SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

CONFERENCE ROOM A
CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE

Members of the public also have the option to join the meeting over Zoom
*(See below for more details)**

2:00 PM **July 6, 2021**

AGENDA

I. APPROVAL OF MINUTES

A. Approval of minutes from the June 1, 2021 Site Plan Review Technical Advisory Committee Meeting.

II. OLD BUSINESS

A. The application of **Banfield Realty, LLC, Owner**, for property located at 3**75 Banfield Road** requesting Site Plan review approval to demolish two existing commercial buildings and an existing shed and construct a 75,000 s.f. industrial warehouse building with 75 parking spaces as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is shown on Assessor Map 266 Lot 7 and lies within the Industrial (I) District.

B. **REQUEST TO POSTPONE** The request of **North Mill Pond Holdings LLC (Applicant), and One Raynes Ave LLC, 31 Raynes Ave LLC, and 203 Maplewood Ave LLC (Owners)** for property located at **31 Raynes Avenue, 203 Maplewood Avenue, and 1 Raynes Avenue** requesting Conditional Use Permit as permitted by Section 10.1112.62 of the Zoning Ordinance and according to the requirements of Section 10.1112.14 to allow 111 off-street parking spaces to be provided on-site and 25 spaces to be provided on a separate lot where a total of 159 are required and Site Plan Review approval for the demolition of three existing buildings and construction of the following: 1) a 5-story mixed use building with 65,650 gross floor area and 17,565 sq. ft. building footprint including 8,100 sq. ft. of commercial use on the ground story and 60 residential units on the upper stories; 2) a 5-story 128-room hotel with 63,400 gross floor area and 13,815 sq. ft. of building footprint; 3) 27,000 sq. ft. of community space as well as associated paving, lighting, utilities, landscaping and other site improvements. Said properties are shown on Assessor Map 123 Lot 14, Map 123 Lot 13, Map 123 Lot 12, Map 123 Lot 10 and lie within the Character District 4 (CD4) District, Downtown Overlay District (DOD), Historic District, and the North End Incentive Overlay District. **REQUEST TO POSTPONE**

E. The request of **Green & Company (Applicant) and Philip J. Stokel and Stella B. Stokel (Owners)** for property located at **83 Peverly Hill Road** requesting Conditional Use Permit approval for an Open Space Planned Unit Development according to the requirements of Section 10.725 of the Zoning Ordinance and Site Plan Review approval for the construction of 56 single-family homes and a new 2,950-foot public road with related utilities, landscaping, drainage and associated site improvements. Said property is shown on Assessor Map 242 Lot 4 and lie within the Single Residence A (SRA) and Single Residence B (SRB) Districts.

F. The request of **Hampshire Development Corp. (Applicant) and 64 Vaughan Mall, LLC (Owner)** for property located at **64 Vaughan Street** requesting Site Plan Review approval for the renovation of an existing building including a 2,475 sq. ft. expansion to the building footprint, a fourth-story addition to a portion of the existing building with retail space on the first floor and 14 residential units on the upper stories and an underground parking garage with related utilities, landscaping, and associated site improvements. Said property is shown on Assessor Map 126 Lot 1 and lies within the Character District 5 (CD5) District, the Historic District, and the Downtown Overlay District.

G. **REQUEST TO POSTPONE** The request of **Gregory J. Morneault and Amanda B. Morneault (Owners)** and **John Chagnon, (Applicant)** for property located at **137 Northwest Street** requesting Preliminary and Final Subdivision Approval to subdivide 1 existing lot with 18,134 square feet of lot area, 19 feet of lot depth, and 537 feet of street frontage into 2 lots as follows: Proposed Lot 1 with 7,500 square feet of lot area, 44 feet of lot depth, and 179 feet of street frontage; Proposed Lot 2 with 10,634 square feet of lot area, 25 feet of lot depth, and 357 feet of street frontage. The existing residence will remain and be on Proposed Lot 1 and a new home will be constructed on Proposed Lot 2. Said property is shown on Assessor Map 122 Lot 2 and lies within the General Residence A (GRA) District and Historic District. **REQUEST TO POSTPONE**

H. The request of **Ricci Construction Company INC, (Owner)** and **Joseph Coronati (Applicant**) for property located at **3400 Lafayette Rd** requesting Conditional Use Permit for a Development Site in accordance with Section 10.5B40 of the Zoning Ordinance and Site Plan Review approval for construction of a 50-unit multi-family residential development that includes community space and related landscaping, drainage, paving, utilities and other site improvements. Said property is shown on Assessor Map 297 Lot 11 and lies within the Gateway Neighborhood Mixed Use Corridor (G1) District and the Natural Resource Protection (NRP) District.

III. NEW BUSINESS

A. The application of **Pease Development Authority, Owner, and Lonza Biologics, Applicant,** for property located at **55 and 101 International Drive**, requesting Subdivision (Lot Line Adjustment) Approval under Chapter 500 of the Pease Land Use Controls, Subdivision Regulations, to revise the lot line between the two lots increasing Map 305 Lot 6 by 2.66 acres from 43.37 acres to 46.02 acres. Said properties are shown on Assessor Map 305 Lot 6 and Lot 7 and lie within the Airport Business Commercial (ABC) District.

B. The application of **Pease Development Authority, Owner, and Lonza Biologics, Applicant,** for property located at **101 International Drive** requesting Site Plan Review Approval, under Chapter 400 of the Pease Land Use Controls, Site Review Regulations for the construction of a new 200 space parking lot along with associated site improvements including lighting, landscaping, and stormwater management. Said property is shown on Assessor Map 305 Lot 6 and lies within the Airport Business Commercial (ABC) District.

IV. OTHER BUSINESS

A. The application of **Bow St Brew LLC, Owner and Applicant**, for property located at 121 Bow St Unit C1, requesting Conditional Use Permit Approval in accordance with Section 10.1112.14 of the Zoning Ordinance, for the provision on no on-site parking spaces where three (3) are required. Said property is shown on Assessor Map 105 Lot 1-1 and lies within the Character District 4 (CD4), Historic District, and Downtown Overlay District (DOD).

V. ADJOURNMENT

**Members of the public also have the option to join the meeting over Zoom, a unique meeting ID and password will be provided once you register. To register, click on the link below or copy and paste this into your web browser:*
https://zoom.us/webinar/register/WN_MaF0GkHrSISpZvkF7RLyfA

SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE
PORTSMOUTH, NEW HAMPSHIRE

Remote Meeting Via Zoom Conference Call

Per NH RSA 91-A:2, III (b) the Chair has declared COVID-19 outbreak an emergency and has waived the requirement that a quorum be physically present at the meeting pursuant to the Governor's Executive Order 2020-04, Section 8, as extended by Executive Order 2020-24, and Emergency Order #12, Section 3. Members will be participating remotely and will identify their location and any person present with them at that location. All votes will be by roll call.

2:00 PM **June 1, 2021**

MINUTES

MEMBERS PRESENT: Juliet TH Walker, Chairperson, Planning Director; David Desfosses, Construction Technician Supervisor; Eric Eby, Parking and Transportation Engineer; Patrick Howe, Fire Department; Darrin Sargent, Police Captain; Nicholas Cracknell, Principal Planner; Robert Marsilia, Chief Building Inspector**;** Peter Britz, Environmental Planner

MEMBERS ABSENT: None.

ADDITIONAL STAFF PRESENT: Peter Stith

I. APPROVAL OF MINUTES

A. Approval of minutes from the May 4, 2021 Site Plan Review Technical Advisory Committee Meeting.

The May 4, 2021 minutes were approved as presented by unanimous vote.

II. OLD BUSINESS

A. The application of **Banfield Realty, LLC, Owner**, for property located at 3**75 Banfield Road** requesting Site Plan review approval to demolish two existing commercial buildings and an existing shed and construct a 75,000 s.f. industrial warehouse building with 75 parking spaces as well as associated paving, stormwater management, lighting, utilities and landscaping. Said property is shown on Assessor Map 266 Lot 7 and lies within the Industrial (I) District.

SPEAKING TO THE APPLICATION

Joe Coronati and Stephen Pernod spoke to the application. Mr. Coronati said the site went a little deeper than previously and that there was more grading work to do; they had a buffer reduction in the impervious and were revegetating all the buffer area in the front and the buffer in the back was for drainage and so on. He said the stormwater treatment will be done with four focal point systems. He said the layout works well overall and will provide a nice entrance and get the parking away from the side of the building. The loading will be the same but just in reverse. The utilities will be the same and there is a leach field area in the greenspace between the building and parking lot. He addressed the TAC comments.

TAC Comments:

- Please provide a green building statement consistent with the requirements of Section 2.5.3.1A of the Site Review Regulations.
- On your checklist, you indicate that you are requesting a waiver to a number of the Site Review requirements. Please provide an updated waiver letter along with justification for why the waivers are justified.
    - They requested a waiver for floor plans and site elevations and would answer what building statement items they could but might request a waiver for that. Ms. Walker asked what the justification was. Mr. Coronati said the tenant hadn't intended to hire an architect, so anything they did provide would be conceptual. Ms. Walker said it was a basic requirement and that an overall layout could be provided. She asked why a Green Building Statement could not be provided, saying that the two waiver requests didn't seem justified. Mr. Coronati said he would provide them.
- Please verify if you will be using irrigation for any of the proposed landscaping areas.
- Please provide will-serve letters from utility companies.
- Please advise on the status of your state permits.
    - They will have irrigation for the landscape areas and letters from the utilities companies and they submitted the AOT and wetlands applications to the State. He said they received the first round of comments and had responded but still needed the septic permit.
- Stormwater treatment in the wetland buffer will require a wetland conditional use permit. Given the redesign of the project please explore opportunities to get all of the treatment outside of the wetland buffer as part of the initial site design.
    - Stormwater treatment in the wetland buffer will require a CUP, and that everything outside the buffer will get treatment and will happen in the focal points. The redesign will have a few impacts in the buffer but the vegetated area in the buffer will act as a stormwater treatment. They met with CONCOM on site but didn't think the impacts could be reduced other than not removing some of the pavement. They designed the stormwater to daylight before but it wasn't allowed for all the solid waste systems and it will be aligned swale to get the water to the edge of the wetland. Everything is clay-lined and can't be put in the back of the site because it's all uphill. They have updated plans for CONCOM.
- Based on a video count conducted at the intersection of Banfield Road and Constitution Ave in December 2020, there was a total of 109 heavy vehicles on the section of Banfield Road north of Constitution Ave between the hours of 6 AM and 6 PM. Heavy vehicles

consist of single-unit trucks, articulated trucks, and buses. A review of the video reveals that the vast majority (over 90%) of the heavy vehicles were smaller single unit trucks. It is not clear from the traffic count data provided by the applicant as to the size of the trucks in their counts. Oftentimes any vehicle with more than 4 wheels or 2 axles will be considered a truck, thereby including many smaller single unit trucks, which increases the total number of vehicles classified as trucks. The proposed project is projected to add 50 trucks to Banfield Road north of Constitution Ave. It must be assumed that the proposed 50 trucks will likely be larger articulated trucks, as that is the standard to which the site plans have been designed. It is therefore likely that the number of larger, articulated trucks on this section of Banfield Road will more than double due to the proposed project.

  - Mr. Pernod said they estimated a daily log of about 90 trucks, but he disagreed that the project would add 50 trucks because their two truck estimates showed 36 trips a day for manufacturing and 48 trips a day for warehousing, and there would be a split because all the trucks would not travel south to north. He said the net increase is less than the 50 anticipated. Mr. Eby said it was more for the impact to the roadway because the shoulders and pavement needed work to accommodate larger trucks. Mr. Pernod said it would be an increase in trucks, but not the full 50, and that the magnitude will be 20-to-25 trucks on Danfield Road. Mr. Eby said they were mostly dealing with very small trucks that didn't have the impact on the road that larger trucks would.

- Construction of this new facility must be conformance to all State rules regarding the areas previously landfilled. Drainage and site details must be reviewed by third part engineer for accuracy and consistency with DES rules.
  - Mr. Coronati said they had to have an AOT permit, so they were designing to those standards. He asked if a third-party review of stormwater would still be needed since AOT would do it. Mr. Desfosses said they wanted someone who was aware of the landfill rules and site review rules to review the design and make sure it was appropriate. Ms. Walker said she would follow up with DPW to get more clarification. Mr. Desfosses said there was a site walk scheduled for Friday with the contractor to look at offsite road improvements and shoulders. Ms. Walker said the third party would also do their analysis.
- As the City will have already reconstructed the road base and pavements, construction of shoulders on Banfield Road based on data and details to be provided by CMA will be the responsibility of the applicant prior to authorization of a CO. This includes all permitting and construction.
- All burlap and cages should be removed for landscape plants.
  - This was agreed to.
- Can the right turn exit area be textured in a different material than pavement to diminish the visual impacts of the painted asphalt?
  - This was agreed to.
- Consideration should be given to add an outdoor seating area for employees either between the parking and the building or between the 100 foot buffer zones adjacent the proposed parking lot.
  - This was agreed to.

- Are there multiple loading docks and if so, the turning template should show how each dock would be accessed using the proposed pavement area.
    - They will provide a floor plan showing where the loading docks are located, how the site will be accessed, and whether the egress is acceptable.

PUBLIC HEARING

The Chair asked if anyone else was present from the public wishing to speak to, for, or against the application. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

Ms. Walker said more discussion was needed before going to the Planning Board.

Mr. Sargent moved to **postpone** the request to the next TAC meeting, and it was seconded. The motion passed unanimously.

NOTE: the next two petitions were addressed together.

B. The request of **Stone Creek Realty, LLC, Owner, and Boston & Maine Corporation, Owner,** for properties located at **53 Green Street** and at the **intersection of Market Street and Green Street** requesting Preliminary and Final Subdivision approval (Lot Line Revision) to transfer 4,852 sq. ft. from Assessor Map 119 Lot 3 to Assessor Map 119 Lot 2 which will increase the total lot area for the receiving lot from 72,200 sq. ft. to 76,670 sq. ft. and the street frontage from 86 ft. to 104 ft. Said properties lie within the Character District 5 (CD5) District, the Transportation Corridor District (TC), Downtown Overlay District (DOD), Historic District, and the North End Incentive Overlay District.

C. The request of **Stone Creek Realty, LLC, Owner,** for property located at **53 Green Street** requesting Site Plan Review approval for the demolition of an existing building and construction of a 5-story mixed-use building with 121,544 sq. ft. of gross floor area and 29,374 sq. ft. building footprint that includes 1,898 sq. ft. of commercial space on the first floor, 48 upper floor residential units, 97 parking spaces and 22,095 sq. ft. of community space as well as paving, utilities, lighting, landscaping and associated site improvements. Said property is shown on Assessor Map 119 Lot 02 and lies within the Character District 5 (CD5) District, Downtown Overlay District (DOD), Historic District, and the North End Incentive Overlay District.

SPEAKING TO THE APPLICATION

Neil Hanson, Rob Simmons, and Robbie Woodburn spoke to the application. Mr. Hanson said additional revisions were made to the plans. He said the lot line plan was finalized and a copy submitted, along with the parking on the site design side. They reconfigured the entrance to the

site and the loading area to accommodate larger delivery trucks and they submitted a variance request to the Board of Adjustment for the front lot line buildout.

Mr. Hanson reviewed TAC's comments as noted below. Ms. Walker said there were comments from the public relating to verifying building height, code requirements, and the façade but that the HDC would work through it. Mr. Howe asked if the truck turning and the rear space would be identified in a low-key manner. Mr. Hanson agreed and said they could add more signage on the wall if necessary. He said the limits of the grass area were delineated by the landscaping plan and the shrubs were ground cover up to the edge of the grass area. Mr. Howe asked if there would be something to identify where the trucks will set up. Mr. Hansen said they could add it. Ms. Walker clarified that there will be minimal signage to delineate where the fire access will be in the area designed to hold the truck and outriggers. Mr. Howe suggested some signage in addition to what's on the pavement, and Mr. Hansen agreed. Mr. Desfosses said C103 was missing from the plan and they couldn't tell the resolution for the rain garden. He said raising the retaining wall would make the rain garden unusable, other than for storage. Ms. Walker said they discussed that it wasn't the property owner's responsibility and that it seemed to be a redesign of the abutting property.

TAC Comments:

With the acute angle of the driveway, most large trucks will need to access to and from Vaughan Street onto Green Street. The intersection of Green and Vaughan must be evaluated to ensure that large trucks can navigate this intersection.

- The area next to the loading zone has a note stating "see landscape plans for surface treatment", but when looking at the landscape plan it is not clear what the treatment is.
- Confirm that the landscape plants along the water are salt tolerant in case of inundation
    - The largest trucks would be delivery trucks and a 30-ft truck can make the turn from Vaughan Street to Green Street and back to Vaughan Street. Mr. Hanson said they could provide those templates but felt that they weren't doing anything different than the existing conditions. Ms. Walker said the way the driveway access was designed would encourage trucks to access it from Vaughan Street, so it would be good to know that the Vaughan Street intersection can accommodate large trucks. She asked that it be verified and said the template for that intersection was needed. Mr. Hanson said they were looking at anything below elevation 10 to confirm that the landscape elements were salt tolerant
- Confirm that the City will not be responsible for maintenance of landscaping
    - Mr. Hanson said the City would be responsible for the greenway trail itself but that the owner would maintain it as well as the landscaping plantings and buffers.
- The landscape plan does not appear to show the surface treatment of the proposed area adjacent to the new loading area. Consider a colored concrete paver be used to delineate the space.
    - The paving squares in the parking area will be a different color to delineate where the trucks would be without putting stripes there.
- Are the building elevations consistent with the latest filing for the Historic Commission?

  - The building elevations provided are the most up-to-date and they are still working through the HDC process, after which they will include any revised elevations with their submittal to the Planning Board.
- A gate and/or signage should be included to delineate the public and private use areas along the North Mill Pond.
  - The only private use along the pond is the dock, which is gated, and everything else is public access.

PUBLIC HEARING

The Chair asked if anyone was present from the public wishing to speak to, for, or against the application. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

Mr. Howe moved to **recommend approval** of the request to the Planning Board, seconded by Mr. Britz, with the following stipulations:

- Ensure that large trucks can turn around the corner at the Vaughan and Green Street intersection;
- Switch out the landscaping in the areas affected by inundation to be salt tolerant;
- Provide a final version of the community space easement with responsibilities related to landscape and maintenance; and
- Add marking and signage to delineate the fire lane area.

The motion passed unanimously.

D. The request of **North Mill Pond Holdings LLC (Applicant), and One Raynes Ave LLC, 31 Raynes Ave LLC, and 203 Maplewood Ave LLC (Owners)** for property located at **31 Raynes Avenue, 203 Maplewood Avenue, and 1 Raynes Avenue** requesting Conditional Use Permit as permitted by Section 10.1112.62 of the Zoning Ordinance and according to the requirements of Section 10.1112.14 to allow 111 off-street parking spaces to be provided on-site and 25 spaces to be provided on a separate lot where a total of 159 are required and Site Plan Review approval for the demolition of three existing buildings and construction of the following: 1) a 5-story mixed use building with 65,650 gross floor area and 17,565 sq. ft. building footprint including 8,100 sq. ft. of commercial use on the ground story and 60 residential units on the upper stories; 2) a 5-story 128-room hotel with 63,400 gross floor area and 13,815 sq. ft. of building footprint; 3) 27,000 sq. ft. of community space as well as associated paving, lighting, utilities, landscaping and other site improvements. Said properties are shown on Assessor Map 123 Lot 14, Map 123 Lot 13, Map 123 Lot 12, Map 123 Lot 10 and lie within the Character District 4 (CD4) District, Downtown Overlay District (DOD), Historic District, and the North End Incentive Overlay District.

SPEAKING TO THE APPLICATION

Neil Hanson, Evan Tormey, and Olivia Stasin spoke to the application. Mr. Hanson addressed the TAC comments. Mr. Desfosses then asked the applicant if they analyzed the drainage system to ensure that it could handle the stormwater flow from the street and adjacent buildings, if it was tied into the system, and if the existing pipe was adequate. Mr. Hanson said they would add it to the model to confirm or upsize as necessary.

Ms. Walker said the public comments they received included how the trash management area will work and how trucks will access it. Mr. Hanson said there were two dumpsters that trucks would pick up and drop, back up and reset, and then leave the site. Ms. Walker asked if there was adequate room for a standard-sized truck, and Mr. Hanson agreed. Ms. Walker said there were also questions relating to building height, which would be addressed at the HDC review.

TAC Comments:

- Responses to traffic peer review still needed.
- With the potential to change traffic flow on Vaughan and Raynes to one-way counter-clockwise, the intersection of Green Street and Vaughan Street must be evaluated to ensure that larger trucks can make the right turn from Green Street onto Vaughan Street. If this maneuver is not possible, an analysis of keeping the section of Vaughan Street between Green Street and Maplewood Avenue two-way should be provided, or modifications to the intersection geometry of Green and Vaughan should be proposed.
    - Related to traffic and the peer review required, Mr. Hanson said they would consider as part of the traffic study the Green Street and Vaughan Street intersection evaluation for larger trucks and analyzing Vaughan Street between Green Street and Maplewood Avenue as two-way if trucks couldn't get through.
- Changes to parking spaces and traffic flow on Raynes and Vaughan will need approval from the Parking and Traffic Safety Committee and City Council.
    - Mr. Hanson said he had no issue with the changes to the parking spaces and traffic flow on Raynes Avenue and Vaughan Street needing approval from the Traffic Safety Committee and City Council. Mr. Howe said it was important that the fire department could make the turn from Vaughan Street, turning left onto Green Street. Mr. Hanson agreed that moving the turn onto Maplewood Avenue was a better condition and that trucks making the turn from Green Street onto Vaughan Street would be easier if Vaughan Street was one-way in that direction. He said they would look into it more when they looked into the peer review.
- As the North Mill Pond Greenway Trail is meant to be a multi-use trail that also allows for bicycle use, then it must be signed accordingly, along with the crossing of Maplewood Avenue.
    - Mr. Hanson said they had no issue with the North Mill Pond greenway being a multi-use trail way allowing for bicycle use signage and that they did similar signs on the Bartlett Street side with the bike path. He said they would work with the City to decide if there should be any specific pavement markings.
- Confirm that the landscape plants along the water are salt tolerant in case of inundation.
    - The landscape plants along the water are salt tolerant and the ones facing Raynes Avenue are not. Additional revisions were made for their CONCOM submission by adding another row of plantings by the path and the pond.

- Confirm that the City will not be responsible for maintenance of landscaping.
    - The City will not be responsible for maintenance and landscaping of the property except for maintaining the physical path itself.
- Approval based on the City and developer agreeing on the price for the outfall and treatment system.
- All materials and construction in the ROW and for the outfall must meet City standards.
    - The price for the outfall and treatment system and all materials and construction will meet City standards.
- In order to comply with the Zoning Ordinance, the tandem spaces will need to be assigned to specific units.
    - Tandem spaces will be assigned specific units to comply with zoning, noting that a letter was received from their parking management company that parking on site would be valet only. It wouldn't be appropriate to assign specific spaces due to the mix of hotel and residential units and 100 percent valet management, noting that it was part of their CUP. Ms. Walker said it should be clear in the CUP that only residential uses were assigned and that tandem spaces weren't allowed for hotel guests.
- Please elaborate on your response to TAC Comment #11 on your TAC Comments Response exhibit related to calculating the spaces for peak parking demand of full occupancy of the hotel.
    - Mr. Hanson said Comment 11 related to calculating the spaces for peak parking demand was also a comment they got from the peer review. Their total room count with 97 parking places is in line with the City's parking demands for a hotel, and the parking management company's analysis put the parking demand for the hotel at 90 spaces, but they will respond to the comment as part of the peer review. It was noted that the peer review commented that the spaces provided did appear to be adequate but that they would not recommend building the additional reserve spaces for the overall project.
- It is indicated in the TAC comment responses that the applicant intends to manage the project's parking with valet service. Will this valet service by 24 hours a day, 365(6) days a year? How many valet personnel will be available? How will this requirement be memorialized/enforced?
    - The owner will manage the parking valet service 24 hours a day and all year long and will determine how much staff is needed to enforce it. It was noted that they worked with other valet companies in Portsmouth in accordance with occupancy and demand and that the residential component would figure in their staffing.
- In the conditional use permit request for parking, it is indicated that the applicant proposes to include the lift systems as "reserve spaces" that could be constructed in the future if the applicant deems that this additional parking is in fact needed to support the developments building program. Specifically what criteria would the applicant use to determine that additional parking is necessary?
    - They don't need the reserved spaces and the peer review agreed, but it would fall to the parking management company to determine whether they need additional spaces to manage the property efficiently. Ms. Walker said if the Planning Board granted the approval, it would require a periodic analysis by the applicant to see

how parking was being managed and whether the additional reserved spaces were required.

- If it is deemed necessary to use the tandem spaces with lifts, what procedures would be in place for the use of these lifts so as to avoid blocking the travel lanes within the parking lot?
    - The site will be 100 percent valet managed and the valet will move the cars around. The lift systems themselves take only seconds to retrieve a car, and the valet company will manage it and make sure it doesn't block access to the site. Mr. Howe noted that if the vehicle was the top one in the rear space, three vehicles would have to be moved to get to it. Mr. Hanson said the system worked with a touch screen or key fob and was a 'puzzle' system that would put the car in the retrievable spot and not have to move any other cars. Ms. Walker asked that a copy be provided showing how the system worked, and Mr. Hanson agreed.
- The proposed streetscreen along the Maplewood Ave. parking area should be modified to include a break away decorative fence along the emergency access driveway.
    - Mr. Hanson said they weren't opposed to the proposed street screen on Maplewood Avenue being modified but wanted to confirm with the Fire Department that it was something they'd be open to. Mr. Howe agreed that there should be some kind of gate. Mr. Cracknell said there was a requirement to have the parking screened, and given that there was an emergency access rarely used, there should be a screen to prevent people from being in front of it and from seeing the parking, and that a swing gate is preferred or a decorative screen with very little opacity to it.
- Details should be submitted for any proposed decking and railing system on the historic pier.
    - Conceptual cross-sections of what the pier could look like with a rail were provided and they hoped to work with the City on finished treatments for the pier if the project moved forward.
- Compliance with the façade modulation, entrance spacing, and building height requirements will be assessed using the final elevations approved by the Historic Commission.
    - The façade modulation, entrance spacing, and building height requirements will be assessed using final elevations approved by the HDC. Ms. Walker asked Mr. Cracknell if compliance with the front lot line building on Maplewood Avenue would exclude the greenway area and meet minimum requirements. Mr. Cracknell said the greenway area would be exempt from the linear frontage and thought the applicant met the 80 percent requirements. Ms. Walker said the applicant had no other choice but to provide the greenway.

PUBLIC HEARING

Elizabeth Bratter of 159 McDonough Street said the puzzle system would require a space to remain empty and asked if that space was part of the parking requirement numbers. Mr. Hanson said they had accounted for those empty spaces in the puzzle system.

The Chair asked if anyone else was present from the public wishing to speak to, for, or against the application. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

It was moved and seconded to **postpone** the request to the next TAC meeting. The motion passed unanimously.

E. **REQUEST TO POSTPONE** The request of **Green & Company (Applicant) and Philip J. Stokel and Stella B. Stokel (Owners)** for property located at **83 Peverly Hill Road** requesting Conditional Use Permit approval for an Open Space Planned Unit Development according to the requirements of Section 10.725 of the Zoning Ordinance and Site Plan Review approval for the construction of 56 single-family homes and a new 2,950-foot public road with related utilities, landscaping, drainage and associated site improvements. Said property is shown on Assessor Map 242 Lot 4 and lie within the Single Residence A (SRA) and Single Residence B (SRB) Districts. **REQUEST TO POSTPONE**

DISCUSSION AND DECISION OF THE BOARD

It was moved and seconded to **postpone** the request to the next TAC meeting. The motion passed unanimously.

F. The request of **Hampshire Development Corp. (Applicant) and 64 Vaughan Mall, LLC (Owner)** for property located at **64 Vaughan Street** requesting Site Plan Review approval for the renovation of an existing building including a 2,475 sq. ft. expansion to the building footprint, a fourth-story addition to a portion of the existing building with retail space on the first floor and 14 residential units on the upper stories and an underground parking garage with related utilities, landscaping, and associated site improvements. Said property is shown on Assessor Map 126 Lot 1 and lies within the Character District 5 (CD5) District, the Historic District, and the Downtown Overlay District.

SPEAKING TO THE APPLICATION

Eric Weinrieb and Steve Wilson spoke to the petition. Mr. Weinrieb said a big change on the demo plan was that they added an area as an overlay to the parking lot. He said they will regrade and repave and will keep the wood guardrail but will modify it because they will move the walkway. He said they re-striped some parking spaces, added a foot of space at the end, turned a second into the painted island for the handicap space, added a no-left-turn sign, and got rid of a parking space to make way for the crosswalk. He said they were redoing a section of paving so they would re-stripe everything and compress the parking spaces to 8-1/2 feet. They reconfigured the basement parking and tilted and angle of the spaces to allow easier ingress and egress. On spaces 13 through 16, they moved the columns. As far as utilities, he said a disconnect was not required, so they wouldn't lose a parking space for that. He said there was plenty of room for outriggers because he took an offset of the sawtooth pattern.

Mr. Desfosses said the DPW wasn't comfortable with the 8-1/2 parking spaces and that the new layout doesn't show how the cars won't damage the trees. Mr. Weinrieb said they would do whatever the City wanted. Ms. Walker asked if the Parking Division had a count of those parking spaces. She suggested that Mr. Weinrieb contact Ben Fletcher to confirm it, noting that it would be helpful to see what's on the ground and what's proposed. Mr. Desfosses said the new angled spaces will work at 8-1/2 feet, but due to the high turnover and the business on the lot, he didn't feel that spaces less than 9 feet were appropriate there. Ms. Walker said she will provide the applicant with more guidance relating to the width of the spaces.

TAC Comments:

- When repainting the parking spaces on the alleyway, make the first and last space 18 feet in length, while shifting all four spaces 2 feet towards the Worth Lot, to keep the 20 foot distance to the new crosswalk.
    - The applicant agreed.
- The double yellow center line on the alleyway should not extend beyond the relocated stop bar.
    - It's an existing stripe but it can go away.
- Other than the one space lost in the alleyway, will the overall number of spaces in the Worth Lot change as a result of the proposed work shown on the plans? It would be helpful to provide a plan showing the number of spaces under existing and proposed conditions.
    - There is no net loss on the entire parking lot. The aerial will be compared to the survey and numbers will be submitted.
- The sidewalk from the Worth Lot driveway to the Vaughn Mall must be reconstructed with lighting as previously requested.
    - The sidewalk will be reconstructed.
- The City will accept the milling and repaving of ½ of the Worth lot.
- All pavement and sidewalks must meet City standards.
    - All pavement and sidewalks will meet City standards.
- Zoning relief for the front lot line buildout requirements may be required for the secondary front yard on Hanover Street as it appears to be 70% versus 80%.
    - They have a subtracting massing technique and don't think a variance will be needed. Ms. Walker said it was specific to the front yard requirement. Mr. Weinrieb said the front lot line references the yard specifically. Mr. Cracknell suggested discussing it offline, noting that the ordinance allows a front lot line buildout to be reduced only if there's a requirement for community space.
- The calculations for the minimum open space should be identified on the site plan.
    - The applicant agreed.
- The reference to the penthouse height in the zoning table should be removed and referenced as an attic space above the third floor.
    - The applicant agreed.
- Compliance with the façade modulation, entrance spacing, and building height requirements will be assessed using the final elevations approved by the Historic Commission.

  - The applicant agreed.
- We will need to discuss the requested waiver of the stormwater management and erosion control plan, it seems a waiver may not be justified.
  - Ms. Walker asked if it the waiver request was discussed with DPW. The applicant said they would do whatever is prudent on the stormwater management plan. He said the entire site is impervious at this point and that they're creating more pervious but not much. All of the roof runoff except the area fronting Vaughan runs into the parking lot. The runoff is being decreased and brought up to standards in all areas, and more details will be provided. Ms. Walker asked why the applicant wanted a waiver from the stormwater plan. Mr. Weinrieb said they were creating greenspace to have less runoff. Ms. Walker said it justifies providing the plan to show that and she is reluctant to recommend waiving requirements at this stage. Mr. Weinrieb said he could do a study and Ms. Walker said she will get back to him about it.
- Please confirm you are proposing a direct financial contribution to the City for the mill and repaving of the Worth Lot as well as for proposed improvements to Vaughan Mall and that you do not intend to undertake previously requested improvements to the Hanover Street sidewalk.
  - Mr. Wilson said that, considering the overlay on the work lot and the sensitivity of it, and if he did it himself or with his contractor, it complicates that area. He said it would be a smart thing if he can set the money aside with the DPW and they could do it at the appropriate time. He said he didn't say that he did not intend to do the sidewalk. Because they were on the hook for all the greenspace and because that sidewalk area was in front of another property and not contiguous to theirs, he felt that they might get some grace on it. Ms. Walker said she asked the DPW Director to confirm whether the City would accept him not doing that Hanover Street section. Mr. Desfosses said the Director asked him to ensure that it was included in the project. Mr. Wilson agreed to do it.

PUBLIC HEARING

The Chair asked if anyone was present from the public wishing to speak to, for, or against the application. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

Ms. Walker said the zoning discussion was needed before going to the Planning Board. Mr. Desfosses said if they moved the project forward, they would have to review it again before the Planning Board for layouts for parking, sidewalks, and streetwalk. Ms. Walker said it would be more efficient if it went back to TAC.

It was moved and seconded to **postpone** the request to the next TAC meeting. The motion passed unanimously.

III. NEW BUSINESS

A. The request of **Gregory J. Morneault and Amanda B. Morneault (Owners)** and **John Chagnon, (Applicant)** for property located at **137 Northwest Street** requesting Preliminary and Final Subdivision Approval to subdivide 1 existing lot with 18,134 square feet of lot area, 19 feet of lot depth, and 537 feet of street frontage into 2 lots as follows: Proposed Lot 1 with 7,500 square feet of lot area, 44 feet of lot depth, and 179 feet of street frontage; Proposed Lot 2 with 10,634 square feet of lot area, 25 feet of lot depth, and 357 feet of street frontage. The existing residence will remain and be on Proposed Lot 1 and a new home will be constructed on Proposed Lot 2. Said property is shown on Assessor Map 122 Lot 2 and lies within the General Residence A (GRA) District and Historic District.

SPEAKING TO THE APPLICATION

John Chagnon spoke to the petition. He said the property was long and skinny and had a bypass behind it and a City pump station on the end of the lot. He addressed the TAC comments.

TAC Comments:

- Within the Maintenance and Turnaround Easement, there should be adequate area for larger vehicles to drive in and back out, and some type of indication in the field that this area must be kept clear of anything that would obstruct the ability of vehicles to use it as a turn around.
- An easement will need to be provided to the City for the entire area currently inside of the turn-around for maintenance of the pump station. The area is shown hatched but is not described as easement to be provided.
    - A survey was done for a water line easement when the bypass was reconstructed and is in place. The final document is subject to an as-built. The turnaround easement is for the dead-end street and the City uses the area to turn plows around, but a more formal agreement is being pursued relevant to the plan. The sewer pump station is fenced in and the turnaround area is just shown as the remainder area but can be expanded to allow for proper turnaround movements so that the plows can plow straight ahead and back out. He asked if signage would be a good way to keep the turnaround area clear of anything that would obstruct vehicles turning around, or if the City would do their signage later. Mr. Howe said they don't want the residents parking their cars in the way of vehicles that need to turn around. Mr. Chagnon said they could add some signage to that effect. He asked if the City knew that the turnaround area would be paved, or if there would just be signs based on what was there now. Mr. Cracknell said the project was not well received by the HDC, so the builder was asked to redesign the house. He said the builder indicated having the driveway to the proposed house as a paved one from Northwest Street into the two-car garage instead of having a donut or cul-de-sac. He said the curb cut was changed, so it made sense that the hammerhead where the snow is stored should be paved from Northwest Street across the easement area into the garage and that anyone should be able to use it as a turnaround if it was signed and posted. Mr. Chagnon said it made sense and that the project is well served by the residents using it as their access, but the owner

didn't want them parking in a certain area or using a certain space as a turnaround. He said he would discuss it with DPW.

- Constructing a single family house on this lot is going to be very challenging given the lot shape, topography and setbacks.
- The limit of work for this house lot should be staked in the field and a landscape plan should be submitted to reestablish an edge along the Route 1 Bypass.
    - Mr. Chagnon asked if the Commission wanted to see the planting along the bypass in relation to the lot development. Mr. Cracknell said Northwest Street is a challenging building envelope because it's on the intersection of Market Street and the bypass. He said everything within the limit of work is thickly vegetated and had a positive effect on Northwest Street, but it would all be removed and the house would be a new screen. He said the site is very tight and it would be helpful for everyone to see the four corners of the building staked out.
- The hammerhead or "T" turnaround area for the public work vehicles should be shown and laid out with adequate area for snow storage.
    - Ms. Walker said if the owner wasn't supportive of doing the turnaround, another alternative would have to be considered. Mr. Cracknell said the turnaround area should be accessible to the public, given the design of the roadway. Mr. Chagnon said they will discuss it with the Legal Department.
- If the existing turnaround area is to remain within the proposed house lot then it should be cut back and reseeded with grass directly in front of the proposed garage and a new, narrower curb-cut established along Northwest Street.
    - Mr. Britz said the turnaround and the new home would be in the tidal buffer and that he'd like to see a plan that reduced that use. He suggested impervious treatment instead of gravel. He asked if there was a way to get the house further out of the buffer and use a different driveway. Mr. Chagnon said the lot narrowed going west, so they hadn't done the final design on the house but will try to infiltrate and replicate as best as possible. He said the area of existing gravel will increase not matter what. Mr. Desfosses said he would be the DPW contact regarding the turnaround treatment. He said the City was used to the area being gravel but would be okay with whatever would be better environmentally. He said infiltration wouldn't work on the site. Ms. Walker asked why more impervious surface to a buffer area would be added if the gravel was working. Mr. Britz said it would be good to put an easement on it and not do anything to it. Ms. Walker said any change to it will require a wetland permit and mitigation, so it was better for it to stay the way it is. Mr. Desfosses suggested paving a little area outside the garage as asphalt. Mr. Chagnon said the gravel worked due to the existing turnaround, but continuing to utilize that turnaround would impact the ability to have a residence on it. Ms. Walker said there were other factors that challenged the lot for putting a residence on it because it was long and linear and didn't compare with the typical subdivision lot. Mr. Cracknell said he discussed with the builder the idea of redesigning the house and moving the garage out of the gravel area by shifting it to the left. Mr. Chagnon said an easement would need to go to the City for the entire area inside the turnaround and the maintenance of the pump

station area. He said they got variances for the construction of a single-family home.

- You indicated a number of items in the list of subdivision requirements are TBD. Please review and explain status.
    - The TBD items are utility items and clarification is needed of how they apply to the subdivision process. Ms. Walker said they need to know which utilities are going to the site and how they will be accessed. The applicant said he will show the potential service locations.
- Please confirm that your proposed residence will comply with the requirements for the extended flood hazard area as outlined in Section 10.628 or will not be located in the extended flood hazard zone.
    - They will comply as needed to confirm that the proposed residence will comply with the requirements of the extended flood hazard area, noting that the red line is +2 feet from Elevation 8, which is the floor hazard elevation, and that they will be able to keep the house out of that area.

PUBLIC HEARING

The Chair asked if anyone was present from the public wishing to speak to, for, or against the application. Seeing no one rise, the Chair closed the public hearing.

DISCUSSION AND DECISION OF THE BOARD

It was moved and seconded to **postpone** the request to the next TAC meeting. The motion passed unanimously.

B. The request of **Ricci Construction Company INC, (Owner)** and **Joseph Coronati (Applicant**) for property located at **3400 Lafayette Rd** requesting Conditional Use Permit for a Development Site in accordance with Section 10.5B40 of the Zoning Ordinance and Site Plan Review approval for construction of a 50-unit multi-family residential development that includes community space and related landscaping, drainage, paving, utilities and other site improvements. Said property is shown on Assessor Map 297 Lot 11 and lies within the Gateway Neighborhood Mixed Use Corridor (G1) District and the Natural Resource Protection (NRP) District.

SPEAKING TO THE APPLICATION

Joe Coronati spoke to the application. He said the plan that was submitted in November had 54 units but that they removed four units in response to TAC's request. He said a lot of the larger buildings were broken up and spacing was added between them, and they also added a turnaround. He said the architectural design was almost the same and there was still a curb cut on Lafayette Road. He said they had existing and proposed trails that would be connected, and the Coach Road trail would be a potential accessway for the public. For the lighting plan, he said there would be a few streetlights around the development that were decorative dark-sky compliant LED styles. He said a landscaping plan was proposed for the whole area as well as

restoration areas of the wetland buffer that would include vegetated outfalls, a lawn area with benches, and a dog park area. He said the property would be 86 percent encumbered by conservation easements once the granting of the ten acres was done, making it a large percentage of 38 out of 44 acres. He said the remaining six acres would stay as wooded areas and would not be developed. Ms. Walker asked if the existing trails were allowed under the current easement. Mr. Coronati said the sewer trail was allowed and they will further research what's allowed. Ms. Walker said it needed more clarification. Mr. Coronati addressed the TAC comments.

The Committee suggested having landscaping near the 24-ft wide buildings and a 12-ft walkway with landscaping along the buildings and driveway. They said the trail can go around the pond and through the City's land up to Nathaniel Street so that everyone can go in both directions, so trail improvements are needed. The sidewalk would be more appropriate if it is concrete instead of asphalt. Ms. Walker said the applicant needed to indicate what community space type the property would be and how it will meet community space definitions. Mr. Britz said he wasn't sure that NRP was a good place to do the stormwater treatment, and certainly not in the buffer. He said the development itself feels more like a condo complex with as many houses that can be fit into it than a community development. He asked if the stormwater treatment was allowed in the easement and thought that adding new stormwater ponds and runoff might not be compatible. He suggested more robust landscaping. Ms. Walker suggested that the applicant make the development feel more like a neighborhood.

TAC Comments:

- Please confirm compliance with the following Sections of the Zoning Ordinance – Section 10.5B22.40 Special Setback Requirements on Lafayette Road and Section 10.5B33.20 Front Lot Line Build Out.
    - They have a minimum setback of 70 feet and a maximum of 90 feet from the center line of the road. They drew in the 70-ft setback and will take an NRP side setback that is 70 feet. All their buildings are beyond the maximum of 90 and there is no way to comply with that setback. He asked if it was a waiver or variance and if it didn't apply due to the odd shape of the lot. Ms. Walker said she would look into it.
- The development appears to be very dense for this site. The community space does not appear to be functional for so many units on the site. Please consider revising the layout to allow for an arrangement that creates more meaningful community space.
    - Four units were removed, so they are below the density requirements. All the buildings were kept out of the 100-ft wetland buffer. There are 50 units in 13 buildings, two different widths of buildings at 20 feet and 24 feet, and different styles. The footprints and building layouts were modified based on privacy and views, as well as the decks. The decks are orientated to the rear of the buildings overlooking the wetlands, with a few to the front. Twenty-eight acres out of 40 are dedicated to a conservation easement and 10 acres in a different location will be dedicated for community space. Mr. Cracknell said the decks add a lot to the façade and suggested having as many as possible on the front façade. He said the site is crowded from too many townhouses being jammed in. He suggested

changing the fatter ones to skinnier ones. He said the eight units in the lower left look awkward and change the neighborhood's continuity.

- If the mailbox area is meant to be drive-up, the area should be larger to allow vehicles to pull in and out easier. If it is meant to be walk up, it should have a sidewalk and crosswalk leading to it.
- The driveway in front of unit 20 is very short due to the angle. It should be lengthened to allow for a vehicle to park in this space.
- The walkway between units 2 and 3 should have a tip down ramp at its terminus.
- The project will require a driveway permit from the NHDOT.
- Applicant's Engineer must work with City Engineer to determine if there is sufficient capacity if the City's sewer system for this development. Any approvals for this project are contingent on the approval of allowing the flow to be added to the City's system.
    - The utilities plan includes City water from Route One, a gas service, underground electric, sewer and drainage and all the utilities are provided from Route One other than the sewer. They will do a gravity sewer line through the middle of the property and down the road out to the existing sewer in the back of the site that will connect through a cross-country line and tie into the existing manhole. There will be further discussions with DPW about sewer details. A capacity analysis will be done.
- Third party engineer will be required to review on-site utilities and drainage during construction.
- Third party engineer required to review drainage design.
    - A drainage plan was done and an alteration of terrain plan that would impact about five acres. A large wetpond on the northern side will take a lot of drainage, and there is a tank and focal point stormwater system for inside the cul-de-sac as well as a bioretention pond. The site sits higher than the other development on Route One, so they will have a lot of stormwater coming off their property but will have culverts to prevent ponding. It will all be reviewed by AOT.
- Water main detail calls out C900 pipe.
- All water main parts to meet City standards.
- All sewer pipe and manholes to meet City and State Standards.
- HDPE pipe must be surrounded by crushed stone.
- Hydrant locations to be approved by Portsmouth Fire.
- Show water lines for fire service sprinklers.
    - A test will be done with a sprinkler company and booster pumps will be done if necessary. Mr. Howe said that it may be pump and tank and to adjust and to get an answer and adjust accordingly.
- Will there be parking allowed on the internal driveways?
- The width of the travel lane should not be less than 24' at any point.
- The dead end section of the travel lane should be a minimum of 26' wide.
- The driveway and parking areas for the 12 townhouse units located near Lafayette Road should have at least 60 feet of pavement between the buildings to allow for parking and turning movements.
- All buildings should allow for front decks over the garages in order to soften the visual impact of the large garage doors at the ground level. Where no decks are proposed I

would suggest double doors be considered (or a facsimile thereof) to add visual interest and break up the monotony and expansiveness of the ground-floor garages.

- The neighborhood design would benefit from removal of units 19-23 and rotating the building containing units 24-26 along the cul-de-sac. At a minimum, due to the orientation and circulation constraints I would remove at least the last two units (19-20). This area could be used for active recreation (i.e. a playground, dog park, grilling area…) for the remaining units.
- The dog park should be located outside the buffer zone.
- 4 visitor spaces seems low given the proposed density and the fact that many residents will be parking in front or their units.
- The snow storage areas look inadequate for the proposed impervious surface.
- The proposed sidewalk should be concrete and efforts should be made to connect a pedestrian walkway to all the proposed units.
- The existing trail system around the wetland should be clearly identified and improved to be used as a passive recreational trail for the residents.
- Please describe your plan for solid waste/trash storage and collection.
- You will need to provide will-serve letters from relevant utilities.
- Please provide an update on the status of any state permits.
- Please provide a green building statement consistent with the requirements of Section 2.5.3.1A of the Site Review Regulations

PUBLIC HEARING

Nicole Seaward said she lived at the Weatherstone Condos and had some concerns. She said the State should readjust the 45 MPH speed limit in the area due to all the congestion. She asked if noise or visibility controls would be put in place due to the impact to the existing buildings. She said noise from the back decks would impact her living conditions and that the light and traffic from the proposed eight separate units would be close to her condo and impact her and others. She said the condo residents were concerned about the environmental impact on the conservation area and wetland and that Weatherstone should also be involved in the access to any trails.

DISCUSSION AND DECISION OF THE BOARD

It was moved and seconded to **postpone** the request to the next TAC meeting. The motion passed unanimously.

IV. ADJOURNMENT

The meeting was adjourned at 5:07 p.m.

Respectfully submitted,

Joann Breault
Acting Secretary for the Technical Advisory Committee

JONES&BEACH
ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

June 23, 2021

Portsmouth Planning Board
Attn: Dexter Legg
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: Response Letter 3 – TAC Comments
375 Banfield Road, Portsmouth, NH
Tax Map 266, Lot 7
JBE Project No. 19190.2

Dear Mr. Legg,

We are in receipt of comments from Jillian Harris dated June 1, 2021. Review comments are listed below with our responses in bold.

1. *Please provide a green building statement consistent with the requirements of Section 2.5.3.1A of the Site Review Regulations.*
   RESPONSE: A Green Building Statement is included along with this response letter.

2. *On your checklist, you indicate that you are requesting a waiver to a number of the Site Review requirements. Please provide an updated waiver letter along with justification for why the waivers are justified.*
   RESPONSE: The waiver requested for Section 2.5.4.3(b) for architectural design is no longer needed as we are submitting architectural plans along with this submission.

3. *Please verify if you will be using irrigation for any of the proposed landscaping areas.*
   RESPONSE: It is possible that irrigation will be used, and Note #18 on Sheet L1 states that an irrigation piping system shall be reviewed and approved by the owner and engineer prior to installation.

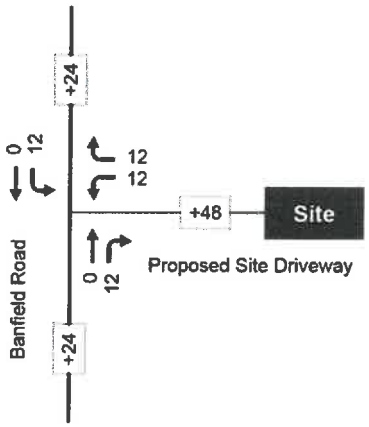
4. *Please provide will-serve letters from utility companies.*
   RESPONSE: Commitment to serve letter from Unitil has been received for the gas service. Letters from the City of Portsmouth Water Department and Eversource are pending but correspondence has been initiated.

5. *Please advise on the status of your state permits.*
   RESPONSE: The State permits have been submitted and are pending approval from NHDES.

6. *Stormwater treatment in the wetland buffer will require a wetland conditional use permit. Given the redesign of the project please explore opportunities to get all of the treatment outside of the wetland buffer as part of the initial site design.*
RESPONSE: The stormwater system is designed as small as it can be and impacts in the buffer are temporary. The Conservation Commission voted to approve the project at the 6/9/21 meeting with the condition that we re-vegetate disturbed areas adjacent to the wetlands with wildflower seed mix.

7. *Based on a video count conducted at the intersection of Banfield Road and Constitution Ave in December 2020, there was a total of 109 heavy vehicles on the section of Banfield Road north of Constitution Ave between the hours of 6 AM and 6 PM. Heavy vehicles consist of single-unit trucks, articulated trucks, and buses. A review of the video reveals that the vast majority (over 90%) of the heavy vehicles were smaller single unit trucks. It is not clear from the traffic count data provided by the applicant as to the size of the trucks in their counts. Oftentimes any vehicle with more than 4 wheels or 2 axles will be considered a truck, thereby including many smaller single unit trucks, which increases the total number of vehicles classified as trucks. The proposed project is projected to add 50 trucks to Banfield Road north of Constitution Ave. It must be assumed that the proposed 50 trucks will likely be larger articulated trucks, as that is the standard to which the site plans have been designed. It is therefore likely that the number of larger, articulated trucks on this section of Banfield Road will more than double due to the proposed project.*
RESPONSE: It is unlikely that all or even a substantial majority of the additional truck traffic from this site will be in the form of larger, articulated trucks like the WB-62 that was used as the design basis for the pavement. The WB-62 model was run as a worst-case scenario to determine the appropriate pavement radii and smaller delivery vehicles will probably be more frequent in traffic coming to and leaving the site.

The following diagram illustrates that the net truck impact on Banfield Road will be approximately +24 truck-trips per day (based on Pernaw & Co., Inc. memorandum dated 12/28/2020 for a warehouse use and an even trip distribution split between points north and south via Banfield Road).



8. *Construction of this new facility must be conformance to all State rules regarding the areas previously landfilled. Drainage and site details must be reviewed by third party engineer for accuracy and consistency with DES rules.*
   RESPONSE: The project has been designed with DES compliance in mind. There are four environmental concerns that will be addressed as follows:
   1. **<u>Contaminants in soil related to historical use of the property as an automobile junkyard and recycling facility</u>. All earth disturbance will be performed under the provisions of a *Soil & Groundwater Management Plan* (SGMP) that will be developed by Wilcox & Barton, Inc., stamped by a licensed Professional Engineer, and submitted to DES for approval. The plan will specify the proper handling and offsite disposal of contaminated soil and any solid wastes that are encountered during the work. Throughout the work, a Wilcox & Barton, Inc. field scientist will be on site to monitor implementation of the SGMP, assess for environmental conditions, and ensure implementation of an *Environmental Health & Safety Plan* designed to protect workers from site-related exposures. If required by DES, the SGMP will be incorporated into a *Remedial Action Plan* (also subject to DES approval) to facilitate the removal of contaminated soil.**
   2. **<u>The site is registered as a Closed Pre-1981 Landfill</u>. Landfilled materials are permitted to remain as long as they are not disturbed. If manmade materials are encountered and must be disturbed as part of site grading, the materials will be removed, segregated, and disposed offsite. No other work is anticipated with respect to the closed landfill status.**
   3. **<u>Site drainage shall not be allowed to infiltrate through contaminated media</u>. In accordance with Env-Wq 1507.02(c)(2)(b), stormwater shall not be infiltrated in areas that have soil contaminants at concentrations exceeding applicable soil quality standards. Site drainage has been designed to eliminate infiltration. This is a provision of the Alteration of Terrain Permit. No further DES involvement will be necessary on this matter.**

   <u>Stormwater management during construction</u>. The project will require coverage under the EPA NPDES Construction General Permit for the management of stormwater. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented on the project to ensure that contaminated stormwater and sediment do not run off from the site while the permanent stormwater management system is being constructed.

9. *As the City will have already reconstructed the road base and pavements, construction of shoulders on Banfield Road based on data and details to be provided by CMA will be the responsibility of the applicant prior to authorization of a CO. This includes all permitting and construction.*
   RESPONSE: The applicant is working with the City on the design of the shoulders of the road. The cost sharing portion still needs to be worked out based on the projected increase in truck traffic from our site.

10. *All burlap and cages should be removed for landscape plants.*
    RESPONSE: See Note #22 on Sheet L1.

11. *Can the right turn exit area be textured in a different material than pavement to diminish the visual impacts of the painted asphalt?*
    RESPONSE: We have modified the right turn exit area to be textured with pavers to differentiate with the standard asphalt.

12. *Consideration should be given to add an outdoor seating area for employees either between the parking and the building or between the 100-foot buffer zones adjacent the proposed parking lot.*
    RESPONSE: Note #20 has been added to Sheet C2 discussing the location of the outdoor seating area if the company decides to have one.

13. *Are there multiple loading docks and if so, the turning template should show how each dock would be accessed using the proposed pavement area.*
    RESPONSE: New truck turning templates have been added to Sheet T3 showing how different potential dock locations would be accessed.

Included with this response letter are the following:

1. Two (2) Revised Full Size Plan Set Folded.
2. One (1) Revised Half Size Plan Set Folded.
3. Elevations & Floor Plans.
4. Green Building Statement.
5. Commitment to Serve Letters.

Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Joseph Coronati
Vice President

cc: Rob Graham, Banfield Realty, LLC (letter and plans via email)
Jim Gove, Gove Environmental Services (letter and plans via email)
Bill Wilcox (letter and plans via email)
Peter Britz, City of Portsmouth (letter and plans via email)

JONES&BEACH
ENGINEERS INC.
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June 23, 2021

Portsmouth Planning Board
Attn: Dexter Legg
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: Green Building Statement
375 Banfield Road, Portsmouth, NH
Tax Map 266, Lot 7
JBE Project No. 19190.2

Dear Mr. Legg,

The intent of this proposal is to construct a 75,000 S.F. industrial warehouse building with associated parking, loading, drainage, and utilities. Throughout the design process, low-impact solutions to site issues were considered and implemented. The orientation of the site with parking generally located south of the proposed building and on top of a fill slope ensures that the parking area receives maximum sunlight during the winter months, which will reduce the amount of salt that will need to be used. This being said, robust landscaping trees such as October Glory Red Maple, Pink Flowering Dogwood, and Greenspire Littleleaf Linden will ensure that the periphery of the parking area is shaded during the summer months, reducing the potential for a "heat island" in this area.

This site is already developed. The site has been previously used as a landfill and an auto salvage facility. The proposed design utilizes the minimum amount of new impervious surface practicable for the intended use. In the existing condition, there is significant impervious surface in the 100' wetland buffer which is being removed with this development. Post-construction, there will be almost no impervious surface within the wetland buffer. The temporary stockpile area and the areas adjacent to the wetland buffer will be restored with a wildflower seed mix. The constraints were the size of the building, the necessity for a loading area that can be used by WB-62 trucks for delivery, and the City of Portsmouth's parking requirements. The addition of impervious surface causes the potential for increased rates of off-site runoff, so a stormwater management system was designed for this development to provide for treatment and detention of runoff. We are using low-impact solutions for treatment and detention, including small-footprint "Focal Point" biofiltration areas, PreTx curb inlet units for pre-treatment, a meadow buffer, and underground detention underneath pavement in lieu of a traditional pond. These systems will provide for treatment and detention of stormwater in a small footprint. The minimum amount of ground practicable will be disturbed with this development.

The building will meet or exceed the NH State energy code as amended by the City of Portsmouth that is in effect at the time of building permit application. It is anticipated that LED fixtures will be used for general lighting within the building and a "cool" membrane roof will be used. Limited

fenestration on the exterior walls will improve the performance of the exterior envelope. LEED certification is not anticipated at this time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Daniel Meditz, E.I.T.
Project Engineer

Unitil
Northern Utilities, Inc.

June 11th, 2021

Dan Meditz
Project Engineer | Jones & Beach Engineering Inc.

Will Serve Letter for 375 Banfield Rd, Portsmouth NH

Hi Dan,

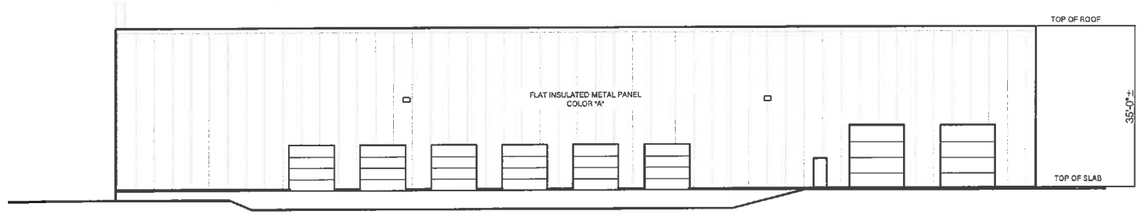
Unitil/Northern Utilities Natural Gas Division has reviewed the requested site for natural gas service:

Unitil hereby confirms that natural gas is available to supply the proposed building located at 375 Banfield Rd in Portsmouth, NH.

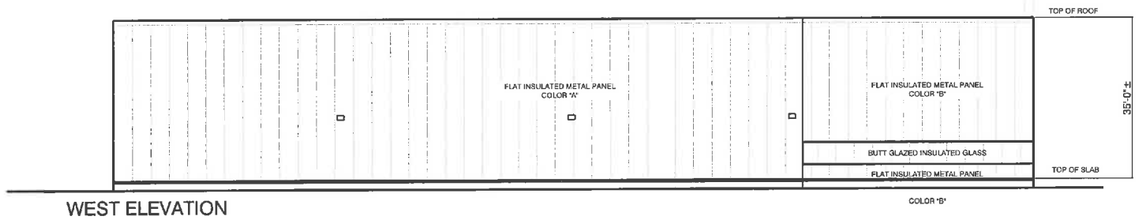
Sincerely,

Dave MacLean
Senior Business Development Rep

Unitil



EAST ELEVATION



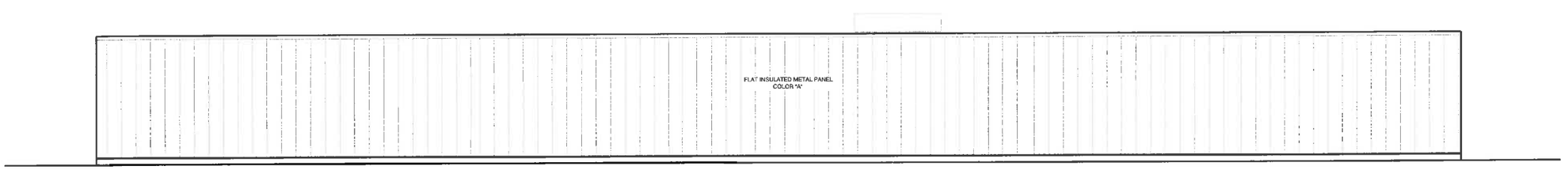
WEST ELEVATION

SIDING "A" AND "B"

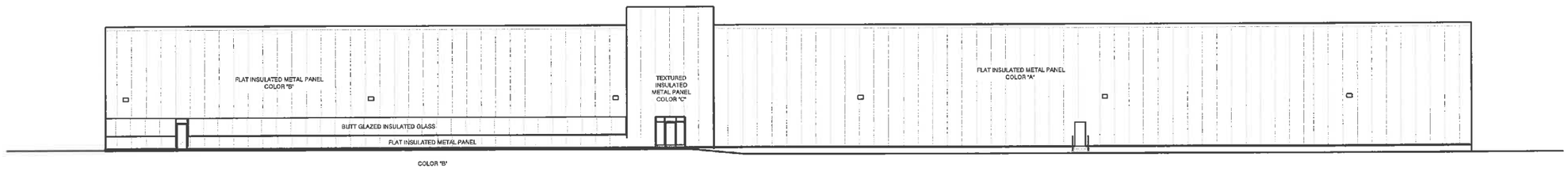
2.5" X 26/26 Ga. CF-42 METL-SPAN OR EQUAL
PANELS WITH 42" COVERAGE
EXTERIOR COLOR "A" - TO BE DETERMINED
EXTERIOR COLOR "B" - TO BE DETERMINED
INTERIOR FINISH - WHITE
PANEL PROFILE - CF-42 LIGHT MESA OR EQUAL
SIDE JOINT FASTENING - CONCEALED CLIP.
2 FASTENERS PER CLIP
ALL TRIM 26 GA TO MATCH EXTERIOR PANEL FINISH

SIDING "C"
2.5" X 26/26 Ga. CF-42 METL-SPAN OR EQUAL
PANELS WITH 42" COVERAGE
EXTERIOR COLOR "C" - TO BE DETERMINED
INTERIOR FINISH - WHITE
PANEL PROFILE - CF FLUTE OR EQUAL
SIDE JOINT FASTENING - CONCEALED CLIP
2 FASTENERS PER CLIP
ALL TRIM 26 GA TO MATCH EXTERIOR PANEL FINISH

ALL SIDING IS TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND IS TO INCLUDE ALL ASSOCIATED ACCESSORIES REQUIRED FOR PROPER INSTALLATION AND AIR AND MOISTURE SEALING.



NORTH ELEVATION



SOUTH ELEVATION

CONCEPT ELEVATIONS

SCALE: 1/16" = 1'-0"

mjk
Michael J. Keane
Architects, PLLC
ARCHITECTURE
PLANNING
DESIGN
101 Kent Place
Newmarket, NH
03857
603-292-1400
mjkarchitects.com

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CONSULTANTS

REVISIONS

APPROVALS

PLANNING BOARD REVIEW
02.02.21
NOT FOR CONSTRUCTION

Accept only original stamp and signature copies may contain unauthorized modifications

PROJECT

INDUSTRIAL WAREHOUSE
375 BANFIELD ROAD
TAX MAP 266 LOT 7,
PORTSMOUTH NH , NH

BANFIELD REALTY LLC
304 MAPLEWOOD AVE
PORTSMOUTH NH 03801,

TITLE

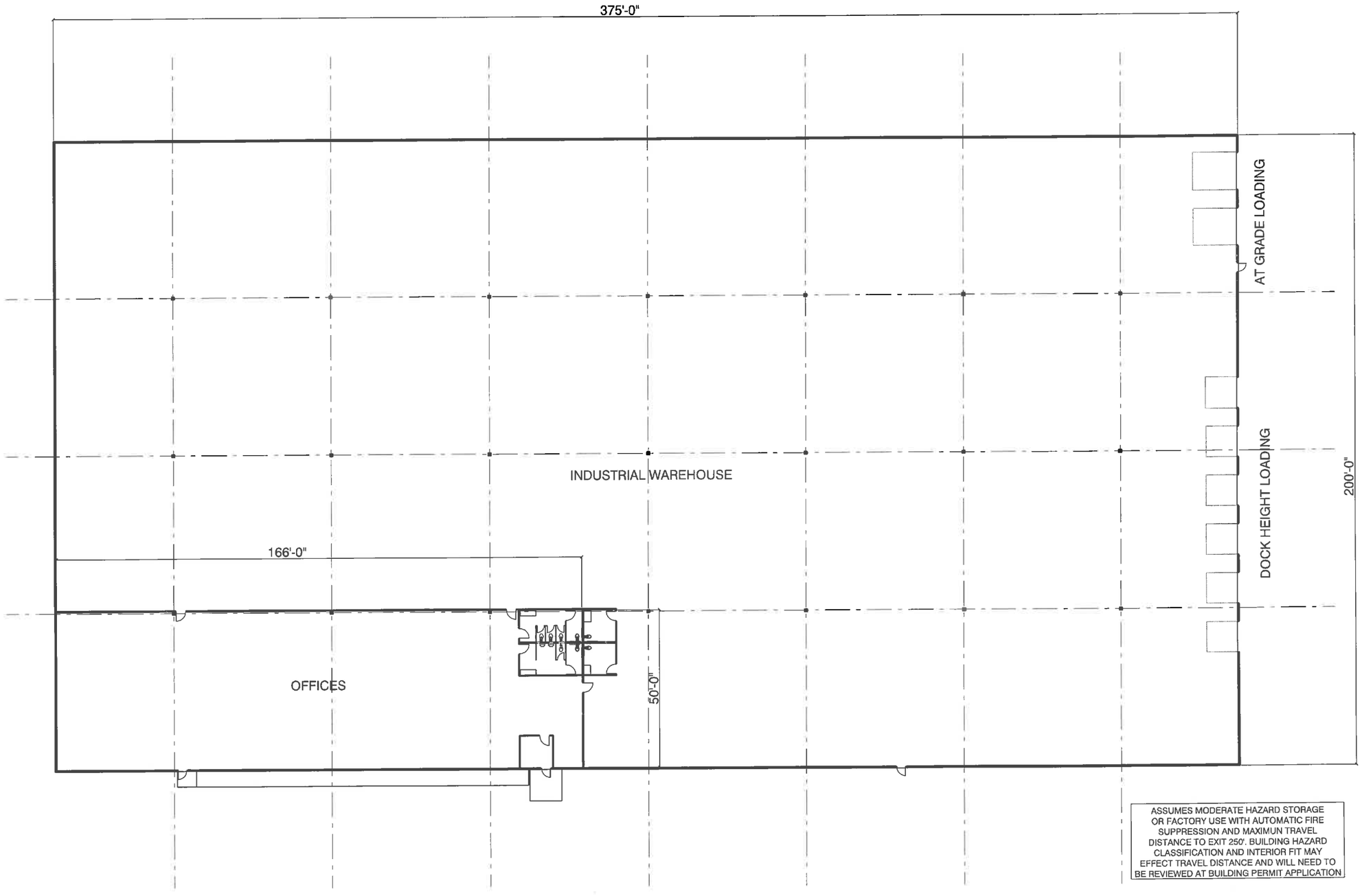
PRELIMINARY ELEVATIONS

DRAWN BY:
CHECKED BY:
DATE: 6/21/2021
SCALE: AS NOTED

DRAWING NO.

A- 1

DO NOT SCALE PRINTS



ASSUMES MODERATE HAZARD STORAGE OR FACTORY USE WITH AUTOMATIC FIRE SUPPRESSION AND MAXIMUN TRAVEL DISTANCE TO EXIT 250'. BUILDING HAZARD CLASSIFICATION AND INTERIOR FIT MAY EFFECT TRAVEL DISTANCE AND WILL NEED TO BE REVIEWED AT BUILDING PERMIT APPLICATION

CONCEPT PLAN
SCALE: 1/16" = 1'-0"

mjk
Michael J. Keane Architects, PLLC
ARCHITECTURE
PLANNING
DESIGN
101 Kent Place
Newmarket, NH
03857
603-292-1400
mjkarchitects.com

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CONSULTANTS

REVISIONS

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PLANNING BOARD REVIEW
02.02.21
NOT FOR CONSTRUCTION

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PROJECT

INDUSTRIAL WAREHOUSE
375 BANFIELD ROAD
TAX MAP 266 LOT 7,
PORTSMOUTH NH , NH

BANFIELD REALTY LLC
304 MAPLEWOOD AVE
PORTSMOUTH NH 03801,

TITLE

CONCEPT PLAN

DRAWN BY:
CHECKED BY:
DATE: 6/21/2021
SCALE: AS NOTED

DRAWING NO.

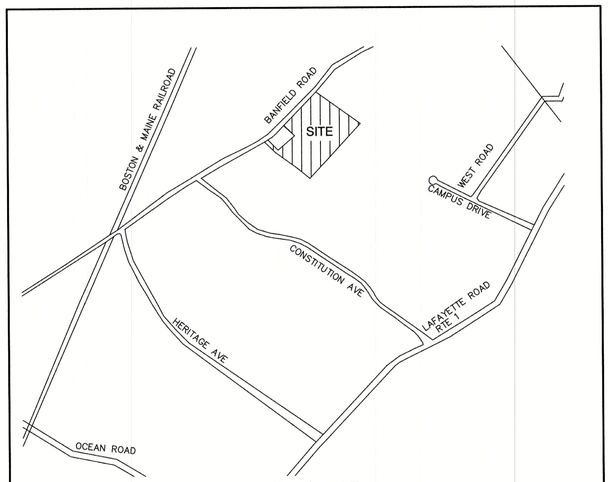
A-2

DO NOT SCALE PRINTS

COMMERCIAL SITE PLAN
"INDUSTRIAL WAREHOUSE"
TAX MAP 266, LOT 7
375 BANFIELD ROAD, PORTSMOUTH, NH

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		TIDAL WETLANDS LINE
		STREAM CHANNEL
		TREE LINE
		STONEWALL
		BARBED WIRE
		FENCE
		STOCKADE FENCE
		SOIL BOUNDARY
		AQUIFER PROTECTION LINE
		FLOOD PLAIN LINE
		ZONELINE
		EASEMENT
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
VGC	VGC	EDGE OF PAVEMENT
SGC	SGC	VERTICAL GRANITE CURB
CCB	CCB	SLOPE GRANITE CURB
PCC	PCC	CAPE COD BERM
		POURED CONCRETE CURB
X	X	SILT FENCE / FIBER BERM
D		DRAINAGE LINE
S	S	SEWER LINE
FM	FM	SEWER FORCE MAIN
G	G	GAS LINE
W	W	WATER LINE
WS	WS	WATER SERVICE
OHE		OVERHEAD ELECTRIC
UGE	UGE	UNDERGROUND ELECTRIC
		GUARDRAIL
UD	UD	UNDERDRAIN
F	F	FIRE PROTECTION LINE
	W	THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
100x0	100x0	SPOT GRADE
100.00	100.00	PAVEMENT SPOT GRADE
100.00 / 99.50	100.00 / 99.50	CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
W TP1	W	WELL
TP1		TEST PIT
		FAILED TEST PIT
M	M	MONITORING WELL
PT		PERC TEST
1		PHOTO LOCATION
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
D	D	DRAIN MANHOLE
S	S	SEWER MANHOLE
		HYDRANT
		WATER GATE
		WATER SHUT OFF
		REDUCER
		SINGLE GRATE CATCH BASIN
		DOUBLE GRATE CATCH BASIN
		TRANSFORMER
		CULVERT W/WINGWALLS
		CULVERT W/FLARED END SECTION
		CULVERT W/STRAIGHT HEADWALL
		STONE CHECK DAM
		DRAINAGE FLOW DIRECTION
		4K SEPTIC AREA
		WETLAND IMPACT
		VEGETATED FILTER STRIP
		RIPRAP
		OPEN WATER
		FRESHWATER WETLANDS
		TIDAL WETLANDS
		STABILIZED CONSTRUCTION ENTRANCE
		CONCRETE
		GRAVEL
		SNOW STORAGE
		RETAINING WALL



LOCUS MAP
SCALE 1" = 1000'

SHEET INDEX

CS	COVER SHEET
C1	EXISTING CONDITIONS PLAN
DM1	DEMOLITION PLAN
C2	SITE PLAN
C3	GRADING AND DRAINAGE PLAN
C4	UTILITY PLAN
L1	LANDSCAPE PLAN
L2	LIGHTING PLAN
S1	EFFLUENT DISPOSAL DESIGN
D1-D7	DETAIL SHEETS
E1	EROSION AND SEDIMENT CONTROL DETAILS
H1-H2	HIGHWAY ACCESS PLAN
T1-T5	TRUCK TURNING PLAN

CIVIL ENGINEER / SURVEYOR
JONES & BEACH ENGINEERS, INC.
85 PORTSMOUTH AVENUE
PO BOX 219
STRATHAM, NH 03885
(603) 772-4746
CONTACT: JOSEPH CORONATI
JCORONATI@JONESANDBEACH.COM

WETLAND AND SOIL CONSULTANT
GOVE ENVIRONMENTAL SERVICES, INC.
8 CONTINENTAL DRIVE BUILDING 2 UNIT H
EXETER, NH 03833
(603) 778-0644
CONTACT: JAMES GOVE
JGOVE@GESINC.BIZ

LANDSCAPE DESIGNER
LM LAND DESIGN
11 SOUTH ROAD
BRENTWOOD, NH 03833
CONTACT: LISE MCNAUGHTON
(603) 770-7728
LMLANDDESIGN@GMAIL.COM

NATURAL GAS
UNITIL SERVICE CORP.
325 WEST ROAD
PORTSMOUTH, NH 03801
CONTACT: DAVID MACLEAN
(603) 294-5261
MACLEAND@UNITIL.COM

ELECTRIC
EVERSOURCE ENERGY
74 OLD DOVER ROAD
ROCHESTER, NH 03867
CONTACT: MARK BOUCHER
(603) 555-5334

TELEPHONE
CONSOLIDATED COMMUNICATIONS
1575 GREENLAND ROAD
GREENLAND, NH 03840
CONTACT: JOE CONSIDINE
(603) 427-5525

CABLE TV
COMCAST COMMUNICATION CORPORATION
334-B CALEF HIGHWAY
EPPING, NH 03402-2325
(603) 679-5695

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM
Checked: JAC	Scale: AS NOTED
Date: 04/21/20	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg	

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STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN No. 9646 LICENSED PROFESSIONAL ENGINEER
6/22/2021

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

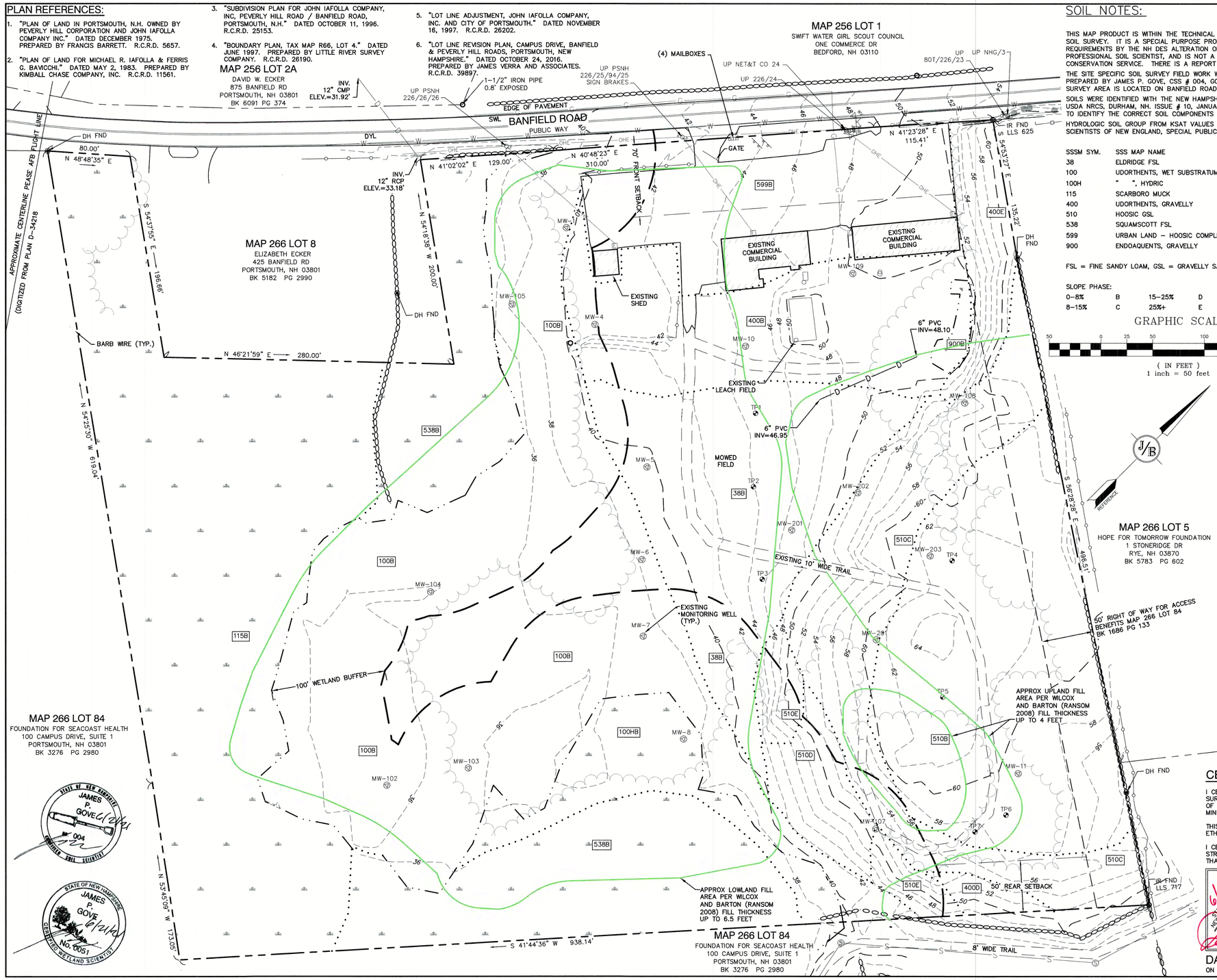
Plan Name:	COVER SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
CS
SHEET 1 OF 24
JBE PROJECT NO. 19190.2

INDUSTRIAL WAREHOUSE, PORTSMOUTH, NH
JBE # 19190.2
REVISION 13 - 6/23/21

PLAN REFERENCES:

1. "PLAN OF LAND IN PORTSMOUTH, N.H. OWNED BY PEVERLY HILL CORPORATION AND JOHN IAFOLLA COMPANY INC." DATED DECEMBER 1975. PREPARED BY FRANCIS BARRETT. R.C.R.D. 5657.
2. "PLAN OF LAND FOR MICHAEL R. IAFOLLA & FERRIS G. BAVICCHI." DATED MAY 2, 1983. PREPARED BY KIMBALL CHASE COMPANY, INC. R.C.R.D. 11561.
3. "SUBDIVISION PLAN FOR JOHN IAFOLLA COMPANY, INC, PEVERLY HILL ROAD / BANFIELD ROAD, PORTSMOUTH, N.H." DATED OCTOBER 11, 1996. R.C.R.D. 25153.
4. "BOUNDARY PLAN, TAX MAP R66, LOT 4." DATED JUNE 1997. PREPARED BY LITTLE RIVER SURVEY COMPANY. R.C.R.D. 26190.
5. "LOT LINE ADJUSTMENT, JOHN IAFOLLA COMPANY, INC. AND CITY OF PORTSMOUTH." DATED NOVEMBER 16, 1997. R.C.R.D. 26202.
6. "LOT LINE REVISION PLAN, CAMPUS DRIVE, BANFIELD & PEVERLY HILL ROADS, PORTSMOUTH, NEW HAMPSHIRE." DATED OCTOBER 24, 2016. PREPARED BY JAMES VERRA AND ASSOCIATES. R.C.R.D. 39897.



SOIL NOTES:

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY FIELD WORK WAS CONDUCTED 07-20-2020, AND WAS PREPARED BY JAMES P. GOVE, CSS # 004, GOVE ENVIRONMENTAL SERVICES, INC. THE SURVEY AREA IS LOCATED ON BANFIELD ROAD, PORTSMOUTH, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE-WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009

SSSM SYM.	SSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.
38	ELDRIDGE FSL	343	C
100	UDORTHENTS, WET SUBSTRATUM	363	C
100H	" ", HYDRIC	563	D
115	SCARBORO MUCK	643	D
400	UDORTHENTS, GRAVELLY	161	A
510	HOOSIC GSL	111	A
538	SQUAMSCOTT FSL	543	C
599	URBAN LAND - HOOSIC COMPLEX	761/161	D/A
900	ENDOAQUENTS, GRAVELLY	561	D

FSL = FINE SANDY LOAM, GSL = GRAVELLY SANDY LOAM

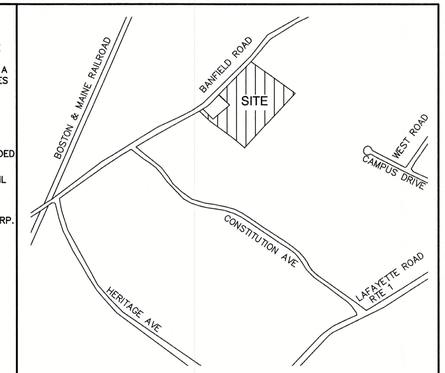
SLOPE PHASE:

0-8%	B	15-25%	D
8-15%	C	25%+	E

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet



LOCUS SCALE: 1"=1000'

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS OF LOT 7 AS SHOWN ON PORTSMOUTH TAX MAP 266.
2. ZONING DISTRICT: INDUSTRIAL
   LOT AREA MINIMUM = 2 ACRES
   LOT FRONTAGE MINIMUM = 200'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 70'
   SIDE SETBACK = 50'
   REAR SETBACK = 50'
   WETLAND BUFFER = 100'
   MAX. BUILDING HEIGHT = 50'
   MIN. OPEN SPACE = 20%
3. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
4. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD AREA DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0270E, WITH EFFECTIVE DATE OF MAY 17, 2005.
5. BASIS OF BEARING: HORIZONTAL - NAD83 NH STATE PLANE.
   VERTICAL - NAVD88.
6. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED AT THE CITY OF PORTSMOUTH ASSESSOR'S OFFICE AND THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
10. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
11. ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL, TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
12. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES IN MARCH 2020 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
    A. THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
    B. THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
    C. THE CURRENT VERSION OF THE FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, AS PUBLISHED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION AND/OR THE CURRENT VERSION OF THE FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, AS PUBLISHED BY THE USDA, NRCS, AS APPROPRIATE.
    D. THE CURRENT NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS, AS PUBLISHED BY THE US FISH AND WILDLIFE SERVICE.
13. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
14. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.
15. 50 FOOT WIDE RIGHT-OF-WAY AS DESCRIBED IN RCRD DEED BOOK 1686 PAGE 133 IS FOR ACCESS BY VEHICLE OR AN OTHER MEANS OF TRANSPORTATION AND BENEFITS LOT 4 AS INDICATED ON TAX MAP 266.

CERTIFICATION:

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 892 DAVID M. COLLIER SIGNATURE 6/22/2021

DAVID M. COLLIER, LLS 892 — DATE: 6/22/2021
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

STATE OF NEW HAMPSHIRE JAMES P. GOVE 004 CERTIFIED SOIL SCIENTIST 6/22/2021

STATE OF NEW HAMPSHIRE JAMES P. GOVE 0051 CERTIFIED WETLAND SCIENTIST 6/22/2021

STATE OF NEW HAMPSHIRE MICHAEL J. KERVAN No. 9648 LICENSED PROFESSIONAL ENGINEER 6/22/2021

Design: JAC	Draft: DJM	Date: 04/21/20	
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2	
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg			

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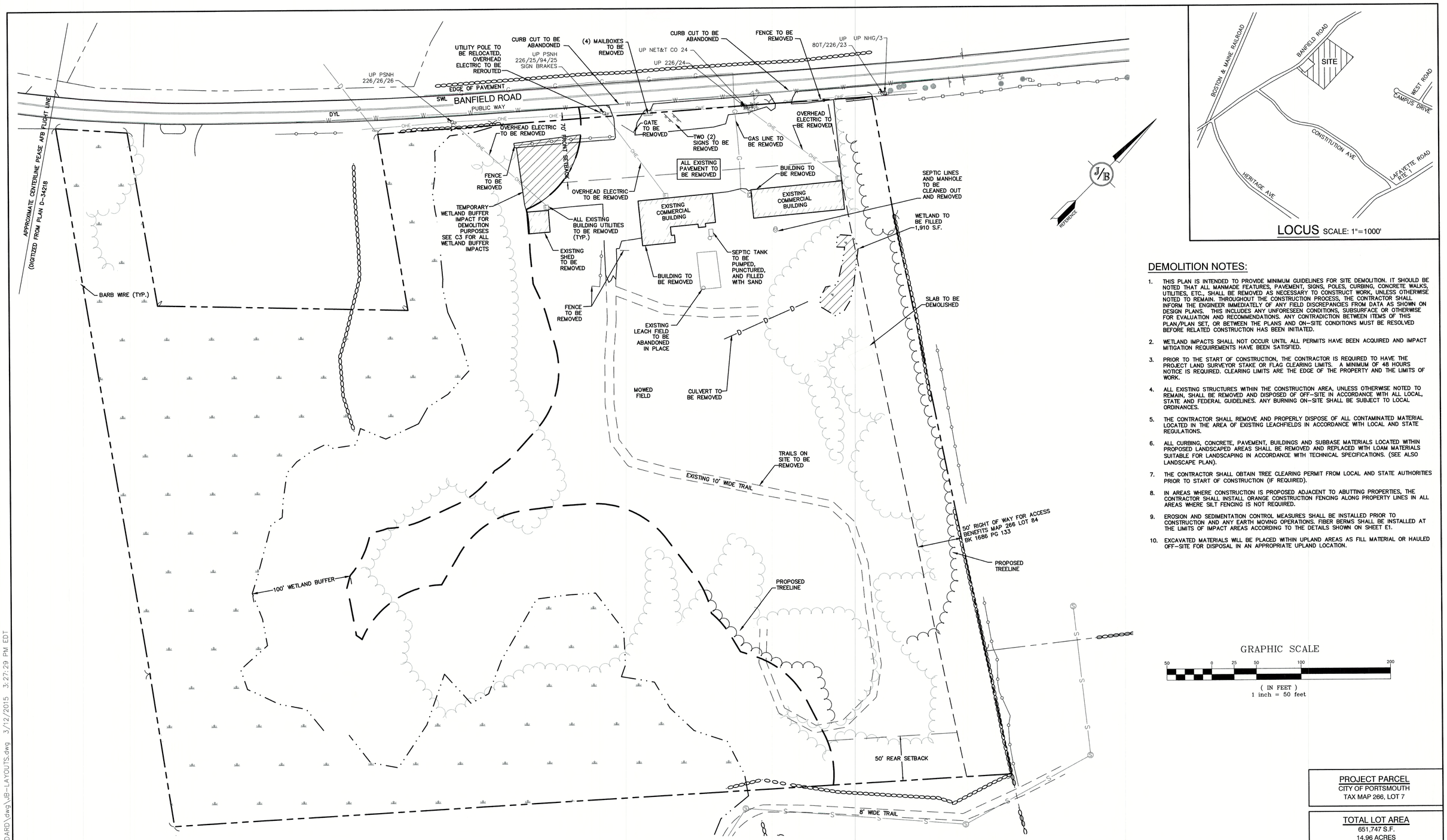
REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EXISTING CONDITIONS PLAN
Project: INDUSTRIAL WAREHOUSE
375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record: BANFIELD REALTY LLC
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
C1
SHEET 2 OF 24
JBE PROJECT NO. 19190.2



DEMOLITION NOTES:

1. THIS PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR SITE DEMOLITION. IT SHOULD BE NOTED THAT ALL MANMADE FEATURES, PAVEMENT, SIGNS, POLES, CURBING, CONCRETE WALKS, UTILITIES, ETC., SHALL BE REMOVED AS NECESSARY TO CONSTRUCT WORK, UNLESS OTHERWISE NOTED TO REMAIN. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCIES FROM DATA AS SHOWN ON DESIGN PLANS. THIS INCLUDES ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS OF THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
2. WETLAND IMPACTS SHALL NOT OCCUR UNTIL ALL PERMITS HAVE BEEN ACQUIRED AND IMPACT MITIGATION REQUIREMENTS HAVE BEEN SATISFIED.
3. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED. CLEARING LIMITS ARE THE EDGE OF THE PROPERTY AND THE LIMITS OF WORK.
4. ALL EXISTING STRUCTURES WITHIN THE CONSTRUCTION AREA, UNLESS OTHERWISE NOTED TO REMAIN, SHALL BE REMOVED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL GUIDELINES. ANY BURNING ON-SITE SHALL BE SUBJECT TO LOCAL ORDINANCES.
5. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL CONTAMINATED MATERIAL LOCATED IN THE AREA OF EXISTING LEACHFIELDS IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.
6. ALL CURBING, CONCRETE, PAVEMENT, BUILDINGS AND SUBBASE MATERIALS LOCATED WITHIN PROPOSED LANDSCAPED AREAS SHALL BE REMOVED AND REPLACED WITH LOAM MATERIALS SUITABLE FOR LANDSCAPING IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS. (SEE ALSO LANDSCAPE PLAN).
7. THE CONTRACTOR SHALL OBTAIN TREE CLEARING PERMIT FROM LOCAL AND STATE AUTHORITIES PRIOR TO START OF CONSTRUCTION (IF REQUIRED).
8. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
9. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND ANY EARTH MOVING OPERATIONS. FIBER BERMS SHALL BE INSTALLED AT THE LIMITS OF IMPACT AREAS ACCORDING TO THE DETAILS SHOWN ON SHEET E1.
10. EXCAVATED MATERIALS WILL BE PLACED WITHIN UPLAND AREAS AS FILL MATERIAL OR HAULED OFF-SITE FOR DISPOSAL IN AN APPROPRIATE UPLAND LOCATION.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9846 – LICENSED PROFESSIONAL ENGINEER – 6/22/2021

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
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9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

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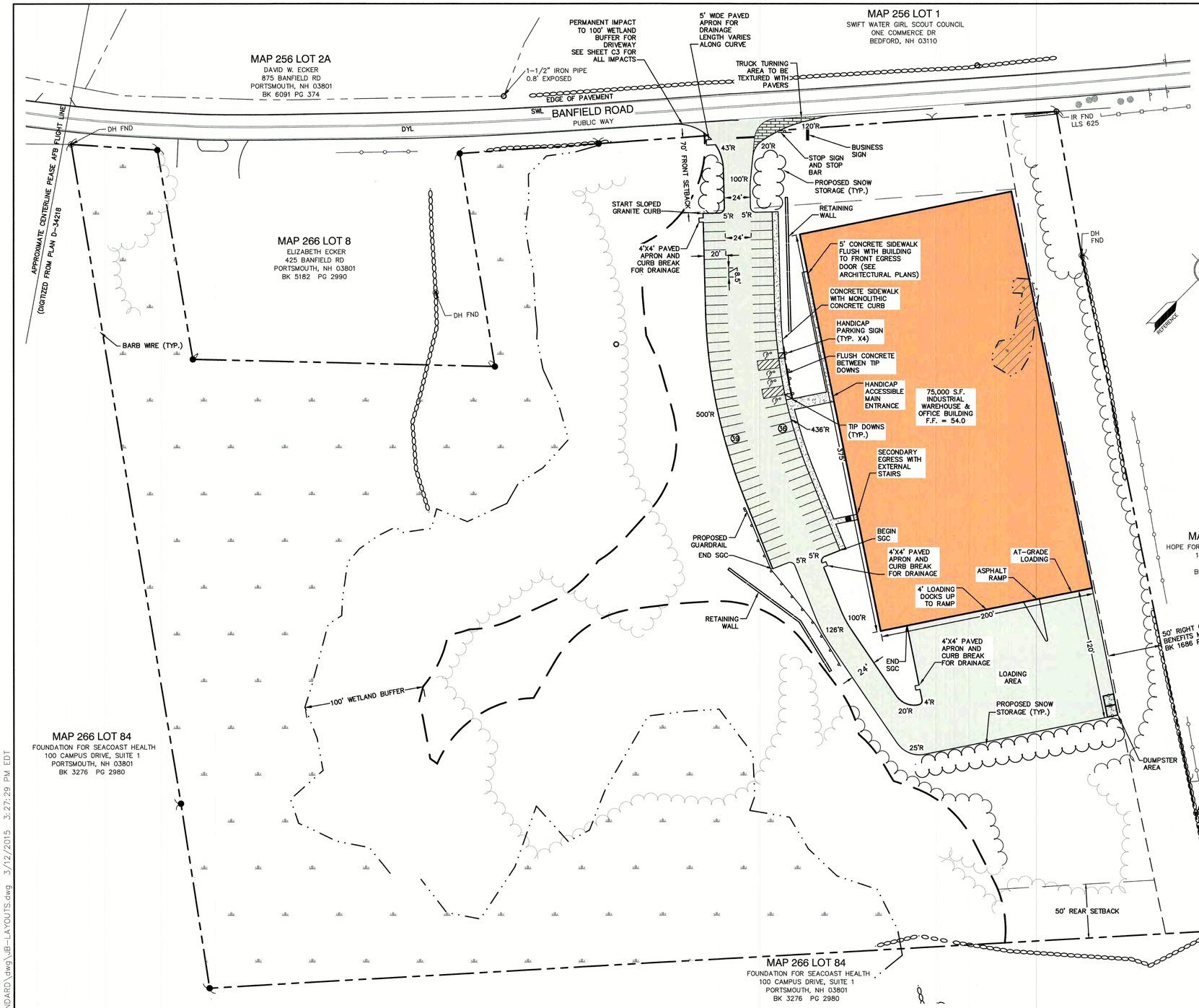
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

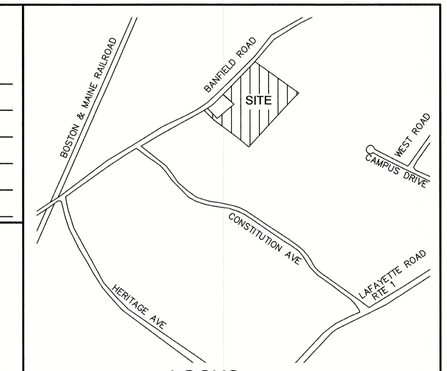
Plan Name:	DEMOLITION PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
DM-1
SHEET 3 OF 24
JBE PROJECT NO. 19190.2



APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:



LOCUS SCALE: 1"=1000'

SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO CONSTRUCT AN INDUSTRIAL WAREHOUSE & OFFICE BUILDING WITH ASSOCIATED GRADING, DRAINAGE, AND UTILITIES.
2. ZONING DISTRICT: INDUSTRIAL
   LOT AREA MINIMUM = 2 ACRES
   LOT FRONTAGE MINIMUM = 200'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 70'
   SIDE SETBACK = 50'
   REAR SETBACK = 50'
   MAX. BUILDING HEIGHT = 70'
   MAX. BUILDING COVERAGE = 50%
   MIN. OPEN SPACE = 20%
   OPEN SPACE PROVIDED = 524,200 S.F. = 80.4%
   BUILDING COVERAGE PROVIDED = 75,000 S.F. = 11.5%
3. THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED. CONTRACTOR TO ALWAYS CONTACT DIG SAFE PRIOR TO DIGGING ONSITE OR OFFSITE TO ENSURE SAFETY AND OBEY THE LAW.
4. PARKING CALCULATIONS: GENERAL MANUFACTURING: 1 SPACE REQUIRED PER 1000 SF GFA
   75,000 S.F. GFA PROPOSED: 75 PARKING SPACES REQUIRED
   75 PARKING SPACES PROVIDED
5. NHDES ALTERATION OF TERRAIN PERMIT NO. DATED .
   NHDES SEPTIC SYSTEM APPROVAL FOR CONSTRUCTION NO. DATED .
   NHDES WETLANDS BUREAU PERMIT NO. DATED .
6. ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
7. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
8. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
9. ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND NHDOT STANDARDS AND SPECIFICATIONS (NON-REFLECTORIZED PAVEMENT MARKINGS), UNLESS OTHERWISE NOTED.
10. ALL PARKING STALLS SHALL BE SEPARATED USING 4" WIDE SOLID STRIPES. STRIPING SHALL HAVE TWO COATS OF PAINT, ALKYD BASIN SYNTHETIC RESIN, FEDERAL SPECIFICATION TTP-115 TYPE 1, IN A COLOR OF WHITE.
11. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
12. ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PROVIDED BY THE OWNER. ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OWNER PRIOR TO THE START OF CONSTRUCTION. BUILDING DIMENSIONS AND AREAS TO BE TO OUTSIDE OF MASONRY, UNLESS OTHERWISE NOTED.
13. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
14. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
15. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
16. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
17. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
18. THE PRACTICES LISTED IN THE SALT MINIMIZATION PLAN PREPARED FOR THIS DEVELOPMENT AS A REQUIREMENT FOR ISSUANCE OF THE SITE-SPECIFIC ALTERATION OF TERRAIN PERMIT ARE TO BE IMPLEMENTED BY THE SITE OWNER AS WELL AS ALL FUTURE OWNERS AND ASSIGNS.
19. SNOW REMOVAL SHOULD BE PERFORMED BY SNO-PRO CERTIFIED PERSONNEL TO MINIMIZE THE POTENTIAL FOR CHLORIDE CONTAMINATION.
20. IF THE TENANT CHOOSES TO HAVE AN OUTDOOR SEATING AREA FOR EMPLOYEES, IT SHALL NOT BE LOCATED WITHIN THE 100' WETLAND BUFFER OR ON TOP OF SEPTIC COMPONENTS OR DRAINAGE PRACTICES.

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 feet

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

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Design: JAC	Draft: DJM	Date: 04/21/20	
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2	
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg			

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERVAN No. 9648 – LICENSED PROFESSIONAL ENGINEER – 6/23/21

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
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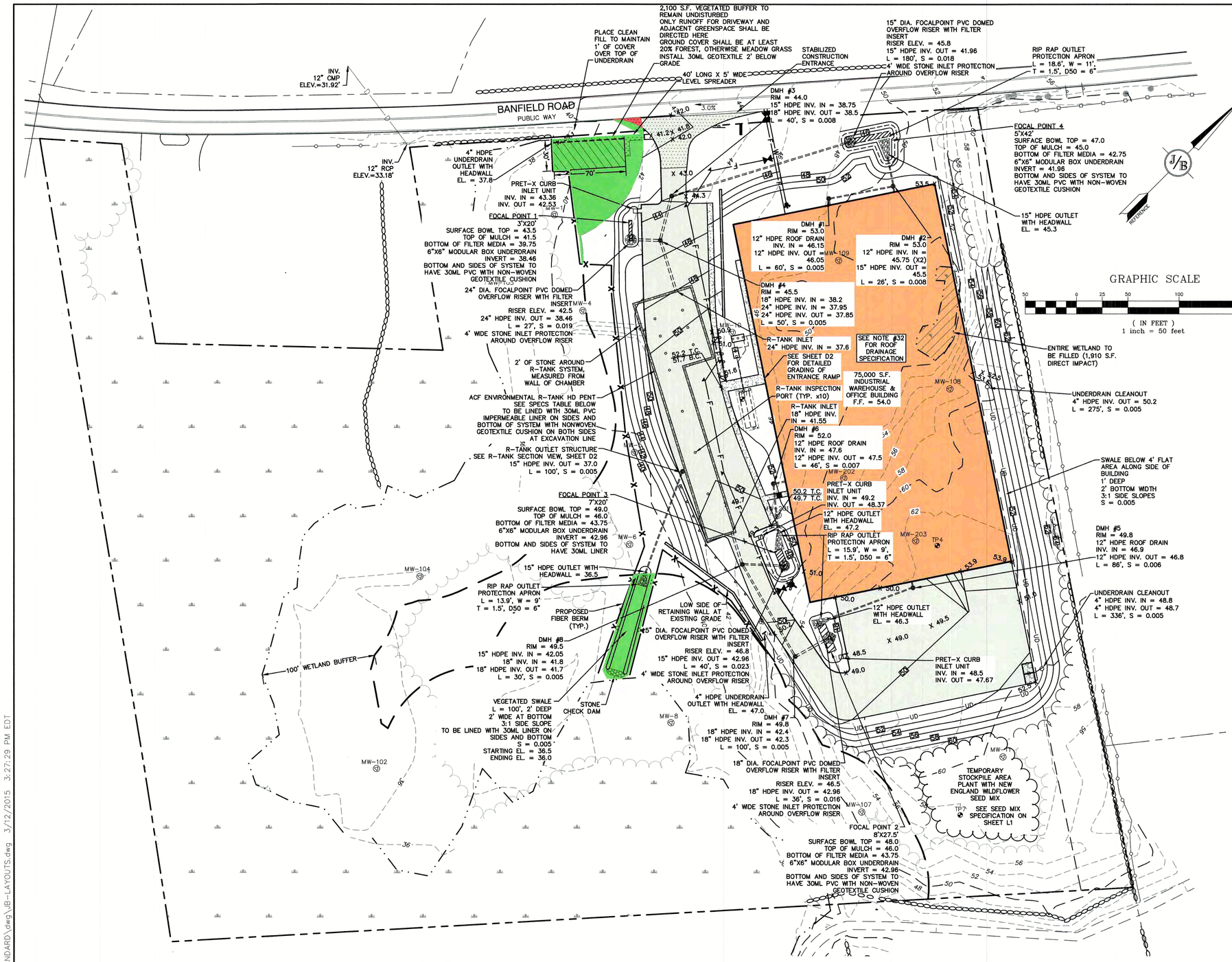
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: SITE PLAN
Project: INDUSTRIAL WAREHOUSE
375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record: BANFIELD REALTY LLC
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
C2
SHEET 4 OF 24
JBE PROJECT NO. 19190.2



GRADING AND DRAINAGE NOTES:

1. UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. NEITHER JONES & BEACH ENGINEERS, INC., NOR ANY OF THEIR EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES AND/OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 888-DIG-SAFE (888-344-7233).
2. VERTICAL DATUM: NAVD88.
3. ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR.
4. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
5. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT'S LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED.
6. ALL ROOF DRAINS FROM BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT THE END. ALL EXTERIOR ROOF DOWNSPOUTS ARE TO BE INSTALLED WITH OVERFLOW DEVICES.
7. ALL SWALES AND DETENTION PONDS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
8. PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
9. ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
10. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS. CATCH BASINS SHALL HAVE 3' DEEP SUMPS WITH GREASE HOODS, UNLESS OTHERWISE NOTED.
11. ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE SHEETS D2-D6 FOR DRAINAGE DETAILS.
12. ALL DRAINAGE STRUCTURES AND STORMWATER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
13. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
14. ALL DRAINAGE PIPE SHALL BE NON-PERFORATED ADS N-12 OR APPROVED EQUAL.
15. STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
16. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION OPERATIONS.
17. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
18. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
19. SHOULD CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
20. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
21. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
22. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
23. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
24. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
25. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
26. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
27. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
28. ALL CULVERT OR DRAINPIPE OUTLETS ARE TO HAVE CONCRETE HEADWALLS UNLESS OTHERWISE STATED.
29. AREA OF TOTAL DISTURBANCE = 225,000 S.F.
AREA OF IMPACT TO 100' WETLAND BUFFER: SEE BELOW
AREA OF WETLAND FILL = 1,910 S.F.
30. ALL STORMWATER TREATMENT, DETENTION, AND BIOFILTRATION PRACTICES TO BE LINED TO RESTRICT INFILTRATION AS SPECIFIED
31. ROOF TO BE SPLIT INTO FOUR QUADRANTS FOR DRAINAGE, EACH SLOPED INTO SEPERATE GUTTER. GUTTERS TO BE SLOPED TOWARD ROOF DRAINS AT DEPICTED LOCATIONS.

WETLAND BUFFER IMPACT LEGEND

= PERMANENT IMPACT (85 S.F. FOR CORNER OF DRIVEWAY)

= TEMPORARY IMPACT (3,350 S.F. EXISTING ASPHALT AND BUILDING REMOVAL, 140 S.F. FOR CORNER OF DRIVEWAY, 4,420 S.F. FOR STORMWATER MANAGEMENT = 7,910 S.F. TOTAL)

R-TANK SPECS

TOP OF FILL	>47.07, < 52.41 (20"-84" ALLOWED)
TOP OF STONE COVER	45.41
TOP OF CHAMBER	44.41
BOTTOM OF CHAMBER	37.2
BOTTOM OF STONE BASE	36.95
CHAMBERS PER ROW, SECTION 1	30
# OF ROWS, SECTION 1	43
CHAMBERS PER ROW, SECTION 2	70
# OF ROWS, SECTION 2	20
LENGTH, SECTION 1	74.37'
WIDTH, SECTION 1	60.43'
LENGTH, SECTION 2	168.21'
WIDTH, SECTION 2	30.25'

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM
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Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg	Date: 04/21/20
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STATE OF NEW HAMPSHIRE - MICHAEL J. KERIVAN No. 9648 LICENSED PROFESSIONAL ENGINEER

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85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: GRADING AND DRAINAGE PLAN
Project: INDUSTRIAL WAREHOUSE
375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record: BANFIELD REALTY LLC
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
C3
SHEET 5 OF 24
JBE PROJECT NO. 19190.2

UTILITY NOTES:

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, CONNECTION FEES AND BONDS.
2. THE CONTRACTOR SHALL PROVIDE A MINIMUM NOTICE OF FOURTEEN (14) DAYS TO ALL CORPORATIONS, COMPANIES AND/OR LOCAL AUTHORITIES OWNING OR HAVING A JURISDICTION OVER UTILITIES RUNNING TO, THROUGH OR ACROSS PROJECT AREAS PRIOR TO DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
3. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE TO THE STANDARDS AND REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY (ELECTRIC, TELEPHONE, CABLE TELEVISION, FIRE ALARM, GAS, WATER, AND SEWER).
4. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, ENGINEER, ARCHITECT, CONTRACTOR, LOCAL OFFICIALS, AND ALL PROJECT-RELATED UTILITY COMPANIES (PUBLIC AND PRIVATE) PRIOR TO START OF CONSTRUCTION.
5. ALL CONSTRUCTION SHALL CONFORM TO THE TOWN STANDARDS AND REGULATIONS, AND NHDES STANDARDS AND SPECIFICATIONS, WHICHEVER ARE MORE STRINGENT, UNLESS OTHERWISE SPECIFIED.
6. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
7. BUILDING TO BE SERVICED BY UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED.
8. THE CONTRACTOR IS TO VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITY STUBS PRIOR TO CONSTRUCTION AND DISCONNECT ALL EXISTING SERVICE CONNECTIONS AT THEIR RESPECTIVE MAINS IN ACCORDANCE WITH THE RESPECTIVE UTILITY COMPANY'S STANDARDS AND SPECIFICATIONS. ENGINEER TO BE NOTIFIED.
9. AS-BUILT PLANS SHALL BE SUBMITTED TO DEPARTMENT OF PUBLIC WORKS.
10. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE THROUGH CHANNEL UNDERLAYMENT OF INVERT, AND SHELF SHALL CONSIST OF BRICK MASONRY.
11. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30 INCH DIA, CLEAR OPENING. THE WORD "SEWER" OR "DRAIN" SHALL BE CAST INTO THE CENTER OF THE UPPER FACE OF EACH COVER WITH RAISED, 3" LETTERS.
12. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H20 LOADS.
13. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS, SERVICES, AND FORCE MAINS.
14. PROPOSED RIM ELEVATIONS OF DRAINAGE AND SANITARY MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
15. ALL WATER MAINS AND SERVICE PIPES SHALL HAVE A MINIMUM 12" VERTICAL AND 24" HORIZONTAL SEPARATION TO MANHOLES, OR CONTRACTOR SHALL INSTALL BOARD INSULATION FOR FREEZING PROTECTION.
16. WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE. WATERMAINS SHALL BE TESTED AT 1.5 TIMES THE WORKING PRESSURE OR 150 PSI, WHICH EVER IS GREATER. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 4 OF AWWA STANDARD C 600. WATERMAINS SHALL BE DISINFECTED AFTER THE ACCEPTANCE OF THE PRESSURE AND LEAKAGE TESTS ACCORDING TO AWWA STANDARD C 651.
17. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
18. IF THE BUILDING IS REQUIRED TO HAVE A SPRINKLER SYSTEM, A PRECONSTRUCTION MEETING SHALL BE HELD BETWEEN THE CONTRACTOR, OWNER, ARCHITECT AND THE LOCAL FIRE DEPARTMENT PRIOR TO THE INSTALLATION.
19. THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, MECHANICAL JOINTS AND FIRE HYDRANTS.
20. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
21. THE CONTRACTOR SHALL HAVE THE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER FIRE PROTECTION SYSTEM PRIOR TO INSTALLATION.
22. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHOULD BE SENT IN TRIPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
23. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
24. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
25. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END AT RIGHT OF WAY AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
26. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
27. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE - MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER - 4/21/20

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

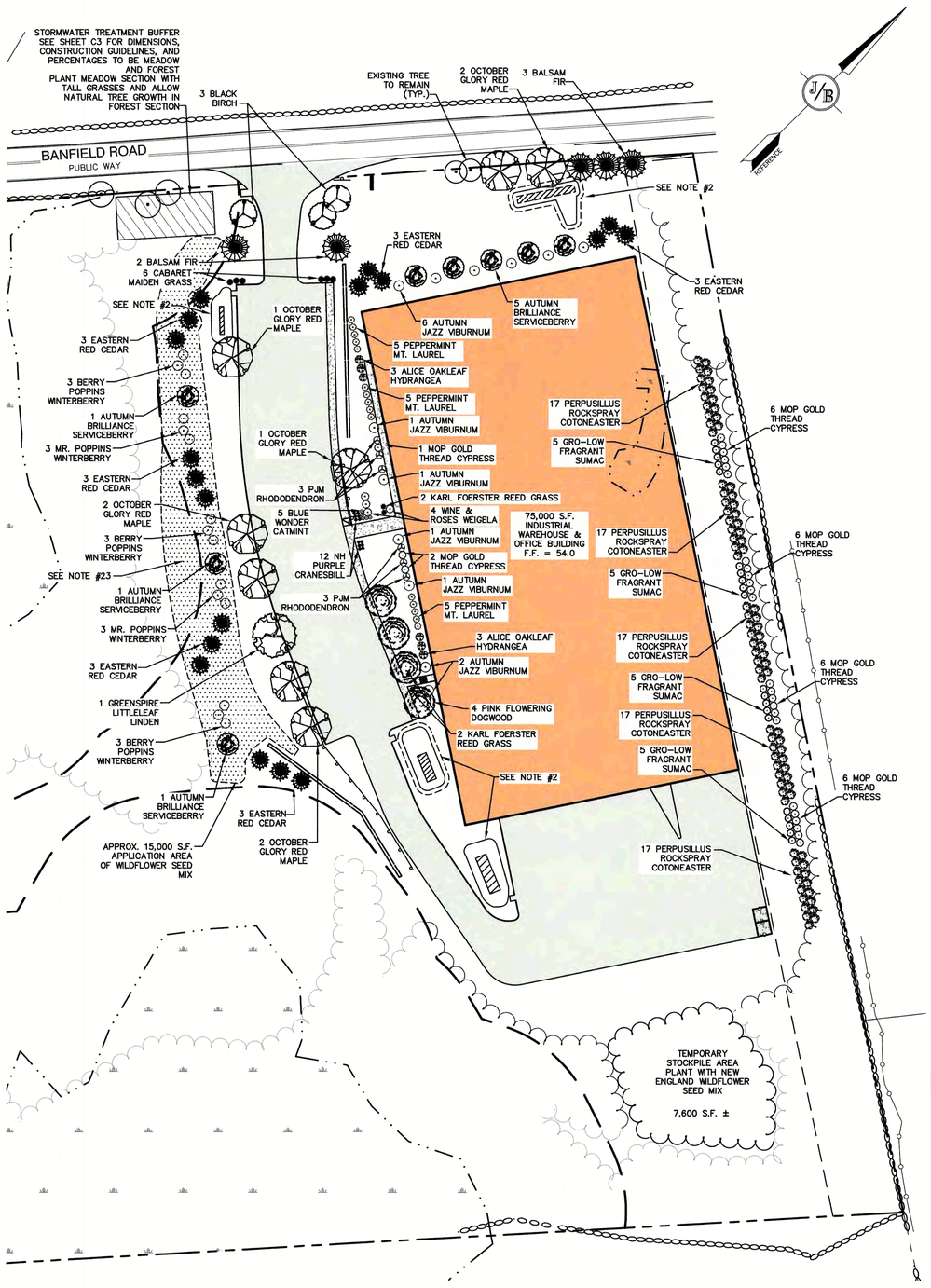
Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	UTILITY PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

C4

SHEET 6 OF 24
JBE PROJECT NO. 19190.2



PLANT LIST

QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
5	ABIES BALSAMEA	BALSAM FIR	8-10 FT. HT.
8	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	3.5" CALIPER
4	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	15 GALLON
3	BETULA LENTA	BLACK BIRCH	10 FT. HT. MULTI
4	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER REED GRASS	2 GALLON
28	CHAMAECYPARIS PISIFERA 'MOP'	MOP GOLD THREAD CYPRESS	3 GALLON
4	CORNUS FLORIDA F. RUBRA	PINK FLOWERING DOGWOOD	2.5" CALIPER
85	COTONEASTER HORIZONTALIS 'PERPUSILLUS'	PERPUSILLUS ROCKSPRAY COTONEASTER	2 GALLON
12	GERANIUM SANGUINEUM 'NH PURPLE'	NH PURPLE CRANESBILL	1 Gallon
6	HYDRANGEA QUERCIFOLIA 'ALICE'	ALICE OAKLEAF HYDRANGEA	5 GALLON
9	ILEX VERTICILLATA 'FARROWBPOP'	BERRY POPPINS WINTERBERRY	5 GALLON
6	ILEX VERTICILLATA 'FARROWMRP'	MR. POPPINS WINTERBERRY	5 GALLON
18	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	6-7 FT. HT.
15	KALMIA LATIFOLIA 'PEPPERMINT'	PEPPERMINT MT LAUREL	5 GALLON
6	MISCANTHUS SINENSIS 'CABARET'	CABARET MAIDEN GRASS	2 GALLON
5	NEPETA X FAASSENII 'BLUE WONDER'	BLUE WONDER CATMINT	1 GALLON
6	RHODODENDRON 'PJM'	PJM RHODODENDRON	5 GALLON
20	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	3 GALLON
1	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	3.5" CALIPER
12	VIBURNUM DENTATUM 'AUTUMN JAZZ'	AUTUMN JAZZ VIBURNUM	5 GALLON
4	WEIGELA FLORIDA 'ALEXANDRA'	WINE & ROSES WEIGELA	3 GALLON

NEW ENGLAND WILDFLOWER SEED MIX

BOTANICAL NAME	COMMON NAME	INDICATOR
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	FACU
SORGHASTRUM NUTANS	INDIAN GRASS	UPL
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	FACU
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	FACW-
ELYMUS CANADENSIS	CANADA WILD RYE	FACU+
FESTUCA RUBRA	RED FESCUE	FACU
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED	NI
VERNONIA NOVEBORACENSIS	NEW YORK IRONWEED	FACW+
OENOTHERA BIENNIS	EVENING PRIMROSE	FACU-
SOLIDAGO JUNCEA	EARLY GOLDENROD	FACW-
EUPATORIUM FISTULOSUM (EUTROCHIUM FISTULOSUM)	HOLLOW-STEM JOE PYE WEED	FACW
ASTER LATERIFLORUS (SYMPHYOTRICHUM LATERIFLORUM)	STARVED/CALICO ASTER	FACW

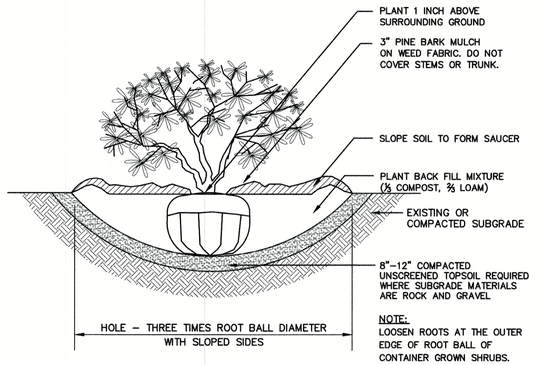
SEED MIX NOTES:

1. APPLICATION RATE: 23 LBS/ACRE, 1900 SQ. FT./LB
2. USE THE ABOVE "NEW ENGLAND WILDFLOWER MIX" TO RESTORE THE STOCKPILE AREA AFTER CONSTRUCTION.
3. FOR APPROX. 7,600 S.F. STOCKPILE AREA AND 15,000 S.F. PLANTING ALONG WETLAND BUFFER (22,600 S.F. TOTAL), UTILIZE 4 LBS± OF SEED MIX. COST IS APPROX. $75/LB.
4. THIS MIX CAN BE APPLIED BY HYDRO-SEEDING (NO TACKIFIERS), BY MECHANICAL SPREADER, OR BY HAND. LIGHTLY RAKE OR ROLL AFTER SOWING TO INCREASE SEED TO SOIL CONTACT. APPLY ON A CLEAN, WEED FREE SEED BED, BEST RESULTS ARE OBTAINED WITH A SPRING OR LATE FALL DORMANT SEEDING.
5. SOURCE: NEW ENGLAND WETLAND PLANTS, INC., 820 WEST STREET, AMHERST, MA 01002. PHONE: 413-548-8000. EMAIL: INFO@NEWP.COM, WEB: WWW.NEWP.COM

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

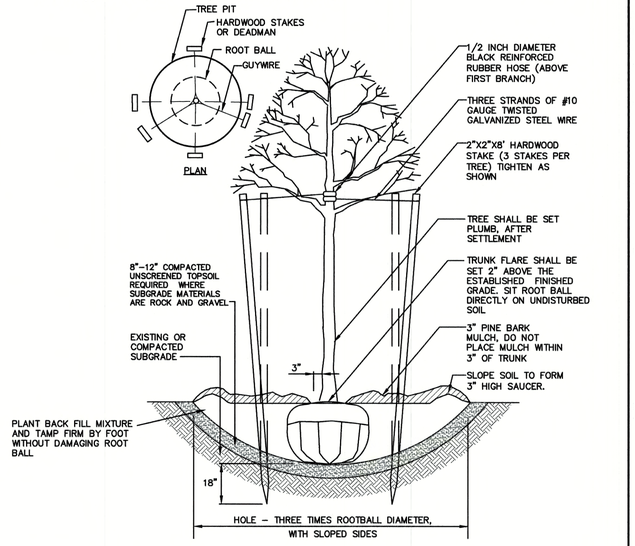


SHRUB PLANTING

NOT TO SCALE

LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. FOCAL POINT STORMWATER TREATMENT AREAS TO BE PLANTED WITH PERENNIAL GRASSES, CONEFLOWERS, DAYLILIES, BUTTERFLY MILKWEED, BEE BALM, BLUE FLAG IRIS, AND JOE PYE WEED. PLANT IN RANDOM GROUPINGS OF 10-12 PLANTS APPROXIMATELY 3 FEET ON CENTER..
3. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
4. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
5. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING FOR CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
6. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
7. ALL WORK AND PLANTS SHALL BE DONE, INSTALLED AND DETAILED IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
8. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
9. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION, EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS SPECIFIED.
10. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS WITH EDGE STRIPS TO SEPARATE TURF GRASS AREAS.
11. THE CONTRACTOR SHALL REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC. FROM ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE. GRASS SEED OR PINE BARK MULCH SHALL BE APPLIED AS DEPICTED ON PLANS.
12. FINISHED GRADES IN LANDSCAPED ISLANDS SHALL BE INSTALLED SO THAT THEY ARE 1" HIGHER THAN THE TOP OF THE SURROUNDING CURB.
13. ALL LANDSCAPING SHALL MEET THE TOWN STANDARDS AND REGULATIONS.
14. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE DRIPLINE OF THE TREE. THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
15. ALL MULCH AREAS SHALL RECEIVE A 3" LAYER OF SHREDDED PINE BARK MULCH OVER A 10 MIL WEED MAT EQUAL TO 'WEEDBLOCK' BY EASY GARDENER OR DEWITT WEED BARRIER.
16. ALL LANDSCAPED AREAS SHALL HAVE SELECT MATERIALS REMOVED TO A DEPTH OF AT LEAST 9" BELOW FINISH GRADE. THE RESULTING VOID IS TO BE FILLED WITH A MINIMUM OF 9" HIGH-QUALITY SCREENED LOAM AMENDED WITH 3" OF AGED ORGANIC COMPOST.
17. THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.
18. IRRIGATION PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY OWNER AND ENGINEER PRIOR TO INSTALLATION.
19. THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS.
20. ALL REQUIRED PLANT MATERIALS SHALL BE TENDED AND MAINTAINED IN A HEALTHY GROWING CONDITION, REPLACED WHEN NECESSARY, AND KEPT FREE OF REFUSE AND DEBRIS. ALL REQUIRED FENCES AND WALLS SHALL BE MAINTAINED IN GOOD REPAIR.
21. THE PROPERTY OWNER SHALL BE RESPONSIBLE TO REMOVE AND REPLACE DEAD OR DISEASED PLANT MATERIALS IMMEDIATELY WITH THE SAME TYPE, SIZE, AND QUANTITY OF PLANT MATERIALS AS ORIGINALLY INSTALLED, UNLESS ALTERNATIVE PLANTINGS ARE REQUESTED, JUSTIFIED, AND APPROVED BY THE PLANNING BOARD OR PLANNING DIRECTOR.
22. ALL BURLAP AND CAGES SHOULD BE REMOVED FOR LANDSCAPE PLANTS.
23. PLANTING IN WETLAND BUFFER WITHOUT FILLING OR DREDGING THE SAME AREA IS A PERMITTED USE PER SECTION 10.1016.10(1) OF THE CITY OF PORTSMOUTH ZONING ORDINANCE.



TREE PLANTING (FOR TREES UNDER 4" CALIPER)

NOT TO SCALE

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Design: JAC	Draft: DJM
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Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg	

Date: 04/21/20
Project No.: 19190.2

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STATE OF NEW HAMPSHIRE - MICHAEL J. KERVAN No. 9646 LICENSED PROFESSIONAL ENGINEER - 4/21/21

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

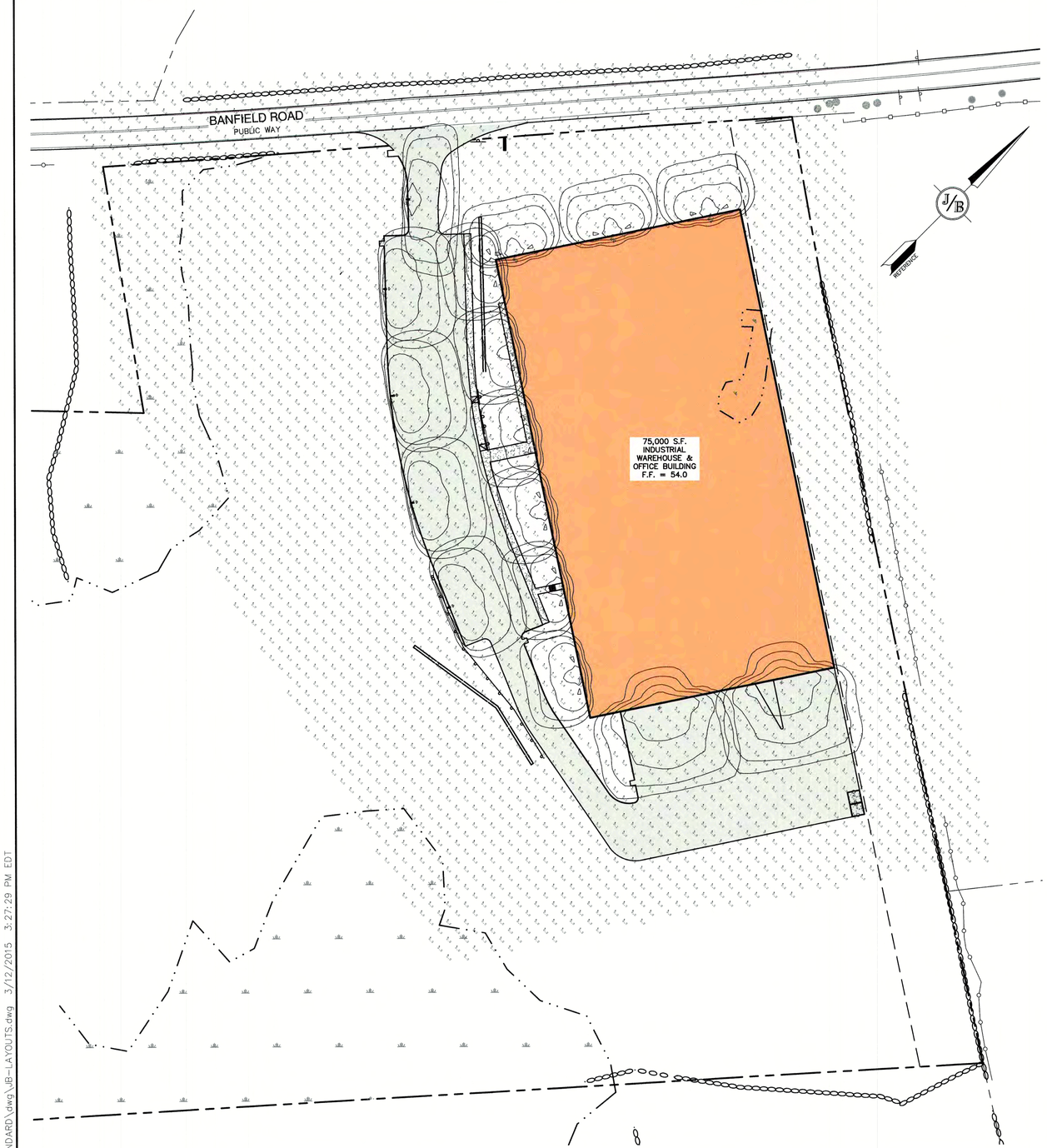
Plan Name: LANDSCAPE PLAN

Project: INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801

Owner of Record: BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No. L1

SHEET 7 OF 24
JBE PROJECT NO. 19190.2



GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	1	S3	SINGLE	GLEON-AF-01-LED-E1-SL3-HSS/ SSS4A20SFN1 (20' AFG)
	4	S4	SINGLE	GLEON-AF-01-LED-E1-SL4-HSS/ SSS4A20SFN1 (20' AFG)
	2	W	SINGLE	GWC-AF-02-LED-E1-T4FT/ WALL MTD 20' AFG
	9	W4	SINGLE	GWC-AF-01-LED-E1-SL4-600/ WALL MTD 15' AFG

McGraw-Edison

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

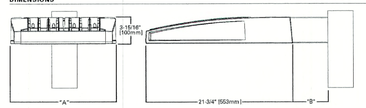
Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT:
Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. QUICK MOUNT ARM: Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation.The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty
Five-year warranty.

DIMENSIONS



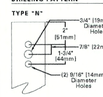
DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length [1]	Weight with Arm (lbs.)	EPA with Arm *(Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-3/8" (543mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	12" (320mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. 2. EPA calculated with optional arm length.

DRILLING PATTERN

TYPE "N"



GLEON
GALLEON LED

1-10 Light Squares
Solid State LED

AREA/SITE LUMINAIRE

Lumen Safe Technology (LSA+/IES)

CERTIFICATION DATA
UL/cUL Wet Location Listed
ISO 9001
LM79 / LM80 Compliant
3G Vibration Rated
IP66 Rated
DesignLights Consortium® Qualified*

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V & 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

TD500020EN
January 17, 2019 2:38 PM

*www.designlights.org

McGraw-Edison

DESCRIPTION

The Galleon™ Wall LED luminaire's appearance is complementary with the Galleon area and site luminaire bringing a modern architectural style to lighting applications. Flexible mounting options accommodate wall surfaces in both an upward and downward configuration. The Galleon family of LED products deliver exceptional performance with patented, high-efficiency AccuLED Optics™, providing uniform and energy conscious lighting for parking lots, building and security lighting applications.

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

SPECIFICATION FEATURES

Construction
Driver enclosure thermally isolated from optics for optimal thermal performance. Heavy wall aluminum housing die-cast with integral external heat sinks to provide superior structural rigidity and an IP66 rated housing. Overall construction passes a 1.5G vibration test to ensure mechanical integrity. UPLIGHTING: Specify with the UPL option for inverted mount uplight housing with additional protections to maintain IP rating.

Optics
Choice of thirteen patented, high-efficiency AccuLED Optics. The optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 3000K, 5000K and 6000K CCT. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 1200mA, 800mA, and 600mA drive currents.

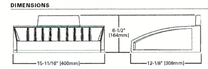
Electrical
LED drivers are mounted for ease of maintenance. 120-277V 50/60Hz, 347V or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Drivers are provided standard with 0-10V dimming. An optional Eaton proprietary surge protection module is available and designed to withstand 10kV of transient line surge. The Galleon Wall LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Emergency egress options for -20°C ambient environments and occupancy sensor available.

Mounting
Gasketed and zinc plated rigid steel mounting attachment fits directly to 4" j-box or wall with the Galleon Wall "Hook-N-Lock" mechanism for quick installation. Secured with two captive corrosion resistant black oxide coated allen head set screws which are concealed but accessible from bottom of fixture.

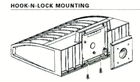
Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult the McGraw-Edison Architectural Colors brochure for the complete selection.

Warranty
Five-year warranty.

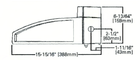
DIMENSIONS



HOOK-N-LOCK MOUNTING



BATTERY BACKUP AND THRU-BRANCH BACK BOX



GWC GALLEON WALL

1-2 Light Squares
Solid State LED

WALL MOUNT LUMINAIRE

CERTIFICATION DATA
UL/cUL Listed
LM79 / LM80 Compliant
IP66 Housing
ISO 9001
DesignLights Consortium® Qualified*

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277VAC & 60Hz, 347/480Hz, 60Hz
-30°C Minimum Temperature
40°C Ambient Temperature Rating

SHIPPING DATA
Approximate Net Weight:
27 lbs. (12.2 kgs.)

TD514017EN
June 21, 2018 4:07 PM

*www.designlights.org

LIGHTING AND ELECTRICAL NOTES:

1. SITE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES AND DRAINAGE BEFORE DRILLING POLE BASES.
2. CONTRACTOR SHALL INSTALL PROPOSED LIGHT POLES ACCORDING TO TOWN REGULATIONS.
3. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER TOWN REGULATIONS.
4. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
5. ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDLES.
6. LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
7. ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
8. NL INDICATES THAT THIS LUMINAIRE SHALL BE ON A NIGHT LIGHT CIRCUIT. FL INDICATES THAT THIS LUMINAIRE SHALL BE A FLOOD LIGHT FIXTURE. MOUNTING BRACKET FOR THIS FL FIXTURE SHALL BE MOUNTED 25' ABOVE BOTTOM OF POLE BASE FOR ALL LIGHT POLES. THESE DESIGNATIONS INDICATE WHAT PHASE LIGHTS ARE WIRED TO (TYP).
9. THE PROPOSED LIGHTING CALCULATIONS AND DESIGN WAS PERFORMED BY CHARRON, INC., P.O. BOX 4550, MANCHESTER, NH 03108, ATTENTION KEN SWEENEY. ALL LIGHTS SHOULD BE PURCHASED FROM THIS COMPANY OR ONE OF THEIR SUPPLIERS, OR AN EQUAL LIGHTING DESIGN SHOULD BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9846
LICENSED PROFESSIONAL ENGINEER
12/22/21

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

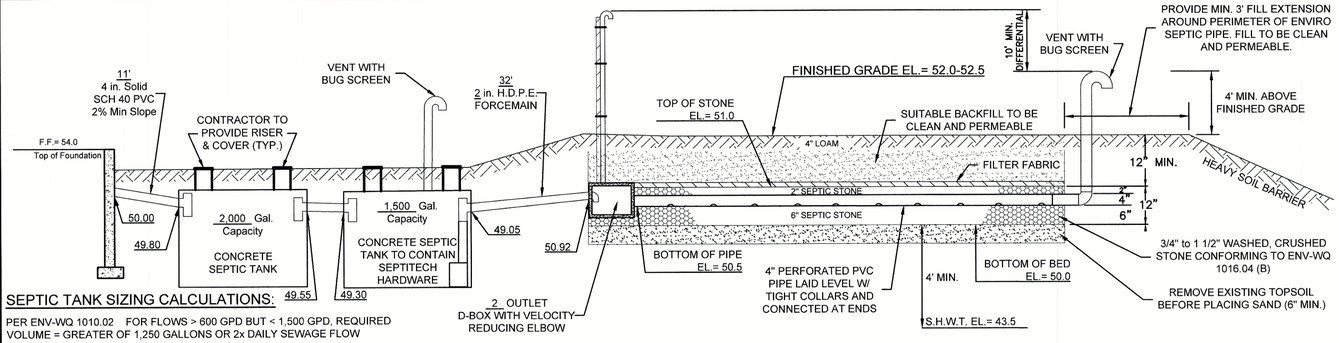
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	LIGHTING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

L2

SHEET 8 OF 24
JBE PROJECT NO. 19190.2



SEPTIC TANK SIZING CALCULATIONS:

PER ENV-WQ 1010.02 FOR FLOWS > 600 GPD BUT < 1,500 GPD, REQUIRED VOLUME = GREATER OF 1,250 GALLONS OR 2x DAILY SEWAGE FLOW

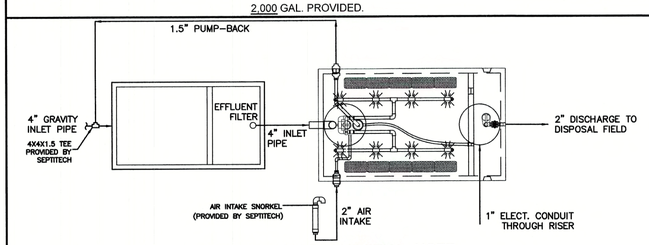
955 GPD X 2 = 1,910 GALLONS > 1,250 GALLONS

1,910 GALLONS REQUIRED

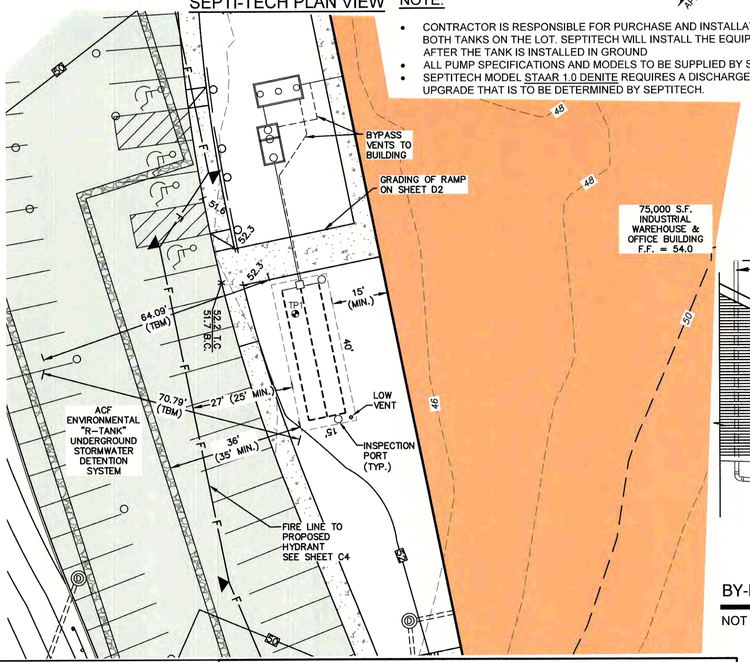
2,000 GAL. PROVIDED.

CROSS SECTION - DISPOSAL SYSTEM

N.T.S.

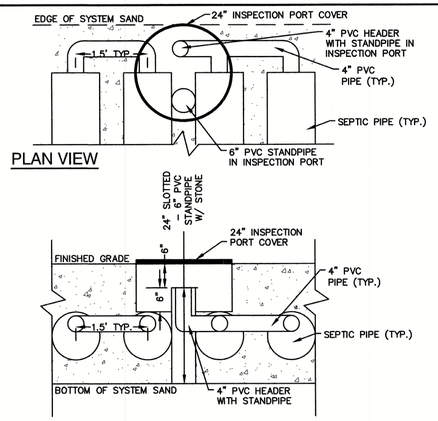


SEPTI-TECH PLAN VIEW



NOTE:

- CONTRACTOR IS RESPONSIBLE FOR PURCHASE AND INSTALLATION OF BOTH TANKS ON THE LOT. SEPTITECH WILL INSTALL THE EQUIPMENT AFTER THE TANK IS INSTALLED IN GROUND
- ALL PUMP SPECIFICATIONS AND MODELS TO BE SUPPLIED BY SEPTITECH
- SEPTITECH MODEL STAAR 1.0 DENITE REQUIRES A DISCHARGE PUMP UPGRADE THAT IS TO BE DETERMINED BY SEPTITECH.

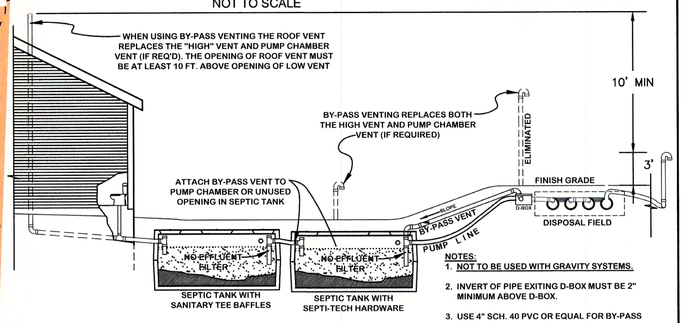


PLAN VIEW

SECTION VIEW

INSPECTION PORT DETAIL

NOT TO SCALE



BY-PASS VENTING

NOT TO SCALE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

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PROJECT PARCEL	
CITY OF PORTSMOUTH	
TAX MAP 266, LOT 7	
R.C.R.D. BK. 6081	PG. 2150
TOTAL LOT AREA:	14.96 ACRES

- CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE SEPTIC PLAN FROM THE NHDES APPROVED PLAN
- THE BUILDER/SITE CONTRACTOR IS RESPONSIBLE TO CONFIRM THE ZONING DIMENSIONAL REQUIREMENTS AND SETBACK LINE REQUIREMENTS PRIOR TO INITIATING CONSTRUCTION OF THE PROPOSED BUILDING AND SEPTIC SYSTEM. THE ZONING ORDINANCE OF THE MUNICIPALITY IS TO BE COMPLIED WITH. THE BUILDER/SITE CONTRACTOR IS ALSO RESPONSIBLE TO CONTACT THE MUNICIPALITY REGARDING INSPECTIONS PRIOR TO AND DURING CONSTRUCTION, I.E. LOCATION AND BED-BOTTOM INSPECTIONS.

TEST PIT LOGS

PERFORMED BY: JOSEPH CORONATI, JONES & BEACH ENGINEERS, INC. SSD# 1716

TEST PIT #1

0"-8"		LOAM
8"-18"	10YR 4/4	DARK YELLOWISH BROWN FINE SANDY LOAM GRANULAR, FRIABLE
18"-90"	10YR 5/6	YELLOWISH BROWN SILTY LOAM FIRM

SHWT = 18"
ROOTS = 18"
H_2O @ 32"
NO REFUSAL OBSERVED

◕ TEST PIT, DATE: APRIL 8, 2020

◐ PERC. TEST, DATE: APRIL 8, 2020
16 MIN./INCH

STONE & PIPE DESIGN CALCULATIONS

WAREHOUSE: 70 EMPLOYEES = 700 GPD (10 GPD / PERSON, PER ENV-WQ 1008-1)

OFFICE WITH CAFETERIA: 17 EMPLOYEES = 255 GPD (15 GPD / PERSON, PER ENV-WQ 1008-1)

955 GPD @ 16 MIN./INCH = 2,148 S.F. REQUIRED PER ENV-WQ 1016-1.
2,148 S.F. x 75% PRE-TREATMENT REDUCTION = 537 S.F. REQUIRED.

600 S.F. PROVIDED (SEE DIMENSIONS BELOW)

BED DIMENSIONS 40' x 15' .

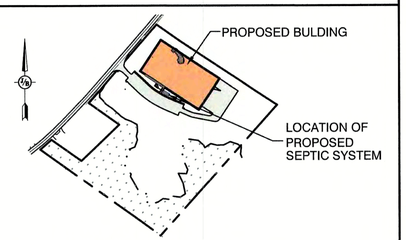
DESIGN INTENT

THE BOTTOM OF THE EFFLUENT DISPOSAL SYSTEM (E.D.S.) SHALL BE CONSTRUCTED AT ELEVATION 50.00 . THIS IS APPROXIMATELY 5.00 FT ABOVE ORIGINAL GROUND ON THE HIGH CONTOUR (45.00) OF THE DESIGNED E.D.S. (ENV-WQ-1003.13(aa))

GENERAL NOTES

- CONTRACTOR TO VERIFY ALL ELEVATIONS IN FIELD PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY DESIGNER OF ANY ABNORMAL CONDITIONS (HARDPAN OR SATURATED SOILS, LEDGE, ETC.) FOUND WHEN EXCAVATING PRIOR TO INSTALLATION OF THE SYSTEM.
- PER ENV-WQ 1016.03, CONTRACTOR IS TO PROTECT THE NATURAL ABSORPTION QUALITIES OF THE SOIL. DO NOT COMPACT OR DRIVE OVER THE AREA WITH EQUIPMENT AND PROTECT OPEN EXCAVATION TO PREVENT THE ENTRANCE OF SILT AND DEBRIS.
- FILL TO BE MEDIUM TO COURSE-TEXTURED SAND (0.5mm-2.0mm).
- REMOVE TOPSOIL BEFORE PLACING FILL.
- 4 INCH THICK LOAM & SEED AROUND PERIMETER OF FILL.
- CONTRACTOR TO INSTALL A VENT WHEN PROVIDING MORE THAN 18" OF COVER.
- VENTING IS REQUIRED FOR PUMP SYSTEMS
- SLOPE SYSTEM AWAY FROM BUILDING.
- SYSTEM WILL BE REPLACED IN SAME LOCATION IN CASE OF FAILURE.
- JOINTS ARE TO BE BELLED PVC OR STANDARD SLIP COLLARS.
- PER ENV-WQ 1010.11, THE FIRST COMPARTMENT IN MULTI-COMPARTMENT SEPTIC TANKS MUST EQUAL AT LEAST 2/3 OF THE REQUIRED VOLUME.
- PER ENV-WQ 1010.10, EXCEPTING LEDGE TANKS, THE LIQUID DEPTH OF THE SEPTIC TANK IS TO BE AT LEAST 40".
- THE OUTLET BAFFLE SHALL BE A VENTED TEE WHICH SHALL EXTEND TO A DISTANCE BELOW THE SURFACE EQUAL TO 40% OF THE LIQUID DEPTH AND SHALL EXTEND ABOVE THE LIQUID LINE TO NOT LESS THAN ONE INCH FROM THE TOP OF THE TANK.
- ALL CONNECTIONS BETWEEN A SEPTIC TANK AND THE PIPES LEADING TO AND EXITING FROM THE SEPTIC TANK SHALL BE SEALED WITH A WATERTIGHT, FLEXIBLE JOINT CONNECTOR THAT: (1) WILL ACCOMMODATE NORMAL MOVEMENT OF THE SEPTIC TANK WITHOUT LEAKING OR BREAKING; AND (2) HAS BEEN CERTIFIED BY ITS MANUFACTURER OR DISTRIBUTOR AS MEETING OR EXCEEDING THE APPLICABLE STANDARD IN ASTM C 1644-06, SECTION 7.
- CONTRACTOR TO PROVIDE RISERS FOR TANKS WITH MORE THAN 12" OF COVER.
- IF GARBAGE GRINDERS ARE DESIRED, SEPTIC TANK SHALL BE 50% LARGER.
- CITY OF PORTSMOUTH REQUIRES BED BOTTOM INSPECTION.
- PVC PIPING TO BE SUPPLIED BY: ELIMINATOR SYSTEMS INC. (603) 868-2242) OR EQUAL.
- 2,000 GALLON SEPTIC TANK & D-BOX TO BE SUPPLIED BY: SHEA CONCRETE. (800-696-7432) OR EQUAL.
- ADVANCED NITRATE TREATMENT SYSTEM AND 1,500 GAL. CONCRETE SEPTIC TANK TO BE SUPPLIED BY: SEPTITECH / BIO-MICROBICS MAINE INC., 207-333-6940. PRODUCT MAY NOT BE SUBSTITUTED WITHOUT FIRST CONTACTING THE DESIGNER.
- ROCKINGHAM COUNTY SOIL CONSERVATION SERVICE SOIL TYPE: ELDRIDGE.
- ANY CHANGES TO SEPTIC TANK, BUILDING OR WELL LOCATION/ORIENTATION WILL REQUIRE AN AS-BUILT PLAN TO BE PROVIDED BY THE DESIGNER PRIOR TO NHDES FINAL INSPECTION.
- PER ENV-WQ 1004.10, SYSTEMS OVER 2,500 GPD ARE TO BE INSPECTED BY DESIGNER.
- PER ENV-WQ 1003.13(a)(3) THERE ARE NO KNOWN BURIAL SITES OR CEMETERIES ON THE LOT WITHIN 100' OF ANY COMPONENT OF THE ISDS.
- 50' SETBACK FROM POORLY DRAINED SOILS.
- DISTANCE FROM SEWER PIPE TO SURFACE WATER, OPEN DRAINAGE, VERY POORLY DRAINED SOIL, AN OPEN LOOP GEOTHERMAL WELL, OR A PRIVATE ON-SITE WELL SHALL BE 75 FT. THIS MAY BE REDUCED TO 50 FT IF SDR26 OR EQUIVALENT IS USED IN ACCORDANCE WITH ENV-WQ 1008.04(c)(1).
- DISTANCE FROM SEPTIC TANK TO SURFACE WATER, OPEN DRAINAGE, VERY POORLY DRAINED SOIL, AN OPEN LOOP GEOTHERMAL WELL, OR A PRIVATE ON-SITE WELL SHALL BE 75 FT. THIS MAY BE REDUCED TO 50 FT IF THE SEPTIC TANK IS EITHER MADE FROM PLASTIC OR COATED WITH A SEALANT TO PREVENT INFILTRATION AND EXFILTRATION IN ACCORDANCE WITH ENV-WQ 1008.04(c)(2).

LOCUS SCALE: 1"=1000'



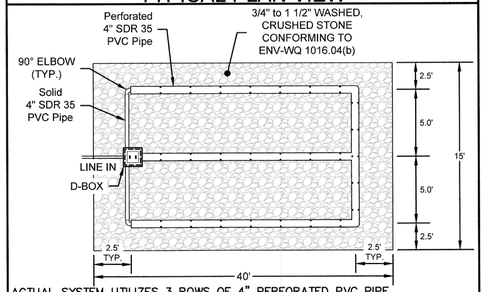
VICINITY SCALE: 1"=400'

REFERENCES

APPROVAL FOR CONSTRUCTION IS VALID FOR 4 YEARS FROM DATE OF ISSUE

- PREV. CONSTRUCTION APPROVAL #CA1998009388 ISSUED: 06/03/1998.
- SUBDIVISION APPROVAL: LARGER THAN 5 ACRES.

TYPICAL PLAN VIEW



ACTUAL SYSTEM UTILIZES 3 ROWS OF 4" PERFORATED PVC PIPE. SEE PLAN VIEW (LEFT) FOR ACTUAL LAYOUT/CONFIGURATION OF SYSTEM.

WETLAND DELINEATION

WETLANDS ON-SITE WERE DELINEATED BY: GOVE ENVIRONMENTAL SERVICES, INC. 8 CONTINENTAL DRIVE, UNIT H EXETER, NH 03833

DATE: SPRING, 2020

OWNER NOTES

- KNOW THE LOCATION OF YOUR SEPTIC TANK AND LEACHING AREA.
- INSPECT YOUR SEPTIC TANK YEARLY. HAVE THE SEPTIC TANK PUMPED AS NEEDED BUT AT LEAST ONCE EVERY THREE YEARS.
- DO NOT FLUSH BULKY ITEMS SUCH AS DIAPERS, SANITARY PADS OR BABY WIPES.
- DO NOT FLUSH TOXIC CHEMICALS SUCH AS PAINT THINNERS, DRANO, PESTICIDES, OR CHLORINE, AS THEY MAY KILL THE NECESSARY BACTERIA IN THE SEPTIC TANK.
- REPAIR LEAKING FIXTURES IN THE BUILDING PROMPTLY.
- BE CONSERVATIVE WITH WATER USE. SPREAD OUT USE OVER TIME, AND USE WATER-REDUCING FIXTURES WHENEVER AND WHEREVER POSSIBLE. TOO MUCH USE IN A SHORT TIME CAN OVERLOAD THE SYSTEM, WHICH MAY LEAD TO FAILURE.
- MOW YOUR LEACHING AREA REGULARLY. PREVENT DEEP-ROOTED TREES AND SHRUBS FROM GROWING ON AND ADJACENT TO YOUR LEACHING AREA.
- NO VEHICULAR TRAVEL, LIVESTOCK TRAVEL, OR SNOW REMOVAL IN AREA OF SYSTEM.

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: 1" = 20'	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.DWG		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERVAN No. 9646 – LICENSED PROFESSIONAL ENGINEER – 12/21/20

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

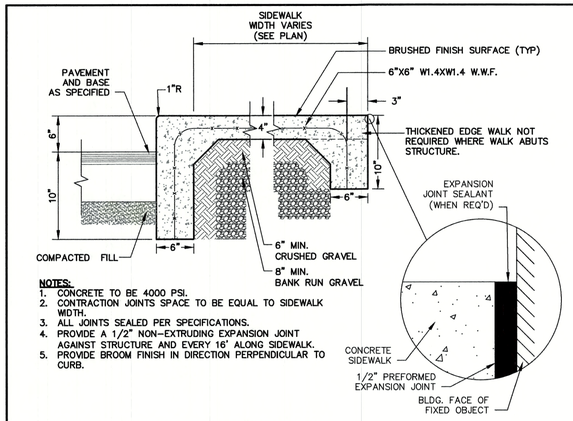
Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EFFLUENT DISPOSAL DESIGN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

S1

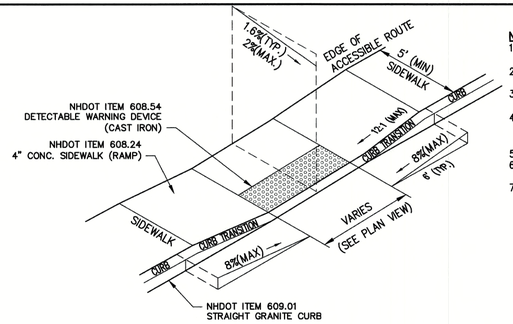
SHEET 9 OF 24
JBE PROJECT NO. 19190.2



NOTES:
1. CONCRETE TO BE 4000 PSI.
2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
3. ALL JOINTS SEALED PER SPECIFICATIONS.
4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT AGAINST STRUCTURE AND EVERY 16' ALONG SIDEWALK.
5. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

MONOLITHIC CONCRETE SIDEWALK

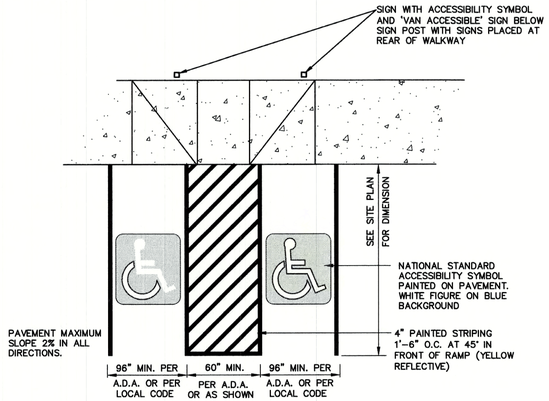
NOT TO SCALE



NOTES:
1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 1.5%.
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) CURB RAMPS SHALL BE 8%.
4. A MINIMUM OF 4 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (i.e., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SECTION FOR RAMP CONSTRUCTION.

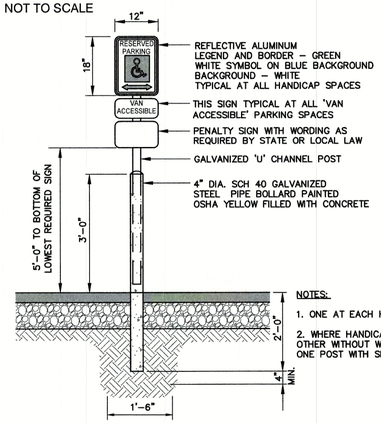
ACCESSIBLE CURB RAMP (TYPE `A')

NOT TO SCALE



HANDICAP PARKING LAYOUT

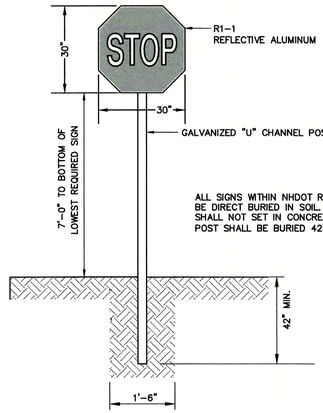
NOT TO SCALE



NOTES:
1. ONE AT EACH HANDICAP SPACE.
2. WHERE HANDICAP SPACES FACE EACH OTHER WITHOUT WALKWAY, THERE SHALL BE ONE POST WITH SIGNS MOUNTED BOTH SIDES.

HANDICAP PARKING SIGN (R7-8)

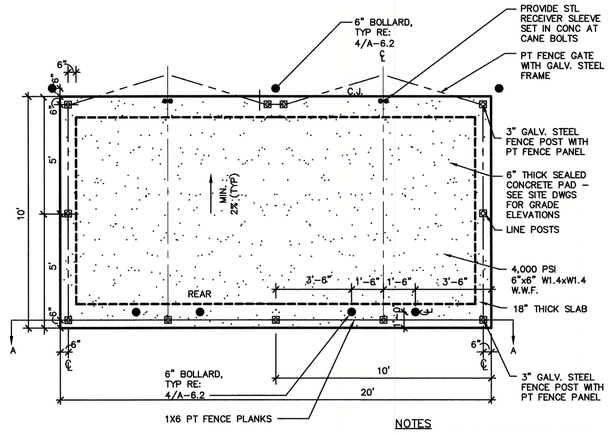
NOT TO SCALE



NOTES:
1. ALL SIGNAGE SHALL BE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND NHDOT STANDARDS.
2. SIGN, HARDWARE, AND INSTALLATION TO CONFORM TO 2016 NHDOT STANDARD SPECIFICATION, SECTION 615 – TRAFFIC SIGNS.
3. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/CATALOG CUTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ERECTING SIGNS.
4. THE LOCATION OF THE SIGNS SHALL BE AS INDICATED ON THE DRAWINGS AND/OR AS DIRECTED BY THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.

STOP SIGN (R1-1)

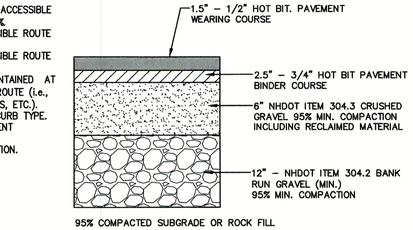
NOT TO SCALE



NOTES
1. ALL LUMBER TO BE PRESSURE TREATED.
2. WOOD FENCE TO BE PAINTED OR STAINED TO MATCH BUILDING FOUNDATION.
3. DUMPSTER SIZE VARIES, SEE SITE PLANS FOR SCREENING SIZE

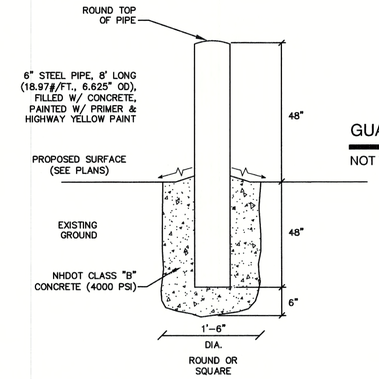
DUMPSTER ENCLOSURE PLAN

NOT TO SCALE



TYPICAL BITUMINOUS PAVEMENT

NOT TO SCALE



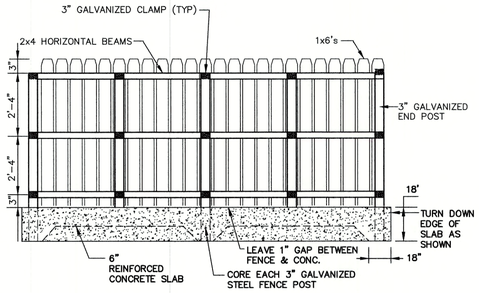
BOLLARD DETAIL

NOT TO SCALE

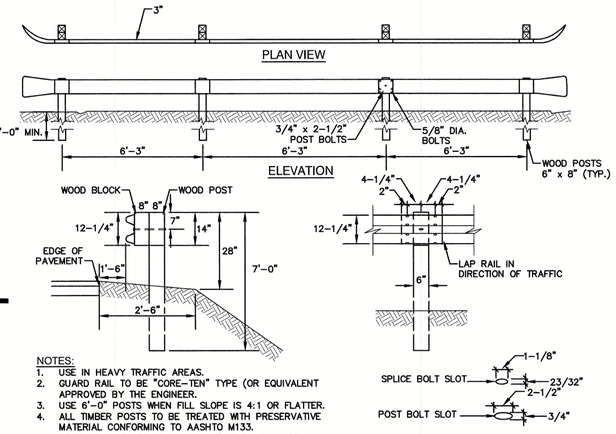
NOTES:
1. ALL STOP BARS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.

STOP BAR

NOT TO SCALE



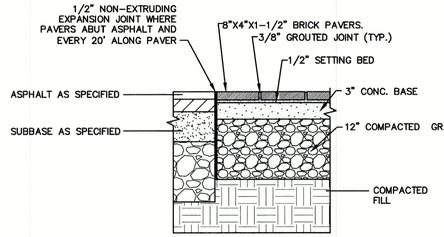
SECTION A–A



NOTES:
1. USE IN HEAVY TRAFFIC AREAS.
2. GUARD RAIL TO BE "CORE-TEN" TYPE (OR EQUIVALENT APPROVED BY THE ENGINEER.
3. USE 6'-0" POSTS WHEN FILL SLOPE IS 4:1 OR FLATTER.
4. ALL TIMBER POSTS TO BE TREATED WITH PRESERVATIVE MATERIAL CONFORMING TO AASHTO M133.
5. POST BOLTS TO BE 18" W/MIN. 2" THREAD LENGTH.

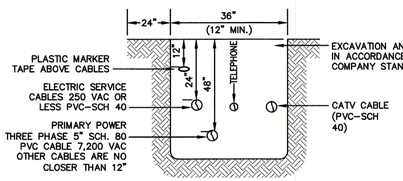
GUARD RAIL (CORE-TEN)

NOT TO SCALE



PAVER DETAIL

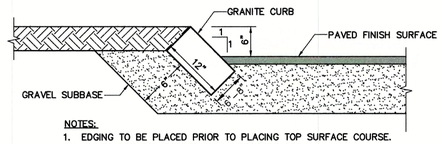
NOT TO SCALE



NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

UTILITY TRENCH

NOT TO SCALE



NOTES:
1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.
3. SALVAGE GRANITE CURBS ON-SITE AND RESET TO THE EXTENT POSSIBLE.

SLOPED GRANITE CURB

NOT TO SCALE

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Design: JAC	Draft: DJM	Date: 04/21/20
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Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

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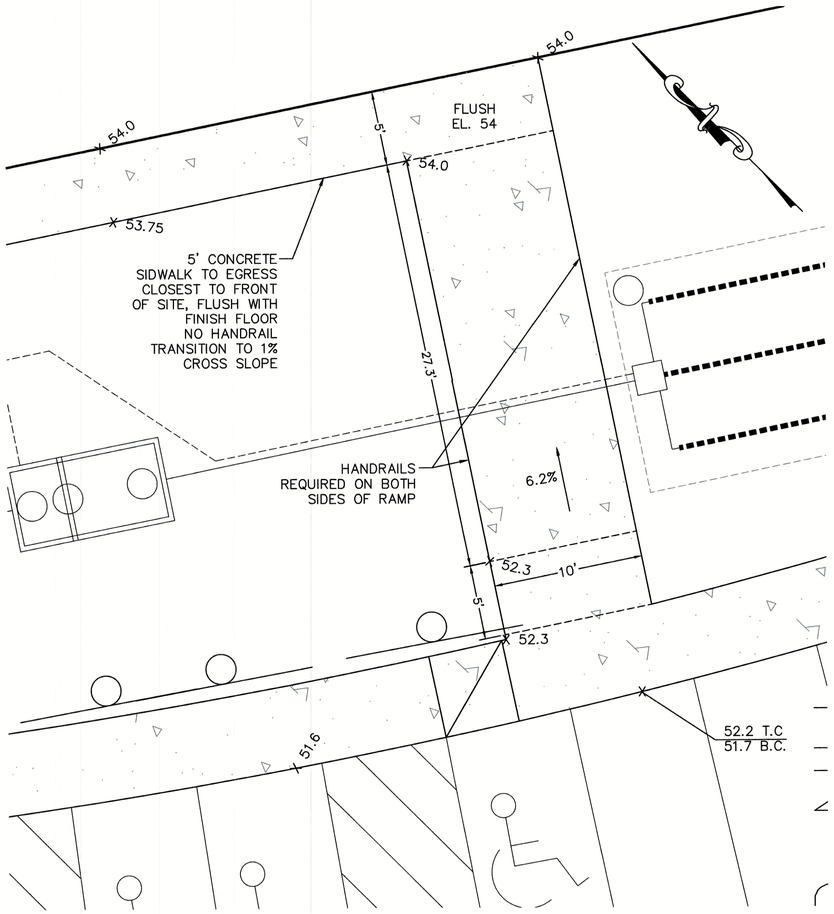
STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9946 – LICENSED PROFESSIONAL ENGINEER – 4/21/20

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

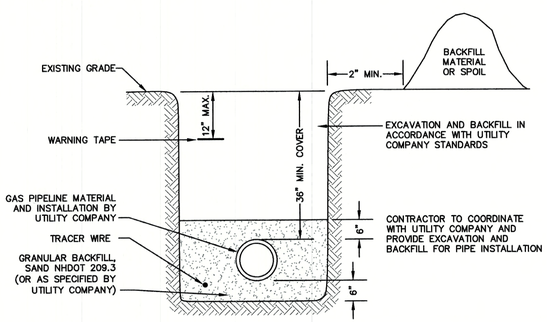
DRAWING No.
D1
SHEET 10 OF 24
JBE PROJECT NO. 19190.2



NOTES:
1. RAMP TO CONTAIN 6"x6" W1.4xW1.4 W.W.F. EXTENDING INTO FOOTING.
2. RAMP TO BE OF CONTRASTING COLOR TO WALK AND PAVEMENT.

MAIN ENTRANCE DETAIL

1 INCH = 5 FEET



GAS TRENCH

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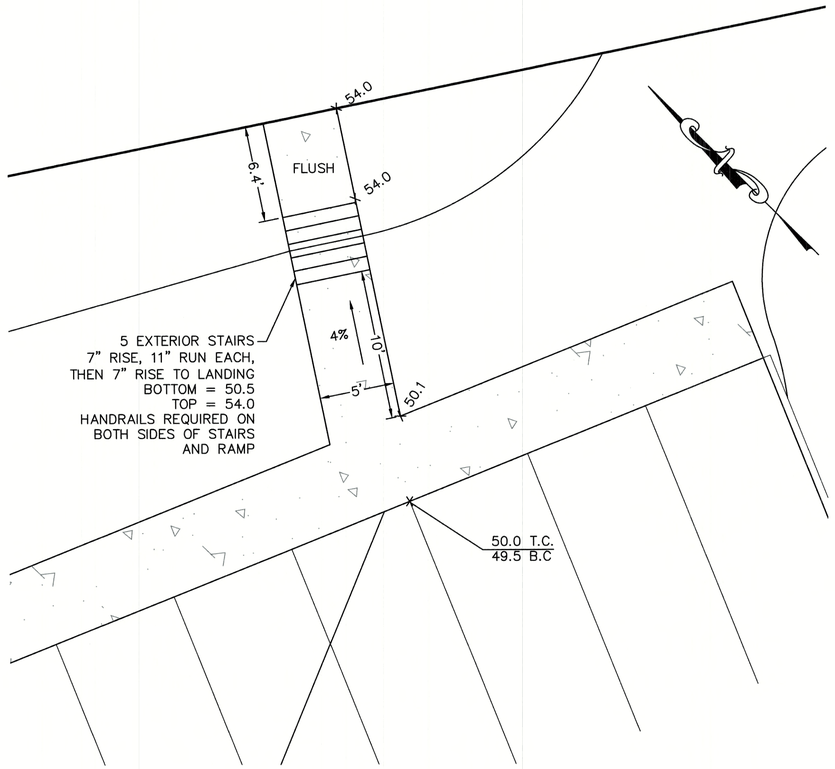
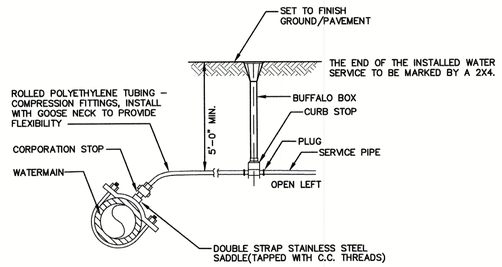


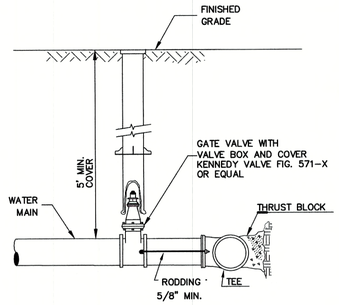
SECONDARY EGRESS DETAIL

1 INCH = 5 FEET



WATER SERVICE CONNECTION-POLYETHYLENE

NOT TO SCALE



BURIED GATE VALVE DETAIL

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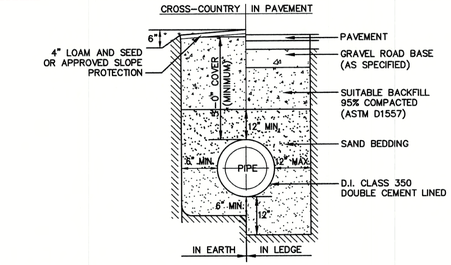

WATER SYSTEM TRENCH

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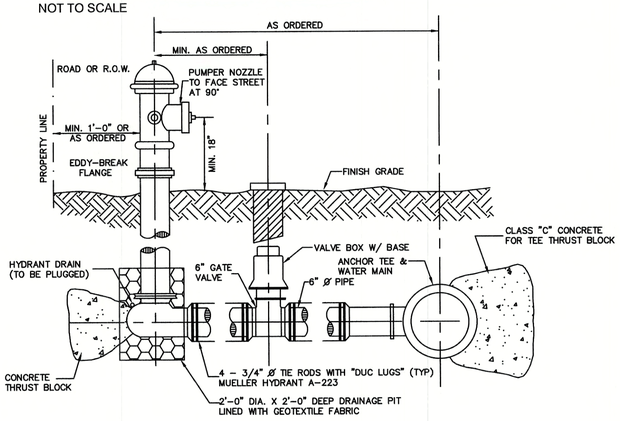
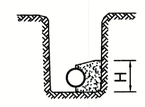


NOTES
1. ALL PIPE FITTINGS TO BE D.I. PRESSURE CLASS 350, THICKNESS CLASS 52.
2. HYDRANT TO BE PAINTED RED WITH WHITE "REFLECTOR" PAINT ON BONNET.
3. MECHANICAL JOINTS SHALL HAVE MEGALUG RETAINING GLANDS AS MADE BY EBBA OR APPROVED EQUAL.
4. STEAMER NOZZLE TO BE "STORCH" TYPE.
5. NATIONAL STANDARD THREAD.

HYDRANT INSTALLATION

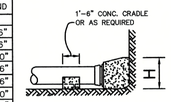
NOT TO SCALE



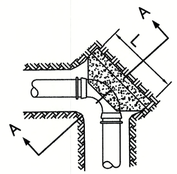
SECTION A–A

CONCRETE THRUST BLOCK DIMENSIONS								
PIPE DIA., (IN.)	TEE		90° BEND OR STUB		45° BEND		22.5° BEND	
	H	L	H	L	H	L	H	L
4"	1'-6"	1'-6"	1'-6"	2'-0"	1'-6"	1'-6"	1'-6"	1'-6"
8"	2'-0"	2'-0"	2'-0"	3'-0"	1'-6"	2'-0"	1'-6"	1'-6"
10"	2'-0"	3'-0"	2'-6"	3'-6"	2'-0"	2'-6"	1'-6"	2'-0"
12"	2'-6"	3'-6"	3'-0"	4'-0"	2'-0"	3'-6"	1'-6"	2'-6"
15"	3'-0"	4'-6"	3'-6"	5'-6"	3'-0"	3'-6"	2'-0"	2'-6"
18"	4'-0"	5'-0"	4'-6"	6'-0"	3'-6"	4'-0"	2'-6"	3'-0"
24"	5'-0"	7'-0"	6'-0"	8'-0"	4'-0"	5'-0"	3'-0"	4'-6"

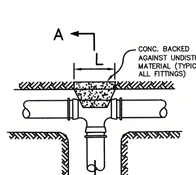
PIPING W/ MECHANICAL JOINT FITTINGS SHALL HAVE RETAINING GLANDS



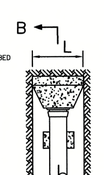
SECTION B–B



PLAN



PLAN



PLAN

THRUST BLOCK DETAILS

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9646 – LICENSED PROFESSIONAL ENGINEER – 12/22/21

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
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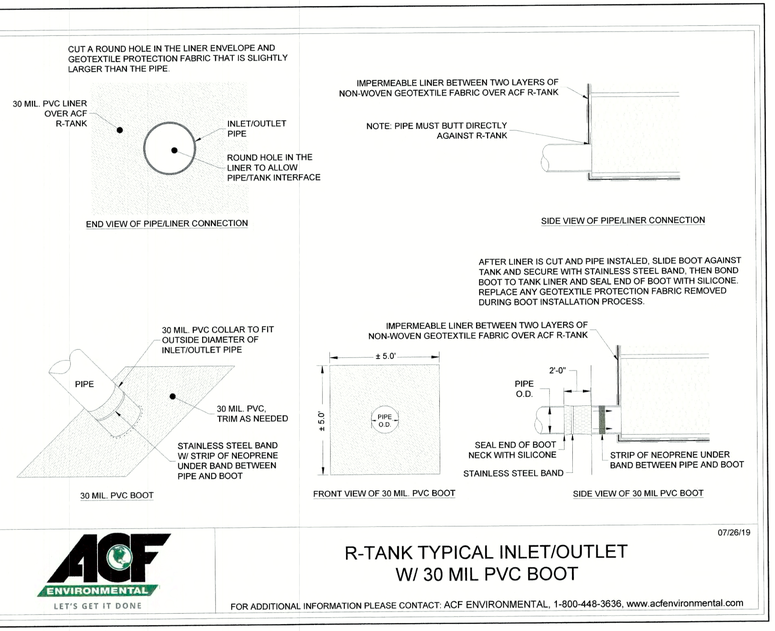
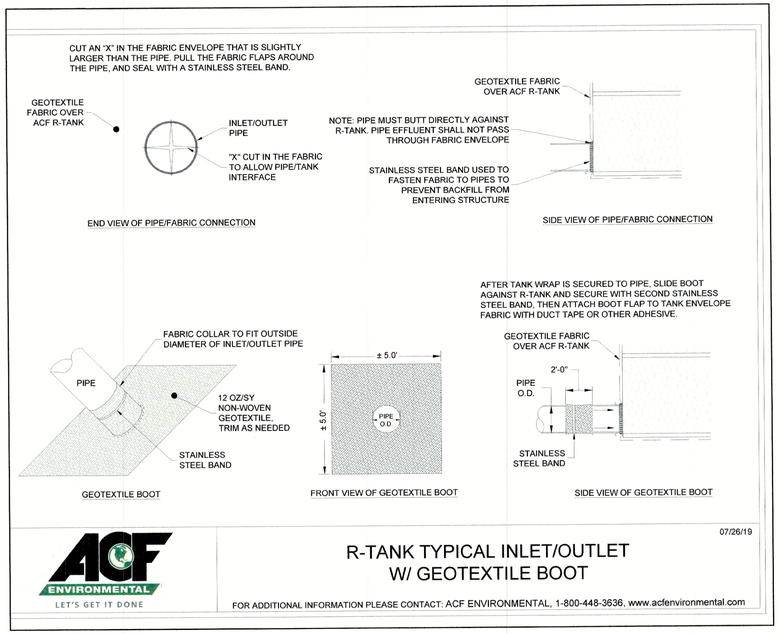
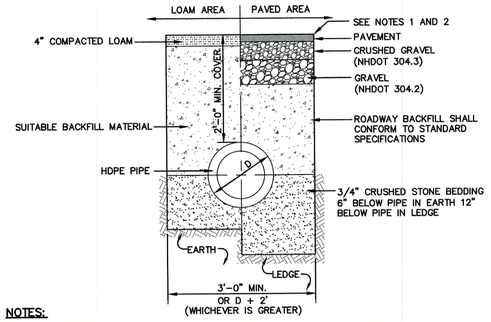
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
D2
SHEET 11 OF 24
JBE PROJECT NO. 19190.2





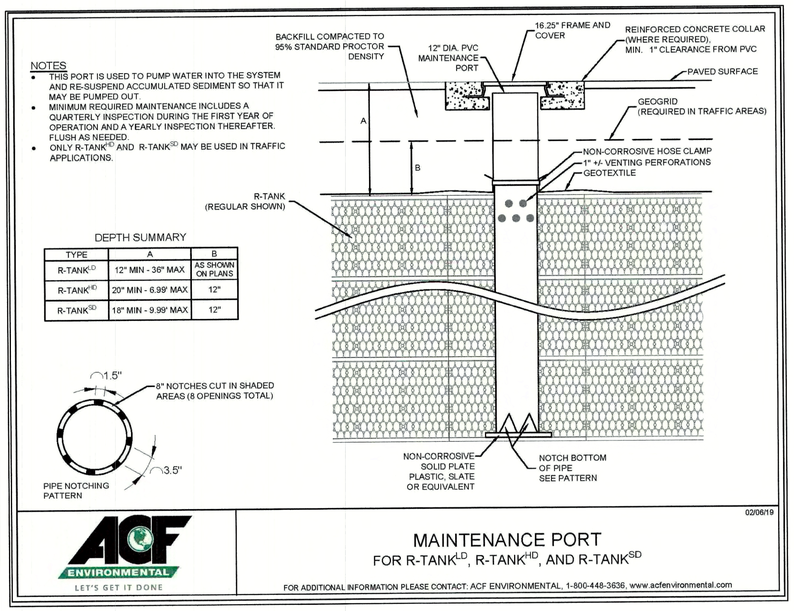


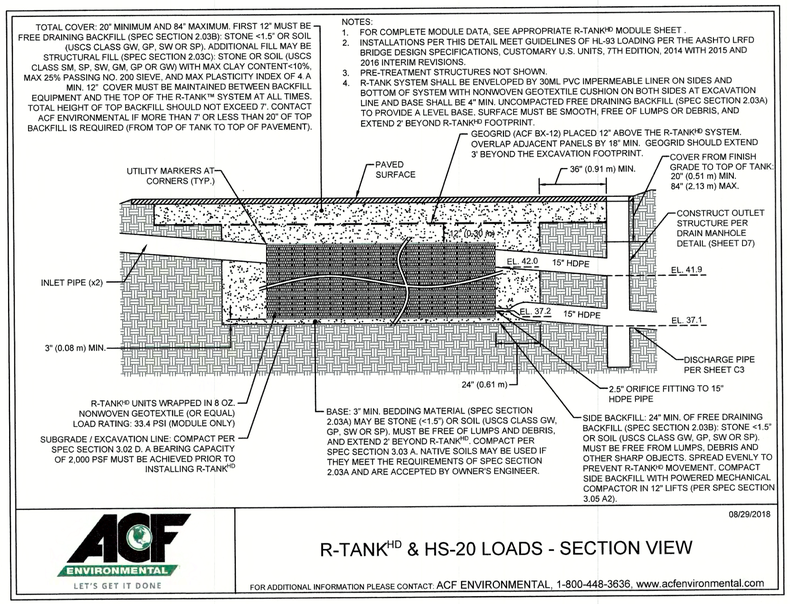
NOTES:

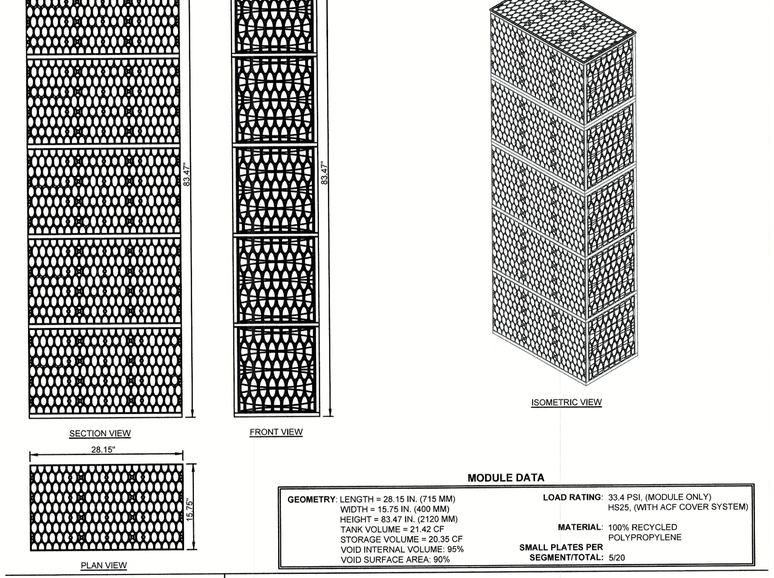
1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM WITH PROJECT AND TOWN SPECIFICATIONS.
3. ALL MATERIALS ARE TO BE COMPACTED TO 95% OF ASTM D-1557.

DRAINAGE TRENCH

NOT TO SCALE







MODULE DATA

GEOMETRY: LENGTH = 28.15 IN. (715 MM)	LOAD RATING: 33.4 PSI, (MODULE ONLY)
WIDTH = 15.75 IN. (400 MM)	HS25, (WITH ACF COVER SYSTEM)
HEIGHT = 83.47 IN. (2120 MM)	MATERIAL: 100% RECYCLED
TANK VOLUME = 21.42 CF	POLYPROPYLENE
STORAGE VOLUME = 20.35 CF	SMALL PLATES PER
VOID INTERNAL VOLUME: 95%	SEGMENT/TOTAL: 5/20
VOID SURFACE AREA: 90%	

ENVIRONMENTAL
LET'S GET IT DONE

R-TANKHD - PENT MODULE

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com 5/16

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STATE OF NEW HAMPSHIRE - MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER 6/22/21

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Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

D3

SHEET 12 OF 24
JBE PROJECT NO. 19190.2

PRETX SPECIFICATIONS

A. GENERAL

1. PRETX SYSTEMS ARE A PRE-FILTER AND CRITICAL MAINTENANCE DEVICE THAT EXTENDS THE OPERATING LIFE AND REDUCES THE MAINTENANCE BURDEN OF BIORETENTION SYSTEMS, RAIN GARDENS, BIOSWALES AND OTHER TYPES OF SURFACE BEST MANAGEMENT PRACTICES BY FILTERING OUT SEDIMENT, TRASH AND DEBRIS AT THE INLET.

B. PRODUCTS

1. PRETX IS AVAILABLE IN 3 MODELS THAT MANAGE MOST BIORETENTIOIN INLET CONFIGURATIONS: CURB, DROP, AND INLINE.
2. PRETX-CURB IS FOR EDGE OF PAVEMENT RUNOFF AT A CURB CUT IN LIEU OF A STONE SPREADER.
3. PRETX-DROP IS FOR USE AS A DROP INLET CONFIGURATION ALONG A CURB LINE AND WOULD BE INSTALLED WITH A STANDARD DROP INLET GRATE.
4. PRETX-INLINE IS FOR USE WITH SUBSURFACE INLET AND OUTLET PIPE.
5. PRETX IS SIZED TO PRETREAT WATER QUALITY FLOWS AND BYPASS LARGER FLOWS THAT HAVE MINIMAL TRASH AND DEBRIS. PRETX CAN BE USED BOTH IN RETROFIT OR NEW INSTALLATIONS.
6. ACCEPTABLE SYSTEM SUPPLIER:
   CONVERGENT WATER TECHNOLOGIES, INC. OR ITS AUTHORIZED VALUE-ADDED RESELLER
   (800) 711-5428
   WWW.CONVERGENTWATER.COM

C. SUBMITTALS

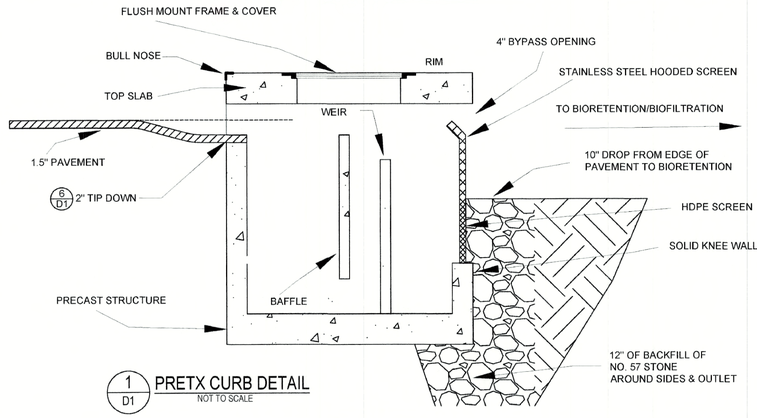
1. SUBMIT PROPOSED LAYOUT DRAWINGS. DRAWINGS SHALL INCLUDE TYPICAL SECTION DETAILS ANNOTED WITH SYSTEM ELEVATIONS (E.G., RIM, PIPE INVERTS, OUTSIDE BOTTOM OF STRUCTURE, ETC.).
2. SUBMIT MATERIAL CERTIFICATES FOR FRAMES AND COVERS
3. ANY PROPOSED EQUAL ALTERNATE PRODUCT SUBSTITUION TO THIS SPECIFICATON MUST BE SUBMITTED FOR REVIEW AND APPROVED PRIOR TO BID OPENING

D. EXECUTION

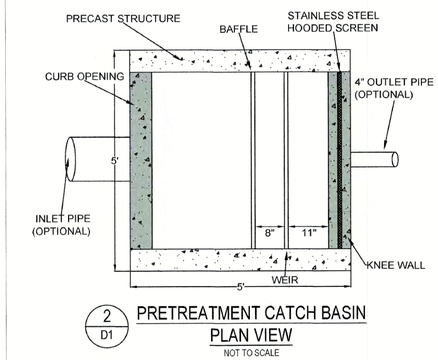
1. All PUBLIC STORM DRAINAGE SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS AND ACCORDING TO LOCAL MUNICIPAL REQ UIREME NTS.
2. All STORM DRAINAGE SYSTEM CONSTRUCTION IS SUBJECT TO INSPECTION AND APPROVAL BY THE PROJECT ENGINEER.
3. THE CONTRACTOR SHALL NOTIFYTHE PROJECT ENGINEER A MINIMUM OF TWO FULL BUSINESS DAYS PRIOR TO THE START OF CONSTRUCTIO N.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND OBTAINING APPROVAL FROM DIG-SAFE AND DETERMINING THE LOCATION OF All UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION/ EXCAVATI ON AND SHALL NOTIFY THE PROJECT ENGINEER OF ANY POTENTIAL CONFLICTS.
5. TO PROTECT STORMWATER FLOW CONTROL AND QUALITY TREATMENT FACILITIES FROM SEDIMENTATION, THEY SHALL BE CONNECTED TO THE STORM CONVEYANCE SYSTEM ONLY AFTER ALL SITE WORK, ROAD CONSTRUCTION, UTILITY WORK AND LANDSCAPING ARE IN PLACE IN ALL AREAS ABOVE AND UPSTREAM OF THE FACILITY.
6. THE EXISTING STORM SEWER SYSTEM SHALL STAY ISOLATED FROM THE NEW SYSTEM UNTIL THE NEW SYSTEM IS CLEANED, AND APPROVED FOR USE. THERE SHALL BE NO DEBRIS IN THE LINES OR FURTHER CLEANING WIll BE REQUIRED PRIOR TO ACCEPTANCE.
7. PROVIDE A 1.5" MINIMUM GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR
8. THE OPENING SHALL BE MEASURED AT THE TOP OF THE PRECAST BASE SECTION.
9. All PICKUP HOLES SHALL BE GROUTED FULL AFTER THE BASIN HAS BEEN PLACED.
10. STANDARD CURB INLETS AND TIPDOWNS SHALL BE PRECAST CONCRETE OR ASPHALT.
11. PIPE ENDS SHALL BE FLUSH WITH THE INNER WALL OR 1" MAXIMUM INTRUSION. MASONRY, CINDER BLOCKS, OR SIMILIAR MATERIALS MA Y BE USED TO ADJUST THE RISERS TO GRADE PRIOR TO GROUTING.
12. GROUTING SHALL BE SUFFICIENTTO PREVENT LEAKS BETWEEN THE PRECAST COMPONENTS OF THE COMPLETED STRUCTURE & SHALL BE PERFORMED INSIDE, BETWEEN & OUTSIDE OF All RISERS, JOINTS & PIPE PENETRATIONS.
13. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M-199 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE STANDARD SPECIFICATIONS.
14. All REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. All PRECAST CONCRETE SHALL BE CLABS 4000.
15. RECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
16. MATING SURFACES OF MANHOLE RINGS AND COVERSSHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITIONS.

E. CONSTRUCTION AND SEQUENCING

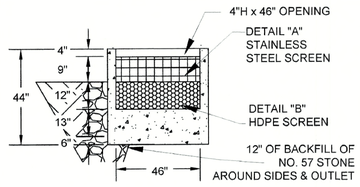
1. EXAMINATION
   A. VERIFY LAYOUT AND ORIENTATION OF PRE-TX SYSTEM AREA INCLUDING EDGE OF PAVEMENT, TIP DOWN, CURBS AND SIDEWALK, BIOFILTRATION SYSTEM, AND CONNECTIONS.
   B. VERIFY EXCAVATION BASE IS READY TO RECEIVE WORK AND EXCAVATIONS, DIMENSIONS, AND ELEVATIONS ARE AS INDICATED ON DRAWINGS.
2. PREPARATION
   A. CALL DIG SAFE AND RECEIVE APPROVAL BEFORE PERFORMING WORK.
   B. REQUEST UNDERGROUND UTILITIES TO BE LOCATED AND MARKED WITHIN AND SURROUNDING CONSTRUCTION AREAS.
   C. IDENTIFY REQUIRED LINES, LEVELS, CONTOURS, AND DATUM.
   D. CLEAR AND GRUB THE PROPOSED PRE-TX SYSTEM AREA.
3. EXCAVATION AND INSTALLATION
   A. THE FOLLOWING CONSTRUCTION SEQUENCE IS TO BE USED AS A GENERAL GUIDELINE. COORDINATE WITH THE OWNER, AND ENGINEERS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
   B. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS TO DIVERT STORM WATER AWAY FROM THE PRE-TX SYSTEM AREA.
   C. EXCAVATE TO THE BOTTOM INVERT OF THE SYSTEM.
   D. TO MINIMIZE COMPACTION OF ADJACENT BIOFILTRATION SYSTEMS, WORK EXCAVATORS OR BACKHOES FROM THE SIDES TO EXCAVATE THE PRE-TX SYSTEM AREA TO ITS APPROPRIATE DESIGN DEPTH AND DIMENSIONS.
   E. ROUGH GRADE THE PRE-TX SYSTEM AREA DURING GENERAL CONSTRUCTION. EXCAVATE THE PRE-TX SYSTEM FACILITIES TO WITHIN 1 FOOT OF STRUCTURE BOTTOM.
   F. PLACE 1 FOOT BED OF COARSE STONE TO ELEVATION OF BASE OF STRUCTURE.
   G. ESTABLISH ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT AND TIP DOWN, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS AS INDICATED ON DRAWINGS.
4. INSTALLATION
   A. PLACE THE PRECAST SYSTEM TO NECESSARY ELEVATION.
   B. VERIFY ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT, PAVEMENT GRADING FOR INLET GRATE FOR PRETX-DROP, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS, OUTLET INVERT FOR KNEE WALL.
   C. FOR PRETX-SURFACE:
      a. VERIFY ELEVATIONS FOR ADJACENT CURBS.
      b. VERIFY EDGE OF PAVEMENT TIP DOWN PAVEMENT GRADING FOR INLET GRATE.
      c. VERIFY CURB ELEVATION IN RELATION TO PAVEMENT AND TIP DOWN.
      d. VERIFY OUTLET INVERT FOR KNEE WALL IN RELATION TO FILTER MEDIA.
   D. FOR PRETX-DROP:
      a. VERIFY ALL INLET PIPES ENTER THE STRUCTURE UPSTREAM OF BAFFLE.
      b. VERIFY FRAME AND GRATE OFFSET ON INLET SIDE AND UPSTREAM OF BAFFLE.
      c. VERIFY CURB LOCATION WITH RESPECT TO FRAME AND GRATE ORIENTATION.
   E. INSTALL BAFFLES, WEIR, AND SCREENS AS INDICATED ON DRAWINGS.
   F. VERIFY MAINTENANCE ACCESS THROUGH GRATE OR COVER AND CLEARANCE FOR VACTOR.
   G. INSTALL TOP OF STRUCTURE LEVEL WITH ADJACENT CURB OR SIDEWALK AS PER MANUFACTURERS SPECIFICATIONS. ENGINEER FIELD VISIT REQUIRED PRIOR TO BACKFILLING.
5. BACKFILLING
   A. BACKFILL WITH APPROVED SOIL AND STONE TO THE DESIGN GRADE AS SPECIFIED IN THE DRAWINGS.
   B. BACKFILL WITH 12" OF NO. 57 STONE AROUND REAR, LEFT, AND RIGHT SIDES TO LEVEL WITH TOP OF HDPE SCREEN.
   C. BACKFILL WITH BIORETENTION SOIL MIX BEYOND STONE BACKFILL TO EQUAL ELEVATION OF THE TOP OF HDPE SCREEN.
   D. DO NOT BACKFILL SOIL OR STONE AGAINST STAINLESS SCREEN.
   E. DO NOT COMPACT ADJACENT FILTRATION SYSTEM SOIL WITH MECHANICAL EQUIPMENT.
   F. STABILIZE All REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/ ORER OSION CONTROL BLANKETS AS INDICATED ON DRAWINGS.
6. CLEAN UP
   A. AFTER COMPLETION OF THE WORK, REMOVE AND PROPERLY DISPOSE ALL DEBRIS, CONSTRUCTION MATERIA LS, RUBBISH, EXCESS SOIL, ETC., FROM THE PROJECT SITE. REPAIR PROMPTL Y ANY IDENTIFIED DEFICIENCIES AND LEAVE THE PROJECT SITE IN A CLEAN AND SATISFACTORY CONDITION.



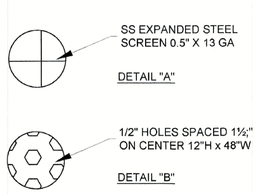
1 D1 PRETX CURB DETAIL
NOT TO SCALE



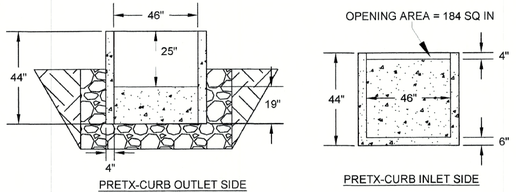
2 D1 PRETREATMENT CATCH BASIN PLAN VIEW
NOT TO SCALE



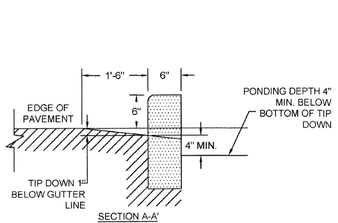
3 D1 PRETX CURB OUTLET SIDE
NOT TO SCALE

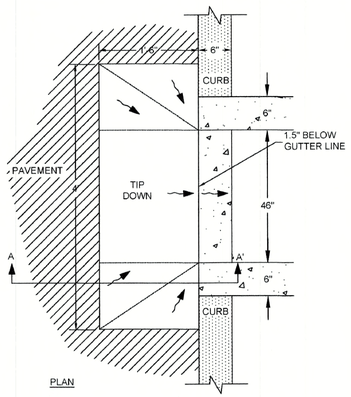


OUTLET SIDE INSTALLED W/ SCREENS

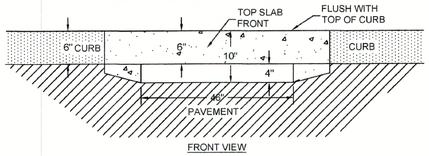


4 D1 PRETX CURB SIDE DETAIL
NOT TO SCALE

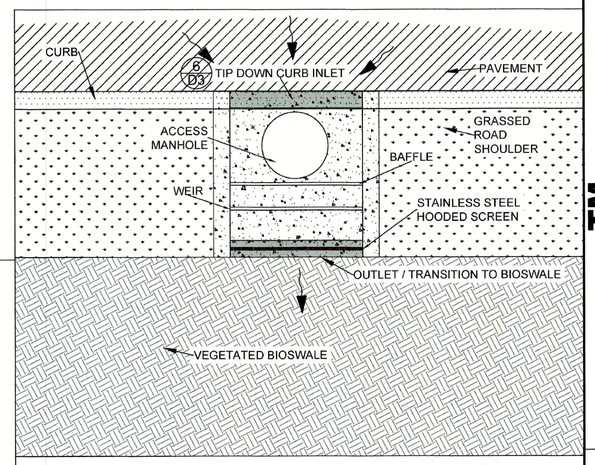




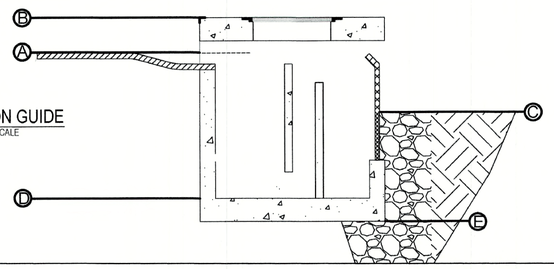
5 D1 TIP DOWN CURB INLET DETAIL
NOT TO SCALE



FRONT VIEW



7 D1 PRETX CURB OUTLET TO BIORETENTION CONFIGURATION
NOT TO SCALE



6 D1 ELEVATION GUIDE
NOT TO SCALE

PRETX–CURB ELEVATION GUIDE		
POINT	DESCRIPTION	ELEV.
A	EDGE OF PAVEMENT	PER PLAN
B	OUTSIDE TOP SLAB	8" ABOVE A
C	TOP OF BIOFILTRATION	PER PLAN
D	SUMP INVERT	36" BELOW A
E	OUTSIDE BOTTOM	42" BELOW A

PRETREATMENT DETAIL

PRETX™ CURB INLET PRETREATMENT

D-1

ACF ENVIRONMENTAL
LET'S GET IT DONE

PRETX BIOFILTER ★ PRETREATMENT

TO FIND A VALUE ADDED RESELLER IN YOUR AREA VISIT
WWW.CONVERGENTWATER.COM/STORMWATER-PRODUCTS
OR CONTACT CONVERGENT WATER TECHNOLOGIES AT
1.800.711.5428

REVISED 11/20/18, ELEVATION DETAILS ADDED, CHECKED BY RR

CONVERGENT WATER TECHNOLOGIES

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERVAN No. 9646 LICENSED PROFESSIONAL ENGINEER – 6/23/21

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9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

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PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
D4
SHEET 13 OF 24
JBE PROJECT NO. 19190.2

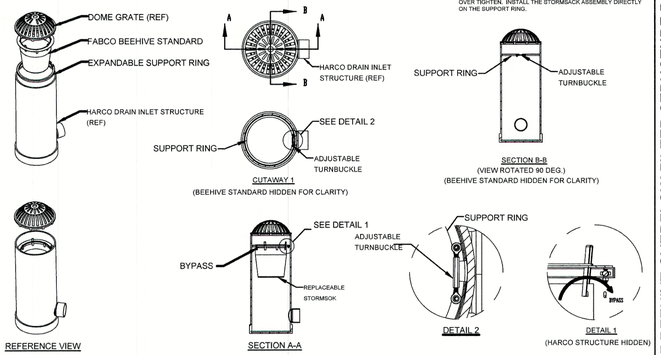
STRUCTURE DIAMETER (IN.)	DEBRIS CAPACITY (CU.FT)	FILTERED FLOWRATE (CFS)	BYPASS FLOWRATE (CFS)
12	0.68	1.7	1.0
15	1.0	2.1	1.3
18	1.2	2.3	1.4
24	2.8	3.9	2.2
30	2.8	3.9	2.2

NOTES:

1. MATERIAL:
   - A) SUPPORT FLANGE: ALUMINUM ALLOY PLATE, 5000 SERIES
   - B) STORMSOK: WOVEN POLYPROPYLENE GEOTEXTILE
   - C) EXPANSION RING: ALUMINUM ALLOY CHANNEL, 6000 SERIES
   - D) HARDWARE: STAINLESS STEEL
2. RECOMMENDED MINIMUM VAULT DEPTH: 2-IN BELOW STORMSOK
3. USE ONLY WITH FABCO REPLACEABLE STORMSOK

GENERAL INSTALLATION:

ADJUST THE TURNBUCKLE DOWN TO GIVE THE SMALLEST RING DIAMETER AND LOCATE THE EXPANSION RING INTO THE HARCO STRUCTURE MINIMUM OF 6-IN DOWN FROM THE TOP OPENING AS SHOWN. BEGIN OPENING THE TURNBUCKLE UNTIL THE EXPANSION RING IS SELF SUPPORTING, THEN VERIFY THE RING IS LEVEL AND PLUMB TO THE HARCO STRUCTURE. USING A CALIBRATED TORQUE WRENCH, CONTINUE TO OPEN THE TURNBUCKLE TO GIVEN TORQUE (MODEL-SPECIFIC). DO NOT OVER TIGHTEN. INSTALL THE STORMSACK ASSEMBLY DIRECTLY ON THE SUPPORT RING.



ACF BEEHIVE OVERFLOW FILTER STRUCTURE DETAILS

FOR MORE INFORMATION CONTACT ACF ENVIRONMENTAL
WWW.ACFENVIRONMENTAL.COM
800.448.3636

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REVISED
AUG 2020

FOCALPOINT HP PERFORMANCE SPECIFICATION:

HIGH PERFORMANCE MEDIA

HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100" PER HOUR INFILTRATION RATE.

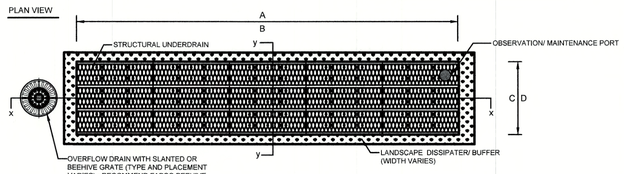
HIGH PERFORMANCE STRUCTURAL UNDERDRAIN

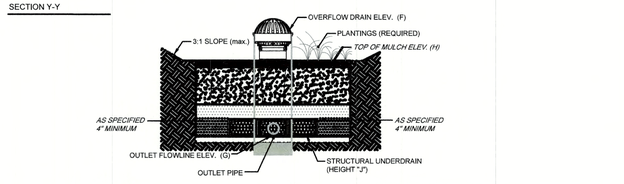
MUST HAVE A MINIMUM OF 19 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT.
MUST MEET H20 LOADING REQUIREMENTS.
MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE.
MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

PLANT COMPONENT

SUPPLIER SHALL PROVIDE LIST OF ACCEPTABLE PLANTS
IF PLANTS ARE NOT INCLUDED IN THE LANDSCAPE CONTRACT/PLANS, SITE CONTRACTOR SHALL PROVIDE PLANTS. PLANTS SHALL BE INSTALLED AT THE TIME THE SYSTEM IS COMMISSIONED FOR USE. PLANTING OUTSIDE THIS TIME REQUIRES APPROVAL BY THE ENGINEER/LANDSCAPE ARCHITECT OF RECORD.
SEE FOCALPOINT INSTALLATION GUIDE FOR PLANT SPACING, PLANTING PROCEDURES ETC.

FOCALPOINT HP CONSTRUCTION GUIDE		
A	FOCALPOINT LENGTH	SEE PLANS
B	# UNDERDRAIN LONG	SEE PLANS
C	FOCALPOINT WIDTH	SEE PLANS
D	# UNDERDRAIN WIDE	SEE PLANS
E	WATER QUALITY VOLUME	VARIES
F	OVERFLOW ELEVATION	SEE PLANS
G	OUTLET FLOWLINE	SEE PLANS
H	TOP OF MULCH	SEE PLANS
I	TOP OF GABION (OPTIONAL)	NO GABION
J	UNDERDRAIN HEIGHT	SEE PLANS





FOCALPOINT HP CONSTRUCTION GUIDE

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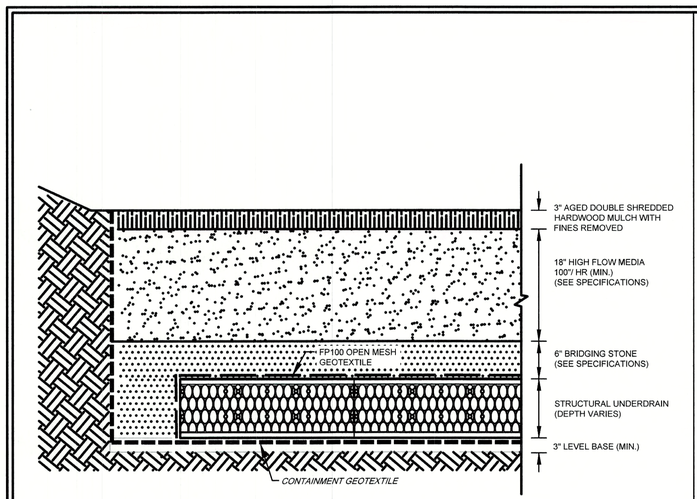

FOCALPOINT HP DETAILED CROSS SECTION

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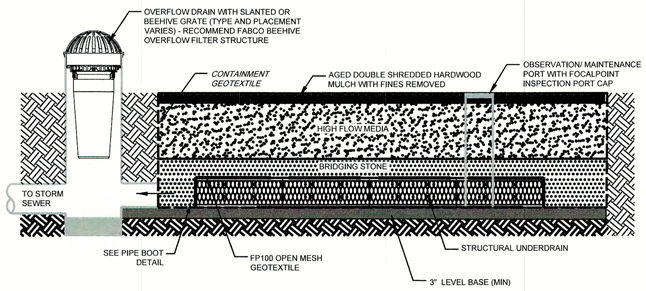

FOCALPOINT HP SECTION X-X

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STATE OF NEW HAMPSHIRE
MICHAEL J. KERVAN No. 9646
LICENSED PROFESSIONAL ENGINEER
6/23/21

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Stratham, NH 03885
Civil Engineering Services
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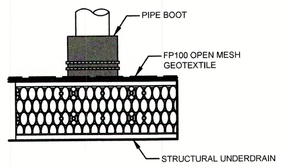
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

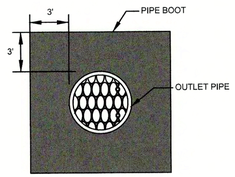
Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
D5
SHEET 14 OF 24
JBE PROJECT NO. 19190.2

OBSERVATION/ MAINTENANCE PORT CONNECTION

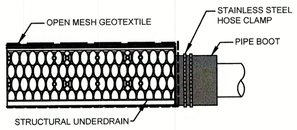


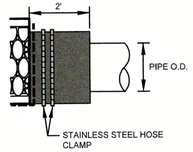
PIPE BOOT DETAIL



FRONT VIEW

OUTLET/ INLET PIPE CONNECTION





SIDE VIEW

FOCALPOINT PIPE CONNECTION

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HYDRODYNAMIC SEPARATORS

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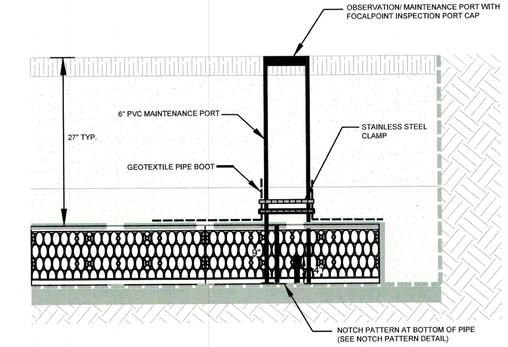
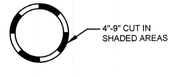
OBSERVATION/ MAINTENANCE PORT

PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPEND ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER FLUSH AS NEEDED.



PIPE NOTCH PATTERN DETAIL



FOCALPOINT OBSERVATION/ MAINTENANCE PORT

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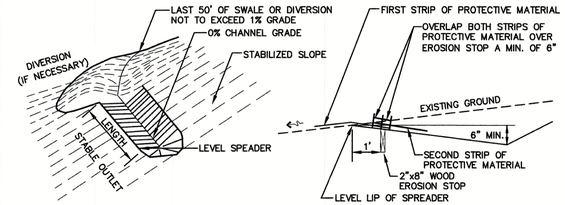
DRAWING No.

D6

SHEET 15 OF 24
JBE PROJECT NO. 19190.2



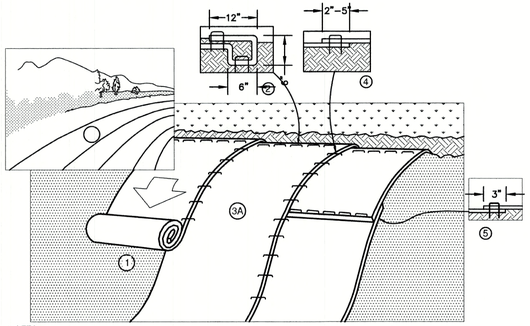
ISOMETRIC VIEW CROSS SECTION

NOTES:

1. CONSTRUCT THE LEVEL SPREADER LIP ON A ZERO PERCENT GRADE TO ENSURE UNIFORM SPREADING OF RUNOFF.
2. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
3. AN EROSION STOP SHALL BE PLACED VERTICALLY A MINIMUM OF SIX INCHES DEEP IN A SLIT TRENCH ONE FOOT BACK OF THE LEVEL LIP AND PARALLEL TO THE LIP. THE EROSION STOP SHALL EXTEND THE ENTIRE LENGTH OF THE LEVEL LIP.
4. ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING TWO STRIPS OF JUTE OR EXCELSIOR MATTING ALONG THE LIP. EACH STRIP SHALL OVERLAP THE EROSION STOP BY AT LEAST SIX INCHES.
5. ENTRANCE CHANNEL TO THE LEVEL SPREADER SHALL NOT EXCEED A 1 PERCENT GRADE FOR AT LEAST 50 FEET BEFORE ENTERING THE SPREADER.
6. THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER MUST NOT RECONCENTRATE IMMEDIATELY BELOW THE SPREADER.
7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PERFORMED.
8. MAINTENANCE: THE LEVEL SPREADER SHOULD BE CHECKED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE IF THE SPREADER HAS BEEN DAMAGED. SEDIMENT DEEPER THAN 4" ACCUMULATION SHOULD BE REMOVED. IF RILLING HAS TAKEN PLACE ON THE LIP, THEN THE DAMAGE SHOULD BE REPAIRED AND REVEGETATED. THE VEGETATION SHOULD BE MOWED OCCASIONALLY TO CONTROL WEEDS AND THE ENCROACHMENT OF WOODY VEGETATION. CLIPPINGS SHOULD BE REMOVED AND DISPOSED OF OUTSIDE THE SPREADER AND AWAY FROM OUTLET AREA. FERTILIZATION SHOULD BE DONE AS NECESSARY TO KEEP THE VEGETATION HEALTHY AND DENSE.

LEVEL SPREADER

NOT TO SCALE



NOTES:

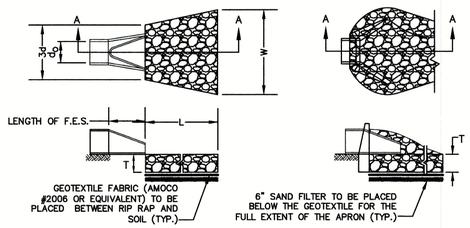
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

NORTH AMERICAN GREEN
14649 HIGHWAY 41 NORTH
EVANSVILLE, INDIANA 47725
1-800-772-2040

EROSION CONTROL BLANKET SLOPE INSTALLATION

(North American Green)

NOT TO SCALE



SECTION A-A — PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL

SECTION A-A — PIPE OUTLET TO WELL-DEFINED CHANNEL

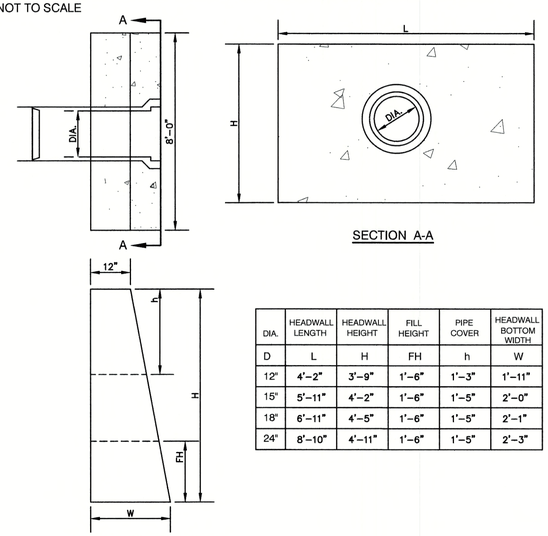
TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES		
THICKNESS OF RIP RAP = 1.5 FEET		
d50 SIZE= 0.50 FEET	6 INCHES	
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM	TO
100%	9	12
85%	8	11
50%	6	9
15%	2	3

NOTES:

1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. OUTLETS TO A DEFINED CHANNEL SHALL HAVE 2:1 OR FLATTER SIDE SLOPES AND SHOULD BEGIN AT THE TOP OF THE CULVERT AND TAPER DOWN TO THE CHANNEL BOTTOM THROUGH THE LENGTH OF THE APRON.
6. MAINTENANCE: THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO OUTLET PROTECTION.

RIP RAP OUTLET PROTECTION APRON

NOT TO SCALE



SECTION A-A

LONGITUDINAL SECTION

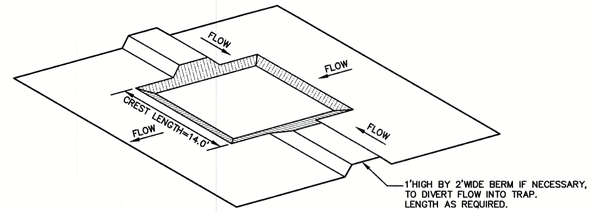
DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
12"	4'-2"	3'-9"	1'-6"	1'-3"	1'-11"
15"	5'-11"	4'-2"	1'-6"	1'-5"	2'-0"
18"	6'-11"	4'-5"	1'-6"	1'-5"	2'-1"
24"	8'-10"	4'-11"	1'-6"	1'-5"	2'-3"

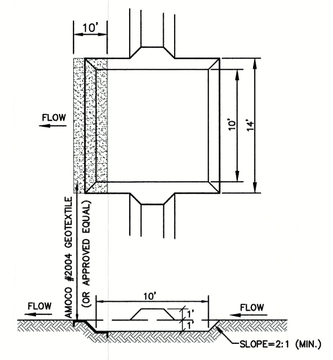
NOTES:

1. ALL DIMENSIONS GIVEN IN FEET & INCHES.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS. CEMENT TO BE TYPE III PER ASTM C-150. REINFORCING TO MEET OR EXCEED ASTM A-615 GRADE 60 DEFORMED BARS.
4. 1" THREADED INSERTS PROVED FOR FINAL ATTACHMENT IN FIELD BY OTHERS.

PRECAST CONCRETE HEADWALL

NOT TO SCALE



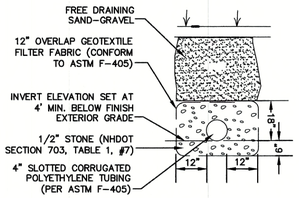


CONSTRUCTION SPECIFICATIONS:

1. THE AREA UNDER THE EMBANKMENT SHALL BE CLEARED, GRUBBED, AND STRIPPED OF ALL VEGETATION, ROOTS, AND DEBRIS.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS, WOODY VEGETATION, STONES OVER 6" SIZE, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIALS. THE FILL SHALL BE COMPACTED BY ROUTING CONSTRUCTION EQUIPMENT OVER IT SO THAT THE ENTIRE AREA OF THE FILL IS TRAVERSED BY AT LEAST ONE WHEEL OR TREAD TRACK OF THE EQUIPMENT.
3. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
4. ALL CUT AND FILL SLOPES SHALL BE 2:1 (H:V) OR FLATTER.
5. OUTLET CREST ELEVATIONS SHALL BE AT LEAST ONE FOOT BELOW THE TOP OF THE EMBANKMENT.
6. OUTLET CREST IS TO BE STABILIZED WITH AMOCO #2004 GEOTEXTILE (OR APPROVED EQUAL), WHICH IS TO BE "TOED" INTO THE GROUND AT ITS ENDS AT LEAST SIX INCHES AND IS TO EXTEND AT LEAST ONE FOOT INTO THE TRAP AND ONE FOOT DOWNSTREAM FROM THE OUTLET EDGE FOR THE ENTIRE LENGTH OF THE CREST.
7. ALL DISTURBED AREAS SHALL BE VEGETATED USING THE APPROPRIATE VEGETATIVE BEST MANAGEMENT PRACTICE.
8. ALL TRAPS ARE TO HAVE SEDIMENT DEPOSITS REMOVED AND DISPOSED PROPERLY AT LEAST ONCE WEEKLY AND AFTER EACH RAINFALL.

TEMPORARY SEDIMENT TRAP

NOT TO SCALE



UNDERDRAIN DETAIL

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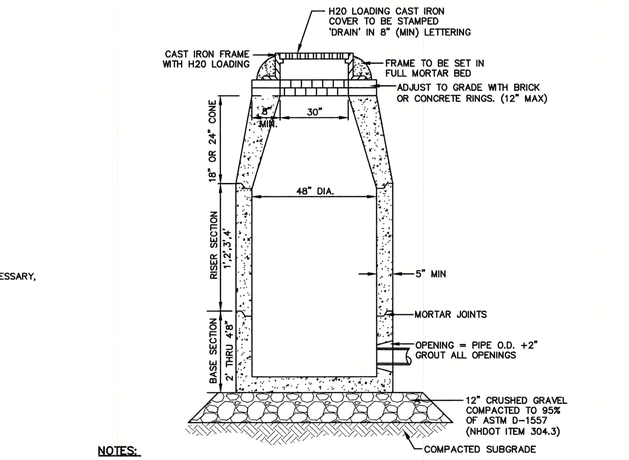
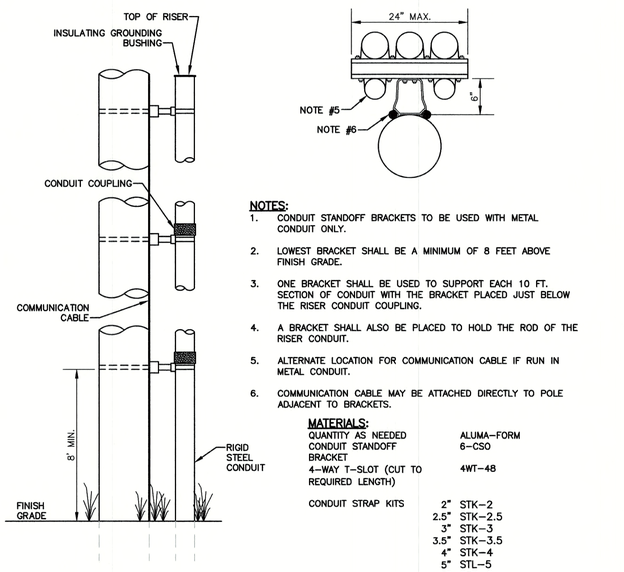


NOTES:

1. BASE SECTION SHALL BE MONOLITHIC WITH 48" INSIDE DIAMETER.
2. ALL SECTIONS SHALL BE DESIGNED FOR H20 LOADING.
3. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI, TYPE II CEMENT.
4. FRAMES AND GRATES SHALL BE HEAVY DUTY AND DESIGNED FOR H20 LOADING.
5. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT.
6. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
7. ALL DRAIN MANHOLE FRAMES AND GRATES SHALL BE NHDOT TYPE MH-1, OR NEENAH R-1798 OR APPROVED EQUAL (30" DIA. TYPICAL).
8. STANDARD FRAME(S) AND GRATE(S) SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM, BUT NO MORE THAN 12"), OR PRECAST CONCRETE 'DONUTS'.

DRAIN MANHOLE

NOT TO SCALE



NOTES:

1. CONDUIT STANDOFF BRACKETS TO BE USED WITH METAL CONDUIT ONLY.
2. LOWEST BRACKET SHALL BE A MINIMUM OF 8 FEET ABOVE FINISH GRADE.
3. ONE BRACKET SHALL BE USED TO SUPPORT EACH 10 FT. SECTION OF CONDUIT WITH THE BRACKET PLACED JUST BELOW THE RISER CONDUIT COUPLING.
4. A BRACKET SHALL ALSO BE PLACED TO HOLD THE ROD OF THE RISER CONDUIT.
5. ALTERNATE LOCATION FOR COMMUNICATION CABLE IF RUN IN METAL CONDUIT.
6. COMMUNICATION CABLE MAY BE ATTACHED DIRECTLY TO POLE ADJACENT TO BRACKETS.

MATERIALS:

QUANTITY AS NEEDED CONDUIT STANDOFF BRACKET	ALUMA-FORM 6-CSO
4-WAY T-SLOT (CUT TO REQUIRED LENGTH)	4WT-48
CONDUIT STRAP KITS	2" STK-2
	2.5" STK-2.5
	3" STK-3
	3.5" STK-3.5
	4" STK-4
	5" STL-5
	6" STK-6

UTILITY POLE RISER DETAIL

NOT TO SCALE

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM	Date: 04/21/20	
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2	
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg			

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STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9846 LICENSED PROFESSIONAL ENGINEER — 12/22/21

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

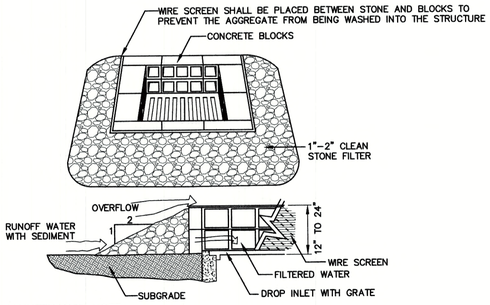
Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No. D7

SHEET 16 OF 24
JBE PROJECT NO. 19190.2

TEMPORARY EROSION CONTROL NOTES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF 5 ACRES BE EXPOSED AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. FIBER BERMS AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
7. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER) ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
8. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
9. AFTER OCTOBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
10. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
    b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    c. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED; OR
    d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. FUGITIVE DUST CONTROL IS REQUIRED TO BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000, AND THE PROJECT IS TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.
12. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR'S NAME, ADDRESS, AND PHONE NUMBER SHALL BE SUBMITTED TO DES VIA EMAIL (SEE BELOW).
13. PRIOR TO CONSTRUCTION, A PHASING PLAN THAT DELINEATES EACH PHASE OF THE PROJECT SHALL BE SUBMITTED. ALL TEMPORARY SEDIMENT BASINS THAT WILL BE NEEDED FOR DEWATERING WORK AREAS SHALL BE LOCATED AND IDENTIFIED ON THIS PLAN.
14. IN ORDER TO ENSURE THE STABILITY OF THE SITE AND EFFECTIVE IMPLEMENTATION OF THE SEDIMENT AND EROSION CONTROL MEASURES SPECIFIED IN THE PLANS FOR THE DURATION OF CONSTRUCTION, THE CONTRACTOR SHALL BE IN STRICT COMPLIANCE WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS IN ADDITION TO THOSE CALLED FOR IN THE SWPPP:
    a. A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL OR A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE ("MONITOR") SHALL BE EMPLOYED TO INSPECT THE SITE FROM THE START OF ALTERATION OF TERRAIN ACTIVITIES UNTIL THE SITE IS IN FULL COMPLIANCE WITH THE SITE SPECIFIC PERMIT ("PERMIT").
    b. DURING THIS PERIOD, THE MONITOR SHALL INSPECT THE SUBJECT SITE AT LEAST ONCE A WEEK, AND IF POSSIBLE, DURING ANY ½ INCH OR GREATER RAIN EVENT (I.E. ½ INCH OF PRECIPITATION OR MORE WITHIN A 24 HOUR PERIOD), IF UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THIS EVENT.
    c. THE MONITOR SHALL PROVIDE TECHNICAL ASSISTANCE AND RECOMMENDATIONS TO THE CONTRACTOR ON THE APPROPRIATE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROLS REQUIRED TO MEET THE REQUIREMENTS OF RSA 485 A:17 AND ALL APPLICABLE DES PERMIT CONDITIONS.
    d. WITHIN 24 HOURS OF EACH INSPECTION, THE MONITOR SHALL SUBMIT A REPORT TO DES VIA EMAIL (RIDGELY MAUCK AT: RIDGELY.MAUCK@DES.NH.GOV).
    e. THE MONITOR SHALL MEET WITH DES TO DECIDE UPON A REPORT FORMAT. THE REPORT FORMAT SHALL BE REVIEWED AND APPROVED BY DES PRIOR TO THE START OF CONSTRUCTION.

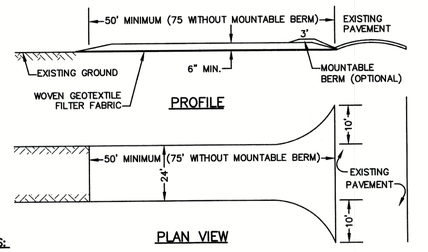


MAINTENANCE NOTE:

1. ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAINFALL AND REPAIRS MADE AS NECESSARY. SEDIMENT SHOULD BE REMOVED FROM TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED IN A SUITABLE UPLAND AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURE OR VEGETATIVE MEANS. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

TEMPORARY CATCH BASIN INLET PROTECTION (Block and Gravel Drop Inlet Sediment Filter)

NOT TO SCALE

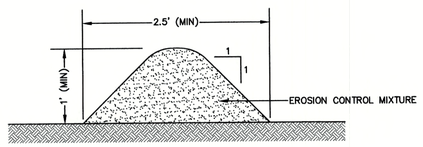


NOTES:

1. STONE FOR STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, 75' WITHOUT A MOUNTABLE BERM, AND EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS, OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER FABRIC IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENTIAL LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A STONE BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO THE PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



NOTES:

1. ORGANIC FIBER BERMS SHALL BE UTILIZED IN LIEU OF SILT FENCE.
2. THE EROSION CONTROL MIX USED IN THE FILTER BERMS SHALL BE A WELL-GRADED MIXTURE OF PARTICLE SIZES, MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER, STUMP GRINDINGS, SHREDDED OR COMPOSTED BARK, OR ACCEPTABEL MANUFACTURED PRODUCTS, AND SHALL BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH, AND SHALL MEET THE FOLLOWING STANDARDS:
   a) THE ORGANIC CONTENT SHALL BE 80-100% OF DRY WEIGHT.
   b) PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN, AND 70-85% PASSING A 0.75" SCREEN.
   c) THE ORGANIC PORTION SHALL BE FIBROUS AND ELONGATED.
   d) LARGE PORTIONS OF SILTS, CLAYS, OR FINE SANDS SHALL NOT BE INCLUDED IN THE MIXTURE.
   e) SOLUBLE SALTS CONTENT SHALL BE >4.0mmhos/cm.
   f) THE pH SHALL BE BETWEEN 5.0 AND 8.0.
3. ORGANIC FILTER BERMS SHALL BE INSTALLED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BERM.
4. ON SLOPES LESS THAN 5%, OR AT THE BOTTOM OF SLOPES STEEPER THAN 3:1, UP TO 20' LONG, THE BERM SHALL BE A MINIMUM OF 12" HIGH (AS MEASURED ON THE UPHILL SIDE), AND A MINIMUM OF 36" WIDE. ON LONGER OR STEEPER SLOPES, THE BERM SHALL BE WIDER TO ACCOMMODATE THE POTENTIAL ADDITIONAL RUNOFF.
5. FROZEN GROUND, OUTCROPS OF BEDROCK, AND VERY ROOTED FORESTED AREAS PRESENT THE MOST PRACTICAL AND EFFECTIVE LOCATIONS FOR ORGANIC FILTER BERMS. OTHER BMP'S SHOULD BE USED AT LOW POINTS OF CONCENTRATED RUNOFF, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS, AND AT THE BOTTOM OF STEEP PERIMETER SLOPES THAT HAVE A LARGE CONTRIBUTING AREA.
6. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE STRUCTURE.
7. STRUCTURES MAY BE LEFT IN PLACE ONCE THE SITE IS STABILIZED.

ORGANIC FIBER BERM

NOT TO SCALE

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1 WITHOUT APPROPRIATE EROSION CONTROL MEASURES AS SPECIFIED ON THE PLANS (3:1 SLOPES OR FLATTER ARE PREFERRED).
   B. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND FERTILIZER AND LIME MIXED INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. TYPES AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
      AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ.FT.
      NITROGEN(N), 50 LBS. PER ACRE OR 1.1 LBS. PER 1,000 SQ.FT.
      PHOSPHATE(P2O5), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      POTASH(K2O), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      (NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. REFER TO THE 'SEEDING GUIDE' AND 'SEEDING RATES' TABLES ON THIS SHEET FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT, TREFOIL AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT PRIOR TO THEIR INTRODUCTION TO THE SITE.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20th OR FROM AUGUST 10th TO SEPTEMBER 1st.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME FULLY ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, ANNUAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT	2/
	F	FAIR	EXCELLENT	EXCELLENT	2/

GRAVEL PIT, SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

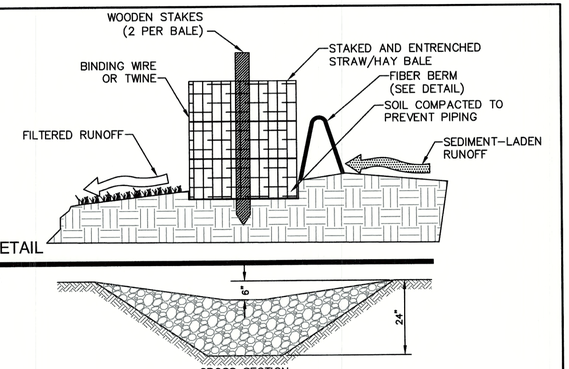
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING GUIDE

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
* C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDS FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.

SEEDING RATES



HAYBALE DETAIL

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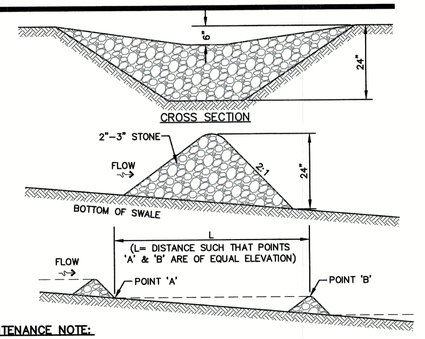

MAINTENANCE NOTE:

1. STONE CHECK DAMS SHOULD BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY NECESSARY REPAIRS SHOULD BE MADE IMMEDIATELY. PARTICULAR ATTENTION SHOULD BE GIVEN TO END RUN AND EROSION AT THE DOWNSTREAM TOE OF THE STRUCTURE. WHEN THE STRUCTURES ARE REMOVED, THE DISTURBED PORTION SHOULD BE BROUGHT TO THE EXISTING CHANNEL GRADE AND THE AREAS PREPARED, SEEDED AND MULCHED. WHILE THIS PRACTICE IS NOT INTENDED TO BE USED PRIMARILY FOR SEDIMENT TRAPPING, SOME SEDIMENT WILL ACCUMULATE BEHIND THE STRUCTURES. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF OF THE ORIGINAL HEIGHT OF THE STRUCTURE.

STONE CHECK DAM

NOT TO SCALE

CONSTRUCTION SEQUENCE

1. PRIOR TO THE START OF ANY ACTIVITY, IT IS THE RESPONSIBILITY OF THE SITE'S SITE DEVELOPER (OR OWNER) TO FILE A NOTICE OF INTENT (NOI) FORM WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) IN ORDER TO GAIN COVERAGE UNDER THE NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. A PRE CONSTRUCTION MEETING IS TO BE HELD WITH ALL DEPARTMENT HEADS PRIOR TO THE START OF CONSTRUCTION.
2. WETLAND BOUNDARIES ARE TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION. AT LEAST A TEMPORARY CULVERT OR ROADBED TO BE IN PLACE PRIOR TO THE START OF CONSTRUCTION.
3. CUT AND REMOVE TREES IN CONSTRUCTION AREA AS REQUIRED OR DIRECTED.
4. INSTALL SILT FENCING, HAY BALES AND CONSTRUCTION ENTRANCES PRIOR TO THE START OF CONSTRUCTION. THESE ARE TO BE MAINTAINED UNTIL THE FINAL PAVEMENT SURFACING AND LANDSCAPING AREAS ARE ESTABLISHED.
5. CLEAR, CUT, GRUB AND DISPOSE OF DEBRIS IN APPROVED FACILITIES. THIS INCLUDES ANY REQUIRED DEMOLITION OF EXISTING STRUCTURES, UTILITIES, ETC.
6. CONSTRUCT AND/OR INSTALL TEMPORARY OR PERMANENT SEDIMENT AND/OR DETENTION BASIN(S) AS REQUIRED. THESE FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING RUN-OFF TO THEM.
7. STRIP LOAM AND PAVEMENT, OR RECLAIM EXISTING PAVEMENT WITHIN LIMITS OF WORK PER THE RECOMMENDATIONS OF THE PROJECT ENGINEER AND STOCKPILE EXCESS MATERIAL. STABILIZE STOCKPILE AS NECESSARY.
8. PERFORM PRELIMINARY SITE GRADING IN ACCORDANCE WITH THE PLANS, INCLUDING THE CONSTRUCTION OF ANY RETAINING WALLS AND SOUND WALLS.
9. PREPARE BUILDING PAD(S) TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
10. INSTALL THE SEWER AND DRAINAGE SYSTEMS FIRST, THEN ANY OTHER UTILITIES IN ACCORDANCE WITH THE PLAN AND DETAILS. ANY CONFLICTS BETWEEN UTILITIES ARE TO BE RESOLVED WITH THE INVOLVEMENT AND APPROVAL OF THE ENGINEER.
11. INSTALL INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED IN ACCORDANCE WITH DETAILS.
12. ALL SWALES AND DRAINAGE STRUCTURES ARE TO BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
13. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINAGE DITCHES, CHECK DAMS, SEDIMENT TRAPS, ETC., TO PREVENT EROSION ON THE SITE AND PREVENT ANY SILTATION OF ABUTTING WATERS AND/OR PROPERTY.
14. PERFORM FINAL FINE GRADING, INCLUDING PLACEMENT OF 'SELECT' SUBGRADE MATERIALS.
15. PAVE ALL PARKING LOTS AND ROADWAYS WITH INITIAL 'BASE COURSE'.
16. PERFORM ALL REMAINING SITE CONSTRUCTION (i.e. BUILDING, CURBING, UTILITY CONNECTIONS, ETC.).
17. LOAM AND SEED ALL DISTURBED AREAS AND INSTALL ANY REQUIRED SEDIMENT AND EROSION CONTROL FACILITIES (i.e. RIP RAP, EROSION CONTROL BLANKETS, ETC.).
18. FINISH PAVING ALL ROADWAYS AND PARKING AREAS WITH 'FINISH' COURSE.
19. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
20. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
21. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
22. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE BEEN 75%-85% ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE. SMOOTH AND RE-VEGETATE ALL DISTURBED AREAS.
23. CLEAN SITE AND ALL DRAINAGE STRUCTURES, PIPES AND SUMPS OF ALL SILT AND DEBRIS.
24. INSTALL ALL PAINTED PAVEMENT MARKINGS AND SIGNAGE PER THE PLANS AND DETAILS.
25. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
26. UPON COMPLETION OF CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ANY RELEVANT PERMITTING AGENCIES THAT THE CONSTRUCTION HAS BEEN FINISHED IN A SATISFACTORY MANNER.

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

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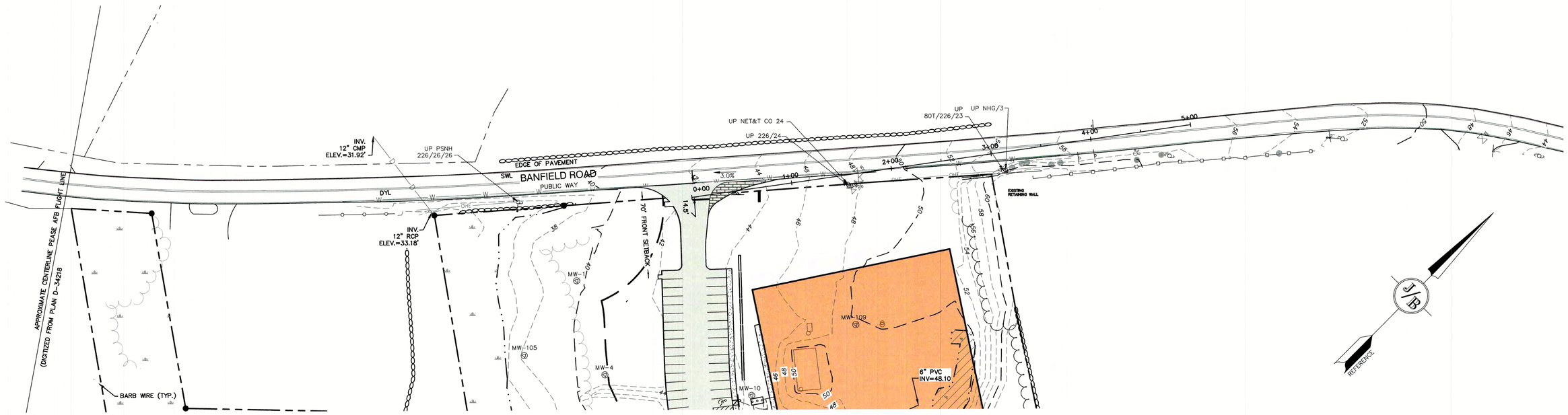
STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9846 LICENSED PROFESSIONAL ENGINEER — 6/23/2021

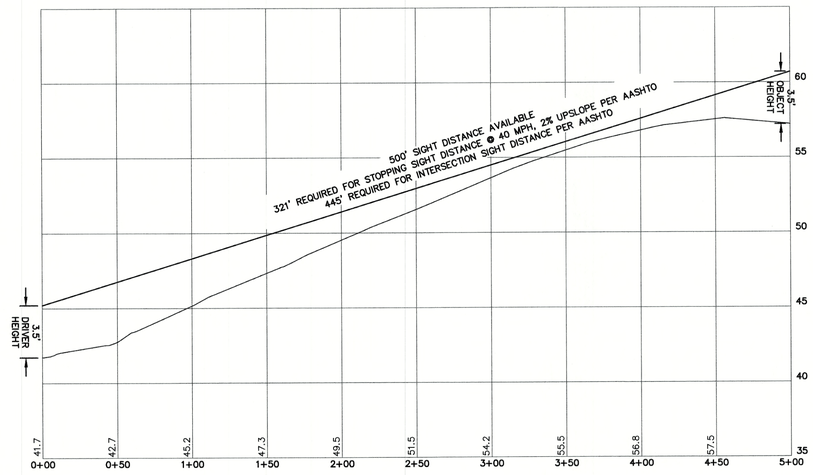
REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EROSION AND SEDIMENT CONTROL DETAILS
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
E1
SHEET 17 OF 24
JBE PROJECT NO. 19190.2





INTERSECTION SIGHT DISTANCE PROFILE

GRAPHIC SCALE
(IN FEET)
1 inch = 50 ft Horiz.
1 inch = 5 ft Vert.

0 50 100
0 5 10

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STATE OF NEW HAMPSHIRE
MICHAEL J. KERVAN No. 9846 LICENSED PROFESSIONAL ENGINEER
6/22/2021

REV.	DATE	REVISION	BY
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9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

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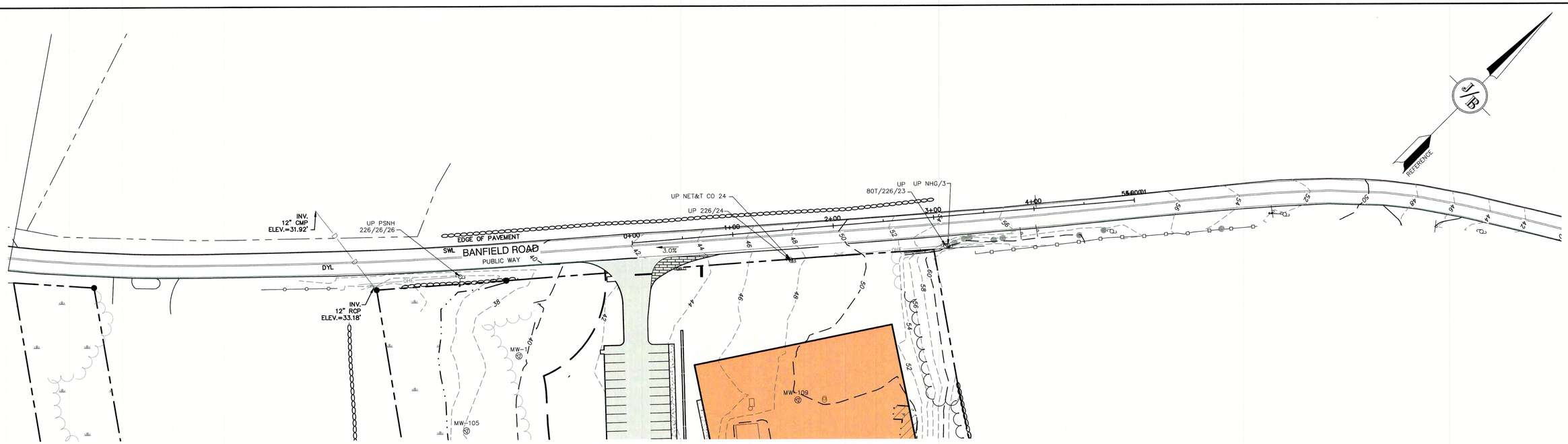
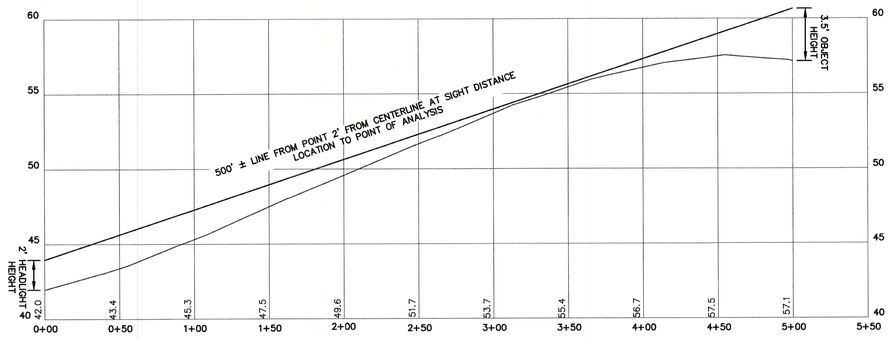
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	HIGHWAY ACCESS PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
H1
SHEET 18 OF 24
JBE PROJECT NO. 19190.2





SIGHT DISTANCE PROFILE ALONG BANFIELD ROAD

GRAPHIC SCALE
(IN FEET)
1 inch = 50 ft Horiz.
1 inch = 5 ft Vert.

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Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

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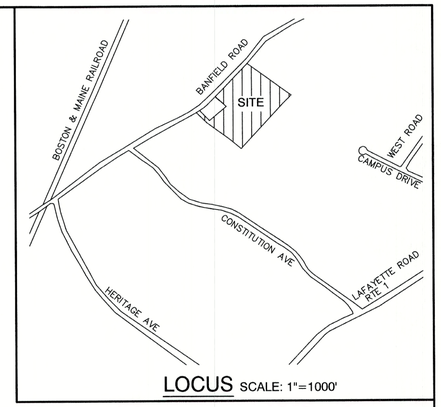
STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9646 LICENSED PROFESSIONAL ENGINEER – 6/23/21

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	HIGHWAY ACCESS PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
H2
SHEET 19 OF 24
JBE PROJECT NO. 19190.2



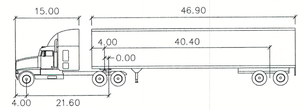
LOCUS SCALE: 1"=1000'

LEGEND

= FRONT TIRES

= REAR TIRES

= VEHICLE BODY



WB-62

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 31.9
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

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Design: JAC	Draft: DJM	Date: 04/21/20
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Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

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STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN No. 9946 LICENSED PROFESSIONAL ENGINEER
6/22/2021

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
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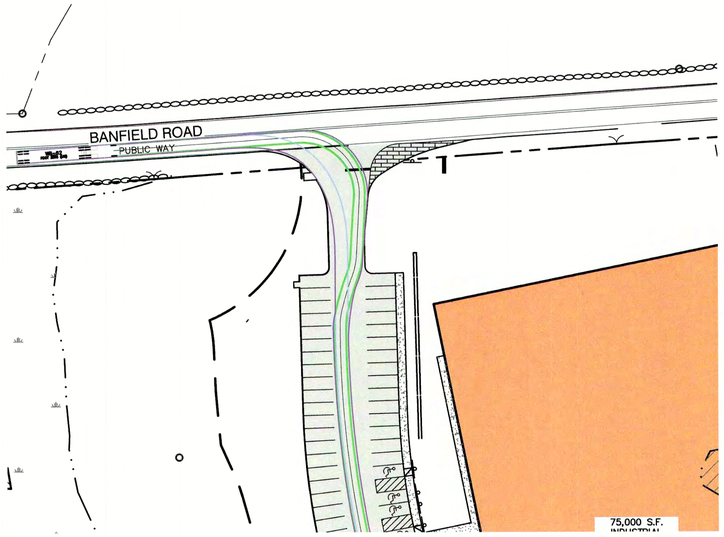
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	OVERVIEW TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

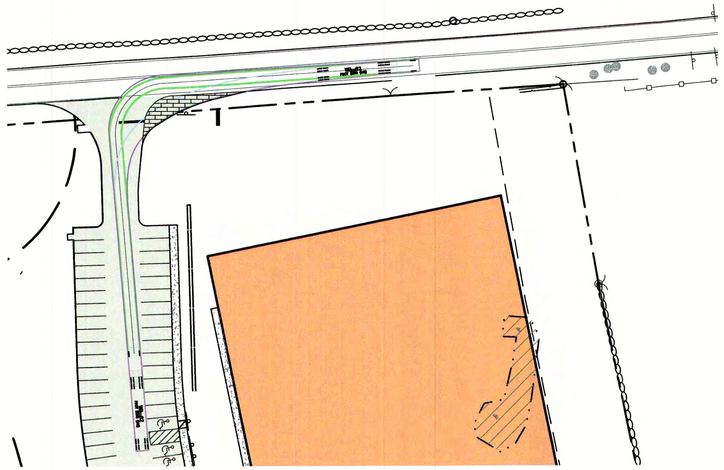
DRAWING No.

T1

SHEET 20 OF 24
JBE PROJECT NO. 19190.2



RIGHT TURN IN PLAN



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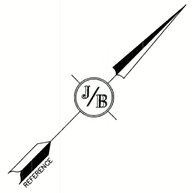
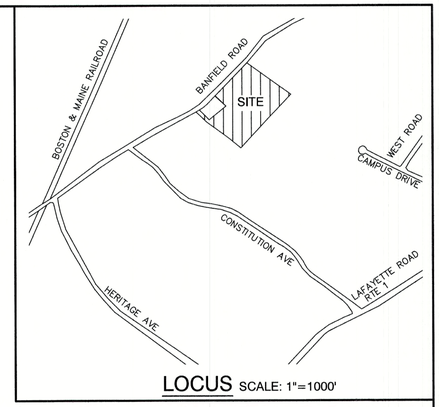




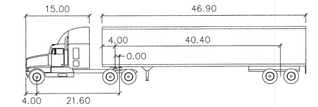
LOCUS SCALE: 1"=1000'

LEGEND

= FRONT TIRES

= REAR TIRES

= VEHICLE BODY



WB-62

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
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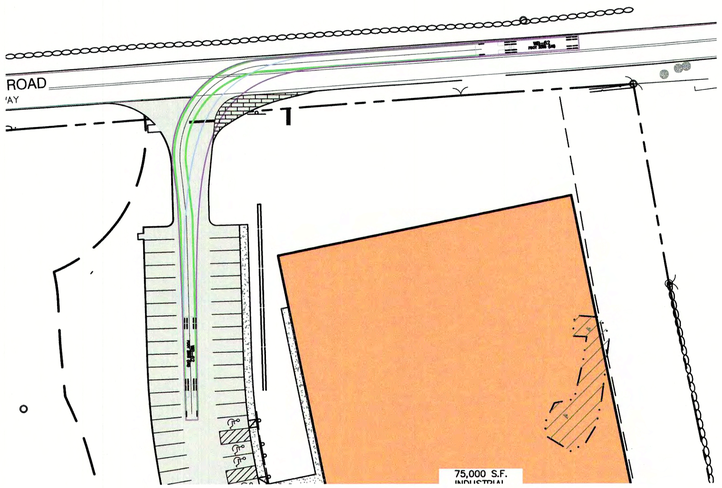
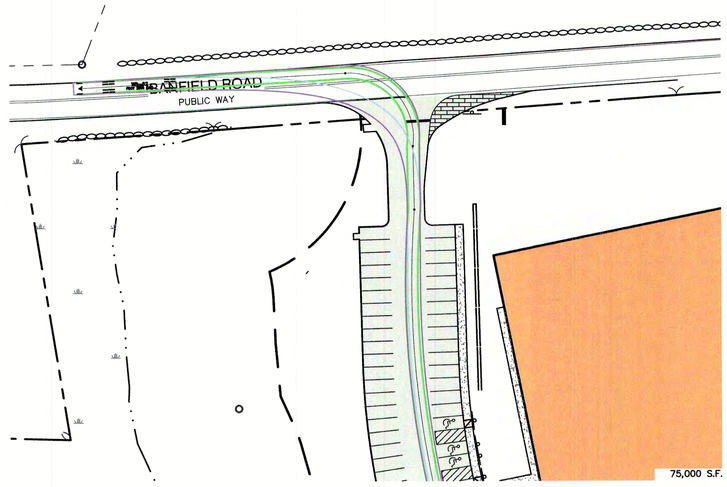


LEFT TURN IN PLAN



LEFT TURN OUT PLAN

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER – 12/22/21

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

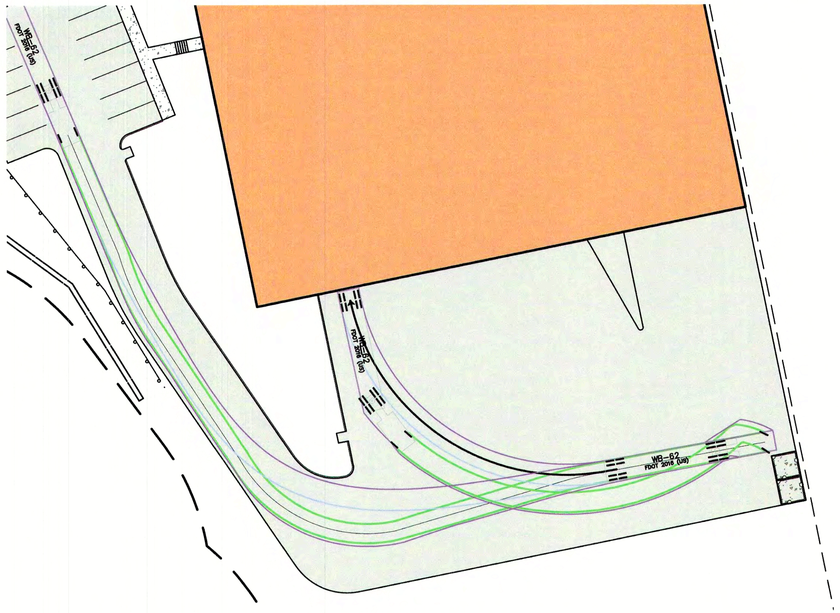
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

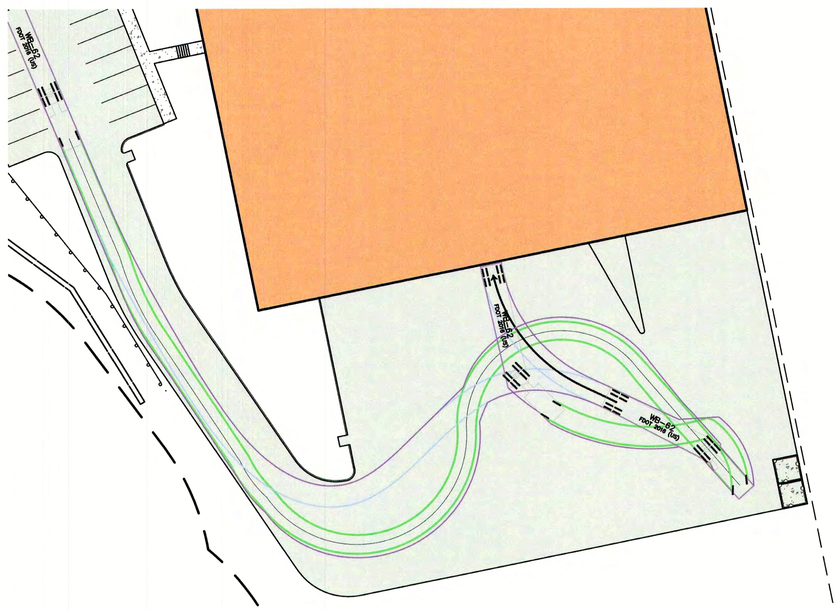
T2

SHEET 21 OF 24
JBE PROJECT NO. 19190.2



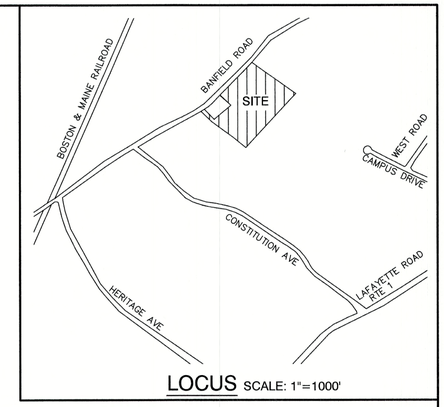
POTENTIAL LOADING AREA #1

POTENTIAL LOADING AREA #2



POTENTIAL LOADING AREA #3

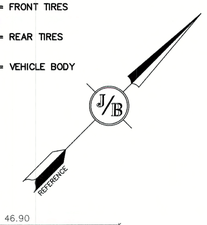
POTENTIAL LOADING AREA #4

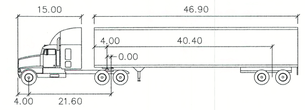


LOCUS SCALE: 1"=1000'

LEGEND

- FRONT TIRES
- REAR TIRES
- VEHICLE BODY





WB-62

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 31.9
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERVAN No. 9846 – LICENSED PROFESSIONAL ENGINEER – 6/23/21

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	REAR TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

T3

SHEET 22 OF 24
JBE PROJECT NO. 19190.2

1-1/2" IRON PIPE
0.8' EXPOSED

BANFIELD ROAD
PUBLIC WAY

DH FND

IR FND
LLS 625

48.87

8.17 20.83

Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

DH FND

75,000 S.F.
INDUSTRIAL
WAREHOUSE &
OFFICE BUILDING
F.F. = 54.0

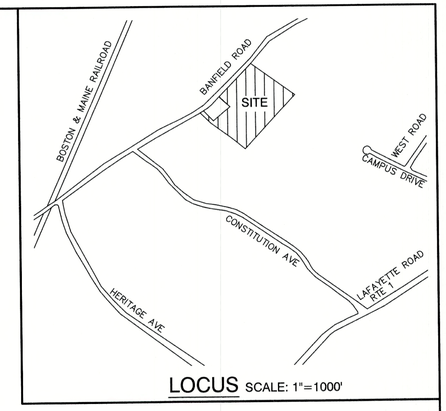
DH FND

REFERENCE

100' WETLAND BUFFER

DH FND

IR FND
LLS 717



LOCUS SCALE: 1"=1000'

LEGEND

= FRONT TIRES

= REAR TIRES

= VEHICLE BODY

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

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STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9646
LICENSED PROFESSIONAL ENGINEER
4/21/20

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
10	5/10/21	ISSUED REVISED PLANS FOR PRELIMINARY PB CONSULTATION	DJM
9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

Designed and Produced in NH
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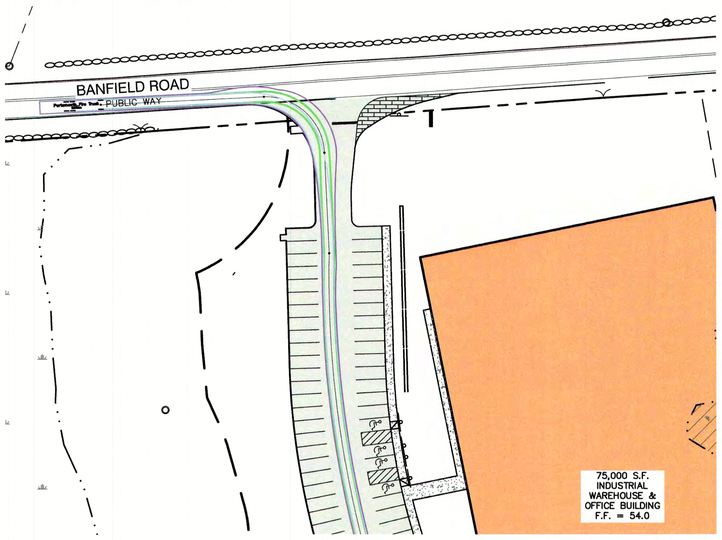
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	OVERVIEW TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

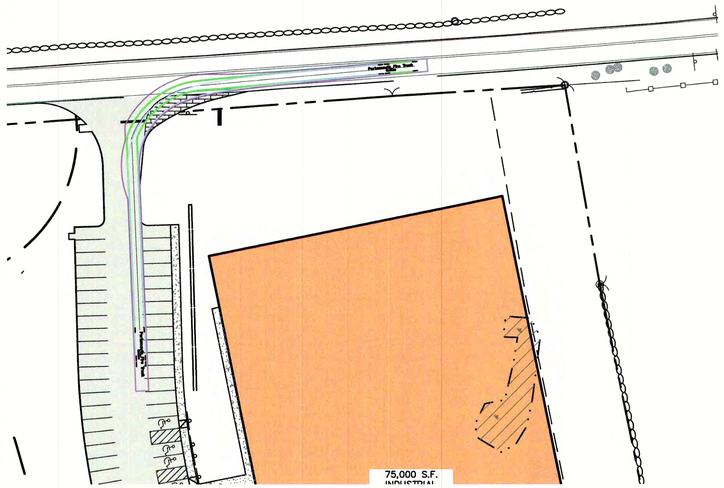
DRAWING No.

T4

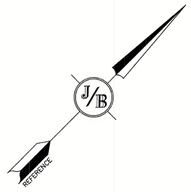
SHEET 23 OF 24
JBE PROJECT NO. 19190.2

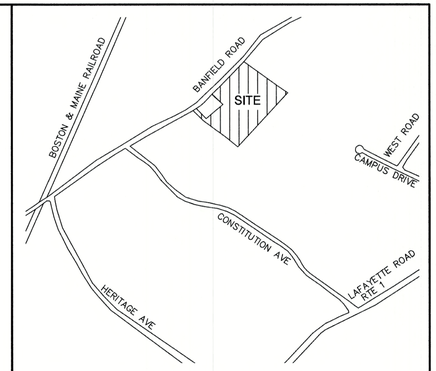


RIGHT TURN IN PLAN



RIGHT TURN OUT PLAN





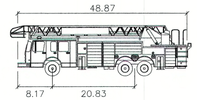
LOCUS SCALE: 1"=1000'

LEGEND

= FRONT TIRES

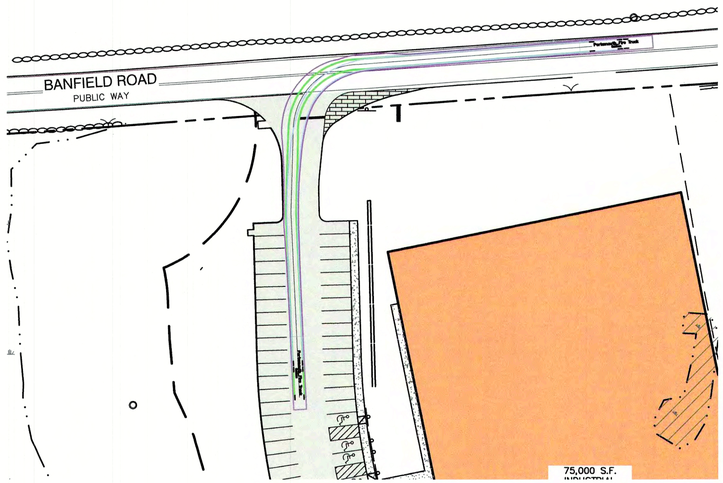
= REAR TIRES

= VEHICLE BODY

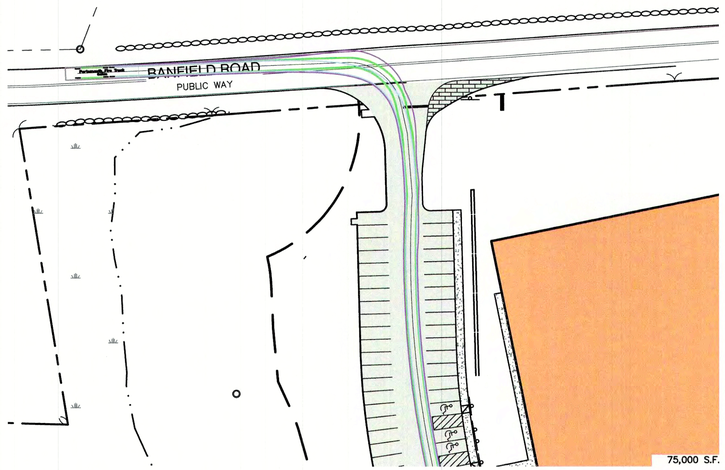


Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7



LEFT TURN IN PLAN



LEFT TURN OUT PLAN

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9848 – LICENSED PROFESSIONAL ENGINEER – 6/23/2021

REV.	DATE	REVISION	BY
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM
11	5/17/21	ISSUED REVISED PLANS TO TAC	DJM
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9	3/9/21	REVISED CONCEPTUAL LAYOUT	DJM

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85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

T5

SHEET 24 OF 24
JBE PROJECT NO. 19190.2

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

June 23, 2021

TFM Project No: 47388.11

Juliet T. H. Walker, AICP
Planning Director
Planning Department, City Hall
1 Junkins Avenue
Portsmouth, NH 03801

Re: Site Plan Review for Peverly Hill Road Condominiums, Tax Map 242, Lot 4

Dear: Juliette,

On behalf of our client, Green & Company, we are submitting the following plans and materials for review by the Planning Board. Included with this letter are the following materials:

- Letter of Authorization
- Abutters List
- Site Plan Check List
- Subdivision Check List
- Waiver Request
- Traffic Memorandum (Traffic Evaluation)
- Traffic Memorandum (Traffic Calming)
- Traffic Peer Review
- Sewer Calculations
- Architectural Housing Plans
- Drainage Report
- Set of the "Peverly Hill Road Condominiums", Peverly Hill Road, Portsmouth, NH, Tax Map 242, Lot 4, Dated April 19, 2021.

This proposal is for an Open Space Planned Unit Development Condominium Site Plan, consisting of 56 single-family dwelling units and 2,950-ft of public roadway. Associated improvements include underground utility installation, (2) recreational pocket parks, a public pike path, landscaping, and open space.

TFMoran, Inc.
48 Constitution Drive, Bedford, NH 03110
03801
T(603) 472-4488 www.tfmoran.com

TFMoran, Inc. Seacoast Division
170 Commerce Way–Suite 102, Portsmouth, NH
T(603) 431-2222

This project has had several reviews and/or meeting with City Staff, TAC and the Planning Board. A summary of our meetings to date, in order, is listed below.

- August 20, 2020 - Preliminary meeting with the Planning Board
- September 3, 2020 - Meeting with Mark Newport of Portsmouth Police Department
- September 4, 2020 - Meeting with Patrick Howe of Portsmouth Fire Department
- September 17, 2020 - Preliminary Conceptual Consultation with Planning Board
- October 13, 2020 - TAC Work Session
- October 30, 2020 - Meeting with Planning Department Staff
- December 11, 2020 - Michael Cumo review of Wetland Delineation
- December 21, 2020 - Meeting with Planning Department Staff
- February 9, 2021 - TAC Work Session
- May 4, 2021 - TAC Meeting
- May 12, 2021 - Meeting with Planning Department Staff
- July 6, 2021 – TAC Meeting (Pending)

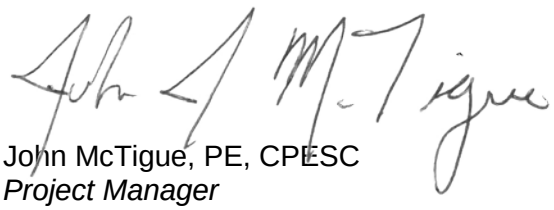
Based comments from the TAC and Planning staff during those meetings we have revised the plans as follows:

- We removed the hammer head drive and limited the development to the smaller area abutting Peverly Drive.
- Reduced paved width of loop road from 26’ to 22.’
- Created an offset intersection at the loop road to prevent a long straight thru roadway.
- Changed 5’ wide asphalt sidewalk to 5 1/2’ wide concrete.
- Increased the 2’ wide grass strip between roadway and sidewalk to 4 ½’.
- Added horizontal curves to the loop road to prevent long straight sections.
- Added a raised crosswalk at the bike path entrance.
- Provided a 10’ wide equipment access (15’ wide easement) to drainage BMP’s.
- Added pavement markings to delineate bike route to bike path.
- Revised street lighting to comply with City preferences.
- Added all utilities to roadway profiles.
- Added underdrain at bottom of slope adjacent to cemetery.

Should we not complete the review process with TAC on the July 6th, 2021 meeting, we intend to postpone this application.

We look forward to discussing this project with you and the rest of the Planning Board at the July 15th, 2021 meeting.

Sincerely,
MSC a division of TFMoran, Inc.



John McTigue, PE, CPESC
Project Manager

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification. STOKEL SB & NA TRUST. STOKEL PHILIP J

Name of Owner/Applicant: Green & Company Building & Development Corp. Date Submitted: 6/23/21

Phone Number: 603-964-7572 E-mail: mgreen@greenandcompany.com

Site Address: 83 Peverly Hill Road Map: 242 Lot: 4

Zoning District: Single Residence A (SRA) & B (SRB) Lot area: 4,604,509 sq. ft.

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
✓	Fully executed and signed Application form. **(2.5.2.3)**	Submitted online and (1) copy to City	N/A
✓	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF) on compact disc, DVD or flash drive. **(2.5.2.8)**	Submitted online	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Statement that lists and describes "green" building components and systems. **(2.5.3.1A)**	N/A	☐
✓	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1B)**	Submitted online and (1) copy to City	N/A
✓	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1C)**	See sheet S-01	N/A
✓	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1D)**	See sheet C-00	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1E)**	See sheet S-01	N/A
✔	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1F)**	See sheet C-00	N/A
✔	List of reference plans. **(2.5.3.1G)**	See sheet S-01	N/A
✔	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1H)**	See sheet C-00/C-01	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director. Submittals shall be a minimum of 11 inches by 17 inches as specified by Planning Dept. staff. **(2.5.4.1A)**	Required on all plan sheets	N/A
✔	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
✔	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	Required on all plan sheets	N/A
✔	Plans shall be drawn to scale. **(2.5.4.1D)**	Required on all plan sheets	N/A
✔	Plans shall be prepared and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
✔	Wetlands shall be delineated by a NH certified wetlands scientist. **(2.5.4.1E)**	S-01	N/A
✔	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	Required on all plan sheets	N/A
✔	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	Required on all plan sheets	N/A
✔	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	Source and date of data displayed on the plan. **(2.5.4.2D)**	Required on all plan sheets	N/A
✔	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	Required on all plan sheets See sheet C-03	N/A
✔	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	See sheet C-03	N/A
✔	Plan sheets showing landscaping and screening shall also include the following additional notes: a. "The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials." b. "All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair." c. "The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director." **(2.13.4)**	See sheet C-45	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
	1. Existing Conditions: (2.5.4.3A)		
✔	a. Surveyed plan of site showing existing natural and built features;	S-01	☐
✔	b. Zoning boundaries;	S-01	☐
✔	c. Dimensional Regulations;	S-05	☐
✔	d. Wetland delineation, wetland function and value assessment;	S-01	☐
✔	e. SFHA, 100-year flood elevation line and BFE data.	S-01	☐
	2. Buildings and Structures: (2.5.4.3B)		
✔	a. Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;	Attached	☐
✔	b. Elevations: Height, massing, placement, materials, lighting, façade treatments;	Attached	☐
✔	c. Total Floor Area;	Attached	☐
✔	d. Number of Usable Floors;	Attached	☐
✔	e. Gross floor area by floor and use.	Attached	☐
	3. Access and Circulation: (2.5.4.3C)		
✔	a. Location/width of access ways within site;	C-04 - C-12	☐
✔	b. Location of curbing, right of ways, edge of pavement and sidewalks;	C-04 - C-11	☐
✔	c. Location, type, size and design of traffic signing (pavement markings);	C-04 - C-11	☐
✔	d. Names/layout of existing abutting streets;	S-01	☐
☐	e. Driveway curb cuts for abutting prop. and public roads;	C-02 & C-04	☐
✔	f. If subdivision; Names of all roads, right of way lines and easements noted;	S-03	☐
☐	g. AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	N/A (Fire truck turning provided)	✔
	4. Parking and Loading: (2.5.4.3D)		
✔	a. Location of off street parking/loading areas, landscaped areas/buffers;	C-04 - C-11	☐
✔	b. Parking Calculations (# required and the # provided).	C-03	☐
	5. Water Infrastructure: (2.5.4.3E)		
✔	a. Size, type and location of water mains, shut-offs, hydrants & Engineering data;	C-27 - C-33	☐
☐	b. Location of wells and monitoring wells (include protective radii).	N/A	☐
	6. Sewer Infrastructure: (2.5.4.3F)		
✔	a. Size, type and location of sanitary sewage facilities & Engineering data.	C-12 - C-15 & C-27 - C-33	☐
	7. Utilities: (2.5.4.3G)		
✔	a. The size, type and location of all above & below ground utilities;	C-12 - C-15 & C-27 - C-33	☐
✔	b. Size type and location of generator pads, transformers and other fixtures.	C-27 - C-33	☐

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	**8. Solid Waste Facilities: (2.5.4.3H)**		
☑	a. The size, type and location of solid waste facilities.	C-12 - C-15 & C-27 - C-33	☐
	9. Storm water Management: (2.5.4.3I)		
☑	a. The location, elevation and layout of all storm-water drainage.	C-17 - C-25	☐
	10. Outdoor Lighting: (2.5.4.3J)		
☑	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.	C-56 - C-63	☐
☑	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	C-56 - C-63	☐
	12. Landscaping: (2.5.4.3K)		
☑	a. Identify all undisturbed area, existing vegetation and that which is to be retained;	C-46 - C-53	☐
☐	**b.** Location of any irrigation system and water source.	TBD	☐
	13. Contours and Elevation: (2.5.4.3L)		
☑	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.	C-17 - C-25	☐
	14. Open Space: (2.5.4.3M)		
☑	a. Type, extent and location of all existing/proposed open space.	S-05	☐
☑	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	S-01	☐
☑	**16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)**	C-4 - C-11 (Road shoulders)	☐
☐	**17. Character/Civic District (All following information shall be included): (2.5.4.3Q)**	N/A	☐
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);		
	b. Applicable Special Requirements (10.5A21.30);		
	c. Proposed building form/type (10.5A43);		
	d. Proposed community space (10.5A46).		

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	Traffic Impact Study or Trip Generation Report, as required. (*Four (4) hardcopies of the full study/report and Six (6) summaries to be submitted with the Site Plan Application*) **(3.2.1-2)**	Traffic Memo	☐
✔	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	Stormwater Management Plan/Report	☐
✔	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	In wellhead protection area. To be provided in final drainage report.	☐
✔	Indicate where measures to minimize impervious surfaces have been implemented. **(7.4.3)**	Narrowed roadways	☐
✔	Calculation of the maximum effective impervious surface as a percentage of the site. **(7.4.3.2)**	C-03	☐
☐	Stormwater Management and Erosion Control Plan. (*Four (4) hardcopies of the full plan/report and Six (6) summaries to be submitted with the Site Plan Application*) **(7.4.4.1)**	C-17 - C-25 & C-35 - C-44. Final report to be provided in Planning Board submittal.	☐

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	All local approvals, permits, easements and licenses required, including but not limited to: a. Waivers; b. Driveway permits; c. Special exceptions; d. Variances granted; e. Easements; f. Licenses. **(2.5.3.2A)**	C-00	☐
✔	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: a. Calculations relating to stormwater runoff; b. Information on composition and quantity of water demand and wastewater generated; c. Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; d. Estimates of traffic generation and counts pre- and post-construction; e. Estimates of noise generation; f. A Stormwater Management and Erosion Control Plan; g. Endangered species and archaeological / historical studies; h. Wetland and water body (coastal and inland) delineations; i. Environmental impact studies. **(2.5.3.2B)**	a. See Stormwater Report b. See Sewer Report c. N/A d. Traffic Memo e. N/A f. C-17 to C-25 & C-35 to C-43 g. NHB21-0943 h. S-01 i. N/A	☐

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
✔	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	Utility Will Serve Letters Submitted as Separate Attachments.	☐
✔	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	C-00	☐

Applicant's Signature: _____ **Date:** 01/23/21

City of Portsmouth, New Hampshire

Subdivision Application Checklist

This subdivision application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all subdivision review requirements. Please refer to the Subdivision review regulations for full details.

Applicant Responsibilities (Section III.C): Applicable fees are due upon application submittal along with required number of copies of the Preliminary or final plat and supporting documents and studies. Please consult with Planning staff for submittal requirements.

Owner: STOKEL SB & NA TRUST. STOKEL PHILIP J Date Submitted: 6/23/2021

Applicant: Green & Company Building & Development Corp.

Phone Number: 603-964-7572 E-mail: mgreen@greenandcompany.com

Site Address 1: 83 Peverly Hill Road Map: 242 Lot: 4

Site Address 2: _____ Map: _____ Lot: 4

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
✓	Completed Application form. **(III.C.2-3)**	Submitted online and (1) copy to City	N/A
✓	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF) on compact disc, DVD or flash drive. **(III.C.4)**	Submitted online and (1) copy to City	N/A

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
✓	Name and address of record owner, any option holders, descriptive name of subdivision, engineer and/or surveyor or name of person who prepared the plat. **(Section IV.1/V.1)**	C-00	☑ Preliminary Plat ☑ Final Plat	N/A

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
✓	**Preliminary Plat** Names and addresses of all adjoining property owners. **(Section IV.2)** **Final Plat** Names and addresses of all abutting property owners, locations of buildings within one hundred (100) feet of the parcel, and any new house numbers within the subdivision. **(Section V.2)**	S-01 - S-05	☑ Preliminary Plat ☑ Final Plat	N/A
✓	North point, date, and bar scale. **(Section IV.3/V3)**	Required on all Plan Sheets	☑ Preliminary Plat ☑ Final Plat	N/A
✓	Zoning classification and minimum yard dimensions required. **(Section IV.4/V.4)**	S-01 - S-05	☑ Preliminary Plat ☑ Final Plat	N/A
✓	**Preliminary Plat** Scale (not to be smaller than one hundred (100) feet = 1 inch) and location map (at a scale of 1" = 1000'). **(Section IV.5)** **Final Plat** Scale (not to be smaller than 1"=100'), Location map (at a scale of 1"=1,000') showing the property being subdivided and its relation to the surrounding area within a radius of 2,000 feet. Said location map shall delineate all streets and other major physical features that my either affect or be affected by the proposed development. **(Section V.5)**	S-01 - S-05	☑ Preliminary Plat ☑ Final Plat	N/A
✓	Location and approximate dimensions of all existing and proposed property lines including the entire area proposed to be subdivided, the areas of proposed lots, and any adjacent parcels in the same ownership. **(Section IV.6)**	S-01 - S-05	☑ Preliminary Plat ☑ Final Plat	
✓	Dimensions and areas of all lots and any and all property to be dedicated or reserved for schools, parks, playgrounds, or other public purpose. Dimensions shall include radii and length of all arcs and calculated bearing for all straight lines. **(Section V.6/ IV.7)**	S-01 - S-05	☑ Preliminary Plat ☑ Final Plat	N/A
✓	Location, names, and present widths of all adjacent streets, with a designation as to whether public or private and approximate location of existing utilities to be used. Curbs and sidewalks shall be shown. **(Section IV.8/V.7)**	S-01 - S-05	☑ Preliminary Plat ☑ Final Plat	

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
✓	Location of significant physical features, including bodies of water, watercourses, wetlands, railroads, important vegetation, stone walls and soils types that my influence the design of the subdivision. **(Section IV.9/V.8)**	S-01 - S05	☑ Preliminary Plat ☑ Final Plat	
	Preliminary Plat Proposed locations, widths and other dimensions of all new streets and utilities, including water mains, storm and sanitary sewer mains, catch basins and culverts, street lights, fire hydrants, sewerage pump stations, etc. **(Section IV.10)** **Final Plat** Proposed locations and profiles of all proposed streets and utilities, including water mains, storm and sanitary sewer mains, catchbasins and culverts, together with typical cross sections. Profiles shall be drawn to a horizontal scale of 1"=50' and a vertical scale of 1"=5', showing existing centerline grade, existing left and right sideline grades, and proposed centerline grade. **(Section V.9)**	C-03 - C-33	☑ Preliminary Plat ☑ Final Plat	
✓	When required by the Board, the plat shall be accompanied by profiles of proposed street grades, including extensions for a reasonable distance beyond the subject land; also grades and sizes of proposed utilities. **(Section IV.10)**	C-12 - C-15	☑ Preliminary Plat ☑ Final Plat	
✓	Base flood elevation (BFE) for subdivisions involving greater than five (5) acres or fifty (50) lots. **(Section IV.11)**	S-05, Note 3	☑ Preliminary Plat ☑ Final Plat	
✓	For subdivisions of five (5) lots or more, or at the discretion of the Board otherwise, the preliminary plat shall show contours at intervals no greater than two (2) feet. Contours shall be shown in dotted lines for existing natural surface and in solid lines for proposed final grade, together with the final grade elevations shown in figures at all lot corners. If existing grades are not to be changed, then the contours in these areas shall be solid lines. **(Section IV.12/ V.12)**	S-01 (existing) C-17 - C-25 (proposed)	☑ Preliminary Plat ☑ Final Plat	

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☑	Dates and permit numbers of all necessary permits from governmental agencies from which approval is required by Federal or State law. **(Section V.10)**	C-00	☐ Preliminary Plat ☑ Final Plat	
☐	For subdivisions involving greater than five (5) acres or fifty (50) lots, the final plat shall show hazard zones and shall include elevation data for flood hazard zones. **(Section V.11)**	N/A (Flood Zone X)	☐ Preliminary Plat ☑ Final Plat	
☑	Location of all permanent monuments. **(Section V.12)**	S-03	☐ Preliminary Plat ☑ Final Plat	

General Requirements[1]			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	**1. Basic Requirements: (VI.1)**	All sheets	
☑	a. Conformity to Official Plan or Map	N/A	
☐	b. Hazards	S-01	
☑	c. Relation to Topography	S-01	
☑	d. Planned Unit Development		
☐	**2. Lots: (VI.2)**	S-05	
☑	a. Lot Arrangement	S-05	
☑	b. Lot sizes	S-05	
☑	c. Commercial and Industrial Lots		
☐	**3. Streets: (VI.3)**	a. S-05	
☑	a. Relation to adjoining Street System	b. S-05	
☑	b. Street Rights-of-Way	c. S-05	
☑	c. Access	d. S-05	
☐	d. Parallel Service Roads	e. C-12 - C-15	
☐	e. Street Intersection Angles	f. N/A	
☐	f. Merging Streets	g. C-12 - C-15	
☑	g. Street Deflections and Vertical Alignment	h. N/A	
☐	h. Marginal Access Streets	i. N/A	
☐	i. Cul-de-Sacs	j. C-12 - C-15	
☑	j. Rounding Street Corners	k. TBD	
☐	k. Street Name Signs	l. TBD	
☐	l. Street Names	m. N/A	
☐	m. Block Lengths	n. N/A	
☐	n. Block Widths	o. C-12-C-15 & C-17-C-24	
☑	o. Grade of Streets	p. C-04 - C-11	
☑	p. Grass Strips		
☑	**4. Curbing: (VI.4)**	C-04 - C-11	
☑	**5. Driveways: (VI.5)**	C-04 - C-11	
☑	**6. Drainage Improvements: (VI.6)**	C-17 - C-25	
☑	**7. Municipal Water Service: (VI.7)**	C-27 - C-33	
☑	**8. Municipal Sewer Service: (VI.8)**	C-12- C-15 & C-27 - C-33	
☑	**9. Installation of Utilities: (VI.9)**	C-27 - C-33	
☐	a. All Districts		
☐	b. Indicator Tape		
☐	**10. On-Site Water Supply: (VI.10)**	C-12- C-15 & C-27 - C-33	
☐	**11. On-Site Sewage Disposal Systems: (VI.11)**	C-12- C-15 & C-27 - C-33	
☐	**12. Open Space: (VI.12)**	a. S-05	
☑	a. Natural Features	b. C-46 - C-54	
☑	b. Buffer Strips	c. S-05	
☑	c. Parks	d. C-46 - C-54	
☑	d. Tree Planting		
☐	**13. Flood Hazard Areas: (VI.13)**	N/A	
☐	a. Permits		
☐	b. Minimization of Flood Damage		
☐	c. Elevation and Flood-Proofing Records		
☐	d. Alteration of Watercourses		
☑	**14. Erosion and Sedimentation Control (VI.14)**	C-42 - C-51	

☑	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
☐ ☑ ☑	**15. Easements (VI.15)** a. Utilities b. Drainage	S-01 - S-05	
☑	**16. Monuments: (VI.16)**	S-01 - S-05	
☑	**17. Benchmarks: (VI.17)**	S-01 - S-05	
☑	**18. House Numbers (VI.18)**	S-05 (Final numbers TBD)	

Design Standards			
	Required Items for Submittal	**Indicate compliance and/or provide explanation as to alternative design**	**Waiver Requested**
☑	**1. Streets have been designed according to the design standards required under Section (VII.1).** a. Clearing b. Excavation c. Rough Grade and Preparation of Sub-Grade d. Base Course e. Street Paving f. Side Slopes g. Approval Specifications h. Curbing i. Sidewalks j. Inspection and Methods	Yes	
☑	**2. Storm water Sewers and Other Drainage Appurtenances have been designed according to the design standards required under Section (VII.2).** a. Design b. Standards of Construction	Yes	
☑	**3. Sanitary Sewers have been designed according to the design standards required under Section (VII.3).** a. Design b. Lift Stations c. Materials d. Construction Standards	Yes	
☑	**4. Water Mains and Fire Hydrants have been designed according to the design standards required under Section (VII.4).** a. Connections to Lots b. Design and Construction c. Materials d. Notification Prior to Construction	Yes	

Applicant's/Representative's Signature: _____ **Date:** 6/23/2021

[1] See City of Portsmouth, NH Subdivision Rules and Regulations for details.

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

June 23, 2021

Mr. Dexter Legg, Chair
Portsmouth Planning Board
1 Junkins Avenue
Portsmouth, NH 03801

RE: Waiver Requests for Condominium Development, Parson Woods Condominium LLC, Tax Map 242, Lot 4

Dear Chairman Legg:

On behalf of our client, Green and Company, we respectfully request the following waivers as part of the submittal of the Village at Banfield Woods Condominium Development:

Waiver Request: for Subdivision Rules and Regulations, Residential Street Minimum Standards (page 36), requiring 32' of pavement width.

Explanation: The pavement width of 26' at the entrance of the subdivision and 22' within the inner loop, is provided pursuant to City Staff recommendations. This recommendation is based on "City of Portsmouth Complete Street Design Guidelines," dated June 2017. Page 8 of this document suggests a pavement width of 20' for a neighborhood slow street, which best describes the street for this Planned Unit Development. A width of 26' is provided to meet fire code standards for roads over 750' long. Two (2) access points are provided for the looped section of road, where the width is reduced to 22'.

Waiver Request: For Subdivision Rules and Regulations Section VI(3)(b), "The minimum right-of-way for main thoroughfares shall be as shown on the City's Master Plan or Official Map and shall, when not indicated on such Master Plan or Official Map, be not less than sixty (60) feet; for residential streets, fifty (50) feet."

Explanation: The ROW width of 40' was provided pursuant to City Staff recommendations. This recommendation is based on the narrower road width and by the applicant's desire to avoid impacting the remainder of the property. This is in alignment with a Planned Unit Development.

Waiver Request: For Site Plan Review Regulations Section 2.5.4.3(c), "Use current AASHTO truck turning templates descriptions with the minimum vehicle allowed being a WB-50, unless otherwise approved by the TAC."

Explanation: The proposed development is residential, and the largest vehicle anticipated to travel the roadway is a Portsmouth Fire Truck (H3635). This vehicle template was applied in the truck turning analysis.

Parson Woods Condominium LLC Submittal
83 Peverly Hill Road – Tax Map 242 Lot 4
Project #47388.11

June 23, 2021

We look forward to your review of these waiver requests at the next Planning Board hearing.

Respectfully,
TFMoran, Inc.

Jack McTigue, PE, CPESC
Project Manager

TFM Since 1968

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Abutters List

Green & Company
83 Peverly Hill Rd, Portsmouth, NH
April 19, 2021
47388-11

	Assessors Map		Abutter Name	Mailing Address
	Map	Lot		
1	LOCUS 242	4	S B & N A STOKEL TRUST & PHILIP J. STOKEL	83 PEVERLY HILL ROAD PORTSMOUTH, NH 03801
2	165	14	BOSTON & MAINE CORPORATION	IRON HORSE PARK HIGH STREET NORTH BILLERICA, MA 01862
3	232	87	SUSAN L. DIXON	68 WIBIRD STREET PORTSMOUTH, NH 03801
4	232	88	NATHAN M. & SHERRI M. TARLETON	74 LEAVITT AVENUE PORTSMOUTH, NH 03801
5	232	92	DYANNA L. INNES	78 PEVERLY HILL ROAD PORTSMOUTH, NH 03801
6	232	93	KENNETH T. BLACK	82 PEVERLY HILL ROAD PORTSMOUTH, NH 03801
7	232	95	CITY OF PORTSMOUTH DPW	PO BOX 628 PORTSMOUTH, NH 03802
8	242	1	STATE OF NEW HAMPSHIRE FISH & GAME DEPT	11 HAZEN DRIVE CONCORD, NH 03301
9	242	3	NEW HOPE BAPTIST CHURCH	PO BOX 1473 PORTSMOUTH, NH 03802
10	242	5	ROMAN CATHOLIC BISHOP OF MANCHESTER CHURCH OF IMMAC	153 ASH STREET MANCHESTER, NH 03104
11	243	50	ASRT, LLC	266 MIDDLE STREET PORTSMOUTH, NH 03801
12	243	51	AJEI REAL ESTATE LLC	163 SPINNEY ROAD PORTSMOUTH, NH 03801
13	243	52	CITY OF PORTSMOUTH DPW	PO BOX 628 PORTSMOUTH, NH 03802
14	255	5	THOMAS E. & MARYBETH B. REIS AND JAMES B. & MEEGAN C. REIS	305 PEVERLY HILL ROAD PORTSMOUTH, NH 03801
15	255	8	MERRIMAC VALLEY HOMES, INC.	1794 BRIDGE STREET, UNIT 6 DRACUT, MA 01826
16	256	1	SWIFT WATER GIRL SCOUT COUNCIL	ONE COMMERCE DRIVE BEDFORD, NH 03110
17	265	2	MARK H. ODIORNE	520 BANFIELD ROAD PORTSMOUTH, NH 03801
18	265	2A	DAVID W. ECKER	875 BANFIELD ROAD PORTSMOUTH, NH 03801
19	265	2B	LEE ANN & RICHARD M. RILEY	470 BANFIELD ROAD PORTSMOUTH, NH 03801
20	265	2C	APOSTOLIC CHURCH OF J CHRIST	500 BANFIELD ROAD PORTSMOUTH, NH 03801
21	265	2D	CITY OF PORTSMOUTH DPW	PO BOX 628 PORTSMOUTH, NH 03802
22	265	2E	CITY OF PORTSMOUTH	1 JUNKINS AVENUE PORTSMOUTH, NH 03801

Civil Engineers / Surveyor	TFMoran, Inc.	170 Commerce Way - Suite 102 Portsmouth, NH 03801
Environmental / Wetlands Scientist	Gove Environmental Services, Inc.	8 Continental Drive, Unit H Exeter, NH 03833

DECLARATION OF CONDOMINIUM
OF
PEVERLY WOODS CONDOMINIUM, PORTSMOUTH, NEW HAMPSHIRE

_____, a duly organized New Hampshire limited liability company with an address of 11 Lafayette Road, North Hampton, New Hampshire 03862, and its successors or assigns, ("Declarant"). The covenants and restrictions provided for herein may also be enforced by Green & Co. Building & Development Corp., a Massachusetts corporation with a place of business at 11 Lafayette Road, North Hampton, New Hampshire 03862 ("Green & Company"), who is the builder of the Development.

ARTICLE 1
SUBMISSION OF PROPERTY

The Declarant hereby submits land located in the City of Portsmouth, Rockingham County, New Hampshire, consisting of approximately 107 acres, more or less, situated on Peverly Hill Road, Portsmouth, New Hampshire, and more particularly described in **Exhibit A** hereto ("Land"), together with the buildings and other improvements heretofore or hereafter constructed thereon, and all easements, rights and appurtenances thereto described in said **Exhibit A**, or as shown on plans of said land, all of which are owned by the Declarant, to the provisions of the Condominium Act, in order to create a plan of condominium ownership in such property containing up to fifty six (56) units, as shown on the following plan; See plan of land entitled, "Condominium Site Plan," project for "Peverly Hill Road, Portsmouth, NH 03801" prepared by **TFM Engineering, Inc., dated _____ with revision # _____ dated and recorded in the Rockingham County Registry of Deeds as Plan #D-_____.**

ARTICLE 2
DEFINITIONS

As provided in Section 12, I of the Condominium Act capitalized terms not otherwise defined in this Declaration or in the Bylaws attached hereto as Exhibit B, as amended from time to time, shall have the meanings specified in Section 3 of the Condominium Act. The following terms are expressly defined herein:

(a) "Building" means any building constructed on a Unit or on the Limited Common Area assigned to a Unit as permitted herein, which Buildings shall be owned by the Unit Owner of the Unit.

(b) "Bylaws" mean the Bylaws provided for the self-government of the Condominium attached hereto, as amended from time to time.

(c) "Common Area" means all parts of the Property other than the Units, as more fully set forth in Article 5 of this Declaration and in the Site Plans, and includes the Limited Common Area.

(d) "Condominium" means "Peverly Woods Condominium", the condominium established by this Declaration.

(e) "Condominium Act" means Chapter 356-B of the New Hampshire Revised Statutes Annotated, as amended.

(f) "Condominium Plan" or "Plans" or "Plat" means the plan entitled Condominium Site Plan," project for, "Peverly Woods, Portsmouth, NH 03811," prepared by **TFM Engineering, Inc., dated _____ with revision # _____ dated and recorded in the Rockingham County Registry of Deeds as Plan #D-_____,** and any revisions thereof, recorded in the Registry simultaneously herewith or recorded subsequently pursuant to the Condominium Act, and any updated or amended site or floor plans.

(g) "Limited Common Area" means all those certain portions of the Common Area which are assigned to each Unit, 15 feet on either side of each unit, 30 feet behind each unit and 20 feet in front of each unit, or to the edge of pavement, whichever is less. Such Limited Common Area shall be restricted for use by the owner(s) of each such Unit, as more fully set forth in this Declaration and in the Plans, and additional limited common area as Declarant may determine in the future.

(h) "Majority of the Owners" means the Owners of the Units to which more than fifty one percent (51%) of the votes in the Unit Owners' Association appertain. Any specified percentage of the Owners means the Owners of Units to which the specified percentage of the votes in the Unit Owners' Association appertain.

(i) "Owner" or "Unit Owner" means any Person or Persons who holds or hold fee simple title to a Unit. No mortgagee shall be deemed to be an Owner until such mortgagee has acquired such title pursuant to foreclosure or any procedure in lieu of foreclosure.

(j) "Percentage Interest" or "Undivided Percentage Interest" means the interest of each Unit in the Common Area as set forth in **Exhibit E** of this Declaration and as may be amended hereafter, which may be expressed as a fraction.

(k) “Registry” means the Rockingham County Registry of Deeds, or any then applicable real property recording office.

(l) “Property” means the Land and the buildings and all other improvements heretofore and hereafter constructed thereon, and all easements, rights and appurtenances thereto, and all articles of personal property intended for common use in connection therewith which are submitted to the Condominium by this Declaration, as amended from time to time.

(m) “Rules” means those rules and regulations adopted from time to time by the Association relative to the use of the Condominium, provided they are not in conflict with the condominium Act, the Declaration or the Bylaws, the City of Portsmouth Zoning Ordinance and the conditions on the plat approved by the Planning Board.

(n) "Site Plan" means the plat of the land submitted to the Condominium Act by this Declaration, which plat is being recorded in the Registry simultaneously herewith. Such term shall include, as appropriate, any such plat recorded in the Registry: (i) subsequently pursuant to RSA 356-B: 20, III, and 356-B:21 or any other provisions of the Condominium Act, or (ii) subsequently for the purpose of amending any previously recorded plat, as the case may be.

(o) "Unit" means a unit as defined by the Condominium Act, which is bounded and described (i) as shown on the Condominium Site Plan; (ii) Floor Plan; and (iii) as provided in Article 4, below.

(p) “Unit Owners’ Association” or “Association” means all of the Owners acting as a group in accordance with this Declaration and Bylaws.

ARTICLE 3
STATUTORY REQUIREMENTS

The following information is provided pursuant to the provisions of the Condominium Act:

(a) Name: The name of the Condominium is “Peverly Woods Condominium.”

(b) Location: The Condominium is located on Peverly Hill Road, City of Portsmouth, Rockingham County, New Hampshire.

ARTICLE 4
DIVISION OF PROPERTY

The property, together with all buildings and improvements thereon, is hereby divided into fifty sixty (56) separate freehold condominium units, hereinafter referred to as Units #1, #2, #3, #4, #5, #6, #7, #8, #9, #10, #11, #12, #13, #14, #15, #16, #17, #18, #19, #20, #21, #22, #23, #24, #25, #26, #27, #28, #29, #30, #31, #32, #33, #34, #35, #36, #37, #38, #39, #40, #41, #42,

#43, #44, #45, #46, #47, #48, #49, #50, #51, #52, #53, #54, #55, and #56. The layout, numerical designation, dimensions and area of each Unit are shown on the Condominium Site Plan.

A. The boundaries of the Units are defined as follows:

The Units shall be Land Units, the vertical boundaries being coextensive with the area identified as such Unit on the Site Plan and the horizontal boundaries being from the center of the earth to the upper edge of the atmosphere and includes the entirety of any building or addition to buildings or improvements to be constructed on the land and includes all rights above the land and any existing building and improvements or any building or improvements constructed within the Land Unit. For the purposes of RSA 356-B, the Condominium Plan shall serve as the Floor Plan for each Land Unit declared herein. In the event a building is constructed within the Land Unit, upon completion of the foundation, a Floor Plan, certified as required by RSA 356-B:20 shall also be recorded, provided the boundary of the Land Unit shall remain the unit boundary.

ARTICLE 5
DESCRIPTION OF COMMON AREAS

Common Areas are set forth on the Condominium Plan Common Areas include, but are not limited to, the following:

SECTION A. All open space, common utilities, walkways, and paths.

SECTION B. All roadways servicing the Condominium and shown on the Plat shall be public and shall be maintained by the City of Portsmouth.

ARTICLE 6
DESCRIPTION OF LIMITED COMMON AREA

Limited Common Area (herein "LCA") is defined as a portion of the Common Area which has been reserved for the exclusive use of the specific Unit or Units to which the Limited Common Area is assigned.

Limited Common Area shall be assigned as set forth in these Condominium Instruments. The "Condominium Instruments" is a term collectively referring to the Declaration, the By-Laws, and the Condominium Site Plan, and the building envelopes depicted on the Condominium Site Plan and recorded pursuant to the provisions of the Condominium Act. To the extent there is a conflict within the Condominium Instruments regarding the assignment of the Limited Common Area to a specific Unit, the assignment of Limited Common Area as set forth on the Condominium Plan shall control.

Reassignment of the LCA is expressly permitted if the reassignment complies with the Condominium Instruments and RSA 356-B, as amended. However, LCA may not be reassigned without the express written permission of the Unit Owner(s) who possesses the exclusive use of the LCA. Any reassignment of the LCA must be recorded in the Rockingham Registry of Deeds to be effective.

It is the intention of the Declarant that the following portions of the Common Area shall be exclusively assigned as LCA:

1. The land shown on the Condominium Plan and which includes the septic system serving the appurtenant units and the appurtenant driveways.

2. All piping, wiring, cable, facilities, improvements, utilities, propane tanks, septic tank or other portions of the Common Area contained within any Limited Common Area shall be exclusively assigned to such appurtenant Units, except the piping, duct work or other improvements which serve the condominium as a whole.

SECTION A. Subject to the restrictions, easements, covenants, conditions, and terms set forth in these Condominium Instruments, the Condominium Act, the ordinance of the City of Portsmouth, and any documents of record, the Owner of the Unit which possesses the assignment and exclusive use of Limited Common Area shall be permitted to encroach upon, use and possess the Limited Common Area. The Declarant shall provide for lawn mowing and landscape maintenance, operation and maintenance of the septic systems, driveway plowing, and walkway snow shoveling within the Limited Common Areas and Unit (collectively referred to as "Maintenance"). The Board of Directors shall be responsible for the Maintenance when its takes control of the Association.

The exterior of Units shall be kept in good repair by the Unit Owner and maintained to the aesthetic and repair standards set forth in this Declaration and By-Laws. Failure of a Unit owner to maintain its Unit to such standards shall give cause to the Association to enter the Limited Common Area to effectuate such repairs or maintenance and to invoice the Unit Owner for the expense thereof.

SECTION B. The LCA, including any improvements or developments, shall run with and be appurtenant to the Unit to which it is assigned and shall automatically pass with the title to the Unit whether or not the LCA is expressly conveyed.

ARTICLE 7
ALLOCATION OF UNDIVIDED INTERESTS ("COMMON INTERESTS")

There is hereby allocated to each Unit an undivided interest in the Common Areas as set forth on **Exhibit E** attached hereto and made a part hereof, under the column "Common Interest". Said undivided interest appurtenant to each Unit is herein called the "common interest". The interest appurtenant to each Unit are shown on **Exhibit E**. The common interest

appurtenant to each Unit will have a permanent character and shall not be altered without the consent of the owner of each Unit affected thereby. The common interest appurtenant to each Unit will not be separated from said Unit even though not expressly mentioned or described in the conveyance or other instrument. The Common Areas will remain equal and undivided and no right shall exist to partition or divide any part thereof except as may be provided in the New Hampshire Condominium Law.

ARTICLE 8
PARKING

Subject to regulation by the Association of Unit Owners (as set forth in the Condominium By-Laws to be recorded with this Declaration as well as Rules and Regulations to be adopted) the Unit owners shall have the exclusive right to park vehicles in the portion of the Limited Common Area associated with his/her Unit as shown on the Plan.

ARTICLE 9
EASEMENTS

SECTION A. Each Unit shall have appurtenant thereto non-exclusive easements in the Common Areas designed for such purposes for ingress to, egress from, and utility services for such Unit, and in the other Common Areas for their use according to their respective purposes, subject always to the exclusive or limited use of the Limited Common Areas as herein provided. These non-exclusive easement rights include, but are not limited to, the right to for the purposes of maintenance or repair of same and any Common Area. If any Unit or Common Area encroaches on any other Unit or Common Area, a valid easement for such encroachment and the maintenance and use thereof so long as it continues shall exist;

SECTION B. To the extent permitted by New Hampshire Revised Statutes Annotated Section 356-B:42 II, as amended from time to time or any successor statute, the Association of Unit Owners shall have the irrevocable power as attorney in fact on behalf of all of the Unit Owners and their successors in title to grant easements through the Common Areas and accept easements benefiting the condominium or any portion thereof;

SECTION C. Declarant hereby expressly reserves the right to grant easements to the owners of abutting property, as well as to the City of Portsmouth, private utilities, electric utilities or gas line utilities, telephone utilities or cable utilities, and any other utilities over, under and through the common and Limited Common Areas of the Condominium for whatever use may be made thereof.

ARTICLE 10

STATEMENT OF PURPOSES, USE, AND RESTRICTIONS.

The Units, Common Areas, and Limited Common Areas shall be occupied subject to the following rules and restrictions:

SECTION A. The Developer shall have the right to transact any business on the Condominium property necessary to consummate sales of Condominium units; including, but not limited to the right to maintain models, having signs identifying units, maintaining employees in the offices, use of the Common Areas and facilities on the Condominium property, and to show units for sale. All furniture and furnishings and equipment in the model units, signs, and all items pertaining to sales shall not be considered Common Areas and facilities and shall remain the property of the Developer. In the event there are unsold Condominium units, Developer's right as the owner of said unsold units shall be the same as all other unit owners in the Condominium; and the Developer, as the owner of the Condominium units, shall contribute the common expenses in the same manner as other Condominium unit owners once an Occupancy Permit has been issued and the Developer, as the owner of the Condominium units, shall have a vote in the Association for each unsold Condominium unit.

SECTION B. None of the fifty-six (56) residential units shall be used for any purpose except residential purposes.

SECTION C. Nothing shall be done or kept in any unit or in the Common Areas or Limited Common Areas, which will increase the rate of insurance in those areas without the prior written consent of the Owners' Association. No owner shall permit anything to be done or kept in his Unit or in the Common Areas or Limited Common Areas which will result in the cancellation of insurance of any unit or any part of the Common Areas or Limited Common Areas, which would be in violation of any law. No waste will be permitted in the Common Areas or the Limited Common Areas.

SECTION D. Units shall be used solely for residential purposes and for uses accessory thereto as may be permitted from time to time by the zoning ordinances of the City of Portsmouth. Notwithstanding the restrictions of this paragraph, the Declarant and its successors in interest may, until all of the residential Units shall have been sold by the Declarant or such successor(s), use unsold Units as models for purposes of promoting the sale or leasing of Units.

SECTION E. DESIGN AND PLAN APPROVAL.

(1) All buildings and structures shall be architecturally designed in keeping with traditional styles as determined by the Declarant. The Declarant, at Declarant’s sole discretion, subject to federal, state, and/or municipal approvals, if applicable, reserves the right to approve the plans and specifications of all residences and other structures for as long as the Declarant is the owner of any Unit in the condominium. At such time as the Declarant relinquishes its control to the Association, the responsibility and/or authority for any architectural approvals in accordance with the Declaration and By-Laws shall become the responsibility of the Board of Directors of the Association or any subcommittee of the Association appointed to perform that task. The Declarant reserves the right to turn over responsibility for architectural approvals to the Association at any time prior to its conveyance of the last Unit it owns.

(2) No construction of any kind shall be commenced on any Unit nor shall any exterior addition or change or alteration be made to any structure nor shall utility lines be erected or installed until plans for the foregoing have been approved in writing by the Declarant at Declarant's sole discretion, subject to federal, state, and/or municipal approvals, if applicable. A copy of such plans shall be provided to the Association for its records.

(3) The architectural integrity of the buildings and the Units shall be preserved, and to that end, no awnings, antennas, and no exterior change, addition, structure, projection, decoration or other feature which is visible from the exterior of a Unit, shall be erected or placed upon or attached to the buildings or any Unit, or any part of either, unless previously approved by the Declarant, at Declarant's sole discretion, subject to federal, state, and/or municipal approvals, if applicable,. This subparagraph, however, shall not restrict the right of the Owner(s) of each Unit to decorate the interiors of the Unit as said Owner(s) may desire;

SECTION F. ARCHITECTURAL FEATURES

(1) Renovations of the Units must be in keeping with the architectural character of the condominium.

(2) Without limiting the generality of the foregoing, all renovations, including the painting, repairing and replacing of exterior doors, door frames, windows, window frames, roofs, siding, porches, decks, entries and other exterior features of the buildings shall be subject to the review and approval of the Board of Directors or its subcommittee established for this purpose prior to commencement of the work.

SECTION G. No animals, livestock, or poultry of any kind shall be raised, bred, or kept in any unit or in any of the Common Areas or Limited Common Areas without the express written permission of the Board of Directors. Pets shall be allowed only with the written permission of the Board of Directors and such permission may be withdrawn should the pets become a nuisance to other unit owners. Owners shall strictly comply with all rules and regulations concerning pets as may be adopted by the Association. No exotic pets are allowed. Pets shall be kept under control of their owners at all times and shall not be allowed to run loose except in the presence and under the control of their owner. The board of directors may make further provisions in the Rules for the control and regulation of household pets on the property. The owner of a unit where a pet is kept or maintained shall be responsible for the maintenance of said pet, and any costs incurred by the association in enforcing the rules prescribed or to be prescribed by the Board of Directors for the control and regulation of pets and each such owner, by electing to keep a pet, shall be deemed to indemnify and hold the Board harmless against such loss or liability resulting from said pet. Owner shall comply with all town ordinances related to pets and pet laws.

SECTION H. The Declarant has adopted and the Association Board may amend from time to time detailed rules and regulations for the use and enjoyment of the Common Areas, for avoiding noxious or offensive activity which may disturb the occupants of any Unit, and for the occupants of any Unit, and for the general governing of the Condominium, consistent with, and

not in conflict with, this Declaration and the Bylaws. All Owners and their tenants, guests and licensees will strictly comply with said rules and regulations.

SECTION I. Units may be rented. All rental agreements shall be documented by a written lease for a term of not less than six (6) months. The lease shall be subject to the Declaration, Bylaws and Rules and Regulations of the Condominium.

SECTION J. The Declarant shall be responsible for arranging for snow removal and lawn mowing within the Common Areas and Limited Common Areas as a Common Expense, together with the maintenance of all drainage improvements. This includes arranging for the maintenance of the road and gate and snow removal for the emergency access road for the purpose of keeping it accessible for the Fire Department.

SECTION K. Declarant reserves the right to make use of unsold Units as may facilitate the completion, construction or sale of the Condominium, including the right to enter all Units, and Limited Common Areas, upon reasonable notice to the Owner thereof, or Common Areas for construction purposes. Declarant reserves the right to store materials, to maintain a sales office or a rental office in any unsold Units, to show such Units for sale or lease, and to display appropriate signs, at Declarant's sole discretion, in conjunction therewith, on unsold buildings or building envelopes, and has the right to implement any other marketing signage anywhere in the entire development.

SECTION L. SIGNS. No sign of any kind, towels, blankets or laundry of any kind, shall be displayed to the public view on or from any unit without the prior written consent of the Board of Directors. No commercial or advertising signs of any kind shall be erected, placed, permitted or maintained on any common area or limited common area or improvement except such signs as may be approved by the Association for the operation of the condominium or for the sale of Units within the condominium. Declarant shall be permitted, at Declarant's sole discretion, to place signs advertising the sale or lease of units, along with development signage, entrance way signage, directional and temporary signage. Display of the United States Flag shall be regulated by RSA 356-B:47-a and rules and regulations adopted thereunder by the Owners' Association and any applicable Zoning and Planning Regulations of the City of Portsmouth.

SECTION M. MOBILE HOMES AND TEMPORARY STRUCTURES. Mobile homes or structures of any kind or character, whether temporary or otherwise, shall not be permitted on any common area or limited common area. However, Declarant, at Declarant's sole discretion, may maintain a trailer for development purposes.

SECTION N. NO VEHICLE STORAGE. No commercial vehicles, pleasure or commercial boats or vessels of any kind, motor homes, campers, trailers, school buses, all-terrain vehicles, off road vehicles or snow mobiles shall be used in the condominium nor shall they be stored within the common area or limited common area, including, but not limited to parking areas and trails. Golf carts may be allowed on the premises subject to the approval of the Declarant, at Declarant's sole discretion, and subject to the approval of the Association after the Declarant relinquishes control. None of the above referenced vehicles may be kept on the

premises except out of sight of the roadway, behind the structure or properly screened from the roadway and abutters or if the same be kept stored in a garage or outbuilding conforming to these covenants. Unregistered or uninspected automobiles or automobiles being repaired, refinished, restored or otherwise brought onto the premises for a period of more than seven (7) days shall be stored in a garage or other enclosed structure.

SECTION O. TREE REMOVAL. Only the Declarant shall be permitted to cut trees on the property. No unit owner shall be permitted to cut any tree(s) without the express written permission of the Declarant. All clearing shall comply with the City of Portsmouth's land use regulations and ordinances.

SECTION P. No noxious or offensive activities shall be carried on in any unit or in the Common Areas or Limited Common Areas, nor shall anything be done therein which may become an annoyance or nuisance to the other unit owners.

SECTION Q. There shall be no violation of the rules of the use of the units, Common Area, or Limited Common Area as adopted by the Owners' Association and furnished in writing to the owners. The Declarant, until such time as the Owners' Association is formed, and thereafter the Owners' Association are authorized to adopt such rules.

SECTION R. Insofar as may be necessary, the Developer and persons that they may select shall have the right of ingress and egress over, upon, and across the Common Area and Limited Common Area and the right to store materials thereon and to make such other use thereof as may be reasonable, necessary, and incidental to construction and complete development and sale of the project, but the Declarant and the persons to whom he has granted this permission shall not unduly interfere with the unit owners or persons living in the units and their rights to use the Common Area and Limited Common Area and facilities.

SECTION S. No unit owner shall paint or otherwise decorate or change the appearance or the type of exterior siding of any portion of the exterior of his/her unit.

SECTION T. No unit owner shall make any alterations to his/her unit; provided, however, any unit owner shall have the right to make interior decorating improvements or any interior changes which do not affect any facilities, which are shared with the other units.

SECTION U. ADDITIONAL PROVISIONS.

The following are prohibited:

(1) Clotheslines;

(2) Above ground swimming pools;

(3) Antennas or satellite dishes with diameters larger than 24 inches;

(4) Additions or outbuildings or appurtenances unless prior approval has been obtained;

(5) Any basketball hoops, soccer nets or other personal property in the right-of-way;

SECTION V. OPEN SPACE USE LIMITATIONS. The Declarant on behalf of itself and its successors in interest covenants that "Open Space" as depicted on the Condominium Site Plan, is and shall forever be and remain subject to the following restrictions, which covenants and restrictions shall bind the Declarant, its successors in interest, and the Owner of each Unit:

(a) The purpose of the Open Space after completion of the proposed improvements depicted on the Condominium Site Plan is to retain the area forever in its scenic and open space condition and to prevent any use of the Open Space that will significantly impair, or interfere with, its conservation value;

(b) To protect and conserve the natural biological diversity of the region including, Blanding's and spotted turtle, and other rare plants and animals, exemplary natural communities, wetlands and other significant wildlife habitats on the Restricted Property;

(c) It shall be maintained in perpetuity as open space.

(d) There shall be no motorized vehicles permitted upon the Open Space.

(e) No structure of any kind, size or shape shall be constructed, on the Open Space.

(f) Upon completion of the proposed improvements, no filling or excavation of soil or other alteration of topography or cutting or removal of standing trees shall be allowed, except those that present an imminent threat to person or property. In addition, trees may be removed in accordance with accepted silvacultural forest practices as outlined in the publication entitled Good Forestry Practices in the Granite State by the Society for the Protection of NH Forests. No disturbance of other natural features shall be allowed unless such activities are commonly necessary to maintain the existing natural environment of the open space.

(g) There shall be no dumping or depositing of trash, debris, stumps, yard waste, hazardous fluid or materials, vehicle bodies or parts within the Open Space.

(h) No discharge of firearms or shooting with a bow and arrow or trapping of animals shall be permitted upon the Open Space in violation of RSA 207:3-a, as amended.

(i) The "Open Space" comprises a portion of the Common Area of the Condominium. As such, maintenance, if any, in the Open Space will be performed pursuant to the other provisions of this Declaration and the Bylaws. Costs for the maintenance, monitoring and annual reporting of the Open Space will be treated as a Common Expense and paid by the Unit Owners in accordance with the provisions of this Declaration. The term maintenance shall

include monitoring and reporting of the conditions of the open space requirements by the Association or by the City of Portsmouth. The Association will be responsible for annually monitoring the Open Space and reporting any violations to the City of Portsmouth.

(j) Such reasonable rules and regulations as may from time to time be promulgated by the Condominium Association for "open space recreational uses."

(k) Access to the Open Space shall be as depicted on the Plan.

(l) Acceptance of any deed for any Unit within the condominium constitutes acknowledgment by the purchaser of the existence of these restrictions and agreement to be bound by it and that said purchaser will not take any action which might violate any provision hereof.

SECTION W. PERMITTED USES OF OPEN SPACE

(a) The Declarant, its successors or assigns, reserve the right to perform cutting, grading, planting and seeding on the common area or limited common area for construction and to install and maintain drainage structures as needed in the development of the condominium.

(b) The Declarant, its successors or assigns, reserve the right to grant utility easements on the common area or limited common area to install and maintain utilities as needed in the development of the condominium.

(c) Dead, diseased, unsafe or fallen trees, saplings, shrubs and ground cover may be removed by the Declarant, its successors or assigns.

ARTICLE 11
ENFORCEMENT OF RESTRICTIONS

If any person or entity shall violate or attempt to violate any of the rules or restrictions set forth in this Declaration, in the By-Laws or in any rules or regulations adopted by the Association of Unit Owners, the Association may commence legal action against said person or entity or against the owner(s) of any Units within which such violation are occurring, either to prevent or abate such violation, or to recover damages caused by such violation or both. In the event of a successful prosecution, the Association of Unit Owners will be entitled to receive its costs, including reasonable attorney's fees, as part of its judgment against the defendant.

If the Association of Unit Owners shall fail to enforce this or any one or more of the covenants set forth in this Declaration or any rule contained in the By-Laws or any rules of the Association of Unit Owners after receiving written request to do so from any Unit Owner within the condominium, then any such Unit Owner may attempt to enforce said requirements by giving ten (10) days' prior written notice to the person violating them, followed by legal proceedings either to enjoin the violation or to recover damages or other compensation, including reasonable collection costs and attorney's fees if the court deems it appropriate under the circumstances.

Notwithstanding anything in this Declaration or in the By-Laws to the contrary, no Unit Owner shall be liable for any violations except such as occur during his or her Unit ownership.

ARTICLE 12
INSURANCE

1. Insurance Required. Pursuant to Section 43 of the Condominium Act, the Board of Directors shall obtain (i) a master casualty policy affording fire and extended coverage in an amount equal to the full replacement value of the common structures within the Condominium; (ii) a master liability policy covering the Association, the Board, the Manager and agents or employees of the foregoing with respect to the Condominium, and all Owners and other persons entitled to occupy any portion of the Condominium; and (iii) such other policies as specified hereinbelow; which insurance shall be governed by the following provisions to the extent obtainable or possible:

(a) Fire insurance with standard extended coverage endorsement, vandalism and malicious mischief endorsements insuring all the common buildings in the Condominium including without limitation all portions of the interior of such buildings are for insurance purposes normally deemed to constitute part of the building and customarily covered by such insurance, such as heating and air conditioning and other service machinery, interior walls, all finished wall surfaces, ceiling and floor surfaces including any wall to wall floor coverings, bathroom and kitchen cabinets and heating and lighting fixtures, except for improvements which exceed a total value of One Thousand Dollars ($1,000.00) and are not reported to the insurer, such insurance to be in an amount at least equal to the replacement value of the buildings and to be payable to the board as trustee for the Owners and their mortgagees as their respective interests may appear.

(b) Public liability insurance in such amounts as the Board may from time to time determine, but in no event shall the limits of liability be less than One Million Dollars ($1,000,000.00) for bodily injury and property damage per occurrence, insuring the Association and all individuals referred to in Section I (ii) above, against any liability to anyone, and with cross liability coverage with respect to liability claims of anyone insured thereunder against any other insured thereunder. The insurance, however, shall not insure against individual liability for negligence occurring within a Unit or within the Limited Common Area to which a Unit has exclusive use.

c) Workmen's compensation insurance as required by law.

d) Such other insurance as the Board may determine.

2. General Insurance Provisions.

(a) The Board shall deal with the insurer or insurance agent in connection with the adjusting of all claims under insurance policies provided for under Paragraph 1 above and shall review with the insurer or insurance agent, at least annually, the coverage under said policies, said review to include an appraisal of improvements within the Condominium, and shall make

any necessary changes in the policy provided for under Paragraph 1 (a) above (prior to the expiration date set forth in any agreed amount endorsement contained in said policy) in order to meet the coverage requirements of such Paragraph.

(b) The Board shall be required to make every effort to see that all policies of physical damage insurance provide for under Paragraph 1 above : (i) shall contain waivers of subrogation by the insurer as to claims against the Association, its employees and agents, members of the Board, the Manager, Owners and members of the family of any Owner who reside with said Owner, except in cases of arson and fraud; (ii) shall contain a waiver of defense of invalidity or prejudice on account of the conduct of any of the Owners over which the Association has "no control"; (iii) shall contain a waiver of defense of invalidity or prejudice by failure of the insured, or Owners collectively, to comply with any warranty or condition with regard to any portion of the Condominium over which the insured, or Owners collectively, have no control; (iv) shall provide that such policies may not be canceled or substantially modified without at least thirty (30) days written notice to all of the insureds thereunder and all mortgagees of Units in the Condominium; (v) shall provide that in no event shall the insurance under said policies be brought into contribution with insurance purchased individually by Owners or their mortgagees; (vi) shall exclude policies obtained by individual Owners for consideration under any "no other insurance" clause; and (vii) shall provide that until the expiration of thirty (30) days after the insurer gives notice in writing to the mortgagee of any Unit, the mortgagee's insurance coverage will not be affected or jeopardized by any act or conduct of the Owner of such Unit, the other Owners, the Board of Directors, or any of their agents, employees or household members, nor canceled for non-payment of premiums.

3. Individual Policies. All Owners shall obtain, at his own expense, insurance insuring his own unit and all buildings thereon and insurance against loss or damage to personal property used or incidental to the occupancy of the Unit, additional living expense, vandalism or malicious mischief, theft, personal liability and the like.

(a) Each Owner shall obtain additional insurance for his own benefit and at his own expense. No such policy shall be written so as to decrease the coverage under any of the policies obtained by the Board pursuant to paragraph 1(a) above, and each Owner hereby assigns to the Board the proceeds to be applied pursuant to the terms hereof as if produced by such coverage. Copies of all such policies (except policies covering only personal property, owned or supplied by individual Owners) shall be filed with the Association.

(b) Each Owner shall obtain insurance for his own benefit and at his own expense insuring all personal property presently or hereafter located in his Unit or Limited Common Area, any floor coverings, appliances and other personal property not covered in the master policy, and any insurance deductible that the unit may be assessed and all improvements.

(c) Each Owner, prior to commencement of construction of such improvements, shall notify the Board of all improvements to his Unit (except personal property other than fixtures) which exceed a total value of One Thousand Dollars ($1,000.00).

(d) Each Owner shall obtain liability insurance with respect to his ownership and/or use of his Unit.

4. Notice to Unit Owners. When any policy of insurance has been obtained on behalf of the Association, written notice of the obtainment thereof and of any subsequent changes therein or termination thereof shall be promptly furnished to each Unit Owner by the Secretary of the Association. Such notice shall be sent by U.S. Mail, return receipt requested, to all Unit Owners of record at the address of their respective Units and to such other addresses as any of them may have designated to the Secretary; or such notice may be hand delivered by the Secretary or Manager obtains a receipt of acceptance of such notice from the Unit Owner.

ARTICLE 13
CONDEMNATION

If part of the project shall be taken or condemned by any authority having the power of eminent domain such that no Unit or any part thereof is taken, then all compensation and damages for on account of the taking or the common elements, exclusive of compensation for consequential damages to certain affected Units, shall be payable to the President of the Association as Trustee for all Unit Owners and Mortgagees according to the loss or damage to their respective interests in such common elements. The Association shall have the right to act on behalf of the Unit Owners with respect to all issues related to the taking and compensation affecting the common elements. Such proceeds shall, subject to the prior rights of such mortgagees, become a part of the reserve funds of the Association.

If any Unit or a part thereof is taken, the Unit Owners directly affected by such taking and their respective mortgagees shall represent and negotiate for themselves with respect to the damages affecting their respective Units. The awards so made shall, subject to the prior rights of mortgagees, be used and distributed by the Trustee first to restore the Units on the remaining land of the project in the same manner as provided for restoration under Section 13 hereof to the extent possible, attempting to rebuild the building, containing new units of the same number, size and basic plan as the units taken, with any excess award distributed in accordance with the provisions of this section.

ARTICLE 14
REVIEW OF INSURANCE

The Association will review not less frequently than annually the adequacy of its insurance program and will, if requested by Unit Owners report to each Unit Owner in writing the Association's conclusions and actions taken, from time to time. Such review shall include an appraisal of all improvements to the project by a representative of the insurance carrier writing the Master Policy. Also, the Association shall provide each Unit Owner with notices describing each new policy of insurance and all amendments and terminations thereof, as and when occurring, in the same manner as it provides notices of Association meetings as set forth in the By-Laws, all as required by New Hampshire Revised Statutes Annotated, Section 356-B:43 II, or any successor statute.

ARTICLE 15
AMENDMENTS TO THE CONDOMINIUM AND TERMINATION

This Declaration, the By-Laws, the Floor Plan, the Condominium Plan or any other condominium instruments (as defined by New Hampshire Revised Statutes Annotated Chapter 356-B) may be amended from time to time, or this condominium may be terminated, only in strict compliance with New Hampshire Revised Statutes Annotated Section 356-B:34, as amended from time to time, or any successor statute. In no event shall such amendments be made without the consent of at least 2/3 of the Unit Owners.

ARTICLE 16
DEFINITIONS

All terms and expressions used in this Declaration which are defined in New Hampshire Revised Statutes Annotated Chapter 356-B shall have the same meanings here unless the context otherwise requires.

ARTICLE 17
PARTIAL INVALIDITY

The invalidity of any provision of this Declaration shall not impair or affect the validity of the remainder of this Declaration and all valid provisions shall remain enforceable and in effect notwithstanding such invalidity.

ARTICLE 18
MORTGAGES

1. Notice to Board. An Owner who mortgages his Condominium Unit shall notify the Board of the name and address of his mortgagee, and shall file a conformed copy of the mortgage with the Board. The Board shall maintain suitable records pertaining to such mortgages.

2. Notice of Action. Upon written request to the Unit Owners' Association, identifying the name and address of the holder, insurer or guarantor and the Unit number or address, any such Eligible Mortgage Holder or Eligible Insurer or Guarantor will be entitled to timely written notice of:

(a) Any condemnation loss or any casualty loss which affects a material portion of the Condominium or any Unit on which there is a first mortgage held, insured, or guaranteed by such Eligible Mortgage holder or Eligible Insurer or Guarantor, as applicable;

(b) Any delinquency in the payment of assessments or charges owed by an Owner of a Unit subject to a first mortgage held, insured or guaranteed by such Eligible

Mortgage Holder or Eligible Insurer or Guarantor, which remains uncured for a period of 60 days.

(c) Any lapse, cancellation or material modification of any insurance policy or fidelity bond maintained by the Owners' Association;

(d) Any proposed action which the Declaration, these Bylaws or the Condominium Act, requires the consent of a specified percentage of mortgage holders.

3. Notice of Default. The Board shall give written notice to an owner of any default by the Owner in the performance of any obligations under the Act, Declaration or Bylaws and, if such default is not cured within thirty (30) days, shall send a copy of such notice to each holder of a mortgage covering such Unit whose name and address has theretofore been furnished to the Board. No suit or other proceeding may be brought to foreclose the lien for any assessment levied pursuant to the Declaration or these Bylaws except after ten (10) days written notice to the holder of the first mortgage on the Unit which is the subject matter of such suit or proceeding.

4. Notice of Damage. The Board of Directors shall notify (i) the mortgagee of a Unit whenever damage to the Unit covered by the mortgage exceeds One Thousand Dollars ($1,000.00) and the Board is made aware of such damage; and (ii) all the mortgagees whenever damage to the Common Area exceeds Ten Thousand Dollars ($10,000.00).

5. Examination of Books. Each Owner and each mortgagee shall be permitted to examine the books on account of the Condominium at reasonable times, on business days, but, with respect to Owners, not more often than once a month.

DECLARATION OF THE PEVERLY WOODS CONDOMINIUM EXECUTED as of the day and year first above written.

_____ LLC

_____ By: _____
Witness Richard W. Green, Manager
Duly Authorized

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM, ss.

This instrument was acknowledged before me on _____, 2021, by Richard W. Green, Manager of _____LLC, a New Hampshire limited liability company.

_____
Notary Public
Printed Name: _____
My Commission Expires: _____

EXHIBIT A

LEGAL DESCRIPTION

EXHIBIT B

EXHIBIT C

EXHIBIT D

EXHIBIT E

COMMON INTEREST

Unit No.	Common Interest
1	1/56
2	1/56
3	1/56
4	1/56
5	1/56
6	1/56
7	1/56
8	1/56
9	1/56
10	1/56
11	1/56
12	1/56
13	1/56
14	1/56
15	1/56
16	1/56
17	1/56
18	1/56
19	1/56
20	1/56
21	1/56
22	1/56
23	1/56
24	1/56
25	1/56
26	1/56
27	1/56
28	1/56
29	1/56
30	1/56
31	1/56
32	1/56
33	1/56
34	1/56
35	1/56
36	1/56
37	1/56

38	1/56
39	1/56
40	1/56
41	1/56
42	1/56
43	1/56
44	1/56
45	1/56
46	1/56
47	1/56
48	1/56
49	1/56
50	1/56
51	1/56
52	1/56
53	1/56
54	1/56
55	1/56
56	1/56

BYLAWS
OF
PEVERLY WOODS CONDOMINIUM OWNERS ASSOCIATION

1. PURPOSE AND DEFINITIONS

Purpose. The administration of Peverly Woods Condominium (the "Condominium") shall be governed by these By-Laws which are annexed to the Declaration of Peverly Woods Condominium (the "Declaration") and are made a part thereof.

Definitions. Certain of the terms used in these By-Laws have been defined in the Declaration and, when used herein, shall have the same meaning as set forth in the Declaration, unless the context clearly indicates a different meaning therefor.

Applicability of By-Laws. The provisions of these By-Laws are applicable to all of the property which now constitutes or hereafter may be added to the Condominium, and to the use and occupancy thereof.

2. MEMBERS AND MEETINGS

A. Members and Voting Rights. Each unit owner and the Declarant, until such time as all of the Declarant's development rights have expired or been terminated (each an "Owner" and collectively the "Owners") shall be a member of Peverly Woods Condominium Owner's Association. The membership of the Association shall consist of all of the Owners. The Owner of each Unit shall be entitled to one (1) vote.

B. Transfer of Membership. Membership in the Association may be transferred only as an incident to the transfer of title to a Unit and shall become effective upon recordation of a deed of conveyance to the said Unit.

C. Annual Meeting. The annual meeting of the members shall be held on the second Monday of March, for the purpose of electing officers and for the transaction of such other business as may come before the meeting.

D. Regular Meetings. Regular meetings of the Board of Directors shall be held in accordance with the provisions of RSA 356-B: 37-c at such time and place as shall be determined, from time to time, by a majority of the directors, but at least quarterly meetings shall be held during each twelve-month period after the annual meeting of the Unit Owners' Association. Notice of regular meetings of the Board of Directors shall be posted to the community and given to each director, personally or by mail, e-mail, telephone or telegraph, at least five (5) business days prior to the day named for such meeting, except that no notice shall be required for a regular meeting held immediately after, and at the same place as the annual meeting of the Association. Directors may attend vote and participate at meetings by telephone

or E-Mail pursuant to RSA 356-B:37-b. Pursuant to RSA 356-B:37-c (II) at least once per quarter the Board shall hold open regular meeting to afford owners an opportunity to common on any matter affecting the Association. Notice of the meeting and any materials distributed to the Board shall be available to the owner pursuant to RSA 356-B:37 (c) (III) and (IV).

E. Special Meetings. Special meetings of the Owners may be called at any time for the purpose of considering matters which, by the terms of the Declaration, these By-Laws, or the Condominium Act, (the "Act"), require the approval of the Owners, or for any other reasonable purposes. Special meetings shall be called by the President upon at least three (3) days written notice prior to the date of the meeting.

F. Contents of Notice. Pursuant to RSA 356-B:37 (I) and 356-B:37-a, it shall be the duty of the clerk or secretary, to send to all owners of record, at least twenty-one (21) days in advance of any meeting notice of any meeting. Said Notice shall state the time, place and purpose of the meeting and shall be sent to the unit owners at the addresses on file with the Association. The clerk or secretary shall attest that the notice was sent to the list of owners attached to the affidavit at the addresses on file with the association in the manner conforming with RSA 356-B: 37-a.Any such notice shall be deemed waived by any Owner who expressly waives the same in writing or who is present in person or by proxy at any such meeting.

G. Quorum. The presence in person or by proxy at the commencement of any meeting of the Association of Unit Owners of two thirds of the Unit Owners shall constitute a quorum at all meetings of the Unit Owners. In determining a quorum, the term "all Unit Owners" in this paragraph will not include Units the title of which is held by the Association. Pursuant to RSA 356-B: 38 (III) if a quorum is not met for an annual meeting, the board shall reschedule the meeting within sixty days and provide proper notice and proxies.

H. (1). Number of Directors and Initial Selection of Board. The Board of Directors shall be composed of three (3) persons. Until the election of the Board of Directors takes place at the first annual meeting of the Unit Owners' Association, the Board of Directors shall consist of such persons as shall have been designated by the Declarant. Thereafter, anything in these Bylaws to the contrary notwithstanding, until seven (7) years after the date of recordation of this Declaration, or until ninety percent (90%) of the Units have been conveyed by the Declarant, whichever occurs later, the members of the Board of Directors shall be selected and designated by the Declarant. The Declarant shall have the right in its sole discretion to replace such Directors as may be so selected and designated by it, and to select and designated their successors. The Declarant may relinquish its rights hereunder at any prior time. Directors shall consist only of Owners or spouses of Owners, or, where a Person which is an Owner is not a natural person, any natural person having authority to execute deeds in behalf of such person.

(2). Election and Term of Office. The initial Board of Directors shall be elected to staggered terms of one, two and three years. Thereafter, each Director shall serve a three (3) year term and one Director shall be elected at every annual meeting. At the expiration of the initial term of office of each director, his successor shall serve a term of three (3) years and each director shall hold office until his successor has been appointed or elected as appropriate.

I. Voting and Minutes. At any meeting of the Association, the Owners shall be entitled to cast their votes for each condominium unit owned as provided in the Declaration. The majority vote of all Unit Owners shall be required to adopt decisions at any meeting of the Association. Any Owner may attend and vote at such meeting in person or by proxy. The provisions of the Condominium Act shall govern all votes (including proxy votes and the votes of units owned by more than one person) at meetings of the Association. Pursuant to RSA 356-B: 37 (VI) the Board of Directors shall make copies of the minutes of all meetings available to the unit owners within 60 days of the date of the meeting or 15 days of the date the minutes are approved by the Board whichever occurs first. The association may opt to provide the minutes electronically or post them on the association website in which case the owners shall be informed of the web address.

J. Budget Ratification. Pursuant to RSA 356-B:40-c (I) the board of directors shall annually adopt a budget for the unit owners' association for consideration by the unit owners at a meeting. The board of directors shall, within 30 days of adoption of the proposed budget, provide the owners a summary of the budget, including any reserves and a statement of the basis on which any reserves are calculated and funded. The board of directors shall set a date not less than 10 days or more than 60 days after providing the budget summary to consider the ratification of the budget. Unless at that meeting, 2/3 of all unit owners reject the budget the budget is ratified whether or not a quorum is present. If no budget is proposed or the proposed budget is rejected, the last budget ratified by the owners shall be in effect until a new budget is ratified by the owners. Pursuant to RSA 356-B:40-c (II) the board of directors at any time may propose a special assessment which shall be ratified by the owners. The assessment shall be in accordance with the provisions of RSA 356-B:40-c (III).

3. POWERS

Powers and Duties. The Association shall have all of the powers and responsibilities assigned by the New Hampshire Condominium Act, RSA 356-B, as amended from time to time or any successor statute. Without limiting the generality of the preceding sentence, the Association will have all of the powers and duties necessary for the administration of the affairs of the condominium. Said powers and duties shall include, but not be limited to, the following:

A. Operation, care, upkeep and maintenance of the common areas;

B. The employment, dismissal and replacement of agents and employees to facilitate the operation, care, upkeep and maintenance of the common areas;

C. To make or cause to be made additional improvements on and as part of the common areas (subject to Article VII, Section 2 below);

D. To acquire, hold, manage, convey and encumber title to real property (including but not limited to condominium Units conveyed to or acquired by the Association) in the name of and on behalf of the Association;

E. To grant easements through the common areas and to accept easements benefitting the condominium or any portion thereof;

F. The assessment and collection of the common expenses from the Unit Owners, and the enforcement of liens to secure unpaid assessments, pursuant to RSA Section 356-B:46, as amended from time to time, or any successor statute;

G. The adoption and amendment of rules and regulations covering the details of the operation and use of the condominium, the common areas or any portion thereof;

H. Opening of bank accounts on behalf of the Association and designating the signatories required for such accounts;

I. Obtaining and administering insurance for the condominium as set forth in the Declaration;

J. Repairing, restoring or replacing common areas after damage or destruction, or as a result of eminent domain proceedings, as provided in the By-Laws;

K. Procuring legal and accounting services necessary or proper in the operation of the condominium or the enforcement of these By-Laws;

L. The assessment of costs or damages against any Unit Owner whose actions have proximately caused damages to the common areas;

M. Payment of any amount necessary to discharge any lien or encumbrance levied against the entire condominium or any part thereof which may in the opinion of the Association constitute a lien against the condominium or against the common areas, rather than merely against the interests of particular Unit Owners (where one or more Owners are responsible for the existence of such lien, they shall be jointly and severally liable for the cost of discharging it and the costs incurred by the Association by reason of said lien or liens);

N. All other powers granted by the Declaration or these By-Laws, permitted by law or enjoyed by associations of this kind.

4. OFFICERS

A. Officers. The officers of the Association shall be a president, a treasurer and a secretary, all of whom shall be appointed by the Unit Owners. Such other officers and assistant officers as may be deemed necessary may be appointed by the Association. Any two or more offices may be held by the same person. Pursuant to RSA 356-B:35 (II), the board of directors/officers shall have a fiduciary relationship to members of the unit owners' association.

B. Appointment and Term of Office. The officers of the Association shall be appointed at the annual meeting. If the appointment of officers shall not be made at such

meeting, such appointment shall be made as soon thereafter as conveniently may be. Each officer shall hold office until his successor shall have been duly appointed and shall have qualified or until his death or until he shall resign or shall have been removed in the manner hereinafter provided.

C. Removal. Any officer or agent may be removed by the Association whenever, in its judgment, the best interests of the Association will be served thereby, but such removal shall be without prejudice to the contract rights, if any, of the person so removed. Appointment of an officer or agent shall not in and of itself create contract rights. Removal of officers or directors shall be by a vote held in accordance with RSA 356-B: 40-b.

D. Vacancies. A vacancy in any office because of death, resignation, removal, disqualification, or otherwise may be filled by the Association for the unexpired portion of the term.

E. President. The president shall be the principal executive officer of the Association and shall in general supervise and control all of the business and affairs of the corporation. He shall, when present, preside at all meetings of the unit owners at meetings of the Association. He may sign with the secretary or with any other proper officer of the Association, deeds, mortgages, bonds, contracts, or other instruments which the Association has authorized to be executed, except in cases where the signing and execution thereof shall be expressly delegated by the Association or by these bylaws to some other officer or agent of the Association, or which is required by law to be otherwise signed or executed; and in general shall perform all duties incident to the office of president and such other duties as may be prescribed by the Association from time to time.

F. The Secretary. The secretary shall: (a) keep the minutes of the proceedings of the annual meeting in one or more books provided for that purpose; (b) see that all notices are duly given in accordance with the provisions of these bylaws or as required by law; (c) be custodian of the Unit Owner records of the Association; (d) keep a register of the post office address of each Unit Owner which shall be furnished to the secretary by such Unit Owner; (e) have general charge of the books of the Association; and (f) in general perform all duties incident to the office of secretary and such other duties as from time to time may be assigned to him by the president or by the Association.

G. The Treasurer. The treasurer if any is appointed and, if none, then the president shall: (a) have charge and custody of and be responsible for all funds and securities of the Association; (b) receive and give receipts for monies due and payable to the Association from any source whatsoever and deposit all such monies in the name of the Association in such banks, trust companies, or other depositories as may be authorized by the Association; (c) in general perform all of the duties incident to the office of treasurer and such other duties as from time to time may be assigned to him by the president or by the Association.

H. Execution of Instruments. All checks, drafts, notes, deeds, acceptances, conveyances, contracts or other instruments shall be signed on behalf of the Association by such

person or persons as shall be provided authority by general or special resolution of the Association or, in the absence of any such resolution applicable to such instrument, by the President and by the Treasurer.

5. INTERIM MANAGEMENT BY DECLARANT

From and after the date of the recording of these By-Laws, the Declarant shall exercise all powers and responsibilities assigned by these By-Laws, the Declaration and by the New Hampshire Condominium Act to the Association of Unit Owners, and the Officers until such time as it turns over said powers and responsibilities to the Unit Owners. Said transfer of said powers and responsibilities shall in no event occur later than the first to occur of (1) the time at which the Declarants have completed the passing of title to third party purchasers of Units to which are assigned a total of 90% of the undivided interest in the common areas, or (2) the expiration of seven (7) years from the date of the incorporation of the Association. No contract binding the Association of Unit Owners, or the Unit Owners as a group, which shall have been entered into during the period of Declarant's control as described in this Article shall be binding after the termination of the Declarant's control unless ratified or renewed with the consent or affirmative vote of Unit Owners of a majority of the Units in the Association of Unit Owners.

6. COMMON EXPENSES

A. Common Expenses. The Owner of each Unit shall be liable for and shall pay as and when assessed a share of common expenses in proportion to his or her common interest. Common expenses will include all charges, costs and expenses of every kind incurred by or on behalf of the Association for and in connection with the administration of the condominium, including without limitation all charges for taxes (except real property taxes or other such taxes which are or may hereafter be assessed separately on each Unit and the common interest appurtenant thereto or the personal property or any other interest of a Unit Owner) assessments, insurance, liability for loss or damage arising out of or in connection with the common areas or any fire, accident or nuisance thereon, the cost of repair, reinstatement, rebuilding and replacement of facilities in the common areas, wages, accounting and legal fees, management fees and all other necessary expenses of upkeep, maintenance, management and operation incurred on or for the common areas. The common expenses may also include such amount as the Association may deem proper to make up any deficit in the reserve. Common expenses will also include all common expense assessments against all Units, title to which is held by the Association.

B. Capital Improvements. Whenever in the judgment of the Association the common areas should be improved by new construction, any such new or replacement construction may be made by the Association only after obtaining approval of all Units. If such approval is so obtained, the cost thereof shall constitute a part of the common expenses.

C. Reserves. The Association shall assess as a common expense an amount or amounts on a monthly basis for the purpose of establishing and maintaining a general operating

reserve and general replacement reserve, against anticipated future outlays for operations or for maintenance or replacement of facilities within the common areas or equipment or other property held by the Association in connection with the condominium. The size of any such reserve shall be reviewed at each annual meeting of the Association. The funds will be deposited in a responsible bank and may be intermingled with the Association's general operating account, or segregated in a separate account, in the Association's discretion.

Any such reserve may be used at the discretion of the Association to meet any deficiencies in operating funds from time to time resulting from higher than expected operating expenses and maintenance costs, or any delinquency by any Unit Owner or Owners in the payment of assessment for common expenses. Said reserve shall not operate to exempt any Owner from liability to contribute his or her proportionate share of such expenses or to pay any such assessments thereof and any funds withdrawn from said reserve for the purpose of making up any delinquency shall be reimbursed upon the payment of such delinquent assessments. The proportionate interest of each Owner in said reserve shall not be withdrawn or assigned separately but shall be deemed to be transferred with each Unit even though not mentioned or described expressly in the instrument of transfer.

D. Expenses for Limited Common Areas. Common expenses relating to the limited common areas shall be charged in accordance with Article 6, Section A of the Declaration.

i. Maintenance and Repair. The Board of Directors shall be responsible for the maintenance, repair and replacement (unless necessitated by the negligence, misuse or neglect of an Owner, or of a person gaining access with said Owner's actual or implied consent, in which case such expenses shall be charged to such Owner) of all Limited Common Area, whether located inside or outside of the Units, the costs of which shall be charged to all Owners as a Common Expense except the cost of repairing and replacing Limited Common Area shall be assessed to the units assigned such Limited Common Area.

E. Books. The Association will maintain books of account for common expenses for the common areas, general operating reserves and replacement reserves, in accordance with generally recognized accounting practices, and will have such books of account available for inspection by each Owner or his authorized representative at reasonable business hours. The Association will not less frequently than annually render or cause to be rendered a statement to each Owner of all receipts and disbursements during the preceding year and the balances of the various accounts.

F. Enforcement. The Association of Unit Owners shall have a lien on every Unit for unpaid assessments of common expenses levied against the Unit, which may be applicable to said Unit, in accordance with the provisions of the New Hampshire Condominium Act. Reference is made to RSA Section 356-B:46, as amended from time to time, and any successor statute, describing the enforcement of the Association's lien rights.

G. Delinquent Assessments. In the event an assessment is not paid within thirty (30) days of the date it is due and payable, the Association, through its Board of Directors, may proceed to enforce and collect the said assessment, with interest at the maximum lawful rate of eighteen percent (18%) per annum, whichever is greater, against the unit Owner owing the same in the manner set forth in RSA 356-B:46. Each delinquent unit Owner shall be responsible for attorney's fees, interest and costs incurred by the Association incident to the collection of such delinquent assessments or enforcement of any lien held by the Association for unpaid assessments.

H. Assessments. The Association shall determine the amounts and frequency of assessments for common expenses. In determining the amount, the Association shall in its discretion set a figure for a reasonable prospective period (up to one year) sufficient to accumulate and pay when due the anticipated common expenses for that period. In determining the frequency of the payments, the Association has full discretion to levy the assessments on a quarterly basis or as otherwise determined by the Association. If at the end of any assessment period it is determined that the assessments were estimated too low, the deficiency may be forthwith assessed by the Association and paid by the Unit Owners as a special assessment or assessments.

I. Expense to Unit Owner. No one shall obstruct, commit any waste in or otherwise cause any damage beyond reasonable wear and tear to the Common Area and any one causing such damage shall pay the expense incurred by the Association in repairing same.

8. GENERAL PROVISIONS

A. Violations. In the event of a violation other than non-payment violation of the Declaration, these By-Laws, or the applicable portions of the Act, the Association, by direction of its Board of Directors, may notify the unit owner by written notice of such breach, and if such violation shall continue for a period of thirty (30) days from the date of this notice, the Association, through its Board of Directors, shall have the right to treat such violation as an intentional and inexcusable and material breach of the Declaration, the By-Laws, or the pertinent provisions of the Condominium Act, and the Association may then, at its option, have the following election: (a) an action at law to recover for its damage on behalf of the Association or on behalf of the other unit owners; (b) an action in equity to enforce performance on the part of the unit owner; or (c) an action in equity for such equitable relief as may be necessary under the circumstances, including injunctive relief. Failure on the part of the Association to maintain such an action at law or in equity within ninety (90) days from date of a written request, signed by a unit owner, sent to the Board of Directors, shall authorize any unit Owner to bring an action in equity or suit at law on account of the violation. Any violations which are deemed by the Board of Directors to be a hazard to public health may be corrected immediately as an emergency matter. The Association shall be entitled to collect all legal fees incurred as a result of any such action or any action instituted for collection of any unpaid assessments.

B. Waiver. The failure of the Association of Unit Owners to insist in any one or more instances upon strict performance of or compliance with any of the covenants of the Owner hereunder, or to exercise any right or option herein contained or to serve any notice, or to institute any action or summary proceeding, shall not be construed as a waiver or a relinquishment for the future, of such covenant or option or right, but such covenant or option or right shall continue and remain in full force and effect.

C. Notices. All notices to Unit Owners shall be deemed given if hand delivered or sent by Registered or Certified Mail, Return Receipt Requested, to the Owner, addressed to the Owner's address appearing on the records of the Association. Any notice given or mailed to one co-Owner shall be presumed to have been properly given to any other co-Owner, regardless of whether a separate notice was given or sent to said other co-Owner. When any policy of insurance has been obtained on behalf of the Association, written notice of the obtainment thereof and of any subsequent changes therein or termination thereof shall be promptly furnished to each Unit Owner by the Secretary of the Association. Pursuant to the provisions of RSA 356-B:43 (II) all notices shall be sent in accordance with the provisions of the last sentence of RSA 356-B:37-a.

D. Amendment. Except as otherwise provided in the Condominium Act and this Declaration and Bylaws, this Declaration and Bylaws may only be amended by agreement of at least two thirds (2/3) of the Owners, provided, however, that (i) any such amendment shall be executed by such two thirds (2/3) of the Owners or by the President and Treasurer of the Association accompanied by a certification of vote of the Secretary; (ii) evidence of such amendment shall be duly recorded at the Registry pursuant to Section 34 IV, of the Condominium Act; (iii) no amendment to the Declaration shall be adopted that could interfere with the construction, sale, lease or other disposition or use of such Units; (iv) no such amendment shall be contrary to the provisions of the Condominium Act. Any approval of amendments by Mortgagees shall be subject to the provisions of and limitations of RSA 356-B.

E. Resale by Purchaser. In the event of any resale of a unit or any interest therein by any person (other than the Declarant or its successors in interest) the prospective Unit Owner shall have the right to obtain from the Association, prior to the contract date of the disposition, the following:

i. A statement of any capital expenditures and major maintenance expenditures anticipated by the Association within the current or succeeding two fiscal years;

ii. A statement of the status and amount of any reserve for the major maintenance or replacement fund, and any portion of such fund earmarked for any specified project by the Association;

iii. A copy of the income statement and balance sheet of the Association for the last fiscal year for which such statement is available;

iv. A statement of the status of any pending suits or judgments in which the Association is a defendant;

v. A statement setting forth what insurance coverage is provided for all Unit Owners by the Association and what additional insurance coverage would normally be secured by each individual Unit Owner;

vi. A statement that any improvements or alterations made to the Unit or the limited common area assigned thereto by the prior Unit Owner are not known to be in violation of the Declaration.

The President of the Association or any other Officer of the Association shall furnish such statements upon written request of any prospective Unit Owner within ten (10) days of the receipt of such request.

Said statement once issued shall be binding upon the Association, and every other Unit Owner. The Association may establish a fee to be charged to the Unit Owner in consideration of issuing said statement, which fee shall not exceed $10.00 for each request, unless a higher amount is permitted by law.

F. Notices to or from Mortgagees

i. Notice to Board. A Unit Owner who mortgages his condominium unit shall notify the Board of the name and address of his mortgagee and the principal amount of such mortgage. The Board shall maintain suitable records pertaining to such mortgages.

ii. Reporting. The Board, whenever so requested in writing by a mortgagee of a condominium unit, shall promptly report any then unpaid assessments for common expenses due from, or any other default by, the Owner of the mortgaged condominium unit. The Board shall be entitled to require a fee of Ten Dollars ($10.00) for each report provided a mortgagee.

iii. Default. The Board shall give written notice to an Owner of any default by the Owner in the performance of any obligations under the Condominium Instruments and, if such default is not cured within thirty (30) days, shall send a copy of such notice to each holder of a mortgage covering such unit whose name and address has theretofore been furnished to the Board. No suit or other proceeding may be brought to foreclose the lien for any assessment levied pursuant to the Declaration or these By-Laws except after ten (10) days written notice to the holder of the first mortgage on the unit which is the subject matter of such suit or proceeding.

Dated this ____ day of _____, 2021.

_____, LLC

_____ By: _____
Witness Richard W. Green, Manager
Duly Authorized

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM, ss.

This instrument was acknowledged before me on _____, 2018, by Richard W. Green, Manager of _____, LLC, a New Hampshire limited liability company.

_____
Notary Public
Printed Name: _____
My Commission Expires: _____

Stephen G. Pernaw & Company, Inc.

P.O. Box 1721 • Concord, NH 03302
tel: (603) 731-8500 • fax: (866) 929-6094 • sgp@ pernaw.com

Transportation: Engineering • Planning • Design

M E M O R A N D U M

Ref: 2047A

To: Michael Green
Green & Company

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Residential Development – Traffic Evaluation
Portsmouth, New Hampshire

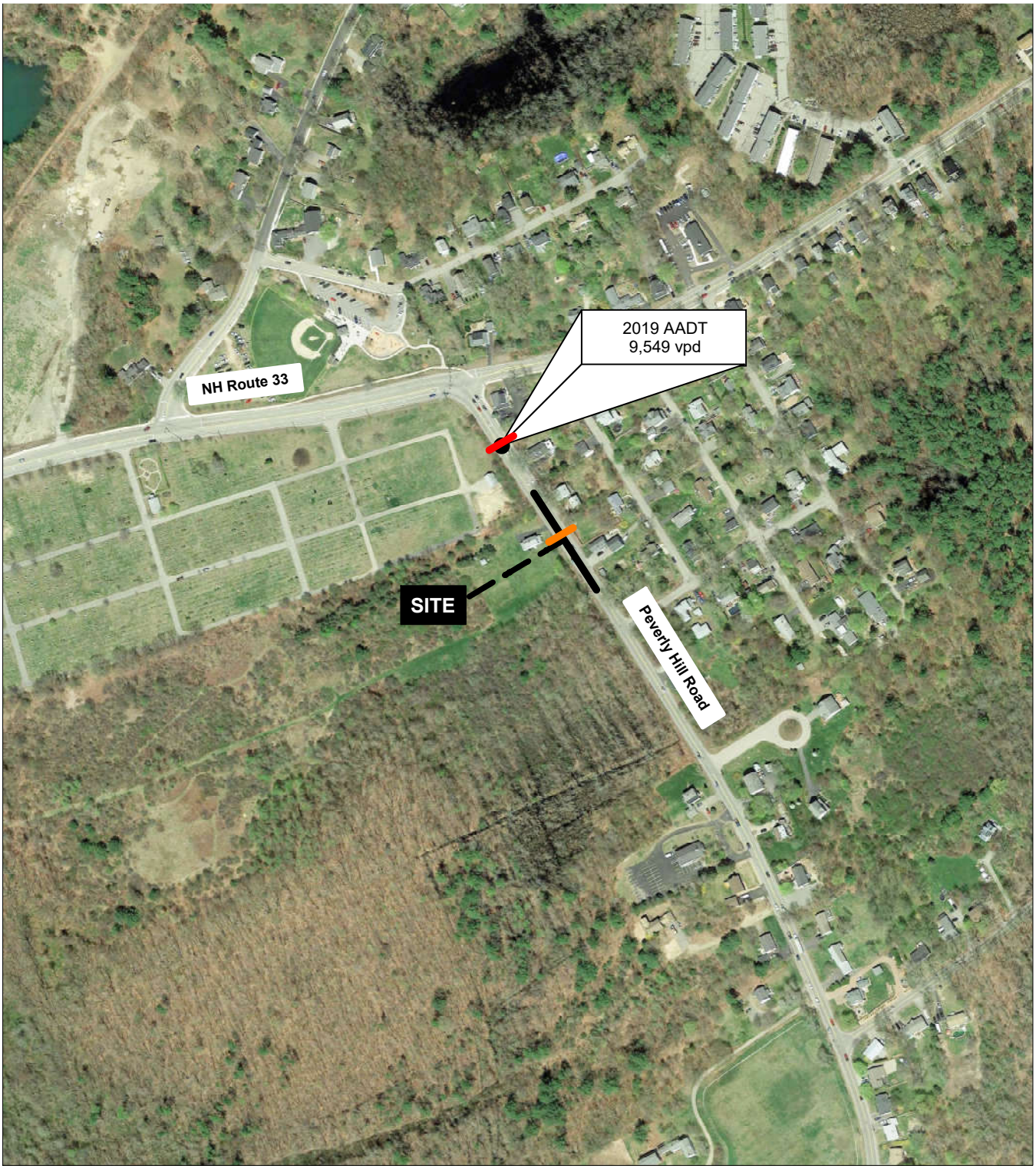
Date: October 6, 2020

As requested, Pernaw & Company, Inc. has conducted this *"Traffic Evaluation"* regarding your proposed residential development project located on the west side of Peverly Hill Road in Portsmouth, New Hampshire. This study evaluates the Peverly Hill Road / Private Road A intersection and in terms of traffic operations, capacity, and safety based on 2032 Build traffic volumes. The purpose of this memorandum is to summarize our research of available traffic count data, our recent traffic counts at the subject site, the trip generation analysis for the proposed development, the post-development traffic projections, and the results of the various technical analyses. This study has determined that this proposed intersection will function safely and adequately as a conventional three-leg T-intersection with one shared general-purpose travel lane on each approach. To summarize:

Proposed Development – The conceptual design plan entitled *"Concept A-PUD Plan,"* prepared by TFM, Inc., Sheet A-02, dated July 28, 2020 shows that the proposed development will create 60 single-family detached residential units along a private roadway system (see Attachment 1). Private Road A is proposed to intersect the west side of Peverly Hill Road approximately 450-feet south of NH33 (Middle Road). The location of the automatic traffic recorders and the subject site with respect to the area roadway system is shown on Figure 1.

Existing Conditions – Peverly Hill Road extends in a general north-south direction along the site frontage and provides access between NH33 and US1. This road provides one travel lane in each direction in the vicinity of the subject site. The pavement width is delineated with a four-inch double yellow centerline and four-inch single white edge lines. Paved, grass and gravel shoulders of variable width are present along both sides of the roadway. The speed limit is posted at 25 mph in each direction in this area.

Existing Traffic Volumes – According to a short-term NHDOT traffic count conducted on Peverly Hill Road (south of NH33) in June 2019, this roadway section carried an estimated Annual Average Daily Traffic (AADT) volume of approximately 9,549 vehicles per day in 2019. The hourly data indicates that weekday volumes typically reached peak levels from 8:00 to 9:00 AM and from 4:00 to 5:00 PM. The diagrams on Page 3 summarize the daily and hourly variations in traffic demand at this location (see Attachments 2 & 3). This information was supplemented by a 24-hour Automatic Traffic Recorder count conducted by our office in September 2020.



= AUTOMATIC TRAFFIC RECORDER LOCATION (NHDOT)

= AUTOMATIC TRAFFIC RECORDER LOCATION (PERNAW & CO., INC.)

NORTH

2047A

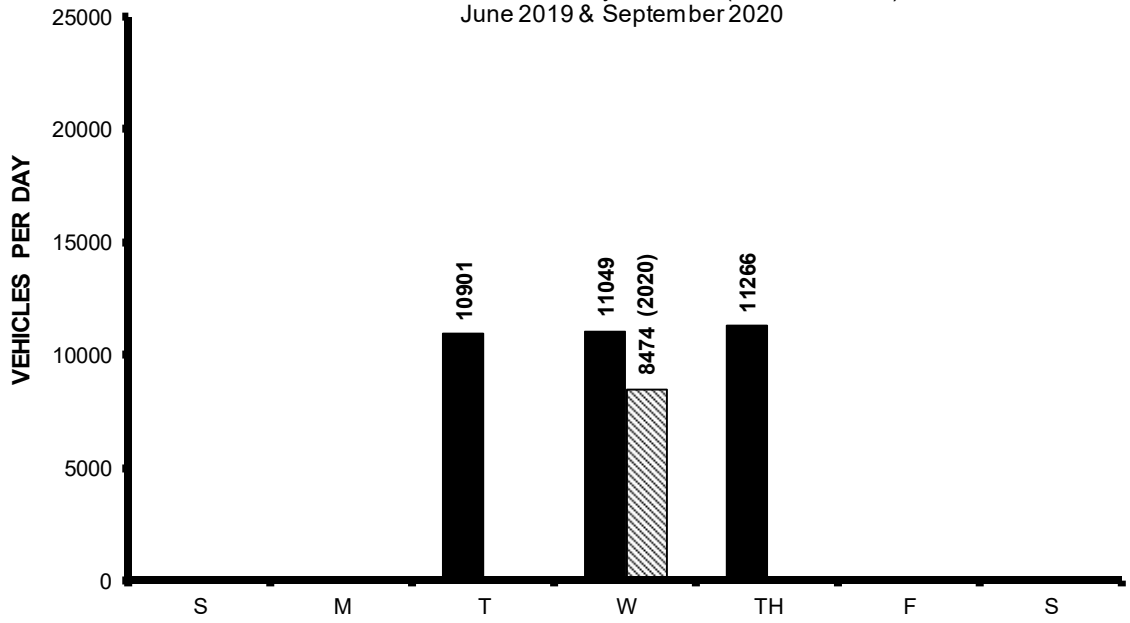
Figure 1

Site Location

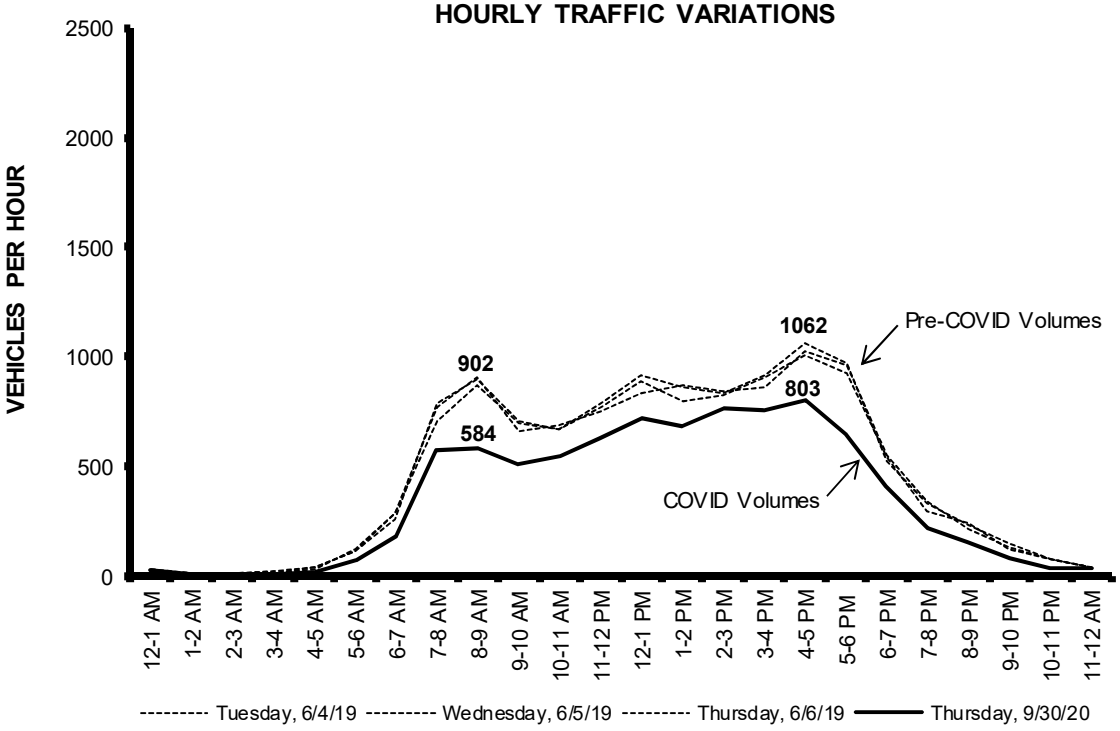
Traffic Evaluation, Proposed Residential Development, Portsmouth, New Hampshire

DAILY TRAFFIC VARIATIONS

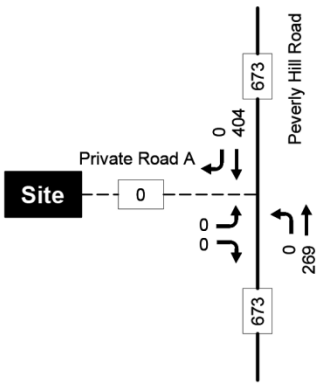
Portsmouth, NH - Peverly Hill Road (South of NH33)
June 2019 & September 2020



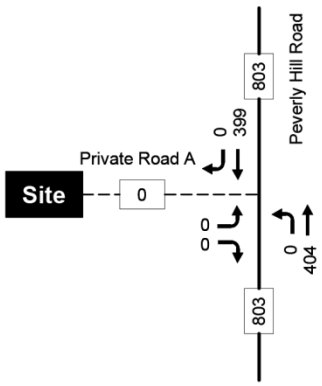
HOURLY TRAFFIC VARIATIONS



The raw 2020 directional traffic volume data on Peverly Hill Road are summarized in the diagrams below. This data shows that travel in the southbound direction is predominant during the morning peak hour, and this reverses to northbound during the evening peak hour. This pattern is indicative of the employment opportunities in the city, and the proximity of Interstate Route 95.



AM PEAK HOUR
Wednesday, September 30, 2020
7:30 to 8:30 AM



PM PEAK HOUR
Wednesday, September 30, 2020
4:00 to 5:00 PM

When compared with the 2019 NHDOT count data, it is obvious that the current traffic levels on Peverly Hill Road have been affected by the COVID-19 pandemic. For this reason, the subsequent post-development traffic volumes contained herein reflect the use of a separate COVID adjustment factor. The raw traffic count data is attached (see Attachment 4).

Trip Generation - To estimate the quantity of vehicle-trips that will be produced by the proposed residential development, the standard trip generation rates and equations published by the Institute of Transportation Engineers[1] (ITE) were considered. Both Land Use Code 210 and 220 are somewhat applicable, for different reasons. LUC 210 applies to single-family detached dwellings; however, the proposed units are condominiums and are much smaller in size than is found in a conventional residential subdivision. LUC 220 applies to condominiums, apartments, and townhouses; however, with multiple units in the same building. Consequently, the trip rates per person for LUC 210 and the trip rates per dwelling unit for LUC 220 were considered; and the higher of the two results were utilized for traffic projection and analysis purposes. According to Green & Company's experience with similar development projects, there are approximately two persons per unit in this type of housing.

[1] Institute of Transportation Engineers, *Trip Generation*, 10th Edition (Washington, D.C., 2017)

Table 1 — Trip Generation Summary

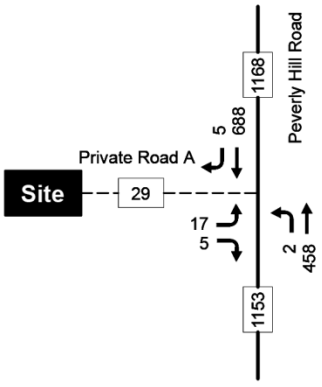
	Estimate A LUC 210 120 Residents [1]	Estimate B LUC 220 60 Units [2]
Weekday AM Peak Hour		
Entering	8 veh	**7 veh**
Exiting	17 veh	**22 veh**
Total	25 trips	**29 trips**
Weekday PM Peak Hour		
Entering	**28 veh**	23 veh
Exiting	**14 veh**	14 veh
Total	**42 trips**	37 trips
Weekday Total (24-hours)		
Entering	198 veh	207 veh
Exiting	198 veh	207 veh
Total	396 trips	414 trips

[1] ITE Land Use Code 210 - Single-Family Detached Housing (Use 2 persons per unit, Trip Equation Method)

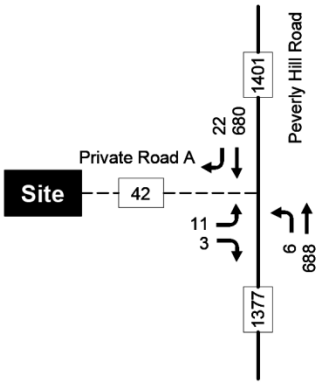
[2] ITE Land Use Code 220 - Multifamily Housing - Low-Rise (60 Dwelling Units, Trip Equation Method)

Based upon ITE Land Use Code 210 (Single-Family Detached Housing) and ITE Land Use Code 220 (Multifamily Housing – Low Rise), the overall development is expected to generate approximately 29 vehicle-trips (7 arrivals, 22 departures) during the AM peak hour, and 42 vehicle-trips (28 arrivals, 14 departures) during the PM peak hour, on an average weekday basis (see Attachment 5).

Future Build Traffic Projections – The diagrams below summarize the Build traffic projections for the 2032 horizon year. These projections are based on the September 2020 traffic count data, a peak-month seasonal adjustment factor of 1.05 (see Attachment 6), a 2.0% background traffic growth rate, compounded annually (see Attachment 7), and a COVID-19 adjustment factor of 1.28 (see Attachment 8). The trip distribution analysis (see Attachment 9) indicates that the majority of site traffic (78%) will travel to/from points north on Peverly Hill Road.



2032 AM Build



2032 PM Build

Intersection Capacity and Level of Service - The long-range (2032) traffic projections form the basis for assessing traffic operations at the Peverly Hill Road / Private Road A intersection from a capacity and delay standpoint. This intersection was analyzed according to the methodologies of the *Highway Capacity Manual 2010*[2] as replicated by the latest edition of the *Synchro Signal Timing Software (Version 10),* which is capable of analyzing unsignalized intersections as well.

Capacity and Level of Service (LOS) calculations pertaining to unsignalized intersections address the quality of service for those vehicles turning into and out of the intersecting side street or driveway. The availability of adequate gaps in the traffic stream on the major street actually controls the potential capacity for vehicle movements to and from the minor approaches, in terms of vehicles per hour.

The results of the analysis for the subject intersection show that all applicable turning movements will operate well below capacity through 2032 with the proposed development fully occupied. Nevertheless, departures from the Private Road A approach to Peverly Hill Road can be expected to encounter moderate delays during the peak hour periods in 2032: Level of Service E during the morning peak hour; Level of Service D during the evening peak hour (see Attachments 10 & 11).

Auxiliary Turn Lane Warrants Analysis

Left-Turn Treatment - The type of treatment needed to accommodate left-turning vehicles from any street or highway to an intersecting side street (or driveway) can range from no treatment, where turning volumes are low; to the provision of a bypass lane for through traffic to travel around left-turning vehicles; to the addition of a formal center turn lane used exclusively by left-turning vehicles for deceleration and storage while waiting to complete their maneuvers.

Analysis of the 2032 traffic volumes using NCHRP 457 guidelines confirmed that no special treatment is needed for left-turn arrivals from Peverly Hill Road. The results of the analysis are summarized on Table 2. This finding means that the northbound through lane on Peverly Hill Road will function safely and adequately as a shared through-left lane (see Attachments 12 & 13).

Right-Turn Treatment - The type of treatment needed to accommodate right-turning vehicles from any street or highway to any intersecting side street (or driveway) can range from a radius only, where turning volumes are low; to the provision of a short 10:1 right-turn taper; to the addition of an exclusive right-turn lane, where turning volumes and through traffic volumes are significant.

Analysis of the 2032 traffic volumes contained herein using NCHRP 457 guidelines confirmed that right-turn treatment is not warranted at the subject intersection. The results of these analyses are summarized on Table 2 and the computations are attached (Attachments 14 & 15).

Minor Road Approach Treatment - The type of treatment needed to accommodate exiting vehicles from the minor-road approach at a stop-controlled intersection can range from a single lane (shared left-right lane) in low-volume conditions, to two exit lanes (exclusive left-turn lane and exclusive right-turn lane) where turning volumes and through traffic volumes are significant,

[2] Transportation Research Board, *Highway Capacity Manual* (Washington, D.C., 2010).

to multiple exit lanes in extreme cases. The analysis is summarized on Table 2 and shows that a single departure lane on the Private Road A approach to Peverly Hill Road is sufficient (see Attachments 16 & 17).

Table 2 — Auxiliary Turn Lane Warrants Analysis Peverly Hill Road / Private Road A

	2032 AM Build Volumes	2032 PM Build Volumes
I. LEFT-TURN LANE WARRANTS ANALYSIS		
Peak Hour Inputs:		
Left-Turn Volume (NB)	2	6
Advancing Volume (NB)	460	694
Opposing Volume (SB)	693	702
Percent Lefts	0.4%	0.9%
Speed (mph)	25	25
Limiting Advancing Volume (veh/h)	>1000	>1000
Left-Turn Treatment Warranted?	**NO**	**NO**
II. RIGHT-TURN LANE WARRANTS ANALYSIS		
Peak Hour Inputs:		
Right-Turn Volume (SB)	5	22
Approach Volume (SB)	693	702
Speed (mph)	25	25
Limiting Right-Turn Volume (veh/h)	225	208
Add Right-Turn Bay?	**NO**	**NO**
III. MINOR-ROAD APPROACH GEOMETRY ANALYSIS		
Peak Hour Inputs:		
Major-Road Volume (NB-SB)	1153	1396
% Right-Turns on Minor (EB)	23	21
Minor-Road Approach Volume	22	14
Limiting Minor-Road Volume (veh/h)	132	95
Consider TWO Approach Lanes?	**NO**	**NO**

Findings & Conclusions

1. The September 2020 traffic count conducted on Peverly Hill Road at the subject site revealed that this section of roadway carried approximately 8,500 vehicles on a typical weekday, with 673 vehicles observed passing the site during the AM peak hour (7:30 to 8:30 AM) and 803 vehicles observed during the PM peak hour (4:00 to 5:00 PM). The predominant travel direction was southbound during the AM, and northbound during the PM.

2. The proposed residential development is expected to generate approximately 29 (AM) and 42 (PM) vehicle-trips during the peak hour periods. The majority (78%) are expected to travel to/from points north on Peverly Hill Road (via NH33).

3. Site traffic is expected to increase the two-way traffic volume on Peverly Hill Road by +2% north of the site, and +1% south of the site by 2032.

4. The intersection capacity and Level of Service analysis indicates that all applicable traffic movements at this intersection will operate well below capacity through 2032 with the development fully occupied. By 2032, departures from the site are expected to operate at Level of Service E during the morning peak hour, and at Level of Service D during the PM peak hour. Left-turn arrivals (from Peverly Hill Road northbound) will operate at Level of Service B, or higher, during all hours of the day through 2032. Vehicle queuing on the Private Road A approach to Peverly Hill Road is expected to be minimal.

5. The 2032 Build traffic volumes do not satisfy the NCHRP guidelines for left-turn treatment or right-turn treatment at the Private Road A intersection on Peverly Hill Road. The subject intersection will function safely and efficiently with one shared travel lane on each approach to the subject intersection.

From a traffic operations and safety standpoint, providing ample sight distances looking left and right from the Proposed Road A approach to Peverly Hill Road is an important safety consideration. This new access road should operate under stop sign control, and be delineated with a 18-inch white stop line and a short section of 4-inch double-yellow centerline to separate inbound and outbound vehicles.

Attachments

A T T A C H M E N T S

PUD SITE DATA

DIMENSIONAL REQUIREMENTS (PROPOSED PUD USE)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
MINIMUM LOT SIZE	10 AC	100± AC
FRONTAGE	100 FT OR (2) @ 50'	865± FT
BASE RESIDENTIAL DENSITY:	74 RESIDENCES	60 RESIDENCES
MINIMUM INTERNAL SETBACKS:		
FRONT	20 FT	20 FT
SIDE	25 FT	TBD
REAR	25 FT	25 FT
BETWEEN BUILDINGS	30 FT	30 FT
MINIMUM OPEN SPACE	25%	TBD
MINIMUM PERIMETER BUFFER:		
FRONT	100 FT	>100 FT
SIDE	50 FT	>50 FT
REAR	50 FT	>50 FT

BASE RESIDENTIAL DENSITY CALCULATIONS

REQUIRED BASE RESIDENTIAL DENSITY:

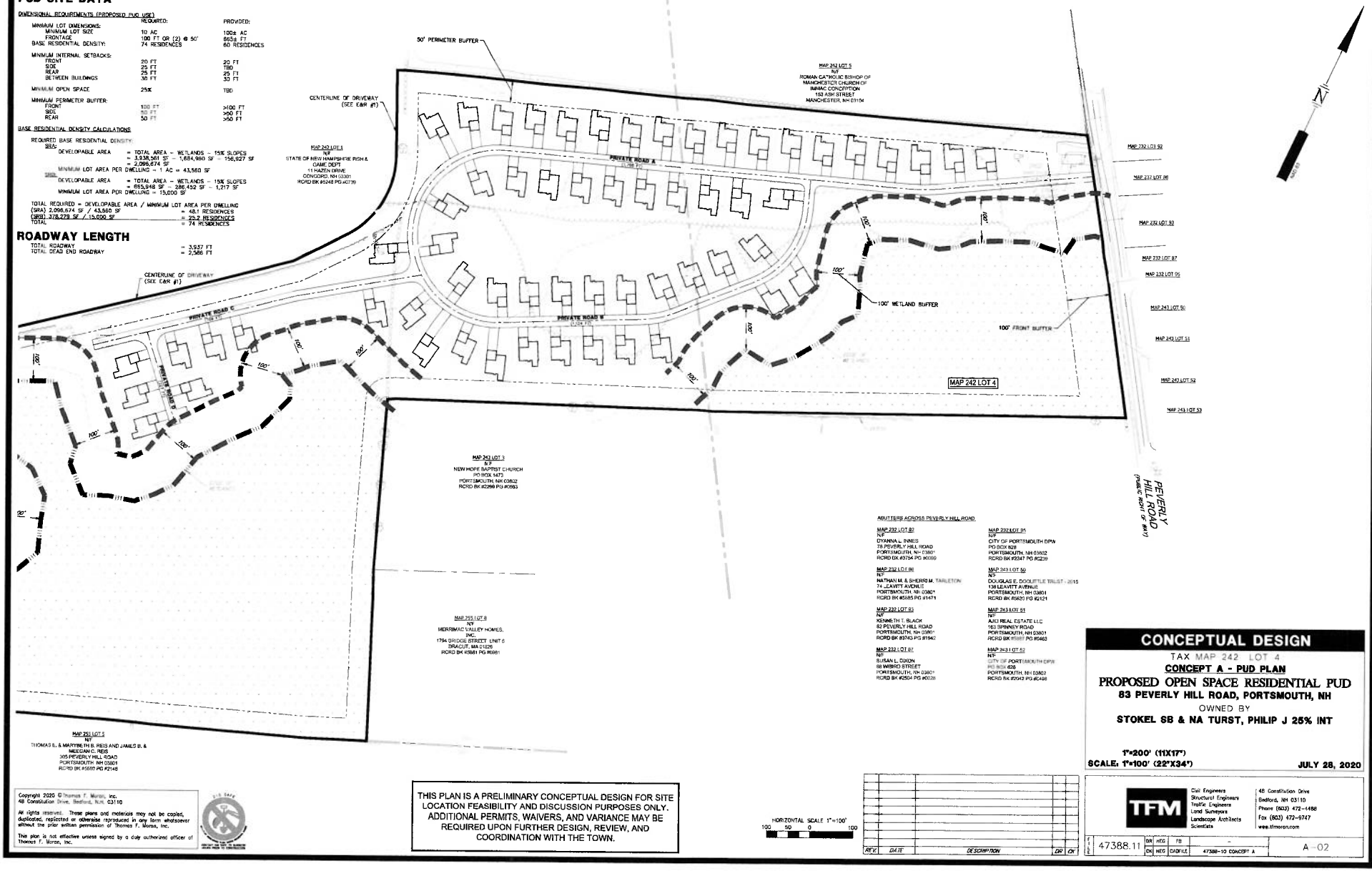
SRA:
DEVELOPABLE AREA = TOTAL AREA − WETLANDS − 15% SLOPES
= 3,938,561 SF − 1,684,980 SF − 156,927 SF
= 2,096,674 SF
MINIMUM LOT AREA PER DWELLING = 1 AC = 43,560 SF

GRA:
DEVELOPABLE AREA = TOTAL AREA − WETLANDS − 15% SLOPES
= 665,948 SF − 286,452 SF − 1,217 SF
MINIMUM LOT AREA PER DWELLING = 15,000 SF

TOTAL REQUIRED = DEVELOPABLE AREA / MINIMUM LOT AREA PER DWELLING
(SRA) 2,096,674 SF / 43,560 SF = 48.1 RESIDENCES
(GRA) 478,279 SF / 15,000 SF = 25.2 RESIDENCES
TOTAL = 74 RESIDENCES

ROADWAY LENGTH

TOTAL ROADWAY = 3,937 FT
TOTAL DEAD END ROADWAY = 2,586 FT



ABUTTERS ACROSS PEVERLY HILL ROAD

MAP 232 LOT 92
N/F
DYANNA L. INNES
78 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK 45704 PG 00099

MAP 232 LOT 88
N/F
NATHAN M. & SHERRI M. TARLETON
74 JEWETT AVENUE
PORTSMOUTH, NH 03801
RCRD BK 05685 PG 01471

MAP 232 LOT 93
N/F
KENNETH T. BLACK
82 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK 03743 PG 01942

MAP 232 LOT 87
N/F
SUSAN L. DIXON
88 WIBIRD STREET
PORTSMOUTH, NH 03801
RCRD BK 42504 PG 00039

MAP 232 LOT 95
N/F
CITY OF PORTSMOUTH DPW
PO BOX 628
PORTSMOUTH, NH 03802
RCRD BK 05247 PG 02239

MAP 243 LOT 50
N/F
DOUGLAS E. DOOLITTLE TRUST - 2015
136 JEWETT AVENUE
PORTSMOUTH, NH 03801
RCRD BK 05630 PG 02121

MAP 243 LOT 51
N/F
AJKI REAL ESTATE LLC
165 SPINNEY ROAD
PORTSMOUTH, NH 03801
RCRD BK 05881 PG 00463

MAP 243 LOT 52
N/F
CITY OF PORTSMOUTH DPW
PO BOX 628
PORTSMOUTH, NH 03802
RCRD BK 05042 PG 00498

CONCEPTUAL DESIGN

TAX MAP 242 LOT 4

CONCEPT A - PUD PLAN

PROPOSED OPEN SPACE RESIDENTIAL PUD

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TURST, PHILIP J 25% INT

1"=200' (11X17")
SCALE: 1"=100' (22"X34")

JULY 28, 2020

THIS PLAN IS A PRELIMINARY CONCEPTUAL DESIGN FOR SITE LOCATION FEASIBILITY AND DISCUSSION PURPOSES ONLY. ADDITIONAL PERMITS, WAIVERS, AND VARIANCE MAY BE REQUIRED UPON FURTHER DESIGN, REVIEW, AND COORDINATION WITH THE TOWN.

HORIZONTAL SCALE 1"=100'
100 50 0 100

REV.	DATE	DESCRIPTION	DR	CK

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48 Constitution Drive, Bedford, NH 03110

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This plan is not effective unless signed by a duly authorized officer of Thomas F. Moran, Inc.

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
ScientSists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE 47388.11 | DR: MEG | TB | DK: MEG | CADFILE: 47388-10 CONCEPT A | A-02

Attachment 1

New Hampshire DOT Department of Transportation

MS2 Transportation Data Management System

List View | All DIRs

Record 1 of 1 Goto Record go

Location ID	82379124	**MPO ID**	
Type	SPOT	**HPMS ID**	
On NHS	No	**On HPMS**	Yes
LRS ID	L3790080__	**LRS Loc Pt.**	
SF Group	04	**Route Type**	
AF Group	04	**Route**	
GF Group	E	**Active**	Yes
Class Dist Grp	Default	**Category**	3
Seas Clss Grp	Default		
WIM Group	Default		
QC Group	Default		
Fnct'l Class	Major Collector	**Milepost**	
Located On	Peverly Hill Rd		
Loc On Alias	PEVERLY HILL RD SOUTH OF NH 33		

More Detail

STATION DATA

Directions: 2-WAY

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2019	9,549	1,062	11		8,748 (92%)	801 (8%)	
2018	10,823[3]		11		9,978 (92%)	845 (8%)	Grown from 2017
2017	10,611[3]		11		9,847 (93%)	764 (7%)	Grown from 2016
2016	10,403	1,150	11		9,487 (91%)	916 (9%)	
2015	10,527[3]						Grown from 2014

> >>| 1-5 of 20

Travel Demand Model

	Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

	Date	Int	Total
	Thu 6/6/2019	60	11,266
	Wed 6/5/2019	60	11,049
	Tue 6/4/2019	60	10,901
	Tue 7/19/2016	60	12,808
	Mon 7/18/2016	60	12,033
	Sun 7/17/2016	60	6,806
	Fri 9/13/2013	60	11,838
	Thu 9/12/2013	60	11,713
	Wed 9/11/2013	60	11,902
	Tue 9/10/2013	60	11,404

VOLUME TREND

Year	Annual Growth
2019	-12%
2018	2%
2017	2%
2016	-1%
2015	3%
2014	2%
2013	4%
2010	-7%
2007	-10%

New Hampshire DOT
Department of Transportation

MS2
Transportation Data Management System

Excel Version

Weekly Volume Report

Location ID:	82379124	**Type:**	SPOT
Located On:	Peverly Hill Rd	:	
Direction:	2-WAY		
Community:	PORTSMOUTH	**Period:**	Mon 6/3/2019 - Sun 6/9/2019
AADT:	9549		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM		14	28	24				22	0.2%
1:00 AM		11	18	12				14	0.1%
2:00 AM		16	13	13				14	0.1%
3:00 AM		13	17	20				17	0.2%
4:00 AM		35	39	40				38	0.3%
5:00 AM		125	113	115				118	1.1%
6:00 AM		286	290	263				280	2.5%
7:00 AM		710	771	786				756	6.8%
8:00 AM		867	906	902				892	8.1%
9:00 AM		700	664	707				690	6.2%
10:00 AM		666	688	674				676	6.1%
11:00 AM		773	751	792				772	7.0%
12:00 PM		893	835	916				881	8.0%
1:00 PM		802	872	858				844	7.6%
2:00 PM		828	840	830				833	7.5%
3:00 PM		904	861	916				894	8.1%
4:00 PM		1004	1025	1062				1,030	9.3%
5:00 PM		926	963	973				954	8.6%
6:00 PM		543	548	524				538	4.9%
7:00 PM		299	340	336				325	2.9%
8:00 PM		246	216	237				233	2.1%
9:00 PM		124	133	148				135	1.2%
10:00 PM		74	78	79				77	0.7%
11:00 PM		42	40	39				40	0.4%
Total	**0**	**10,901**	**11,049**	**11,266**	**0**	**0**	**0**		
24hr Total		10901	11049	11266				11,072	
AM Pk Hr		8:00	8:00	8:00					
AM Peak		867	906	902				892	
PM Pk Hr		4:00	4:00	4:00					
PM Peak		1004	1025	1062				1,030	
% Pk Hr		9.21%	9.28%	9.43%				9.31%	

Stephen G. Pernaw & Company, Inc.

Automatic Traffic Recorder Count - Peverly Hill Road, Portsmouth, NH (South of NH Route 33)

Wednesday, September 30, 2020

Period Beginning	CARS SB	CARS NB	TRUCKS SB	TRUCKS NB	TOTAL SB	TOTAL NB	TOT	
12:00 AM	6	3	0	0	6	3	9	
12:15 AM	5	2	0	0	5	2	7	
12:30 AM	4	1	0	0	4	1	5	
12:45 AM	2	2	0	0	2	2	4	25
1:00 AM	0	1	0	0	0	1	1	17
1:15 AM	2	0	0	0	2	0	2	12
1:30 AM	1	1	0	0	1	1	2	9
1:45 AM	1	1	0	1	1	2	3	8
2:00 AM	1	0	1	0	2	0	2	9
2:15 AM	1	1	0	0	1	1	2	9
2:30 AM	1	0	0	0	1	0	1	8
2:45 AM	1	1	0	0	1	1	2	7
3:00 AM	1	2	0	1	1	3	4	9
3:15 AM	0	0	0	0	0	0	0	7
3:30 AM	0	0	0	1	0	1	1	7
3:45 AM	3	0	0	0	3	0	3	8
4:00 AM	1	1	0	0	1	1	2	6
4:15 AM	1	2	0	0	1	2	3	9
4:30 AM	1	0	0	0	1	0	1	9
4:45 AM	4	4	1	0	5	4	9	15
5:00 AM	6	2	1	0	7	2	9	22
5:15 AM	17	4	0	0	17	4	21	40
5:30 AM	9	10	1	0	10	10	20	59
5:45 AM	20	3	1	1	21	4	25	75
6:00 AM	13	13	3	1	16	14	30	96
6:15 AM	17	7	0	0	17	7	24	99
6:30 AM	26	11	3	2	29	13	42	121
6:45 AM	63	22	4	1	67	23	90	186
7:00 AM	50	27	5	0	55	27	82	238
7:15 AM	76	33	4	3	80	36	116	330
7:30 AM	91	41	2	7	93	48	141	429
7:45 AM	150	73	8	6	158	79	237	576
8:00 AM	76	72	4	6	80	78	158	652
8:15 AM	69	61	4	3	73	64	137	673
8:30 AM	71	36	2	7	73	43	116	648
8:45 AM	91	72	3	7	94	79	173	584
9:00 AM	71	54	1	2	72	56	128	554
9:15 AM	68	43	7	2	75	45	120	537
9:30 AM	65	50	4	7	69	57	126	547
9:45 AM	86	45	1	2	87	47	134	508
10:00 AM	80	44	7	0	87	44	131	511
10:15 AM	79	60	8	6	87	66	153	544
10:30 AM	64	51	2	1	66	52	118	536
10:45 AM	85	53	7	3	92	56	148	550
11:00 AM	79	51	7	3	86	54	140	559
11:15 AM	77	60	7	4	84	64	148	554
11:30 AM	81	61	6	9	87	70	157	593
11:45 AM	93	71	7	9	100	80	180	625
					1920	1247	3167	
7:30 - 8:30 AM Peak Hour					404	269	673	

Period Beginning	CARS SB	CARS NB	TRUCKS SB	TRUCKS NB	TOTAL SB	TOTAL NB	TOT	
12:00 PM	98	80	10	10	108	90	198	683
12:15 PM	88	86	3	2	91	88	179	714
12:30 PM	92	81	8	2	100	83	183	740
12:45 PM	88	66	2	3	90	69	159	719
1:00 PM	75	81	4	2	79	83	162	683
1:15 PM	79	74	4	3	83	77	160	664
1:30 PM	79	76	8	6	87	82	169	650
1:45 PM	100	80	3	8	103	88	191	682
2:00 PM	94	68	8	6	102	74	176	696
2:15 PM	92	79	6	6	98	85	183	719
2:30 PM	107	68	5	5	112	73	185	735
2:45 PM	110	102	3	7	113	109	222	766
3:00 PM	113	90	7	2	120	92	212	802
3:15 PM	89	81	3	5	92	86	178	797
3:30 PM	91	91	8	6	99	97	196	808
3:45 PM	94	68	3	2	97	70	167	753
4:00 PM	93	110	0	3	93	113	206	747
4:15 PM	99	111	2	1	101	112	213	782
4:30 PM	86	92	5	0	91	92	183	769
4:45 PM	110	82	4	5	114	87	201	803
5:00 PM	89	100	2	0	91	100	191	788
5:15 PM	100	71	2	0	102	71	173	748
5:30 PM	79	76	1	1	80	77	157	722
5:45 PM	76	48	0	0	76	48	124	645
6:00 PM	72	55	0	0	72	55	127	581
6:15 PM	60	40	0	0	60	40	100	508
6:30 PM	49	40	0	1	49	41	90	441
6:45 PM	58	32	0	0	58	32	90	407
7:00 PM	31	43	0	0	31	43	74	354
7:15 PM	33	25	0	0	33	25	58	312
7:30 PM	29	21	0	0	29	21	50	272
7:45 PM	20	19	0	1	20	20	40	222
8:00 PM	21	23	0	0	21	23	44	192
8:15 PM	16	19	0	0	16	19	35	169
8:30 PM	17	23	0	0	17	23	40	159
8:45 PM	20	13	0	0	20	13	33	152
9:00 PM	15	9	1	0	16	9	25	133
9:15 PM	11	6	0	0	11	6	17	115
9:30 PM	6	9	0	0	6	9	15	90
9:45 PM	12	11	2	0	14	11	25	82
10:00 PM	3	11	0	0	3	11	14	71
10:15 PM	5	7	0	0	5	7	12	66
10:30 PM	1	1	0	0	1	1	2	53
10:45 PM	2	7	0	0	2	7	9	37
11:00 PM	5	5	0	0	5	5	10	33
11:15 PM	2	5	0	0	2	5	7	28
11:30 PM	9	4	0	0	9	4	13	39
11:45 PM	2	7	0	0	2	7	9	39
					2824	2483	5307	
4:00 - 5:00 PM Peak Hour					399	404	803	

DAILY TRAFFIC VOLUME = 8,474 vehicles per day

2047A

Trip Generation Summary

Alternative: Alternative 1
Phase:
Project: 2047A Gen

Open Date: 10/5/2020
Analysis Date: 10/5/2020

ITE	Land Use		Weekday Average Daily Trips			Weekday AM Peak Hour of Adjacent Street Traffic			Weekday PM Peak Hour of Adjacent Street Traffic		
		*	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
210	SFHOUSE 1		198	198	396	8	17	25	28	14	42
	120 Residents										
220	LOW-RISE 1		207	206	413	7	22	29	23	14	37
	60 Dwelling Units										
Unadjusted Volume			405	404	809	15	39	54	51	28	79
Internal Capture Trips			0	0	0	0	0	0	0	0	0
Pass-By Trips			0	0	0	0	0	0	0	0	0
Volume Added to Adjacent Streets			405	404	809	15	39	54	51	28	79

Total Weekday Average Daily Trips Internal Capture = 0 Percent
Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent
Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition
TRIP GENERATION 10, TRAFFICWARE, LLC

Seasonal Adjustment Factors
NHDOT Group 4 (Urban Highways)

Stephen G. Pernaw & Company, Inc.

Year 2019 Monthly Data - Urban

		Adjustment to	
Month	ADT	Average	Peak
Jan	11,431	1.12	1.23
Feb	11,848	1.08	1.18
Mar	12,141	1.06	1.15
Apr	12,860	1.00	1.09
May	13,551	0.95	1.03
Jun	13,785	0.93	1.02
Jul	13,942	0.92	1.01
Aug	14,016	0.92	1.00
Sep	13,379	0.96	1.05
Oct	13,339	0.96	1.05
Nov	12,265	1.05	1.14
Dec	11,496	1.12	1.22

Year 2018 Monthly Data - Urban

		Adjustment to	
Month	ADT	Average	Peak
Jan	11,282	1.13	1.24
Feb	11,848	1.08	1.18
Mar	11,828	1.08	1.18
Apr	12,491	1.02	1.12
May	13,587	0.94	1.03
Jun	13,911	0.92	1.00
Jul	13,765	0.93	1.01
Aug	13,945	0.92	1.00
Sep	13,168	0.97	1.06
Oct	13,367	0.96	1.04
Nov	12,215	1.05	1.14
Dec	11,963	1.07	1.17

Year 2017 Monthly Data - Urban

		Adjustment to	
Month	ADT	Average	Peak
Jan	12254	1.21	1.33
Feb	13494	1.10	1.21
Mar	14335	1.03	1.14
Apr	15004	0.99	1.09
May	15547	0.95	1.05
Jun	16310	0.91	1.00
Jul	15523	0.95	1.05
Aug	15974	0.93	1.02
Sep	15546	0.95	1.05
Oct	15104	0.98	1.08
Nov	14544	1.02	1.12
Dec	14151	1.05	1.15

September to Peak-Month Factor = 1.05

Stephen G. Pernaw & Company, Inc.

STEPHEN G. PERNAW & COMPANY, INC.
PROJECT: Proposed Residential Development, Portsmouth New Hampshire
NUMBER: 2047A
COUNT STATION: 82379124

HISTORICAL GROWTH CALCULATIONS

LOCATION : Peverly Hill Road (S. of NH33)
CASE : AADT

ARITHMETIC PROJECTIONS

YEAR	AADT
2015	10527
2016	10403
2017	10611
2018	10823

Regression Output:

Constant	-210417.4
Std Err of Y Est	129.62099
R Squared	0.6412368
No. of Observations	4
Degrees of Freedom	2
X Coefficient	109.6
Std Err of Coef.	57.968267

PROJECTIONS

2020	10975
2021	11084
2022	11194
2023	11303
2024	11413
2025	11523
2026	11632
2027	11742
2028	11851
2029	11961
2030	12071

RATE = 110 VPD/YEAR

GEOMETRIC PROJECTIONS

YEAR	AADT	Ln AADT
2015	10527	9.26170
2016	10403	9.24985
2017	10611	9.26965
2018	10823	9.28943

Regression Output:

Constant	-11.49974
Std Err of Y Est	0.0122527
R Squared	0.6384951
No. of Observations	4
Degrees of Freedom	2
X Coefficient	0.0102987
Std Err of Coef.	0.0054796

PROJECTIONS

2020	10979
2021	11092
2022	11207
2023	11323
2024	11440
2025	11559
2026	11678
2027	11799
2028	11921
2029	12045
2030	12170

RATE = 1.0 % / YEAR

Use 2.0%

Stephen G. Pernaw & Company, Inc.

CALCULATION SHEET

Attachment 8

Project:	Portsmouth - Res.	Job Number:	2047A
Calculated By:	SGP	Date:	10/5/2020
Checked By:	CA	Date:	10/5/2020
Sheet No:	1	Of:	1
Subject:	COVID-19 Adjustment Factor		

I. Given:

1. NHDOT traffic count on Peverly Hill Road (south of NH33) in June 2019 (Pre-covid conditions)
   - Average AM peak hour = 892 veh.
   - Average PM peak hour = 1,030 veh.
   - Average weekday = 11,072 veh.
2. SGP ATR count on Wednesday, September 30, 2020
   - AM peak hour = 673 veh.
   - PM peak hour = 803 veh.
   - Weekday = 8,474 veh.
3. NHDOT Group 4 (Urban Highways) seasonal adjustment factors
   - September to peak month = 1.05 (average of 2017, 2018 & 2019)
   - June to peak month = 1.01 (average of 2017, 2018 & 2019)
4. Background growth rate = 1.0/year; use 2.0% to account for other unknown development projects

II. Calculate 2020 peak month volumes using NHDOT June 2019 data (pre-covid conditions)

1. AM = 892 x 1.02 x 1.01 = 919 veh
2. PM = 1,030 X 1.02 x 1.01 = 1,061 veh
3. Weekday = 11,072 x 1.02 x 1.01 = 11,406 veh

III. Calculate 2020 peak month volumes using SGP September 2020 data (during covid)

1. AM = 673 x 1.05 = 707 veh
2. PM = 803 X 1.05 = 843 veh
3. Weekday = 8,474 x 1.05 = 8,898 veh

IV. Calculate individual COVID-19 factors

1. AM = 919 / 707 = 1.30
2. PM = 1,061 / 843 = 1.26
3. Weekday = 11,406 / 8,898 = 1.28

V. Calculate average COVID-19 factor

Average covid factor = (1.30 + 1.26 + 1.28) / 3 = 1.28

Stephen G. Pernaw & Company, Inc.

Location: Portsmouth, New Hampshire
Job Number: 2047A

TRIP DISTRIBUTION ANALYSIS

Work Destination Report - Where Workers are Employed Who Live in the Selection Area - by County Subdivisions

Total All Jobs

Jobs Counts by County Subdivisions Where Workers are Employed - All Jobs	Count	Gateway % A	Gateway % B	Gateway % C		Gateway Allocation A	Gateway Allocation B	Gateway Allocation C	
Portsmouth city (Rockingham, NH)	4,355	0.40	0.40	0.20	1.00	1742	1742	871	4355
Dover city (Strafford, NH)	604	0.50		0.50	1.00	302	0	302	604
Exeter town (Rockingham, NH)	423	1.00			1.00	423	0	0	423
Manchester city (Hillsborough, NH)	399	1.00			1.00	399	0	0	399
Boston city (Suffolk, MA)	371	1.00			1.00	371	0	0	371
Newington town (Rockingham, NH)	343	0.50		0.50	1.00	172	0	172	344
Hampton town (Rockingham, NH)	266	0.70		0.30	1.00	186	0	80	266
Durham town (Strafford, NH)	266	0.30		0.70	1.00	80	0	186	266
Nashua city (Hillsborough, NH)	249	1.00			1.00	249	0	0	249
Salem town (Rockingham, NH)	193	1.00			1.00	193	0	0	193
	7469					4117	1742	1611	7470
						55.1%	23.3%	21.6%	100%
					USE	55	23	22	100

KEY

A=To/From Points West via NH Route 33
B=To/From Points East via NH Route 33
C=To/From Points South via Peverly Hill Road

Attachment 9

HCM 2010 TWSC
3: Peverly Hill Road & Proposed Site Driveway

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	5	2	458	688	5
Future Vol, veh/h	17	5	2	458	688	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	85	85	64	64
Heavy Vehicles, %	0	0	0	8	5	0
Mvmt Flow	19	6	2	539	1075	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1622	1079	1083	0	-	0
Stage 1	1079	-	-	-	-	-
Stage 2	543	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	114	268	652	-	-	-
Stage 1	329	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	114	268	652	-	-	-
Mov Cap-2 Maneuver	114	-	-	-	-	-
Stage 1	328	-	-	-	-	-
Stage 2	586	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	38.7	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	652	-	131	-	-
HCM Lane V/C Ratio	0.004	-	0.187	-	-
HCM Control Delay (s)	10.5	0	38.7	-	-
HCM Lane LOS	B	A	E	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

HCM 2010 TWSC
3: Peverly Hill Road & Proposed Site Driveway

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	3	6	688	680	22
Future Vol, veh/h	11	3	6	688	680	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	89	89	88	88
Heavy Vehicles, %	0	0	0	2	3	0
Mvmt Flow	12	3	7	773	773	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1573	786	798	0	-	0
Stage 1	786	-	-	-	-	-
Stage 2	787	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	123	395	833	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	121	395	833	-	-	-
Mov Cap-2 Maneuver	121	-	-	-	-	-
Stage 1	446	-	-	-	-	-
Stage 2	452	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.4	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	833	-	142	-	-
HCM Lane V/C Ratio	0.008	-	0.11	-	-
HCM Control Delay (s)	9.4	0	33.4	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

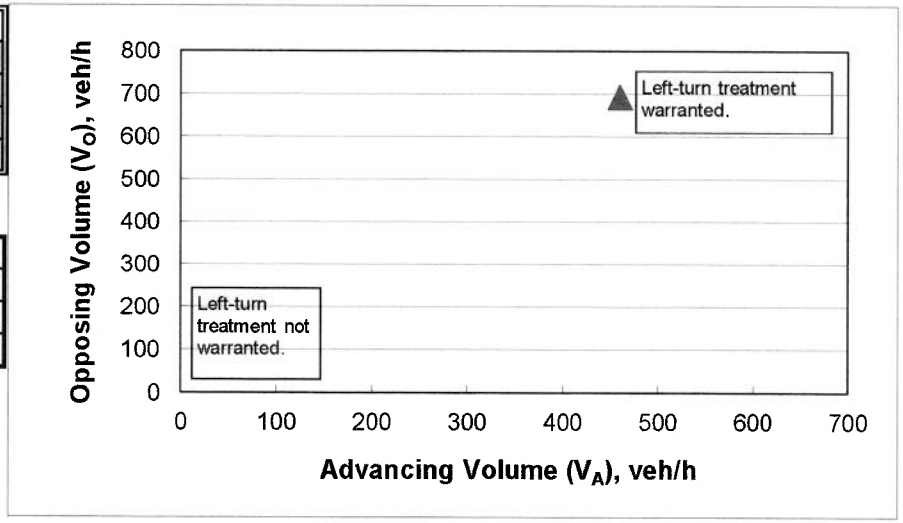
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	460
Opposing volume (V_O), veh/h:	693

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1456
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Stephen G. Pernaw & Company, Inc.

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

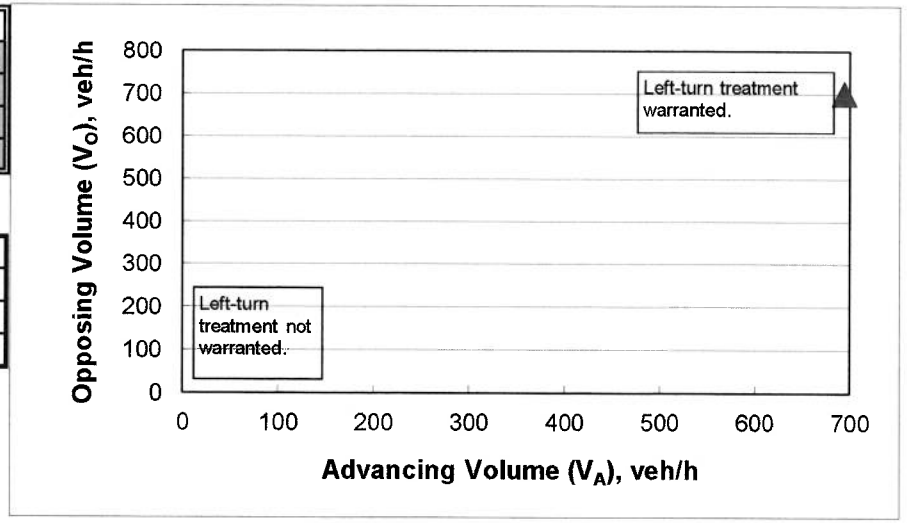
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	694
Opposing volume (V_O), veh/h:	702

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1023
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Stephen G. Pernaw & Company, Inc.

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

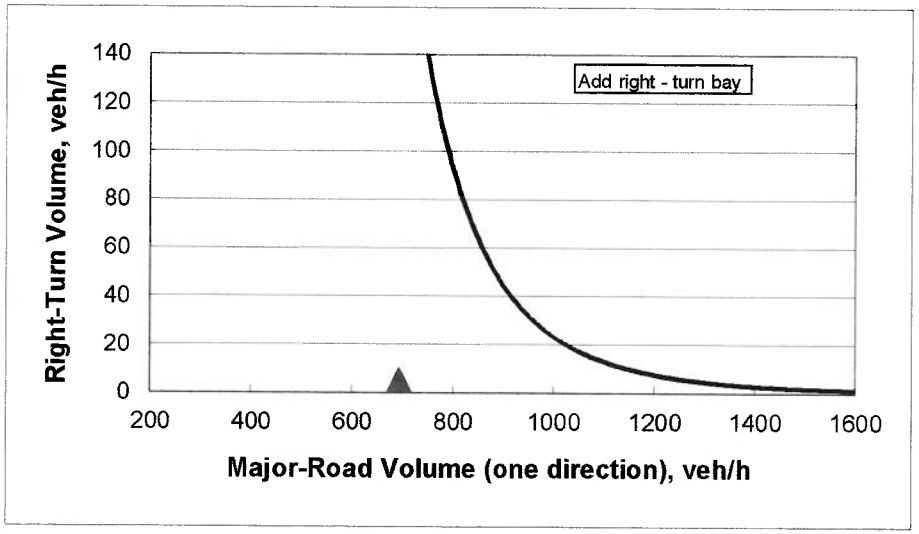
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	25
Major-road volume (one direction), veh/h:	693
Right-turn volume, veh/h:	5

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	225
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Stephen G. Pernaw & Company, Inc.

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

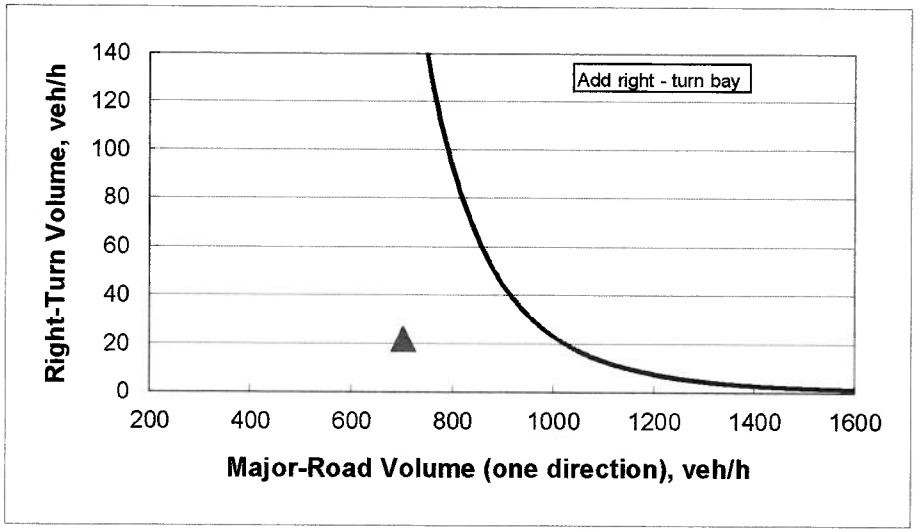
INPUT

2-lane roadway

Variable	Value
Major-road speed, mph:	25
Major-road volume (one direction), veh/h:	702
Right-turn volume, veh/h:	22

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	208
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



Stephen G. Pernaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1153
Percentage of right-turns on minor road, %:	23%
Minor-road volume (one direction), veh/h:	22

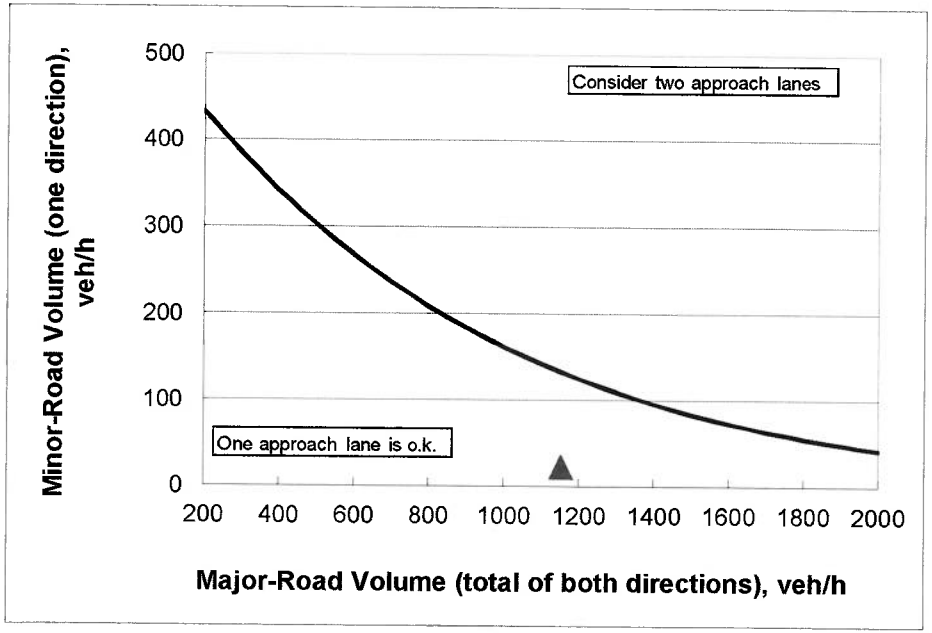
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	132
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Stephen G. Pernaw & Company, Inc.

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1396
Percentage of right-turns on minor road, %:	21%
Minor-road volume (one direction), veh/h:	14

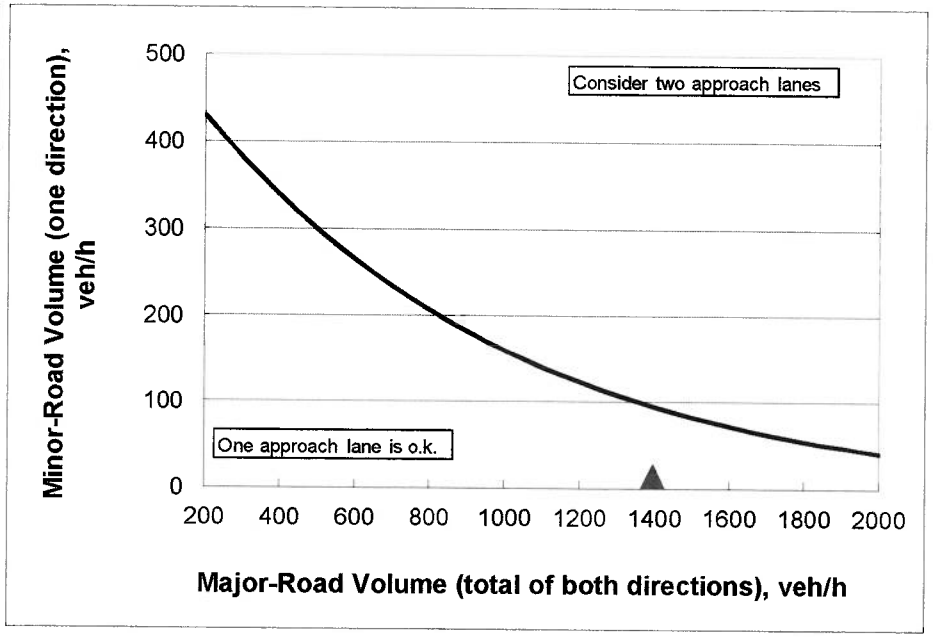
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	95
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM



Attachment 17

Stephen G. Pernaw & Company, Inc.

P.O. Box 1721 • Concord, NH 03302
tel: (603) 731-8500 • fax: (866) 929-6094 • sgp@ pernaw.com

Transportation: Engineering • Planning • Design

M E M O R A N D U M

Ref: 2047A

To: Jack McTigue, P.E., CPESC
TFMoran - Seacoast Division

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Residential Development – 83 Peverly Hill Road
Portsmouth, New Hampshire

Date: June 17, 2021

As requested, our office has reviewed the plan entitled: *"Overall Site Layout Plan – Peverly Hill Road Condominiums"* dated April 19, 2021 (no revisions, see Attachment 1) and the "Site Layout Plans" (Sheets C-04 through C-12) and offer the following comments:

1. The proposed development has been reduced in size since the publication of our *"Traffic Evaluation"* memorandum dated 10/6/20 from 60 dwelling units to 56 units. This change translates into a slight reduction of -2 (AM) and -3 (PM) fewer vehicle-trips during the peak hour periods than was previously analyzed.
2. The roadway system employs a 26-foot pavement width on the section that extends from Peverly Hill Road to the first and only internal T-intersection. From there, the loop road will be constructed with a 22-foot pavement width. The proposed pavement widths are acceptable from a traffic engineering standpoint given the traffic volumes and travel speeds involved.
3. The various "Site Layout Plans" include several horizontal curves and reverse curves and specifies the installation of vertical granite curb on both sides of the roadway. The elimination of the previously proposed straight tangent sections will reduce travel speeds in the neighborhood. The "side friction" associated with vertical curbing will also serve to reduce travel speeds.
4. The raised crosswalk located between units #44 and #45 will require slower speeds and the advanced warning signs (W17-1) are appropriate. These should be supplemented with an Advisory Speed Plaque (W13-1P).

We find that the current layout of the proposed roadway system is superior to the initial conceptual layout in terms of travel speeds and overall livability. The proposed roadway layout reasonably mitigates the previous concerns with travel speeds within the development.

Attachment

cc: Michael Green, Jenna Green – Green and Company

169 Ocean Boulevard/PO Box 249
Hampton, NH 03842
603.601.8154
TheEngineeringCorp.com
Create | Design | Innovate

Juliet T.H. Walker, AICP
Planning Director
City of Portsmouth Planning Department
City Hall, 3rd Floor
1 Junkins Avenue
Portsmouth, NH 03801

June 22, 2021

Ref. T1118

Re: Peverly Hill Road Residential Development
Transportation Peer Review

Dear Ms. Walker:

On behalf of the City of Portsmouth, TEC, Inc. (TEC) has reviewed documents as part of the transportation engineering peer review of a proposed mixed used development located at 83 Peverly Hill Road in Portsmouth. The project consists of constructing 56 dwelling units. Access is provided by one site roadway intersection onto Peverly Hill Road. It is proposed that the site roadway be accepted as a public road by the City.

The following documents were received as part of our review:

- *Traffic Evaluation – Proposed Residential Development*, prepared by Stephen G. Pernaw & Company, Inc. – October 6, 2020
- *Proposed Residential Development Traffic Calming Memorandum,* prepared by Stephen G. Pernaw & Company, Inc. – April 5, 2021
- *Peverly Hill Road Condominiums Site Development Plans,* prepared by TFM – April 19, 2021
- *Peverly Hill Road Condominiums Conceptual plan,* prepared by TFM, May 10, 2021

TEC completed a review of these documents for the City of Portsmouth, and the following provides a summary of the comments that were compiled during our review:

1. In order to be consistent with the Traffic Evaluation, Peverly Hill Road is designated as a north/south roadway within this letter.
2. The Traffic Evaluation presents a study area including one intersection of the site roadway with Peverly Hill Road. TEC concurs with the scope of the study area and does not find that additional intersections are warranted based upon the documented trip generation levels.
3. Traffic counts utilized within the Traffic Evaluation were conducted along Peverly Hill Road in September 2020, when vehicular traffic volumes were impacted by the Covid-19

pandemic. The 2020 volumes were compared with June 2019 traffic volumes recorded by NHDOT in the same location. In order to project future traffic volumes along Peverly Hill Road for the design year of 2032, the September 2020 volumes were increased by a seasonal adjustment factor, a background growth rate, and a Covid-19 adjustment factor. TEC concurs with this methodology and the use of a 2032 horizon year.

The weekday morning and evening peak commuter hours were studied to determine the project's overall effect on the adjacent roadway system. TEC concurs that these time periods are generally appropriate to study the impact for a residential development.

4. The Traffic Evaluation uses data published in the industry standard Institute of Transportation Engineers (ITE) publication, *Trip Generation, 10th Edition* to estimate the traffic generated by the proposed development. The Traffic Evaluation uses a combination of data found under Land Use Code (LUC) 221 – Multi-Family Housing (Mid-Rise) and LUC 210 – Single Family Detached Housing to project future traffic volumes associated with the proposed residential units. The information provided in the TAC Submission, dated April 19, 2021, illustrates the units as three-bedroom detached dwellings averaging 2,400 square feet of living space. No age restriction is proposed for the development. The units appear to be intended to be sold as condominium units, however, the traffic generation characteristics may more closely resemble single family dwellings due to the size, separation, and number of bedrooms in each unit.

   The Traffic Evaluation projects 29 vehicle trips during the weekday morning peak hour and 42 vehicle trips during the weekday evening peak hour using the combined methodology. TEC recommends the use of only LUC 210 - Single Family Detached Housing to reflect the trip generation characteristics of the proposed residential units more accurately. For the 56 proposed units as shown on the Site Plan, LUC 210 projects 41 vehicle trips during the weekday morning peak hour and 55 vehicle trips during the weekday evening peak hour. TEC understands that the increase likely will not change the impact of the site on the adjacent roadway system. However, the Applicant should discuss whether these additional trips can be accommodated safely and efficiently at the site roadway intersection onto Peverly Hill Road.

5. The vehicular traffic generated by the proposed project was distributed onto the adjacent roadway system based upon available Journey-to-Work data published by the US Census Bureau for persons residing in the City of Portsmouth. TEC notes that there are significant employment opportunities within the City of Portsmouth along the Route 1 corridor to the south of the site, which can be accessed directly via Peverly Hill Road. The Applicant should discuss if these employment opportunities were considered when preparing the vehicular traffic distribution, as only 22% of the site generated traffic is projected to travel to/from this direction. The Applicant should review the site distributions and revise the analyses at the intersection of the site roadway with Peverly Hill Road, as necessary.

6. TEC generally concurs with the use of the Highway Capacity Manual 2010 methodology as used within the Synchro version 10 software.

7. The Traffic Evaluation indicates that the site traffic is expected to increase the two-way traffic volume along Peverly Hill Road by 2% north of the site and 1% south of the site in the 2032 future conditions, which is unlikely to be noticeable. The intersection of the site

roadway with Peverly Hill Road is projected to operate with available capacity, minimal queues, and typical delays for intersecting side streets under stop control. No off-site mitigation is proposed to be implemented.

8. The comments as noted above may result in modifications to the results of the capacity and queue analysis and therefore TEC reserves the right to provide additional comments and improvement recommendations upon completion of the peer review comment responses.
9. The site roadway approach to its intersection with Peverly Hill Road is shown with one exiting lane to accommodate left turning and right turning vehicles. Provision of two lanes on this approach may not significantly improve the operation of this approach and maintaining a minimum crossing distance for pedestrians is preferred.
10. Peverly Hill Road provides one travel lane in each direction along most of its length. The northbound approach of Peverly Hill Road widens at its intersection with Middle Road, just to the north of the site, to provide an exclusive left turn lane and a shared left/right turn lane. The taper area for this widening occurs along the site frontage. No dedicated left turn lane is required or provided for northbound left turns into the site roadway. The Applicant should discuss whether any conflicts are anticipated between northbound left turns accessing the site roadway and northbound vehicles wishing to enter the exclusive left turn lane at Middle Road.
11. Provision of a multi-use path along the west side of Peverly Hill Road, extending between Middle Road and West Road is under design by the City of Portsmouth to increase safety for pedestrians and bicyclists and provide infrastructure to accommodate alternative modes of transportation between residential areas and commercial areas along Route 1. The multi-use path will directly benefit the residents of the proposed development by providing the opportunity for multi-modal travel along Peverly Hill Road as well as safe and uninterrupted access to the Portsmouth Plains Playground and recreational area at the intersection of Peverly Hill Road with Middle Road. The Applicant should provide any necessary easements identified by the City in order to facilitate the construction of this path. The site roadway approach at its intersection with Peverly Hill Road should be designed and constructed in anticipation of the multi-use path by including a crosswalk with ADA-compliant curb ramps across the site roadway approach. The City should consider requiring the Applicant to construct the multi-use path along the site frontage and extending north 500 feet toward Middle Road in accordance with the City's design plans to provide a direct connect between the residential development and the recreation area and pedestrian facilities along Middle Road.
12. Sidewalk is provided along one side of the site roadway throughout the site, creating a pedestrian network. Further, connection to the planned Seacoast Greenway Rail Trail is proposed, along with a pocket park and four parking spaces for visitor access. The Applicant should discuss the volume of vehicular traffic that may access the site daily and the anticipated volume of pedestrian and bicycle traffic that are anticipated to use the site roadway between the Rail Trail and the proposed multi-use path along Peverly Hill Road.
13. The site roadway has been designed in accordance with the City of Portsmouth Complete Streets Design Guidelines for a Neighborhood Slow Street. The roadway is 26 feet wide,

which allows for parking along one side of the roadway and two 9-foot travel lanes. Sidewalk along one side of the roadway creates a pedestrian network facility. Bicycles will be accommodated within the roadway. However, in order to experience the benefit of a Complete Streets design along the site roadway, residents should be encouraged to park along at least one side of the roadway.

Should residents not park on-street, the traffic calming nature of the roadway will be reduced, as the entire 26-foot width would be useable by vehicle traffic. While the circular curvature of the roadway will aid in reducing vehicle speeds, alternative forms of traffic calming, such as raising the proposed crosswalks or the addition of speed humps, can be considered along the straight portion of the roadway to keep both resident and visitor vehicular speeds low.

14. The Pernaw memorandum discussing traffic calming opportunities, dated April 5, 2021, recommends additional signage around the proposed crosswalk located at the internal T-intersection to alert vehicles to potential crossing pedestrians. TEC concurs with these recommendations. Similar additional signage is recommended for the proposed crosswalk across the site roadway at the pocket park/Rail Trail connection.

Please do not hesitate to contact me directly if you have any questions concerning this peer review at 978-794-1792.Thank you for your consideration.

Sincerely,
TEC, Inc.
"The Engineering Corporation"

Elizabeth Oltman

Elizabeth Oltman, PE
Director of Transportation Planning

5 Centennial Drive, Peabody, MA 01960 (HQ)
Tel: 978.532.1900

May 21, 2021

Raymond C. Pezzullo, P.E.
Assistant City Engineer
Portsmouth Department of Public Works
680 Peverly Hill Road
Portsmouth, NH 03801

Corey Colwell, LLS
Division Manager / Principal
TFMoran Seacoast Division
170 Commerce Way, Suite 102
Portsmouth, NH 03801

Re: **Portsmouth Water Distribution System Model**
Peverly Hill Road Developer Review

Dear Mr. Pezzullo and Mr. Colwell:

As requested, Weston & Sampson has completed the water system evaluation of the proposed residential development located on Peverly Hill Road in Portsmouth, NH. The proposed development includes 56 new single family condominiums on a cul-de-sac. The progress print, dated 03/09/2021, of the "Site Development Plans: Proposed Open Space Residential PUD," prepared by TFMoran Seacoast Division, was used for this review. The plan set shows the development connecting to the existing 6-inch water main in Peverly Hill Road and does not specify a size for the proposed water main in the development. The plans also note that each unit is to have a sprinkler system. Demands were estimated to be about 68,320 gpd by TFMoran Seacoast Division, dated 05/18/2021.

Two hydrant flow tests were performed by Weston & Sampson and City staff, the results of which were used to calibrate the City's hydraulic model in the area of the proposed development. The results of the flow test indicated an available fire flow of 1,326 gpm at 20 psi near the location of the proposed connection to the 8-inch water main on Peverly Hill Road. The hydrants on Peverly Hill Road are connected to the existing 6-inch water main. The hydraulic model was calibrated using the flow test data, carried over into the existing 8-inch water main running parallel to the existing 6-inch water main in Peverly Hill Road. When compared to the hydraulic model, the simulated fire flows were similar to the field observations. Based on these results the model was determined to be adequately calibrated.

The purpose of this evaluation was to determine if the proposed development will receive adequate water pressure and fire flows from the existing Portsmouth water system, and if the development may have an adverse impact on the Portsmouth water system.

REGULATIONS AND EVALUATION CRITERIA

The New Hampshire Code of Administrative Rules and the Insurance Services Office's (ISO) requirements for available fire flow were used as the basis for our determination. The New Hampshire Code of Administrative Rules PUC 600.02 states that: "Each utility shall maintain normal operating pressures of not less than 20 [psi]." Env-Dw 405.32, which applies to community water systems that serve between 25 and 1000 people and so is relevant but not directly applicable in this case, provides additional detail: "The water distribution piping system shall be capable of passing peak flow without excessive frictional loss. At peak flow, pressure at the sill elevation of each lot or unit shall be at least 20 psi." In addition to the regulatory requirement to maintain pressure greater than 20 psi during all conditions, Weston & Sampson recommends that the City maintain a minimum of 35 psi pressure to

all residences in the system during all "typical" demand conditions, which would include peak hour and summertime irrigation demands but exclude fire flows.

The Insurance Services Office (ISO) is an independent organization that provides ratings for town insurance pricing on systems providing fire protection. ISO estimates needed fire flow requirements at representative locations throughout communities and publishes their methodology and guidance for calculating needed fire flow for individual buildings in their "Guide for Determination of Needed Fire Flow." In our experience, the necessary available fire flow for a development like the one proposed here at 83 Peverly Hill Road would be approximately 1,250 gpm at 20 psi.

MODELING RESULTS

The model was run to evaluate the development if connected to the existing 8-inch water main in Peverly Hill Road. The connection to the existing parallel 6-inch water main was evaluated and identified to be less than 1,000 gpm at 20 psi. It is recommended that the new development connect to the existing 8-inch water main and not to the existing parallel 6-inch water main.

The model was evaluated under peak hour demand (PHD) conditions to determine the potential impact on typical system pressure and under maximum day demand (MDD) conditions to determine if the development will receive adequate fire flows. The extended period simulation diurnal curve in the hydraulic model, previously developed for the City of Portsmouth, scaled the MDD by a factor of 2.33 for PHD. The estimated demands provided by the developer denoted that conditions for June/July, which would be a period of MDD conditions. Table 1 below shows how demands were scaled for PHD conditions.

Table 1: Estimated Demands

	Developer Estimated MDD (gpm)	PHD (gpm)
Demand (gpm)	47.4	110.5

EVALUATION

The hydraulic model indicates that the pressures in the development at PHD would be greater than 35 psi, as shown in Table 2 below.

Table 2: Hydraulic Model Results

Pressure (psi) at PHD	Available Fire Flow (gpm) at 20 psi
45.2	1352

The plans indicate that the proposed condominiums will have sprinklers for fire protection. However, it is still recommended that the system be able to provide adequate fire flows to the fire hydrants in the development to handle a fire event outside the limits of the sprinkler systems. Fires on the exterior of the buildings, roofs, a car, or a dumpster would require fire flows from nearby hydrants. It is anticipated that a fire flow of approximately 1,250 gpm for 2 hours at a pressure of 20 psi would be appropriate for this development. The hydraulic model indicates that the available fire flow from the existing 8-inch water main on Peverly Hill Road is in excess of 1,250 gpm, as indicated in Table 2 above.

RECOMMENDATIONS

The hydraulic model indicates that Peverly Hill Road can support peak domestic demands with subsequent pressure greater than the recommended pressure for this type of residential development. The model indicated that the available flow through the existing 8-inch water main in Peverly Hill Road would be in excess of 1,250 gpm. It is recommended that the proposed water main for the development connect to the existing 8-inch water main in Peverly Hill Road and not to the existing parallel 6-inch water main.

We appreciate the opportunity to assist the City of Portsmouth and TF Moran in this matter. Please contact me at 978-532-1900 should you have any questions or require further support.

Sincerely,

WESTON & SAMPSON ENGINEERS, INC.

Leah Stanton, PE
Vice President

Attachments:
Peverly Hill Water Utilities (plan set)
Peverly Hill Water Flows (estimate demands)

\\wse03.local\WSE\Projects\NH\Portsmouth, NH\Modeling On-Call\Peverly Hill Rd\Peverly HIll Rd Developer Review Memo_Draft.docx

NOTES

1. ALL CONDOMINIUM UNITS SHALL HAVE FIRE SUPPRESSION SPRINKLERS SYSTEMS INSTALLED.
2. SEE UTILITY NOTES ON NOTES & LEGEND SHEET (C-01).
3. A THIRD PARTY INSPECTOR SHALL BE ON SITETO INSPECT THE INSTALLATION OF THE UTILITIES.

UTILITY COLOR LEGEND	
WATER	

N

NAD 83

MAP 242 LOT 1
N/F
STATE OF NEW HAMPSHIRE FISH & GAME DEPT
11 HAZEN DRIVE
CONCORD, NH 03301
RCRD BK.#5248 PG.#0739

MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF MANCHESTER CHURCH OF IMMAC CONCEPTION
153 ASH STREET
MANCHESTER, NH 03104

PEVERLY HILL ROAD
(PUBLIC - RIGHT OF WAY)

MAP 232 LOT 92
N/F
JOYANNA L. INNES
78 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3754 PG.#0099

MAP 232 LOT 88
N/F
NATHAN M. & SHERRI M. TARLETON
74 LEAVITT AVENUE
PORTSMOUTH, NH 03801
RCRD BK.#6885 PG.#1471

MAP 232 LOT 93
N/F
KENNETH T. BLACK
82 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3743 PG.#1942

MAP 232 LOT 87
N/F
SUSAN L. DIXON
68 WIBIRD STREET
PORTSMOUTH, NH 03801
RCRD BK.#2504 PG.#0028

C-29 C-30 C-31 C-32 C-33 C-34 C-35 C-36 C-37

MAP 242 LOT 4

PUBLIC ROAD A
(0.972 FT)

PC 5+37.80
PT 28+64.63
PC 23+43.80
PT 20+26.50
PT 24+46.67

100' WETLAND BUFFER
EDGE OF WETLAND

MAP 242 LOT 3
N/F
NEW HOPE BAPTIST CHURCH
PO BOX 1473
PORTSMOUTH, NH 03802
RCRD BK.#2269 PG.#0663

MAP 255 LOT 8
N/F
MERRIMAC VALLEY HOMES, INC.
1794 BRIDGE STREET, UNIT 6
DRACUT, MA 01826
RCRD BK.#5881 PG.#0981

HORIZONTAL SCALE 1"=100'
100 50 0 100

PROGRESS PRINT
date: 03/09/2021

REV.	DATE	DESCRIPTION	DR	CK

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

OVERALL UTILITY PLAN

PROPOSED OPEN SPACE RESIDENTIAL PUD

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34") **FEBRUARY 25, 2021**

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Seacoast Division
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Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE					
47388.11	DR	JSM	FB	–	C-28
	CK	JJM	CADFILE	47388-11_UTILITY	

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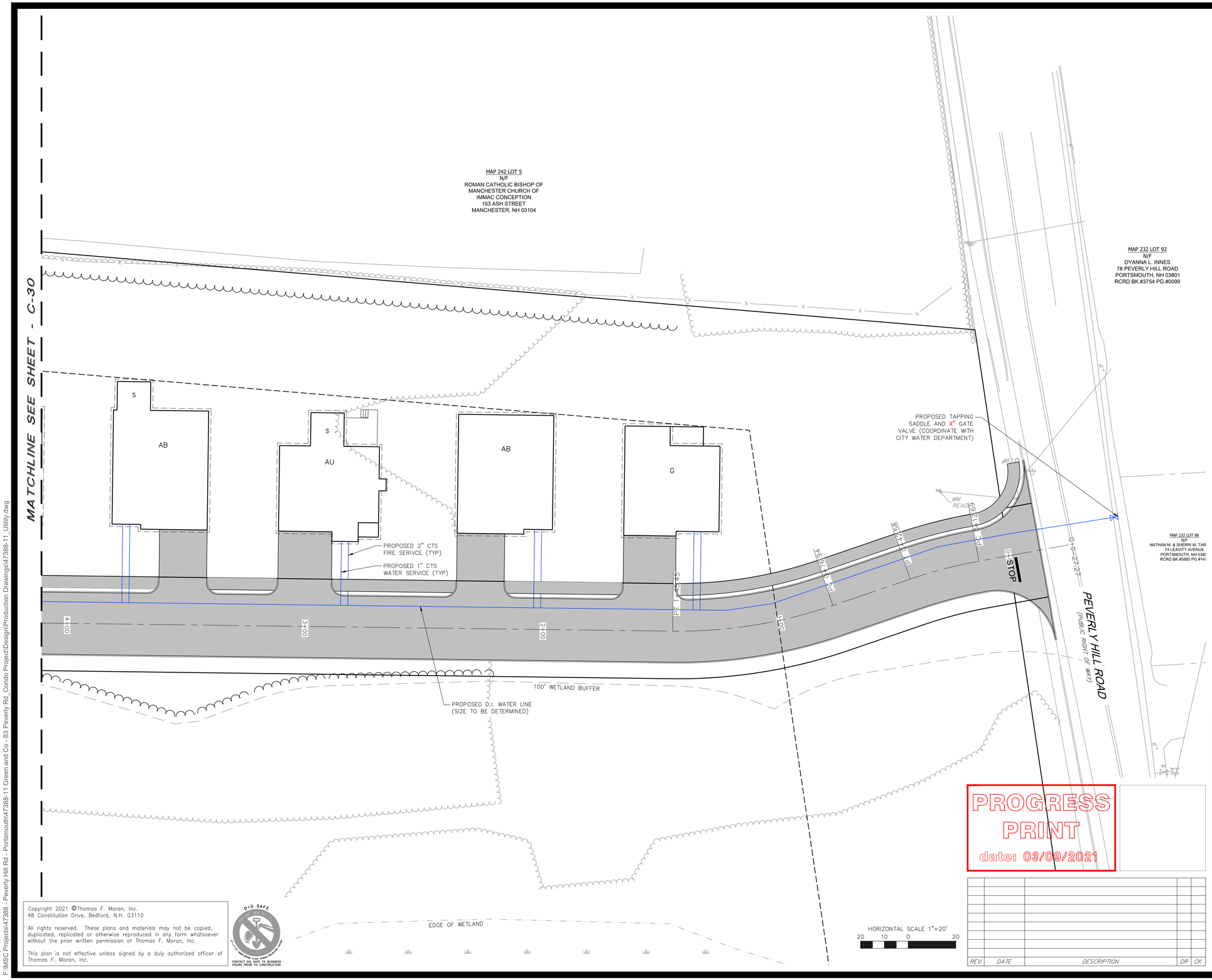

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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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Portsmouth, NH 03801
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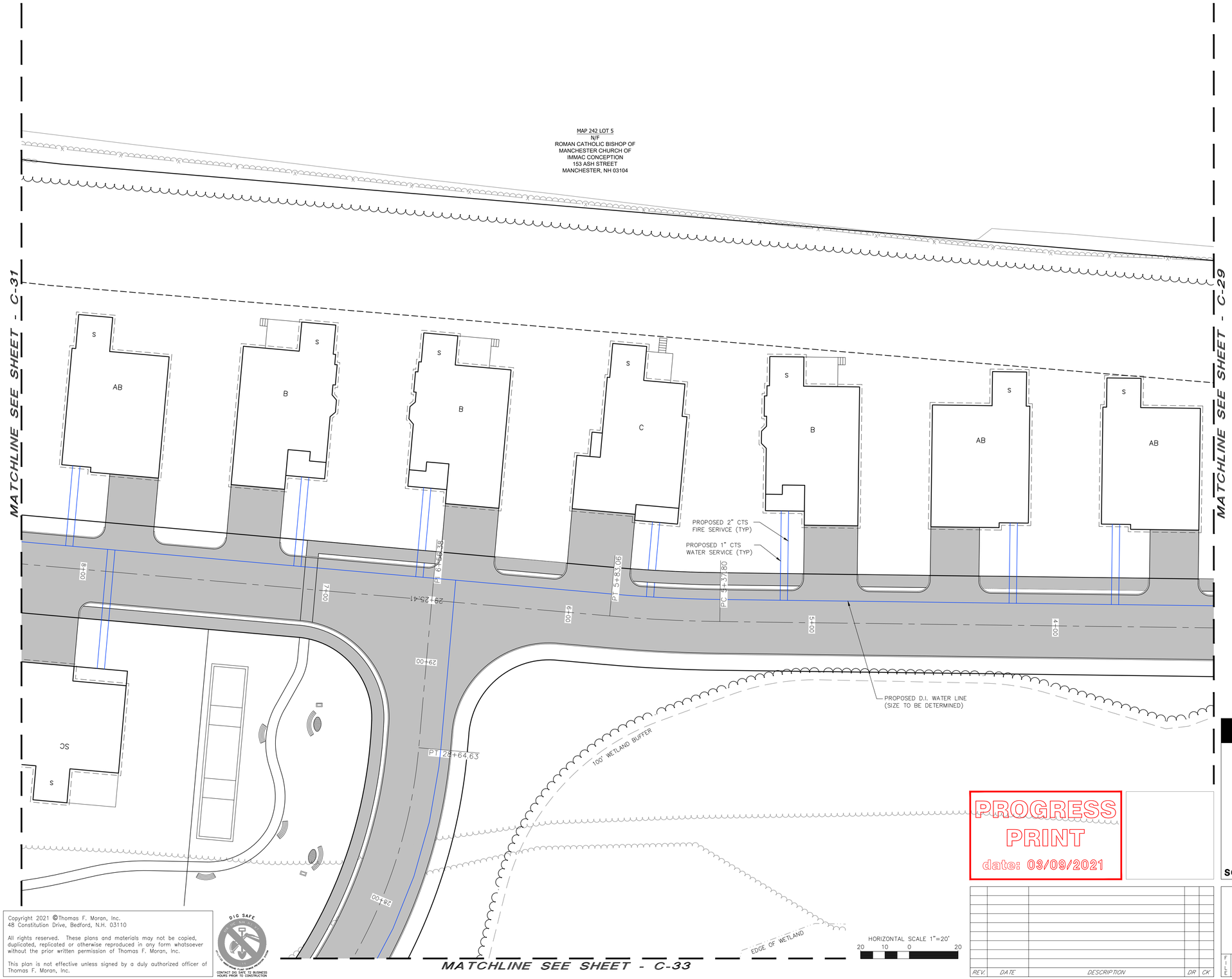

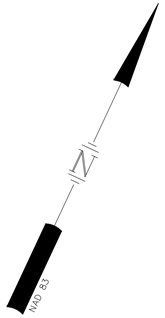

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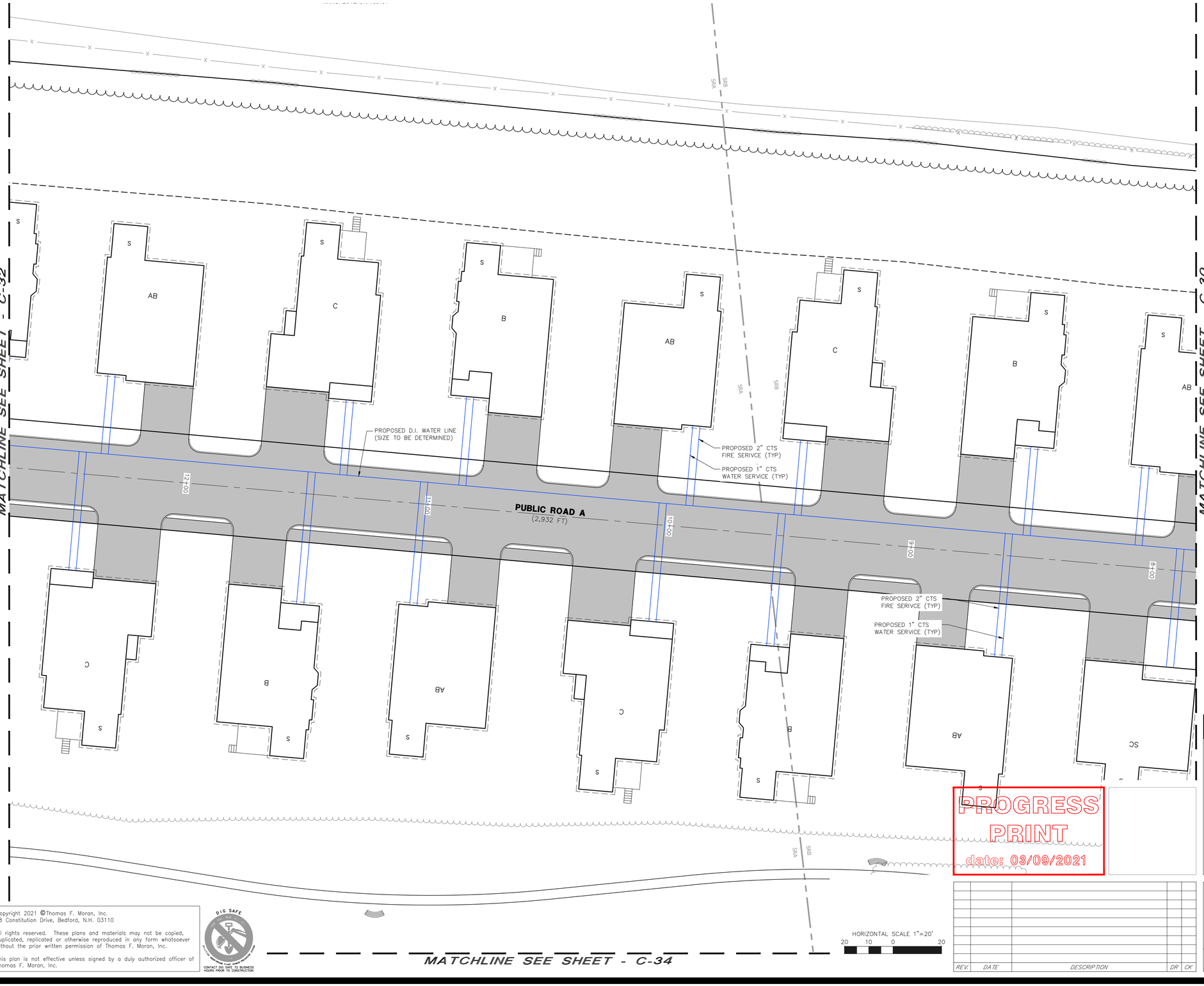

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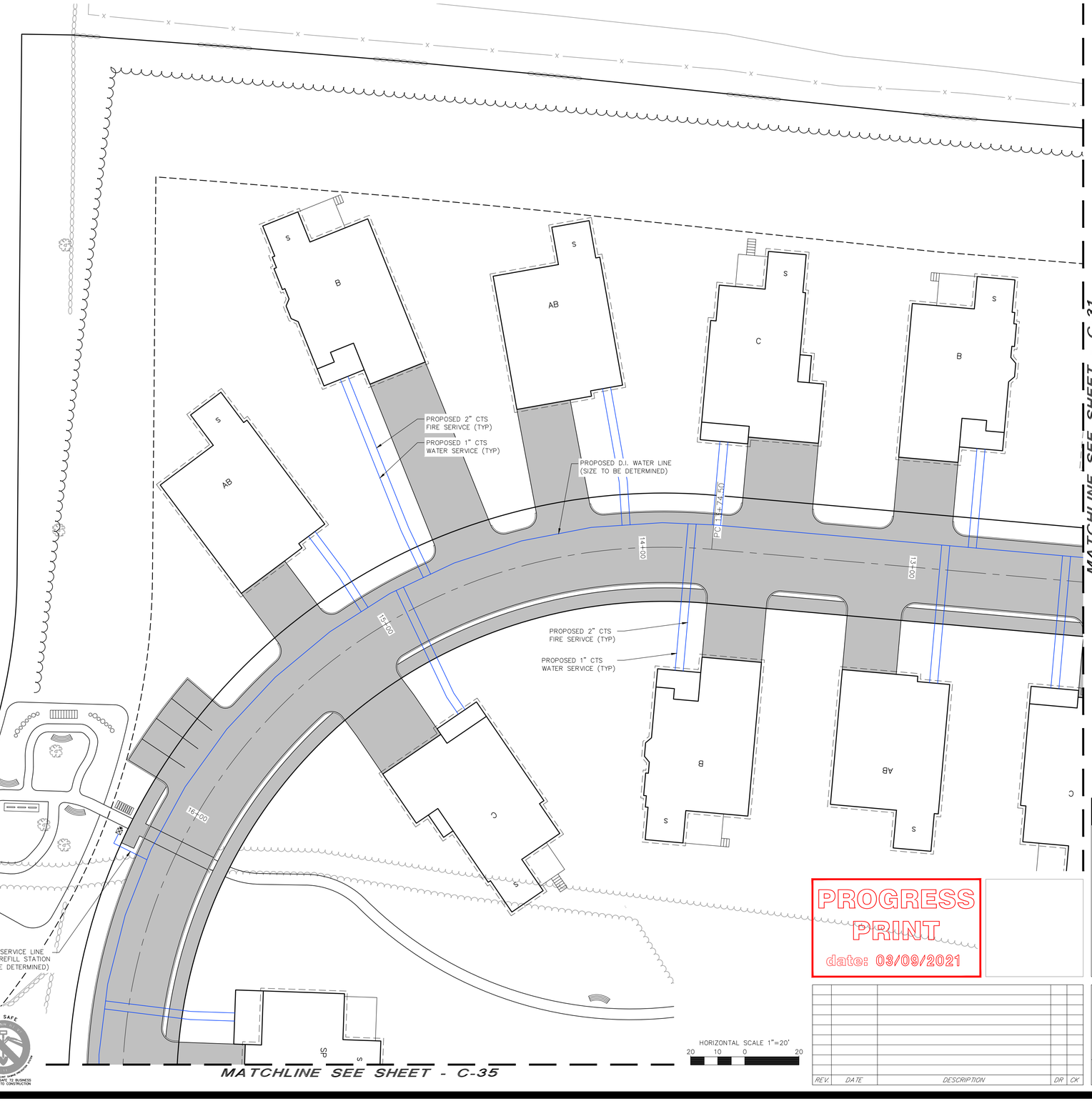
CONCORD, NH 03301
RCRD BK.#5248 PG.#0739



HORIZONTAL SCALE 1"=20'
20 10 0 20

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NAD 83

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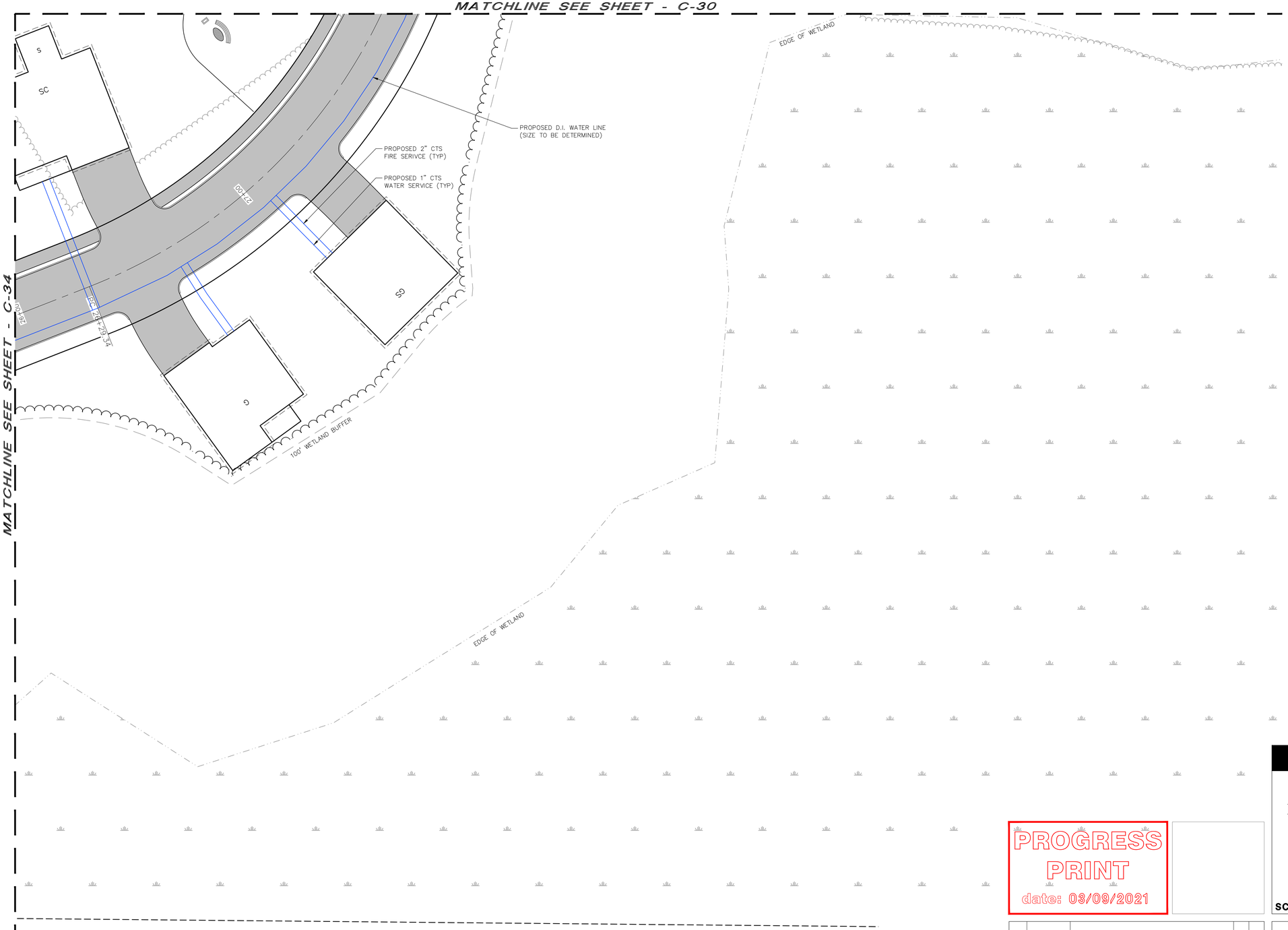
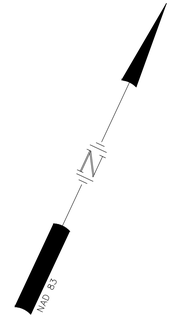
MATCHLINE SEE SHEET - C-34





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date: 03/09/2021

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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

UTILITY PLAN

PROPOSED OPEN SPACE RESIDENTIAL PUD

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34")

FEBRUARY 25, 2021

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		CK	JJM	CADFILE	47388-11_UTILITY	

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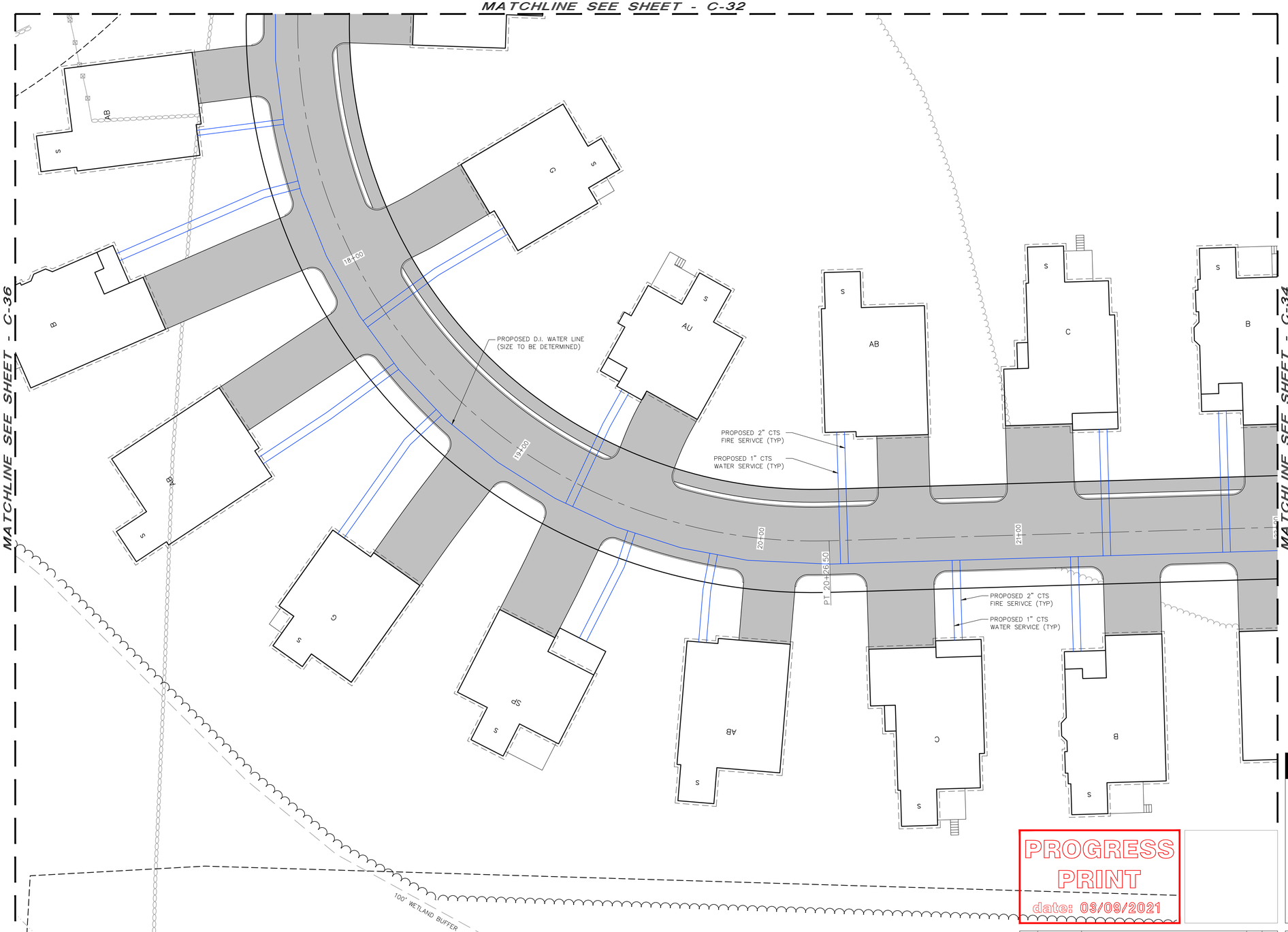

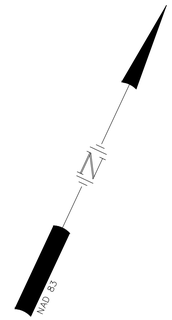

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FEBRUARY 25, 2021

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MAP 242 LOT 1
N/F
STATE OF NEW HAMPSHIRE FISH &
GAME DEPT
11 HAZEN DRIVE
CONCORD, NH 03301
RCRD BK.#5248 PG.#0739

MATCHLINE SEE SHEET - C-37

MATCHLINE SEE SHEET - C-35

17+00

18+00

B

S

100' WETLAND BUFFER

EDGE OF WETLAND

OLD WETLAND LINE

NEW WETLAND FLAGS A65 & A66 NOT FOUND

HORIZONTAL SCALE 1"=20'
20 10 0 20

NAD 83

NOTES

1.

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Project **Peverly Hill Rd Condominiums** Date: 5/18/2021

Location **Peverly Hill Rd**

Portsmouth, NH

Unit Water Flows

Total Number of Units 56

Based on 100% 4 Bedroom Units

4 Bedroom Houses

Residences Single Family - 2 Bedroom	300
Additional Flow for 2 Additional Bedroom	300
Gallons Per Day per 4 Bedroom Unit	600

Household Water Flows (Based on NHDES Env-Wq 1008-3 Table 1008-1)

	Number of Units	GPD/ Unit	GPD	
Number of 4 Bedroom	56	600	33,600	
Total Household Flow	56		33,600	GPD for Development

Irrigation Flows (Eto x PF x SF x 0.62) / IE

Conversion Factor	0.62	Galloons per in*sf
Eto - Highest Evapotrans.	0.15	Eto per Portsmouth (June and July)
		Per Rainmaster Historic ET
PF - Plant Factor	1.00	For Lawn
IE - Irrigation Efficiency	0.75	
Square Feet Per Yard	5,000	70'x100' (Lawn) - 2000sf (House)
Irrigation Flows	620	GPD/Unit

	Number of Units	GPD/ Unit	GPD	
Total Irrigation Flow	56	620	34,720	GPD for Development

Total Water Demand =	68,320	GPD for Development

(2) Metered water readings for uses that are as similar as possible to the proposed use, taking into consideration factors such as occupancy and frequency of use, determined as specified in (d), below.

(d) Design flows based on metered water readings shall be calculated:

(1) By finding the average of water meter readings over a period of time that is representative of the volume of water used and multiplying the average by a minimum peaking factor of 2 for commercial light flow or a maximum peaking factor of 3 for commercial heavy flow; or

(2) By measuring not less than 6 months of consecutive daily meter readings, including the month(s) of heaviest use for uses that are seasonal in nature, and using the highest daily flow without application of a peaking factor;

(e) The unit design flow figures referenced in (b) and (c), above, shall be as listed in Table 1008-1, below, subject to (f), below:

Table 1008-1: Unit Design Flow Figures

Use	**Unit Design Flow**
AIRPORTS	5 GPD/Transient plus 10 GPD/Employee
APARTMENTS	See Dwellings
BARS, LOUNGES	See Food Service
BED & BREAKFAST	60 GPD/Guest, based on the greater of 2 guests per room or the actual number of guests the room is designed to accommodate, plus 10 GPD/Employee
BUNKHOUSE	60 GPD/Person
CAMPS:	
Campground with Central Comfort Station	45 GPD/site, plus 20 GPD/Site for the dump station
Recreational Campgrounds with 3-way hookups	60 GPD/Site
Construction Camps	50 GPD/Person
Day Camps (not including meals)	15 GPD/Person
Dining Facility	3 GPD/Person/meal
Residential Youth Recreation Camps	25 GPD/Person plus 3 GPD/Person/meal
CATERERS – Function Rooms	12 GPD/patron
CHURCHES:	
Sanctuary Seating	3 GPD/Seat
Church Suppers	12 GPD/Seat
COUNTRY CLUBS – PRIVATE	
Dining Room	10 GPD/Seat
Snack Bar	10 GPD/Seat
Locker & Showers	20 GPD/Locker
DAY CARE CENTERS	10 GPD/Person
DENTISTS	10 GPD/Chair plus 35 GPD/Staff Member
DOCTOR'S OFFICES	250 GPD/Doctor
DOG KENNELS	50 GPD/Kennel, with one dog per kennel
DWELLINGS:	
Apartment - Studio or One-Bedroom	225 GPD
Apartment - 2 or More Bedrooms	150 GPD/Bedroom
Residence - Single-Family	300 GPD plus 150 GPD for each bedroom over 2
Residence - Duplex	300 GPD plus 150 GPD for each bedroom over 2 for each unit
Rooming House – With Meals	60 GPD/Person
Rooming House – Without Meals	40 GPD/Person
Senior Housing	See Senior Housing

Project #47388.11

DRAINAGE ANALYSIS

F O R

The Peverly Hill Road Condominiums

86 Peverly Hill Road
Portsmouth, NH
Rockingham County

Tax Map 242, Lot 4

Month April 19, 2021
Last Revised June 23, 2021

Prepared By:

TFM Since 1968

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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4.0 - PRE-DEVELOPMENT CONDITIONS 2

5.0 - POST-DEVELOPMENT CONDITIONS 2

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APPENDIX G –SITE SPECIFIC SOIL MAP & TEST PIT LOGS

APPENDIX H – NHDES ONE STOP DATA MAPPER

APPENDIX I – PRE AND POST DRAINAGE PLANS

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1.0 - SUMMARY & PROJECT DESCRIPTION

The project includes the development of a 56-Unit PUD on 83 Peverly Hill Road, Portsmouth, NH. The existing Tax Map 242 Lot 6 is approximately 4,604,509 sf / 105.7 Acres and currently contains one residential building. The site is within the Single Residence A (SRA) & Single Residence B (SRB) Zoning district is adjacent to a Calvary Cemetery to the North and a wetland to the south. The majority of the buildings on Peverly Hill Road are residential and the surrounding area consists of residential neighborhoods.

The proposed project is to construct 56 single-family unit condominium. Associated improvements include and are not limited to access, grading, utilities, stormwater management system, lighting, and landscaping. The project proposes 56 homes and a public road for access. The 56 buildings and roadway total 247,920 sf / 5.7 acres of impervious area with approximately 732,290 sf / 16.8 acres of disturbance to facilitate the development, this is approximately 5% effective impervious cover. Aside from the 16.8 acres of disturbance, the approximately 88.9 remaining acreage is to be undeveloped. A path is to be constructed connecting the neighborhood with the existing bike path that is under development along the Boston and Main Railroad Tracks.

This analysis has been completed to verify the project will not pose adverse stormwater effects on-site and off-site. Compared to the pre-development conditions, the post-development stormwater management system has been designed to reduce peak runoff rates, reduces runoff volume, reduces the risk of erosion and sedimentation, and improves stormwater runoff quality. In addition, Best Management Practices employed to formulate a plan that assures stormwater quality both during and after construction. The following summarizes the findings from the study.

2.0 - CALCULATION METHODS

The design storms analyzed in this study are the 2-year, 10-year, and 50-year 24-hour storm events. The software program, HydroCAD version 10.00[1] was utilized to calculate the peak runoff rates from these storm events. The program estimates the peak rates using the TR-20 method. A Type III storm pattern was used in the model. Rainfall frequencies for the analyzed region were also incorporated into the model. Rainfall frequencies from the higher of the Extreme Precipitation Rates from Cornell University's Northeast Regional Climate Center (see Appendix A) were used to determine the storm-event intensities, see Table 1. The site lies withing the Great Bay Region, and the rainfalls were increased to take this into account. Design standards were taken from the New Hampshire Stormwater Manual, December 2008[2].

Time of Concentration is the time it takes for water to flow from the hydraulically most remote point in the watershed (with the longest travel time) to the watershed outlet. This time is determined by calculating the time it takes runoff to travel this route under one of three hydrologic conditions: sheet flow, shallow concentrated flow, or channel flow. Because the Intensity-Duration-Frequency (IDF) curve is steep with short TC's, estimating the actual intensity is subject to error and overestimates actual runoff. Due to this, the TCs are adjusted to a minimum of 6 minutes.

[1] HydroCAD version 10.00, HydroCAD Software Solutions LLC, Chocorua, NH, 2013.
[2] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

	24-HOUR RAINFALL RATES		
Storm-Event (year)	Cornell University Rainfall (in)	Factor of Increase For the Great Bay Region	Design Rainfall (in)
2	3.22	115%	3.70
10	4.89	115%	5.62
50	7.43	115%	8.54

Table 1 – 24-Hour Rainfall Rates

3.0 – EXISTING SITE CONDITIONS

The soils within the proposed area of disturbance are identified in accordance with the Site-Specific Soil Survey (see Existing Conditions detail and soil locations). The Site-Specific Soil Survey identifies the soils within the disturbed project area as primarily Newfield sandy loam (HSG B), Hoosic gravelly loamy sand (HSG A), Deerfield loamy sand (HSG B) and Canton sandy loam (HSG B). Hydrologic Soil Group A is classified as having low runoff potential and Hydrologic Soil Group B is classified as moderately low runoff potential.

All other areas that contribute runoff to the project site are composed of Boxford silt loam (HSG C), Scitico silt loam (HSG C), Walpole sandy loam, (HSG C). Hydrologic Soil Group C is classified as having moderately high runoff potential when thoroughly wet.

Offsite soils draining onto the site are classified by the Natural Resource Conservation Service (NRCS) as Scitico Silt Loam (HSG C/D), Eldridge Fine Sandy Loam (HSG C/D), Maybid Silt Loam (HSG C/D), Deerfield Loamy Fine Sand (HSG A), Pennichuck Channery Very Fine Sand Loam (HSG C), Natchaug Mucky Peat (HSG B/D), Hoosic Gravelly Fine Sandy Loam (HSG A) and Squamscott Fine Sandy Loam (HSG C/D). In dual group classifications, the first letter is for drained areas while the second is for un-drained areas.

4.0 - PRE-DEVELOPMENT CONDITIONS

The pre-development condition is characterized by six watersheds. Pre-development subcatchment areas are depicted on the attached plan entitled “Pre-Development Drainage Map,” Sheet D-01 in.

Stormwater runoff from the site that does not infiltrates into the soil, drains into the wetland along the south side of the property (EPOI-1, EPOI-2, EPOI-3, and EPOI-5). A small portion, along the northern edge of the property, drains into the woodlands on the abutting property (EPOI-4 and EPOI-6).

In the pre-development condition, the total impervious area is 78,390 sf over a total drainage analysis area of 775,754 sf.

5.0 - POST-DEVELOPMENT CONDITIONS

The post-development condition is characterized by six watersheds divided into many subcatchment areas. Post-development subcatchment areas are depicted on the attached plan entitled “Post-Development Drainage Map,” sheet D-02.

In the post-development condition, the total impervious area is 333,000 sf over a total drainage analysis area of 732,290 sf disturbed. Impervious area from the project consists of 56 single-family residential buildings, 2932 lf of roadway and associated improvements. Two bioretention areas with internal reservoirs and one subsurface gravel wetland are proposed to treat and mitigate the stormwater runoff from the impact of the new impervious area from the proposed development.

With the exception of the insignificant increase of the 2-year flow at POI-1, the peak runoffs for the proposed project are less than or remains the same as the peak rates of runoff from the existing conditions for all storm events, in accordance with AoT regulations and City stormwater regulations (see Table 2). The flows will all be reduced for the final submission. There will be no adverse effects on the abutting properties from the proposed stormwater management system.

Appendices B and D summarizes all 24-hour storm events for pre- and post-development drainage calculations using HydroCAD analysis. Appendices C and E provide a full summary of the 10-year, 24-hour storm for the pre- and post-development drainage calculations using HydroCAD analysis.

Area Number	2-Year (Flow - cfs)		10-Year (Flow - cfs)		50-Year (Flow - cfs)	
	Pre-Dev.	Post Dev.	Pre-Dev.	Post Dev.	Pre-Dev.	Post Dev.
POI-1	5.2	5.4	22.2	22.0	58.6	55.2
POI-2	5.7	3.7	22.4	14.3	57.2	41.5
POI-3	11.5	11.5	21.8	21.8	70.4	70.4
POI-4	0.2	0.2	2.7	2.7	12.9	12.9
POI-5	2.7	2.7	7.9	7.9	17.7	17.7
POI-6	0.7	0.7	2.7	2.7	6.8	6.8

Table 2 – Pre and Post Development Flows

6.0 – REGULATORY COMPLIANCE

The project shall meet the stricter of the stormwater standards identified in the New Hampshire Department of Environmental Services (DES) Env-Wq 1500 Alteration of Terrain Regulations and City/Town stormwater management regulations.

6.1 – ALTERATION OF TERRAIN (AOT) CRITERIA

The following regulatory requirements are provided to show the project conformance to the applicable criteria of the NHDES Env-Wq 1500 Alteration of Terrain Regulations which include and are not limited to the following:

Env-Wq 1507.03(a) Pollutant Discharge Minimization Requirements: Stormwater treatment practices described in Env-Wq 1508.03 through Env-Wq 1508.10 shall be acceptable methods for minimizing pollutant discharges to surface waters.

Stormwater is treated using an infiltration practice, specifically a subsurface infiltration basin. The subsurface infiltration basins are designed in accordance with the applicable criteria of Env-Wq 1508.06 as follows:

Per 1508.06(e), the volume of the practice shall be large enough to contain the WQV without depending on infiltration. Refer to the corresponding BMP Worksheet in Section 12 for verification.

Per 1508.06(f), the practice completely drains the WQV within 72 hours or less. Refer to the corresponding BMP Worksheet in Section 12 for verification.

Env-Wq 1507.03(c) Pollutant Discharge Minimization Requirements: Stormwater treatment practices shall be designed with infiltration rates in accordance with Env-Wq 1504.14

Per 1508.06(a), the design infiltration rate of underlaying native soil was considered in accordance with Env-Wq 1504.14. The design infiltration rate for each subsurface infiltration basin is the average from each infiltration test in each basin. Refer to the Infiltration Feasibility Report.

Env-Wq 1507.03(e) Pollutant Discharge Minimization Requirements: Stormwater treatment practices shall be designed for the WQV/WQF, calculated in accordance with Env-Wq 1504.10 and Env-Wq 1504.11.

The regulation is met. Refer to the corresponding BMP Worksheets.

Env-Wq 1507.04(a) Groundwater Recharge Requirements: The proposed development shall reduce to the maximum extent practicable by using groundwater recharge practices as described in Env-Wq 1508.16.

The regulation is met. Refer to the corresponding BMP Worksheet in Section 12 for verification.

Env-Wq 1507.04(c) Groundwater Recharge Requirements: Design Infiltration rates for groundwater recharge practices shall be determined in accordance with Env-Wq 1504.14.

Design infiltration rates were obtained per Ksat testing using a Guelph Permeameter (Amoozemeter) per Env-Wq 1504.14(d). The design infiltration rate for each subsurface infiltration basin is the average from each infiltration test in each basin. Refer to the Infiltration Feasibility Report in Section 16 for verification.

Env-Wq 1507.05 Channel Protection Requirements: The 2-year 24-hour post development peak rate shall not exceed the pre-development peak flow rate for all flows leaving the site and the conditions of Env-Wq 1507.05(b), Env-Wq 1507.05(b)(2), or Env-Wq 1507.05(b)(3).

The 2-year 24-hour post development peak rate and volume is less than the pre-development rate per Env-Wq 1507.05(b)(1)(a). Refer to 5.0 Post Development Conditions.

Env-Wq 1507.06 Control Peak Runoff: The 10-year and 50-year 24-hour post development peak rate shall not exceed the pre-development peak flow rate for all flows leaving the site.

The regulation is met. Refer to Table 2 for peak discharge rate comparison.

7.0 – BEST MANAGEMENT PRACTICES

Best Management Practices will be developed in accordance with the *New Hampshire Stormwater Manual, Volumes Two and Three, December 2008*[3] to formulate a plan that assures stormwater quality both during and after construction. The intent of the outlined measures is to minimize erosion and sedimentation during construction, stabilize and protect the site from erosion after construction is complete and mitigate any adverse impacts to stormwater quality resulting from development. Best Management Practices for this project include:

- Temporary practices to be implemented during construction.

- Permanent practices to be implemented after construction.

7.1 – TEMPORARY PRACTICES

1. Erosion, sediment, and stormwater detention measures must be installed as directed by the engineer.
2. All disturbed areas, as well as loam stockpiles, shall be seeded and contained by a silt barrier.
3. Silt barriers must be installed prior to any construction commencing. All erosion control devices including silt barriers and storm drain inlet filters shall be inspected at least once per week and following any rainfall. All necessary maintenance shall be completed within twenty-four (24) hours.
4. Any silt barriers found to be failing must be replaced immediately. Sediment is to be removed from behind the silt fence if found to be one-third the height of the silt barrier or greater.
5. Any area of the site, which has been disturbed and where construction activity will not occur for more than twenty-one (21) days, shall be temporarily stabilized by mulching and seeding.
6. No construction materials shall be buried on-site.
7. After all areas have been stabilized, temporary practices are to be removed, and the area they are removed from must be smoothed and revegetated.
8. Areas must be temporarily stabilized within 14 days of disturbance or seeded and mulched within 3 days of final stabilization.
9. After November 15th, incomplete driveways or parking areas must be protected with a minimum of 3" of crushed gravel, meeting the standards of NHDOT item 304.3.
10. An area shall be considered stable if one of the following has occurred:
    a) Base course gravels are installed in areas to be paved.
    b) A minimum of 85% vegetated growth has been established.
    c) A minimum of 3" of non-erosive material such as stone or rip rap has been installed.
    d) Erosion control blankets have been properly installed.

[3] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

7.2 – PERMANENT PRACTICES

The objectives for developing permanent Best Management Practices for this site include the following:

1. Maintain existing runoff flow characteristics.
    a) Drainage is structured to minimize any offsite increase in runoff.

2. Treatment BMP's are established to ensure the water quality.

3. Maintenance schedules are set to safeguard the long-term working of the stormwater BMP's.

A Stormwater Management Operations & Maintenance Manual is provided to ensure the proper functioning of the system over time.

7.3 – BEST MANAGEMENT PRACTICE EFFICIENCIES

Appendix E of Volume 2 of the New Hampshire Stormwater [4] lists the pollutant removal efficiencies of various BMP's. All proposed BMP's meet all state and City requirements for total suspended solids (TSS) and pollutant removal, Total Nitrogen (TN), and Total Phosphorous (TP).

Bioretention Systems have a 90% TSS removal efficiency, 65% TN removal efficiency, and 65% TP efficiency.

Gravel Wetlands have a 95% TSS removal efficiency, 85% TN removal efficiency, and 64% TP efficiency. Gravel Wetlands have the have the highest removal rating for total nitrogen. The surface of the wetland creates an aerobic zone allowing nitrification of the organic nitrogen and plant debris, and the rock area under the wetland soil allows for an anaerobic zone causing denitrification of the stormwater, releasing nitrogen gas back into the atmosphere.

Bioretention Area #1 and Gravel Wetland #1 both use sediment forebays to pretreat the stormwater. Bioretention Area #2 only receives impervious runoff from roofs and no pretreatment is required. The pretreatment areas help to settle sediment and prevent clogging of treatment areas.

7.3.1 – LID PRACTICES

Gravel Wetlands and Bioretention Areas are both Low Impact Design. The goal of LID systems is to mimic a site's precondition hydrology by infiltrating, filtering, storming, evaporating and detaining stormwater but use of natural landscape features. These treatments filter and detain the stormwater. They use natural processes, such as soil filtration, evapotranspiration (from the plants in the system) and anaerobic and aerobic treatment of stormwater. The detain the stormwater and release it to mimic the predevelopment storm flows.

[4] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

9.0 – CONCLUSION

The proposed stormwater management system will treat, infiltrate, and mitigate the runoff generated from the proposed development and provide protection of groundwater and surface waters as required through the Alteration of Terrain Bureau and City stormwater management regulations. The project has been designed in accordance with NHDES and City regulations. There is little change in the flow characteristics of the site. The proposed project has been designed to pose no adverse effects on surrounding properties.

Respectfully,
TFMoran, Inc.

Jack McTigue, PE, CPESC
Project Manager

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APPENDIX A – EXTREME PRECIPITATION RATES

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Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.783 degrees West
Latitude	43.056 degrees North
Elevation	0 feet
Date/Time	Mon, 19 Oct 2020 18:28:44 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.70	0.98	1.21	1.56	2.04	2.67	2.93	**1yr**	2.36	2.82	3.23	3.95	4.57	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.50	3.22	3.58	**2yr**	2.85	3.45	3.95	4.70	5.35	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.43	3.15	4.08	4.60	**5yr**	3.62	4.42	5.06	5.96	6.73	**5yr**
10yr	0.41	0.65	0.82	1.12	1.45	1.89	**10yr**	1.25	1.73	2.24	2.90	3.76	4.89	5.55	**10yr**	4.33	5.34	6.11	7.14	8.01	**10yr**
25yr	0.48	0.76	0.97	1.34	1.78	2.34	**25yr**	1.53	2.14	2.78	3.64	4.76	6.20	7.13	**25yr**	5.49	6.86	7.84	9.07	10.10	**25yr**
50yr	0.54	0.86	1.10	1.54	2.07	2.76	**50yr**	1.79	2.53	3.29	4.33	5.68	7.43	8.62	**50yr**	6.57	8.29	9.48	10.87	12.04	**50yr**
100yr	0.60	0.97	1.25	1.77	2.42	3.26	**100yr**	2.09	2.98	3.91	5.17	6.79	8.90	10.43	**100yr**	7.88	10.03	11.45	13.04	14.35	**100yr**
200yr	0.68	1.10	1.43	2.05	2.83	3.84	**200yr**	2.44	3.52	4.62	6.15	8.11	10.67	12.61	**200yr**	9.44	12.13	13.84	15.64	17.12	**200yr**
500yr	0.80	1.32	1.72	2.49	3.48	4.77	**500yr**	3.00	4.39	5.78	7.73	10.26	13.56	16.23	**500yr**	12.00	15.60	17.80	19.91	21.62	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.63	0.87	0.92	1.33	1.67	2.24	2.53	**1yr**	1.98	2.43	2.87	3.17	3.91	**1yr**
2yr	0.32	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.07	3.47	**2yr**	2.72	3.34	3.84	4.57	5.10	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.81	4.22	**5yr**	3.37	4.06	4.74	5.57	6.28	**5yr**
10yr	0.39	0.59	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.81	2.39	3.06	4.40	4.91	**10yr**	3.90	4.72	5.49	6.47	7.25	**10yr**
25yr	0.44	0.67	0.83	1.19	1.57	1.90	**25yr**	1.35	1.86	2.10	2.76	3.54	4.74	5.96	**25yr**	4.19	5.73	6.73	7.88	8.76	**25yr**
50yr	0.48	0.74	0.92	1.32	1.77	2.17	**50yr**	1.53	2.12	2.35	3.07	3.93	5.36	6.90	**50yr**	4.74	6.63	7.85	9.16	10.12	**50yr**
100yr	0.54	0.82	1.02	1.48	2.02	2.48	**100yr**	1.75	2.42	2.63	3.41	4.36	6.03	7.98	**100yr**	5.33	7.67	9.15	10.66	11.69	**100yr**
200yr	0.60	0.90	1.14	1.65	2.30	2.82	**200yr**	1.98	2.76	2.94	3.78	4.80	6.76	9.22	**200yr**	5.98	8.87	10.67	12.42	13.53	**200yr**
500yr	0.69	1.03	1.33	1.93	2.74	3.38	**500yr**	2.36	3.30	3.42	4.32	5.47	7.87	11.18	**500yr**	6.97	10.75	13.07	15.23	16.39	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.20	3.00	3.16	**1yr**	2.66	3.04	3.60	4.39	5.07	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.44	3.71	**2yr**	3.04	3.57	4.09	4.85	5.65	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.62	**5yr**	1.15	1.58	1.88	2.53	3.25	4.35	4.96	**5yr**	3.85	4.77	5.39	6.38	7.16	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.98	**10yr**	1.39	1.93	2.28	3.10	3.94	5.36	6.20	**10yr**	4.74	5.96	6.81	7.84	8.76	**10yr**
25yr	0.58	0.88	1.09	1.56	2.05	2.57	**25yr**	1.77	2.51	2.95	4.06	5.14	7.82	8.32	**25yr**	6.92	8.00	9.11	10.34	11.41	**25yr**
50yr	0.67	1.02	1.27	1.83	2.46	3.13	**50yr**	2.12	3.06	3.59	4.99	6.30	9.79	10.42	**50yr**	8.66	10.02	11.37	12.72	13.96	**50yr**
100yr	0.79	1.19	1.49	2.16	2.96	3.81	**100yr**	2.55	3.72	4.37	6.14	7.73	12.25	13.04	**100yr**	10.84	12.54	14.19	15.67	17.07	**100yr**
200yr	0.92	1.39	1.76	2.55	3.55	4.65	**200yr**	3.07	4.55	5.33	7.57	9.49	15.37	16.34	**200yr**	13.60	15.71	17.73	19.31	20.89	**200yr**
500yr	1.14	1.70	2.19	3.18	4.53	6.03	**500yr**	3.91	5.90	6.91	10.00	12.48	20.76	22.02	**500yr**	18.37	21.17	23.80	25.43	27.29	**500yr**

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APPENDIX B – PRE-DEVELOPMENT CALCULATIONS

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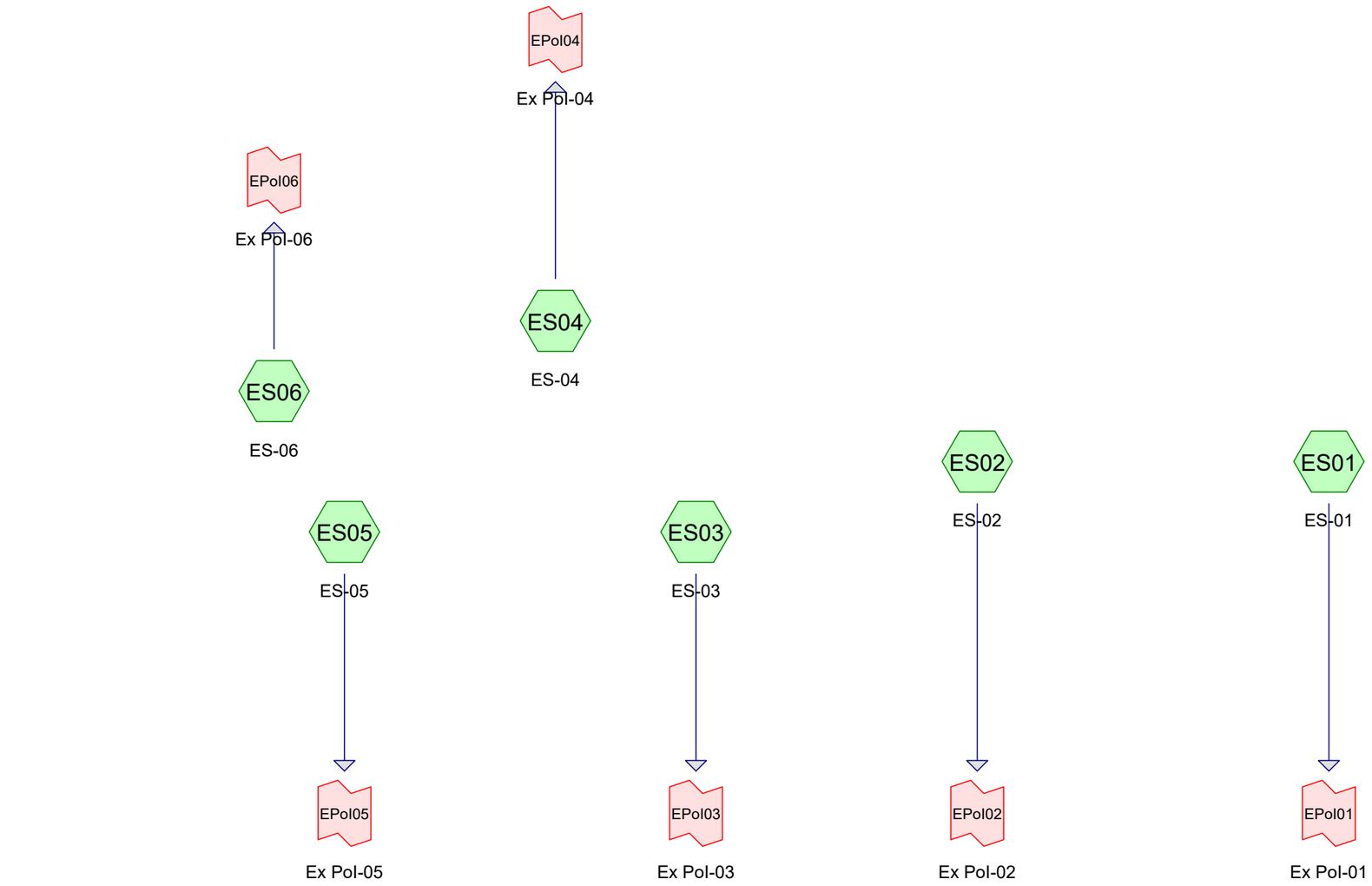
PRE DEVELOPEMENT



Subcat Reach Pond Link

Routing Diagram for 6-10-21_47388-11_Pre-Post-Drainage
Prepared by {enter your company name here}, Printed 6/23/2021
HydroCAD® 10.10-4b s/n 00866 © 2020 HydroCAD Software Solutions LLC

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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
803,900	39	>75% Grass cover, Good, HSG A (ES01, ES02, ES04)
183,812	61	>75% Grass cover, Good, HSG B (ES01, ES02, ES04)
3,097	74	>75% Grass cover, Good, HSG C (ES01, ES04)
227	96	Gravel surface, HSG A (ES04)
1,882	96	Gravel surface, HSG C (ES04)
76,964	98	Paved parking, HSG A (ES01, ES02, ES04)
1,391	98	Roofs, HSG A (ES01)
277,822	30	Woods, Good, HSG A (ES01, ES02, ES04)
1,413,864	55	Woods, Good, HSG B (ES01, ES02, ES03, ES04, ES05, ES06)
1,195,197	70	Woods, Good, HSG C (ES01, ES02, ES03, ES04, ES05, ES06)
3,958,156	**56**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
1,160,304	HSG A	ES01, ES02, ES04
1,597,676	HSG B	ES01, ES02, ES03, ES04, ES05, ES06
1,200,176	HSG C	ES01, ES02, ES03, ES04, ES05, ES06
0	HSG D	
0	Other	
3,958,156		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES01: ES-01 Runoff Area=1,086,569 sf 2.77% Impervious Runoff Depth>0.45"
Flow Length=1,030' Tc=23.4 min CN=56 Runoff=5.2 cfs 40,693 cf

Subcatchment ES02: ES-02 Runoff Area=1,302,728 sf 3.02% Impervious Runoff Depth>0.49"
Flow Length=2,000' Tc=39.9 min CN=57 Runoff=5.7 cfs 52,678 cf

Subcatchment ES03: ES-03 Runoff Area=469,882 sf 0.00% Impervious Runoff Depth>0.74"
Flow Length=1,040' Tc=62.6 min CN=63 Runoff=3.0 cfs 29,089 cf

Subcatchment ES04: ES-04 Runoff Area=668,692 sf 1.33% Impervious Runoff Depth>0.09"
Flow Length=1,040' Tc=49.8 min CN=44 Runoff=0.2 cfs 5,128 cf

Subcatchment ES05: ES-05 Runoff Area=305,212 sf 0.00% Impervious Runoff Depth>0.75"
Flow Length=720' Tc=34.6 min CN=63 Runoff=2.7 cfs 19,091 cf

Subcatchment ES06: ES-06 Runoff Area=125,073 sf 0.00% Impervious Runoff Depth>0.53"
Flow Length=340' Tc=27.5 min CN=58 Runoff=0.7 cfs 5,508 cf

Link EPol01: Ex Pol-01 Inflow=5.2 cfs 40,693 cf
Primary=5.2 cfs 40,693 cf

Link EPol02: Ex Pol-02 Inflow=5.7 cfs 52,678 cf
Primary=5.7 cfs 52,678 cf

Link EPol03: Ex Pol-03 Inflow=3.0 cfs 29,089 cf
Primary=3.0 cfs 29,089 cf

Link EPol04: Ex Pol-04 Inflow=0.2 cfs 5,128 cf
Primary=0.2 cfs 5,128 cf

Link EPol05: Ex Pol-05 Inflow=2.7 cfs 19,091 cf
Primary=2.7 cfs 19,091 cf

Link EPol06: Ex Pol-06 Inflow=0.7 cfs 5,508 cf
Primary=0.7 cfs 5,508 cf

Total Runoff Area = 3,958,156 sf Runoff Volume = 152,187 cf Average Runoff Depth = 0.46"
98.02% Pervious = 3,879,801 sf 1.98% Impervious = 78,355 sf

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES01: ES-01 Runoff Area=1,086,569 sf 2.77% Impervious Runoff Depth>1.37"
Flow Length=1,030' Tc=23.4 min CN=56 Runoff=22.2 cfs 123,777 cf

Subcatchment ES02: ES-02 Runoff Area=1,302,728 sf 3.02% Impervious Runoff Depth>1.43"
Flow Length=2,000' Tc=39.9 min CN=57 Runoff=22.4 cfs 155,520 cf

Subcatchment ES03: ES-03 Runoff Area=469,882 sf 0.00% Impervious Runoff Depth>1.88"
Flow Length=1,040' Tc=62.6 min CN=63 Runoff=8.8 cfs 73,690 cf

Subcatchment ES04: ES-04 Runoff Area=668,692 sf 1.33% Impervious Runoff Depth>0.58"
Flow Length=1,040' Tc=49.8 min CN=44 Runoff=2.7 cfs 32,585 cf

Subcatchment ES05: ES-05 Runoff Area=305,212 sf 0.00% Impervious Runoff Depth>1.90"
Flow Length=720' Tc=34.6 min CN=63 Runoff=7.9 cfs 48,262 cf

Subcatchment ES06: ES-06 Runoff Area=125,073 sf 0.00% Impervious Runoff Depth>1.51"
Flow Length=340' Tc=27.5 min CN=58 Runoff=2.7 cfs 15,766 cf

Link EPol01: Ex Pol-01 Inflow=22.2 cfs 123,777 cf
Primary=22.2 cfs 123,777 cf

Link EPol02: Ex Pol-02 Inflow=22.4 cfs 155,520 cf
Primary=22.4 cfs 155,520 cf

Link EPol03: Ex Pol-03 Inflow=8.8 cfs 73,690 cf
Primary=8.8 cfs 73,690 cf

Link EPol04: Ex Pol-04 Inflow=2.7 cfs 32,585 cf
Primary=2.7 cfs 32,585 cf

Link EPol05: Ex Pol-05 Inflow=7.9 cfs 48,262 cf
Primary=7.9 cfs 48,262 cf

Link EPol06: Ex Pol-06 Inflow=2.7 cfs 15,766 cf
Primary=2.7 cfs 15,766 cf

Total Runoff Area = 3,958,156 sf Runoff Volume = 449,600 cf Average Runoff Depth = 1.36"
98.02% Pervious = 3,879,801 sf 1.98% Impervious = 78,355 sf

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES01: ES-01 Runoff Area=1,086,569 sf 2.77% Impervious Runoff Depth>3.26"
Flow Length=1,030' Tc=23.4 min CN=56 Runoff=58.6 cfs 294,875 cf

Subcatchment ES02: ES-02 Runoff Area=1,302,728 sf 3.02% Impervious Runoff Depth>3.36"
Flow Length=2,000' Tc=39.9 min CN=57 Runoff=57.2 cfs 364,565 cf

Subcatchment ES03: ES-03 Runoff Area=469,882 sf 0.00% Impervious Runoff Depth>4.04"
Flow Length=1,040' Tc=62.6 min CN=63 Runoff=19.8 cfs 158,106 cf

Subcatchment ES04: ES-04 Runoff Area=668,692 sf 1.33% Impervious Runoff Depth>1.89"
Flow Length=1,040' Tc=49.8 min CN=44 Runoff=12.9 cfs 105,208 cf

Subcatchment ES05: ES-05 Runoff Area=305,212 sf 0.00% Impervious Runoff Depth>4.07"
Flow Length=720' Tc=34.6 min CN=63 Runoff=17.7 cfs 103,415 cf

Subcatchment ES06: ES-06 Runoff Area=125,073 sf 0.00% Impervious Runoff Depth>3.49"
Flow Length=340' Tc=27.5 min CN=58 Runoff=6.8 cfs 36,330 cf

Link EPol01: Ex Pol-01 Inflow=58.6 cfs 294,875 cf
Primary=58.6 cfs 294,875 cf

Link EPol02: Ex Pol-02 Inflow=57.2 cfs 364,565 cf
Primary=57.2 cfs 364,565 cf

Link EPol03: Ex Pol-03 Inflow=19.8 cfs 158,106 cf
Primary=19.8 cfs 158,106 cf

Link EPol04: Ex Pol-04 Inflow=12.9 cfs 105,208 cf
Primary=12.9 cfs 105,208 cf

Link EPol05: Ex Pol-05 Inflow=17.7 cfs 103,415 cf
Primary=17.7 cfs 103,415 cf

Link EPol06: Ex Pol-06 Inflow=6.8 cfs 36,330 cf
Primary=6.8 cfs 36,330 cf

Total Runoff Area = 3,958,156 sf Runoff Volume = 1,062,500 cf Average Runoff Depth = 3.22"
98.02% Pervious = 3,879,801 sf 1.98% Impervious = 78,355 sf

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APPENDIX C – PRE-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

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Summary for Subcatchment ES01: ES-01

Run from top of graveyard, thru site, and into wetland.

Runoff = 22.2 cfs @ 12.37 hrs, Volume= 123,777 cf, Depth> 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
28,755	98	Paved parking, HSG A	Pavement
1,391	98	Roofs, HSG A	Roofs
107,595	30	Woods, Good, HSG A	Woods
333,961	55	Woods, Good, HSG B	Woods
284,601	70	Woods, Good, HSG C	Woods
190,112	39	>75% Grass cover, Good, HSG A	Open Space
139,756	61	>75% Grass cover, Good, HSG B	Brush
398	74	>75% Grass cover, Good, HSG C	Brush
1,086,569	56	Weighted Average	
1,056,423		97.23% Pervious Area	
30,146		2.77% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0300	0.22		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
2.9	210	0.0300	1.21		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
12.8	720	0.0350	0.94		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
23.4	1,030	Total			

Summary for Subcatchment ES02: ES-02

Runoff = 22.4 cfs @ 12.63 hrs, Volume= 155,520 cf, Depth> 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
39,291	98	Paved parking, HSG A	Pavement
6,841	30	Woods, Good, HSG A	Brush
451,295	55	Woods, Good, HSG B	Woods
446,489	70	Woods, Good, HSG C	Woods
353,745	39	>75% Grass cover, Good, HSG A	Open Space
5,067	61	>75% Grass cover, Good, HSG B	Open Space
1,302,728	57	Weighted Average	
1,263,437		96.98% Pervious Area	
39,291		3.02% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
3.9	500	0.0200	2.12		**Shallow Concentrated Flow, Shallow Concentrated** Grassed Waterway Kv= 15.0 fps
26.9	1,400	0.0300	0.87		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
39.9	2,000	Total			

Summary for Subcatchment ES03: ES-03

Runoff = 8.8 cfs @ 12.88 hrs, Volume= 73,690 cf, Depth> 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
218,042	55	Woods, Good, HSG B	Woods
251,840	70	Woods, Good, HSG C	Woods
469,882	63	Weighted Average	
469,882		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.8	100	0.0200	0.05		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
27.8	940	0.0127	0.56		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
62.6	1,040	Total			

Summary for Subcatchment ES04: ES-04

Runoff = 2.7 cfs @ 12.90 hrs, Volume= 32,585 cf, Depth> 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
8,918	98	Paved parking, HSG A	Pavement
227	96	Gravel surface, HSG A	Roadway
1,882	96	Gravel surface, HSG C	Roadway
163,386	30	Woods, Good, HSG A	Woods
169,721	55	Woods, Good, HSG B	Woods
22,827	70	Woods, Good, HSG C	Woods
260,043	39	>75% Grass cover, Good, HSG A	Open Space
38,989	61	>75% Grass cover, Good, HSG B	Open Space
2,699	74	>75% Grass cover, Good, HSG C	Open Space
668,692	44	Weighted Average	
659,774		98.67% Pervious Area	
8,918		1.33% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	100	0.0400	0.06		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
8.2	300	0.0150	0.61		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
15.2	640	0.0100	0.70		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
49.8	1,040	Total			

Summary for Subcatchment ES05: ES-05

Runoff = 7.9 cfs @ 12.51 hrs, Volume= 48,262 cf, Depth> 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
141,482	55	Woods, Good, HSG B	Open Water
163,730	70	Woods, Good, HSG C	Woods
305,212	63	Weighted Average	
305,212		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0800	0.08		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
1.4	120	0.0830	1.44		**Shallow Concentrated Flow, Shallow Concentrates** Woodland Kv= 5.0 fps
13.2	500	0.0160	0.63		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
34.6	720	Total			

Summary for Subcatchment ES06: ES-06

Runoff = 2.7 cfs @ 12.43 hrs, Volume= 15,766 cf, Depth> 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
99,363	55	Woods, Good, HSG B	Woods
25,710	70	Woods, Good, HSG C	Woods
125,073	58	Weighted Average	
125,073		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4	100	0.0600	0.07		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
5.1	240	0.0250	0.79		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
27.5	340	Total			

Summary for Link EPol01: Ex Pol-01

Inflow Area = 1,086,569 sf, 2.77% Impervious, Inflow Depth > 1.37" for 10-Year event
Inflow = 22.2 cfs @ 12.37 hrs, Volume= 123,777 cf
Primary = 22.2 cfs @ 12.37 hrs, Volume= 123,777 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link EPol02: Ex Pol-02

Inflow Area = 1,302,728 sf, 3.02% Impervious, Inflow Depth > 1.43" for 10-Year event
Inflow = 22.4 cfs @ 12.63 hrs, Volume= 155,520 cf
Primary = 22.4 cfs @ 12.63 hrs, Volume= 155,520 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link EPol03: Ex Pol-03

Inflow Area = 469,882 sf, 0.00% Impervious, Inflow Depth > 1.88" for 10-Year event
Inflow = 8.8 cfs @ 12.88 hrs, Volume= 73,690 cf
Primary = 8.8 cfs @ 12.88 hrs, Volume= 73,690 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link EPoI04: Ex PoI-04

Inflow Area = 668,692 sf, 1.33% Impervious, Inflow Depth > 0.58" for 10-Year event
Inflow = 2.7 cfs @ 12.90 hrs, Volume= 32,585 cf
Primary = 2.7 cfs @ 12.90 hrs, Volume= 32,585 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link EPoI05: Ex PoI-05

Inflow Area = 305,212 sf, 0.00% Impervious, Inflow Depth > 1.90" for 10-Year event
Inflow = 7.9 cfs @ 12.51 hrs, Volume= 48,262 cf
Primary = 7.9 cfs @ 12.51 hrs, Volume= 48,262 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link EPoI06: Ex PoI-06

Inflow Area = 125,073 sf, 0.00% Impervious, Inflow Depth > 1.51" for 10-Year event
Inflow = 2.7 cfs @ 12.43 hrs, Volume= 15,766 cf
Primary = 2.7 cfs @ 12.43 hrs, Volume= 15,766 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

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APPENDIX D – POST-DEVELOPMENT CALCULATIONS

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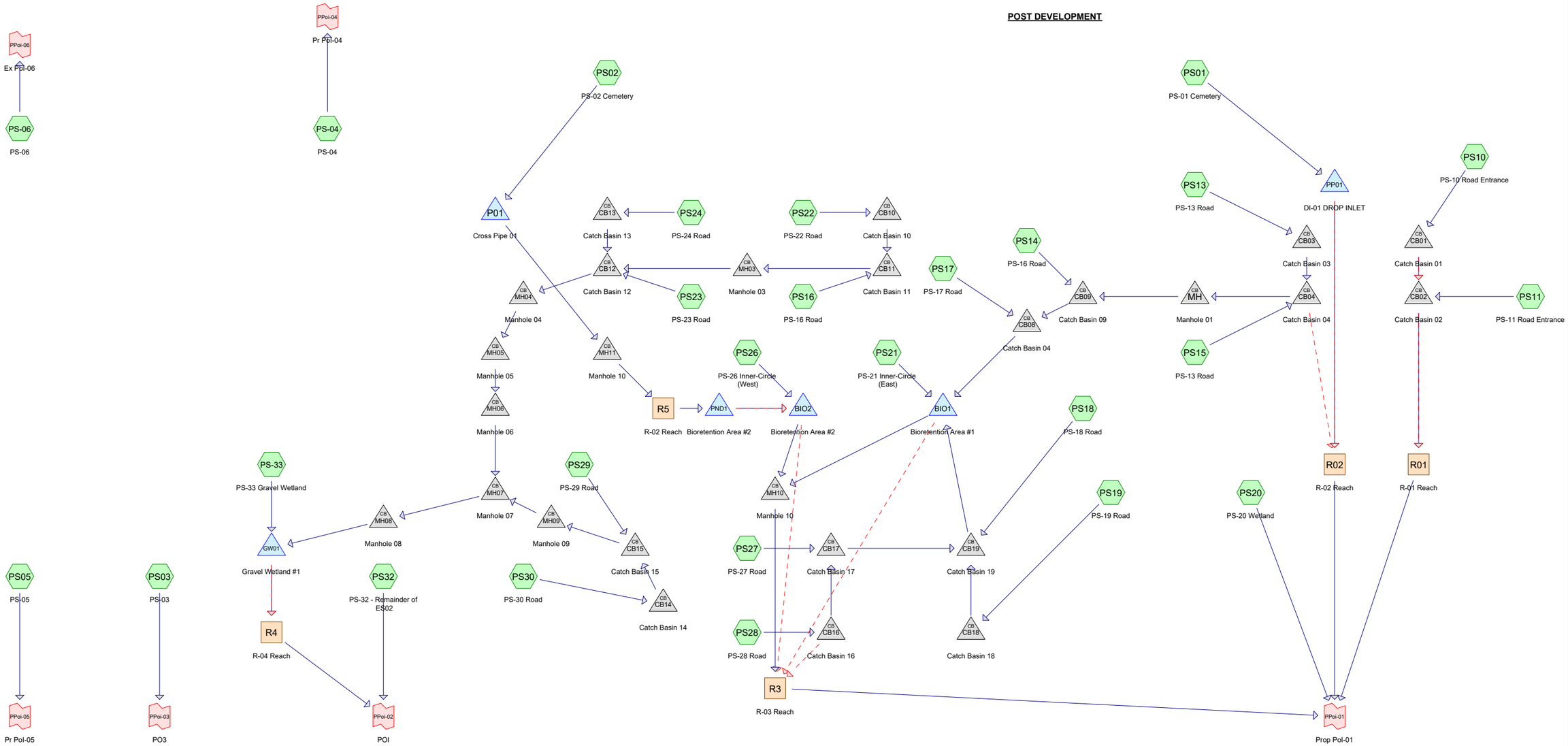
POST DEVELOPMENT
PPoi-06
Ex Poi-06
PS-06
PS-06
PPoi-04
Pr Poi-04
PS-04
PS-04
PS02
PS-02 Cemetery
P01
Cross Pipe 01
CB CB13
Catch Basin 13
PS24
PS-24 Road
PS22
PS-22 Road
CB CB10
Catch Basin 10
CB CB12
Catch Basin 12
CB MH03
Manhole 03
CB CB11
Catch Basin 11
PS23
PS-23 Road
PS16
PS-16 Road
CB MH04
Manhole 04
CB MH05
Manhole 05
CB MH11
Manhole 10
PS26
PS-26 Inner-Circle (West)
PS21
PS-21 Inner-Circle (East)
CB MH06
Manhole 06
R5
R-02 Reach
PND1
Bioretention Area #2
BIO2
Bioretention Area #2
BIO1
Bioretention Area #1
PS18
PS-18 Road
PS-33
PS-33 Gravel Wetland
CB MH07
Manhole 07
PS29
PS-29 Road
CB MH08
Manhole 08
CB MH09
Manhole 09
GW01
Gravel Wetland #1
CB CB15
Catch Basin 15
PS05
PS-05
PS03
PS-03
PS32
PS-32 - Remainder of ES02
PS30
PS-30 Road
CB CB14
Catch Basin 14
R4
R-04 Reach
CB MH10
Manhole 10
PS19
PS-19 Road
PS27
PS-27 Road
CB CB17
Catch Basin 17
CB CB19
Catch Basin 19
PS28
PS-28 Road
CB CB16
Catch Basin 16
CB CB18
Catch Basin 18
R3
R-03 Reach
PPoi-05
Pr Poi-05
PPoi-03
PO3
PPoi-02
POI
PPoi-01
Prop Poi-01
PS01
PS-01 Cemetery
PS13
PS-13 Road
PP01
DI-01 DROP INLET
PS14
PS-16 Road
CB CB09
Catch Basin 09
CB MH
Manhole 01
CB CB03
Catch Basin 03
CB CB08
Catch Basin 04
CB CB04
Catch Basin 04
PS15
PS-13 Road
PS10
PS-10 Road Entrance
CB CB01
Catch Basin 01
CB CB02
Catch Basin 02
PS11
PS-11 Road Entrance
PS20
PS-20 Wetland
R02
R-02 Reach
R01
R-01 Reach
Subcat
Reach
Pond
Link
Routing Diagram for 6-10-21_47388-11_Pre-Post-Drainage
Prepared by {enter your company name here}, Printed 6/23/2021
HydroCAD® 10.10-4b s/n 00866 © 2020 HydroCAD Software Solutions LLC

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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
851,873	39	>75% Grass cover, Good, HSG A (PS-04, PS01, PS02, PS10, PS11, PS13, PS14, PS15, PS17, PS20, PS21)
470,179	61	>75% Grass cover, Good, HSG B (PS-04, PS-33, PS01, PS02, PS14, PS15, PS16, PS17, PS18, PS19, PS20, PS21, PS22, PS23, PS24, PS26, PS27, PS28, PS29, PS30, PS32)
7,911	74	>75% Grass cover, Good, HSG C (PS-04, PS-33, PS20, PS32)
227	96	Gravel surface, HSG A (PS-04)
18,177	96	Gravel surface, HSG B (PS-04, PS-06, PS-33, PS03, PS17, PS18, PS21, PS23, PS24, PS26)
1,882	96	Gravel surface, HSG C (PS-04)
103,506	98	Paved parking, HSG A (PS-04, PS01, PS02, PS10, PS11, PS13, PS14, PS15, PS17)
98,854	98	Paved parking, HSG B (PS13, PS14, PS15, PS16, PS17, PS18, PS19, PS20, PS22, PS23, PS24, PS27, PS28, PS29, PS30)
18,780	98	Roofs, HSG A (PS01, PS10, PS13, PS14)
101,857	98	Roofs, HSG B (PS-33, PS01, PS02, PS14, PS18, PS20, PS21, PS22, PS23, PS24, PS26, PS27, PS29)
185,918	30	Woods, Good, HSG A (PS-04, PS01, PS02, PS10, PS20)
908,609	55	Woods, Good, HSG B (PS-04, PS-06, PS-33, PS01, PS02, PS03, PS05, PS20, PS24, PS30, PS32)
1,190,383	70	Woods, Good, HSG C (PS-04, PS-06, PS-33, PS03, PS05, PS20)
3,958,156	**59**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
1,160,304	HSG A	PS-04, PS01, PS02, PS10, PS11, PS13, PS14, PS15, PS17, PS20, PS21
1,597,676	HSG B	PS-04, PS-06, PS-33, PS01, PS02, PS03, PS05, PS13, PS14, PS15, PS16, PS17, PS18, PS19, PS20, PS21, PS22, PS23, PS24, PS26, PS27, PS28, PS29, PS30, PS32
1,200,176	HSG C	PS-04, PS-06, PS-33, PS03, PS05, PS20, PS32
0	HSG D	
0	Other	
3,958,156		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PS-04: PS-04 Runoff Area=668,692 sf 1.33% Impervious Runoff Depth>0.11"
Flow Length=1,040' Tc=49.8 min CN=45 Runoff=0.2 cfs 6,269 cf

Subcatchment PS-06: PS-06 Runoff Area=125,073 sf 0.00% Impervious Runoff Depth>0.57"
Flow Length=340' Tc=27.5 min CN=59 Runoff=0.8 cfs 5,946 cf

Subcatchment PS-33: PS-33 Gravel Runoff Area=603,289 sf 1.53% Impervious Runoff Depth>0.96"
Flow Length=794' Tc=33.4 min CN=67 Runoff=7.6 cfs 48,015 cf

Subcatchment PS01: PS-01 Cemetery Runoff Area=301,519 sf 11.75% Impervious Runoff Depth>0.19"
Flow Length=517' Tc=11.5 min CN=48 Runoff=0.3 cfs 4,746 cf

Subcatchment PS02: PS-02 Cemetery Runoff Area=394,562 sf 8.81% Impervious Runoff Depth>0.14"
Flow Length=1,189' Tc=25.2 min CN=46 Runoff=0.2 cfs 4,513 cf

Subcatchment PS03: PS-03 Runoff Area=469,882 sf 0.00% Impervious Runoff Depth>0.74"
Flow Length=1,040' Tc=62.6 min CN=63 Runoff=3.0 cfs 29,089 cf

Subcatchment PS05: PS-05 Runoff Area=305,212 sf 0.00% Impervious Runoff Depth>0.75"
Flow Length=720' Tc=34.6 min CN=63 Runoff=2.7 cfs 19,091 cf

Subcatchment PS10: PS-10 Road Entrance Runoff Area=21,365 sf 39.43% Impervious Runoff Depth>0.71"
Flow Length=164' Tc=8.7 min CN=62 Runoff=0.3 cfs 1,263 cf

Subcatchment PS11: PS-11 Road Entrance Runoff Area=3,593 sf 78.96% Impervious Runoff Depth>2.27"
Flow Length=131' Tc=5.0 min CN=86 Runoff=0.2 cfs 681 cf

Subcatchment PS13: PS-13 Road Runoff Area=32,248 sf 55.72% Impervious Runoff Depth>1.25"
Flow Length=242' Tc=9.0 min CN=72 Runoff=0.9 cfs 3,362 cf

Subcatchment PS14: PS-16 Road Runoff Area=42,709 sf 50.85% Impervious Runoff Depth>1.51"
Flow Length=330' Tc=9.8 min CN=76 Runoff=1.5 cfs 5,370 cf

Subcatchment PS15: PS-13 Road Runoff Area=5,802 sf 78.34% Impervious Runoff Depth>2.27"
Flow Length=207' Tc=5.0 min CN=86 Runoff=0.4 cfs 1,100 cf

Subcatchment PS16: PS-16 Road Runoff Area=6,627 sf 55.82% Impervious Runoff Depth>1.95"
Flow Length=177' Tc=5.0 min CN=82 Runoff=0.4 cfs 1,075 cf

Subcatchment PS17: PS-17 Road Runoff Area=12,439 sf 58.98% Impervious Runoff Depth>1.87"
Flow Length=362' Tc=5.7 min CN=81 Runoff=0.6 cfs 1,938 cf

Subcatchment PS18: PS-18 Road Runoff Area=40,442 sf 46.99% Impervious Runoff Depth>1.72"
Flow Length=290' Tc=10.5 min CN=79 Runoff=1.6 cfs 5,793 cf

Subcatchment PS19: PS-19 Road Runoff Area=12,708 sf 65.47% Impervious Runoff Depth>2.19"
Flow Length=236' Tc=5.0 min CN=85 Runoff=0.8 cfs 2,319 cf

Subcatchment PS20: PS-20 Wetland Runoff Area=498,342 sf 3.58% Impervious Runoff Depth>0.85"
Flow Length=518' Tc=41.1 min CN=65 Runoff=4.8 cfs 35,214 cf

Subcatchment PS21: PS-21 Inner-Circle Runoff Area=35,774 sf 19.91% Impervious Runoff Depth>1.07"
Flow Length=138' Slope=0.0600 '/' Tc=6.1 min CN=69 Runoff=1.0 cfs 3,203 cf

Subcatchment PS22: PS-22 Road Runoff Area=12,972 sf 53.89% Impervious Runoff Depth>1.87"
Flow Length=215' Tc=9.5 min CN=81 Runoff=0.6 cfs 2,020 cf

Subcatchment PS23: PS-23 Road Runoff Area=26,118 sf 59.22% Impervious Runoff Depth>2.03"
Flow Length=333' Slope=0.0200 '/' Tc=6.1 min CN=83 Runoff=1.4 cfs 4,409 cf

Subcatchment PS24: PS-24 Road Runoff Area=57,571 sf 48.08% Impervious Runoff Depth>1.72"
Flow Length=375' Slope=0.0200 '/' Tc=9.6 min CN=79 Runoff=2.3 cfs 8,249 cf

Subcatchment PS26: PS-26 Inner-Circle Runoff Area=108,179 sf 16.12% Impervious Runoff Depth>1.02"
Flow Length=154' Slope=0.0600 '/' Tc=6.1 min CN=68 Runoff=2.7 cfs 9,177 cf

Subcatchment PS27: PS-27 Road Runoff Area=35,948 sf 54.83% Impervious Runoff Depth>1.87"
Flow Length=378' Tc=10.1 min CN=81 Runoff=1.6 cfs 5,596 cf

Subcatchment PS28: PS-28 Road Runoff Area=18,193 sf 41.21% Impervious Runoff Depth>1.51"
Flow Length=359' Tc=7.5 min CN=76 Runoff=0.7 cfs 2,289 cf

Subcatchment PS29: PS-29 Road Runoff Area=23,194 sf 44.34% Impervious Runoff Depth>1.58"
Flow Length=355' Tc=9.6 min CN=77 Runoff=0.9 cfs 3,049 cf

Subcatchment PS30: PS-30 Road Runoff Area=26,650 sf 40.36% Impervious Runoff Depth>1.51"
Flow Length=412' Tc=11.4 min CN=76 Runoff=0.9 cfs 3,350 cf

Subcatchment PS32: PS-32 - Remainder of Runoff Area=69,053 sf 0.00% Impervious Runoff Depth>0.49"
Flow Length=194' Tc=21.2 min CN=57 Runoff=0.4 cfs 2,815 cf

Reach R01: R-01 Reach Avg. Flow Depth=0.04' Max Vel=0.23 fps Inflow=0.5 cfs 1,944 cf
n=0.100 L=501.0' S=0.0199 '/' Capacity=19.5 cfs Outflow=0.2 cfs 1,867 cf

Reach R02: R-02 Reach Avg. Flow Depth=0.04' Max Vel=0.22 fps Inflow=0.3 cfs 4,746 cf
n=0.100 L=487.0' S=0.0189 '/' Capacity=19.0 cfs Outflow=0.2 cfs 4,542 cf

Reach R3: R-03 Reach Avg. Flow Depth=0.07' Max Vel=0.34 fps Inflow=0.7 cfs 24,384 cf
n=0.100 L=487.0' S=0.0189 '/' Capacity=19.0 cfs Outflow=0.7 cfs 23,666 cf

Reach R4: R-04 Reach Avg. Flow Depth=0.22' Max Vel=0.55 fps Inflow=3.7 cfs 60,021 cf
n=0.100 L=594.0' S=0.0126 '/' Capacity=15.6 cfs Outflow=3.6 cfs 58,998 cf

Reach R5: R-02 Reach Avg. Flow Depth=0.03' Max Vel=0.21 fps Inflow=0.2 cfs 4,491 cf
n=0.100 L=487.0' S=0.0189 '/' Capacity=19.0 cfs Outflow=0.2 cfs 4,273 cf

Pond BIO1: Bioretention Area #1 Peak Elev=36.50' Storage=18,123 cf Inflow=8.6 cfs 30,969 cf
Primary=0.5 cfs 20,095 cf Secondary=0.0 cfs 0 cf Outflow=0.5 cfs 20,095 cf

Pond BIO2: Bioretention Area #2 Peak Elev=36.23' Storage=8,836 cf Inflow=2.7 cfs 12,905 cf
Primary=0.2 cfs 4,290 cf Secondary=0.0 cfs 0 cf Outflow=0.2 cfs 4,290 cf

Pond CB01: Catch Basin 01 Peak Elev=36.72' Inflow=0.3 cfs 1,263 cf
Primary=0.3 cfs 1,263 cf Secondary=0.0 cfs 0 cf Outflow=0.3 cfs 1,263 cf

Pond CB02: Catch Basin 02 Peak Elev=36.56' Inflow=0.5 cfs 1,944 cf
Primary=0.5 cfs 1,944 cf Secondary=0.0 cfs 0 cf Outflow=0.5 cfs 1,944 cf

Pond CB03: Catch Basin 03 Peak Elev=36.60' Inflow=0.9 cfs 3,362 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0060 '/' Outflow=0.9 cfs 3,362 cf

Pond CB04: Catch Basin 04 Peak Elev=36.50' Inflow=1.2 cfs 4,461 cf
Primary=1.2 cfs 4,461 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 4,461 cf

Pond CB08: Catch Basin 04 Peak Elev=36.50' Inflow=3.3 cfs 11,770 cf
24.0" Round Culvert n=0.013 L=188.0' S=0.0053 '/' Outflow=3.3 cfs 11,770 cf

Pond CB09: Catch Basin 09 Peak Elev=36.50' Inflow=2.7 cfs 9,832 cf
18.0" Round Culvert n=0.013 L=24.0' S=0.0062 '/' Outflow=2.7 cfs 9,832 cf

Pond CB10: Catch Basin 10 Peak Elev=45.79' Inflow=0.6 cfs 2,020 cf
12.0" Round Culvert n=0.013 L=16.0' S=0.0094 '/' Outflow=0.6 cfs 2,020 cf

Pond CB11: Catch Basin 11 Peak Elev=45.66' Inflow=0.9 cfs 3,095 cf
12.0" Round Culvert n=0.013 L=275.0' S=0.0075 '/' Outflow=0.9 cfs 3,095 cf

Pond CB12: Catch Basin 12 Peak Elev=44.17' Inflow=4.5 cfs 15,753 cf
12.0" Round Culvert n=0.013 L=79.0' S=0.0076 '/' Outflow=4.5 cfs 15,753 cf

Pond CB13: Catch Basin 13 Peak Elev=44.53' Inflow=2.3 cfs 8,249 cf
12.0" Round Culvert n=0.013 L=16.0' S=0.0156 '/' Outflow=2.3 cfs 8,249 cf

Pond CB14: Catch Basin 14 Peak Elev=41.35' Inflow=0.9 cfs 3,350 cf
18.0" Round Culvert n=0.013 L=28.0' S=0.0071 '/' Outflow=0.9 cfs 3,350 cf

Pond CB15: Catch Basin 15 Peak Elev=41.15' Inflow=1.7 cfs 6,398 cf
18.0" Round Culvert n=0.013 L=66.0' S=0.0068 '/' Outflow=1.7 cfs 6,398 cf

Pond CB16: Catch Basin 16 Peak Elev=36.50' Inflow=0.7 cfs 2,289 cf
Primary=0.7 cfs 2,289 cf Secondary=0.0 cfs 0 cf Outflow=0.7 cfs 2,289 cf

Pond CB17: Catch Basin 17 Peak Elev=36.50' Inflow=2.2 cfs 7,885 cf
18.0" Round Culvert n=0.013 L=205.0' S=0.0061 '/' Outflow=2.2 cfs 7,885 cf

Pond CB18: Catch Basin 18 Peak Elev=36.50' Inflow=0.8 cfs 2,319 cf
12.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=0.8 cfs 2,318 cf

Pond CB19: Catch Basin 19 Peak Elev=36.50' Inflow=4.4 cfs 15,997 cf
24.0" Round Culvert n=0.013 L=117.0' S=0.0051 '/' Outflow=4.4 cfs 15,997 cf

Pond GW01: Gravel Wetland #1 Peak Elev=36.79' Storage=24,558 cf Inflow=9.8 cfs 70,166 cf
Primary=3.7 cfs 60,021 cf Secondary=0.0 cfs 0 cf Outflow=3.7 cfs 60,021 cf

Pond MH: Manhole 01 Peak Elev=36.50' Inflow=1.2 cfs 4,461 cf
15.0" Round Culvert n=0.013 L=85.0' S=0.0053 '/' Outflow=1.2 cfs 4,462 cf

Pond MH03: Manhole 03 Peak Elev=44.29' Inflow=0.9 cfs 3,095 cf
12.0" Round Culvert n=0.013 L=166.0' S=0.0072 '/' Outflow=0.9 cfs 3,095 cf

Pond MH04: Manhole 04 Peak Elev=42.12' Inflow=4.5 cfs 15,753 cf
18.0" Round Culvert n=0.013 L=79.0' S=0.0082 '/' Outflow=4.5 cfs 15,753 cf

Pond MH05: Manhole 05 Peak Elev=41.36' Inflow=4.5 cfs 15,753 cf
18.0" Round Culvert n=0.013 L=79.0' S=0.0070 '/' Outflow=4.5 cfs 15,753 cf

Pond MH06: Manhole 06 Peak Elev=40.58' Inflow=4.5 cfs 15,753 cf
24.0" Round Culvert n=0.013 L=128.0' S=0.0074 '/' Outflow=4.5 cfs 15,753 cf

Pond MH07: Manhole 07 Peak Elev=39.71' Inflow=6.2 cfs 22,151 cf
24.0" Round Culvert n=0.013 L=285.0' S=0.0054 '/' Outflow=6.2 cfs 22,151 cf

Pond MH08: Manhole 08 Peak Elev=38.05' Inflow=6.2 cfs 22,151 cf
24.0" Round Culvert n=0.013 L=176.0' S=0.0054 '/' Outflow=6.2 cfs 22,151 cf

Pond MH09: Manhole 09 Peak Elev=40.33' Inflow=1.7 cfs 6,398 cf
24.0" Round Culvert n=0.013 L=154.0' S=0.0068 '/' Outflow=1.7 cfs 6,398 cf

Pond MH10: Manhole 10 Peak Elev=35.27' Inflow=0.7 cfs 24,384 cf
24.0" Round Culvert x 2.00 n=0.013 L=232.0' S=0.0050 '/' Outflow=0.7 cfs 24,384 cf

Pond MH11: Manhole 10 Peak Elev=35.26' Inflow=0.2 cfs 4,491 cf
12.0" Round Culvert n=0.013 L=85.0' S=0.0053 '/' Outflow=0.2 cfs 4,491 cf

Pond P01: Cross Pipe 01 Peak Elev=45.42' Storage=37 cf Inflow=0.2 cfs 4,513 cf
12.0" Round Culvert n=0.013 L=338.5' S=0.0050 '/' Outflow=0.2 cfs 4,491 cf

Pond PND1: Bioretention Area #2 Peak Elev=38.26' Storage=834 cf Inflow=0.2 cfs 4,273 cf
Outflow=0.1 cfs 3,728 cf

Pond PP01: DI-01 DROP INLET Peak Elev=38.50' Storage=0 cf Inflow=0.3 cfs 4,746 cf
Primary=0.3 cfs 4,746 cf Secondary=0.0 cfs 0 cf Outflow=0.3 cfs 4,746 cf

Link PPoi-01: Prop Pol-01 Inflow=5.4 cfs 65,290 cf
Primary=5.4 cfs 65,290 cf

Link PPoi-02: POI Inflow=3.7 cfs 61,813 cf
Primary=3.7 cfs 61,813 cf

Link PPoi-03: PO3 Inflow=3.0 cfs 29,089 cf
Primary=3.0 cfs 29,089 cf

Link PPoi-04: Pr PoI-04

Inflow=0.2 cfs 6,269 cf
Primary=0.2 cfs 6,269 cf

Link PPoi-05: Pr PoI-05

Inflow=2.7 cfs 19,091 cf
Primary=2.7 cfs 19,091 cf

Link PPoi-06: Ex PoI-06

Inflow=0.8 cfs 5,946 cf
Primary=0.8 cfs 5,946 cf

Total Runoff Area = 3,958,156 sf Runoff Volume = 219,940 cf Average Runoff Depth = 0.67"
91.84% Pervious = 3,635,159 sf 8.16% Impervious = 322,997 sf

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PS-04: PS-04 Runoff Area=668,692 sf 1.33% Impervious Runoff Depth>0.64"
Flow Length=1,040' Tc=49.8 min CN=45 Runoff=3.2 cfs 35,704 cf

Subcatchment PS-06: PS-06 Runoff Area=125,073 sf 0.00% Impervious Runoff Depth>1.59"
Flow Length=340' Tc=27.5 min CN=59 Runoff=2.9 cfs 16,552 cf

Subcatchment PS-33: PS-33 Gravel Runoff Area=603,289 sf 1.53% Impervious Runoff Depth>2.23"
Flow Length=794' Tc=33.4 min CN=67 Runoff=19.2 cfs 112,040 cf

Subcatchment PS01: PS-01 Cemetery Runoff Area=301,519 sf 11.75% Impervious Runoff Depth>0.83"
Flow Length=517' Tc=11.5 min CN=48 Runoff=3.7 cfs 20,887 cf

Subcatchment PS02: PS-02 Cemetery Runoff Area=394,562 sf 8.81% Impervious Runoff Depth>0.71"
Flow Length=1,189' Tc=25.2 min CN=46 Runoff=2.9 cfs 23,214 cf

Subcatchment PS03: PS-03 Runoff Area=469,882 sf 0.00% Impervious Runoff Depth>1.88"
Flow Length=1,040' Tc=62.6 min CN=63 Runoff=8.8 cfs 73,690 cf

Subcatchment PS05: PS-05 Runoff Area=305,212 sf 0.00% Impervious Runoff Depth>1.90"
Flow Length=720' Tc=34.6 min CN=63 Runoff=7.9 cfs 48,262 cf

Subcatchment PS10: PS-10 Road Entrance Runoff Area=21,365 sf 39.43% Impervious Runoff Depth>1.83"
Flow Length=164' Tc=8.7 min CN=62 Runoff=0.9 cfs 3,260 cf

Subcatchment PS11: PS-11 Road Entrance Runoff Area=3,593 sf 78.96% Impervious Runoff Depth>4.05"
Flow Length=131' Tc=5.0 min CN=86 Runoff=0.4 cfs 1,212 cf

Subcatchment PS13: PS-13 Road Runoff Area=32,248 sf 55.72% Impervious Runoff Depth>2.68"
Flow Length=242' Tc=9.0 min CN=72 Runoff=2.1 cfs 7,203 cf

Subcatchment PS14: PS-16 Road Runoff Area=42,709 sf 50.85% Impervious Runoff Depth>3.05"
Flow Length=330' Tc=9.8 min CN=76 Runoff=3.1 cfs 10,851 cf

Subcatchment PS15: PS-13 Road Runoff Area=5,802 sf 78.34% Impervious Runoff Depth>4.05"
Flow Length=207' Tc=5.0 min CN=86 Runoff=0.6 cfs 1,956 cf

Subcatchment PS16: PS-16 Road Runoff Area=6,627 sf 55.82% Impervious Runoff Depth>3.64"
Flow Length=177' Tc=5.0 min CN=82 Runoff=0.7 cfs 2,008 cf

Subcatchment PS17: PS-17 Road Runoff Area=12,439 sf 58.98% Impervious Runoff Depth>3.54"
Flow Length=362' Tc=5.7 min CN=81 Runoff=1.2 cfs 3,665 cf

Subcatchment PS18: PS-18 Road Runoff Area=40,442 sf 46.99% Impervious Runoff Depth>3.34"
Flow Length=290' Tc=10.5 min CN=79 Runoff=3.1 cfs 11,242 cf

Subcatchment PS19: PS-19 Road Runoff Area=12,708 sf 65.47% Impervious Runoff Depth>3.94"
Flow Length=236' Tc=5.0 min CN=85 Runoff=1.4 cfs 4,175 cf

Subcatchment PS20: PS-20 Wetland Runoff Area=498,342 sf 3.58% Impervious Runoff Depth>2.06"
Flow Length=518' Tc=41.1 min CN=65 Runoff=13.1 cfs 85,419 cf

Subcatchment PS21: PS-21 Inner-Circle Runoff Area=35,774 sf 19.91% Impervious Runoff Depth>2.42"
Flow Length=138' Slope=0.0600 '/' Tc=6.1 min CN=69 Runoff=2.3 cfs 7,203 cf

Subcatchment PS22: PS-22 Road Runoff Area=12,972 sf 53.89% Impervious Runoff Depth>3.53"
Flow Length=215' Tc=9.5 min CN=81 Runoff=1.1 cfs 3,819 cf

Subcatchment PS23: PS-23 Road Runoff Area=26,118 sf 59.22% Impervious Runoff Depth>3.74"
Flow Length=333' Slope=0.0200 '/' Tc=6.1 min CN=83 Runoff=2.6 cfs 8,132 cf

Subcatchment PS24: PS-24 Road Runoff Area=57,571 sf 48.08% Impervious Runoff Depth>3.34"
Flow Length=375' Slope=0.0200 '/' Tc=9.6 min CN=79 Runoff=4.6 cfs 16,007 cf

Subcatchment PS26: PS-26 Inner-Circle Runoff Area=108,179 sf 16.12% Impervious Runoff Depth>2.33"
Flow Length=154' Slope=0.0600 '/' Tc=6.1 min CN=68 Runoff=6.6 cfs 21,001 cf

Subcatchment PS27: PS-27 Road Runoff Area=35,948 sf 54.83% Impervious Runoff Depth>3.53"
Flow Length=378' Tc=10.1 min CN=81 Runoff=3.0 cfs 10,583 cf

Subcatchment PS28: PS-28 Road Runoff Area=18,193 sf 41.21% Impervious Runoff Depth>3.05"
Flow Length=359' Tc=7.5 min CN=76 Runoff=1.4 cfs 4,625 cf

Subcatchment PS29: PS-29 Road Runoff Area=23,194 sf 44.34% Impervious Runoff Depth>3.14"
Flow Length=355' Tc=9.6 min CN=77 Runoff=1.7 cfs 6,076 cf

Subcatchment PS30: PS-30 Road Runoff Area=26,650 sf 40.36% Impervious Runoff Depth>3.05"
Flow Length=412' Tc=11.4 min CN=76 Runoff=1.8 cfs 6,769 cf

Subcatchment PS32: PS-32 - Remainder of Runoff Area=69,053 sf 0.00% Impervious Runoff Depth>1.44"
Flow Length=194' Tc=21.2 min CN=57 Runoff=1.6 cfs 8,293 cf

Reach R01: R-01 Reach Avg. Flow Depth=0.07' Max Vel=0.35 fps Inflow=1.2 cfs 4,471 cf
n=0.100 L=501.0' S=0.0199 '/' Capacity=19.5 cfs Outflow=0.7 cfs 4,354 cf

Reach R02: R-02 Reach Avg. Flow Depth=0.17' Max Vel=0.58 fps Inflow=3.7 cfs 20,887 cf
n=0.100 L=487.0' S=0.0189 '/' Capacity=19.0 cfs Outflow=2.7 cfs 20,510 cf

Reach R3: R-03 Reach Avg. Flow Depth=0.26' Max Vel=0.75 fps Inflow=7.1 cfs 76,243 cf
n=0.100 L=487.0' S=0.0189 '/' Capacity=19.0 cfs Outflow=6.0 cfs 75,061 cf

Reach R4: R-04 Reach Avg. Flow Depth=0.47' Max Vel=0.86 fps Inflow=14.1 cfs 142,953 cf
n=0.100 L=594.0' S=0.0126 '/' Capacity=15.6 cfs Outflow=13.9 cfs 141,491 cf

Reach R5: R-02 Reach Avg. Flow Depth=0.16' Max Vel=0.55 fps Inflow=2.7 cfs 23,178 cf
n=0.100 L=487.0' S=0.0189 '/' Capacity=19.0 cfs Outflow=2.4 cfs 22,750 cf

Pond BIO1: Bioretention Area #1 Peak Elev=37.45' Storage=26,568 cf Inflow=17.4 cfs 61,502 cf
Primary=6.8 cfs 43,834 cf Secondary=0.0 cfs 0 cf Outflow=6.8 cfs 43,834 cf

Pond BIO2: Bioretention Area #2 Peak Elev=37.06' Storage=15,220 cf Inflow=6.6 cfs 42,727 cf
Primary=1.2 cfs 32,409 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 32,409 cf

Pond CB01: Catch Basin 01 Peak Elev=37.04' Inflow=0.9 cfs 3,260 cf
Primary=0.9 cfs 3,260 cf Secondary=0.0 cfs 0 cf Outflow=0.9 cfs 3,260 cf

Pond CB02: Catch Basin 02 Peak Elev=36.85' Inflow=1.2 cfs 4,471 cf
Primary=1.2 cfs 4,471 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 4,471 cf

Pond CB03: Catch Basin 03 Peak Elev=38.07' Inflow=2.1 cfs 7,203 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0060 '/' Outflow=2.1 cfs 7,203 cf

Pond CB04: Catch Basin 04 Peak Elev=37.77' Inflow=2.6 cfs 9,160 cf
Primary=2.6 cfs 9,160 cf Secondary=0.0 cfs 0 cf Outflow=2.6 cfs 9,160 cf

Pond CB08: Catch Basin 04 Peak Elev=37.50' Inflow=6.7 cfs 23,676 cf
24.0" Round Culvert n=0.013 L=188.0' S=0.0053 '/' Outflow=6.7 cfs 23,676 cf

Pond CB09: Catch Basin 09 Peak Elev=37.59' Inflow=5.7 cfs 20,011 cf
18.0" Round Culvert n=0.013 L=24.0' S=0.0062 '/' Outflow=5.7 cfs 20,011 cf

Pond CB10: Catch Basin 10 Peak Elev=51.76' Inflow=1.1 cfs 3,819 cf
12.0" Round Culvert n=0.013 L=16.0' S=0.0094 '/' Outflow=1.1 cfs 3,819 cf

Pond CB11: Catch Basin 11 Peak Elev=51.79' Inflow=1.7 cfs 5,827 cf
12.0" Round Culvert n=0.013 L=275.0' S=0.0075 '/' Outflow=1.7 cfs 5,827 cf

Pond CB12: Catch Basin 12 Peak Elev=50.71' Inflow=8.6 cfs 29,966 cf
12.0" Round Culvert n=0.013 L=79.0' S=0.0076 '/' Outflow=8.6 cfs 29,966 cf

Pond CB13: Catch Basin 13 Peak Elev=52.02' Inflow=4.6 cfs 16,007 cf
12.0" Round Culvert n=0.013 L=16.0' S=0.0156 '/' Outflow=4.6 cfs 16,007 cf

Pond CB14: Catch Basin 14 Peak Elev=41.68' Inflow=1.8 cfs 6,769 cf
18.0" Round Culvert n=0.013 L=28.0' S=0.0071 '/' Outflow=1.8 cfs 6,769 cf

Pond CB15: Catch Basin 15 Peak Elev=41.50' Inflow=3.5 cfs 12,845 cf
18.0" Round Culvert n=0.013 L=66.0' S=0.0068 '/' Outflow=3.5 cfs 12,845 cf

Pond CB16: Catch Basin 16 Peak Elev=37.63' Inflow=1.4 cfs 4,625 cf
Primary=1.4 cfs 4,623 cf Secondary=0.0 cfs 0 cf Outflow=1.4 cfs 4,623 cf

Pond CB17: Catch Basin 17 Peak Elev=37.61' Inflow=4.3 cfs 15,206 cf
18.0" Round Culvert n=0.013 L=205.0' S=0.0061 '/' Outflow=4.3 cfs 15,206 cf

Pond CB18: Catch Basin 18 Peak Elev=37.52' Inflow=1.4 cfs 4,175 cf
12.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=1.4 cfs 4,174 cf

Pond CB19: Catch Basin 19 Peak Elev=37.51' Inflow=8.5 cfs 30,623 cf
24.0" Round Culvert n=0.013 L=117.0' S=0.0051 '/' Outflow=8.5 cfs 30,623 cf

Pond GW01: Gravel Wetland #1 Peak Elev=37.90' Storage=43,488 cf Inflow=23.7 cfs 154,851 cf
Primary=14.1 cfs 142,953 cf Secondary=0.0 cfs 0 cf Outflow=14.1 cfs 142,953 cf

Pond MH: Manhole 01 Peak Elev=37.65' Inflow=2.6 cfs 9,160 cf
15.0" Round Culvert n=0.013 L=85.0' S=0.0053 '/' Outflow=2.6 cfs 9,160 cf

Pond MH03: Manhole 03 Peak Elev=51.04' Inflow=1.7 cfs 5,827 cf
12.0" Round Culvert n=0.013 L=166.0' S=0.0072 '/' Outflow=1.7 cfs 5,827 cf

Pond MH04: Manhole 04 Peak Elev=43.32' Inflow=8.6 cfs 29,966 cf
18.0" Round Culvert n=0.013 L=79.0' S=0.0082 '/' Outflow=8.6 cfs 29,966 cf

Pond MH05: Manhole 05 Peak Elev=42.26' Inflow=8.6 cfs 29,966 cf
18.0" Round Culvert n=0.013 L=79.0' S=0.0070 '/' Outflow=8.6 cfs 29,966 cf

Pond MH06: Manhole 06 Peak Elev=41.19' Inflow=8.6 cfs 29,966 cf
24.0" Round Culvert n=0.013 L=128.0' S=0.0074 '/' Outflow=8.6 cfs 29,966 cf

Pond MH07: Manhole 07 Peak Elev=40.39' Inflow=12.0 cfs 42,811 cf
24.0" Round Culvert n=0.013 L=285.0' S=0.0054 '/' Outflow=12.0 cfs 42,811 cf

Pond MH08: Manhole 08 Peak Elev=38.67' Inflow=12.0 cfs 42,811 cf
24.0" Round Culvert n=0.013 L=176.0' S=0.0054 '/' Outflow=12.0 cfs 42,811 cf

Pond MH09: Manhole 09 Peak Elev=40.80' Inflow=3.5 cfs 12,845 cf
24.0" Round Culvert n=0.013 L=154.0' S=0.0068 '/' Outflow=3.5 cfs 12,845 cf

Pond MH10: Manhole 10 Peak Elev=35.53' Inflow=7.1 cfs 76,243 cf
24.0" Round Culvert x 2.00 n=0.013 L=232.0' S=0.0050 '/' Outflow=7.1 cfs 76,243 cf

Pond MH11: Manhole 10 Peak Elev=36.08' Inflow=2.7 cfs 23,178 cf
12.0" Round Culvert n=0.013 L=85.0' S=0.0053 '/' Outflow=2.7 cfs 23,178 cf

Pond P01: Cross Pipe 01 Peak Elev=46.47' Storage=714 cf Inflow=2.9 cfs 23,214 cf
12.0" Round Culvert n=0.013 L=338.5' S=0.0050 '/' Outflow=2.7 cfs 23,178 cf

Pond PND1: Bioretention Area #2 Peak Elev=39.49' Storage=5,595 cf Inflow=2.4 cfs 22,750 cf
Outflow=0.8 cfs 21,725 cf

Pond PP01: DI-01 DROP INLET Peak Elev=38.50' Storage=0 cf Inflow=3.7 cfs 20,887 cf
Primary=3.7 cfs 20,887 cf Secondary=0.0 cfs 0 cf Outflow=3.7 cfs 20,887 cf

Link PPoi-01: Prop Pol-01 Inflow=22.0 cfs 185,343 cf
Primary=22.0 cfs 185,343 cf

Link PPoi-02: POI Inflow=14.3 cfs 149,784 cf
Primary=14.3 cfs 149,784 cf

Link PPoi-03: PO3 Inflow=8.8 cfs 73,690 cf
Primary=8.8 cfs 73,690 cf

Link PPoi-04: Pr PoI-04

Inflow=3.2 cfs 35,704 cf
Primary=3.2 cfs 35,704 cf

Link PPoi-05: Pr PoI-05

Inflow=7.9 cfs 48,262 cf
Primary=7.9 cfs 48,262 cf

Link PPoi-06: Ex PoI-06

Inflow=2.9 cfs 16,552 cf
Primary=2.9 cfs 16,552 cf

Total Runoff Area = 3,958,156 sf Runoff Volume = 553,850 cf Average Runoff Depth = 1.68"
91.84% Pervious = 3,635,159 sf 8.16% Impervious = 322,997 sf

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PS-04: PS-04 Runoff Area=668,692 sf 1.33% Impervious Runoff Depth>2.00"
Flow Length=1,040' Tc=49.8 min CN=45 Runoff=13.9 cfs 111,226 cf

Subcatchment PS-06: PS-06 Runoff Area=125,073 sf 0.00% Impervious Runoff Depth>3.60"
Flow Length=340' Tc=27.5 min CN=59 Runoff=7.1 cfs 37,548 cf

Subcatchment PS-33: PS-33 Gravel Runoff Area=603,289 sf 1.53% Impervious Runoff Depth>4.54"
Flow Length=794' Tc=33.4 min CN=67 Runoff=39.9 cfs 228,298 cf

Subcatchment PS01: PS-01 Cemetery Runoff Area=301,519 sf 11.75% Impervious Runoff Depth>2.35"
Flow Length=517' Tc=11.5 min CN=48 Runoff=14.4 cfs 59,129 cf

Subcatchment PS02: PS-02 Cemetery Runoff Area=394,562 sf 8.81% Impervious Runoff Depth>2.12"
Flow Length=1,189' Tc=25.2 min CN=46 Runoff=12.3 cfs 69,776 cf

Subcatchment PS03: PS-03 Runoff Area=469,882 sf 0.00% Impervious Runoff Depth>4.04"
Flow Length=1,040' Tc=62.6 min CN=63 Runoff=19.8 cfs 158,106 cf

Subcatchment PS05: PS-05 Runoff Area=305,212 sf 0.00% Impervious Runoff Depth>4.07"
Flow Length=720' Tc=34.6 min CN=63 Runoff=17.7 cfs 103,415 cf

Subcatchment PS10: PS-10 Road Entrance Runoff Area=21,365 sf 39.43% Impervious Runoff Depth>3.97"
Flow Length=164' Tc=8.7 min CN=62 Runoff=2.1 cfs 7,072 cf

Subcatchment PS11: PS-11 Road Entrance Runoff Area=3,593 sf 78.96% Impervious Runoff Depth>6.85"
Flow Length=131' Tc=5.0 min CN=86 Runoff=0.7 cfs 2,051 cf

Subcatchment PS13: PS-13 Road Runoff Area=32,248 sf 55.72% Impervious Runoff Depth>5.16"
Flow Length=242' Tc=9.0 min CN=72 Runoff=4.0 cfs 13,875 cf

Subcatchment PS14: PS-16 Road Runoff Area=42,709 sf 50.85% Impervious Runoff Depth>5.64"
Flow Length=330' Tc=9.8 min CN=76 Runoff=5.7 cfs 20,081 cf

Subcatchment PS15: PS-13 Road Runoff Area=5,802 sf 78.34% Impervious Runoff Depth>6.85"
Flow Length=207' Tc=5.0 min CN=86 Runoff=1.1 cfs 3,312 cf

Subcatchment PS16: PS-16 Road Runoff Area=6,627 sf 55.82% Impervious Runoff Depth>6.37"
Flow Length=177' Tc=5.0 min CN=82 Runoff=1.1 cfs 3,517 cf

Subcatchment PS17: PS-17 Road Runoff Area=12,439 sf 58.98% Impervious Runoff Depth>6.25"
Flow Length=362' Tc=5.7 min CN=81 Runoff=2.1 cfs 6,477 cf

Subcatchment PS18: PS-18 Road Runoff Area=40,442 sf 46.99% Impervious Runoff Depth>6.00"
Flow Length=290' Tc=10.5 min CN=79 Runoff=5.5 cfs 20,228 cf

Subcatchment PS19: PS-19 Road Runoff Area=12,708 sf 65.47% Impervious Runoff Depth>6.73"
Flow Length=236' Tc=5.0 min CN=85 Runoff=2.3 cfs 7,128 cf

Subcatchment PS20: PS-20 Wetland Runoff Area=498,342 sf 3.58% Impervious Runoff Depth>4.30"
Flow Length=518' Tc=41.1 min CN=65 Runoff=28.2 cfs 178,403 cf

Subcatchment PS21: PS-21 Inner-Circle Runoff Area=35,774 sf 19.91% Impervious Runoff Depth>4.81"
Flow Length=138' Slope=0.0600 '/' Tc=6.1 min CN=69 Runoff=4.6 cfs 14,330 cf

Subcatchment PS22: PS-22 Road Runoff Area=12,972 sf 53.89% Impervious Runoff Depth>6.24"
Flow Length=215' Tc=9.5 min CN=81 Runoff=1.9 cfs 6,750 cf

Subcatchment PS23: PS-23 Road Runoff Area=26,118 sf 59.22% Impervious Runoff Depth>6.49"
Flow Length=333' Slope=0.0200 '/' Tc=6.1 min CN=83 Runoff=4.4 cfs 14,122 cf

Subcatchment PS24: PS-24 Road Runoff Area=57,571 sf 48.08% Impervious Runoff Depth>6.00"
Flow Length=375' Slope=0.0200 '/' Tc=9.6 min CN=79 Runoff=8.1 cfs 28,800 cf

Subcatchment PS26: PS-26 Inner-Circle Runoff Area=108,179 sf 16.12% Impervious Runoff Depth>4.69"
Flow Length=154' Slope=0.0600 '/' Tc=6.1 min CN=68 Runoff=13.6 cfs 42,257 cf

Subcatchment PS27: PS-27 Road Runoff Area=35,948 sf 54.83% Impervious Runoff Depth>6.24"
Flow Length=378' Tc=10.1 min CN=81 Runoff=5.2 cfs 18,703 cf

Subcatchment PS28: PS-28 Road Runoff Area=18,193 sf 41.21% Impervious Runoff Depth>5.64"
Flow Length=359' Tc=7.5 min CN=76 Runoff=2.6 cfs 8,558 cf

Subcatchment PS29: PS-29 Road Runoff Area=23,194 sf 44.34% Impervious Runoff Depth>5.76"
Flow Length=355' Tc=9.6 min CN=77 Runoff=3.2 cfs 11,138 cf

Subcatchment PS30: PS-30 Road Runoff Area=26,650 sf 40.36% Impervious Runoff Depth>5.64"
Flow Length=412' Tc=11.4 min CN=76 Runoff=3.4 cfs 12,526 cf

Subcatchment PS32: PS-32 - Remainder of Runoff Area=69,053 sf 0.00% Impervious Runoff Depth>3.37"
Flow Length=194' Tc=21.2 min CN=57 Runoff=4.0 cfs 19,419 cf

Reach R01: R-01 Reach Avg. Flow Depth=0.12' Max Vel=0.49 fps Inflow=2.6 cfs 9,124 cf
n=0.100 L=501.0' S=0.0199 '/' Capacity=19.5 cfs Outflow=1.7 cfs 8,960 cf

Reach R02: R-02 Reach Avg. Flow Depth=0.37' Max Vel=0.91 fps Inflow=12.2 cfs 59,860 cf
n=0.100 L=487.0' S=0.0189 '/' Capacity=19.0 cfs Outflow=10.8 cfs 59,246 cf

Reach R3: R-03 Reach Avg. Flow Depth=0.46' Max Vel=1.04 fps Inflow=16.7 cfs 185,259 cf
n=0.100 L=487.0' S=0.0189 '/' Capacity=19.0 cfs Outflow=16.5 cfs 183,777 cf

Reach R4: R-04 Reach Avg. Flow Depth=0.92' Max Vel=1.09 fps Inflow=42.9 cfs 291,109 cf
n=0.100 L=594.0' S=0.0126 '/' Capacity=15.6 cfs Outflow=39.6 cfs 289,076 cf

Reach R5: R-02 Reach Avg. Flow Depth=0.34' Max Vel=0.88 fps Inflow=20.5 cfs 69,715 cf
n=0.100 L=487.0' S=0.0189 '/' Capacity=19.0 cfs Outflow=9.5 cfs 69,017 cf

Pond BIO1: Bioretention Area #1 Peak Elev=38.41' Storage=40,668 cf Inflow=30.0 cfs 111,948 cf
Primary=12.5 cfs 90,717 cf Secondary=0.0 cfs 0 cf Outflow=12.5 cfs 90,717 cf

Pond BIO2: Bioretention Area #2 Peak Elev=37.89' Storage=22,719 cf Inflow=13.6 cfs 108,400 cf
Primary=5.6 cfs 93,847 cf Secondary=0.0 cfs 0 cf Outflow=5.6 cfs 93,847 cf

Pond CB01: Catch Basin 01 Peak Elev=37.62' Inflow=2.1 cfs 7,072 cf
Primary=2.1 cfs 7,072 cf Secondary=0.0 cfs 0 cf Outflow=2.1 cfs 7,072 cf

Pond CB02: Catch Basin 02 Peak Elev=37.32' Inflow=2.6 cfs 9,124 cf
Primary=2.6 cfs 9,124 cf Secondary=0.0 cfs 0 cf Outflow=2.6 cfs 9,124 cf

Pond CB03: Catch Basin 03 Peak Elev=41.65' Inflow=4.0 cfs 13,875 cf
12.0" Round Culvert n=0.013 L=20.0' S=0.0060 '/' Outflow=4.0 cfs 13,875 cf

Pond CB04: Catch Basin 04 Peak Elev=40.51' Inflow=4.9 cfs 17,187 cf
Primary=4.2 cfs 16,535 cf Secondary=1.7 cfs 656 cf Outflow=4.9 cfs 17,187 cf

Pond CB08: Catch Basin 04 Peak Elev=38.71' Inflow=10.9 cfs 43,092 cf
24.0" Round Culvert n=0.013 L=188.0' S=0.0053 '/' Outflow=10.9 cfs 43,092 cf

Pond CB09: Catch Basin 09 Peak Elev=39.64' Inflow=8.9 cfs 36,615 cf
18.0" Round Culvert n=0.013 L=24.0' S=0.0062 '/' Outflow=8.9 cfs 36,615 cf

Pond CB10: Catch Basin 10 Peak Elev=76.39' Inflow=1.9 cfs 6,750 cf
12.0" Round Culvert n=0.013 L=16.0' S=0.0094 '/' Outflow=1.9 cfs 6,750 cf

Pond CB11: Catch Basin 11 Peak Elev=76.51' Inflow=2.9 cfs 10,267 cf
12.0" Round Culvert n=0.013 L=275.0' S=0.0075 '/' Outflow=2.9 cfs 10,267 cf

Pond CB12: Catch Basin 12 Peak Elev=73.37' Inflow=15.0 cfs 53,189 cf
12.0" Round Culvert n=0.013 L=79.0' S=0.0076 '/' Outflow=15.0 cfs 53,189 cf

Pond CB13: Catch Basin 13 Peak Elev=77.54' Inflow=8.1 cfs 28,800 cf
12.0" Round Culvert n=0.013 L=16.0' S=0.0156 '/' Outflow=8.1 cfs 28,800 cf

Pond CB14: Catch Basin 14 Peak Elev=45.05' Inflow=3.4 cfs 12,526 cf
18.0" Round Culvert n=0.013 L=28.0' S=0.0071 '/' Outflow=3.4 cfs 12,526 cf

Pond CB15: Catch Basin 15 Peak Elev=44.96' Inflow=6.5 cfs 23,664 cf
18.0" Round Culvert n=0.013 L=66.0' S=0.0068 '/' Outflow=6.5 cfs 23,664 cf

Pond CB16: Catch Basin 16 Peak Elev=40.19' Inflow=2.6 cfs 8,558 cf
Primary=2.7 cfs 8,468 cf Secondary=2.7 cfs 694 cf Outflow=2.6 cfs 8,558 cf

Pond CB17: Catch Basin 17 Peak Elev=40.43' Inflow=7.8 cfs 27,171 cf
18.0" Round Culvert n=0.013 L=205.0' S=0.0061 '/' Outflow=7.8 cfs 27,171 cf

Pond CB18: Catch Basin 18 Peak Elev=39.15' Inflow=2.3 cfs 7,128 cf
12.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=2.3 cfs 7,128 cf

Pond CB19: Catch Basin 19 Peak Elev=39.03' Inflow=15.1 cfs 54,526 cf
24.0" Round Culvert n=0.013 L=117.0' S=0.0051 '/' Outflow=15.1 cfs 54,526 cf

Pond GW01: Gravel Wetland #1 Peak Elev=38.88' Storage=63,703 cf Inflow=47.9 cfs 305,152 cf
Primary=16.4 cfs 233,109 cf Secondary=26.4 cfs 58,000 cf Outflow=42.9 cfs 291,109 cf

Pond MH: Manhole 01 Peak Elev=40.00' Inflow=4.2 cfs 16,535 cf
15.0" Round Culvert n=0.013 L=85.0' S=0.0053 '/' Outflow=4.2 cfs 16,535 cf

Pond MH03: Manhole 03 Peak Elev=74.30' Inflow=2.9 cfs 10,267 cf
12.0" Round Culvert n=0.013 L=166.0' S=0.0072 '/' Outflow=2.9 cfs 10,267 cf

Pond MH04: Manhole 04 Peak Elev=51.39' Inflow=15.0 cfs 53,189 cf
18.0" Round Culvert n=0.013 L=79.0' S=0.0082 '/' Outflow=15.0 cfs 53,189 cf

Pond MH05: Manhole 05 Peak Elev=48.36' Inflow=15.0 cfs 53,189 cf
18.0" Round Culvert n=0.013 L=79.0' S=0.0070 '/' Outflow=15.0 cfs 53,189 cf

Pond MH06: Manhole 06 Peak Elev=45.17' Inflow=15.0 cfs 53,189 cf
24.0" Round Culvert n=0.013 L=128.0' S=0.0074 '/' Outflow=15.0 cfs 53,189 cf

Pond MH07: Manhole 07 Peak Elev=44.15' Inflow=21.3 cfs 76,854 cf
24.0" Round Culvert n=0.013 L=285.0' S=0.0054 '/' Outflow=21.3 cfs 76,854 cf

Pond MH08: Manhole 08 Peak Elev=40.54' Inflow=21.3 cfs 76,854 cf
24.0" Round Culvert n=0.013 L=176.0' S=0.0054 '/' Outflow=21.3 cfs 76,854 cf

Pond MH09: Manhole 09 Peak Elev=44.32' Inflow=6.5 cfs 23,664 cf
24.0" Round Culvert n=0.013 L=154.0' S=0.0068 '/' Outflow=6.5 cfs 23,664 cf

Pond MH10: Manhole 10 Peak Elev=36.14' Inflow=16.7 cfs 184,564 cf
24.0" Round Culvert x 2.00 n=0.013 L=232.0' S=0.0050 '/' Outflow=16.7 cfs 184,564 cf

Pond MH11: Manhole 10 Peak Elev=79.52' Inflow=20.5 cfs 69,715 cf
12.0" Round Culvert n=0.013 L=85.0' S=0.0053 '/' Outflow=20.5 cfs 69,715 cf

Pond P01: Cross Pipe 01 Peak Elev=212.05' Storage=7,082 cf Inflow=12.3 cfs 69,776 cf
12.0" Round Culvert n=0.013 L=338.5' S=0.0050 '/' Outflow=20.5 cfs 69,715 cf

Pond PND1: Bioretention Area #2 Peak Elev=40.40' Storage=10,138 cf Inflow=9.5 cfs 69,017 cf
Outflow=7.6 cfs 66,143 cf

Pond PP01: DI-01 DROP INLET Peak Elev=40.14' Storage=2,409 cf Inflow=14.4 cfs 59,129 cf
Primary=9.4 cfs 57,720 cf Secondary=2.9 cfs 1,484 cf Outflow=12.2 cfs 59,204 cf

Link PPoi-01: Prop Pol-01 Inflow=55.2 cfs 430,386 cf
Primary=55.2 cfs 430,386 cf

Link PPoi-02: POI Inflow=41.5 cfs 308,496 cf
Primary=41.5 cfs 308,496 cf

Link PPoi-03: PO3 Inflow=19.8 cfs 158,106 cf
Primary=19.8 cfs 158,106 cf

Link PPoi-04: Pr Pol-04

Inflow=13.9 cfs 111,226 cf
Primary=13.9 cfs 111,226 cf

Link PPoi-05: Pr Pol-05

Inflow=17.7 cfs 103,415 cf
Primary=17.7 cfs 103,415 cf

Link PPoi-06: Ex Pol-06

Inflow=7.1 cfs 37,548 cf
Primary=7.1 cfs 37,548 cf

Total Runoff Area = 3,958,156 sf Runoff Volume = 1,206,245 cf Average Runoff Depth = 3.66"
91.84% Pervious = 3,635,159 sf 8.16% Impervious = 322,997 sf

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APPENDIX E – POST-DEVELOPMENT CALCULATIONS (10-YEAR STORM EVENT)

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Summary for Subcatchment PS-04: PS-04

Runoff = 3.2 cfs @ 12.89 hrs, Volume= 35,704 cf, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
8,918	98	Paved parking, HSG A	Pavement
227	96	Gravel surface, HSG A	Roadway
7,174	96	Gravel surface, HSG B	Roadway
1,882	96	Gravel surface, HSG C	Roadway
163,386	30	Woods, Good, HSG A	Woods
162,547	55	Woods, Good, HSG B	Woods
22,827	70	Woods, Good, HSG C	Woods
260,043	39	>75% Grass cover, Good, HSG A	Open Space
38,989	61	>75% Grass cover, Good, HSG B	Open Space
2,699	74	>75% Grass cover, Good, HSG C	Open Space
668,692	45	Weighted Average	
659,774		98.67% Pervious Area	
8,918		1.33% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.4	100	0.0400	0.06		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
8.2	300	0.0150	0.61		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
15.2	640	0.0100	0.70		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
49.8	1,040	Total			

Summary for Subcatchment PS-06: PS-06

Runoff = 2.9 cfs @ 12.43 hrs, Volume= 16,552 cf, Depth> 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
3,629	96	Gravel surface, HSG B	Roadway
95,734	55	Woods, Good, HSG B	Woods
25,710	70	Woods, Good, HSG C	Woods
125,073	59	Weighted Average	
125,073		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.4	100	0.0600	0.07		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
5.1	240	0.0250	0.79		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
27.5	340	Total			

Summary for Subcatchment PS-33: PS-33 Gravel Wetland

Run from top of graveyard, thru site, and into wetland.

Runoff = 19.2 cfs @ 12.49 hrs, Volume= 112,040 cf, Depth> 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
0	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
9,250	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
111,932	55	Woods, Good, HSG B	Open Space
441,665	70	Woods, Good, HSG C	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
33,884	61	>75% Grass cover, Good, HSG B	Open Space
3,954	74	>75% Grass cover, Good, HSG C	Open Space
2,604	96	Gravel surface, HSG B	Roadway
0	96	Gravel surface, HSG C	Roadway
603,289	67	Weighted Average	
594,039		98.47% Pervious Area	
9,250		1.53% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0800	0.08		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
13.4	694	0.0300	0.87		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
33.4	794	Total			

Summary for Subcatchment PS01: PS-01 Cemetery

Run from top of graveyard, thru site, and into wetland.

Runoff = 3.7 cfs @ 12.21 hrs, Volume= 20,887 cf, Depth> 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
33,245	98	Paved parking, HSG A	Woods
0	98	Paved parking, HSG B	Woods
1,260	98	Roofs, HSG A	Woods
924	98	Roofs, HSG B	Woods
11,085	30	Woods, Good, HSG A	Open Space
2,470	55	Woods, Good, HSG B	Open Space
227,444	39	>75% Grass cover, Good, HSG A	Open Space
25,091	61	>75% Grass cover, Good, HSG B	Open Space
301,519	48	Weighted Average	
266,090		88.25% Pervious Area	
35,429		11.75% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0300	0.22		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
2.9	210	0.0300	1.21		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
0.2	30	0.4000	3.16		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
0.7	177	0.0100	4.22	46.39	**Channel Flow, Channel Flow** Area= 11.0 sf Perim= 22.3' r= 0.49' n= 0.022 Earth, clean & straight
11.5	517	Total			

Summary for Subcatchment PS02: PS-02 Cemetery

Runoff = 2.9 cfs @ 12.51 hrs, Volume= 23,214 cf, Depth> 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
33,461	98	Paved parking, HSG A	Pavement
0	98	Paved parking, HSG B	Pavement
0	98	Roofs, HSG A	Pavement
1,316	98	Roofs, HSG B	Pavement
5,444	30	Woods, Good, HSG A	Brush
4,043	55	Woods, Good, HSG B	Woods
316,738	39	>75% Grass cover, Good, HSG A	Open Space
33,560	61	>75% Grass cover, Good, HSG B	Open Space
394,562	46	Weighted Average	
359,785		91.19% Pervious Area	
34,777		8.81% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.0120	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
12.7	609	0.0130	0.80		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
1.3	480	0.0200	5.96	65.60	**Channel Flow, Channel Flow** Area= 11.0 sf Perim= 22.3' r= 0.49' n= 0.022 Earth, clean & straight
25.2	1,189	Total			

Summary for Subcatchment PS03: PS-03

Runoff = 8.8 cfs @ 12.88 hrs, Volume= 73,690 cf, Depth> 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
41	96	Gravel surface, HSG B	Roadway
218,001	55	Woods, Good, HSG B	Woods
251,840	70	Woods, Good, HSG C	Woods
469,882	63	Weighted Average	
469,882		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.8	100	0.0200	0.05		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
27.8	940	0.0127	0.56		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
62.6	1,040	Total			

Summary for Subcatchment PS05: PS-05

Runoff = 7.9 cfs @ 12.51 hrs, Volume= 48,262 cf, Depth> 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
141,482	55	Woods, Good, HSG B	Open Water
163,730	70	Woods, Good, HSG C	Woods
305,212	63	Weighted Average	
305,212		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0800	0.08		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
1.4	120	0.0830	1.44		**Shallow Concentrated Flow, Shallow Concentrates** Woodland Kv= 5.0 fps
13.2	500	0.0160	0.63		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
34.6	720	Total			

Summary for Subcatchment PS10: PS-10 Road Entrance

Run from top of graveyard, thru site, and into wetland.

Runoff = 0.9 cfs @ 12.13 hrs, Volume= 3,260 cf, Depth> 1.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
4,701	98	Paved parking, HSG A	Woods
0	98	Paved parking, HSG B	Woods
3,724	98	Roofs, HSG A	Woods
0	98	Roofs, HSG B	Woods
298	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
12,642	39	>75% Grass cover, Good, HSG A	Open Space
0	61	>75% Grass cover, Good, HSG B	Open Space
21,365	62	Weighted Average	
12,940		60.57% Pervious Area	
8,425		39.43% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	86	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
0.6	78	0.0150	2.10	3.57	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.022 Earth, clean & straight
8.7	164	Total			

Summary for Subcatchment PS11: PS-11 Road Entrance

Run from top of graveyard, thru site, and into wetland.

Runoff = 0.4 cfs @ 12.07 hrs, Volume= 1,212 cf, Depth> 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
2,837	98	Paved parking, HSG A	Woods
0	98	Paved parking, HSG A	Woods
0	98	Roofs, HSG A	Woods
0	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	30	Woods, Good, HSG A	Open Space
756	39	>75% Grass cover, Good, HSG A	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
3,593	86	Weighted Average	
756		21.04% Pervious Area	
2,837		78.96% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	3	0.0200	0.09		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
0.6	128	0.0150	3.55	6.04	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.013 Asphalt, smooth
3.8					**Direct Entry, Miniimum Tc of 5 Min**
5.0	131	Total			

Summary for Subcatchment PS13: PS-13 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 2.1 cfs @ 12.13 hrs, Volume= 7,203 cf, Depth> 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
9,110	98	Paved parking, HSG A	Woods
216	98	Paved parking, HSG B	Woods
8,644	98	Roofs, HSG A	Woods
0	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
14,278	39	>75% Grass cover, Good, HSG A	Open Space
0	61	>75% Grass cover, Good, HSG B	Open Space
32,248	72	Weighted Average	
14,278		44.28% Pervious Area	
17,970		55.72% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	89	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
0.7	153	0.0155	3.61	6.14	**Channel Flow, Channel** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.013 Asphalt, smooth
9.0	242	Total			

Summary for Subcatchment PS14: PS-16 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 3.1 cfs @ 12.14 hrs, Volume= 10,851 cf, Depth> 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

	Area (sf)	CN	Description	Land Use
	4,352	98	Paved parking, HSG A	Woods
*	5,825	98	Paved parking, HSG B	Woods
	5,152	98	Roofs, HSG A	Woods
	6,390	98	Roofs, HSG B	Woods
	0	30	Woods, Good, HSG A	Open Space
	0	55	Woods, Good, HSG B	Open Space
	8,021	39	>75% Grass cover, Good, HSG A	Open Space
	12,969	61	>75% Grass cover, Good, HSG B	Open Space
	42,709	76	Weighted Average	
	20,990		49.15% Pervious Area	
	21,719		50.85% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
0.7	230	0.0330	5.27	8.96	**Channel Flow, Street Gutter** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.013 Asphalt, smooth
9.8	330	Total			

Summary for Subcatchment PS15: PS-13 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 0.6 cfs @ 12.07 hrs, Volume= 1,956 cf, Depth> 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
4,051	98	Paved parking, HSG A	Woods
494	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
0	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
1,105	39	>75% Grass cover, Good, HSG A	Open Space
152	61	>75% Grass cover, Good, HSG B	Open Space
5,802	86	Weighted Average	
1,257		21.66% Pervious Area	
4,545		78.34% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	3	0.0200	0.09		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
1.0	204	0.0150	3.55	6.04	**Channel Flow, Roadway Gutter** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.013 Asphalt, smooth
3.4					**Direct Entry, Miniimum Tc of 5 Min**
5.0	207	Total			

Summary for Subcatchment PS16: PS-16 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 0.7 cfs @ 12.07 hrs, Volume= 2,008 cf, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
3,699	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
0	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
2,928	61	>75% Grass cover, Good, HSG B	Open Space
6,627	82	Weighted Average	
2,928		44.18% Pervious Area	
3,699		55.82% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	37	0.0200	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
0.7	140	0.0330	3.11	5.29	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.022 Earth, clean & straight
0.2					**Direct Entry, Miniimum Tc of 5 Min**
5.0	177	Total			

Summary for Subcatchment PS17: PS-17 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 1.2 cfs @ 12.08 hrs, Volume= 3,665 cf, Depth> 3.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
2,831	98	Paved parking, HSG A	Woods
4,505	98	Paved parking, HSG B	Woods
11	96	Gravel surface, HSG B	Roadway
0	98	Roofs, HSG A	Woods
0	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
1,020	39	>75% Grass cover, Good, HSG A	Open Space
4,072	61	>75% Grass cover, Good, HSG B	Open Space
12,439	81	Weighted Average	
5,103		41.02% Pervious Area	
7,336		58.98% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	36	0.0200	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
1.7	326	0.0330	3.11	5.29	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.022 Earth, clean & straight
5.7	362	Total			

Summary for Subcatchment PS18: PS-18 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 3.1 cfs @ 12.15 hrs, Volume= 11,242 cf, Depth> 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
10,901	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
8,102	98	Roofs, HSG B	Woods
405	96	Gravel surface, HSG B	Roadway
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
21,034	61	>75% Grass cover, Good, HSG B	Open Space
40,442	79	Weighted Average	
21,439		53.01% Pervious Area	
19,003		46.99% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
0.2	27	0.0200	2.12		**Shallow Concentrated Flow, Shallow Concentrated** Grassed Waterway Kv= 15.0 fps
1.2	163	0.0175	2.27	3.85	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.022 Earth, clean & straight
10.5	290	Total			

Summary for Subcatchment PS19: PS-19 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 1.4 cfs @ 12.07 hrs, Volume= 4,175 cf, Depth> 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
8,320	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
0	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
4,388	61	>75% Grass cover, Good, HSG B	Open Space
12,708	85	Weighted Average	
4,388		34.53% Pervious Area	
8,320		65.47% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	27	0.0200	0.14		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
0.1	7	0.0200	0.87		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.70"
1.5	202	0.0175	2.27	3.85	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.022 Earth, clean & straight
0.2					**Direct Entry, Miniimum Tc of 5 Min**
5.0	236	Total			

Summary for Subcatchment PS20: PS-20 Wetland

Run from top of graveyard, thru site, and into wetland.

Runoff = 13.1 cfs @ 12.60 hrs, Volume= 85,419 cf, Depth> 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
357	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
17,465	98	Roofs, HSG B	Woods
5,705	30	Woods, Good, HSG A	Open Space
123,665	55	Woods, Good, HSG B	Open Space
284,611	70	Woods, Good, HSG C	Open Space
9,753	39	>75% Grass cover, Good, HSG A	Open Space
56,388	61	>75% Grass cover, Good, HSG B	Open Space
398	74	>75% Grass cover, Good, HSG C	Open Space
498,342	65	Weighted Average	
480,520		96.42% Pervious Area	
17,822		3.58% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	9	0.5000	0.41		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
27.4	91	0.0300	0.06		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
0.7	40	0.0400	1.00		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
12.6	378	0.0100	0.50		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
41.1	518	Total			

Summary for Subcatchment PS21: PS-21 Inner-Circle (East)

Run from top of graveyard, thru site, and into wetland.

Runoff = 2.3 cfs @ 12.09 hrs, Volume= 7,203 cf, Depth> 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
0	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
7,124	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
73	39	>75% Grass cover, Good, HSG A	Open Space
27,558	61	>75% Grass cover, Good, HSG B	Open Space
1,019	96	Gravel surface, HSG B	Roadway
35,774	69	Weighted Average	
28,650		80.09% Pervious Area	
7,124		19.91% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0600	0.28		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
0.2	38	0.0600	3.67		**Shallow Concentrated Flow, Shallow Concentrated Flow** Grassed Waterway Kv= 15.0 fps
6.1	138	Total			

Summary for Subcatchment PS22: PS-22 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 1.1 cfs @ 12.13 hrs, Volume= 3,819 cf, Depth> 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

	Area (sf)	CN	Description	Land Use
	0	98	Paved parking, HSG A	Woods
*	2,919	98	Paved parking, HSG B	Woods
	0	98	Roofs, HSG A	Woods
	4,072	98	Roofs, HSG B	Woods
	0	30	Woods, Good, HSG A	Open Space
*	0	30	Woods, Good, HSG B	Open Space
	0	39	>75% Grass cover, Good, HSG A	Open Space
	5,981	61	>75% Grass cover, Good, HSG B	Open Space
	0	96	Gravel surface, HSG B	Roadway
	12,972	81	Weighted Average	
	5,981		46.11% Pervious Area	
	6,991		53.89% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
0.4	115	0.0330	5.27	8.96	**Channel Flow, Street Gutter** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.013 Asphalt, smooth
9.5	215	Total			

Summary for Subcatchment PS23: PS-23 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 2.6 cfs @ 12.09 hrs, Volume= 8,132 cf, Depth> 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
13,785	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
1,683	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
10,561	61	>75% Grass cover, Good, HSG B	Open Space
89	96	Gravel surface, HSG B	Roadway
26,118	83	Weighted Average	
10,650		40.78% Pervious Area	
15,468		59.22% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	37	0.0200	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
2.0	296	0.0200	2.42	4.12	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.022 Earth, clean & straight
6.1	333	Total			

Summary for Subcatchment PS24: PS-24 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 4.6 cfs @ 12.13 hrs, Volume= 16,007 cf, Depth> 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

	Area (sf)	CN	Description	Land Use
	0	98	Paved parking, HSG A	Woods
*	13,275	98	Paved parking, HSG B	Woods
	0	98	Roofs, HSG A	Woods
	14,404	98	Roofs, HSG B	Woods
	0	30	Woods, Good, HSG A	Open Space
	32	55	Woods, Good, HSG B	Open Space
	0	39	>75% Grass cover, Good, HSG A	Open Space
	28,810	61	>75% Grass cover, Good, HSG B	Open Space
	1,050	96	Gravel surface, HSG B	Roadway
	57,571	79	Weighted Average	
	29,892		51.92% Pervious Area	
	27,679		48.08% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	91	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
1.2	284	0.0200	4.10	6.97	**Channel Flow, Street Gutter** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.013 Asphalt, smooth
9.6	375	Total			

Summary for Subcatchment PS26: PS-26 Inner-Circle (West)

Run from top of graveyard, thru site, and into wetland.

Runoff = 6.6 cfs @ 12.09 hrs, Volume= 21,001 cf, Depth> 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
0	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
17,438	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
88,586	61	>75% Grass cover, Good, HSG B	Open Space
2,155	96	Gravel surface, HSG B	Roadway
108,179	68	Weighted Average	
90,741		83.88% Pervious Area	
17,438		16.12% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	100	0.0600	0.28		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
0.2	54	0.0600	3.67		**Shallow Concentrated Flow, Shallow Concentrated Flow** Grassed Waterway Kv= 15.0 fps
6.1	154	Total			

Summary for Subcatchment PS27: PS-27 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 3.0 cfs @ 12.14 hrs, Volume= 10,583 cf, Depth> 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
9,357	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
10,353	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
16,238	61	>75% Grass cover, Good, HSG B	Open Space
35,948	81	Weighted Average	
16,238		45.17% Pervious Area	
19,710		54.83% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	83	0.0200	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
2.2	295	0.0171	2.24	3.81	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.022 Earth, clean & straight
10.1	378	Total			

Summary for Subcatchment PS28: PS-28 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 1.4 cfs @ 12.11 hrs, Volume= 4,625 cf, Depth> 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
7,498	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
0	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
10,695	61	>75% Grass cover, Good, HSG B	Open Space
18,193	76	Weighted Average	
10,695		58.79% Pervious Area	
7,498		41.21% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.0200	0.16		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
2.3	309	0.0171	2.24	3.81	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.022 Earth, clean & straight
7.5	359	Total			

Summary for Subcatchment PS29: PS-29 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 1.7 cfs @ 12.14 hrs, Volume= 6,076 cf, Depth> 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
6,948	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
3,336	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
0	55	Woods, Good, HSG B	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
12,910	61	>75% Grass cover, Good, HSG B	Open Space
23,194	77	Weighted Average	
12,910		55.66% Pervious Area	
10,284		44.34% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	78	0.0200	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
2.1	277	0.0171	2.24	3.81	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.022 Earth, clean & straight
9.6	355	Total			

Summary for Subcatchment PS30: PS-30 Road

Run from top of graveyard, thru site, and into wetland.

Runoff = 1.8 cfs @ 12.16 hrs, Volume= 6,769 cf, Depth> 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
10,755	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
0	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
1,756	55	Woods, Good, HSG B	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
14,139	61	>75% Grass cover, Good, HSG B	Open Space
26,650	76	Weighted Average	
15,895		59.64% Pervious Area	
10,755		40.36% Impervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0600	0.11		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 3.70"
1.5	27	0.1300	0.30		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.70"
2.5	335	0.0171	2.24	3.81	**Channel Flow, Channel Flow** Area= 1.7 sf Perim= 13.3' r= 0.13' n= 0.022 Earth, clean & straight
11.4	412	Total			

Summary for Subcatchment PS32: PS-32 - Remainder of ES02

Run from top of graveyard, thru site, and into wetland.

Runoff = 1.6 cfs @ 12.33 hrs, Volume= 8,293 cf, Depth> 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=5.62"

Area (sf)	CN	Description	Land Use
0	98	Paved parking, HSG A	Woods
0	98	Paved parking, HSG B	Woods
0	98	Roofs, HSG A	Woods
0	98	Roofs, HSG B	Woods
0	30	Woods, Good, HSG A	Open Space
46,947	55	Woods, Good, HSG B	Open Space
0	39	>75% Grass cover, Good, HSG A	Open Space
21,246	61	>75% Grass cover, Good, HSG B	Open Space
860	74	>75% Grass cover, Good, HSG C	Open Space
69,053	57	Weighted Average	
69,053		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0800	0.08		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 3.70"
1.2	94	0.0650	1.27		**Shallow Concentrated Flow, Shallow Concentrated** Woodland Kv= 5.0 fps
21.2	194	Total			

Summary for Reach R01: R-01 Reach

Inflow Area = 24,958 sf, 45.12% Impervious, Inflow Depth > 2.15" for 10-Year event
Inflow = 1.2 cfs @ 12.11 hrs, Volume= 4,471 cf
Outflow = 0.7 cfs @ 12.32 hrs, Volume= 4,354 cf, Atten= 45%, Lag= 12.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 0.35 fps, Min. Travel Time= 23.7 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 70.3 min

Peak Storage= 965 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.07' , Surface Width= 27.91'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 19.5 cfs

25.00' x 0.50' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 45.00'
Length= 501.0' Slope= 0.0199 '/'
Inlet Invert= 35.95', Outlet Invert= 26.00'

‡

Summary for Reach R02: R-02 Reach

Inflow Area = 301,519 sf, 11.75% Impervious, Inflow Depth > 0.83" for 10-Year event
Inflow = 3.7 cfs @ 12.21 hrs, Volume= 20,887 cf
Outflow = 2.7 cfs @ 12.46 hrs, Volume= 20,510 cf, Atten= 26%, Lag= 15.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 0.58 fps, Min. Travel Time= 14.1 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 29.4 min

Peak Storage= 2,311 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 31.70'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 19.0 cfs

25.00' x 0.50' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 45.00'
Length= 487.0' Slope= 0.0189 '/'
Inlet Invert= 35.20', Outlet Invert= 26.00'

‡

Summary for Reach R3: R-03 Reach

[80] Warning: Exceeded Pond MH10 by 2.96' @ 0.00 hrs (35.7 cfs 135,780 cf)

Inflow Area = 739,004 sf, 22.39% Impervious, Inflow Depth > 1.24" for 10-Year event
Inflow = 7.1 cfs @ 12.45 hrs, Volume= 76,243 cf
Outflow = 6.0 cfs @ 12.60 hrs, Volume= 75,061 cf, Atten= 16%, Lag= 9.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 0.75 fps, Min. Travel Time= 10.8 min
Avg. Velocity = 0.47 fps, Avg. Travel Time= 17.2 min

Peak Storage= 3,857 cf @ 12.60 hrs
Average Depth at Peak Storage= 0.26' , Surface Width= 35.48'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 19.0 cfs

25.00' x 0.50' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 45.00'
Length= 487.0' Slope= 0.0189 '/'
Inlet Invert= 35.20', Outlet Invert= 26.00'

‡

Summary for Reach R4: R-04 Reach

Inflow Area = 756,421 sf, 11.12% Impervious, Inflow Depth > 2.27" for 10-Year event
Inflow = 14.1 cfs @ 12.82 hrs, Volume= 142,953 cf
Outflow = 13.9 cfs @ 13.02 hrs, Volume= 141,491 cf, Atten= 2%, Lag= 12.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 0.86 fps, Min. Travel Time= 11.5 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 26.7 min

Peak Storage= 9,599 cf @ 13.02 hrs
Average Depth at Peak Storage= 0.47' , Surface Width= 43.79'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 15.6 cfs

25.00' x 0.50' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 45.00'
Length= 594.0' Slope= 0.0126 '/'
Inlet Invert= 33.50', Outlet Invert= 26.00'

‡

Summary for Reach R5: R-02 Reach

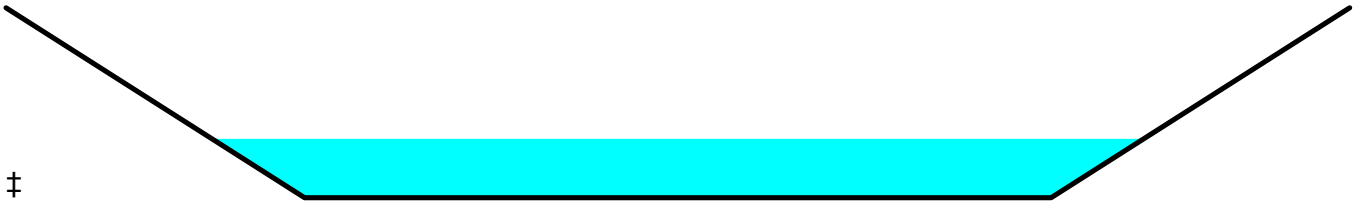
[80] Warning: Exceeded Pond MH11 by 0.44' @ 0.00 hrs (0.6 cfs 9,707 cf)

Inflow Area = 394,562 sf, 8.81% Impervious, Inflow Depth > 0.70" for 10-Year event
Inflow = 2.7 cfs @ 12.66 hrs, Volume= 23,178 cf
Outflow = 2.4 cfs @ 12.84 hrs, Volume= 22,750 cf, Atten= 10%, Lag= 11.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 0.55 fps, Min. Travel Time= 14.8 min
Avg. Velocity = 0.29 fps, Avg. Travel Time= 27.7 min

Peak Storage= 2,121 cf @ 12.84 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 31.20'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 19.0 cfs

25.00' x 0.50' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 20.0 '/' Top Width= 45.00'
Length= 487.0' Slope= 0.0189 '/'
Inlet Invert= 35.20', Outlet Invert= 26.00'



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Summary for Pond BIO1: Bioretention Area #1

[92] Warning: Device #6 is above defined storage

Inflow Area = 236,263 sf, 47.92% Impervious, Inflow Depth > 3.12" for 10-Year event
Inflow = 17.4 cfs @ 12.12 hrs, Volume= 61,502 cf
Outflow = 6.8 cfs @ 12.44 hrs, Volume= 43,834 cf, Atten= 61%, Lag= 19.2 min
Primary = 6.8 cfs @ 12.44 hrs, Volume= 43,834 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.45' @ 12.44 hrs Surf.Area= 3,387 sf Storage= 26,568 cf

Plug-Flow detention time= 211.6 min calculated for 43,834 cf (71% of inflow)
Center-of-Mass det. time= 118.1 min (942.7 - 824.6)

Volume	Invert	Avail.Storage	Storage Description
#1	32.55'	305 cf	**Media (Irregular)** Listed below (Recalc) 1,524 cf Overall x 20.0% Voids
#2	33.00'	42,376 cf	**Pond Area (Irregular)** Listed below (Recalc) -Impervious
		42,681 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
32.55	3,387	339.6	0	0	3,387
33.00	3,387	339.6	1,524	1,524	3,540

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
33.00	3,387	339.6	0	0	3,387
35.00	5,515	375.1	8,816	8,816	5,529
36.00	6,027	398.4	5,769	14,585	7,014
36.33	6,521	443.9	2,070	16,655	10,067
37.00	8,819	475.4	5,120	21,775	12,392
38.00	14,190	537.5	11,399	33,173	17,423
38.50	22,974	614.2	9,203	42,376	24,459

Device	Routing	Invert	Outlet Devices
#1	Primary	32.55'	**18.0" Round Culvert** L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 32.55' / 32.25' S= 0.0038 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	32.55'	**2.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	34.00'	**6.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 3	32.55'	**5.000 in/hr Exfiltration over Surface area**
#5	Device 1	37.00'	**24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	39.00'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.8 cfs @ 12.44 hrs HW=37.45' TW=35.50' (Dynamic Tailwater)
- **1=Culvert** (Passes 6.8 cfs of 11.5 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.1 cfs @ 6.72 fps)
  - **3=Orifice** (Passes 0.4 cfs of 1.3 cfs potential flow)
    - **4=Exfiltration** (Exfiltration Controls 0.4 cfs)
  - **5=Grate** (Weir Controls 6.2 cfs @ 2.20 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=32.55' TW=35.20' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BIO2: Bioretention Area #2

Inflow Area = 502,741 sf, 10.39% Impervious, Inflow Depth > 1.02" for 10-Year event
Inflow = 6.6 cfs @ 12.09 hrs, Volume= 42,727 cf
Outflow = 1.2 cfs @ 15.29 hrs, Volume= 32,409 cf, Atten= 83%, Lag= 192.0 min
Primary = 1.2 cfs @ 15.29 hrs, Volume= 32,409 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.06' @ 15.29 hrs Surf.Area= 8,345 sf Storage= 15,220 cf

Plug-Flow detention time= 225.0 min calculated for 32,409 cf (76% of inflow)
Center-of-Mass det. time= 131.9 min (1,066.6 - 934.7)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	1,098 cf	**Media (Irregular)** Listed below (Recalc) -Impervious 5,491 cf Overall x 20.0% Voids
#2	35.00'	37,485 cf	**Pond Area (Irregular)** Listed below (Recalc)
		38,583 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
34.00	5,491	456.6	0	0	5,491
35.00	5,491	456.6	5,491	5,491	5,948

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	5,491	456.6	0	0	5,491
38.00	9,855	513.2	22,702	22,702	10,095
39.50	9,855	513.2	14,783	37,485	10,865

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**12.0" Round Culvert** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.00' / 33.50' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	34.00'	**1.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 4	35.00'	**5.000 in/hr Exfiltration over Surface area**
#4	Device 1	36.00'	**6.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	37.00'	**24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	38.50'	**100.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.2 cfs @ 15.29 hrs HW=37.06' TW=35.35' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.2 cfs of 4.9 cfs potential flow)
  - **2=Orifice** (Orifice Controls 0.0 cfs @ 6.28 fps)
  - **4=Orifice** (Orifice Controls 0.8 cfs @ 4.32 fps)
    - **3=Exfiltration** (Passes 0.8 cfs of 1.0 cfs potential flow)
  - **5=Grate** (Weir Controls 0.3 cfs @ 0.77 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=34.00' TW=35.20' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond CB01: Catch Basin 01

Inflow Area = 21,365 sf, 39.43% Impervious, Inflow Depth > 1.83" for 10-Year event
Inflow = 0.9 cfs @ 12.13 hrs, Volume= 3,260 cf
Outflow = 0.9 cfs @ 12.13 hrs, Volume= 3,260 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.13 hrs, Volume= 3,260 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.04' @ 12.12 hrs
Flood Elev= 39.17'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.40'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.40' / 36.25' S= 0.0075 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	39.43'	**20.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.9 cfs @ 12.13 hrs HW=37.04' TW=36.85' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.9 cfs @ 2.42 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=36.40' TW=36.15' (Dynamic Tailwater)
↑**2=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond CB02: Catch Basin 02

Inflow Area = 24,958 sf, 45.12% Impervious, Inflow Depth > 2.15" for 10-Year event
Inflow = 1.2 cfs @ 12.11 hrs, Volume= 4,471 cf
Outflow = 1.2 cfs @ 12.11 hrs, Volume= 4,471 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.11 hrs, Volume= 4,471 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 36.85' @ 12.11 hrs
Flood Elev= 39.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.15'	**12.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.15' / 36.04' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	39.85'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=1.2 cfs @ 12.11 hrs HW=36.85' TW=36.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.2 cfs @ 2.94 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=36.15' TW=35.95' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond CB03: Catch Basin 03

Inflow Area = 32,248 sf, 55.72% Impervious, Inflow Depth > 2.68" for 10-Year event
Inflow = 2.1 cfs @ 12.13 hrs, Volume= 7,203 cf
Outflow = 2.1 cfs @ 12.13 hrs, Volume= 7,203 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.1 cfs @ 12.13 hrs, Volume= 7,203 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 38.07' @ 12.17 hrs
Flood Elev= 38.93'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.97'	**12.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.97' / 35.85' S= 0.0060 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.0 cfs @ 12.13 hrs HW=37.81' TW=37.53' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.0 cfs @ 2.52 fps)

Summary for Pond CB04: Catch Basin 04

Inflow Area = 38,050 sf, 59.17% Impervious, Inflow Depth > 2.89" for 10-Year event
Inflow = 2.6 cfs @ 12.12 hrs, Volume= 9,160 cf
Outflow = 2.6 cfs @ 12.12 hrs, Volume= 9,160 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.12 hrs, Volume= 9,160 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.77' @ 12.19 hrs
Flood Elev= 38.94'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.75'	**15.0" Round Culvert** L= 188.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.75' / 34.80' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	40.46'	**50.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.9 cfs @ 12.12 hrs HW=37.39' TW=37.18' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.9 cfs @ 1.58 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=35.75' TW=35.20' (Dynamic Tailwater)
2=Sharp-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond CB08: Catch Basin 04

Inflow Area = 93,198 sf, 55.33% Impervious, Inflow Depth > 3.05" for 10-Year event
Inflow = 6.7 cfs @ 12.12 hrs, Volume= 23,676 cf
Outflow = 6.7 cfs @ 12.12 hrs, Volume= 23,676 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.7 cfs @ 12.12 hrs, Volume= 23,676 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.50' @ 12.40 hrs
Flood Elev= 39.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	**24.0" Round Culvert** L= 188.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.00' / 33.00' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.7 cfs @ 12.12 hrs HW=36.74' TW=36.47' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.7 cfs @ 2.14 fps)

Summary for Pond CB09: Catch Basin 09

Inflow Area = 80,759 sf, 54.77% Impervious, Inflow Depth > 2.97" for 10-Year event
Inflow = 5.7 cfs @ 12.13 hrs, Volume= 20,011 cf
Outflow = 5.7 cfs @ 12.13 hrs, Volume= 20,011 cf, Atten= 0%, Lag= 0.0 min
Primary = 5.7 cfs @ 12.13 hrs, Volume= 20,011 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.59' @ 12.37 hrs
Flood Elev= 40.49'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.15'	**18.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.15' / 34.00' S= 0.0062 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.3 cfs @ 12.13 hrs HW=37.07' TW=36.81' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.3 cfs @ 2.43 fps)

Summary for Pond CB10: Catch Basin 10

[58] Hint: Peaked 2.75' above defined flood level

Inflow Area = 12,972 sf, 53.89% Impervious, Inflow Depth > 3.53" for 10-Year event
Inflow = 1.1 cfs @ 12.13 hrs, Volume= 3,819 cf
Outflow = 1.1 cfs @ 12.13 hrs, Volume= 3,819 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.1 cfs @ 12.13 hrs, Volume= 3,819 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2

Peak Elev= 51.76' @ 12.14 hrs
Flood Elev= 49.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	45.25'	**12.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.25' / 45.10' S= 0.0094 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.13 hrs HW=51.64' TW=51.68' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Summary for Pond CB11: Catch Basin 11

[58] Hint: Peaked 2.78' above defined flood level
[80] Warning: Exceeded Pond CB10 by 0.15' @ 12.06 hrs (1.5 cfs 428 cf)

Inflow Area = 19,599 sf, 54.54% Impervious, Inflow Depth > 3.57" for 10-Year event
Inflow = 1.7 cfs @ 12.11 hrs, Volume= 5,827 cf
Outflow = 1.7 cfs @ 12.11 hrs, Volume= 5,827 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.11 hrs, Volume= 5,827 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 51.79' @ 12.14 hrs
Flood Elev= 49.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	45.10'	**12.0" Round Culvert** L= 275.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.10' / 43.05' S= 0.0075 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.6 cfs @ 12.11 hrs HW=50.87' TW=50.77' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.6 cfs @ 0.79 fps)

Summary for Pond CB12: Catch Basin 12

[58] Hint: Peaked 3.66' above defined flood level

Inflow Area = 103,288 sf, 52.12% Impervious, Inflow Depth > 3.48" for 10-Year event
Inflow = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf
Outflow = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 50.71' @ 12.12 hrs
Flood Elev= 47.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.65'	**12.0" Round Culvert**

L= 79.0' CPP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 41.65' / 41.05' S= 0.0076 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=8.5 cfs @ 12.11 hrs HW=50.60' TW=43.28' (Dynamic Tailwater)
1=Culvert (Outlet Controls 8.5 cfs @ 10.89 fps)

Summary for Pond CB13: Catch Basin 13

[58] Hint: Peaked 4.97' above defined flood level

Inflow Area = 57,571 sf, 48.08% Impervious, Inflow Depth > 3.34" for 10-Year event
Inflow = 4.6 cfs @ 12.13 hrs, Volume= 16,007 cf
Outflow = 4.6 cfs @ 12.13 hrs, Volume= 16,007 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.6 cfs @ 12.13 hrs, Volume= 16,007 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 52.02' @ 12.12 hrs
Flood Elev= 47.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	43.50'	**12.0" Round Culvert**
			L= 16.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 43.50' / 43.25' S= 0.0156 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.6 cfs @ 12.13 hrs HW=51.81' TW=50.36' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.6 cfs @ 5.81 fps)

Summary for Pond CB14: Catch Basin 14

Inflow Area = 26,650 sf, 40.36% Impervious, Inflow Depth > 3.05" for 10-Year event
Inflow = 1.8 cfs @ 12.16 hrs, Volume= 6,769 cf
Outflow = 1.8 cfs @ 12.16 hrs, Volume= 6,769 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.8 cfs @ 12.16 hrs, Volume= 6,769 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 41.68' @ 12.15 hrs
Flood Elev= 44.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	40.80'	**18.0" Round Culvert**
			L= 28.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 40.80' / 40.60' S= 0.0071 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.8 cfs @ 12.16 hrs HW=41.68' TW=41.49' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.8 cfs @ 2.45 fps)

Summary for Pond CB15: Catch Basin 15

Inflow Area = 49,844 sf, 42.21% Impervious, Inflow Depth > 3.09" for 10-Year event
Inflow = 3.5 cfs @ 12.15 hrs, Volume= 12,845 cf
Outflow = 3.5 cfs @ 12.15 hrs, Volume= 12,845 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.5 cfs @ 12.15 hrs, Volume= 12,845 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 41.50' @ 12.15 hrs
Flood Elev= 45.28'

Device	Routing	Invert	Outlet Devices
#1	Primary	40.50'	**18.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 40.50' / 40.05' S= 0.0068 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.6 cfs @ 12.15 hrs HW=41.49' TW=40.79' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.6 cfs @ 4.07 fps)

Summary for Pond CB16: Catch Basin 16

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=151)

Inflow Area = 18,193 sf, 41.21% Impervious, Inflow Depth > 3.05" for 10-Year event
Inflow = 1.4 cfs @ 12.11 hrs, Volume= 4,625 cf
Outflow = 1.4 cfs @ 12.11 hrs, Volume= 4,623 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.11 hrs, Volume= 4,623 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.63' @ 12.33 hrs
Flood Elev= 39.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.32'	**15.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.32' / 35.20' S= 0.0075 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	40.02'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=0.7 cfs @ 12.11 hrs HW=36.99' TW=36.98' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.7 cfs @ 0.58 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=35.32' TW=35.20' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond CB17: Catch Basin 17

[80] Warning: Exceeded Pond CB16 by 1.66' @ 18.32 hrs (5.3 cfs 47,457 cf)

Inflow Area =	54,141 sf,	50.25% Impervious,	Inflow Depth >	3.37"	for	10-Year event
Inflow =	4.3 cfs @	12.13 hrs,	Volume=	15,206 cf		
Outflow =	4.3 cfs @	12.13 hrs,	Volume=	15,206 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	4.3 cfs @	12.13 hrs,	Volume=	15,206 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.61' @ 12.35 hrs
Flood Elev= 39.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	35.10'	**18.0" Round Culvert** L= 205.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.10' / 33.85' S= 0.0061 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.5 cfs @ 12.13 hrs HW=37.19' TW=36.88' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 3.5 cfs @ 1.96 fps)

Summary for Pond CB18: Catch Basin 18

[58] Hint: Peaked 0.52' above defined flood level
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=54)

Inflow Area =	12,708 sf,	65.47% Impervious,	Inflow Depth >	3.94"	for	10-Year event
Inflow =	1.4 cfs @	12.07 hrs,	Volume=	4,175 cf		
Outflow =	1.4 cfs @	12.07 hrs,	Volume=	4,174 cf,	Atten= 0%,	Lag= 0.0 min
Primary =	1.4 cfs @	12.07 hrs,	Volume=	4,174 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.52' @ 12.40 hrs
Flood Elev= 37.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.95'	**12.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.95' / 33.85' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=36.27' TW=36.30' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Summary for Pond CB19: Catch Basin 19

[58] Hint: Peaked 0.51' above defined flood level
[80] Warning: Exceeded Pond CB18 by 0.09' @ 12.16 hrs (1.2 cfs 2,117 cf)

Inflow Area = 107,291 sf, 50.83% Impervious, Inflow Depth > 3.43" for 10-Year event
Inflow = 8.5 cfs @ 12.12 hrs, Volume= 30,623 cf
Outflow = 8.5 cfs @ 12.12 hrs, Volume= 30,623 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.5 cfs @ 12.12 hrs, Volume= 30,623 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.51' @ 12.39 hrs
Flood Elev= 37.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	33.75'	**24.0" Round Culvert** L= 117.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 33.75' / 33.15' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.5 cfs @ 12.12 hrs HW=36.85' TW=36.52' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 8.5 cfs @ 2.70 fps)

Summary for Pond GW01: Gravel Wetland #1

Inflow Area = 756,421 sf, 11.12% Impervious, Inflow Depth > 2.46" for 10-Year event
Inflow = 23.7 cfs @ 12.43 hrs, Volume= 154,851 cf
Outflow = 14.1 cfs @ 12.82 hrs, Volume= 142,953 cf, Atten= 40%, Lag= 23.5 min
Primary = 14.1 cfs @ 12.82 hrs, Volume= 142,953 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.90' @ 12.82 hrs Surf.Area= 29,693 sf Storage= 43,488 cf

Plug-Flow detention time= 90.2 min calculated for 142,834 cf (92% of inflow)
Center-of-Mass det. time= 52.2 min (908.0 - 855.8)

Volume	Invert	Avail.Storage	Storage Description
#1	34.40'	677 cf	**Media-1 - to Outlet Inv (Irregular)**Listed below (Recalc) 3,387 cf Overall x 20.0% Voids
#2	35.00'	33,430 cf	**Pond Area - 1 (Irregular)**Listed below (Recalc)
#3	34.40'	647 cf	**Media-2 - to Outlet Inv (Irregular)**Listed below (Recalc) 3,233 cf Overall x 20.0% Voids
#4	35.00'	31,526 cf	**Pond Area - 2 (Irregular)**Listed below (Recalc)
		66,280 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
34.40	5,645	356.4	0	0	5,645
35.00	5,645	366.4	3,387	3,387	6,260

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	5,645	356.4	0	0	5,645
37.00	7,888	402.2	13,471	13,471	8,512
37.33	8,971	437.5	2,780	16,250	10,875
38.00	9,858	450.1	6,305	22,556	11,813
38.25	11,021	492.1	2,609	25,164	14,964
39.00	11,021	492.1	8,266	33,430	15,334

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
34.40	5,388	380.7	0	0	5,388
35.00	5,388	380.7	3,233	3,233	5,616

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
35.00	5,388	380.7	0	0	5,388
38.00	9,069	437.3	21,447	21,447	9,271
38.25	10,225	483.0	2,410	23,858	12,620
39.00	10,225	483.0	7,669	31,526	12,982

Device	Routing	Invert	Outlet Devices
#1	Primary	34.40'	**18.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.40' / 33.97' S= 0.0172 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	34.40'	**2.5" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	35.50'	**12.0" Vert. Upper Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	36.75'	**18.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	38.00'	**12.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=14.1 cfs @ 12.82 hrs HW=37.90' TW=33.96' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 14.1 cfs @ 7.99 fps)
  ├─**2=Orifice** (Passes < 0.3 cfs potential flow)
  ├─**3=Upper Orifice** (Passes < 5.2 cfs potential flow)
  └─**4=Grate** (Passes < 9.1 cfs potential flow)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=34.40' TW=33.50' (Dynamic Tailwater)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond MH: Manhole 01

Inflow Area = 38,050 sf, 59.17% Impervious, Inflow Depth > 2.89" for 10-Year event
Inflow = 2.6 cfs @ 12.12 hrs, Volume= 9,160 cf
Outflow = 2.6 cfs @ 12.12 hrs, Volume= 9,160 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.12 hrs, Volume= 9,160 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 37.65' @ 12.33 hrs
Flood Elev= 41.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.70'	**15.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.70' / 34.25' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.5 cfs @ 12.12 hrs HW=37.18' TW=36.95' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.5 cfs @ 2.08 fps)

Summary for Pond MH03: Manhole 03

[58] Hint: Peaked 1.11' above defined flood level
[80] Warning: Exceeded Pond CB11 by 0.76' @ 12.06 hrs (1.7 cfs 384 cf)

Inflow Area = 19,599 sf, 54.54% Impervious, Inflow Depth > 3.57" for 10-Year event
Inflow = 1.7 cfs @ 12.11 hrs, Volume= 5,827 cf
Outflow = 1.7 cfs @ 12.11 hrs, Volume= 5,827 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.7 cfs @ 12.11 hrs, Volume= 5,827 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 51.04' @ 12.12 hrs
Flood Elev= 49.93'

Device	Routing	Invert	Outlet Devices
#1	Primary	42.95'	**12.0" Round Culvert** L= 166.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 42.95' / 41.75' S= 0.0072 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.3 cfs @ 12.11 hrs HW=50.77' TW=50.48' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.3 cfs @ 1.68 fps)

Summary for Pond MH04: Manhole 04

Inflow Area = 103,288 sf, 52.12% Impervious, Inflow Depth > 3.48" for 10-Year event
Inflow = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf
Outflow = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 43.32' @ 12.12 hrs
Flood Elev= 48.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	40.95'	**18.0" Round Culvert** L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 40.95' / 40.30' S= 0.0082 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.4 cfs @ 12.11 hrs HW=43.28' TW=42.24' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 8.4 cfs @ 4.75 fps)

Summary for Pond MH05: Manhole 05

Inflow Area = 103,288 sf, 52.12% Impervious, Inflow Depth > 3.48" for 10-Year event
Inflow = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf
Outflow = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 42.26' @ 12.11 hrs
Flood Elev= 49.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	40.20'	**18.0" Round Culvert** L= 79.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 40.20' / 39.65' S= 0.0070 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.5 cfs @ 12.11 hrs HW=42.24' TW=41.18' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 8.5 cfs @ 4.83 fps)

Summary for Pond MH06: Manhole 06

Inflow Area = 103,288 sf, 52.12% Impervious, Inflow Depth > 3.48" for 10-Year event
Inflow = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf
Outflow = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf, Atten= 0%, Lag= 0.0 min
Primary = 8.6 cfs @ 12.11 hrs, Volume= 29,966 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 41.19' @ 12.12 hrs
Flood Elev= 50.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.55'	**24.0" Round Culvert** L= 128.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 39.55' / 38.60' S= 0.0074 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.5 cfs @ 12.11 hrs HW=41.18' TW=40.38' (Dynamic Tailwater)
1=Culvert (Outlet Controls 8.5 cfs @ 4.24 fps)

Summary for Pond MH07: Manhole 07

Inflow Area = 153,132 sf, 48.90% Impervious, Inflow Depth > 3.35" for 10-Year event
Inflow = 12.0 cfs @ 12.12 hrs, Volume= 42,811 cf
Outflow = 12.0 cfs @ 12.12 hrs, Volume= 42,811 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.0 cfs @ 12.12 hrs, Volume= 42,811 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 40.39' @ 12.12 hrs
Flood Elev= 49.23'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.50'	**24.0" Round Culvert** L= 285.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 38.50' / 36.95' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.0 cfs @ 12.12 hrs HW=40.39' TW=38.67' (Dynamic Tailwater)
1=Culvert (Outlet Controls 12.0 cfs @ 5.06 fps)

Summary for Pond MH08: Manhole 08

Inflow Area = 153,132 sf, 48.90% Impervious, Inflow Depth > 3.35" for 10-Year event
Inflow = 12.0 cfs @ 12.12 hrs, Volume= 42,811 cf
Outflow = 12.0 cfs @ 12.12 hrs, Volume= 42,811 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.0 cfs @ 12.12 hrs, Volume= 42,811 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 38.67' @ 12.12 hrs
Flood Elev= 41.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	36.85'	**24.0" Round Culvert** L= 176.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.85' / 35.90' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.0 cfs @ 12.12 hrs HW=38.67' TW=36.37' (Dynamic Tailwater)
1=Culvert (Barrel Controls 12.0 cfs @ 5.26 fps)

Summary for Pond MH09: Manhole 09

Inflow Area = 49,844 sf, 42.21% Impervious, Inflow Depth > 3.09" for 10-Year event
Inflow = 3.5 cfs @ 12.15 hrs, Volume= 12,845 cf
Outflow = 3.5 cfs @ 12.15 hrs, Volume= 12,845 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.5 cfs @ 12.15 hrs, Volume= 12,845 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 40.80' @ 12.14 hrs
Flood Elev= 46.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	39.65'	**24.0" Round Culvert** L= 154.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 39.65' / 38.60' S= 0.0068 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.6 cfs @ 12.15 hrs HW=40.79' TW=40.35' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.6 cfs @ 2.78 fps)

Summary for Pond MH10: Manhole 10

[80] Warning: Exceeded Pond BIO1 by 2.64' @ 0.34 hrs (0.6 cfs 23,190 cf)
[80] Warning: Exceeded Pond BIO2 by 1.19' @ 0.34 hrs (0.0 cfs 1,143 cf)

Inflow Area = 739,004 sf, 22.39% Impervious, Inflow Depth > 1.24" for 10-Year event
Inflow = 7.1 cfs @ 12.45 hrs, Volume= 76,243 cf
Outflow = 7.1 cfs @ 12.45 hrs, Volume= 76,243 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.1 cfs @ 12.45 hrs, Volume= 76,243 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 35.53' @ 12.53 hrs
Flood Elev= 41.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	32.15'	**24.0" Round Culvert X 2.00** L= 232.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 32.15' / 31.00' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.1 cfs @ 12.45 hrs HW=35.51' TW=35.42' (Dynamic Tailwater)
1=Culvert (Outlet Controls 7.1 cfs @ 1.12 fps)

Summary for Pond MH11: Manhole 10

Inflow Area = 394,562 sf, 8.81% Impervious, Inflow Depth > 0.70" for 10-Year event
Inflow = 2.7 cfs @ 12.65 hrs, Volume= 23,178 cf
Outflow = 2.7 cfs @ 12.66 hrs, Volume= 23,178 cf, Atten= 0%, Lag= 0.3 min
Primary = 2.7 cfs @ 12.66 hrs, Volume= 23,178 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 36.08' @ 12.66 hrs
Flood Elev= 41.09'

Device	Routing	Invert	Outlet Devices
#1	Primary	34.70'	**12.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 34.70' / 34.25' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.7 cfs @ 12.66 hrs HW=36.08' TW=35.34' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.7 cfs @ 3.38 fps)

Summary for Pond P01: Cross Pipe 01

Inflow Area = 394,562 sf, 8.81% Impervious, Inflow Depth > 0.71" for 10-Year event
Inflow = 2.9 cfs @ 12.51 hrs, Volume= 23,214 cf
Outflow = 2.7 cfs @ 12.65 hrs, Volume= 23,178 cf, Atten= 10%, Lag= 8.6 min
Primary = 2.7 cfs @ 12.65 hrs, Volume= 23,178 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 46.47' @ 12.65 hrs Surf.Area= 1,519 sf Storage= 714 cf
Flood Elev= 47.50' Surf.Area= 5,085 sf Storage= 3,950 cf

Plug-Flow detention time= 2.8 min calculated for 23,178 cf (100% of inflow)
Center-of-Mass det. time= 2.0 min (935.3 - 933.3)

Volume	Invert	Avail.Storage	Storage Description
#1	45.00'	7,082 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
45.00	25	20.0	0	0	25
46.00	574	136.2	240	240	1,471
47.00	3,122	370.3	1,678	1,918	10,911
48.00	7,524	565.6	5,164	7,082	25,463

Device	Routing	Invert	Outlet Devices
#1	Primary	45.18'	**12.0" Round Culvert** L= 338.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 45.18' / 43.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.7 cfs @ 12.65 hrs HW=46.47' TW=36.08' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.7 cfs @ 3.38 fps)

Summary for Pond PND1: Bioretention Area #2

[63] Warning: Exceeded Reach R5 INLET depth by 4.21' @ 14.36 hrs

Inflow Area = 394,562 sf, 8.81% Impervious, Inflow Depth > 0.69" for 10-Year event
Inflow = 2.4 cfs @ 12.84 hrs, Volume= 22,750 cf
Outflow = 0.8 cfs @ 14.29 hrs, Volume= 21,725 cf, Atten= 65%, Lag= 86.9 min
Primary = 0.8 cfs @ 14.29 hrs, Volume= 21,725 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 39.49' @ 14.29 hrs Surf.Area= 4,504 sf Storage= 5,595 cf

Plug-Flow detention time= 92.0 min calculated for 21,725 cf (95% of inflow)
Center-of-Mass det. time= 70.9 min (1,020.7 - 949.8)

Volume	Invert	Avail.Storage	Storage Description
#1	38.00'	10,730 cf	**Pond Area (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
38.00	3,036	319.5	0	0	3,036
40.00	5,067	357.7	8,017	8,017	5,203
40.50	5,794	369.8	2,713	10,730	5,927

Device	Routing	Invert	Outlet Devices
#1	Primary	40.00'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	38.00'	**6.0" Round Culvert** L= 56.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.00' / 35.00' S= 0.0536 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.8 cfs @ 14.29 hrs HW=39.49' TW=36.97' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Controls 0.0 cfs)
2=Culvert (Inlet Controls 0.8 cfs @ 4.24 fps)

Summary for Pond PP01: DI-01 DROP INLET

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 301,519 sf, 11.75% Impervious, Inflow Depth > 0.83" for 10-Year event
Inflow = 3.7 cfs @ 12.21 hrs, Volume= 20,887 cf
Outflow = 3.7 cfs @ 12.21 hrs, Volume= 20,887 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.7 cfs @ 12.21 hrs, Volume= 20,887 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 38.50' @ 12.21 hrs Surf.Area= 4 sf Storage= 0 cf
Flood Elev= 40.50' Surf.Area= 6,935 sf Storage= 4,444 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (913.2 - 913.2)

Volume	Invert	Avail.Storage	Storage Description
#1	38.50'	4,444 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
38.50	4	8.0	0	0	4
39.00	380	163.1	70	70	2,116
40.00	3,702	491.9	1,756	1,827	19,257
40.50	6,935	663.0	2,617	4,444	34,985

Device	Routing	Invert	Outlet Devices
#1	Primary	36.36'	**12.0" Round Culvert X 2.00** L= 159.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.36' / 35.55' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	40.00'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.9 cfs @ 12.21 hrs HW=38.50' TW=35.31' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 6.9 cfs @ 4.40 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=38.50' TW=35.20' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Link PPoi-01: Prop PoI-01

Inflow Area = 1,563,823 sf, 14.70% Impervious, Inflow Depth > 1.42" for 10-Year event
Inflow = 22.0 cfs @ 12.58 hrs, Volume= 185,343 cf
Primary = 22.0 cfs @ 12.58 hrs, Volume= 185,343 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link PPoi-02: POI

Inflow Area = 825,474 sf, 10.19% Impervious, Inflow Depth > 2.18" for 10-Year event
Inflow = 14.3 cfs @ 12.99 hrs, Volume= 149,784 cf
Primary = 14.3 cfs @ 12.99 hrs, Volume= 149,784 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link PPoi-03: PO3

Inflow Area = 469,882 sf, 0.00% Impervious, Inflow Depth > 1.88" for 10-Year event
Inflow = 8.8 cfs @ 12.88 hrs, Volume= 73,690 cf
Primary = 8.8 cfs @ 12.88 hrs, Volume= 73,690 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link PPoi-04: Pr PoI-04

Inflow Area = 668,692 sf, 1.33% Impervious, Inflow Depth > 0.64" for 10-Year event
Inflow = 3.2 cfs @ 12.89 hrs, Volume= 35,704 cf
Primary = 3.2 cfs @ 12.89 hrs, Volume= 35,704 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link PPoi-05: Pr PoI-05

Inflow Area = 305,212 sf, 0.00% Impervious, Inflow Depth > 1.90" for 10-Year event
Inflow = 7.9 cfs @ 12.51 hrs, Volume= 48,262 cf
Primary = 7.9 cfs @ 12.51 hrs, Volume= 48,262 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link PPoi-06: Ex PoI-06

Inflow Area = 125,073 sf, 0.00% Impervious, Inflow Depth > 1.59" for 10-Year event
Inflow = 2.9 cfs @ 12.43 hrs, Volume= 16,552 cf
Primary = 2.9 cfs @ 12.43 hrs, Volume= 16,552 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

APPENDIX F – NRCS WEB SOIL SURVEY

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United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire

April 30, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:7,640 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 22, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Jun 14, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
33A	Scitico silt loam, 0 to 5 percent slopes	15.6	17.7%
38A	Eldridge fine sandy loam, 0 to 3 percent slopes	11.0	12.5%
134	Maybid silt loam	3.0	3.4%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	6.1	6.9%
313A	Deerfield loamy fine sand, 0 to 3 percent slopes	6.1	6.9%
460C	Pennichuck channery very fine sandy loam, 8 to 15 percent slopes	8.6	9.7%
495	Natchaug mucky peat, 0 to 2 percent slopes	1.0	1.1%
510A	Hoosic gravelly fine sandy loam, 0 to 3 percent slopes	0.7	0.8%
510B	Hoosic gravelly fine sandy loam, 3 to 8 percent slopes	29.4	33.4%
510C	Hoosic gravelly fine sandy loam, 8 to 15 percent slopes	5.2	5.9%
538A	Squamscott fine sandy loam, 0 to 5 percent slopes	1.5	1.7%
Totals for Area of Interest		**88.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion

of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

33A—Scitico silt loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9cn6
Elevation: 0 to 180 feet
Mean annual precipitation: 47 to 49 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Farmland of local importance

Map Unit Composition

Scitico and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scitico

Setting

Landform: Marine terraces

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 12 inches: silty clay loam
H3 - 12 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F144AY019NH - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Squamscott

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Maybid

Percent of map unit: 5 percent
Landform: Marine terraces

Hydric soil rating: Yes

Boxford

Percent of map unit: 5 percent
Hydric soil rating: No

38A—Eldridge fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9cn9
Elevation: 90 to 1,000 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 120 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Eldridge and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Eldridge

Setting

Parent material: Outwash over glaciolacustrine

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 23 inches: loamy fine sand
H3 - 23 to 62 inches: loamy very fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Squamscott
Percent of map unit: 10 percent
Landform: Marine terraces
Hydric soil rating: Yes

Scitico
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Well drained inclusion
Percent of map unit: 5 percent
Hydric soil rating: No

134—Maybid silt loam

Map Unit Setting
National map unit symbol: 9cmg
Elevation: 0 to 180 feet
Mean annual precipitation: 47 to 50 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 155 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition
Maybid and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maybid

Setting
Landform: Marine terraces
Parent material: Silty and clayey marine deposits

Typical profile
H1 - 0 to 9 inches: silt loam
H2 - 9 to 26 inches: silty clay loam
H3 - 26 to 63 inches: silty clay

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None

Frequency of ponding: Frequent
Available water capacity: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: C/D
Ecological site: F144AY020MA - Very Wet Coastal Lake Plain
Hydric soil rating: Yes

Minor Components

Ossipee

Percent of map unit: 10 percent
Landform: Swamps
Hydric soil rating: Yes

Scitico

Percent of map unit: 10 percent
Landform: Marine terraces
Hydric soil rating: Yes

Not named wet

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

140C—Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2w82s
Elevation: 0 to 980 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 35 percent
Canton, very stony, and similar soils: 25 percent
Hollis, very stony, and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex

Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Canton, Very Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Freetown

Percent of map unit: 5 percent
Landform: Bogs, marshes, depressions, kettles, swamps

Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Newfields, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines, moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Scarboro, very stony

Percent of map unit: 3 percent
Landform: Depressions, drainageways, outwash deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 2 percent
Landform: Ridges, hills
Hydric soil rating: Unranked

313A—Deerfield loamy fine sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2xfg8
Elevation: 0 to 1,100 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Deerfield and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Outwash plains, kame terraces, outwash deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Concave, linear, convex

Parent material: Sandy outwash derived from granite, gneiss, and/or quartzite

Typical profile

Ap - 0 to 9 inches: loamy fine sand
Bw - 9 to 25 inches: loamy fine sand
BC - 25 to 33 inches: fine sand
Cg - 33 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: About 15 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum: 11.0
Available water capacity: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 7 percent
Landform: Outwash plains, kame terraces, outwash deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear, concave, convex
Across-slope shape: Concave, linear, convex
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 2 percent
Landform: Outwash plains, kame terraces, outwash deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Concave, linear, convex
Hydric soil rating: No

Ninigret

Percent of map unit: 1 percent
Landform: Outwash plains, kame terraces, outwash terraces
Landform position (three-dimensional): Tread

Down-slope shape: Convex, linear
Across-slope shape: Convex, concave
Hydric soil rating: No

460C—Pennichuck channery very fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cp0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 120 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Pennichuck and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pennichuck

Setting

Parent material: Till

Typical profile

H1 - 0 to 11 inches: channery very fine sandy loam
H2 - 11 to 25 inches: very channery fine sandy loam
H3 - 25 to 36 inches: very channery loamy coarse sand
R - 36 to 40 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Not named
Percent of map unit: 10 percent
Hydric soil rating: No

Scitico
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Squamscott
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Eldridge
Percent of map unit: 5 percent
Hydric soil rating: No

495—Natchaug mucky peat, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2w691
Elevation: 0 to 910 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Natchaug and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Natchaug

Setting
Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material over loamy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy till

Typical profile
Oe1 - 0 to 12 inches: mucky peat
Oe2 - 12 to 31 inches: mucky peat
2Cg1 - 31 to 39 inches: silt loam
2Cg2 - 39 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.01 to 14.17 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Very high (about 14.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Ecological site: F144AY042NY - Semi-Rich Organic Wetlands
Hydric soil rating: Yes

Minor Components

Scarboro

Percent of map unit: 4 percent
Landform: Depressions, drainageways, outwash deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole

Percent of map unit: 4 percent
Landform: Outwash plains, depressions, depressions, deltas, outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Maybid

Percent of map unit: 2 percent
Landform: Depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

510A—Hoosic gravelly fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9cp3

Elevation: 100 to 1,100 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Hoosic and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting
Parent material: Outwash

Typical profile
H1 - 0 to 8 inches: gravelly fine sandy loam
H2 - 8 to 15 inches: very gravelly fine sandy loam
H3 - 15 to 60 inches: very gravelly coarse sand

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Not named
Percent of map unit: 10 percent
Hydric soil rating: No

510B—Hoosic gravelly fine sandy loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9cp4
Elevation: 100 to 1,100 feet

Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Hoosic and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting
Parent material: Outwash

Typical profile
H1 - 0 to 8 inches: gravelly fine sandy loam
H2 - 8 to 15 inches: very gravelly fine sandy loam
H3 - 15 to 60 inches: very gravelly coarse sand

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Not named
Percent of map unit: 10 percent
Hydric soil rating: No

510C—Hoosic gravelly fine sandy loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 9cp5
Elevation: 100 to 1,100 feet
Mean annual precipitation: 30 to 50 inches

Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 135 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition
Hoosic and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting
Parent material: Outwash

Typical profile
H1 - 0 to 8 inches: gravelly fine sandy loam
H2 - 8 to 15 inches: very gravelly fine sandy loam
H3 - 15 to 60 inches: very gravelly coarse sand

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Not named
Percent of map unit: 5 percent
Hydric soil rating: No

538A—Squamscott fine sandy loam, 0 to 5 percent slopes

Map Unit Setting
National map unit symbol: 9cp9
Elevation: 0 to 1,000 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 45 to 54 degrees F

Frost-free period: 120 to 180 days
Farmland classification: Farmland of local importance

Map Unit Composition

Squamscott and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Squamscott

Setting

Landform: Marine terraces

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 12 inches: loamy sand
H3 - 12 to 19 inches: fine sand
H4 - 19 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F144AY019NH - Wet Lake Plain
Hydric soil rating: Yes

Minor Components

Scitico

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Maybid

Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Eldridge

Percent of map unit: 5 percent
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group (Peverly NCRS Soils Report)

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

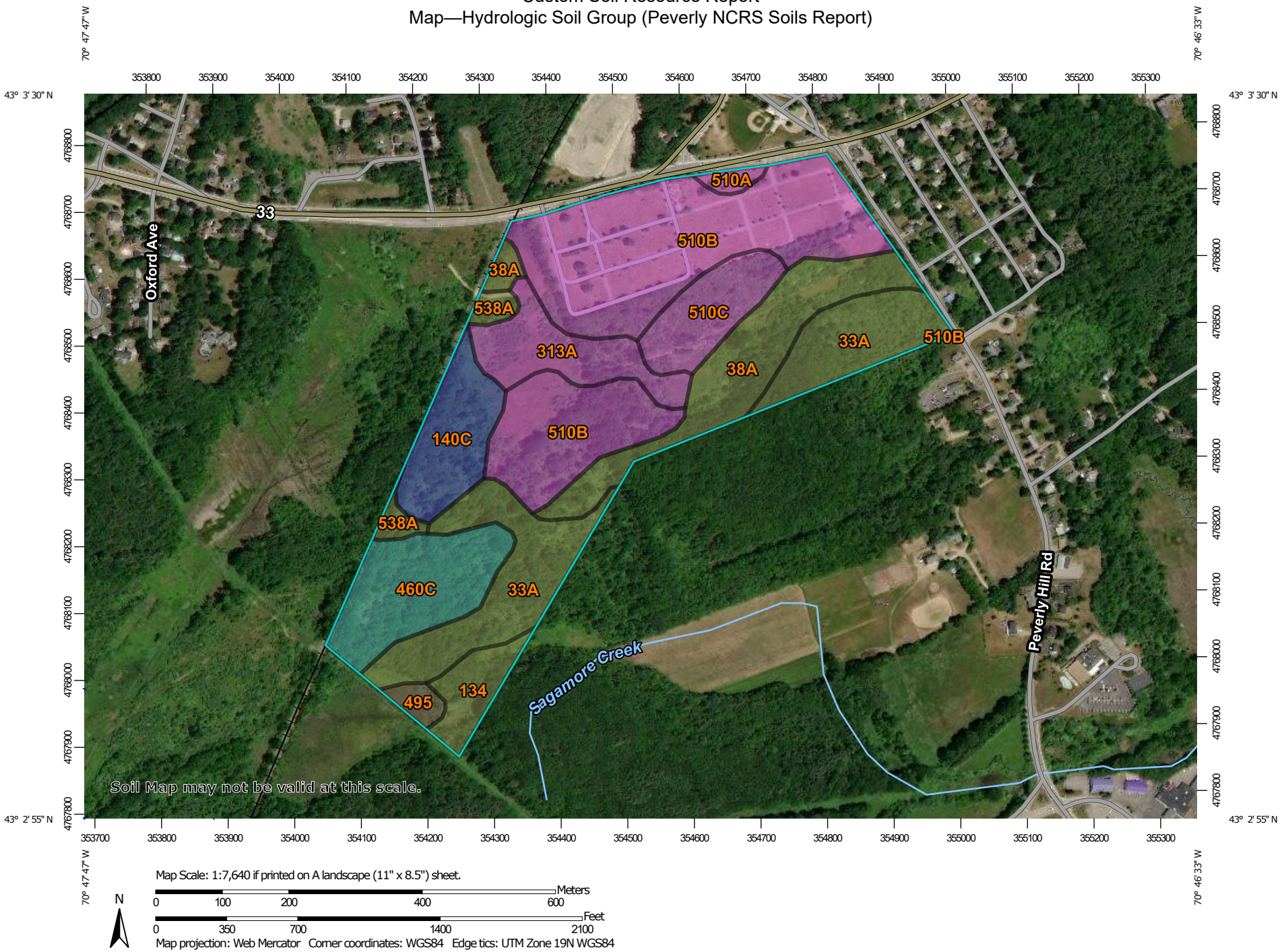
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group (Peverly NCRS Soils Report)



Map Scale: 1:7,640 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 22, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Jun 14, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group (Peverly NCRS Soils Report)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
33A	Scitico silt loam, 0 to 5 percent slopes	C/D	15.6	17.7%
38A	Eldridge fine sandy loam, 0 to 3 percent slopes	C/D	11.0	12.5%
134	Maybid silt loam	C/D	3.0	3.4%
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	B	6.1	6.9%
313A	Deerfield loamy fine sand, 0 to 3 percent slopes	A	6.1	6.9%
460C	Pennichuck channery very fine sandy loam, 8 to 15 percent slopes	C	8.6	9.7%
495	Natchaug mucky peat, 0 to 2 percent slopes	B/D	1.0	1.1%
510A	Hoosic gravelly fine sandy loam, 0 to 3 percent slopes	A	0.7	0.8%
510B	Hoosic gravelly fine sandy loam, 3 to 8 percent slopes	A	29.4	33.4%
510C	Hoosic gravelly fine sandy loam, 8 to 15 percent slopes	A	5.2	5.9%
538A	Squamscott fine sandy loam, 0 to 5 percent slopes	C/D	1.5	1.7%
Totals for Area of Interest			**88.0**	**100.0%**

Rating Options—Hydrologic Soil Group (Peverly NCRS Soils Report)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the following National Soil Survey Handbook link: “National Soil Survey Handbook.”

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3
Low: 3 to 6
Moderate: 6 to 9
High: 9 to 12
Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluves. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology)

from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left

behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth's surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2
Low: 0.2 to 0.4
Moderately low: 0.4 to 0.75
Moderate: 0.75 to 1.25
Moderately high: 1.25 to 1.75
High: 1.75 to 2.5
Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth’s crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can

occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low: Less than 0.5 percent
Low: 0.5 to 1.0 percent
Moderately low: 1.0 to 2.0 percent
Moderate: 2.0 to 4.0 percent
High: 4.0 to 8.0 percent
Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and

promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5
Extremely acid: 3.5 to 4.4
Very strongly acid: 4.5 to 5.0
Strongly acid: 5.1 to 5.5
Moderately acid: 5.6 to 6.0
Slightly acid: 6.1 to 6.5
Neutral: 6.6 to 7.3
Slightly alkaline: 7.4 to 7.8
Moderately alkaline: 7.9 to 8.4
Strongly alkaline: 8.5 to 9.0
Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
   A. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; *and*
   B. Masses, which are noncemented concentrations of substances within the soil matrix; *and*
   C. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
   A. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; *and*
   B. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletans).
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where “Rock outcrop” is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)

High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)

Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)

Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)

Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)

Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which “severely eroded,” “very severely eroded,” or “gullied” is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1
Moderate: 13-30:1
Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0
Coarse sand: 1.0 to 0.5
Medium sand: 0.5 to 0.25
Fine sand: 0.25 to 0.10
Very fine sand: 0.10 to 0.05
Silt: 0.05 to 0.002
Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated

Prismatic: Vertically elongated and having flat tops

Columnar: Vertically elongated and having rounded tops

Angular blocky: Having faces that intersect at sharp angles (planes)

Subangular blocky: Having subrounded and planar faces (no sharp angles)

Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand

Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field

generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

The uprooting and tipping over of trees by the wind.

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APPENDIX G – SITE SPECIFIC SOIL MAP & TEST PIT LOGS

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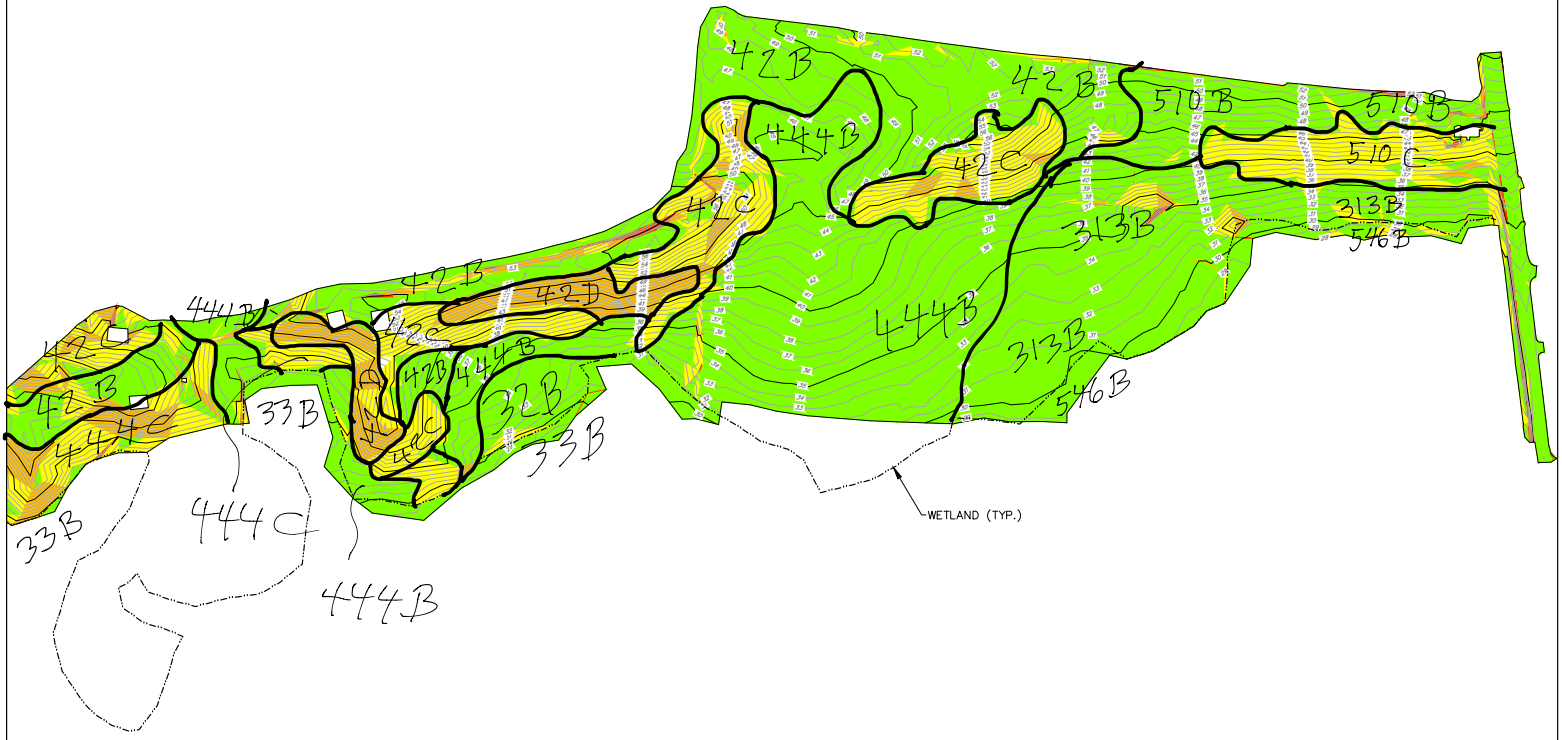
PEVERLY HILL ROAD
EXISTING SLOPE ANALYSIS

Slopes Table			
Number	Minimum Slope	Maximum Slope	Color
1	0,01%	8,00%	
2	8,01%	15,00%	
3	15,01%	25,00%	
4	25,01%	10000,00%	



SCALE
1"=100'

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TEST PIT DATA

Project	Peverly Hill Road, Portsmouth, NH
Client	Green and Company
GES Project No.	2019211
MM/DD/YY Staff	11-19-2020 JP Gove CSS# 004

Test Pit No. 601
ESHWT: 49”
Termination @ 95”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-7”	10YR3/3	GRLS	GR	FR	NONE
7-49”	10YR4/6	GRLS	GR	FR	NONE
49-95”	10YR4/4	GRS	OM	FR	10YR2/1, C/P

GR (TEXTURE) = GRAVELLY
LS = LOAMY SAND
S = SAND
FSL = FINE SANDY LOAM
SL = SANDY LOAM
SIL = SILT LOAM
SICL = SILTY CLAY

GR = GRANULAR
OM = MASSIVE
PL = PLATY
BK = BLOCKY

FR = FRIABLE
FI = FIRM
C = COMMON
P = PROMINENT
D = DISTINCT

VF (TEXTURE) = VERY FINE

F (TEXTURE) = FINE

Test Pit No. 602
ESHWT: 44”
Termination @ 96”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-9”	10YR3/3	GRLS	GR	FR	NONE
9-44”	10YR4/6	GRLS	GR	FR	NONE
44-96”	10YR4/4	GRS	OM	FR	7.5YR5/8, C/P

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
www.gesinc.biz

Test Pit No. **603**
ESHWT: 36”
Termination @ 109”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-12”	10YR3/2	GRSL	GR	FR	NONE
12-36”	10YR4/6	GRSL	GR	FR	NONE
36-109”	2.5Y5/4	GRLS	PL	FI	7.5YR5/8, C/P

Test Pit No. **604**
ESHWT: 55”
Termination @ 95”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-14”	10YR3/3	GRSL	GR	FR	NONE
14-55”	10YR4/6	GRSL	GR	FR	NONE
55-95”	2.5Y5/4	GRLS	PL	FI	7.5YR5/8, C/P

Test Pit No. **605**
ESHWT: 37”
Termination @ 102”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-7”	10YR3/3	LS	GR	FR	NONE
7-37”	10YR5/6	LS	GR	FR	NONE
37-102”	2.5Y5/3	S	OM	FR	7.5YR5/8, C/P

Test Pit No. **606**
ESHWT: 30”
Termination @ 97”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-10”	10YR3/3	LS	GR	FR	NONE
10-30”	10YR5/6	LS	GR	FR	NONE
30-97”	2.5Y5/4	S	OM	FR	7.5YR5/8, C/P

Test Pit No. **607**
ESHWT: 30”
Termination @ 96”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-9”	10YR3/3	LS	GR	FR	NONE
9-30”	10YR5/6	LS	GR	FR	NONE
30-96”	2.5Y3/3	S	OM	FR	2.5Y6/6, C/D

Test Pit No. **608**
ESHWT: 23”
Termination @ 97”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-8”	10YR3/3	LS	GR	FR	NONE
8-23”	10YR4/6	LS	GR	FR	NONE
23-97”	2.5Y5/3	S	OM	FR	7.5YR5/8, C/P

Test Pit No. **609**
ESHWT: 35”
Termination @ 111”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-12”	10YR3/3	GRSL	GR	FR	NONE
12-35”	10YR4/6	GRSL	GR	FR	NONE
35-111”	2.5Y5/3	VFS	OM	FR	7.5YR5/8, C/P

Test Pit No. **610**
ESHWT: 30”
Termination @ 107”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-12”	10YR3/3	GRSL	GR	FR	NONE
12-30”	10YR5/6	GRSL	GR	FR	NONE
30-107”	2.5Y5/4	VFS	OM	FR	7.5YR5/8, C/P

Test Pit No. **611**
ESHWT: 29”
Termination @ 105”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-12”	10YR3/2	GRFSL	GR	FR	NONE
12-29”	10YR4/6	GRLS	GR	FR	NONE
29-105”	2.5Y5/4	VFS	OM	FR	7.5YR5/8, C/P

Test Pit No. **612**
ESHWT: 38”
Termination @ 92”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-12”	10YR3/2	GRSL	GR	FR	NONE
12-38”	10YR5/6	GRSL	GR	FR	NONE
38-92”	2.5Y5/4	GRS	PL	FI	7.5YR5/8, C/P

Test Pit No. **613**
ESHWT: 33”
Termination @ 110”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-12”	10YR3/2	GRSL	GR	FR	NONE
12-33”	10YR4/6	GRSL	GR	FR	NONE
33-110”	2.5Y5/3	GRFSL	PL	FI	7.5YR5/6, C/P

Test Pit No. **614**
ESHWT: 12”
Termination @ 105”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-12”	10YR3/2	FSL	GR	FR	NONE
12-40”	2.5y5/2	SIL	PL	FI	7.5YR5/8, C/P
40-73”	10YR5/6	FS	OM	FR	7.5YR5/8, C/P
73-105”	2.5Y4/2	GRFSL	PL	FI	2.5Y6/6, C/D

Test Pit No. **615**
ESHWT: 17”
Termination @ 108”
Refusal: 108”
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-8”	10YR3/2	FSL	GR	FR	NONE
8-17”	10YR4/6	FSL	GR	FR	NONE
17-44”	2.5Y5/2	SIL	PL	FI	7.5YR5/8, C/P
44-66”	10YR4/4	FS	OM	FR	7.5YR5/8, C/P
66-108”	2.5Y3/3	GRFSL	PL	FI	2.5Y6/6,C/D

108” - BEDROCK

Test Pit No. **616**
ESHWT: 26”
Termination @ 80”
Refusal: No
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-9”	10YR3/2	FSL	GR	FR	NONE
9-26”	10YR4/6	FSL	GR	FR	NONE
26-80”	2.5Y5/4	GRFSL	PL	FI	7.5YR5/8, C/P

Test Pit No. **617**
ESHWT: 35”
Termination @ 80”
Refusal: 80”
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-9”	10YR3/3	GRFSL	GR	FR	NONE
9-35”	10YR4/6	GRFSL	GR	FR	NONE
35-80”	2.5Y5/4	GRFSL	PL	FI	7.5YR5/8, C/P

80” = BEDROCK

Test Pit No. **618**
ESHWT: 22”
Termination @ 57”
Refusal: 57”
Obs. Water: None

Depth	Color	Texture	Structure	Consistence	REDOX; Quantity/Contrast
0-12”	10YR3/2	GRFSL	GR	FR	NONE
12-22”	10YR4/6	GRFSL	GR	FR	NONE
22-57”	2.5Y5/4	GRFSL	PL	FI	7.5YR5/8, C/P

57” = BEDROCK

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TEST PIT & INFILTRATION TEST	
TEST PIT	
#	DEPTH
TP-1	8 FT
TP-2	8 FT
TP-3	8 FT
TP-4	8 FT
TP-5	6 FT
TP-6	6 FT
TP-7	6 FT
TP-8	6 FT
TP-9	6 FT
TP-10	8 FT
TP-11	6 FT
TP-12	10 FT
TP-13	10 FT
TP-14	6 FT
TP-15	6 FT
TP-16	10 FT
TP-17	8 FT
TP-18	8 FT

NOTES

1. TEST PIT LOCATIONS HAVE BEEN CHOSEN TO SATISFY AOT REQUIREMENTS PER ENV-WQ 1504.13(C).
2. TEST PITS DEPTHS LISTED ARE MINIMUM DEPTHS. IF SEASONAL HIGH WATER TABLE IS ENCOUNTERED, THE TEST PITS CAN BE STOPPED.
3. EACH TEST PIT LOCATION SHALL RECORD SHWT PER ENV-WQ 1504.13(D).
4. EACH TEST PIT LOCATION SHALL INCLUDE SOIL PROFILE DESCRIPTIONS PER ENV-WQ 1504.13(F).
5. INFILTRATION TESTING SHALL BE CONDUCTED PER ENV-WQ 1504.14(d)(1) AND AT LEAST 1 FOOT ABOVE SEASONAL HIGH WATER.
6. TEST PIT AND INFILTRATION TEST LOCATIONS ARE NUMBERED IN ORDER OF PRIORITY. PLEASE CONDUCT TESTING IN CHRONOLOGICAL ORDER. PLEASE COMPLETE AS MANY TEST PITS AND INFILTRATION TESTS AS POSSIBLE IN ONE DAY AND REPORT RESULTS TO TFMORAN. FURTHER TEST PITS & INFILTRATION TESTS MAY BE CONDUCTED ON A SEPERATE DAY AND SUBJECT TO REVISION BASED ON RESULTS.
7. INFILTRATION TESTS SHALL BE PERFORMED IN EACH TEST PIT TO DEPTHS OF 3 FEET ABOVE THE OBSERVED WATER TABLE.

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

TEST PIT & INFILTRATION TEST LOCATION PLAN

PROPOSED OPEN SPACE RESIDENTIAL PUD

83 PEVERLEY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

1"=200' (11"X17")

SCALE: 1"=100' (22"X34") **NOVEMBER 9, 2020**

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DIG SAFE
CALL BEFORE YOU DIG
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

HORIZONTAL SCALE 1"=20'
20 10 0 20

REV.	DATE	DESCRIPTION	DR	CK

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE					
47388_11	DR JSM	FB	–	TP-01	
	CK JJM	CADFILE 47388-11_TEST PIT_PRELIMINARY DESIGN			

Nov 09, 2020 - 6:09pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Soils\Test Pits\47388-11_Test Pit_Preliminary Design.dwg

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APPENDIX H –NHDES ONE STOP DATA MAPPER

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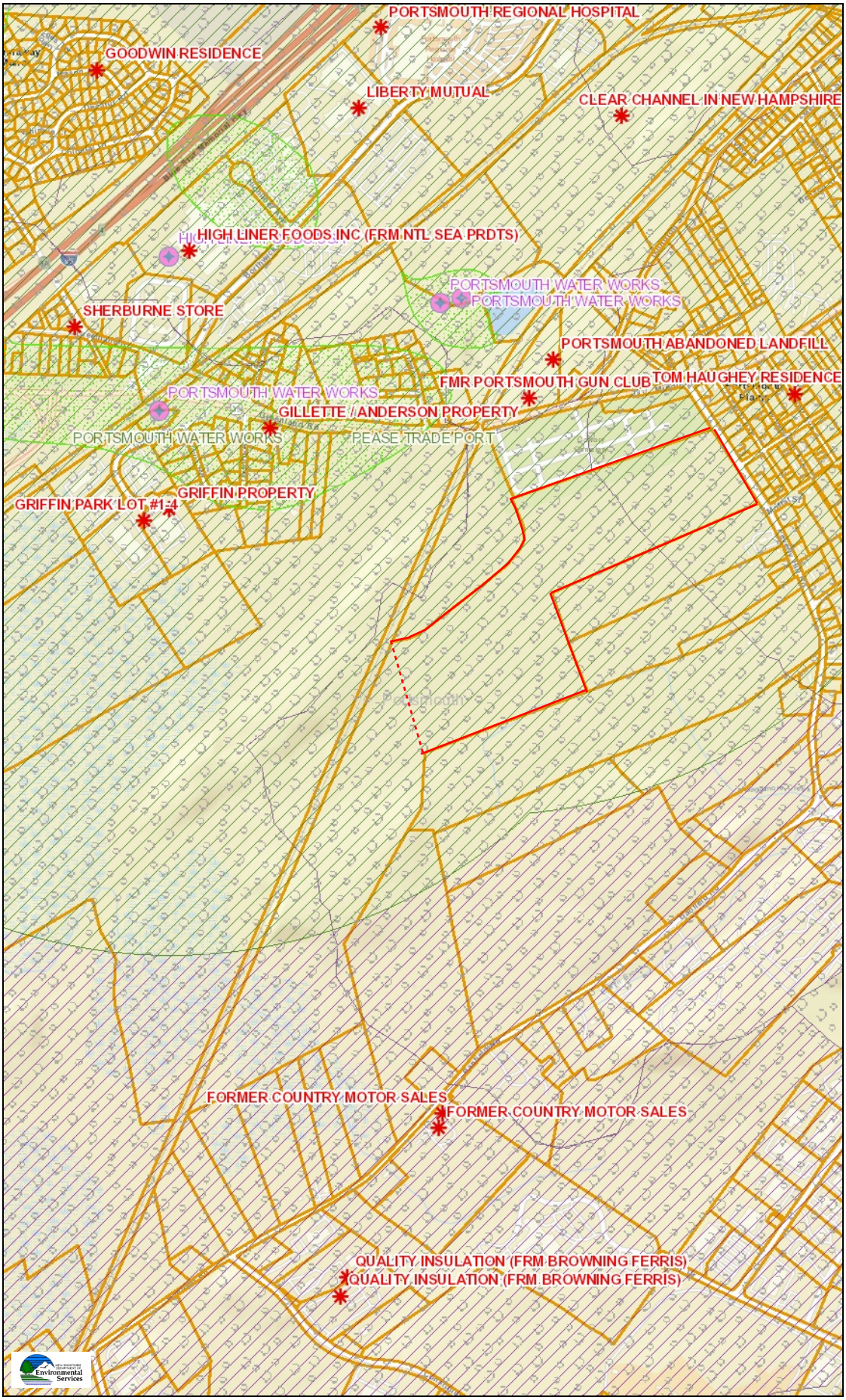
83 Perverly Road



Legend

- Remediation Sites
- Coastal and Great Bay Regi Communities
- Designated Rivers Quarterm Buffer
- Public Water Supply Wells
- Groundwater Classification GA1
- Groundwater Classification GA2
- Water Supply Intake Protect Areas
- Wellhead Protection Areas
- Class A Lakes with a Quarte Buffer
- Class A - All Features
- All Lakes, with a Quarter Mil Buffer
- Outstanding Resource Wate Watersheds
- Surface Waters with Impairn 2016 with Quarter Mile Buffe
- Watersheds with Chloride Impairments 2016

Parcels

- Parcel Polygons
- Attributes for Additional Lines

Map Scale

1: 12,988

© NH DES, http://des.nh.gov

Map Generated: 4/19/2021

Notes

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APPENDIX I – PRE AND POST-DEVELOPMENT DRAINAGE PLANS

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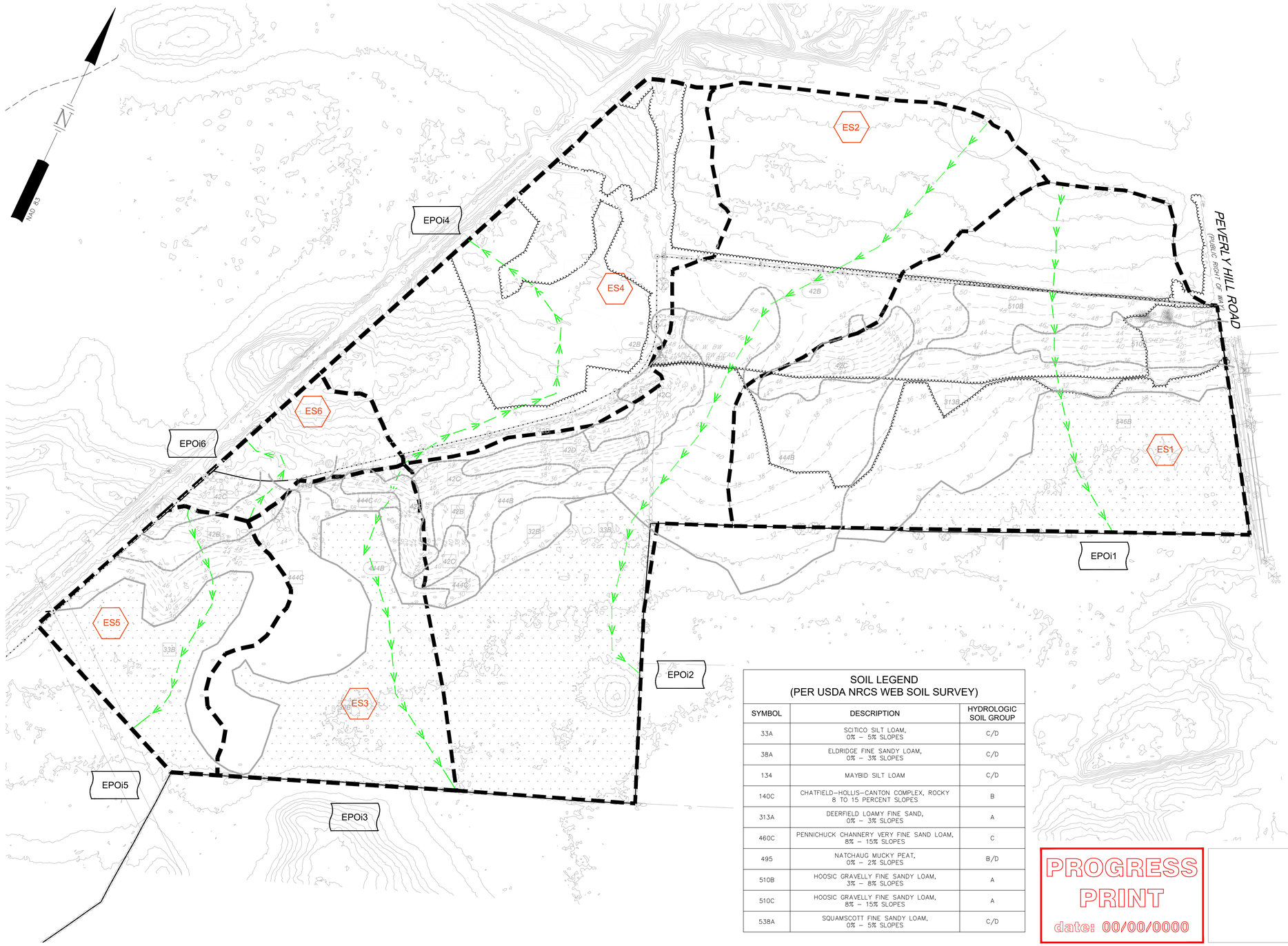

LEGEND

- FLOW PATH (Tc LINE)
- SOIL GROUP BREAK LINE
- EXISTING LOT LINE
- LIMITS OF SUBCATCHMENT
- ES4 — EXISTING SUBCATCHMENT NODE
- EC1 — EXISTING POND AREA AND CULVERT NODE
- EPOi3 — POINT OF INTEREST

SOIL LEGEND (PER SITE SPECIFIC SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
32	BOXFORD SILT LOAM	C
33	SCITICO SILT LOAM	C
42	CANTON SANDY LOAM	B
313	DEERFIELD LOAMY SAND	B
444	NEWFIELDS SANDY LOAM	B
510	HOOSIC GRAVELLY LOAMY SAND	A
546	WALPOLE SANDY LOAM	C

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
33A	SCITICO SILT LOAM, 0% – 5% SLOPES	C/D
38A	ELDRIDGE FINE SANDY LOAM, 0% – 3% SLOPES	C/D
134	MAYBID SILT LOAM	C/D
140C	CHATFIELD–HOLLIS–CANTON COMPLEX, ROCKY 8 TO 15 PERCENT SLOPES	B
313A	DEERFIELD LOAMY FINE SAND, 0% – 3% SLOPES	A
460C	PENNICHUCK CHANNERY VERY FINE SAND LOAM, 8% – 15% SLOPES	C
495	NATCHAUG MUCKY PEAT, 0% – 2% SLOPES	B/D
510B	HOOSIC GRAVELLY FINE SANDY LOAM, 3% – 8% SLOPES	A
510C	HOOSIC GRAVELLY FINE SANDY LOAM, 8% – 15% SLOPES	A
538A	SQUAMSCOTT FINE SANDY LOAM, 0% – 5% SLOPES	C/D

PROGRESS PRINT
date: 00/00/0000

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 6

PRE-DEVELOPEMENT DRAINAGE AREAS

PROPOSED OPEN SPACE RESIDENTIAL PUD

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

1"=300" (11"X17")
SCALE: 1"=150" (22"X34")

APRIL 19, 2021

HORIZONTAL SCALE 1"=150'
150 75 0 150

REV.	DATE	DESCRIPTION	DR	CK

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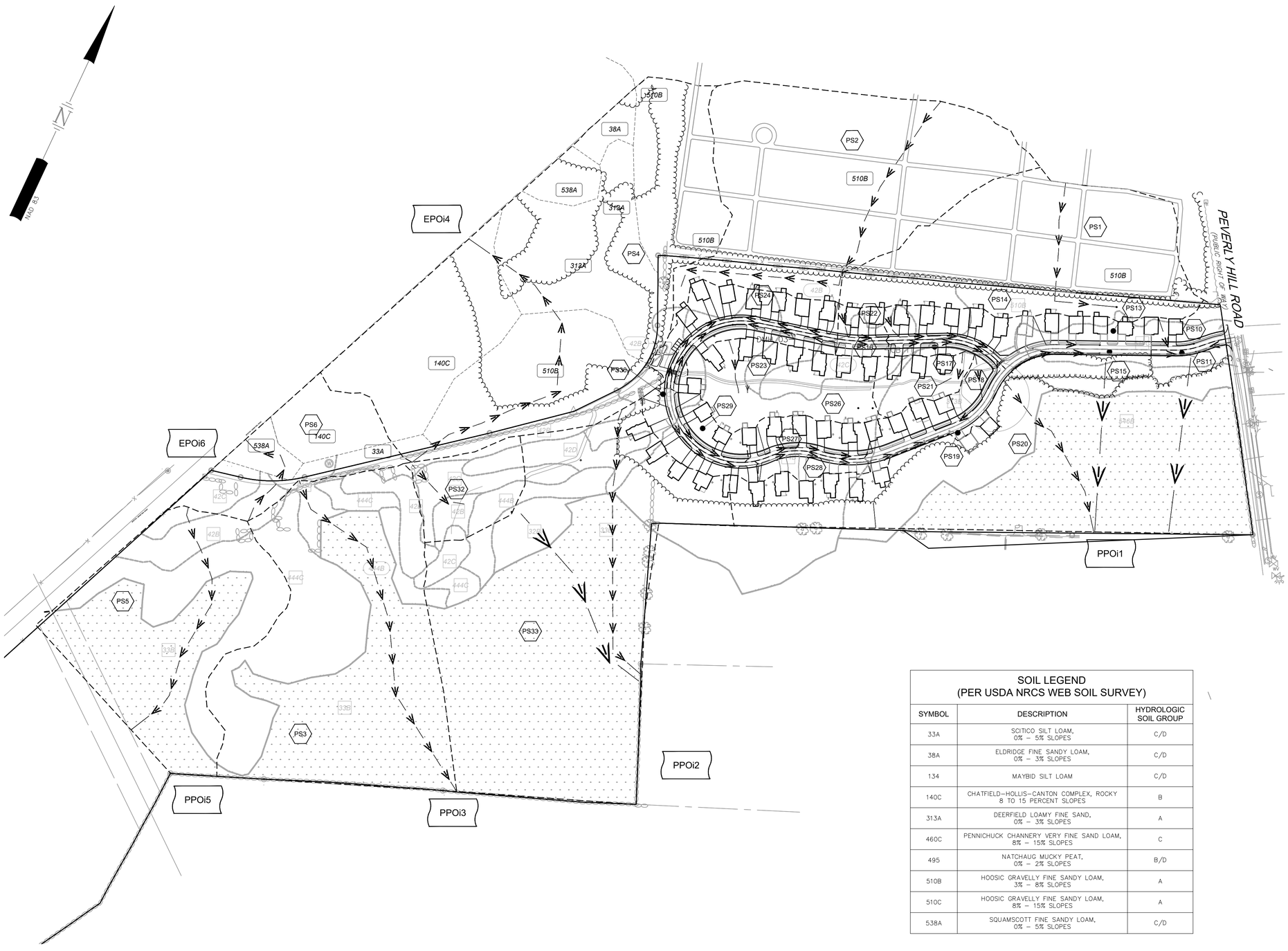

LEGEND

- FLOW PATH (Tc LINE)
- REACH
- SOIL GROUP BREAK LINE
- EXISTING LOT LINE
- LIMITS OF SUBCATCHMENT
- PS4 — PROPOSED SUBCATCHMENT NODE
- PR1 — PROPOSED REACH
- PC1 — PROPOSED POND AREA AND CULVERT NODE
- PPOi3 — POINT OF INTEREST

SOIL LEGEND (PER SITE SPECIFIC SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
32	BOXFORD SILT LOAM	C
33	SCITICO SILT LOAM	C
42	CANTON SANDY LOAM	B
313	DEERFIELD LOAMY SAND	B
444	NEWFIELDS SANDY LOAM	B
510	HOOSIC GRAVELLY LOAMY SAND	A
546	WALPOLE SANDY LOAM	C

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
33A	SCITICO SILT LOAM, 0% – 5% SLOPES	C/D
38A	ELDRIDGE FINE SANDY LOAM, 0% – 3% SLOPES	C/D
134	MAYBID SILT LOAM	C/D
140C	CHATFIELD–HOLLIS–CANTON COMPLEX, ROCKY 8 TO 15 PERCENT SLOPES	B
313A	DEERFIELD LOAMY FINE SAND, 0% – 3% SLOPES	A
460C	PENNICHUCK CHANNERY VERY FINE SAND LOAM, 8% – 15% SLOPES	C
495	NATCHAUG MUCKY PEAT, 0% – 2% SLOPES	B/D
510B	HOOSIC GRAVELLY FINE SANDY LOAM, 3% – 8% SLOPES	A
510C	HOOSIC GRAVELLY FINE SANDY LOAM, 8% – 15% SLOPES	A
538A	SQUAMSCOTT FINE SANDY LOAM, 0% – 5% SLOPES	C/D

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 6

OVERALL POST-DEVELOPEMENT DRAINAGE AREAS

PROPOSED OPEN SPACE RESIDENTIAL PUD

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

1"=300" (11"X17")

SCALE: 1"=150" (22"X34")

APRIL 19, 2021

HORIZONTAL SCALE 1"=150'

150 75 0 150

REV.	DATE	DESCRIPTION	DR	CK

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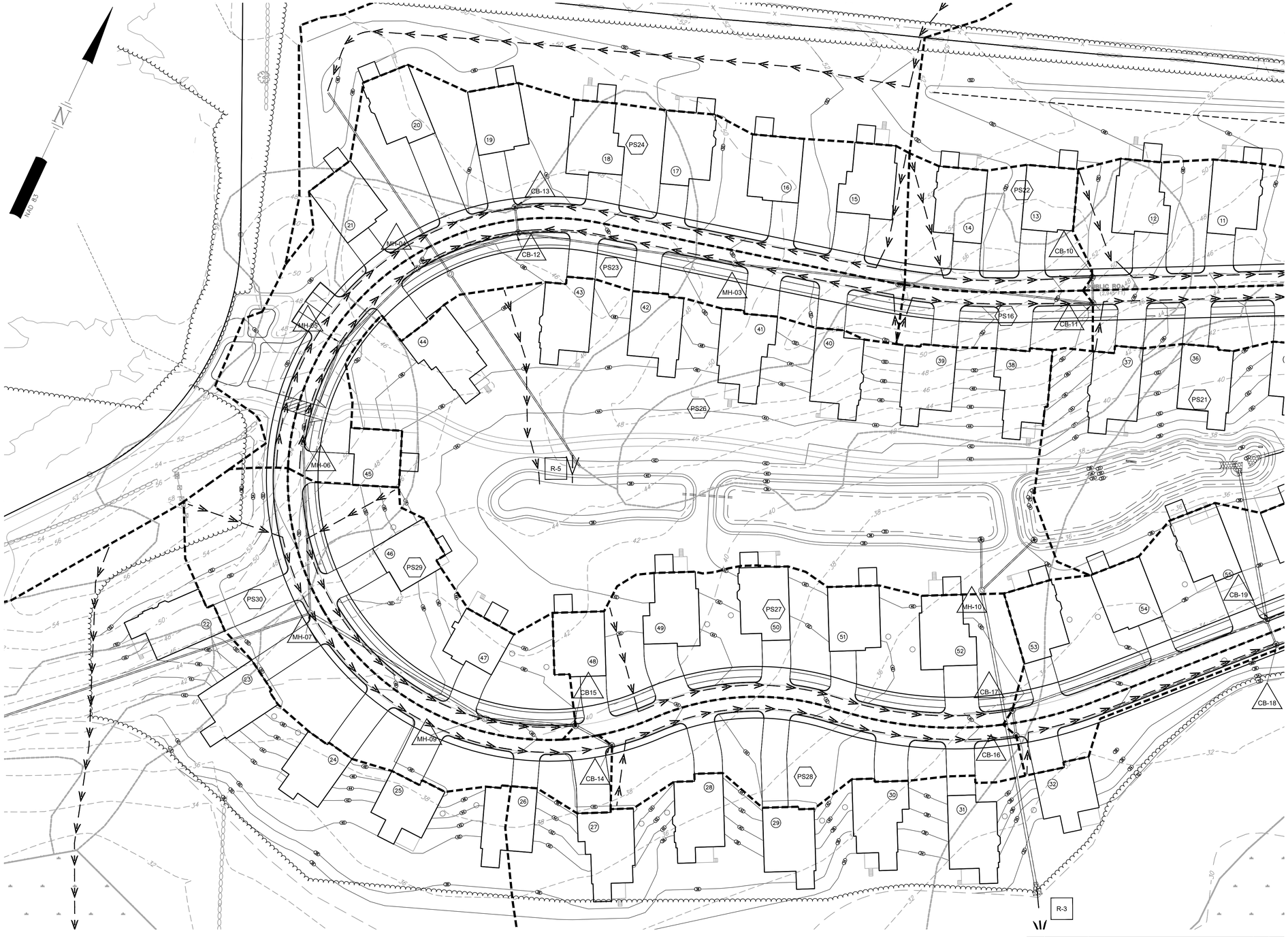

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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 6

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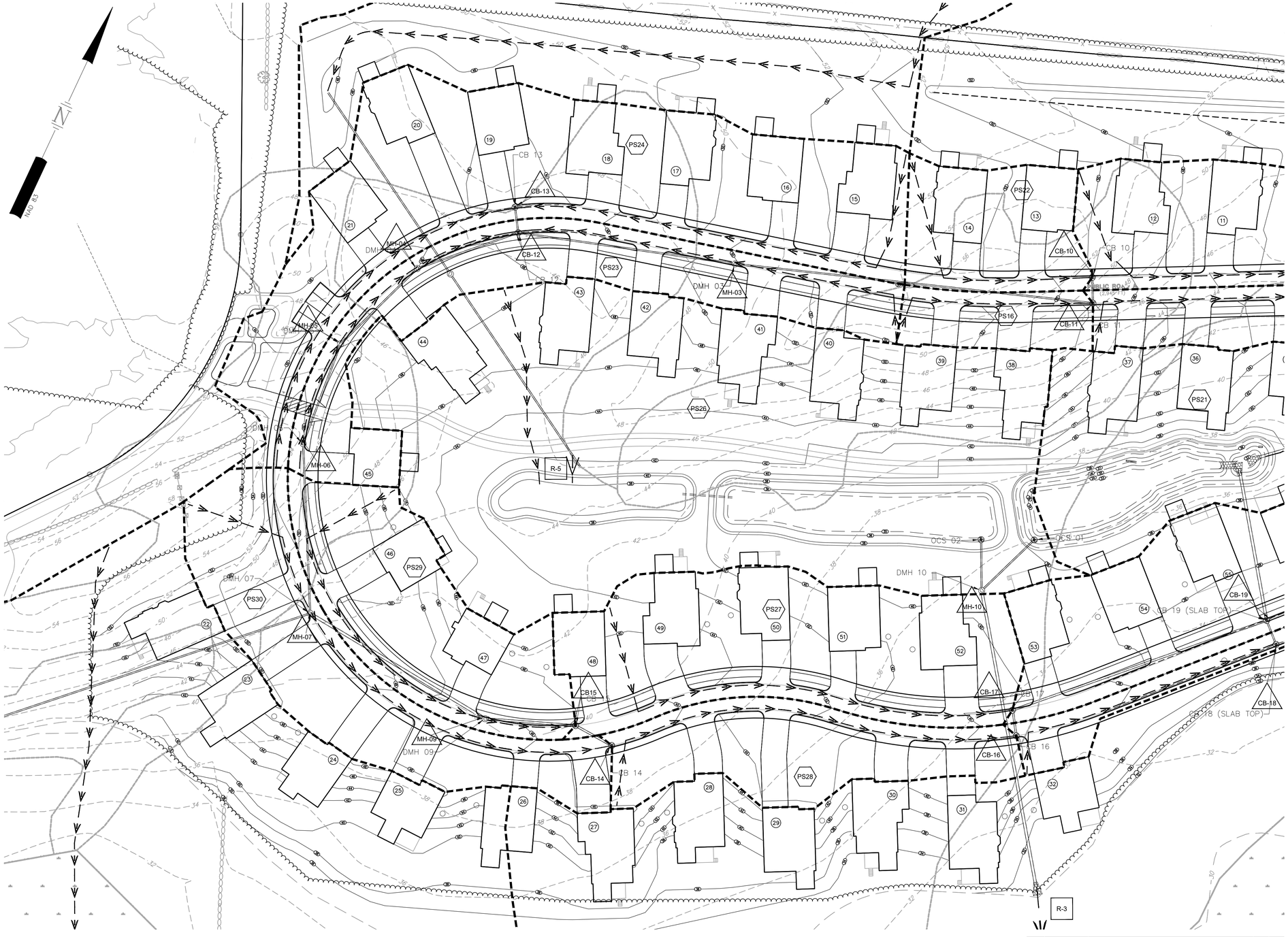

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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 6

POST-DEVELOPEMENT DRAINAGE AREAS

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HORIZONTAL SCALE 1"=150'
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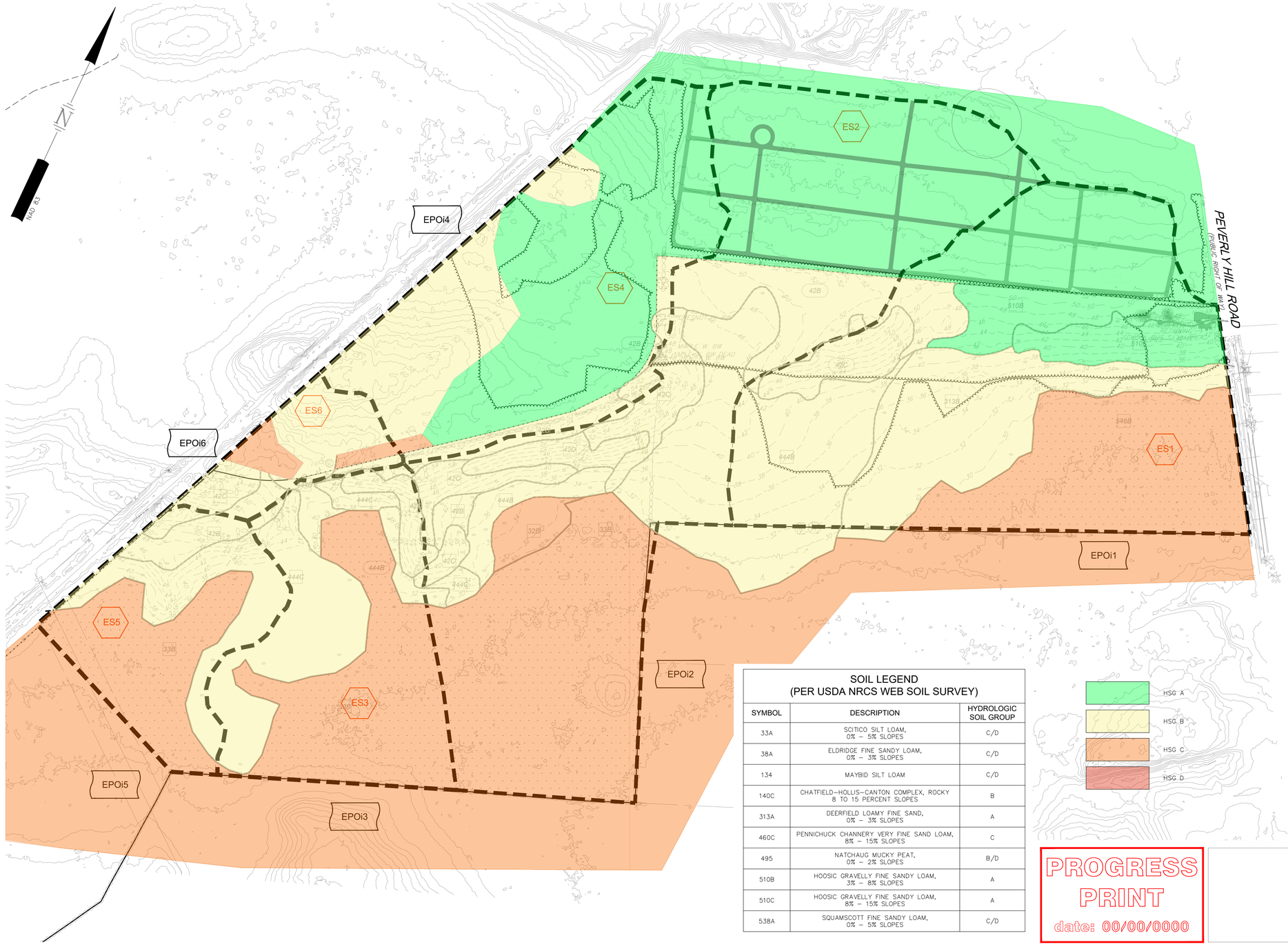

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510	HOOSIC GRAVELLY LOAMY SAND	A
546	WALPOLE SANDY LOAM	C

SUFFIX
B slope = 0–8%
C slope = 8–15%
D slope = 15–25%

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)

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PROGRESS PRINT
date: 00/00/0000

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 6

HYDROLOGIC SOIL GROUPS

PROPOSED OPEN SPACE RESIDENTIAL PUD

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

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SCALE: 1"=1X' (22"X34")

APRIL 19, 2021

HORIZONTAL SCALE 1"=150'
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Job #47388.11

NHDES

Application for Sewer Connection Permit

F O R

Peverly Hill Road Development

Peverly Road
Portsmouth, New Hampshire
Rockingham County

Tax Map 242, Lot 04

June 23, 2021

DRAFT

Dennis Greene
June 23, 2021

Prepared By:

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NEW HAMPSHIRE 200

June 23, 2021

TFM Project No: 47388.11

Dennis Greene, PE
NHDES WWEB
PO Box 95
Concord, NH 03302-0095

Re: Sewer Connection Permit – Peverly Hill Road Portsmouth, NH – Tax Map 242 Lot 4
Peverly Hill Road Development
TFM PIN: 47388.11

Dear Mr. Greene:

On behalf of Green and Company Building and Development Corp., we respectfully submit an Application for Sewer Connection Permit relative to the above referenced project. The following materials are included in this submission:

- Application for Sewer Connection Permit;
- Check for the amount of $2,760.00 for the Sewer Connection Permit;
- Table 1008-1, Unit Design Flow from Pages 47-49 from the NH Code of Administrative Rules, ENV-Wq 1000;
- Calculated Design Sewer Flow
- Full Flow and Approximate Partial Flow Calculations for gravity sewer, Dated April 19, 2021;
- Environmental One Corporation Pressure Sewer Design Analysis for Peverly Hill Road Development;
- Cover Sheet, Existing Conditions, Utility Plans, Sewer Profile and Details of the Site Plan Set titled, “Peverly Hill Road Condominiums; Peverly Hill Road; Tax Map 242, Lot 4; 83 Peverly Hill Road; Portsmouth, New Hampshire; County of Rockingham; Prepared for Green and Company Real Estate. dated April 19, 2021” prepared by TFMoran, Inc.”

This project consists of 56 single unit homes. The homes are serviced by a combination of low-pressure sewers and gravity sewers. 20 of the low-pressure systems discharges into Sewer Manhole 15, after which the flow

becomes gravity. 3 of the low-pressure systems discharges into Sewer Manhole 5, subsequently the flow becomes gravity. The remaining 33 residences are gravity flow.

The proposed project consists of 800 linear feet 2" low-pressure SDR 11 line, 270 linear feet of 1-1/2" low-pressure SDR11 line, 1,789 linear feet of 8" SDR 35 gravity sewer main, 15 proposed sewer manholes and 2 cleanouts for the low-pressure lines.

The City of Portsmouth concurrently reviewing this application. Any revisions based on their comments will be circled on the plans and forwarded to you.

On behalf of our client, we respectfully request review of the application package for approval.

Sincerely,
MSC a division of TFMoran, Inc.

Jack McTigue, PE, CPESC
Project Manager

cc: Rick Green (Green and Company), Michael Green (Green and Company), Jenna Green (Green and Company), and Juliet Walker (City of Portsmouth)

DRAFT

NHDES-W-09-008

APPLICATION FOR SEWER CONNECTION PERMIT
Water Division/Wastewater
Engineering Bureau Design Review Section

RSA/Rule: RSA 485-A:37 / Env-Wq 703.07

TYPE OR PRINT CLEARLY

Use this application for Sewer Connection Permit to request NHDES review/approval for any proposed sewerage design. Under RSAs 485 and 485-A, design plans for new sewerage facilities – whether publicly or privately owned, and regardless of design flow – must be submitted to NHDES for review/approval action at least 30 days prior to construction. Pursuant to Env-Wq 703, design submittals must include 1 set of engineering plans/specifications, pertinent design calculations, the required fee, and a Municipal Certification (signed by an authorized municipal official, see page 2).

1. Engineer of Record - Contact Information		
Engineer / Contact: Jack McTigue, PE	*Company: TFMoran, Inc.*	
Mailing Address: 170 Commerce Way		
Town/City: Portsmouth	*State:* NH	*ZIP:* 03801
Phone Number: (603) 431-2222	*Email: jmctigue@TFMoran.com*	

2. Description of Proposed Work (check all that apply)	
☐	An extension of a collector or interceptor;
☐	A sewage pumping station greater than 50 gpm or serving more than one building;
☒	A proposed sewer that serves more than one building or that requires a manhole at the connection.

Project Name or Description: 56 3-bedroom single family unit resdiential condominium		
Project Location - Street Address: 83 Peverly Hill Road		
Project Location - Town / City: Portsmouth, NH		
Name Of Receiving WWTF: Sewer Division of the Portsmouth NH Department of Public Works		
Average Design Flow (ADF, gal/day): 25,200 GPD		
Proposed Sewer Length (Linear ft)	Pipe Diameter (inches)	Pipe Material
274	1-1/2" Pressure Sewer Services	HDPE SDR-11
820	2" Pressure Sewer Main	HDPE SDR-11
1,696	8" Gravity Sewer	SDR-35

3. Required Fee	
☒	Sewer connection design submittals must be accompanied by a review fee payment based on the project's average design flow - $0.10 per gal/day ("a dime a gallon") for design flows up to 10,000 gal/day, plus $0.05 per gal/day for any flows in excess thereof.
☐	A fee of $200 per plan sheet shall be paid for review of modifications to privately owned pump stations, force mains, interceptors, and wastewater treatment facilities which are not associated with an increase in wastewater flow.
☐	Fees are not required of municipalities for municipal projects.
Fee Enclosed: $2760.00	Please make checks payable to "Treasurer State of NH".

Italics indicate items are optional.

RSA/Rule: RSA 485-A:37 / Env-Wq 703.07

4. Municipal Certification	
On behalf of Peverly Hill Road Condominiums,the Town or City of Portsmouth hereby provides the following municipal certification.	
The municipal sewage collection system and wastewater treatment facilities have been demonstrated, pursuant to Env-Wq 703.07(d), to have adequate processing capability for the proposed added hydraulic flow and organic flow at the time of connection. The proposed sewer connection and/or sewerage design meet with the approval of the local jurisdictional authority.	
Name Of Municipal Official (Project Location):	Title:
Signature:	Date:
Email Address:	
When the Receiving WWTF is in a different Municipality from that of the Project Location, the following additional certification is required.	
Name Of WWTF Official (Host Community):	Title:
Signature:	Date:
Email Address:	

Submit completed application package to:

NHDES Wastewater Engineering Bureau
Design Review Section
29 Hazen Drive
P.O. Box 95
Concord, NH 03302-0095

NOTE: A Separate INDUSTRIAL WASTEWATER INDIRECT DISCHARGE REQUEST (IDR) May be Required For Industrial Waste Contributions, Depending On Quantity And Quality. For Further Information, Contact The Industrial Pretreatment Supervisor Of The Wastewater Engineering Bureau At (603)-271-2052.

Project	**Peverly Hill Rd Condominiums**	Date: 4/9/2021
Location	**Peverly Hill Rd**	
	Portsmouth, NH	

Unit Sewer Flows

Total Number of Units 56

Based on 100% 3 Bedroom Units

3 Bedroom Houses	
Residences Single Family - 2 Bedroom	300
Additional Flow for 1 Additional Bedroom	150
Gallons Perd Day per 3 Bedroom Unit	450

4 Bedroom Houses	
Residences Single Family - 2 Bedroom	300
Additional Flow for 2 Additional Bedroom	300
Gallons Perd Day per 4 Bedroom Unit	600

Design Sewer Flows

	Number of Units	GPD/ Unit	GPD
Number of 3 Bedroom	56	450	25,200
Number of 4 Bedroom	-	600	-
Total Design Flow	56		25,200

State Fee

Cost per GPD	$ 0.10	10,000	$ 1,000.00
In Excess of 10,000 GPD	$ 0.05	15,200	$ 760.00
Pump Station	$200.00	5	$ 1,000.00
Total Cost			$ 2,760.00

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(2) Metered water readings for uses that are as similar as possible to the proposed use, taking into consideration factors such as occupancy and frequency of use, determined as specified in (d), below.

(d) Design flows based on metered water readings shall be calculated:

(1) By finding the average of water meter readings over a period of time that is representative of the volume of water used and multiplying the average by a minimum peaking factor of 2 for commercial light flow or a maximum peaking factor of 3 for commercial heavy flow; or

(2) By measuring not less than 6 months of consecutive daily meter readings, including the month(s) of heaviest use for uses that are seasonal in nature, and using the highest daily flow without application of a peaking factor;

(e) The unit design flow figures referenced in (b) and (c), above, shall be as listed in Table 1008-1, below, subject to (f), below:

Table 1008-1: Unit Design Flow Figures

Use	**Unit Design Flow**
AIRPORTS	5 GPD/Transient plus 10 GPD/Employee
APARTMENTS	See Dwellings
BARS, LOUNGES	See Food Service
BED & BREAKFAST	60 GPD/Guest, based on the greater of 2 guests per room or the actual number of guests the room is designed to accommodate, plus 10 GPD/Employee
BUNKHOUSE	60 GPD/Person
CAMPS:	
Campground with Central Comfort Station	45 GPD/site, plus 20 GPD/Site for the dump station
Recreational Campgrounds with 3-way hookups	60 GPD/Site
Construction Camps	50 GPD/Person
Day Camps (not including meals)	15 GPD/Person
Dining Facility	3 GPD/Person/meal
Residential Youth Recreation Camps	25 GPD/Person plus 3 GPD/Person/meal
CATERERS – Function Rooms	12 GPD/patron
CHURCHES:	
Sanctuary Seating	3 GPD/Seat
Church Suppers	12 GPD/Seat
COUNTRY CLUBS – PRIVATE	
Dining Room	10 GPD/Seat
Snack Bar	10 GPD/Seat
Locker & Showers	20 GPD/Locker
DAY CARE CENTERS	10 GPD/Person
DENTISTS	10 GPD/Chair plus 35 GPD/Staff Member
DOCTOR'S OFFICES	250 GPD/Doctor
DOG KENNELS	50 GPD/Kennel, with one dog per kennel
DWELLINGS:	
Apartment - Studio or One-Bedroom	225 GPD
Apartment - 2 or More Bedrooms	150 GPD/Bedroom
Residence - Single-Family	300 GPD plus 150 GPD for each bedroom over 2
Residence - Duplex	300 GPD plus 150 GPD for each bedroom over 2 for each unit
Rooming House – With Meals	60 GPD/Person
Rooming House – Without Meals	40 GPD/Person
Senior Housing	See Senior Housing

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Sewer Flow Calculations
Peverly Hill Road Condominiums
PIN # 47388.11

6/23/2021

Areas to be filled in are highlighted in yellow

P_f	6	Peak Factor	
I/I	300	gpd/in/mile	5.28E-07 cfs
n_f	0.010	Manning	
k	1.485	Converstion Factor	

Q_{full}	Full Pipe Flow
Q_{cal}	Calculated Flow - Based on Flow Height
Q_{needed}	Required Flow ($Q_{per-use}$+Q_{inf})
Q_{inf}	Flow needed for infiltration
$Q_{per-use}$	Flow Needed Per Use
ΔQ	Difference between Q_{needed} and Q_{cal}

		Flow (cfs)	Flow with Peaking Factor
Residence (4-Bedroom)	600 gpd	0.0009 cfs	0.0056 cfs

V_{cal1}	Velocity from the approximate flow depth
V_{cal2}	Velocity based on the iterative flow depth
K_h	Constant used to calculate the approximate flow depth Based on an approximation method presented by Esen (1993)
y	Depth of flow
∅	Angle of partial flow based on flow depth
A	Area of partial flow
P	Wetted Perimeter
R_h	Hydraulic Radius

TABLE 1 - FULL FLOW AND APPROXIMATE PARTIAL FLOW CALCULATIONS

								Full Flow									Partial Flow				
From	To	Length	Inverts		Slope	Dia		V_{full}	Q_{full}	K_h	∅ full	∅	y/Y	y	A	Units	Q (cfs)			V_{cal1}	Notes
		(ft)	Out	In	(ft/ft)	(in)	(ft)	fps	cfs		rad.	rad.		ft	sf	#	$Q_{per-use}$	Q_{inf}	Q_{needed}	fps	
Pressure Sewer #1																20.00	0.111	0.0000	0.111	NA	Units 23-32, 46-55
PSMH-15	PSMH-14	56	42.90	42.45	0.008	8	0.67	4.03	1.41	0.027	1.89	1.89	0.21	0.14	0.05	2.00	0.011	0.0002	0.123	2.36	Units 22 & 45
PSMH-14	PSMH-13	83	42.35	41.90	0.005	8	0.67	3.31	1.16	0.033	1.99	1.99	0.23	0.15	0.06	0.00	0.000	0.0004	0.123	2.07	
PSMH-13	PSMH-12	83	41.80	41.35	0.005	8	0.67	3.31	1.16	0.033	1.99	1.99	0.23	0.15	0.06	0.00	0.000	0.0004	0.123	2.07	
PSMH-12	PSMH-11	83	41.25	40.80	0.005	8	0.67	3.31	1.16	0.038	2.06	2.06	0.24	0.16	0.07	3.00	0.017	0.0004	0.141	2.16	Units 20-21 & 44
PSMH-11	PSMH-10	83	40.70	40.25	0.005	8	0.67	3.31	1.16	0.039	2.08	2.08	0.25	0.16	0.07	1.00	0.006	0.0004	0.146	2.19	Unit 19
PSMH-10	PSMH-9	244	40.15	38.90	0.005	8	0.67	3.22	1.12	0.053	2.25	2.25	0.28	0.19	0.08	8.00	0.045	0.0010	0.192	2.35	Units 15-18 & 40-43
PSMH-9	PSMH-8	108	38.80	38.25	0.005	8	0.67	3.21	1.12	0.057	2.29	2.29	0.29	0.20	0.09	2.00	0.011	0.0005	0.204	2.39	Units 14 & 39
PSMH-8	PSMH-7	222	38.15	37.05	0.005	8	0.67	3.17	1.11	0.069	2.41	2.41	0.32	0.21	0.10	7.00	0.039	0.0009	0.244	2.51	Units 10-13 & 36-38
PSMH-7	PSMH-6	78	36.95	36.55	0.005	8	0.67	3.22	1.12	0.069	2.42	2.42	0.32	0.22	0.10	1.00	0.006	0.0003	0.249	2.56	Unit 35
PSMH-6	PSMH-5	79	36.45	36.05	0.005	8	0.67	3.21	1.12	0.073	2.45	2.45	0.33	0.22	0.10	2.00	0.011	0.0003	0.261	2.59	Units 8-9
Pressure Sewer #2																3.00	0.017	0.0000	0.017	NA	Units 56 and 33-34
PSMH-5	PSMH-4	132	35.95	35.40	0.005	8	0.67	3.02	1.05	0.007	1.34	1.34	0.11	0.07	0.02	1.00	0.006	0.0006	0.023	1.13	Units 7
PSMH-4	PSMH-3	161	35.30	34.70	0.005	8	0.67	3.02	1.05	0.012	1.54	1.54	0.14	0.09	0.03	3.00	0.017	0.0007	0.040	1.35	Units 4-6
PSMH-3	PSMH-2	223	34.60	33.65	0.005	8	0.67	3.02	1.05	0.017	1.68	1.68	0.17	0.11	0.04	3.00	0.017	0.0009	0.058	1.52	Units 1-3
PSMH-2	PSMH-1	47	33.55	33.35	0.005	8	0.67	3.02	1.05	0.017	1.68	1.68	0.17	0.11	0.04	0.00	0.000	0.0002	0.058	1.52	
PSMH-1	SMH-E1	107	33.25	32.80	0.005	8	0.67	3.02	1.05	0.017	1.69	1.69	0.17	0.11	0.04	0.00	0.000	0.0005	0.059	1.52	

Environment One Corporation

Pressure Sewer Preliminary

Cost and Design Analysis

For

Peverly Hill Road Condominiums
Peverly Hill Road

Prepared For:
TFMoran
170 Commerce Way - Suite 102
Portsmouth NH 03801
Tel: (603) 431-2222
Fax:
Prepared By: Jack McTigue
April 19, 2021

Peverly Hill Road Condominiums
Peverly Hill Road

Prepared by : Jack McTigue **On:** April 19, 2021

Notes :
Two Zones

Zone 1 - Units Units 22-32, 46-55 - Connecting to MH-09

Zone 2 - Units 56 and 33-34 - Connecting to MH-03

<<<<< E N D O F N O T E S >>>>>

PRELIMINARY PRESSURE SEWER - PIPE SIZING AND BRANCH ANALYSIS

Prepared By:
Jack McTigue

Peverly Hill Road Condominiums
Peverly Hill Road

April 19, 2021

Zone Number	Connects to Zone	Number of Pumps in Zone	Accum Pumps in Zone	Gals/day per Pump	Max Flow Per Pump (gpm)	Max Sim Ops	Max Flow (GPM)	Pipe Size (inches)	Max Velocity (FPS)	Length of Main this Zone	Friction Loss Factor (ft/100 ft)	Friction Loss This Zone	Accum Fric Loss (feet)	Max Main Elevation	Minimum Pump Elevation	Static Head (feet)	Total Dynamic Head (ft)
This spreadsheet was calculated using pipe diameters for: SDR11HDPE											Friction loss calculations were based on a Constant for inside roughness "C" of: 150						
1.00	1.00	21	21	450	11.90	5	59.50	2.00	6.44	820.00	7.51	61.55	61.55	43.20	30.00	13.20	74.75
2.00	2.00	3	3	450	13.90	2	27.80	1.50	4.70	274.00	5.44	14.90	14.90	37.05	30.00	7.05	21.95

Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One.

PRELIMINARY PRESSURE SEWER - ACCUMULATED RETENTION TIME (HR)

Prepared By:
Jack McTigue

Peverly Hill Road Condominiums
Peverly Hill Road

April 19, 2021

Zone Number	Connects to Zone	Accumulated Total of Pumps this Zone	Pipe Size (inches)	Gallons per 100 lineal feet	Length of Zone	Capacity of Zone	Average Daily Flow	Average Fluid Changes per Day	Average Retention Time (Hr)	Accumulated Retention Time (Hr)
This spreadsheet was calculated using pipe diameters for: SDR11HDPE								Gals per Day per Dwelling		450
1.00	1.00	21	2.00	15.40	820.00	126.30	9,450	74.82	0.32	0.32
2.00	2.00	3	1.50	9.85	274.00	27.00	1,350	50.00	0.48	0.48

Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One

E|ONE SPD PUMP PERFORMANCE CURVE

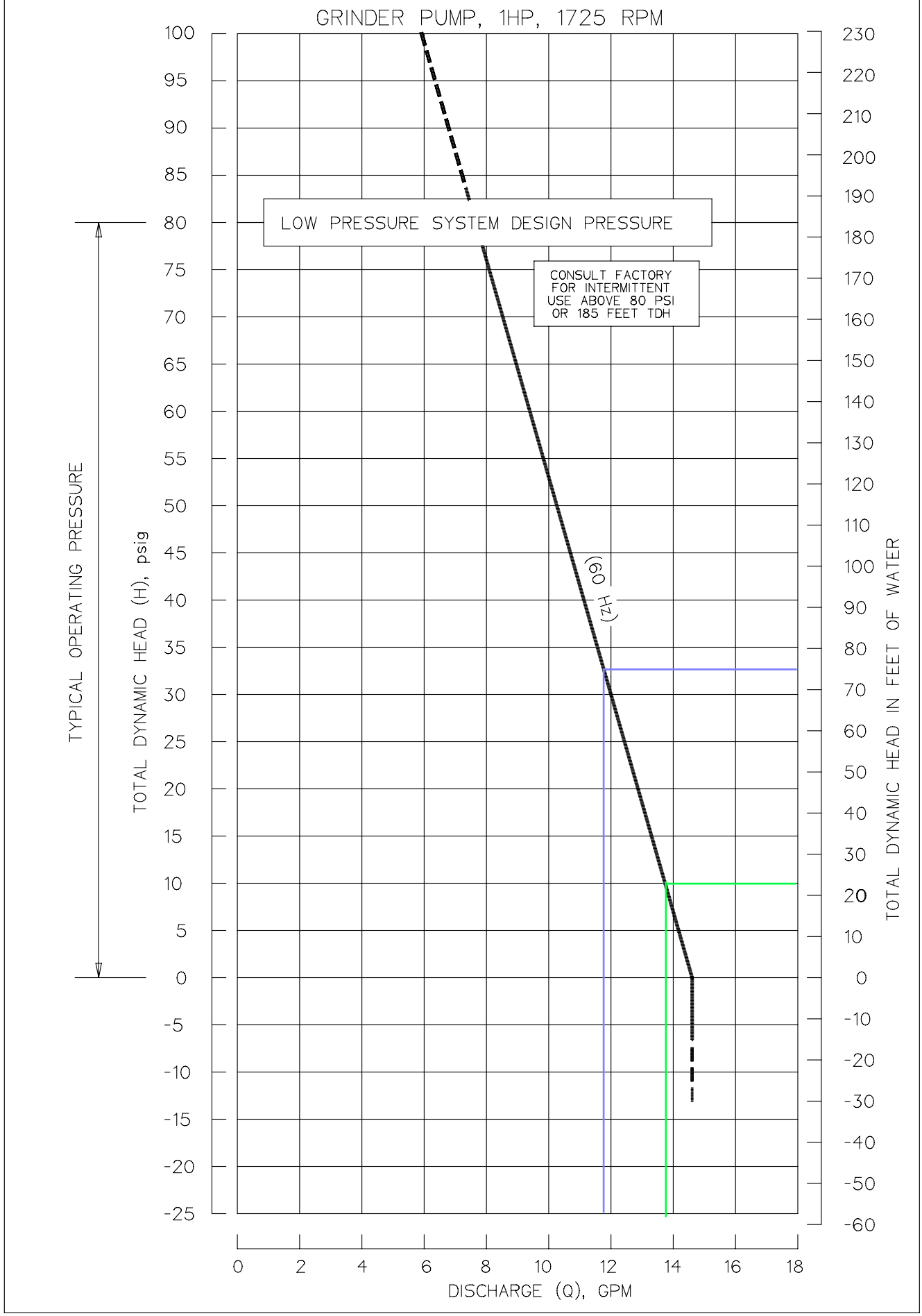

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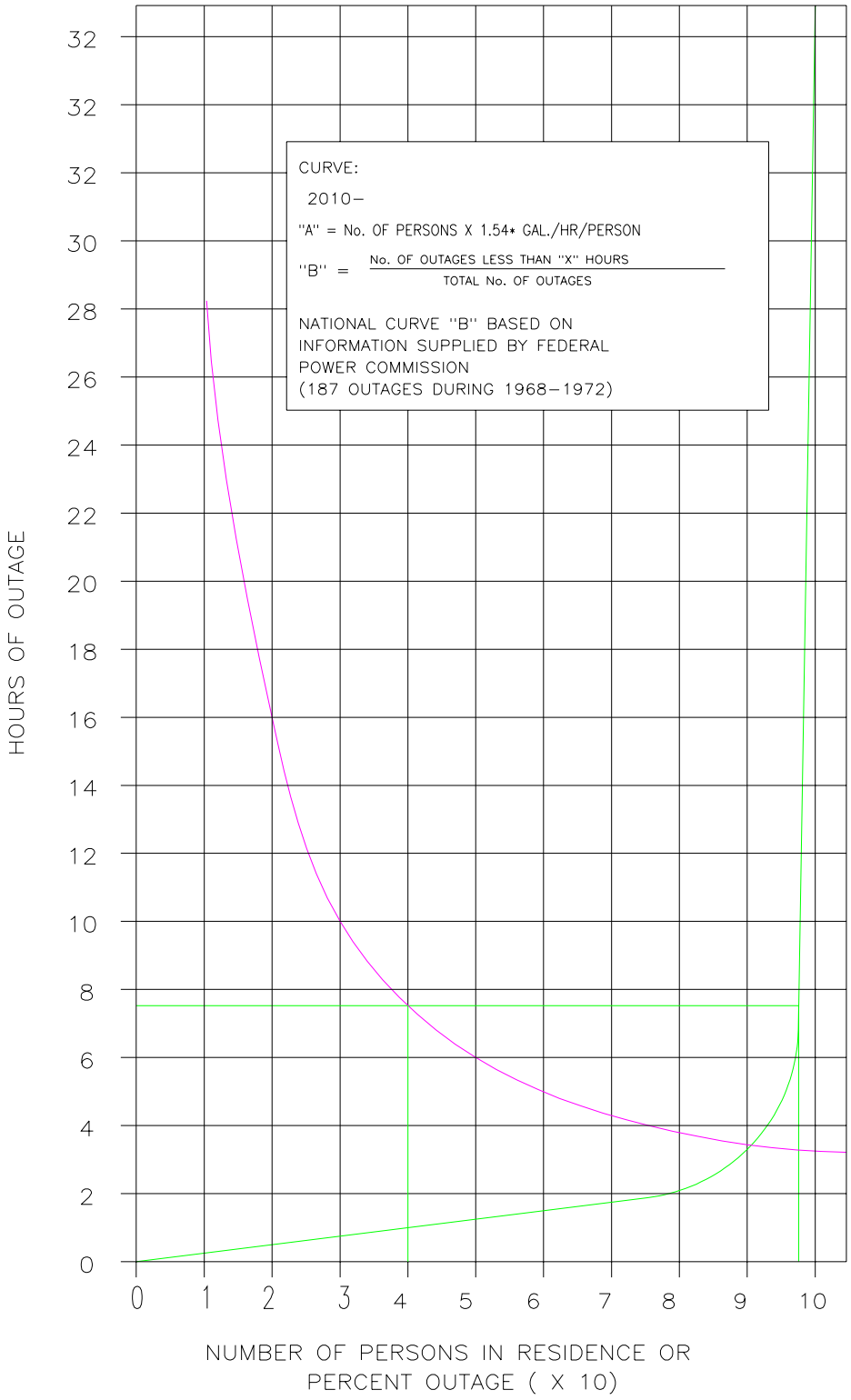
Figure 2

Relationship of GP Storage Capacity to Power Outage Experience



EXAMPLE:

1. GP 2010 INSTALLED
2. FOUR PERSONS IN RESIDENCE
3. FOLLOW VERTICAL LINE 4 UPWARD TO CURVE "A" FOR GP 2010
4. HORIZONTALLY LEFT SHOWS 7–1/2 HOURS OF STORAGE CAPACITY
5. HORIZONTALLY RIGHT TO CURVE "B"
6. VERTICALLY DOWN SHOWS 97% OF THE NATIONS OUTAGES ARE SATISFIED

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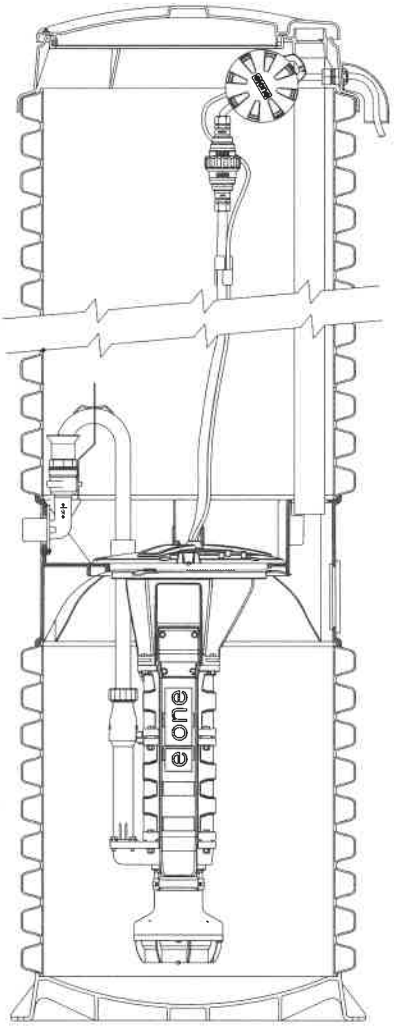
E/ONE EXTREME SERIES

DH071/DR071



General Features

The model DH071 or DR071 grinder pump station is a complete unit that includes: the grinder pump, check valve, HDPE (high density polyethylene) tank, controls, and alarm panel. A single DH071 or DR071 is a popular choice for one, average single-family home and can also be used for up to two average single-family homes where codes allow and with consent of the factory.

- Rated for flows of 700 gpd (2650 lpd)
- 70 gallons (265 liters) of capacity
- Indoor or outdoor installation
- Standard outdoor heights range from 61 inches to 160 inches

The DH071 is the "hardwired," or "wired," model where a cable connects the motor controls to the level controls through watertight penetrations.

The DR071 is the "radio frequency identification" (RFID), or "wireless," model that uses wireless technology to communicate between the level controls and the motor controls.

Operational Information

Motor
1 hp, 1,725 rpm, high torque, capacitor start, thermally protected, 120/240V, 60 Hz, 1 phase

Inlet Connections
4-inch inlet grommet standard for DWV pipe. Other inlet configurations available from the factory.

Discharge Connections
Pump discharge terminates in 1.25-inch NPT female thread. Can easily be adapted to 1.25-inch PVC pipe or any other material required by local codes.

Discharge
15 gpm at 0 psig (0.95 lps at 0 m)
11 gpm at 40 psig (0.69 lps at 28 m)
7.8 gpm at 80 psig (0.49 lps at 56 m)

Accessories

E/One requires that the Uni-Lateral, E/One's own stainless steel check valve, be installed between the grinder pump station and the street main for added protection against backflow.

Alarm panels are available with a variety of options, from basic monitoring to advanced notice of service requirements.

The Remote Sentry is ideal for installations where the alarm panel may be hidden from view.

Patent Numbers: 5,752,315
5,562,254 5,439,180

E/ONE EXTREME SERIES

E/One Sentry™

Alarm Panel — Basic Package

Description

The E/One Sentry panels are custom designed for use with Environment One grinder pump stations. They can be configured to meet the needs of your application, from basic alarm indication to advanced warning of pending service requirements.

E/One Sentry panels are supplied with audible and visual high level alarms. They are easily installed in accordance with relevant national and local codes. Standard panels are approved by UL, CSA, CE and NSF to ensure high quality and safety.

The panel features a corrosion-proof, NEMA 4X-rated, thermoplastic enclosure. A padlock is provided to prevent unauthorized entry (safety front).

Standard Features

Circuit breakers, 240 or 120 VAC service

Terminal blocks and ground lugs

Audible alarm with manual silence

Manual run feature and run indicator

Redundant "Start" function with high level alarm

Conformal-coated alarm board (both sides)

Alarm board overload protection

Optional Features

Contact group (dry, powered and Remote Sentry)

Inner cover (dead front)

Hour meter

Generator receptacle with auto transfer

GFCI

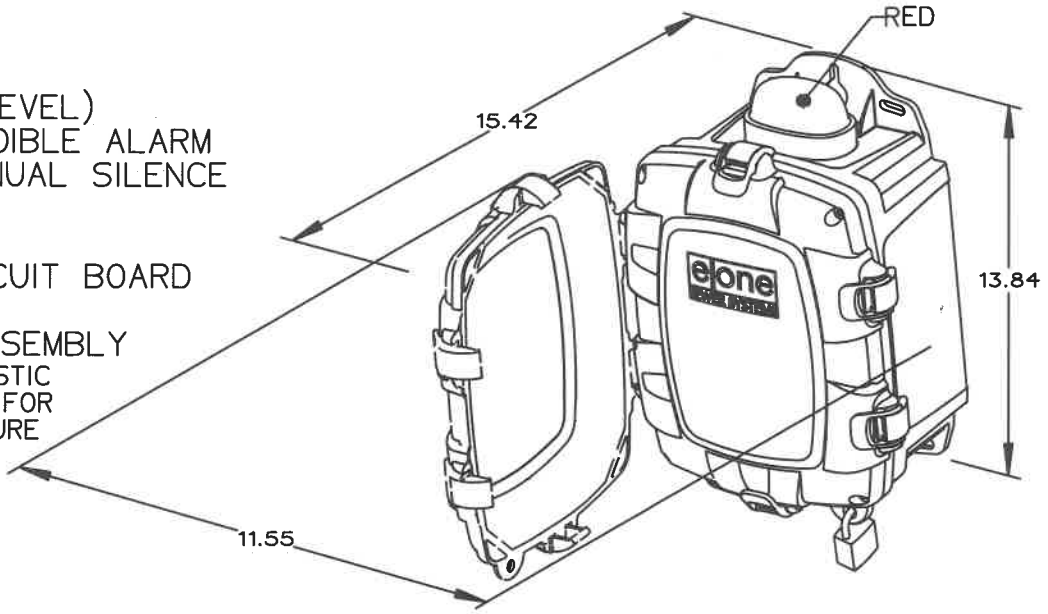
Main service disconnect

Brownout protection

Please consult factory for special applications.

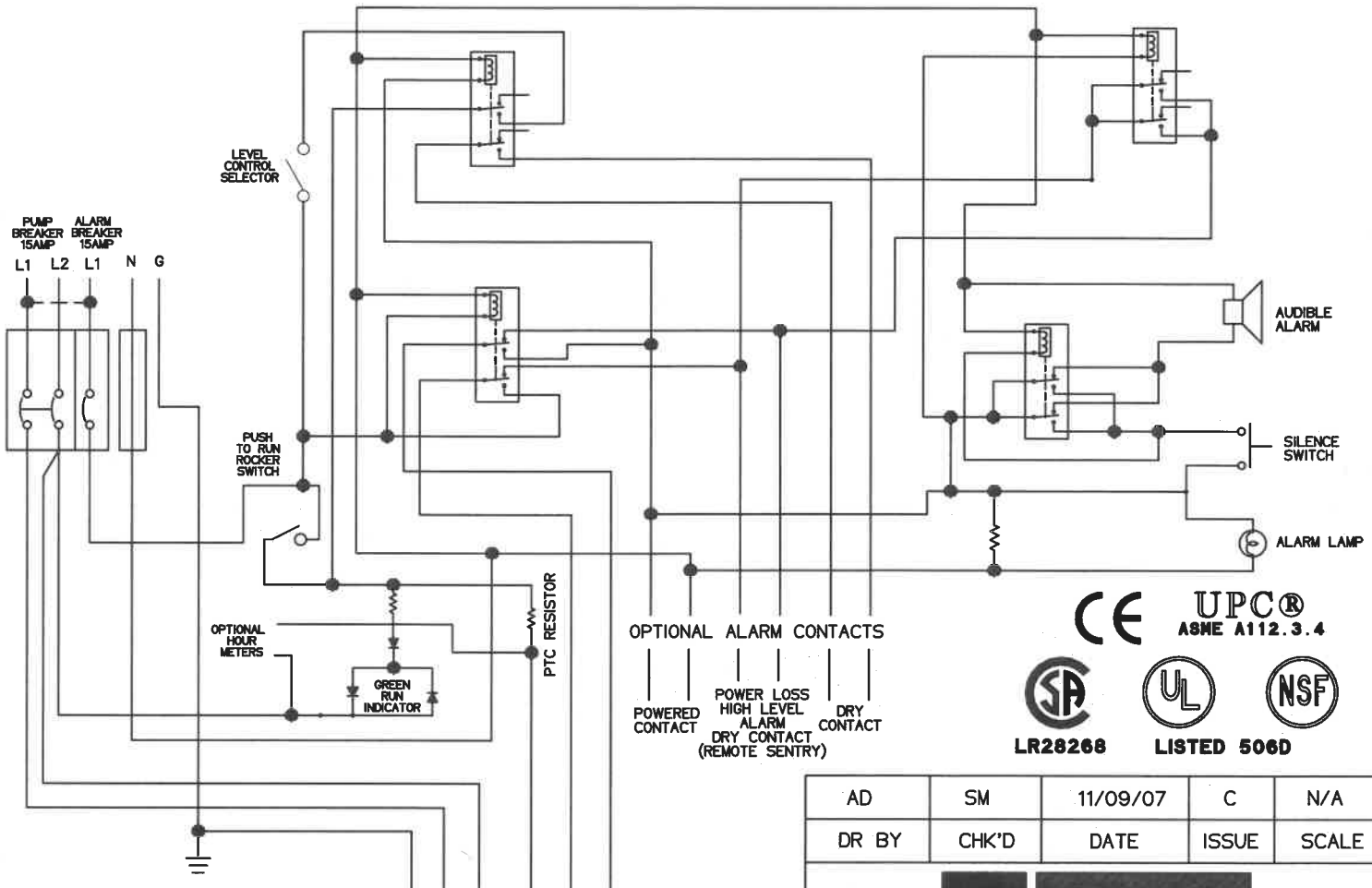
SIMPLEX SENTRY

REDUNDANT RUN (HIGH LEVEL)
EXTERNAL VISUAL & AUDIBLE ALARM
EXTERNAL LATCHING MANUAL SILENCE
MANUAL RUN
PUMP RUN INDICATOR
CONFORMAL COATED CIRCUIT BOARD
PADLOCK
NEMA 4X ENCLOSURE ASSEMBLY
CORROSION PROOF THERMOPLASTIC POLYESTER APPROVED BY UL FOR ELECTRICAL CONTROL ENCLOSURE



OPTIONS:

- ☐ ALARM CONTACTS
- ☐ HOUR METER



CE UPC® ASME A112.3.4

CSA LR28268 UL LISTED 506D NSF

PIN	FUNCTION	2000S	EXTREME
1	MANUAL RUN	RED	BROWN
2	L1	BLACK	RED
3	L2	WHITE	BLACK
4	GND	GREEN	GRN/YEL
5	ALARM FEED	ORANGE	YELLOW
6	ALARM RETURN	BLUE	BLUE

CONTROL CABLE:
TYPE TC: DIRECT BURIAL, 12AWG, SIX CONDUCTOR

AD	SM	11/09/07	C	N/A
DR BY	CHK'D	DATE	ISSUE	SCALE

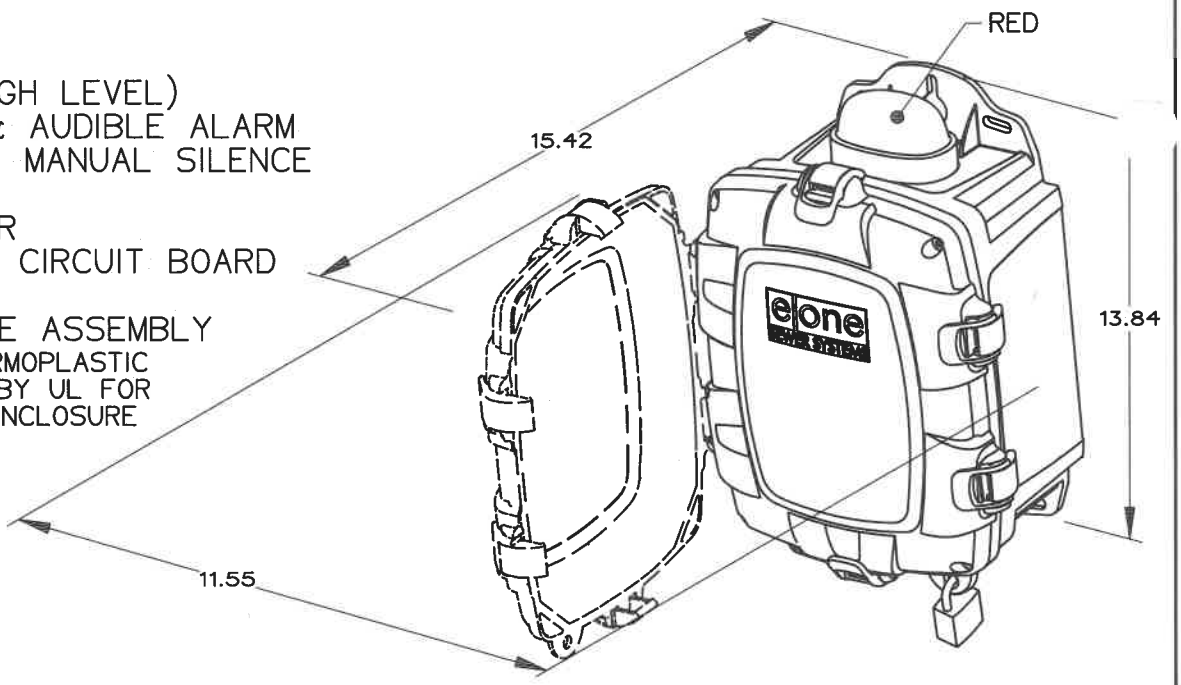
e/one SEWER SYSTEMS

SIMPLEX SENTRY, 240V 60Hz.
DOUBLE POLE POWER

LM000326

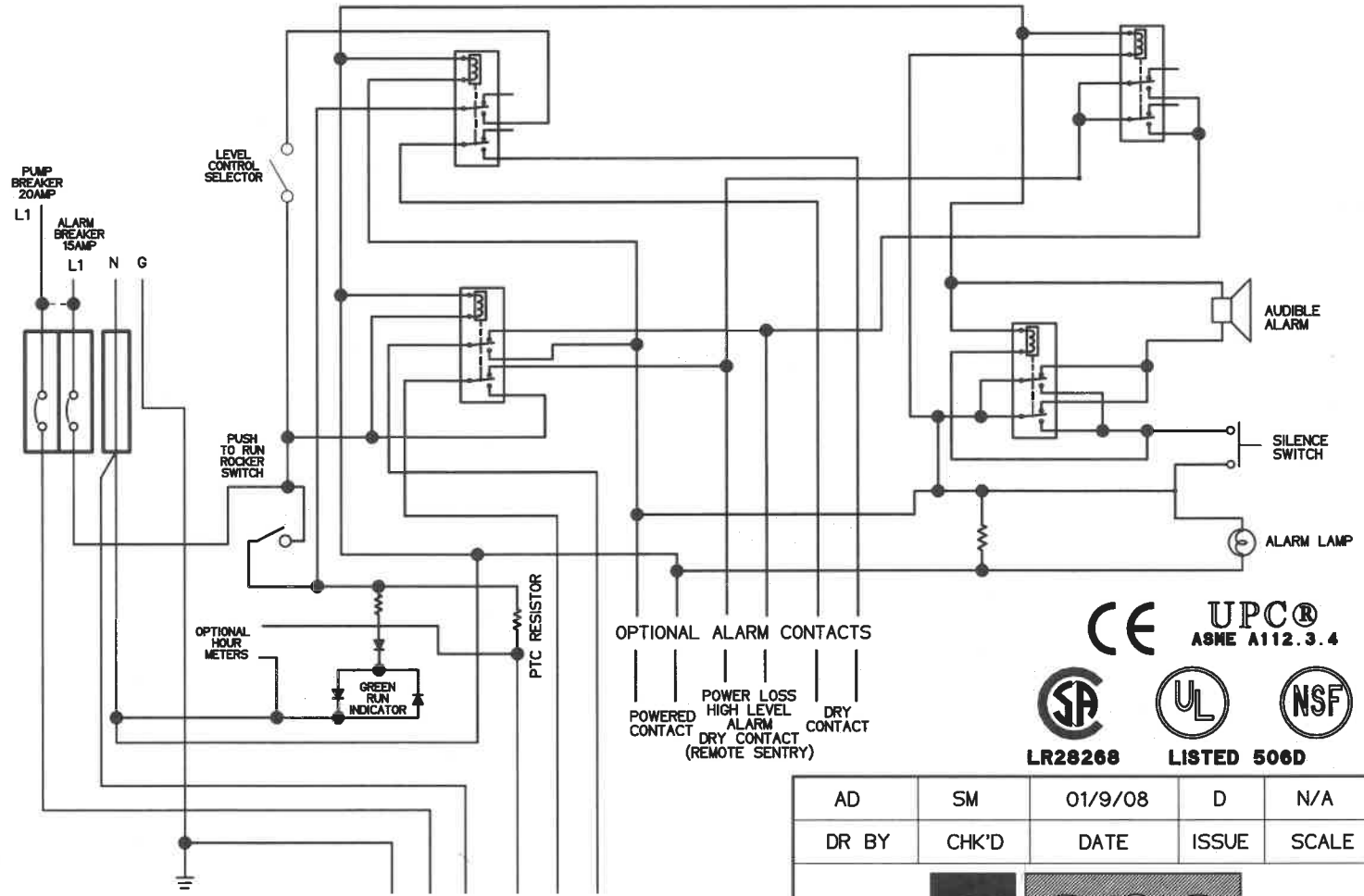
SIMPLEX SENTRY

REDUNDANT RUN (HIGH LEVEL)
EXTERNAL VISUAL & AUDIBLE ALARM
EXTERNAL LATCHING MANUAL SILENCE
MANUAL RUN
PUMP RUN INDICATOR
CONFORMAL COATED CIRCUIT BOARD
PADLOCK
NEMA 4X ENCLOSURE ASSEMBLY
CORROSION PROOF THERMOPLASTIC POLYESTER APPROVED BY UL FOR ELECTRICAL CONTROL ENCLOSURE



OPTIONS:

- ☐ ALARM CONTACTS
- ☐ HOUR METER



CE UPC® ASME A112.3.4

LR28268 LISTED 506D

PIN	FUNCTION	2000S	EXTREME
1	MANUAL RUN	RED	BROWN
2	L1	BLACK	RED
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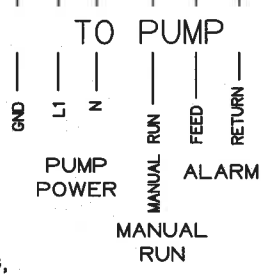
4	GND	GREEN	GRN/YEL
5	ALARM FEED	ORANGE	YELLOW
6	ALARM RETURN	BLUE	BLUE



CONTROL CABLE:
TYPE TC: DIRECT BURIAL, 12AWG, SIX CONDUCTOR

AD	SM	01/9/08	D	N/A
DR BY	CHK'D	DATE	ISSUE	SCALE

e one SEWER SYSTEMS

SIMPLEX SENTRY, 120V 60Hz.
SINGLE POLE POWER

LM000327

Lot 29 - Page Farm - Garage Right - With Sun

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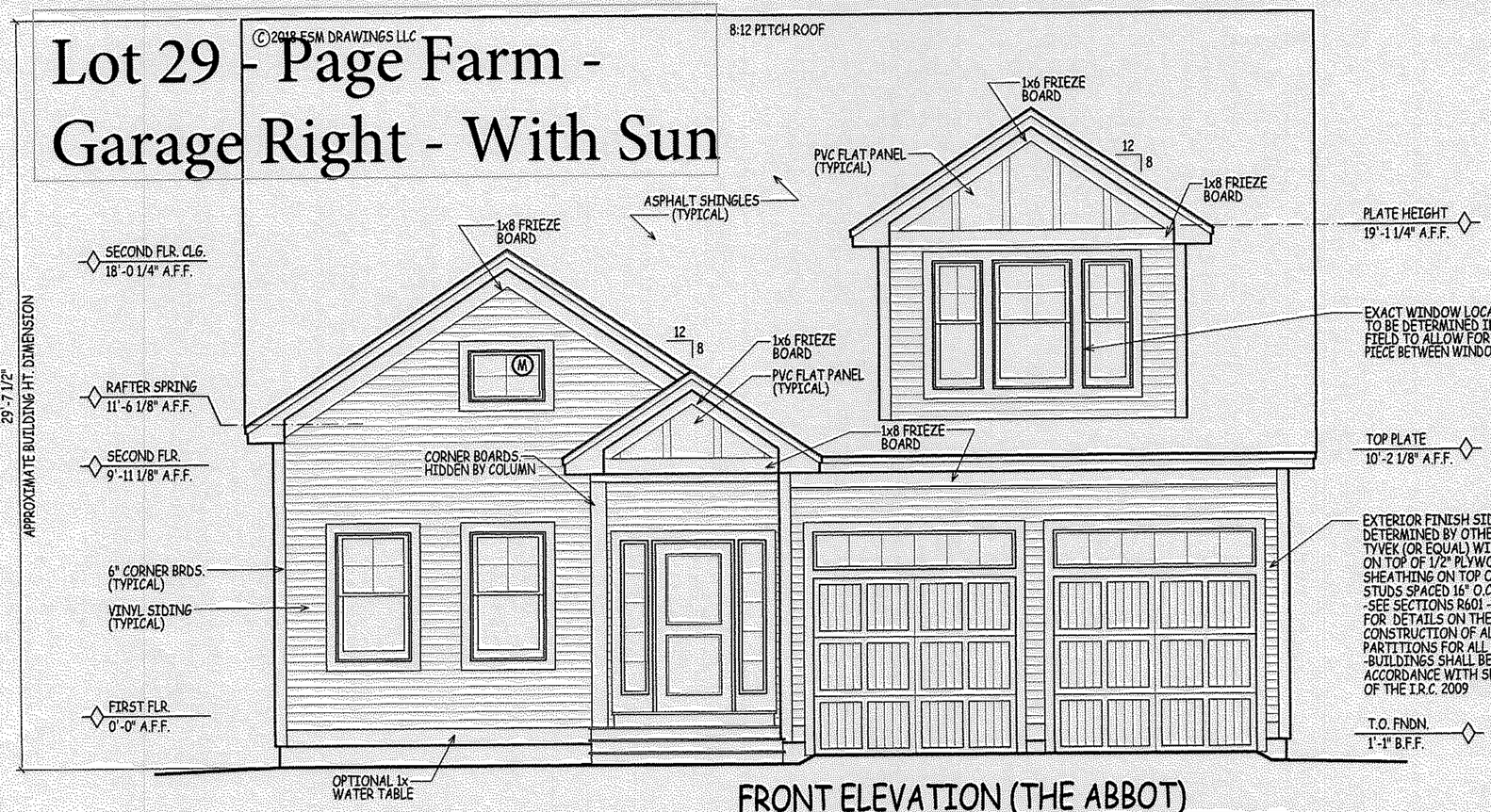
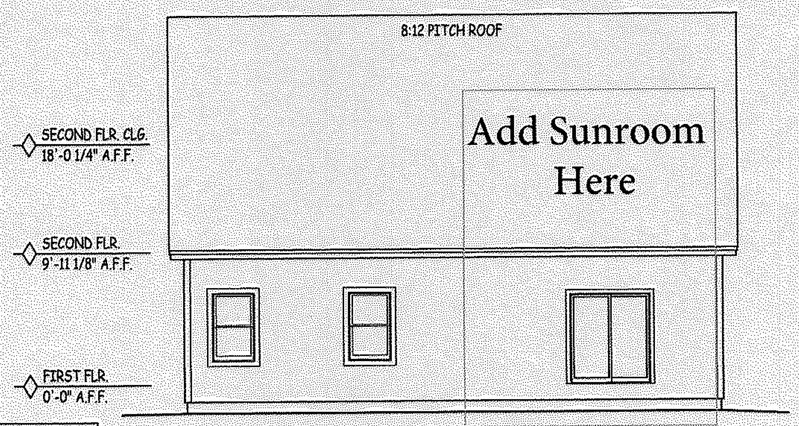


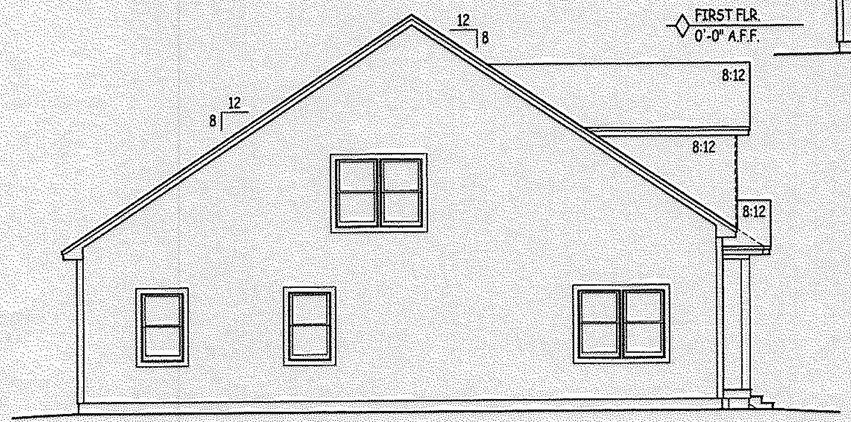
FRONT ELEVATION (THE ABBOT)

SCALE: 1/4" = 1'-0"



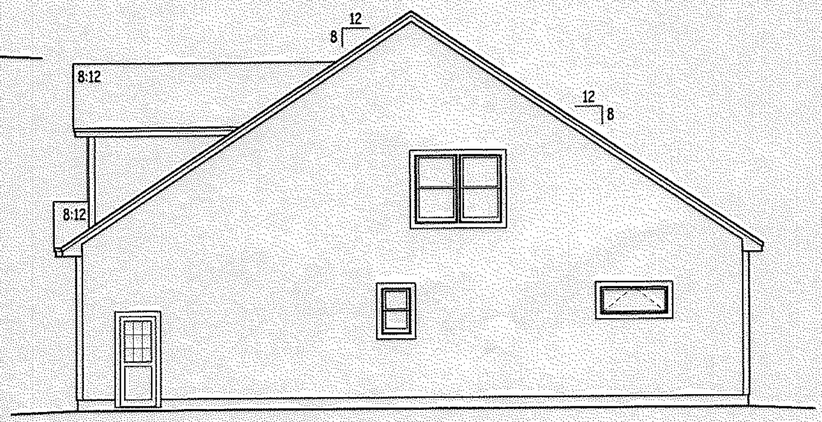
REAR ELEVATION

SCALE: 1/8" = 1'-0"



LEFT ELEVATION

SCALE: 1/8" = 1'-0"



RIGHT ELEVATION

SCALE: 1/8" = 1'-0"

NOTES:
1. DECK(S) NOT SHOWN FOR CLARITY - CONSULT CONTRACTOR IN FIELD FOR EXACT SIZE & LOCATION
2. REFER TO FLOOR PLANS FOR EXACT LOCATION OF WINDOWS & DOORS - DO NOT SCALE FROM ELEVATIONS

NOTE:
THESE ELEVATIONS TO BE USED WITH FLOOR PLANS SHEET 2a & 3a.

EGRESS NOTE:
AT LEAST ONE WINDOW PER SLEEPING ROOM TO MEET MINIMUM LOCAL, STATE, AND NATIONAL REQUIREMENTS OF NET CLEAR OPENING WIDTH, HEIGHT, AREA AND SILL HEIGHT FOR EGRESS -
IN DWELLING UNITS, WHERE THE OPENING OF AN OPERABLE WINDOW IS LOCATED MORE THAN 72" ABOVE FINISHED GRADE OR SURFACE BELOW, THE LOWEST PART OF THE CLEAR OPENING OF THE WINDOW SHALL BE A MINIMUM OF 24" ABOVE THE FINISHED FLOOR IN WHICH THE WINDOW IS LOCATED (REFER TO SECTION R612.2 OF THE I.R.C. 2009)

REFER TO SECTIONS R612.2 FOR WINDOW SILL HEIGHT ABOVE GROUND (OR SURFACE BELOW) AND TO SECTION 310 FOR EGRESS WINDOWS & BASEMENTS PRIOR TO PLACING WINDOW ORDER

REFER TO SECTION 311 FOR MEANS OF EGRESS PRIOR TO ORDERING DOORS

NOTE:
PLANS DESIGNED TO THE 2009 INTERNATIONAL RESIDENTIAL CODE.

ADMISSION OF ERROR, OMISSION AND/OR OVERSIGHT:
WHILE IT IS OUR INTENT TO DELIVER OUR SERVICES FREE OF ERROR, OMISSION OR OVERSIGHT, WE WILL ADMIT TO BE HUMAN, AND, THEREFORE, FSM DRAWINGS, LLC ASSUMES SOLELY CONTRACTOR USING THESE PLANS TO THOROUGHLY REVIEW THEM FOR DIMENSIONAL ACCURACY, COMPLETENESS AND APPROPRIATENESS. THE CONTRACTOR USING THESE PLANS ASSUMES ALL RESPONSIBILITY FOR THEM AND WILL BE HEREBY DEEMS NECESSARY BEFORE ANY BID OR BUILDING. WE ENCOURAGE TO ASSIST IN THE REVIEW.

FSM DRAWINGS
27 Lowell Street, Suite 102, Manchester, New Hampshire 03101
T: (603) 836-0800 www.fsmdrawings.com

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PROJECT: THE ABBOT
PAGE FARM - ATKINSON, NH

PREPARED FOR: GREEN & CO

DRAWN BY:	MM/JW
CHECKED BY:	MM
DATE DRAWN:	09/06/18
DATE ISSUED:	09/06/18
SCALE:	AS INDICATED
JOB NO.:	FSM17-206CA

REVISIONS

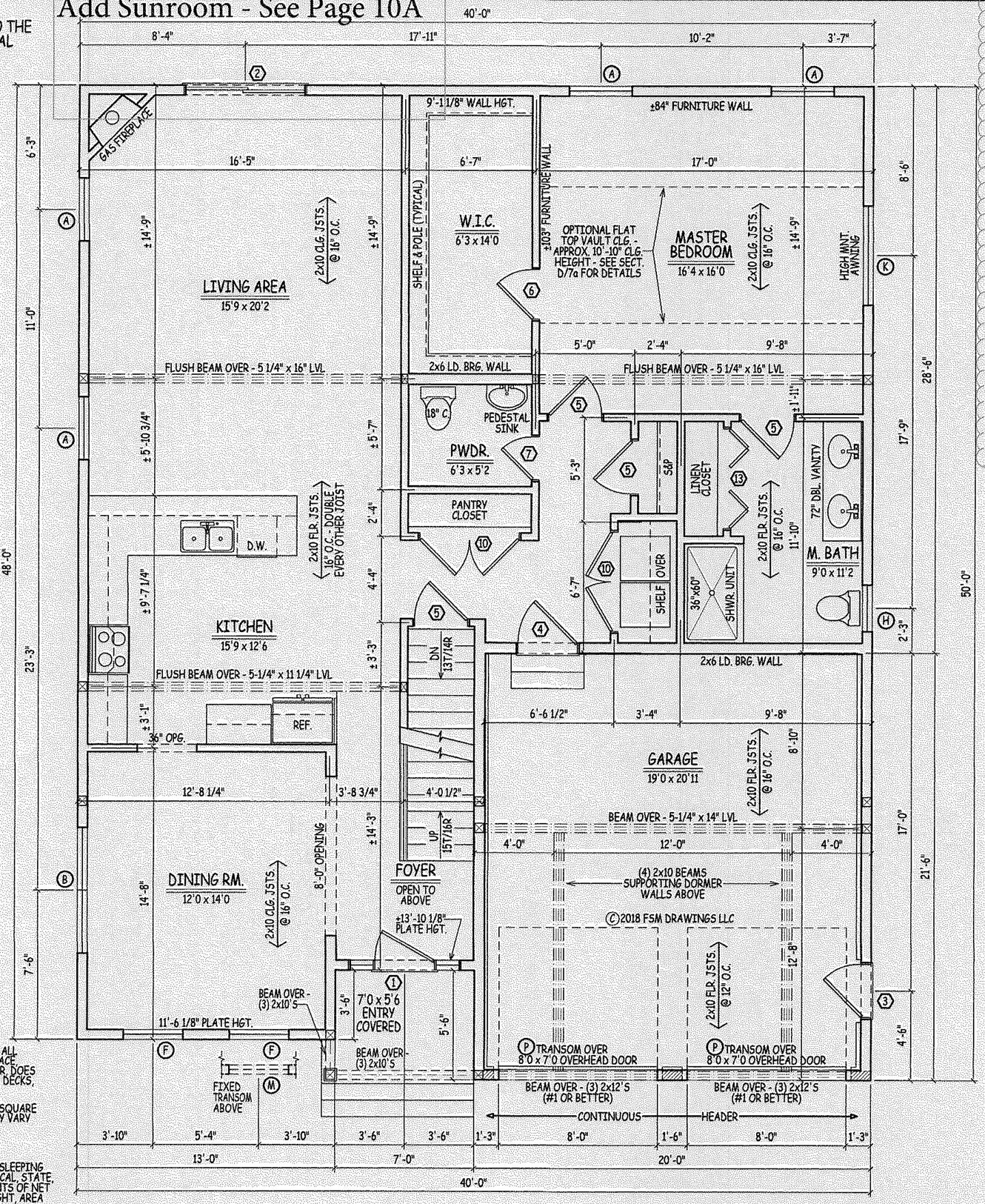
16	08/27/18	THE CALLAWAY & RILEY REVISED PER REQUEST - ISSUED FOR REVIEW AND STAMP
17	09/06/18	BEAM LOCATION UPDATED ON THE ABBOT - ISSUED FOR REVIEW AND STAMP
13	08/03/18	THE CALLAWAY REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP
14	08/15/18	THE RILEY REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP
15	08/15/18	THE ABBOT REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP

1a

Lot 29 Page Farm (Abbot w/Sun, Garage Right)

NOTE:
PLANS DESIGNED TO THE 2009 INTERNATIONAL RESIDENTIAL CODE.

Add Sunroom - See Page 10A



FIRST FLOOR PLAN

APPROX. 1,515 S.F.

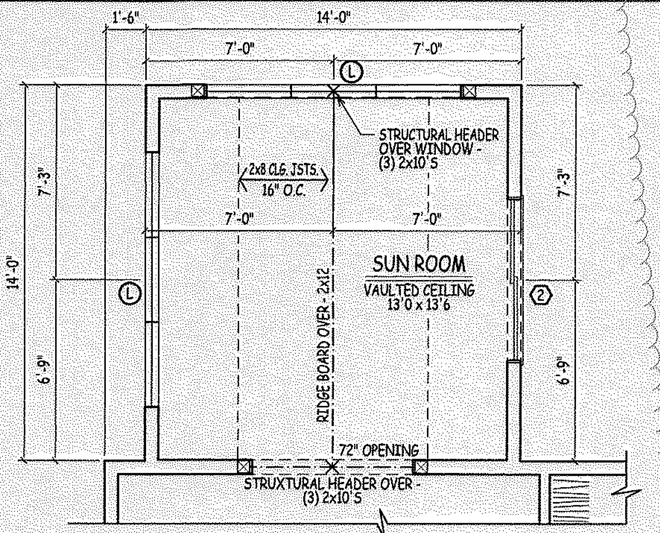
SCALE: 1/4" = 1'-0"

NOTE:
SQUARE FOOTAGE INCLUDES ALL WALL STRUCTURE, LIVING SPACE, CLOSETS, & STAIRS, HOWEVER, DOES NOT INCLUDE GARAGE SPACE, DECKS, OR PATIO'S.

TAKE NOTE THAT BUILDER'S SQUARE FOOTAGE CALCULATIONS MAY VARY FROM DRAFTER'S.

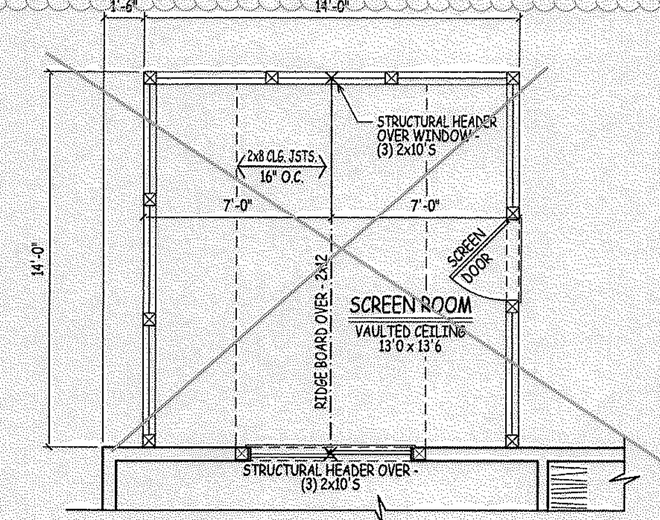
EGRESS NOTE:
AT LEAST ONE WINDOW PER SLEEPING ROOM TO MEET MINIMUM LOCAL, STATE, AND NATIONAL REQUIREMENTS OF NET CLEAR OPENING WIDTH, HEIGHT, AREA AND SILL HEIGHT FOR EGRESS - IN DWELLING UNITS, WHERE THE OPENING OF AN OPERABLE WINDOW IS LOCATED MORE THAN 72" ABOVE FINISHED GRADE OR SURFACE BELOW, THE LOWEST PART OF THE CLEAR OPENING OF THE WINDOW SHALL BE A MINIMUM OF 24" ABOVE THE FINISHED FLOOR IN WHICH THE WINDOW IS LOCATED (REFER TO SECTION R612.2 OF THE I.R.C. 2009)

NOTE:
THIS FLOOR PLAN TO BE USED WITH SECOND FLOOR PLAN SHEET 3a.



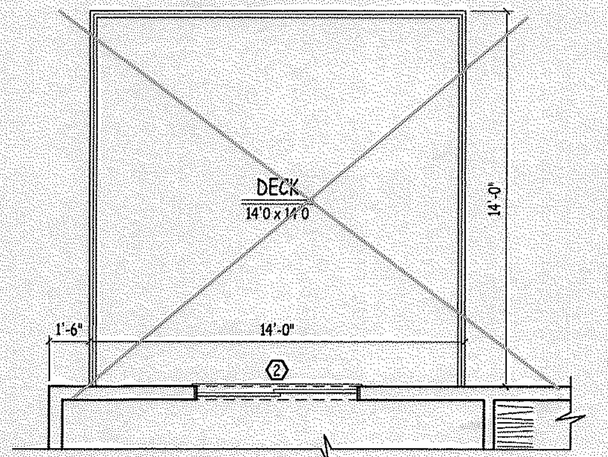
SUN ROOM OPTION

SCALE: 1/4" = 1'-0"



SCREEN ROOM OPTION

SCALE: 1/4" = 1'-0"



DECK OPTION

SCALE: 1/4" = 1'-0"

ADMISSION OF ERROR, OMISSION AND/OR OVERSIGHT:
WHILE IT IS OUR INTENT TO DELIVER OUR SERVICES FREE OF ERROR, OMISSION OR OVERSIGHT, WE WILL ADMIT TO BE HUMAN AND THEREFORE CAPABLE OF SUCH. WE HAVE EMPLOYED THE COMPETENT PROFESSIONALS TO DRAW THESE PLANS AND WILL HELP THE CONTRACTOR IN ANY WAY POSSIBLE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO THOROUGHLY REVIEW THEM FOR DIMENSIONAL ACCURACY, COMPLETENESS AND APPROPRIATENESS. THE CONTRACTOR USING THESE PLANS ASSUMES ALL RESPONSIBILITY FOR THEM AND WILL HIRE ONLY ASSISTANCE FROM QUALIFIED PROFESSIONALS TO ASSIST IN THE REVIEW.

FSM DRAWINGS
27 Lowell Street
Manchester, New Hampshire
03101
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www.fsmdrawings.com

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PROJECT:
THE ABBOT
PAGE FARM - ATKINSON, NH

PREPARED FOR:
GREEN & CO.

DRAWN BY:	MM/JW
CHECKED BY:	MM
DATE DRAWN:	09/06/18
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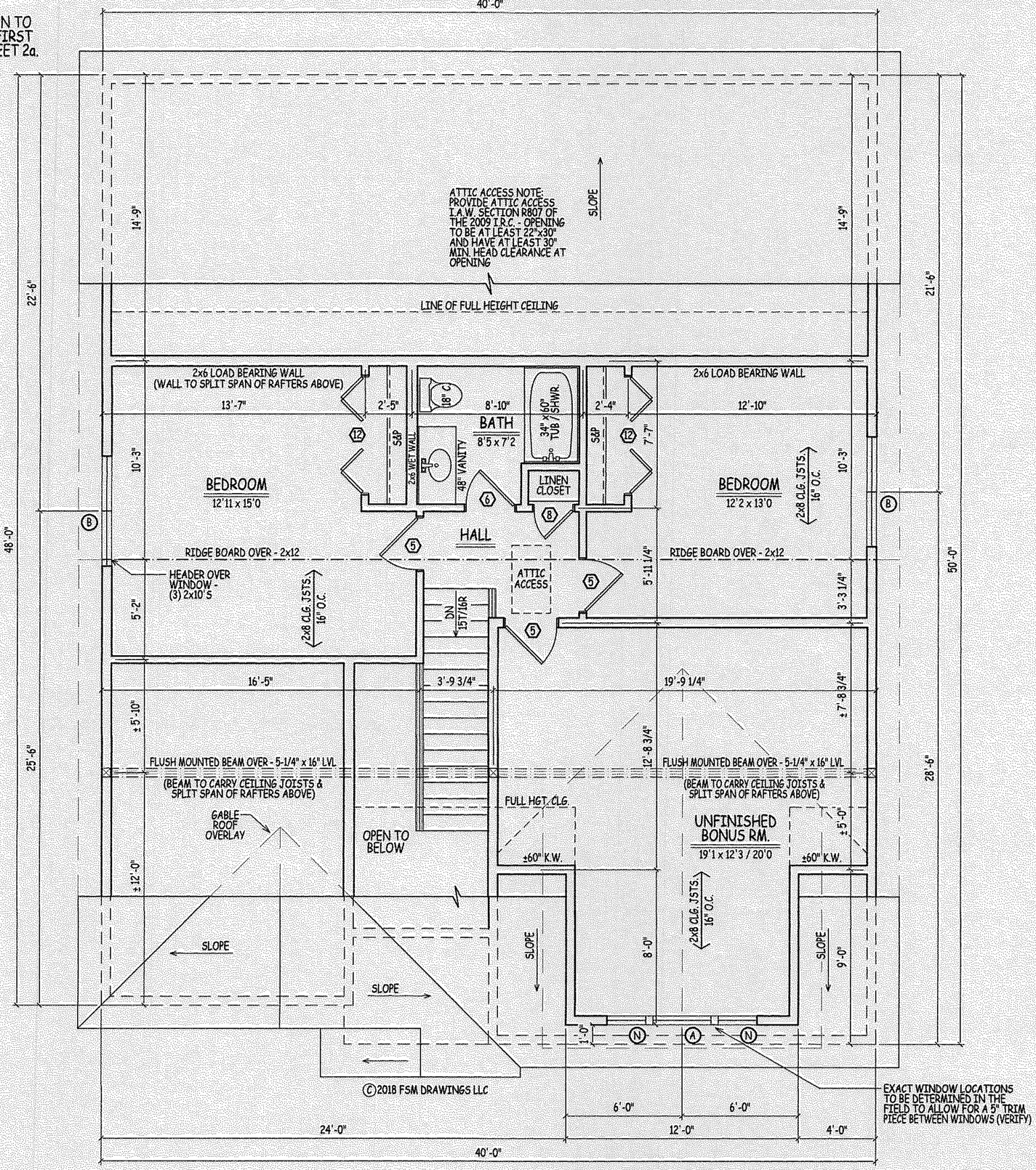
13	08/03/18	THE CALLAWAY REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP
14	08/15/18	THE RILEY REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP
15	08/15/18	THE ABBOT REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP

2a

NOTE:
THIS FLOOR PLAN TO BE USED WITH FIRST FLOOR PLAN SHEET 2a.



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NOTE:
PLANS DESIGNED TO THE 2009 INTERNATIONAL RESIDENTIAL CODE.

SECOND FLOOR PLAN

APPROX. 590 S.F.
(BONUS RM. 330 S.F.)

SCALE: 1/4" = 1'-0"

NOTE:
THESE SCHEDULES ARE TO BE USED WITH FIRST FLOOR PLAN SHEET 2a, & 3a.

DOOR SCHEDULE

MARK	QTY	SIZE	RSO	NOTES
1		3'-0" x 6'-8"		EXT. ENTRY DOOR W/ SIDELITES
2		6'-0" x 6'-8"		EXT. GLASS SLIDER
3		2'-8" x 6'-8"		EXT. 9-LITE
4		3'-0" x 6'-8"		FIRE RATED DOOR
5		2'-8" x 6'-8"		INTERIOR
6		2'-6" x 6'-8"		INTERIOR
7		2'-4" x 6'-8"		INTERIOR
8		2'-0" x 6'-8"		INTERIOR
9		5'-0" x 6'-8"		INT. DBL. FRENCH DOORS
10		5'-0" x 6'-8"		INT. DBL. DOORS
11		4'-0" x 6'-8"		INT. DBL. DOORS
12		6'-0" x 6'-8"		INT. BI-FOLDS
13		5'-0" x 6'-8"		INT. BI-FOLDS
14		4'-0" x 6'-8"		INT. BI-FOLDS

RSO TO BE DETERMINED BY DOOR MANUFACTURER-
CONTRACTOR TO DETERMINE FINAL DOOR COUNT

WINDOW SCHEDULE

MARK	QTY	UNIT	RSO	NOTES
A		DH3862		DOUBLE HUNG (EGRESS)
B		DH3862-2		2 WIDE DBL. HUNG (EGRESS)
C		DH3462		DOUBLE HUNG
D		DH3462-2		2 WIDE DBL. HUNG
E		DH3469-2		2 WIDE DBL. HUNG
F		DH3662		DOUBLE HUNG
G		DH3442		DOUBLE HUNG
H		DH2842		DOUBLE HUNG
J		C4445		DOUBLE CASEMENT
K		A6024		AWNING WINDOW
L		DH3862-3		3 WIDE DBL. HUNG
M		CF3624		FIXED TRANSOM
N		DH2462		DOUBLE HUNG
P				6-LITE GARAGE DOOR TRANSOM

RSO TO BE DETERMINED BY WINDOW MANUFACTURER-
CONTRACTOR TO DETERMINE FINAL WINDOW COUNT
(NOTE: HARVEY WINDOW (VERIFY SERIES WITH CONTRACTOR) SIZES ARE GIVEN ABOVE ONLY FOR THE PURPOSE OF PROVIDING A REFERENCE FOR COMPARING ROUGH OPENING SIZES WITH ANOTHER MANUFACTURER. CONSULT HOME-OWNER FOR THE EXACT WINDOW MANUFACTURER CHOSEN FOR THIS HOME)

NOTE:
SQUARE FOOTAGE INCLUDES ALL WALL STRUCTURE, LIVING SPACE, CLOSETS, & STAIRS, HOWEVER, DOES NOT INCLUDE GARAGE SPACE, DECKS, OR PATIO'S.

TAKE NOTE THAT BUILDER'S SQUARE FOOTAGE CALCULATIONS MAY VARY FROM DRAFTER'S.

EGRESS NOTE:
AT LEAST ONE WINDOW PER SLEEPING ROOM TO MEET MINIMUM LOCAL, STATE, AND NATIONAL REQUIREMENTS OF NET CLEAR OPENING WIDTH, HEIGHT, AREA AND SILL HEIGHT FOR EGRESS - IN DWELLING UNITS, WHERE THE OPENING OF AN OPERABLE WINDOW IS LOCATED MORE THAN 72" ABOVE FINISHED GRADE OR SURFACE BELOW, THE LOWEST PART OF THE CLEAR OPENING OF THE WINDOW SHALL BE A MINIMUM OF 24" ABOVE THE FINISHED FLOOR IN WHICH THE WINDOW IS LOCATED. (REFER TO SECTION R612.2 OF THE I.R.C. 2009)

ADMISSION OF ERROR, OMISSION AND/OR OVERSIGHT:
WHILE IT IS OUR INTENT TO DELIVER OUR SERVICES FREE OF ERROR, OMISSION OR OVERSIGHT, WE WILL ADMIT TO BE HUMAN, AND THEREFORE FSM DRAWINGS LLC, ACTING SOLELY AS A DESIGNER, ASSUMES NO RESPONSIBILITY FOR ANY CONTRACTOR USING THESE PLANS TO THOROUGHLY REVIEW THEM FOR DIMENSIONAL ACCURACY, COMPLETENESS AND APPROPRIATENESS. THE CONTRACTOR USING THESE PLANS ASSUMES ALL RESPONSIBILITY FOR THEM AND WILL IF HE/SHE DEEMS NECESSARY, HIRE A LICENSED PROFESSIONAL ENGINEER TO ASSIST IN THE REVIEW.

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PROJECT: THE ABBOT
PAGE FARM - ATKINSON, NH

PREPARED FOR: GREEN&CO.

DRAWN BY:	MM/JW
CHECKED BY:	MM
DATE DRAWN:	09/06/18
DATE ISSUED:	09/06/18
SCALE:	AS INDICATED
JOB NO.:	FSM17-206CA

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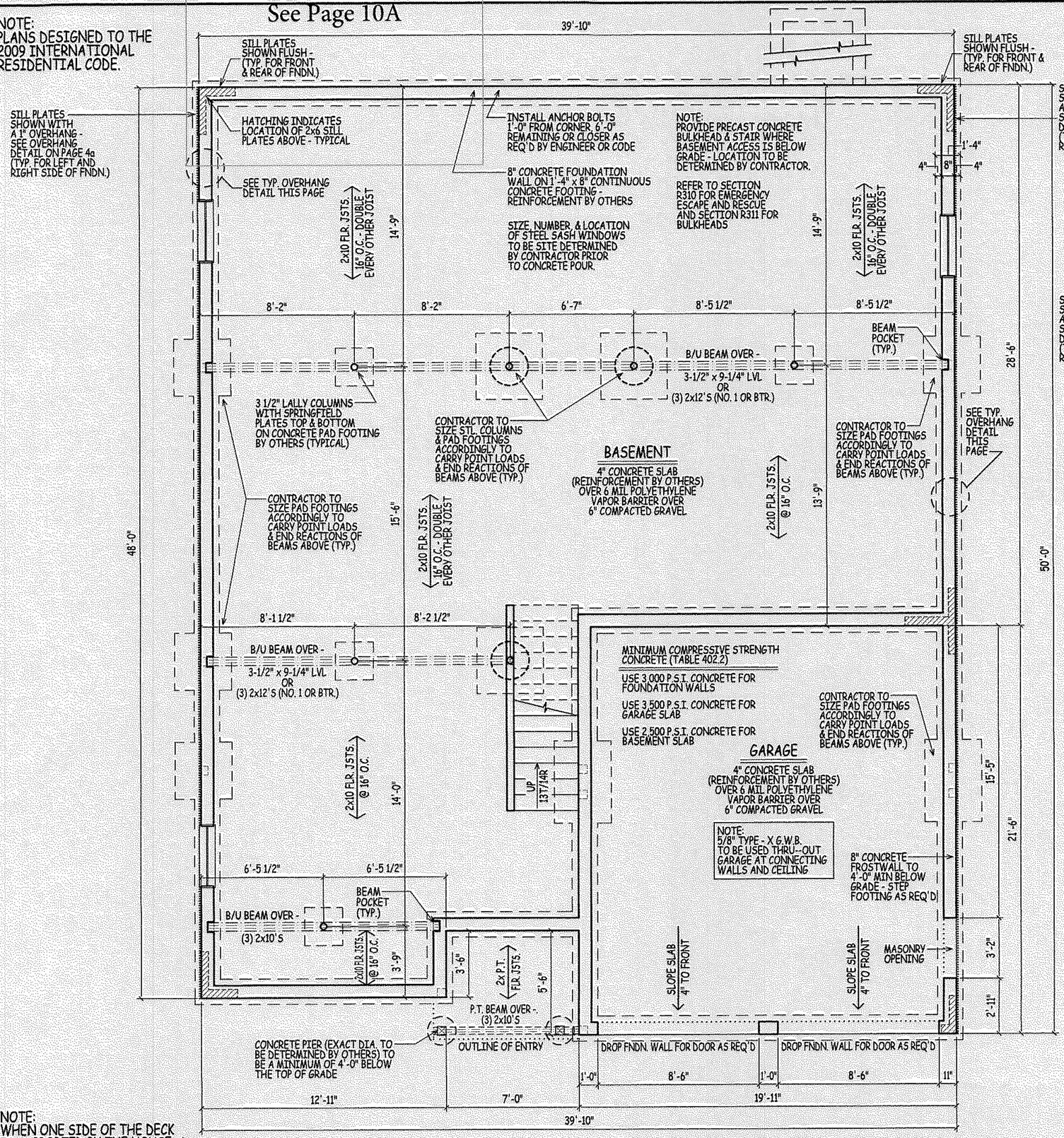
3a

Add Sunroom Foundation

See Page 10A

NOTE:
PLANS DESIGNED TO THE 2009 INTERNATIONAL RESIDENTIAL CODE.

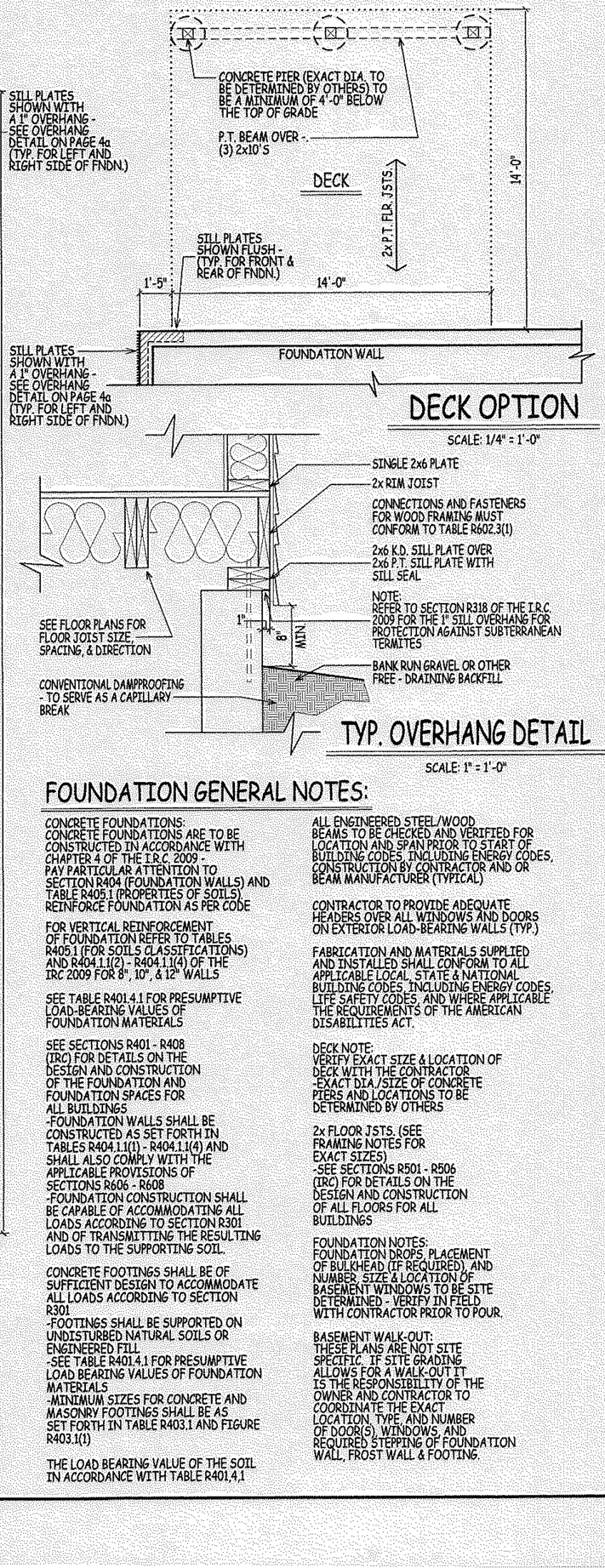


NOTE:
WHEN ONE SIDE OF THE DECK IS SUPPORTED BY THE HOUSE, A LATERAL LOAD CONNECTION IS REQUIRED. HOLD-DOWN TENSION DEVICES SHALL BE INSTALLED IN AT LEAST 2 LOCATIONS WITH A MINIMUM LATERAL-LOAD CAPACITY OF 1,500 LBS. PER DEVICE. (SEE SECTION 502.2.2 OF THE 2009 IRC.)

FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

NOTE:
THIS FOUNDATION PLAN TO BE USED WITH FIRST FLOOR PLAN SHEET 2a.



DECK OPTION

SCALE: 1/4" = 1'-0"

TYP. OVERHANG DETAIL

SCALE: 1" = 1'-0"

FOUNDATION GENERAL NOTES:

CONCRETE FOUNDATIONS:
CONCRETE FOUNDATIONS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH CHAPTER 4 OF THE I.R.C. 2009 - PAY PARTICULAR ATTENTION TO SECTION R404 (FOUNDATION WALLS) AND TABLE R405.1 (PROPERTIES OF SOILS) REINFORCE FOUNDATION AS PER CODE

FOR VERTICAL REINFORCEMENT OF FOUNDATION REFER TO TABLES R405.1 (FOR SOILS CLASSIFICATIONS) AND R404.1.1(2) - R404.1.1(4) OF THE IRC 2009 FOR 8", 10", & 12" WALLS

SEE TABLE R401.4.1 FOR PRESUMPTIVE LOAD-BEARING VALUES OF FOUNDATION MATERIALS

SEE SECTIONS R401 - R408 (IRC) FOR DETAILS ON THE DESIGN AND CONSTRUCTION OF THE FOUNDATION AND FOUNDATION SPACES FOR ALL BUILDINGS
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-FOUNDATION CONSTRUCTION SHALL BE CAPABLE OF ACCOMMODATING ALL LOADS ACCORDING TO SECTION R301 AND OF TRANSMITTING THE RESULTING LOADS TO THE SUPPORTING SOIL.

CONCRETE FOOTINGS SHALL BE OF SUFFICIENT DESIGN TO ACCOMMODATE ALL LOADS ACCORDING TO SECTION R301
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-MINIMUM SIZES FOR CONCRETE AND MASONRY FOOTINGS SHALL BE AS SET FORTH IN TABLE R403.1 AND FIGURE R403.1(1)

THE LOAD BEARING VALUE OF THE SOIL IN ACCORDANCE WITH TABLE R401.4.1

ALL ENGINEERED STEEL/WOOD BEAMS TO BE CHECKED AND VERIFIED FOR LOCATION AND SPAN PRIOR TO START OF BUILDING CODES, INCLUDING ENERGY CODES, CONSTRUCTION BY CONTRACTOR AND OR BEAM MANUFACTURER (TYPICAL)

CONTRACTOR TO PROVIDE ADEQUATE HEADERS OVER ALL WINDOWS AND DOORS ON EXTERIOR LOAD-BEARING WALLS (TYP.)

FABRICATION AND MATERIALS SUPPLIED AND INSTALLED SHALL CONFORM TO ALL APPLICABLE LOCAL, STATE & NATIONAL BUILDING CODES, INCLUDING ENERGY CODES, LIFE SAFETY CODES, AND WHERE APPLICABLE THE REQUIREMENTS OF THE AMERICAN DISABILITIES ACT.

DECK NOTE:
VERIFY EXACT SIZE & LOCATION OF DECK WITH THE CONTRACTOR
-EXACT DIA./SIZE OF CONCRETE PIERS AND LOCATIONS TO BE DETERMINED BY OTHERS

2x FLOOR JSTS. (SEE FRAMING NOTES FOR EXACT SIZES)
-SEE SECTIONS R501 - R506 (IRC) FOR DETAILS ON THE DESIGN AND CONSTRUCTION OF ALL FLOORS FOR ALL BUILDINGS

FOUNDATION NOTES:
FOUNDATION DROPS, PLACEMENT OF BULKHEAD (IF REQUIRED), AND NUMBER, SIZE & LOCATION OF BASEMENT WINDOWS TO BE SITE DETERMINED - VERIFY IN FIELD WITH CONTRACTOR PRIOR TO POUR.

BASEMENT WALK-OUT:
THESE PLANS ARE NOT SITE SPECIFIC. IF SITE GRADING ALLOWS FOR A WALK-OUT IT IS THE RESPONSIBILITY OF THE OWNER AND CONTRACTOR TO COORDINATE THE EXACT LOCATION, TYPE, AND NUMBER OF DOOR(S), WINDOWS, AND REQUIRED STEPPING OF FOUNDATION WALL, FROST WALL & FOOTING.

ADMISSION OF ERROR, OMISSION AND/OR OVERSIGHT:
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PROJECT: THE ABBOT
PAGE FARM - ATKINSON, NH

PREPARED FOR: GREEN&CO

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4a

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CONTRACTOR TO PROVIDE ADEQUATE HEADERS OVER ALL WINDOWS AND DOORS ON EXTERIOR LOAD-BEARING WALLS (TYP.)

LIFE SAFETY CODES, AND WHERE APPLICABLE THE REQUIREMENTS OF THE AMERICAN DISABILITIES ACT.

DOUBLE UP FLOOR JOISTS @ LOCATIONS OF NON-LOAD BEARING WALLS AND UNDER ALL BATHROOMS (I.E. BATHING TUBS/WHIRLPOOLS), KITCHENS, LAUNDRY ROOMS, ETC. (TYPICAL)

CONTRACTOR TO PROVIDE ADEQUATE BLOCKING AND BRIDGING BETWEEN FLOOR JOISTS AS REQUIRED (TYPICAL)

NOTE:
SEE THE NEW HAMPSHIRE BUILDING CODE (IBC, IPC, IMC, IECC, IRC, & IEBC) AS PUBLISHED BY THE ICC AND THE NATIONAL ELECTRICAL CODE AS PUBLISHED BY THE NFPA FOR IN DEPTH DETAILS ON BUILDING IN ACCORDANCE WITH CITY BUILDING REGULATIONS

IBC INTERNATIONAL BUILDING CODE
IPC INTERNATIONAL PLUMBING CODE
IMC INTERNATIONAL MECHANICAL CODE
IECC INTERNATIONAL ENERGY CONSERVATION CODE
IRC INTERNATIONAL RESIDENTIAL CODE
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COMPLIANCE SHALL BE DEMONSTRATED BY EITHER MEETING THE REQUIREMENTS OF THE INTERNATIONAL ENERGY CONSERVATION CODE 2009 OR MEETING THE REQUIREMENTS OF CHAPTER 11 IN THE 2009 INTERNATIONAL RESIDENTIAL CODE

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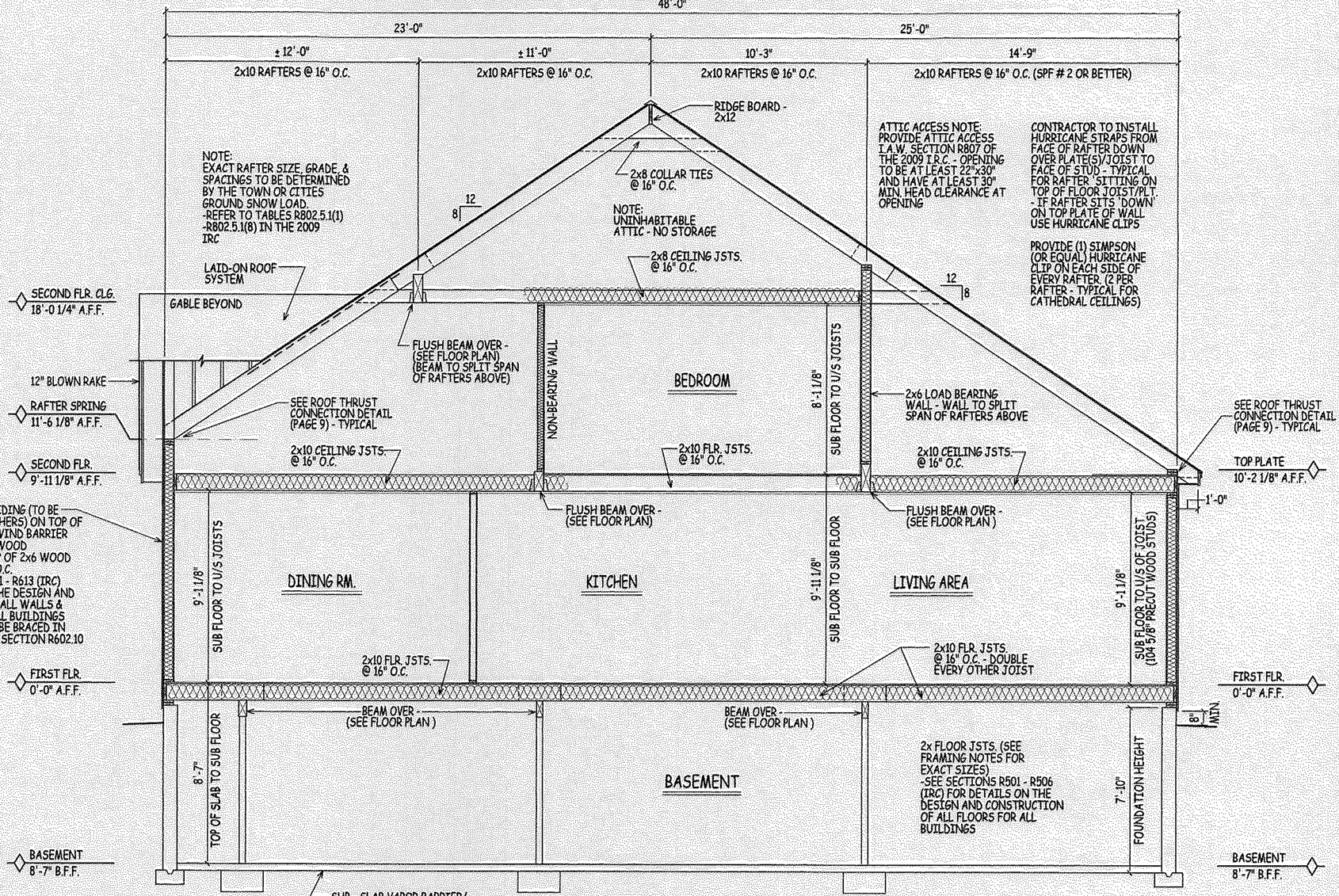
THE CONTRACTOR IS TO ENSURING WINDOWS MEET PREVAILING BUILDING AND LIFESAFETY CODES FOR MINIMUM EGRESS CLEAR OPENING HEIGHT, WIDTH, AND AREA - THE CONTRACTOR WILL ADJUST WINDOW SCHEDULE ACCORDINGLY.

REFER TO SECTIONS R612.2 FOR WINDOW SILL HEIGHT ABOVE GROUND (OR SURFACE BELOW) AND TO SECTION 310 FOR EGRESS WINDOWS & BASEMENTS PRIOR TO PLACING WINDOW ORDER

REFER TO SECTION 311 FOR MEANS OF EGRESS PRIOR TO ORDERING DOORS



CROSS SECTION A/5a

SCALE: 1/4" = 1'-0"

ROOF CONSTRUCTION:

VERIFY RIDGE BOARD SIZE IN FIELD (LENGTH TO EXCEED PLUM CUT OF RAFTER)

2 x 10 RAFTERS @ 16" O.C. (U.N.O.)
2 x 8 COLLAR TIES @ 16" O.C.
2 x 8 CEILING JOISTS @ 16"
235# ASPHALT SHINGLES ON 15# BUILDING PAPER ON 5/8" PLYWOOD SHEATHING
ICE & WEATHER SHIELD AT RAFTER TAILS & VALLEYS
EAVE/RAKE: METAL DRIP EDGE, 1x4 PINE BLOCKING (SUB-FASCIA), 1x8 PINE BD. FASCIA, 3/8" AC EXT. GD. PLYWD SOFFIT W/2" CONT. LOUVERED VENT (SOFFIT ONLY)

EXTERIOR WALL CONSTRUCTION:

2 x 6 WOOD STUDS @ 16" O.C. W/TYVEK (OR EQUAL) WIND BARRIER AND 1/2" PLYWD.
2 x 6 DOUBLE TOP PLATE
2 x 6 SINGLE BOTTOM PLATE

INTERIOR CONSTRUCTION:

2 x 4 WOOD STUDS @ 16" O.C.
2 x 4 DOUBLE TOP PLATE (LD. BRG. ONLY)
2 x 4 SINGLE BOTTOM PLATE
WALL- 1/2" GYPSUM WALL BOARD EA. SIDE STUD - MOISTURE-RESISTANT / FIRE-RATED WHERE REQUIRED
CLG.- 1/2" G.W.B. ON 1x3 WOOD STRAPPING @ 16"O.C.- MOISTURE-RESISTANT / FIRE-RATED WHERE REQUIRED
2x12 STAIR STRINGERS @ 12" O.C.

FLOOR CONSTRUCTION:

2x10 FLOOR JOISTS @ 16" O.C. WITH 3/4" TONGUE & GROOVE PLYWD. GLUED & NAILED (TYP. U.O.N.)

BUILT-UP BEAMS SIZED BY CONTRACTOR

FOUNDATION CONSTRUCTION:

8" CONCRETE FOUNDATION WALL WITH DBL. 2x6 P.T. SILL WITH SILL SEAL
8" CONC. FROST WALLS (WHERE SHOWN) TO 48" BELOW GD.
CONTINUOUS CONCRETE FOOTING - SIZE BY OTHERS
REFER TO SECTION R404.1.2.2 FOR HORIZONTAL AND VERTICAL REINFORCEMENT FOR FOUNDATION WALLS
PROVIDE MATCHING CORNER DOWELS LAP 50 BAR DIAMETERS (TYPICAL)
PROVIDE 3 1/2" DIA. STEEL COLUMNS OVER CONCRETE FOOTINGS AS REQ'D FOR BEAMS SHOWN ON PLAN

INSULATION

WALLS: R-20 CAVITY INSULATION OR R-13 PLUS R-5
FLOOR: R-30 OR INSULATION SUFFICIENT TO FILL JOIST CAVITY
CEILING: R-38 (ZONE 5) OR R-49 (ZONE 6) - HOWEVER, IF MAINTAINING THE FULL R VALUE OVER THE PLATES (RAISED) R-30 (ZONE 5) OR R-38 (ZONE 6)

NOTE:
THESE SECTIONS TO BE USED WITH FLOOR PLANS SHEET 2a, 3a & 4a.

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PAGE FARM - ATKINSON, NH

PREPARED FOR: GREEN&CO.

DRAWN BY:	MM/JW
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5a

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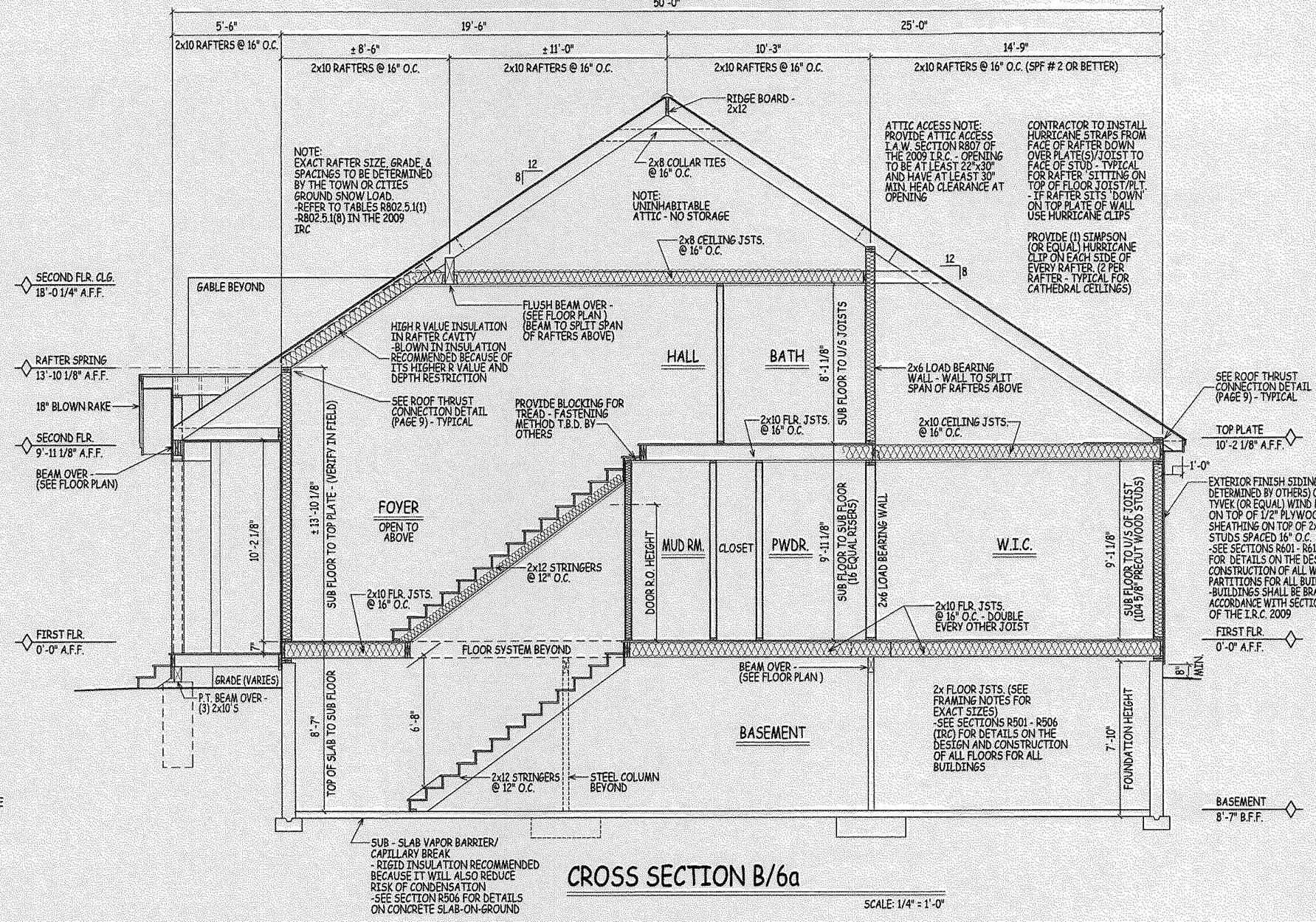

CROSS SECTION B/6a

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2x12 STAIR STRINGERS @ 12" O.C.

FLOOR CONSTRUCTION:

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NOTE:
THESE SECTIONS TO BE USED WITH FLOOR PLANS SHEET 2a, 3a & 4a.

ADMISSION OF ERROR, OMISSION AND/OR OVERSIGHT:
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PROJECT: THE ABBOT
PAGE FARM - ATKINSON, NH

PREPARED FOR: GREEN&CO.

DRAWN BY:	MM/JW
CHECKED BY:	MM
DATE DRAWN:	09/06/18
DATE ISSUED:	09/06/18
SCALE:	AS INDICATED
JOB NO.:	FSM17-206CA

REVISIONS

16	08/27/18	THE CALLAWAY RILEY REVISED PER REQUEST - ISSUED FOR REVIEW AND STAMP
17	09/06/18	BEAM LOCATION UPDATED ON THE ABBOT - ISSUED FOR REVIEW AND STAMP
13	08/03/18	THE CALLAWAY REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP
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15	08/15/18	THE ABBOT REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP

6a

GENERAL NOTES:

SEE SECTIONS R401 - R408 (IRC) FOR DETAILS ON THE DESIGN AND CONSTRUCTION OF THE FOUNDATION AND FOUNDATION SPACES FOR ALL BUILDINGS
-FOUNDATION WALLS SHALL BE CONSTRUCTED AS SET FORTH IN TABLES R404.1.1(1) - R404.1.1(4) AND SHALL ALSO COMPLY WITH THE APPLICABLE PROVISIONS OF SECTIONS R606 - R608
-FOUNDATION CONSTRUCTION SHALL BE CAPABLE OF ACCOMMODATING ALL LOADS ACCORDING TO SECTION R301 AND OF TRANSMITTING THE RESULTING LOADS TO THE SUPPORTING SOIL.

CONCRETE FOOTINGS SHALL BE OF SUFFICIENT DESIGN TO ACCOMMODATE ALL LOADS ACCORDING TO SECTION R301
-FOOTINGS SHALL BE SUPPORTED ON UNDISTURBED NATURAL SOILS OR ENGINEERED FILL
-SEE TABLE R401.4.1 FOR PRESUMPTIVE LOAD BEARING VALUES OF FOUNDATION MATERIALS
-MINIMUM SIZES FOR CONCRETE AND MASONRY FOOTINGS SHALL BE AS SET FORTH IN TABLE R403.1 AND FIGURE R403.1(1)

THE LOAD BEARING VALUE OF THE SOIL IN ACCORDANCE WITH TABLE R401.4.1

CONTRACTOR TO PROVIDE ADEQUATE VAPOR BARRIERS UNDER ALL CONCRETE SLABS

CONTRACTOR TO PROVIDE ADEQUATE HEADERS OVER ALL WINDOWS AND DOORS ON EXTERIOR LOAD-BEARING WALLS (TYP.)

LIFE SAFETY CODES, AND WHERE APPLICABLE THE REQUIREMENTS OF THE AMERICAN DISABILITIES ACT.

DOUBLE UP FLOOR JOISTS @ LOCATIONS OF NON-LOAD BEARING WALLS AND UNDER ALL BATHROOMS (I.E. BATHING TUBS/WHIRLPOOLS), KITCHENS, LAUNDRY ROOMS, ETC. (TYPICAL)

CONTRACTOR TO PROVIDE ADEQUATE BLOCKING AND BRIDGING BETWEEN FLOOR JOISTS AS REQUIRED (TYPICAL)

NOTE:
SEE THE NEW HAMPSHIRE BUILDING CODE (IBC, IPC, IMC, IECC, IRC, & IEBC) AS PUBLISHED BY THE ICC AND THE NATIONAL ELECTRICAL CODE AS PUBLISHED BY THE NFPA FOR IN DEPTH DETAILS ON BUILDING IN ACCORDANCE WITH CITY BUILDING REGULATIONS

IBC INTERNATIONAL BUILDING CODE
IPC INTERNATIONAL PLUMBING CODE
IMC INTERNATIONAL MECHANICAL CODE
IECC INTERNATIONAL ENERGY CONSERVATION CODE
IRC INTERNATIONAL RESIDENTIAL CODE
IEBC INTERNATIONAL EXISTING BUILDING CODE
ICC INTERNATIONAL CODE COUNCIL
NFPA NATIONAL FIRE PROTECTION ASSOCIATION
NEC NATIONAL ELECTRICAL CODE

FABRICATION AND MATERIALS SUPPLIED AND INSTALLED SHALL CONFORM TO ALL APPLICABLE LOCAL, STATE & NATIONAL BUILDING CODES, INCLUDING ENERGY CODES, LIFE SAFETY CODES, AND WHERE APPLICABLE THE REQUIREMENTS OF THE AMERICAN DISABILITIES ACT.

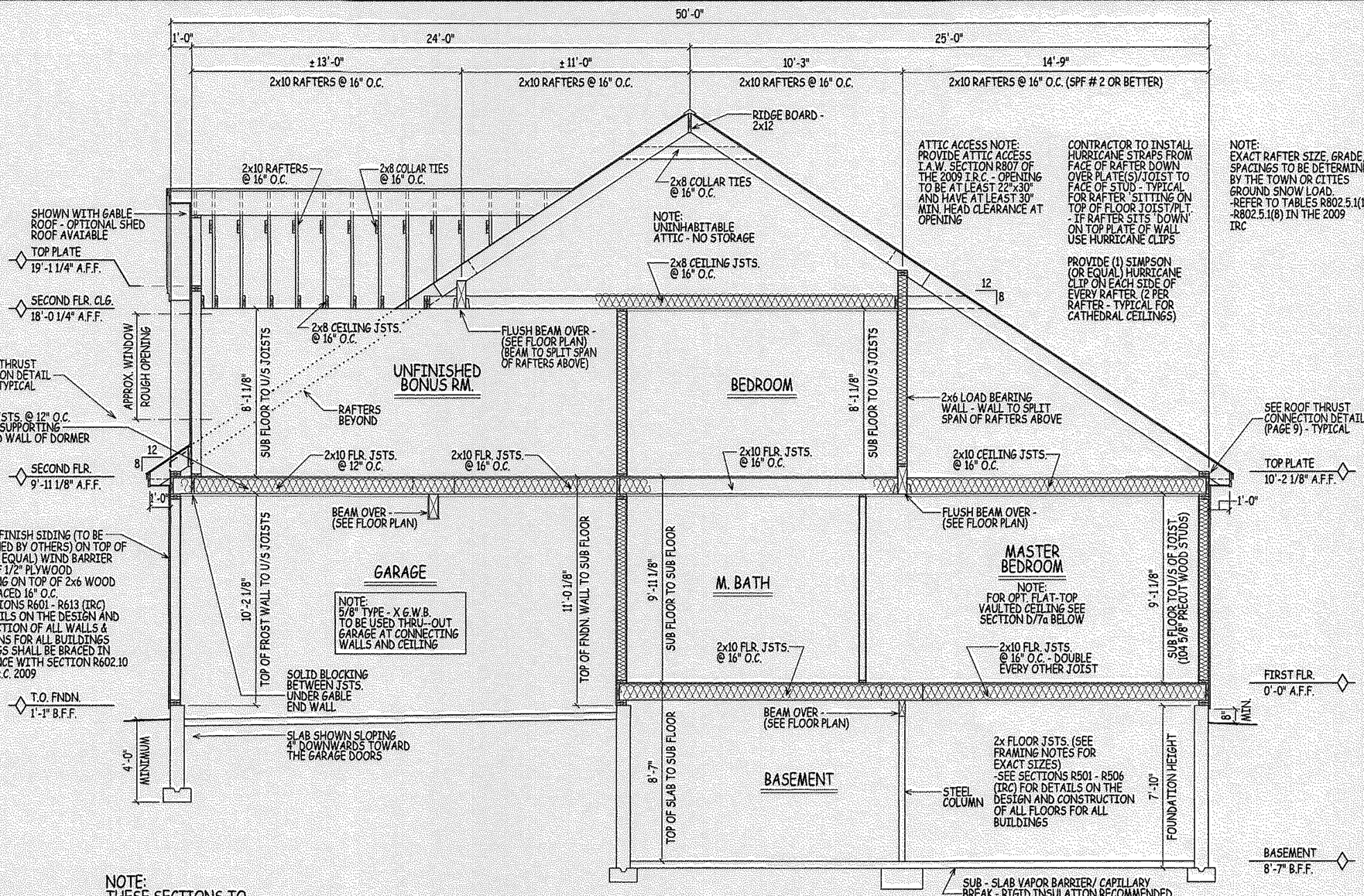
ENERGY EFFICIENCY NOTE:
COMPLIANCE SHALL BE DEMONSTRATED BY EITHER MEETING THE REQUIREMENTS OF THE INTERNATIONAL ENERGY CONSERVATION CODE 2009 OR MEETING THE REQUIREMENTS OF CHAPTER 11 IN THE 2009 INTERNATIONAL RESIDENTIAL CODE

ALL ENGINEERED STEEL/WOOD BEAMS TO BE CHECKED AND VERIFIED FOR LOCATION AND SPAN PRIOR TO START OF CONSTRUCTION BY CONTRACTOR AND OR BEAM MANUFACTURER (TYPICAL)

THE CONTRACTOR IS TO ENSURING WINDOWS MEET PREVAILING BUILDING AND LIFESAFETY CODES FOR MINIMUM EGRESS CLEAR OPENING HEIGHT, WIDTH, AND AREA - THE CONTRACTOR WILL ADJUST WINDOW SCHEDULE ACCORDINGLY.

REFER TO SECTIONS R612.2 FOR WINDOW SILL HEIGHT ABOVE GROUND (OR SURFACE BELOW) AND TO SECTION 310 FOR EGRESS WINDOWS & BASEMENTS PRIOR TO PLACING WINDOW ORDER

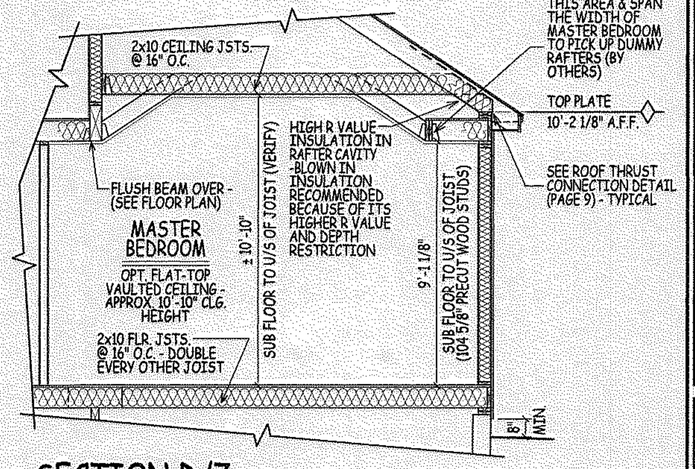
REFER TO SECTION 311 FOR MEANS OF EGRESS PRIOR TO ORDERING DOORS



NOTE:
THESE SECTIONS TO BE USED WITH FLOOR PLANS SHEET 2a, 3a & 4a.

CROSS SECTION C/7a

SCALE: 1/4" = 1'-0"



SECTION D/7a

SCALE: 1/4" = 1'-0"

NOTE:
THESE SECTIONS TO BE USED WITH FLOOR PLANS SHEET 2a, 3a & 4a.

ROOF CONSTRUCTION:

VERIFY RIDGE BOARD SIZE IN FIELD (LENGTH TO EXCEED PLUM CUT OF RAFTER)

2 x 10 RAFTERS @ 16" O.C. (U.N.O.)
2 x 8 COLLAR TIES @ 16" O.C.
2 x 8 CEILING JOISTS @ 16"
235# ASPHALT SHINGLES ON 15# BUILDING PAPER ON 5/8" PLYWOOD SHEATHING
ICE & WEATHER SHIELD AT RAFTER TAILS & VALLEYS
EAVE/RAKE: METAL DRIP EDGE
1x4 PINE BLOCKING (SUB-FASCIA)
1x8 PINE BD. FASCIA
3/8" AC EXT. GD. PLYWD SOFFIT W/2" CONT. LOUVERED VENT (SOFFIT ONLY)

EXTERIOR WALL CONSTRUCTION:

2 x 6 WOOD STUDS @ 16" O.C. W/TYVEK (OR EQUAL) WIND BARRIER AND 1/2" PLYWD.
2 x 6 DOUBLE TOP PLATE
2 x 6 SINGLE BOTTOM PLATE

INTERIOR CONSTRUCTION:

2 x 4 WOOD STUDS @ 16" O.C.
2 x 4 DOUBLE TOP PLATE (LD. BRG. ONLY)
2 x 4 SINGLE BOTTOM PLATE
WALL- 1/2" GYPSUM WALL BOARD EA. SIDE STUD - MOISTURE-RESISTANT / FIRE-RATED WHERE REQUIRED
CLG.- 1/2" G.W.B. ON 1x3 WOOD STRAPPING @ 16"O.C.- MOISTURE-RESISTANT / FIRE-RATED WHERE REQUIRED
2x12 STAIR STRINGERS @ 12" O.C.

FLOOR CONSTRUCTION:

2x10 FLOOR JOISTS @ 16" O.C. WITH 3/4" TONGUE & GROOVE PLYWD. GLUED & NAILED (TYP. U.O.N.)

BUILT-UP BEAMS SIZED BY CONTRACTOR

FOUNDATION CONSTRUCTION:

8" CONCRETE FOUNDATION WALL WITH DBL. 2x6 P.T. SILL WITH SILL SEAL
8" CONC. FROST WALLS (WHERE SHOWN) TO 48" BELOW GD.
CONTINUOUS CONCRETE FOOTING - SIZE BY OTHERS
REFER TO SECTION R404.1.2.2 FOR HORIZONTAL AND VERTICAL REINFORCEMENT FOR FOUNDATION WALLS
PROVIDE MATCHING CORNER DOWELS LAP 50 BAR DIAMETERS (TYPICAL)
PROVIDE 3 1/2" DIA. STEEL COLUMNS OVER CONCRETE FOOTINGS AS REQ'D FOR BEAMS SHOWN ON PLAN

INSULATION

WALLS: R-20 CAVITY INSULATION OR R-13 PLUS R-5
FLOOR: R-30 OR INSULATION SUFFICIENT TO FILL JOIST CAVITY
CEILING: R-38 (ZONE 5) OR R-49 (ZONE 6) - HOWEVER, IF MAINTAINING THE FULL R VALUE OVER THE PLATES (RAISED) R-30 (ZONE 5) OR R-38 (ZONE 6)

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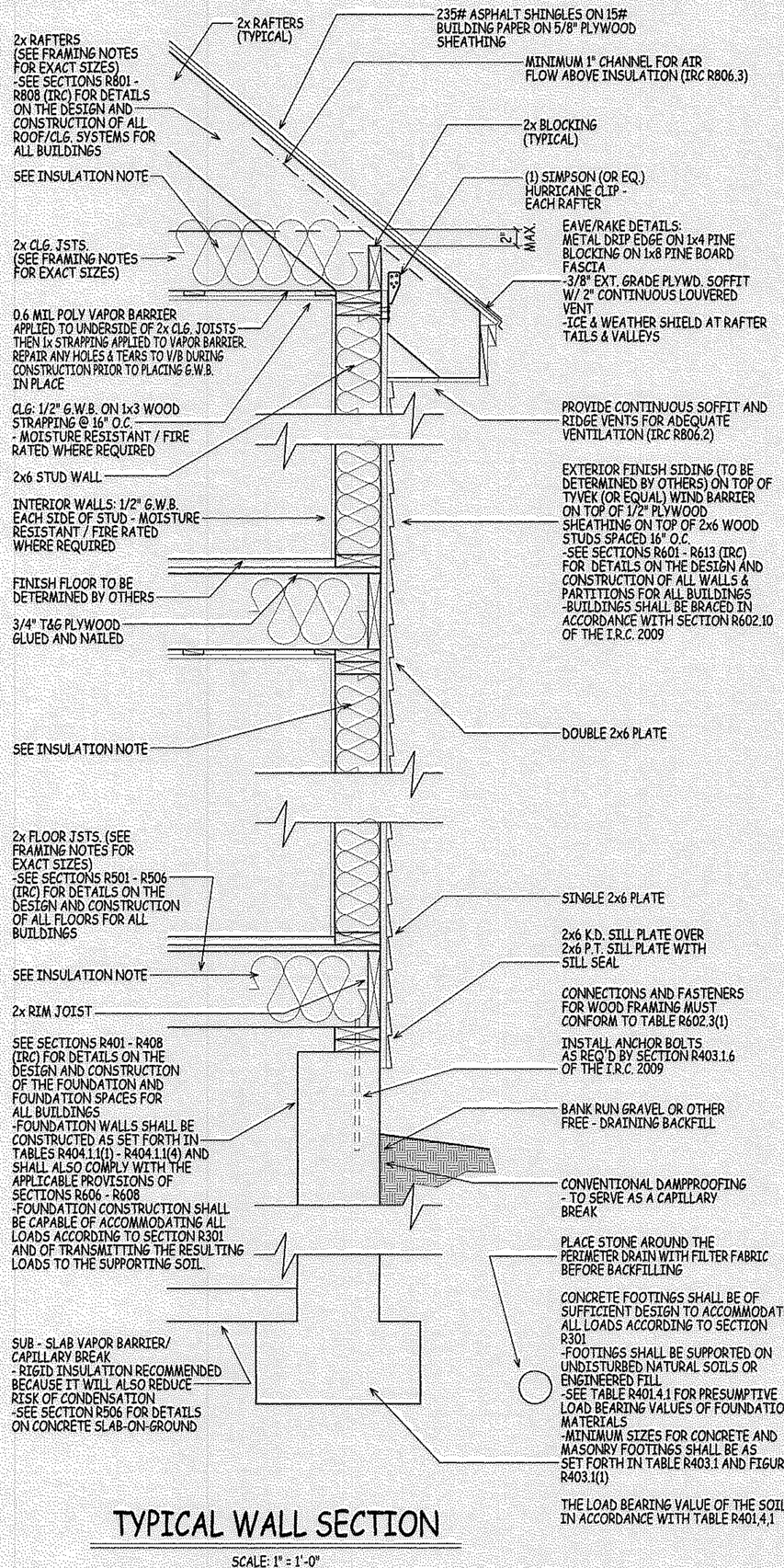
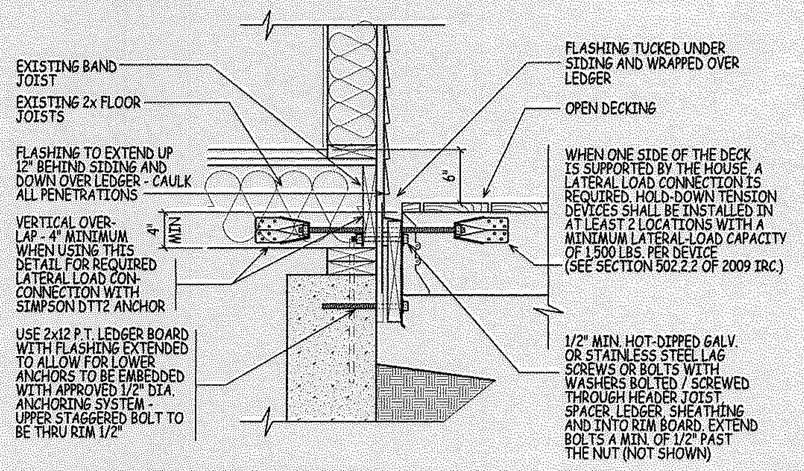
7a



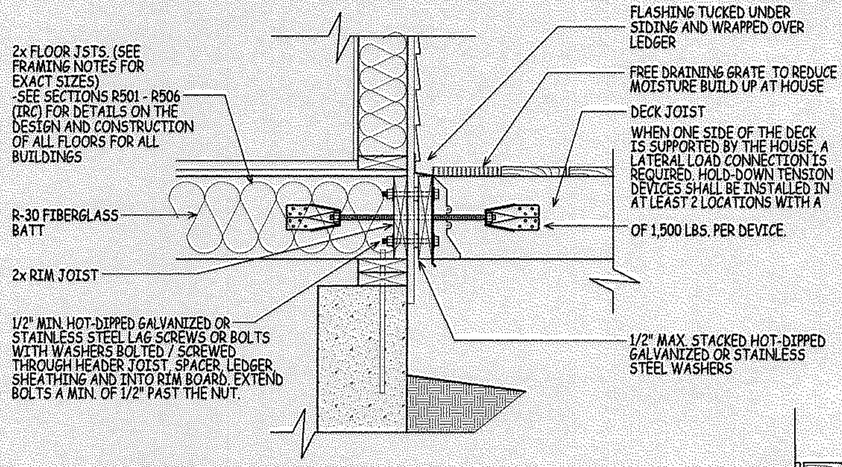
TYPICAL WALL SECTION

SCALE: 1" = 1'-0"



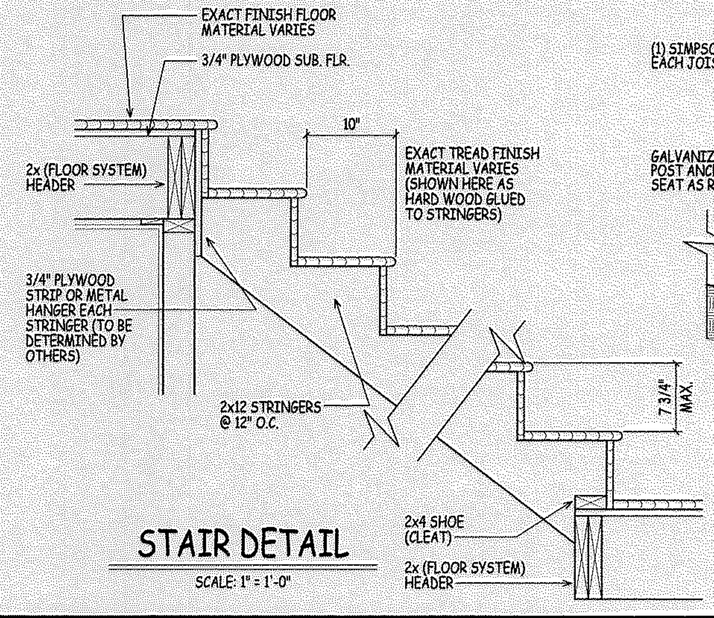
DECK DETAIL - STEP DN. OPTION CONNECTION

SCALE: 1" = 1'-0"



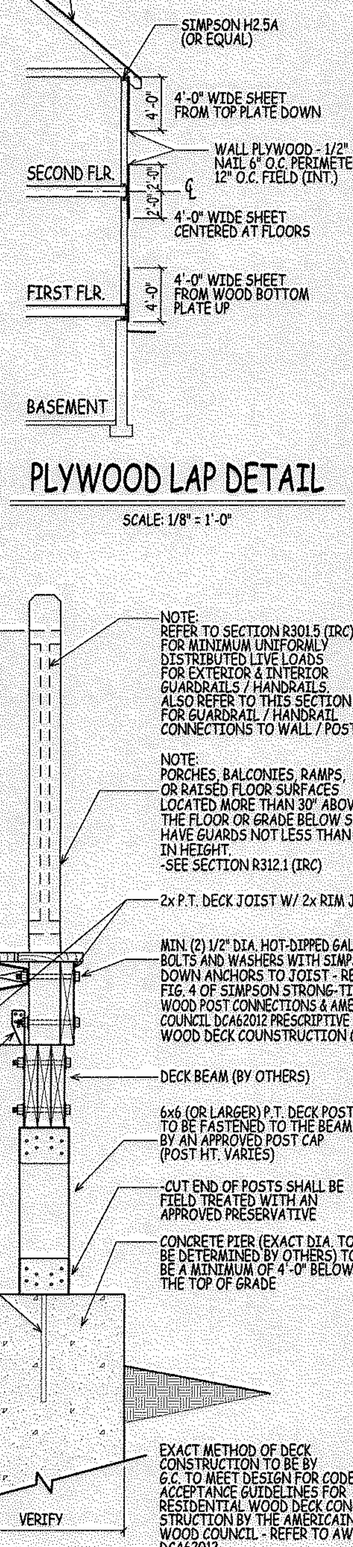
DECK DETAIL - NO STEP OPTION CONNECTION

SCALE: 1" = 1'-0"



STAIR DETAIL

SCALE: 1" = 1'-0"



PLYWOOD LAP DETAIL

SCALE: 1/8" = 1'-0"

TYPICAL DECK DETAILS

SCALE: 1" = 1'-0"

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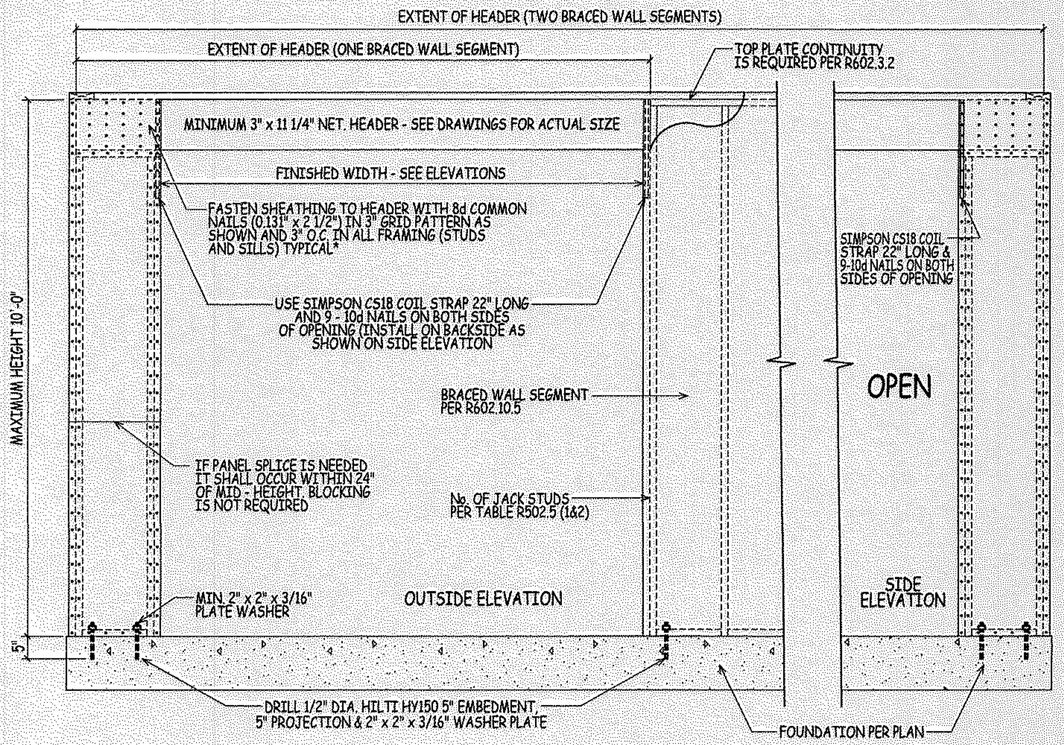
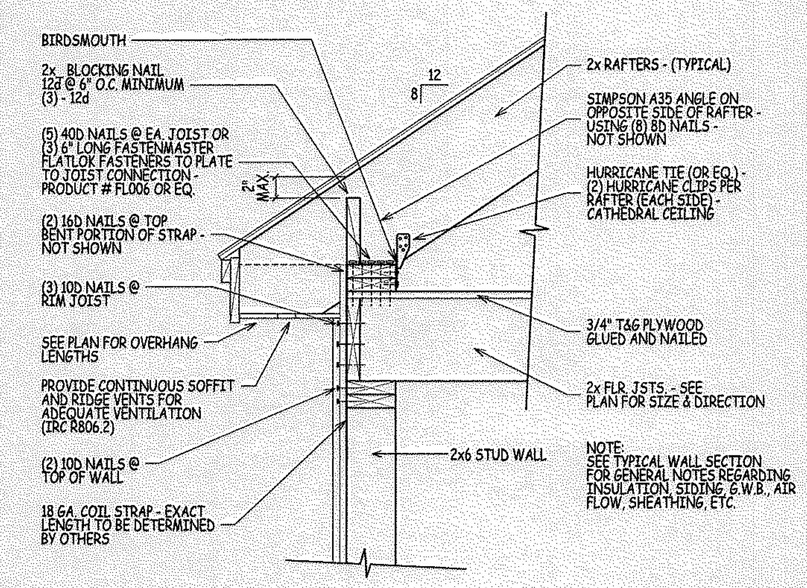
8



NARROW WALL OVER CONCRETE OR MASONRY BLOCK FOUNDATION

FIGURE R602.10.3.4

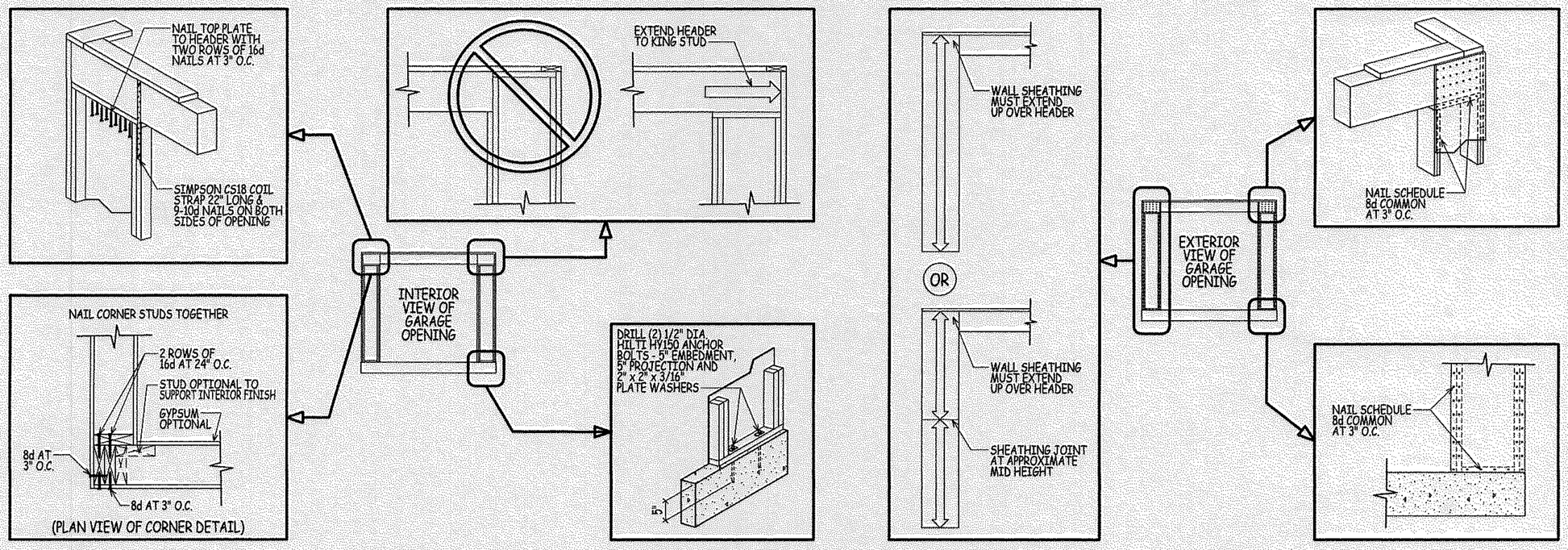


ROOF THRUST CONNECTION DETAIL

SCALE: 1" = 1'-0"

DETAIL AT GARAGE OVERHEAD DOORS

NOT TO SCALE



APA NARROW WALL BRACING METHOD FRAMING TIPS (FORM F435)

THE APA NARROW WALL BRACING METHOD IS A SIMPLE, SITE - BUILT SOLUTION THAT ALLOWS BUILDERS TO CONSTRUCT SEGMENTS AS NARROW AS 16" NEXT TO WINDOW AND DOOR OPENINGS. BE SURE TO CHECK FOR THESE ESSENTIAL DETAILS WHEN CONSTRUCTING THE APA NARROW WALL BRACING METHOD AROUND GARAGE OPENINGS.

APA PUBLICATION G440 "WHOLE HOUSE BRACING" IS AVAILABLE FOR ADDITIONAL INFORMATION.

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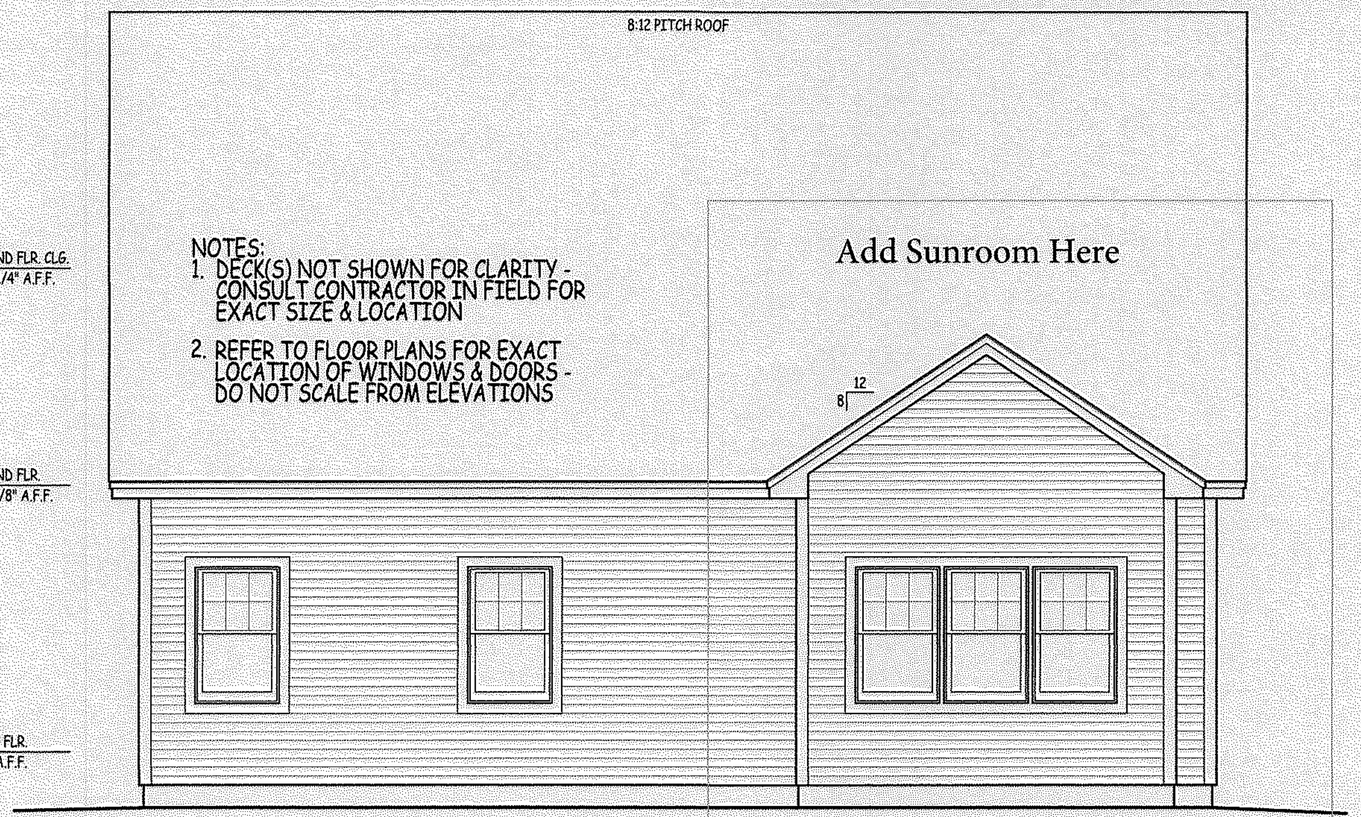
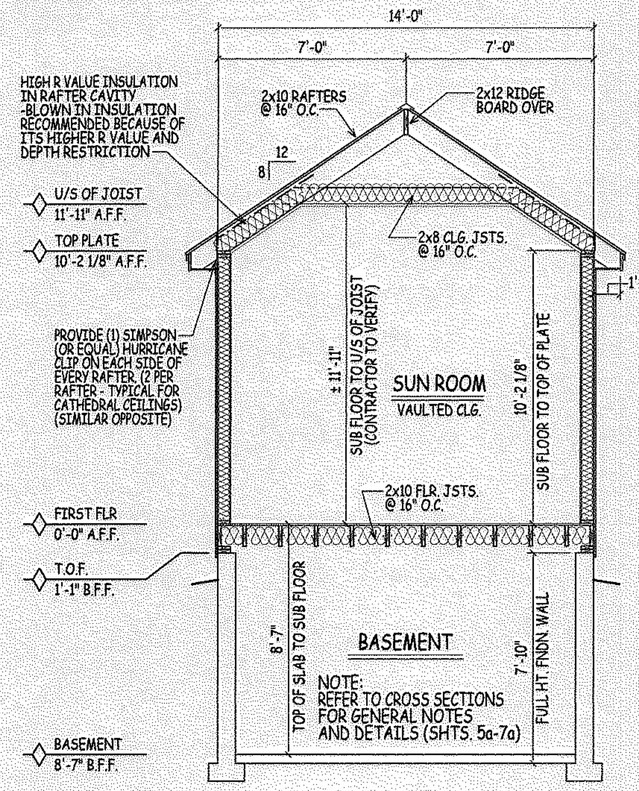


NOTES:
1. DECK(S) NOT SHOWN FOR CLARITY - CONSULT CONTRACTOR IN FIELD FOR EXACT SIZE & LOCATION
2. REFER TO FLOOR PLANS FOR EXACT LOCATION OF WINDOWS & DOORS - DO NOT SCALE FROM ELEVATIONS

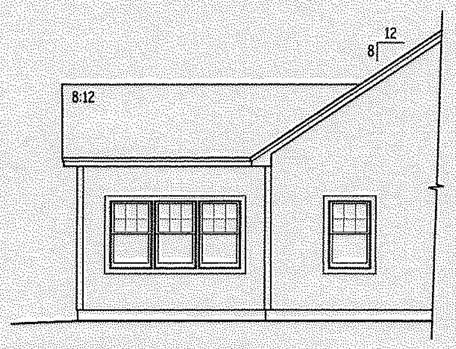
REAR ELEVATION
(SUN ROOM OPTION)

SCALE: 1/4" = 1'-0"



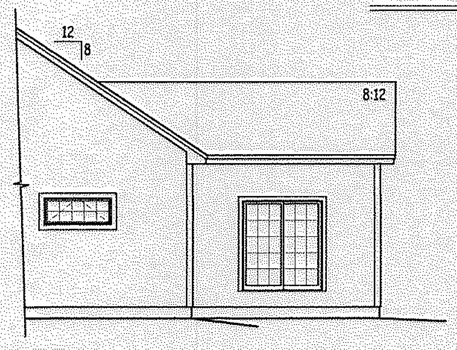
SUN ROOM CROSS SECTION

SCALE: 1/4" = 1'-0"



LEFT ELEVATION

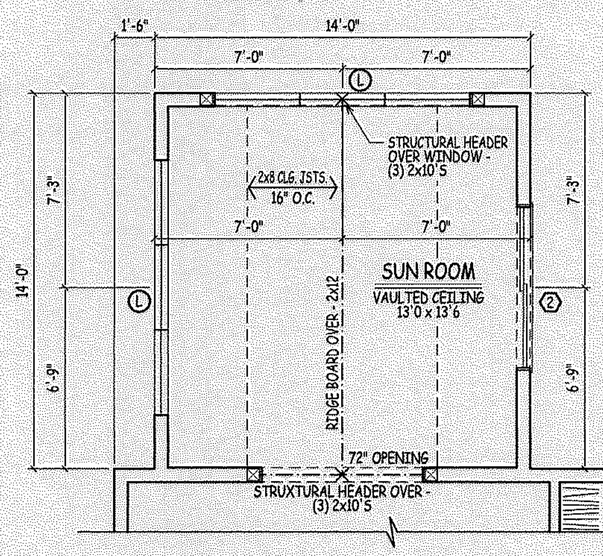
SCALE: 1/8" = 1'-0"



RIGHT ELEVATION

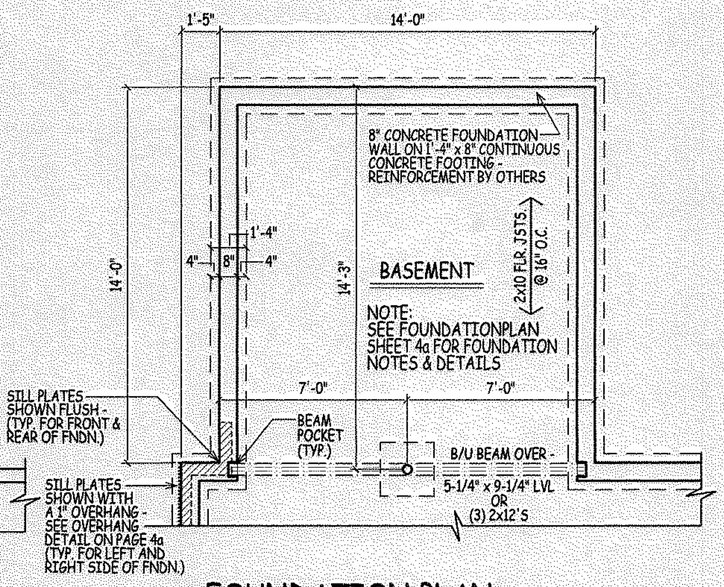
SCALE: 1/8" = 1'-0"

NOTE:
THIS PAGE TO BE USED WITH SHEETS 1a, 2a, 3a, & 4a



FIRST FLOOR PLAN

SCALE: 1/4" = 1'-0"



FOUNDATION PLAN

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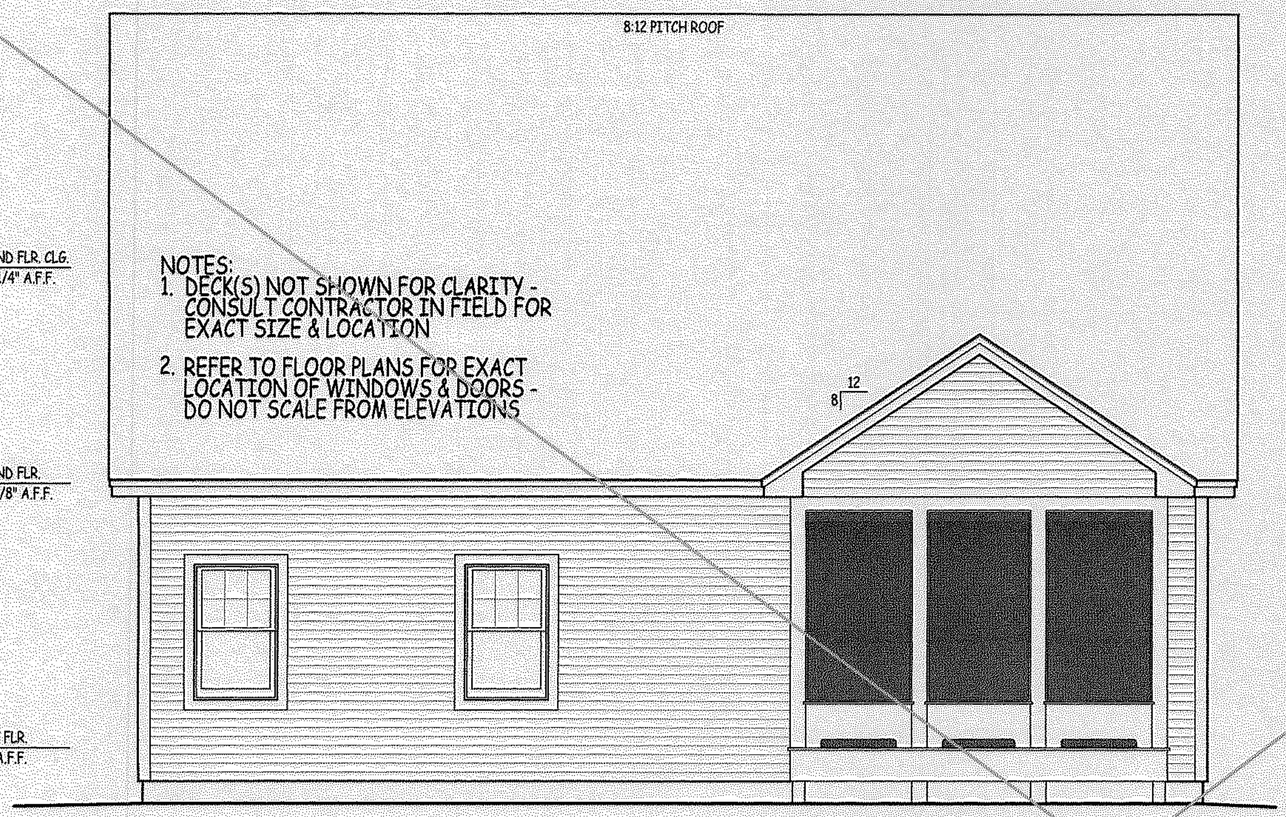
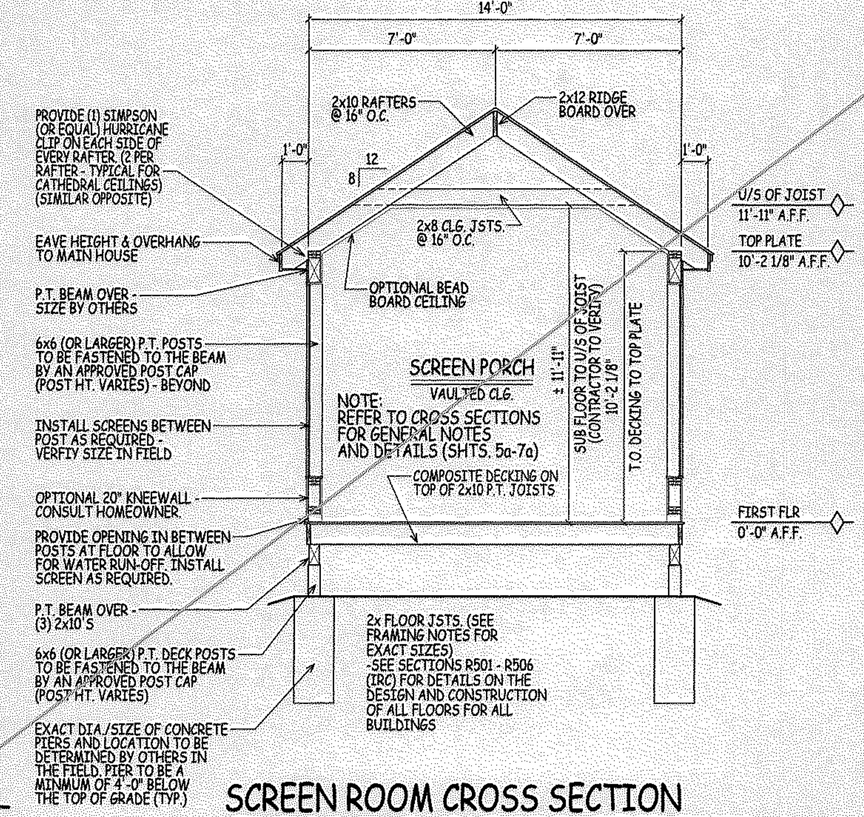


REAR ELEVATION

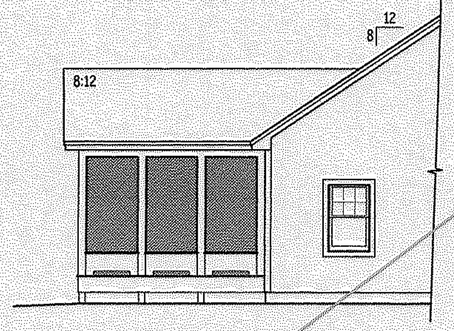
(SCREEN ROOM OPTION)

SCALE: 1/4" = 1'-0"



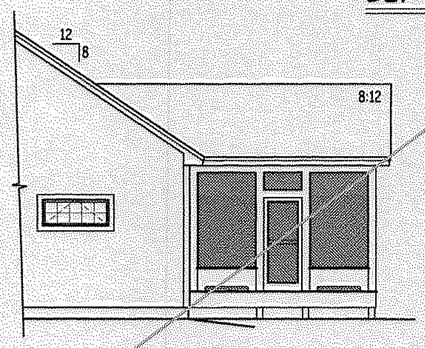
SCREEN ROOM CROSS SECTION

SCALE: 1/4" = 1'-0"



LEFT ELEVATION

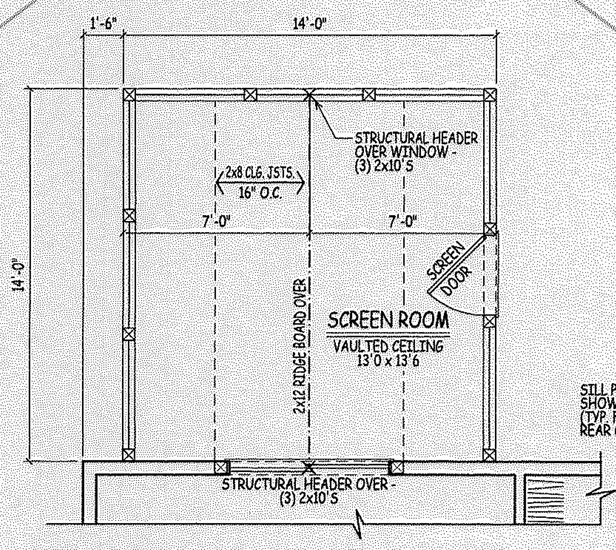
SCALE: 1/8" = 1'-0"



RIGHT ELEVATION

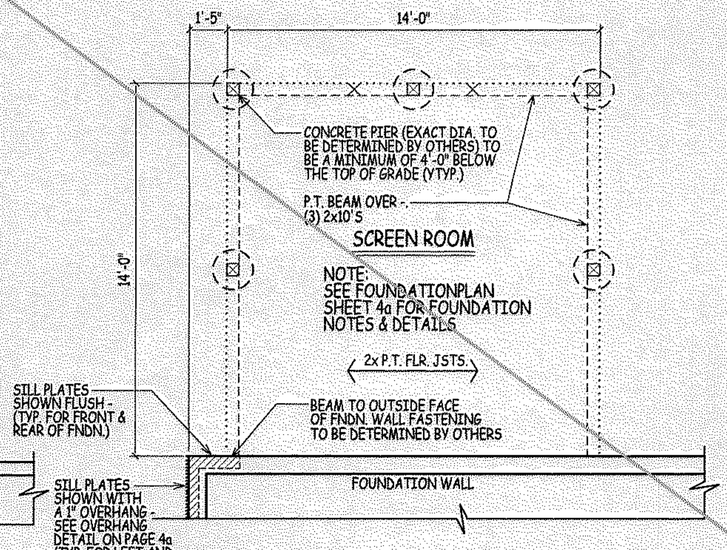
SCALE: 1/8" = 1'-0"

NOTE:
THIS PAGE TO BE USED
WITH SHEETS 1a, 2a, 3a, & 4a



FIRST FLOOR PLAN

SCALE: 1/4" = 1'-0"



FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

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Manchester, New Hampshire 03101
P (603) 935-9888 www.fsmdrawings.com
F (603) 625-2657 info@fsmdrawings.com

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PROJECT:
THE ABBOT
PAGE FARM - ATKINSON, NH

PREPARED FOR:
GREEN&CO.

DRAWN BY:	MM/JW
CHECKED BY:	MM
DATE DRAWN:	09/06/18
DATE ISSUED:	09/06/18
SCALE:	AS INDICATED
JOB NO.:	FSM17-206CA

REVISIONS

16	08/27/18	THE CALLAWAY & RILEY REVISED PER REQUEST - ISSUED FOR REVIEW AND STAMP
17	09/06/18	BEAM LOCATION UPDATED ON THE ABBOT - ISSUED FOR REVIEW AND STAMP
13	08/03/18	THE CALLAWAY REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP
14	08/15/18	THE RILEY REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP
15	08/15/18	THE ABBOT REVISED PER MARK-UPS - ISSUED FOR REVIEW AND STAMP

11a

934.126 GL Aurelia

	Main	Future	Apt	Main + Future	Main + Apt	All
Living Area	2302 SF	0 SF	0 SF	2302 SF	2302 SF	2302 SF
Bedrooms	3	1	0	4	3	4
Baths	2.5	0.0	0.0	2.5	2.5	2.5

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- Increasing ceiling heights usually requires adjustments to window sizes and other exterior elements.

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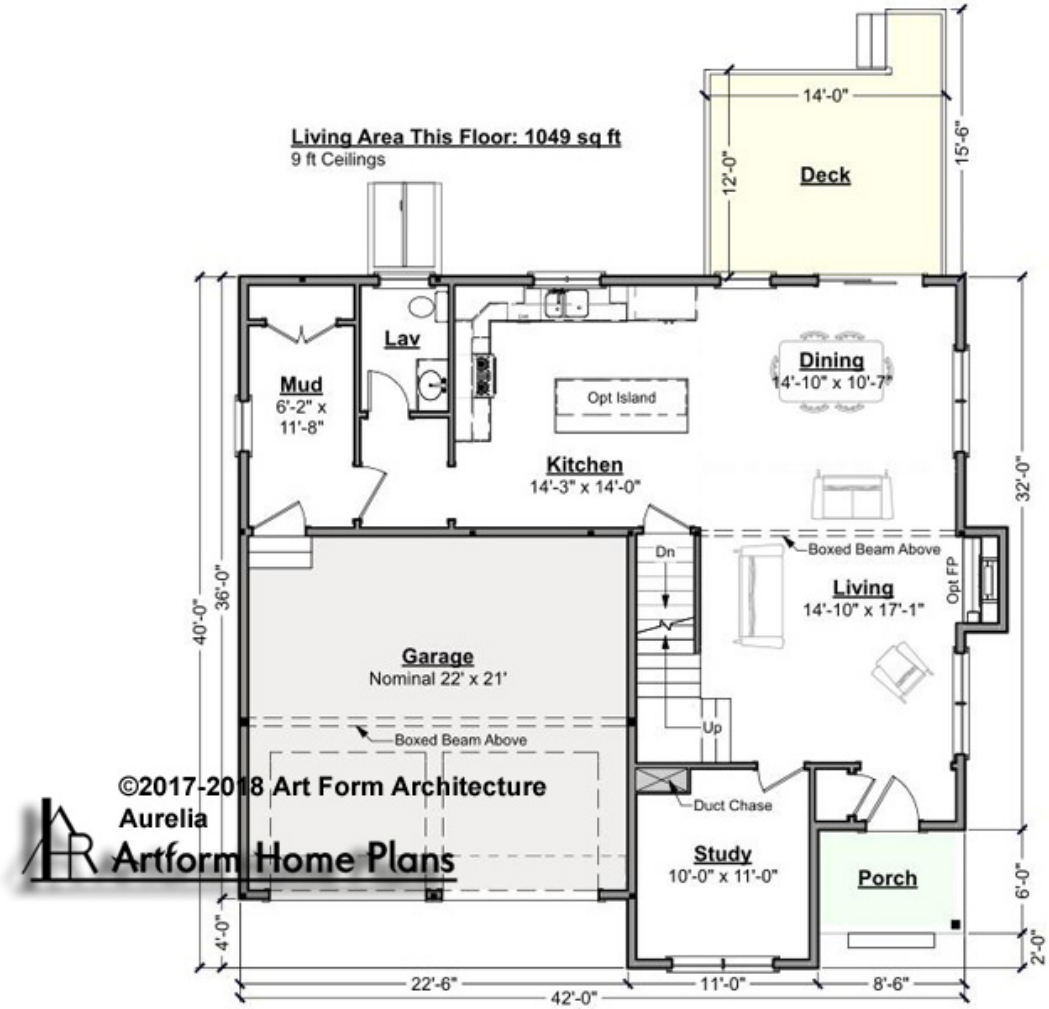
First Floor

	Area	Beds	Baths
Main	1049 SF	0	0.5
Future	0 SF	1	0
Apt	0 SF	0	0
Total	**1049 SF**	**1**	**0.5**

Ceiling Height	
Shown	9'-0"
Possible*	8'-0"

* See Major Change information on plan page for cost



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Artform Home Plans

Second Floor

	Area	Beds	Baths
Main	1253 SF	3	2
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**1253 SF**	**3**	**2**

Ceiling Height	
Shown	8'-0"
Possible*	8'-0"

* See Major Change information on plan page for cost

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Basement Floor

	Area	Beds	Baths
Main	0 SF	0	0
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**0 SF**	**0**	**0**

Ceiling Height	
Shown	7'-8"
Possible*	9'-0"

* See Major Change information on plan page for cost

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Artform Home Plans

Front Elevation

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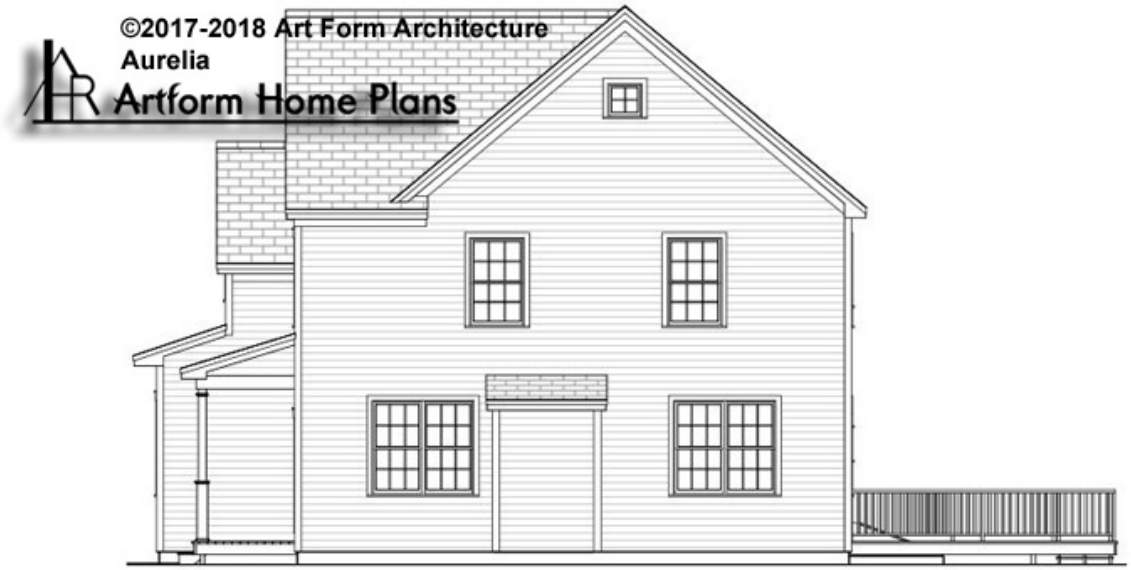
Artform Home Plans

Right Elevation



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Artform Home Plans

Rear Elevation

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Artform Home Plans

Left Elevation

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1016.124 GL Carter

	Main	Future	Apt	Main + Future	Main + Apt	All
Living Area	2670 SF	0 SF	0 SF	2670 SF	2670 SF	2670 SF
Bedrooms	3	0	0	3	3	3
Baths	2.5	0.0	0.0	2.5	2.5	2.5

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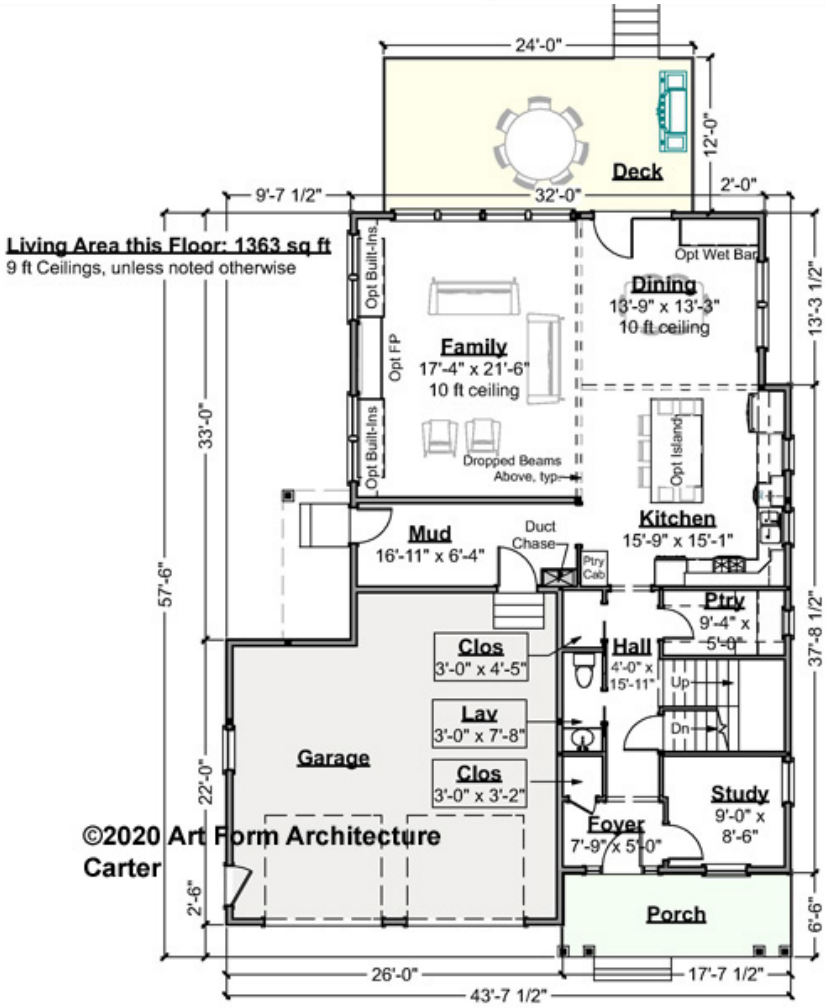
Artform Home Plans

First Floor

	Area	Beds	Baths
Main	1363 SF	0	0.5
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**1363 SF**	**0**	**0.5**

Ceiling Height	
Shown	9'-0"
Possible*	9'-0"

* See Major Change information on plan page for cost



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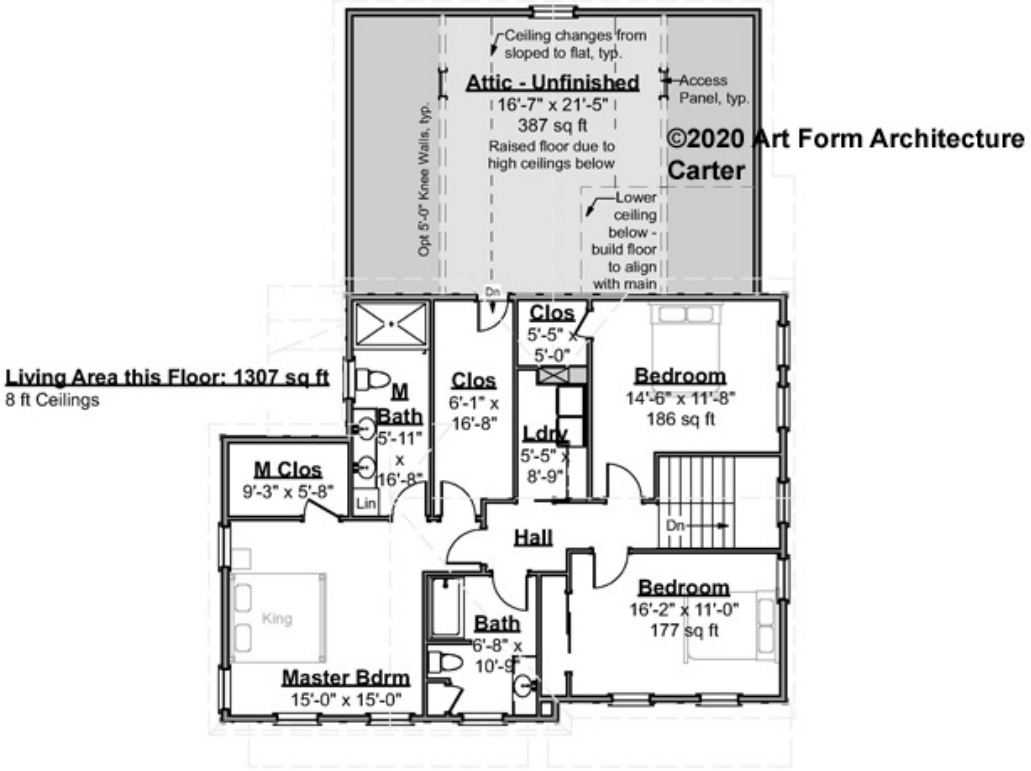
Artform Home Plans

Second Floor

	Area	Beds	Baths
Main	1307 SF	3	2
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**1307 SF**	**3**	**2**

Ceiling Height	
Shown	8'-0"
Possible*	8'-0"

* See Major Change information on plan page for cost



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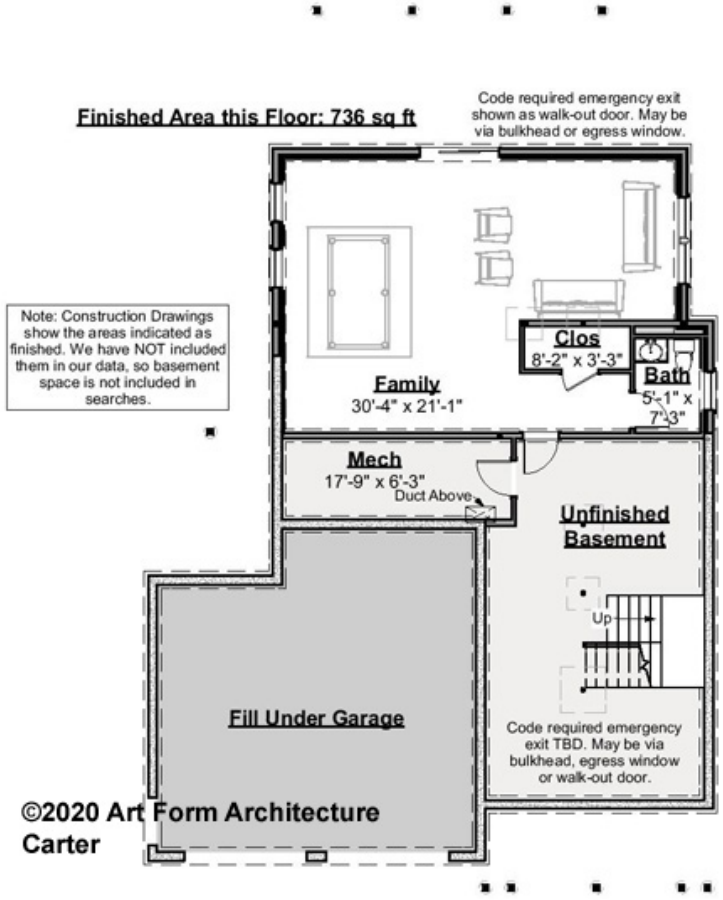
Artform Home Plans

Basement Floor

	Area	Beds	Baths
Main	0 SF	0	0
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**0 SF**	**0**	**0**

Ceiling Height	
Shown	7'-8"
Possible*	8'-4"

* See Major Change information on plan page for cost



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Front Elevation

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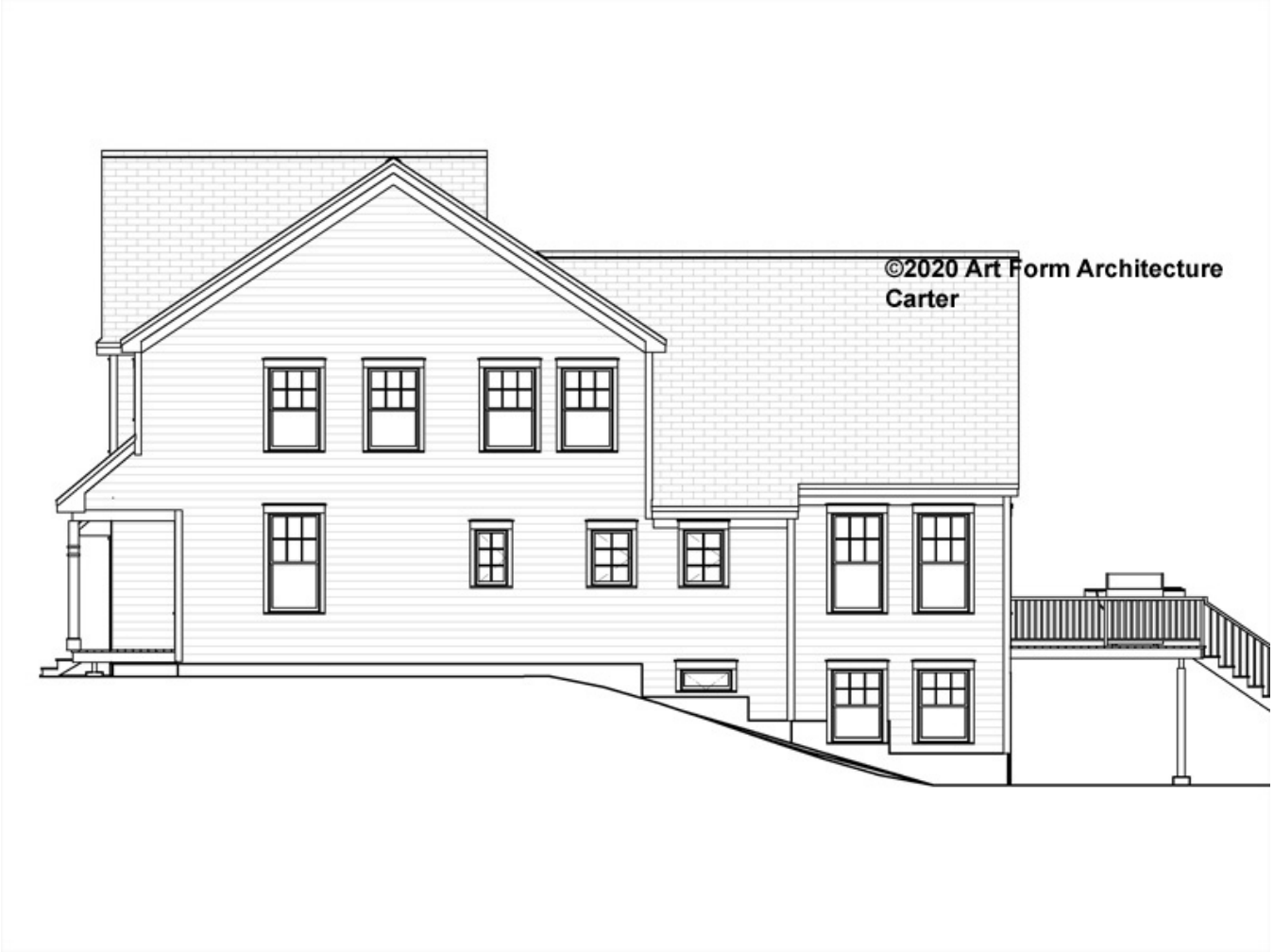

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Rear Elevation

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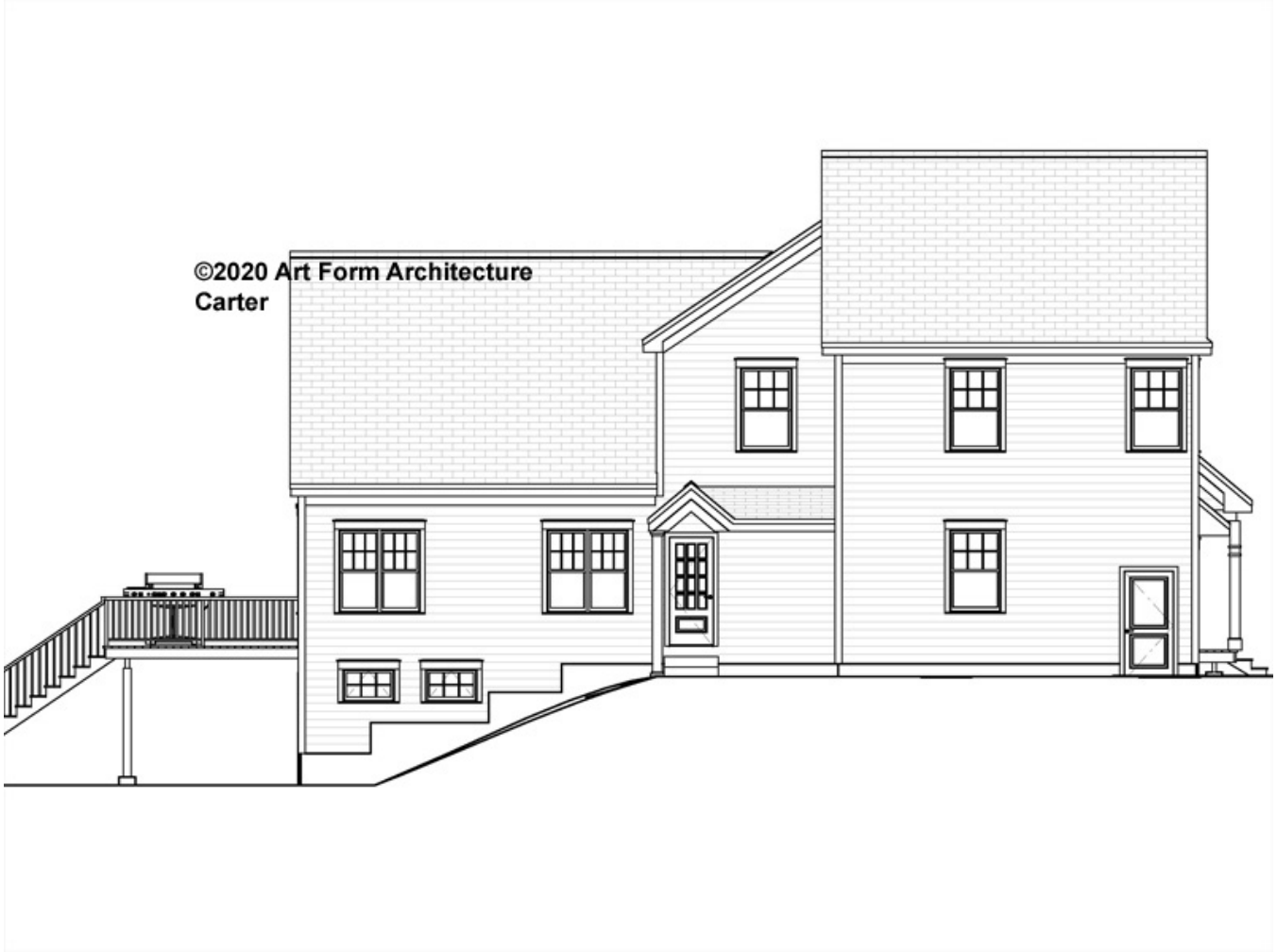
Artform Home Plans

Left Elevation



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Rear Render

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\\afdiskstation\AFA Staff\Access\-Home Designs\by Project\Green & Co - Page Farm\Balmalcolm 540\540.126.v16 Bigger Garage & Porch\CD 540.126.v16 ER 2573 Balmalcolm - Lot 32 Page Farm.layout

Wall Types

Exterior walls 2x6 wood stud
Interior walls 2x4 wood stud, unless noted otherwise

Wall Keys

(2) 2x wood studs on the flat
(3) 2x3 wood stud wall, 16" oc
(6) 2x6 wood stud wall, 16" oc
Note: 2x4 wood stud wall, 16" oc unless otherwise noted

Key Notes

A — 30" x 22" Minimum Attic Access Panel - Insulated (RO 34" x 26")
F — Field locate for plumbing or mechanical
V — Verify size of fixture or appliance Adjust dimensions to accommodate
S — Snug - Door or Window trim will be snug and may need to be cut down
C — Center - Place door or window centered on wall
D — Double Stud or structural mull – adapt to suit chosen window brand. Object is to have some "bite" for curtain hardware and exterior aesthetics.
SD — Smoke Detector
CO — Carbon Monoxide Detector
HD — Heat Detector

Dimensions

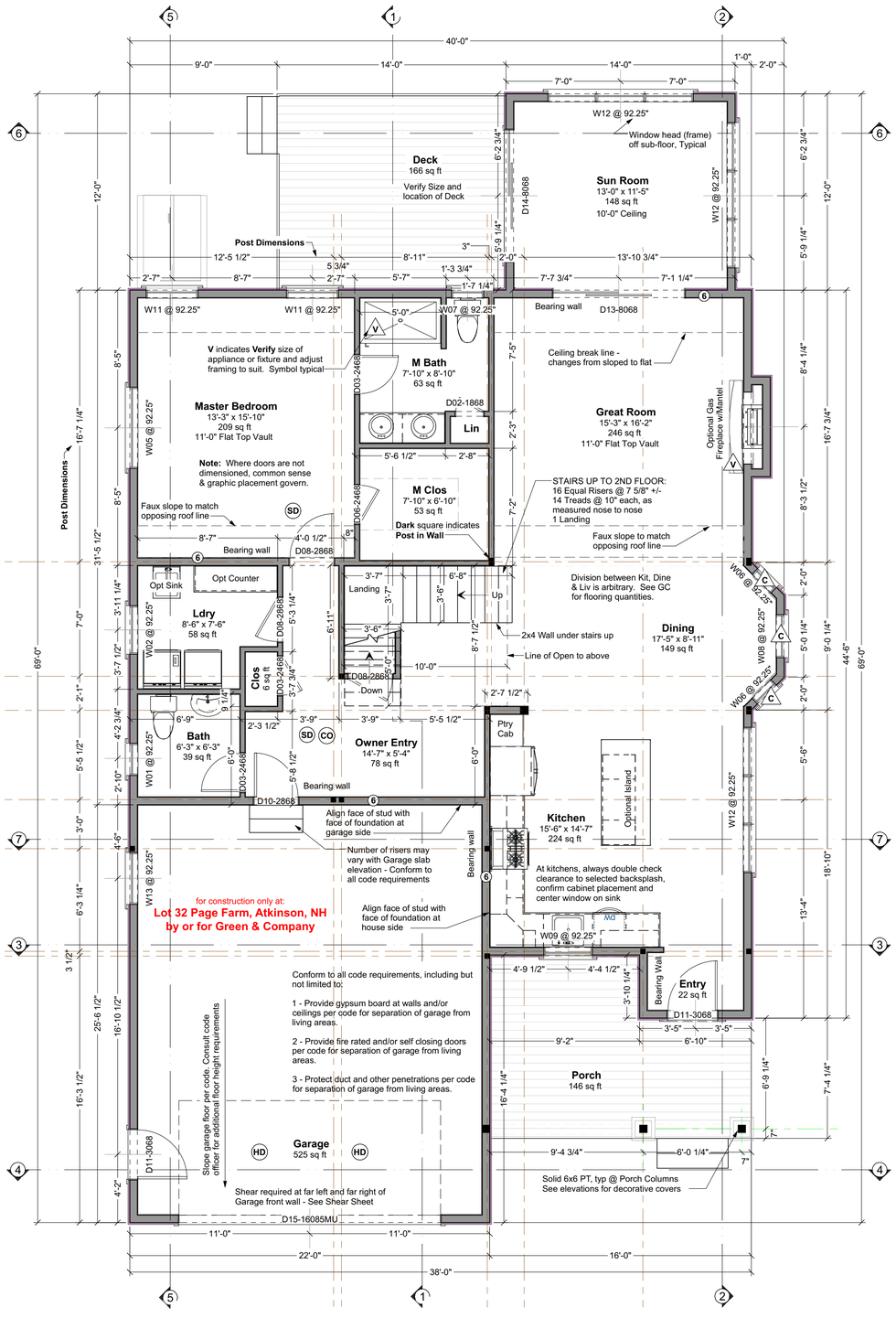
1. Dimensions are to face of stud, unless noted otherwise.
2. Closets are 24" clear inside, unless dimensioned otherwise.

Square Footages

1. Sq ft numbers are interior to room for use in calculating finishes.
2. Cabinets and fixtures not subtracted.
3. Add for doorways when floor finishes run through.

Notes

1. Exterior walls 2x6 wood stud @ 16" oc. Provide insulation & vapor barrier conforming to state or local codes. Interior sheathing 1/2" gypsum board. Provide 1/2" exterior rated sheathing, house wrap with drainage plane and siding. Provide step flashing at walls adjacent to roof planes.
2. Interior walls 2x4 wood stud @ 16" oc, unless noted otherwise.
3. Roof - see structural for rafter sizes. Provide 5/8" exterior rated roof sheathing 15# roofing felt, ice & water shield at eaves and valleys, aluminum drip edge and asphalt shingles or metal roofing. Structure not calculated to support slate or tile. Flash all penetrations. Provide cricket at any added chimneys.
4. Provide roof and/or ceiling insulation per code. Provide soffit and ridge vents where required for insulation strategy. (Verify with code officer - closed cell spray foam or dense-pack cellulose installed at rafters and filling ridge and eaves generally contra-indicates venting, batt insulation always requires venting).
5. Provide smoke detectors where shown, where required by code and where required by local authorities.
6. Provide fire resistive materials where required by code, including but not limited to, firestopping at penetrations, 1/2" drywall on walls and 5/8" drywall on ceilings to separate garage (where garage present in design) from dwelling, and separation of dwellings (where more than one dwelling present in design), and protection of flammable insulation materials.
7. Compliance with code requirements for rooms size and clearances, (hallway widths, room sizes, etc) assume 1/2" drywall on walls and 1/2" drywall on 3/4" strapping on ceilings. Adjust as required if materials differ.
8. Shear is only called out where Continuous Portal Frame will not suffice. See Section R602.10.4 (Pages 173 - 179) of the IRC 2009.



First Floor Plan

1 0 1 2 3 4
1/4"=1'-0"

Living Area this Floor: 1562 sq ft
9ft Finished Ceilings (Unless Noted Otherwise)

NOTE TO HOMEOWNER:
These construction plans ARE NOT a part of your construction contract with your builder, unless your P&S agreement specifies that they are. Your P&S and it's attachments (like the builder's specifications or a review set of this design) describes what you and your builder agreed the builder would build for you. We here at Artform Home Plans do not have the authority to obligate your builder to provide you with amenities like fireplaces and spa tubs. The contract between you and your builder governs.

Balmalcolm

Dear Code Officer,

These are predesigned home plans, designed to bring good design and construction drawings to people at more affordable prices and faster time frames than traditional architecture. Where traditional "Internet" home plans disclaim all responsibility, we split responsibility between us (Artform) and the owner. We encourage the future homeowners to use a quality builder who can assist them with this. They are responsible for thermal and moisture decisions and for meeting code in ways that a quality builder should know without an explicit detail. We are responsible for things that are directly related to the design and/or that a quality builder couldn't reasonably figure out on their own - specifically the following IRC 2009 code sections:

1 - Room sizes (Section R304)
2 - Ceiling Height (Section R305)
3 - Floor space & ceiling height at Toilet, Bath and Shower Spaces (Section R307)
4 - Hallway widths (Section R311.6)
5 - Door types & sizes (Section R311.2)
6 - Floor space in front of doors (Section R311.3)
7 - Stair width - The stairs in our designs will be a minimum of 36" wide measured wall surface to wall surface, allowing compliance with R311.7.1 with installation of correct handrail.
8 - Stairway headroom (Section R311.7.2)
9 - Stair treads and risers (Section R311.7.5)
10 - Landings for stairways (Section R311.7.6)
11 - Emergency Escape Window Sizes (Section R310.2.1, R310.2.2, R310.2.3 and R310.2.4). Casement windows may require manufacturer's emergency escape window hardware. Will also comply with NFPA 101.
12 - Structural Floor Framing (Section R502.3) Where dimensional lumber is shown, framing members will be sized according to this section of the code. Where engineered wood products are shown, those framing members will be size according to the manufacturer's tables for loads and spans, or sizes will have been calculating using manufacturer's published materials properties.
13 - See structural sheets for additional notes.

The builder can and should add information to this set, such as Rescheck, a hand markup of our generic thermal and moisture section, additional information about doors and windows (such as fire rating, tempering, etc), foundation drops relative to site grading, and sometimes their chosen method of basement egress. These drawings are not intended to be used without that additional information.

Where a construction address is shown on the drawings, it is for copyright control only. We have not inspected the site, adapted the design to state specific laws (except where it says so in the drawings) or site or region specific climate conditions. Homeowner and/or Builder shall be responsible for thermal and moisture control strategies, materials choices and compliance with applicable laws and ordinances.

Please do feel free to call us with any questions. We can and do update our drawings and standard notes to address specific concerns, especially in jurisdictions where our clients will be building again.

Dear Everybody,

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Permissible uses of these drawings:

1. All activities associated with construction at the listed address.
2. Pricing or preliminary discussions with zoning or code officials for construction at other addresses, with prior notification to Artform Home Plans - just use the Contact form on the web site – http://www.artformhomeplans.com/contact.a5w

Not Permitted:

1. Application for any permits or other approvals for construction at properties other than the listed address, including but not limited to construction, zoning, conservation, or design review.
2. Modification of the basic design.

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We can provide drawings suitable for use in obtaining design or zoning approvals without incurring the expense of a full set of construction drawings. Contact us for more information.
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These drawings are intended for use by an experienced professional builder in responsible charge of the entire project, including but not limited to mechanical, electrical and sitework. Any additional adaptation for these trades or other trades must be determined prior to start of construction. Contact Artform for any adjustments needed.

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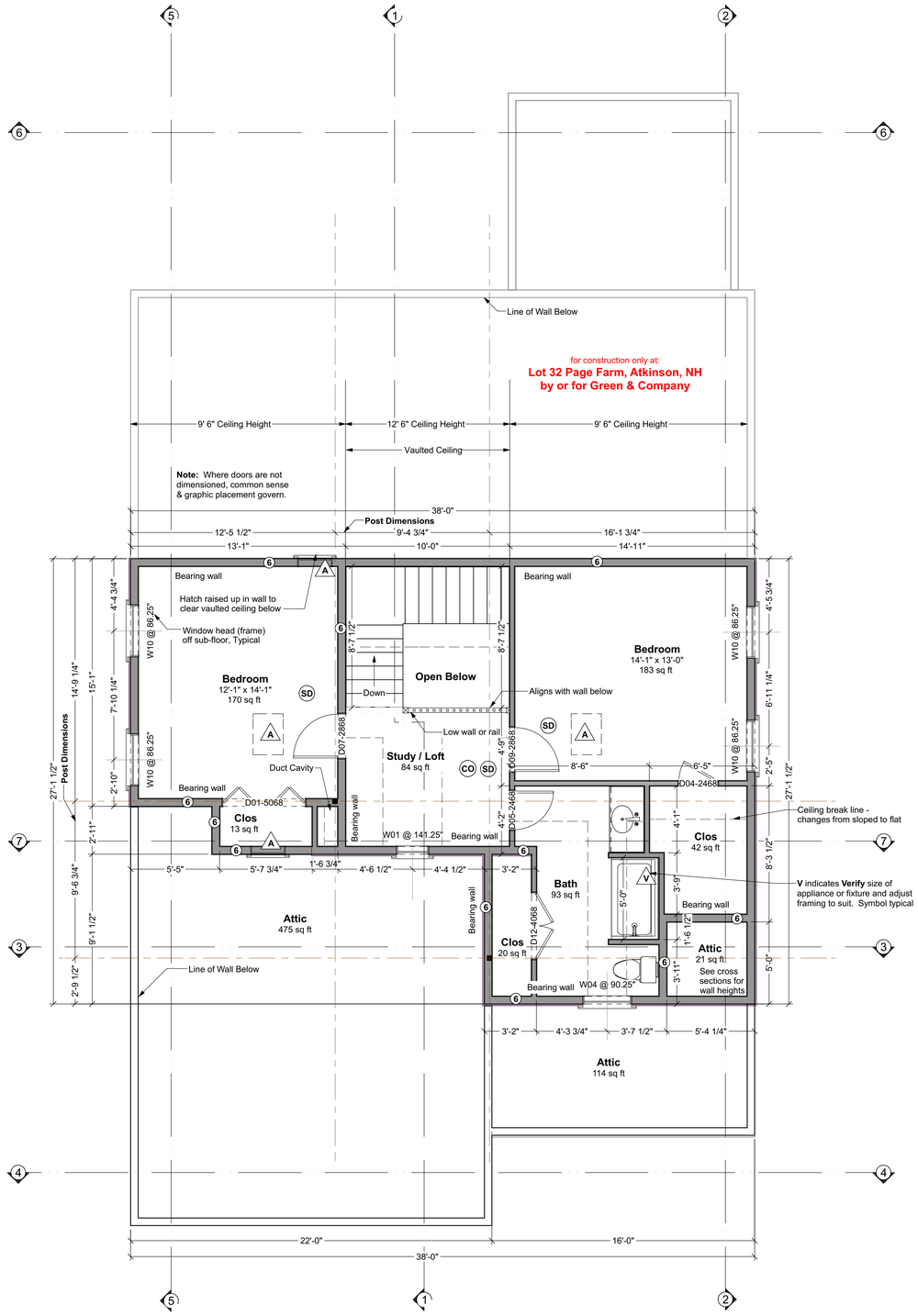
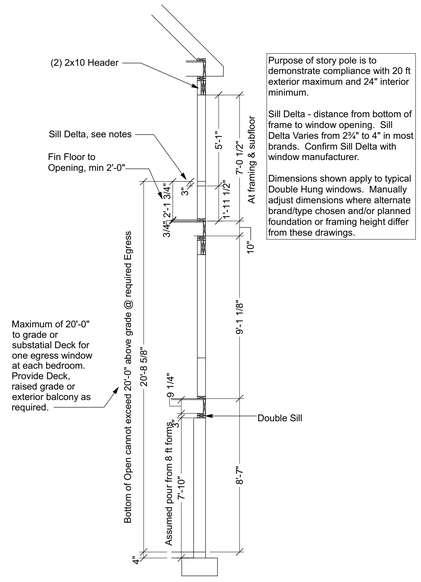


Second Floor Plan

1 0 1 2 3 4

Living Area this Floor: 793 sq ft
9'-6" Ceilings, unless noted otherwise



Window Story Pole

Scale ¼"=1'-0"

Door & Window Notes

1. **Rated Doors:** Provide fire rated and/or self-closing doors where required by local codes or local authorities
2. **Trimmed Openings:** Trimmed openings not shown on schedule. See Plan.
3. **Window Tempering:** Provide tempered windows where required by local codes or local authorities. Tempering column provided here for convenience. Windows have not been reviewed for tempering requirements.
4. **Window RO's:** 1/4" or 1/2" on each of 4 sides allowed for window RO's, typical. Review framing size vs RO size. Adjust per manufacturer's requirements and/or builder preference.
5. **Egress Windows:** Provide minimum one door or window meeting egress requirements in basement, in each sleeping room, in each potential sleeping room, and other locations required by local code, in sizes required by local code. Note that casement windows coded by manufacturer as meeting IRC 2006 egress requirements typically need to be ordered with specific hardware. Emergency Escape Window Sizes (Section R310.1.1, R310.1.2, R310.1.3 and R310.1.4). Will also comply with NFPA 101.
6. **Basement Windows:** Add basement windows as required to meet state or local code requirements, including but not limited to egress and light/ventilation.
7. **Skylights:** Skylights are not shown on this schedule, but may be required. Consult builder and/or see floor plan.
8. **Minimum window sill height:** IRC 2009 and later requires that floor window sills be 24" from floor. Confirm bottom of window opening relative to frame. Adjust head heights as required to conform to IRC

DOOR SCHEDULE

NUMBER	QTY	FLOOR	SIZE	WIDTH	HEIGHT	TYPE	COMMENTS
D01	1	2	5068 L/R	60 "	80 "	4 DR. BIFOLD	
D02	1	1	1868 R IN	20 "	80 "	HINGED	
D03	3	1	2468 L IN	28 "	80 "	HINGED	
D04	1	2	2468 R IN	28 "	80 "	HINGED	
D05	1	2	2468 L IN	28 "	80 "	HINGED	
D06	1	1	2468 R IN	28 "	80 "	HINGED	
D07	1	2	2868 L IN	32 "	80 "	HINGED	
D08	3	1	2868 R IN	32 "	80 "	HINGED	
D09	1	2	2868 R IN	32 "	80 "	HINGED	
D10	1	1	2868 L EX	32 "	80 "	HINGED	
D11	2	1	3068 R EX	36 "	80 "	HINGED	
D12	1	2	4068 L/R IN	48 "	80 "	DOUBLE HINGED	
D13	1	1	8068 R IN	96 "	80 "	SLIDER	
D14	1	1	8068 L EX	96 "	80 "	SLIDER	
D15	1	1	16085	192 "	101 "	MULLED UNIT	GARAGE W/ TRANSOM

WINDOW SCHEDULE

NUMBER	QTY	WIDTH	HEIGHT	R/O	EGRESS	TEMPERED	DESCRIPTION	MANUFACTURER	COMMENTS
W01	2	23 1/2 "	23 1/2 "	24"X24"			SINGLE AWNING		
W02	1	35 1/2 "	23 1/2 "	36"X24"			SINGLE AWNING		
W03	1	35 1/2 "	35 1/2 "	36"X36"			SINGLE AWNING		
W04	1	35 1/2 "	35 1/2 "	36"X36"		YES	SINGLE AWNING		
W05	1	59 1/2 "	23 1/2 "	60"X24"			SINGLE AWNING		
W06	2	19 1/2 "	65 1/2 "	20"X66"			DOUBLE HUNG		
W07	1	23 1/2 "	51 1/2 "	24"X52"		YES	DOUBLE HUNG		
W08	1	31 1/2 "	65 1/2 "	32"X66"			DOUBLE HUNG		
W09	1	35 1/2 "	47 1/2 "	36"X48"			DOUBLE HUNG		
W10	4	38 "	61 1/2 "	38 1/2"X62"	YES		DOUBLE HUNG		
W11	2	38 "	65 1/2 "	38 1/2"X66"	YES		DOUBLE HUNG		
W12	3	106 1/2 "	65 1/2 "	107"X66"			3X DH		
W13	1	38 "	65 1/2 "	38 1/2"X66"			DOUBLE HUNG		

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Structural General Notes:

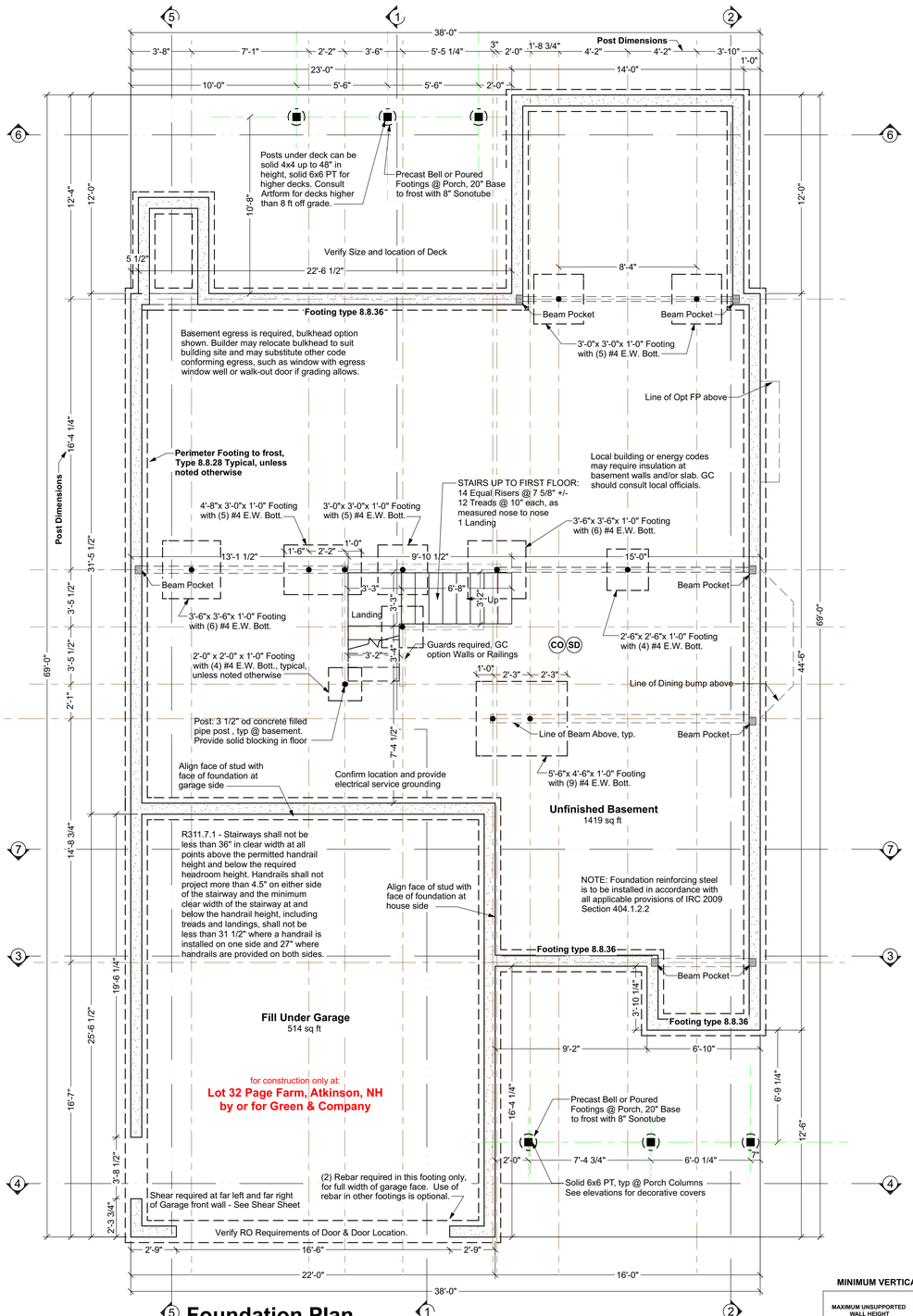
1. Builder shall consult and follow the building code and other regulations in effect for the building site for all construction details not shown in these drawings. Requirements described here are specific to this design and/or are provided as reference. Additional building code or local requirements may apply.
2. Builder shall maintain a safe worksite, including but not limited to, provision of temporary supports where appropriate and adherence to applicable safety standards.
3. Design is based on the snow load listed on the framing plans, 100 mph basic wind speed, Exposure type B, soil bearing capacity of 2000 psf, and Seismic Category C, unless otherwise noted on the framing plans. Builder shall promptly inform Artform Home Plans of differing conditions.

Foundations

1. No footing shall be poured on loose or unsuitable soils, in water or on frozen ground.
2. All exterior footings to conform to all applicable code requirements for frost protection.
3. All concrete shall have a minimum compressive strength of at least 3000 PSI at 28 days.
4. Foundation anchorage to comply with IRC 2009 Section R403.1.6, it shall consist of minimum size 1/2" diameter anchor bolts with 3/16" x 2" x 2" washers at a maximum of 72" oc for two stories or 48" oc for more than two stories, max of 12" from each corner, min of 2 bolts per wall. Anchor bolt shall extend 7" into concrete or grouted cells of concrete masonry units. Be aware that a garage under may be counted by your code officer as a story. Additional anchorage may be required at braced walls.

Wood Framing

1. All structural wood shall be identified by a grade mark or certificate of inspection by a recognized inspection agency.
2. Structural wood shall be Spruce-Pine-Fir (SPF) #2 or better.
3. When used, LVL or PSL indicate Laminated Veneer Lumber or Parallel Strand Lumber, respectively. Products used shall equal or exceed the strength properties for the size indicated as manufacturered by TrusJoist.
4. When used, AJS indicates wood I-joists as manufactured by Boise Cascade. Products of alternate manufacturers may be substituted provided they meet or exceed the strength properties for the member specified.
5. All floor joists shall have bridging installed at mid-span or at 8'-0" oc maximum.
6. Floor systems are designed for performance with subfloor glued and screwed.
7. At posts, provide solid framing/blocking to supports below. Provide minimum 1 1/2" bearing length for all beams and headers, unless noted otherwise.
8. All wood permanently exposed to the weather, in contact with concrete or in contact with the ground shall meet code requirements for wood in these environments.
9. Deck ledgers shall be securely attached to the structure and/or independently supported, including against lateral movement, per building code requirements and best practices. Unless otherwise noted, decks shall have solid 4x4 pt posts up to 6 ft above grade, and solid 8x8 for heights above that.
10. Wherever beams are noted as Flush framed, install joist hangers at all joists, sized appropriately for the members being connected.
11. Support the lower end of roof beams via minimum 2" horizontal bearing on a post, ledger or via an appropriately sized and configured hanger.
12. Where multiple beams are supported on one post, provide min 2" bearing for each, via either appropriately sized post cap or additional post(s).
13. Hangers, post caps, ties and other connectors shall be as manufactured by Simpson Strong Tie, as designed to connect the members shown, and shall be installed per manufacturer's instructions.



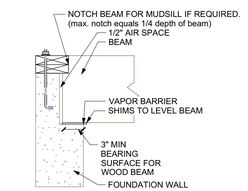
Foundation Plan

Structure designed for Snow Load of 55 PSF

1 0 1 2 3 4

Ceiling height may vary: 8 ft Forms

Post Caps: Typically supplier calculates weights based on these framing plans. Contact Art Form if additional information is needed.



Beam Pocket

Scale 1/2"=1'-0"

TYPICAL PERIMETER FOUNDATION WALL:

- 8" poured concrete, 8 ft forms, min 7'-10" finished, with total of 3 rebar, as follows:
- (1) #4 rebar, 4" from top
- (1) #4 rebar @ vertical midpoint. Omit this rebar at walls 4 ft high or less.
- (1) #4 rebar, min 3" from bottom or per code
- Lap corners & splices of rebar per code.
- Secure sill to foundation with 1/2" diameter anchor bolts that extend 7" into concrete and tightened with a nut and washer @ 6' oc & max 12" from each corner & each end @ wood sill splices - if built-up sill, bolts must extend through all sill plates or straps must secure all sill plates.

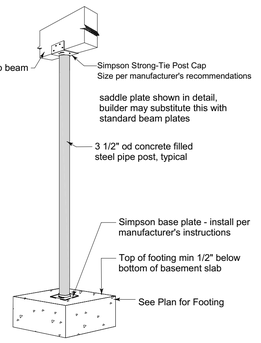
TYPICAL PERIMETER FOOTING:

1. Verify that depth of home matches chart. Depth is foundation dimension eave to eave. Contact Artform Home Plans if you believe the chart does not match the plan.
2. Select column for snow load shown on the structural plans.
3. Select soil bearing pressure based on soil type and/or consultation with code officer.
4. The required footing size is at the intersection of the Snow Load and Soil PSI. Rebar is not required. Key or pin foundation wall to footing per code. For the purposes of permitting, soil bearing for New England is assumed to be 2,000 PSI.

FAQ - Adding rebar to footings does not reduce the required width. Rebar affects performance with earth movement, like an earthquake and has near zero effect on bearing capacity.

Guide to Soil PSI

3,000	Sandy gravel and/or gravel (GW and GP)
2,000	Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC)
1,500	Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH)



Typical Basement Post

Not to scale

Footing Size / Type 8.8.28		up to 28 ft plan depth 8 ft nominal basement height 8" foundation wall Full basement plus 2 stories				
		Snow Load				
		50	60	70	80
Soil PSI	3,000	16" x 8"	16" x 8"	16" x 8"	16" x 8"
	2,000	18" x 8"	18" x 8"	18" x 8"	20" x 8"
	1,500	22" x 8"	22" x 8"	24" x 8"	24" x 8"

Footing Size / Type 8.8.32		29-32 ft plan depth 8 ft nominal basement height 8" foundation wall Full basement plus 2 stories			
		Snow Load			
		50	60	70	80
Soil PSI	3,000	16" x 8"	16" x 8"	16" x 8"	16" x 8"
	2,000	18" x 8"	20" x 8"	20" x 8"	22" x 8"
	1,500	24" x 8"	26" x 8"	26" x 8"	28" x 8"

Footing Size / Type 8.8.36		33-36 ft plan depth 8 ft nominal basement height 8" foundation wall Full basement plus 2 stories			
		Snow Load			
		50	60	70	80
Soil PSI	3,000	16" x 8"	16" x 8"	16" x 8"	16" x 8"
	2,000	20" x 8"	20" x 8"	22" x 8"	24" x 8"
	1,500	26" x 8"	28" x 8"	30" x 8"	30" x 8"

MINIMUM VERTICAL REINFORCEMENT FOR 8-INCH (203MM) NOMINAL FLAT CONCRETE BASEMENT WALL

MAXIMUM UNSUPPORTED WALL HEIGHT (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT (feet)	MINIMUM VERTICAL REINFORCEMENT - BAR SIZE AND SPACING (inches)		
		Soil classes and design lateral soil (psf per foot of depth)		
		GW, GP, SW, SP 30	GM, GC, SM, SM-SC and ML 45	SC, ML-CL and inorganic CL 60
8	4	NR	NR	NR
	5	NR	NR	NR
	6	NR	NR	6 @ 37
	7	NR	6 @ 36	6 @ 35
	8	6 @ 41	6 @ 35	6 @ 26

Foundation Contractor Check List

Confirm or review the following prior to forming & pouring foundation

Initials	Date	Checked
____	_____	Confirmed soil bearing
____	_____	Checked w/GC for added foundation steps to suit grade
____	_____	Confirm sill plate thickness (foundation bolts to extend through all)
____	_____	Confirmed garage door size
____	_____	Checked w/GC for added basement windows
____	_____	Checked w/GC for added basement man doors
____	_____	Confirmed sizes & locations mech/plbg penetrations
____	_____	Confirmed sizes and locations of beams w/GC, added or adjusted beam pockets
____	_____	Confirmed location and installed electrical service grounding - See GC for location

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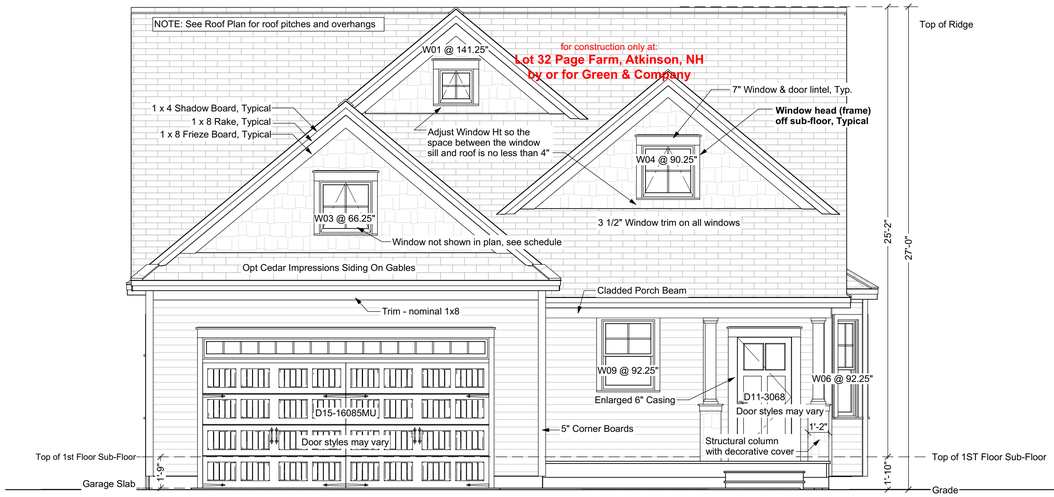
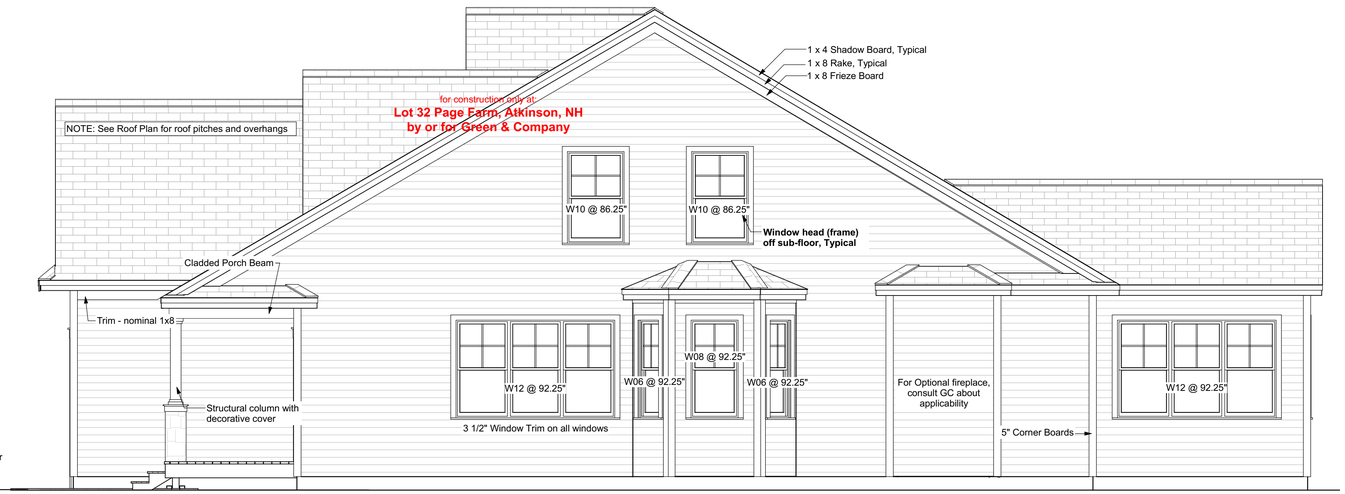


Garage slab height may vary. If garage slab height is lower than shown, consult Artform for aesthetic direction. Taller garage doors, transoms, lintels and/or additional frieze boards may be required to achieve desired look.

Not shown - number of steps may vary - handrail may be required per code.

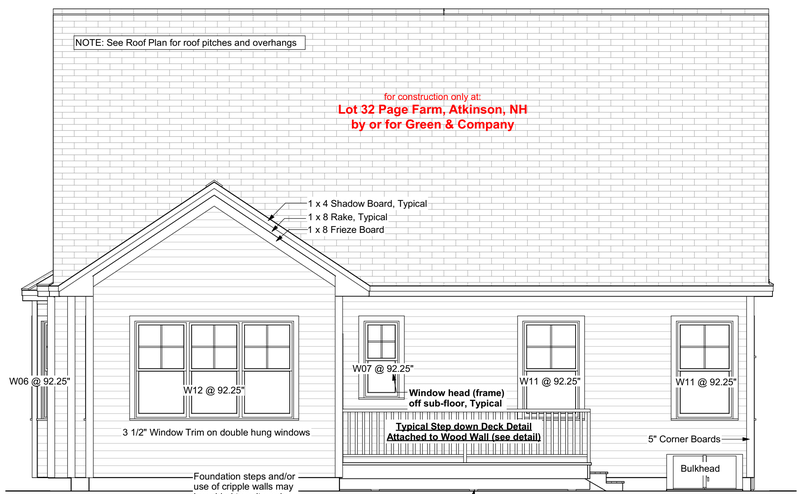
Front Elevation

Note - Actual grade level may vary. Where zoning height restrictions apply, builder shall verify conformance. Manual markup of drawings to demonstrate compliance is recommended.



Right Elevation

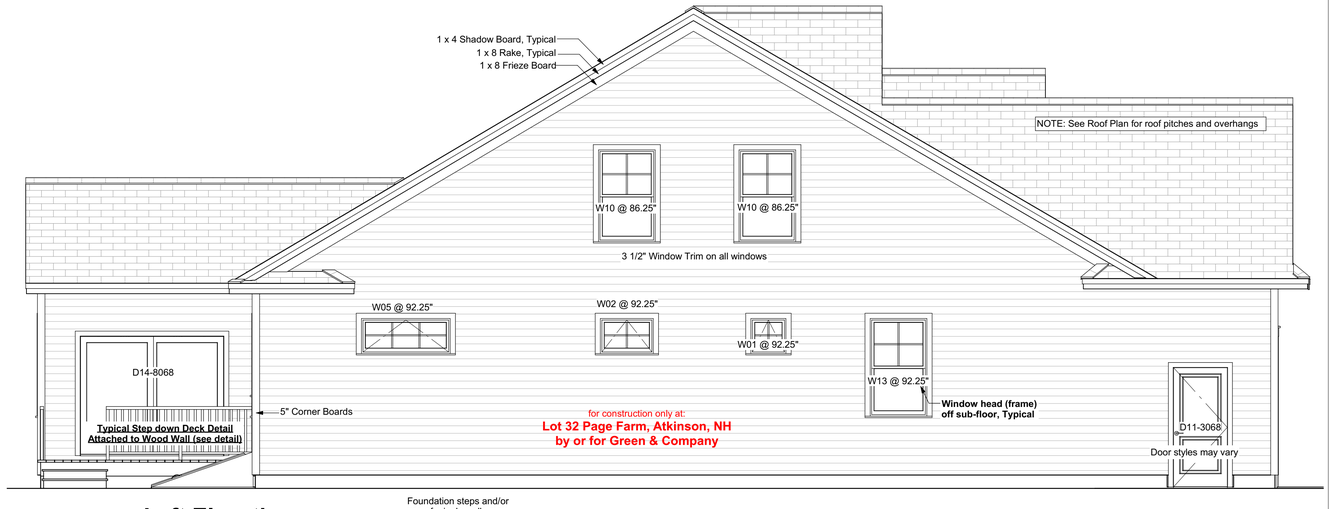
Foundation steps and/or use of cripple walls may be added to suit grade.



Rear Elevation

Posts under deck can be solid 4x4 up to 48" in height, solid 6x6 PT for higher decks. Consult Artform for decks higher than 8 ft off grade.

Basement egress is required, bulkhead option shown. Builder may relocate bulkhead to suit building site and may substitute other code conforming egress, such as window with egress window well or walk-out door if grading allows.



Left Elevation

Foundation steps and/or use of cripple walls may be added to suit grade.

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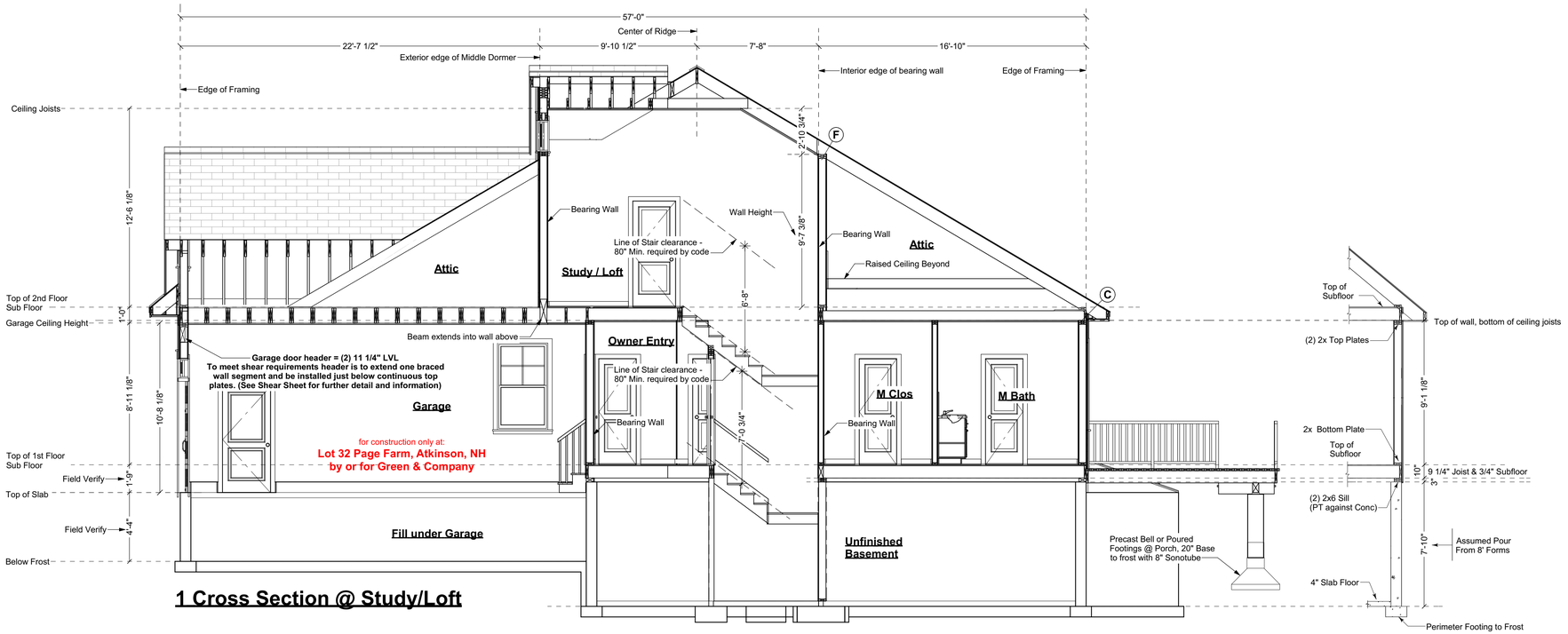
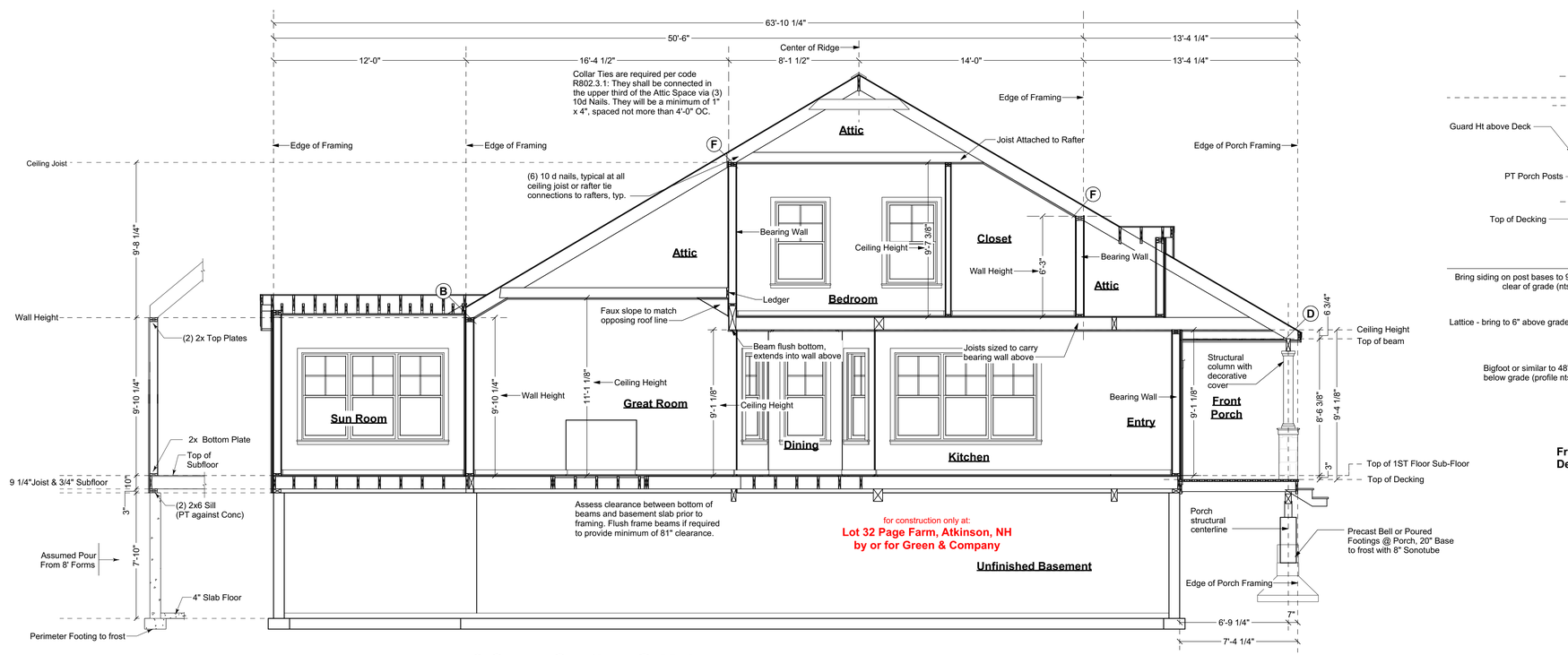
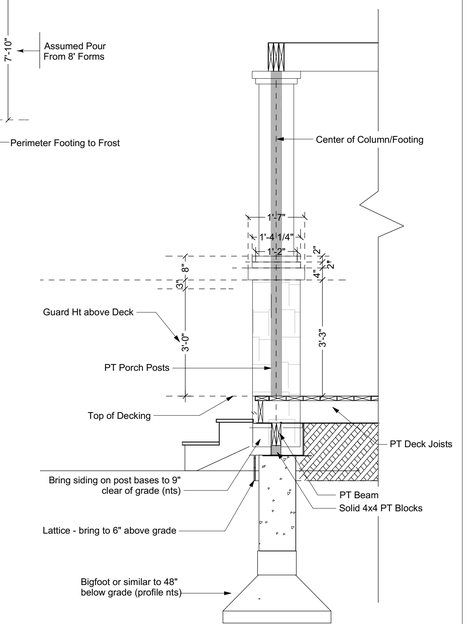


1 Cross Section @ Study/Loft



2 Cross Section @ Main



Column Detail

From Column Center = 5" to Edge of Decking, 4" to Edge of Deck Framing.

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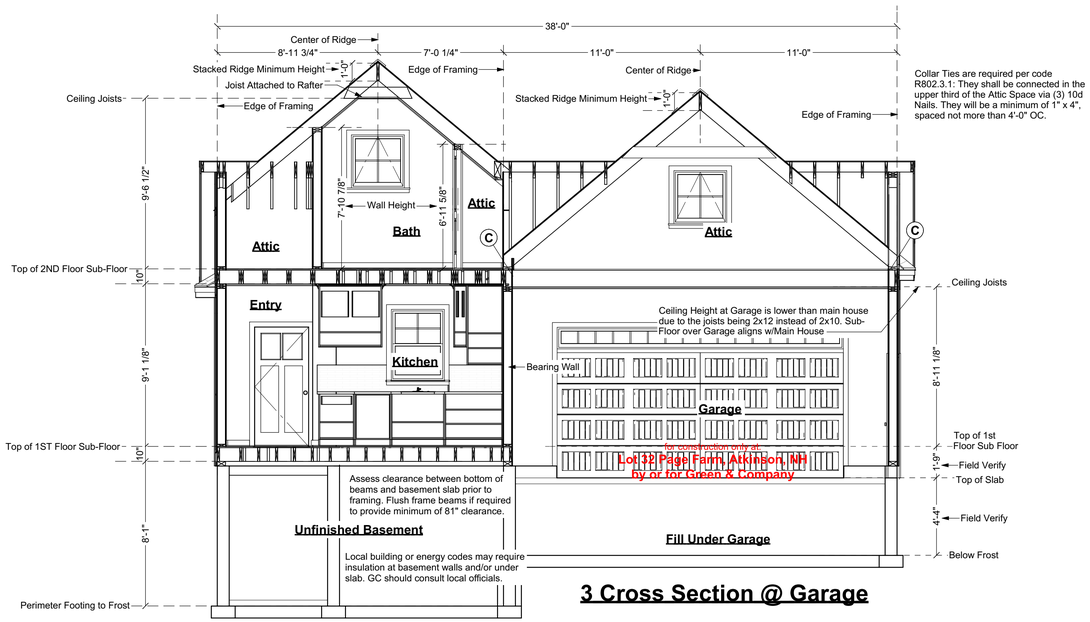
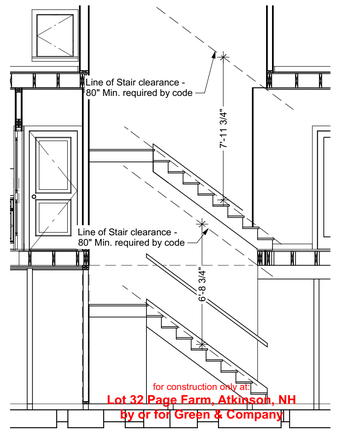
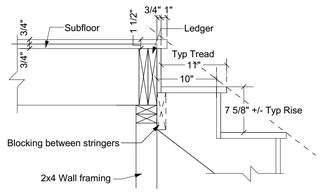


3 Cross Section @ Garage



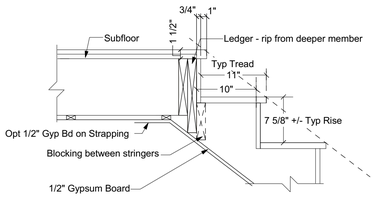
Line of Stair Clearance (Lower)



Detail shows assumptions used for framing plan RO
Framer may adjust to suit different head support methods

Top of Carriage (B)

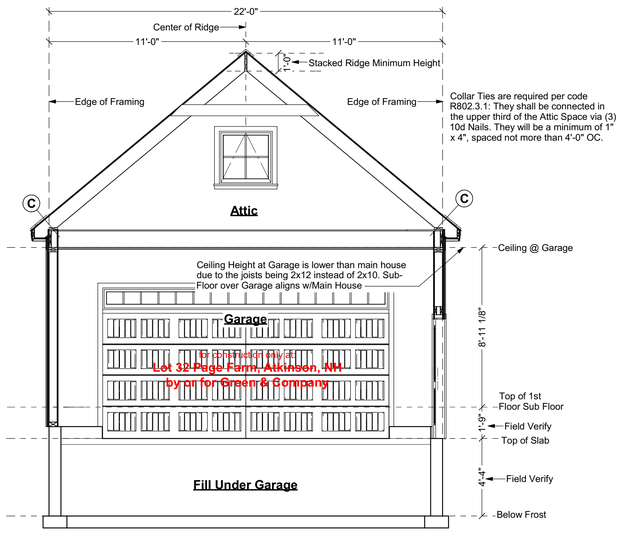
Scale: 1" = 1'-0"



Detail shows assumptions used for framing plan RO
Framer may adjust to suit different head support methods

Top of Carriage (C)

Scale: 1" = 1'-0"



4 Cross Section @ Front Porch

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Balmalcolm
Lot 32 Page Farm
Atkinson, NH

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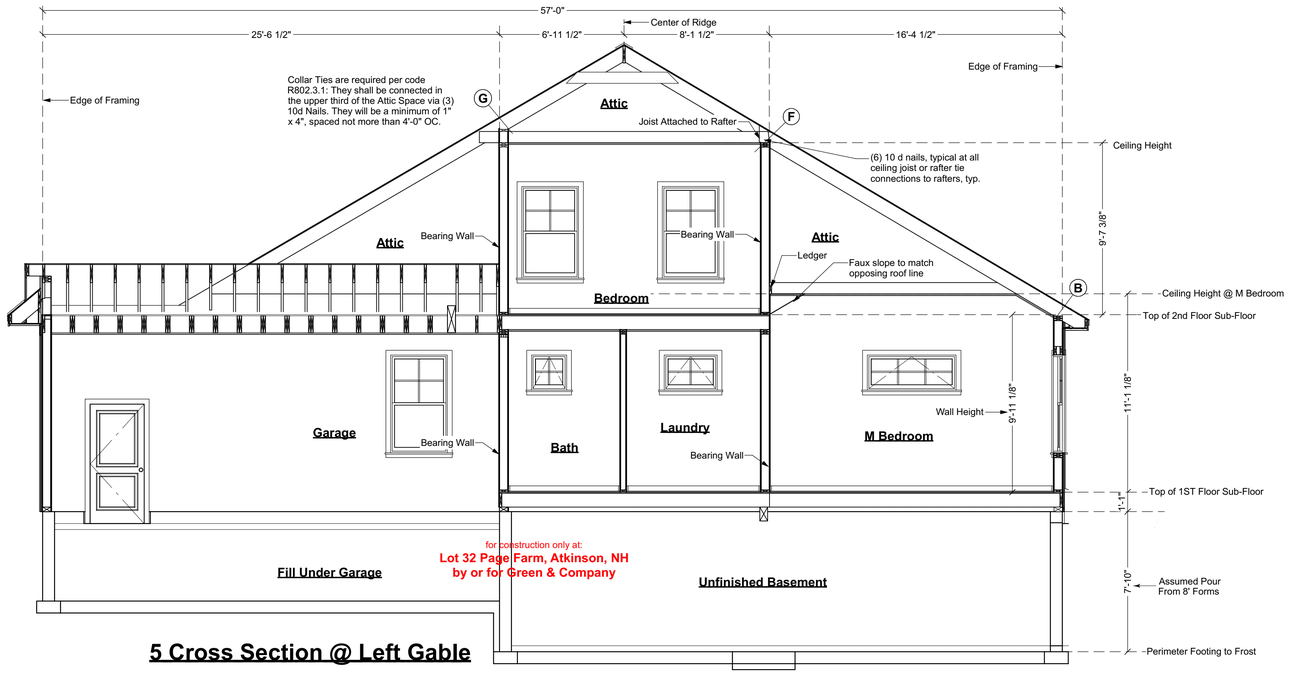

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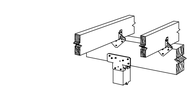
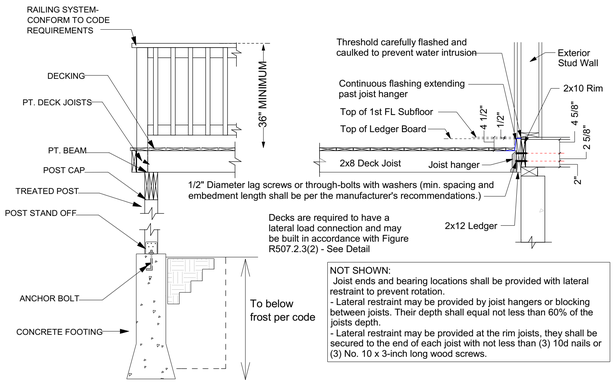
5 Cross Section @ Left Gable



POST CAP & JOIST ATTACHMENT

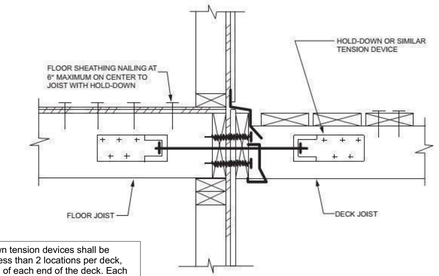
POST CAP

POST STAND OFF



Deck Ledger Attachment Detail for Step Down

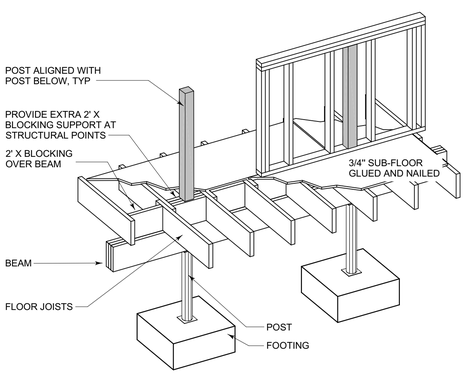
Scale: 1/2" = 1'-0"

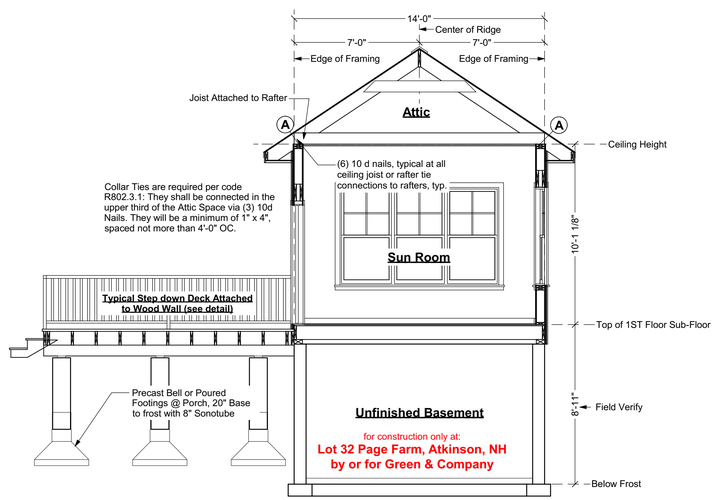


NOTE: hold down tension devices shall be installed in not less than 2 locations per deck, within 24 inches of each end of the deck. Each device shall have an allowable stress design capacity of not less than 1,500 lbs.

FIGURE R507.2.3(2)
DECK ATTACHMENT FOR LATERAL LOADS

Follow manufacturer's instructions both for installation of joist hangers to joist and to beam. The illustration below, by Simpson Strong Tie, is provided as a courtesy. Consult their full manual for acceptable fastener sizes and other important instructions.





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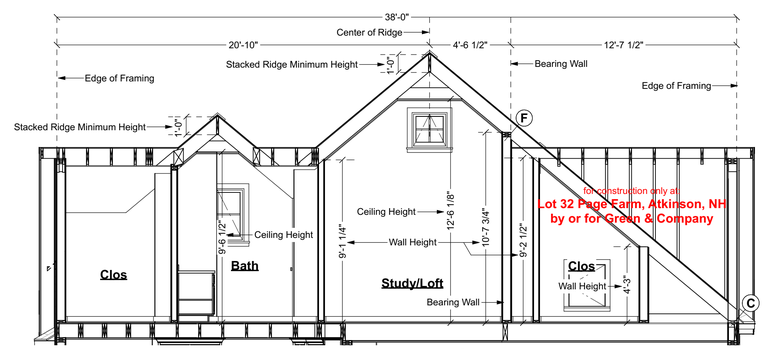
6 Cross Section @ Sun Room



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7 Cross Section @ Bath

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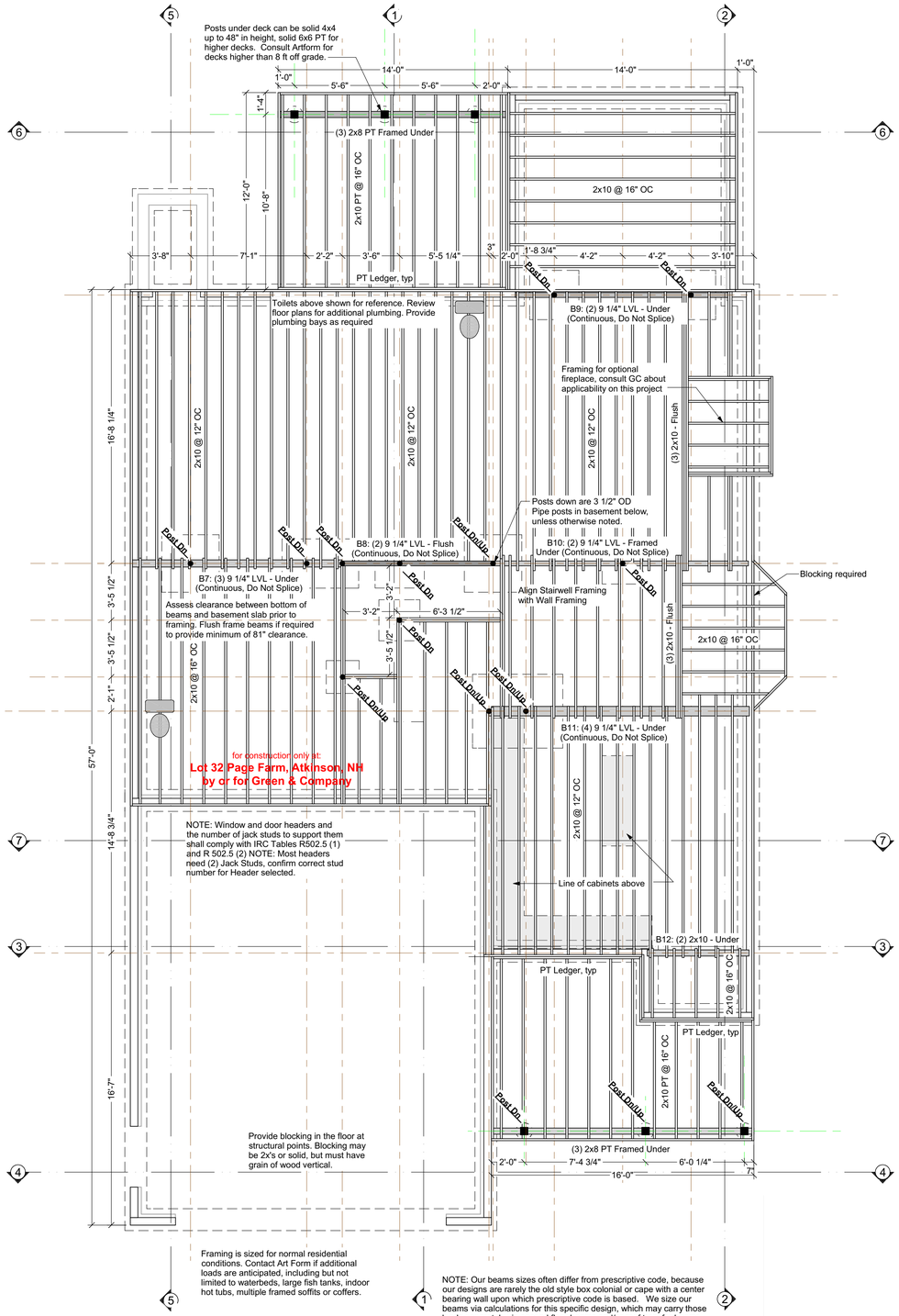
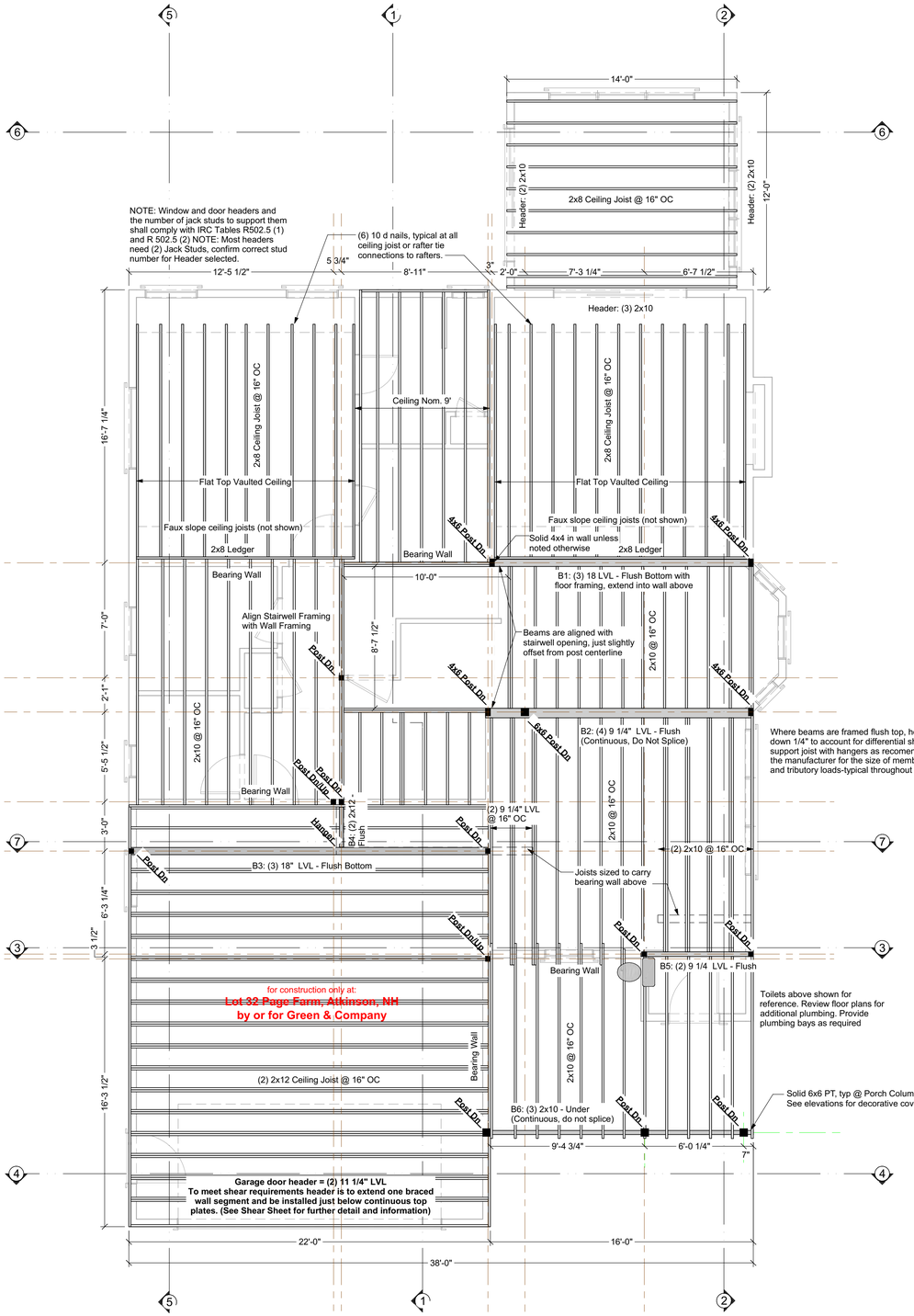


First Floor Framing

Structure designed for Snow Load of 55 PSF

1 0 1 2 3 4



Second Floor Framing

Structure designed for Snow Load of 55 PSF

1 0 1 2 3 4

Framing is sized for normal residential conditions. Contact Art Form if additional loads are anticipated, including but not limited to waterbeds, large fish tanks, indoor hot tubs, multiple framed soffits or coffers.

Built-up Beams:
Unless otherwise noted, connect multiple 1 3/4" ply beams as follows:
3 ply & up, fasteners are per side

(2) 9 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 24" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 24" oc
- Framed under (2) rows 10d nails @ 24" oc

(2) 11 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 19.2" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 19.2" oc
- Framed under (2) rows 10d nails @ 24" oc

(2) 16" LVL or greater:
- Flush framed
  - (3) rows 3 3/8" TrussLock @ 19.2" oc, or
  - (3) rows SDS 1/4x3 1/2 @ 19.2" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 9 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 19.2" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 19.2" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 11 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 16" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 14" LVL:
- Flush framed
  - (3) rows 3 3/8" TrussLock @ 16" oc, or
  - (3) rows SDS 1/4x3 1/2 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 16" LVL or greater:
- Flush framed
  - (3) rows 3 3/8" TrussLock @ 16" oc, or
  - (3) rows SDS 1/4x3 1/2 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(4) 9 1/4" LVL:
- Flush framed
  - (2) rows 5" TrussLock @ 16" oc, or
  - (2) rows SDS 1/4x6 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(4) 11 1/4" LVL:
- Flush framed
  - (2) rows 5" TrussLock @ 16" oc, or
  - (2) rows SDS 1/4x6 @ 16" oc
- Framed under (2) rows 10d nails @ 12" oc

(4) 16" LVL or greater:
- Flush framed
  - (3) rows 5" TrussLock @ 16" oc, or
  - (3) rows SDS 1/4x6 @ 16" oc
- Framed under (2) rows 10d nails @ 12" oc

Beam Substitutions:

(2) 9 1/4" LVL may replace a double or triple 2x10 beam. No other substitutions are allowed. Conventional lumber beams MAY NOT be substituted for LVL beams by any "rule of thumb". Substitutions must be calculated by either Artform or a structural engineer. If calculated by a structural engineer, provide stamped plans and/or calculations.

We specify LVL beams as built up members to allow framers to use existing stock. You may substitute single piece LVLs of equivalent overall size for built-up members, unless otherwise noted.

Built-up members MAY NOT replace single piece LVL's where specified.

Where a beam of 1 3/4" or less in width is specified as framed under, either brace at 48" or double member for lateral stability.

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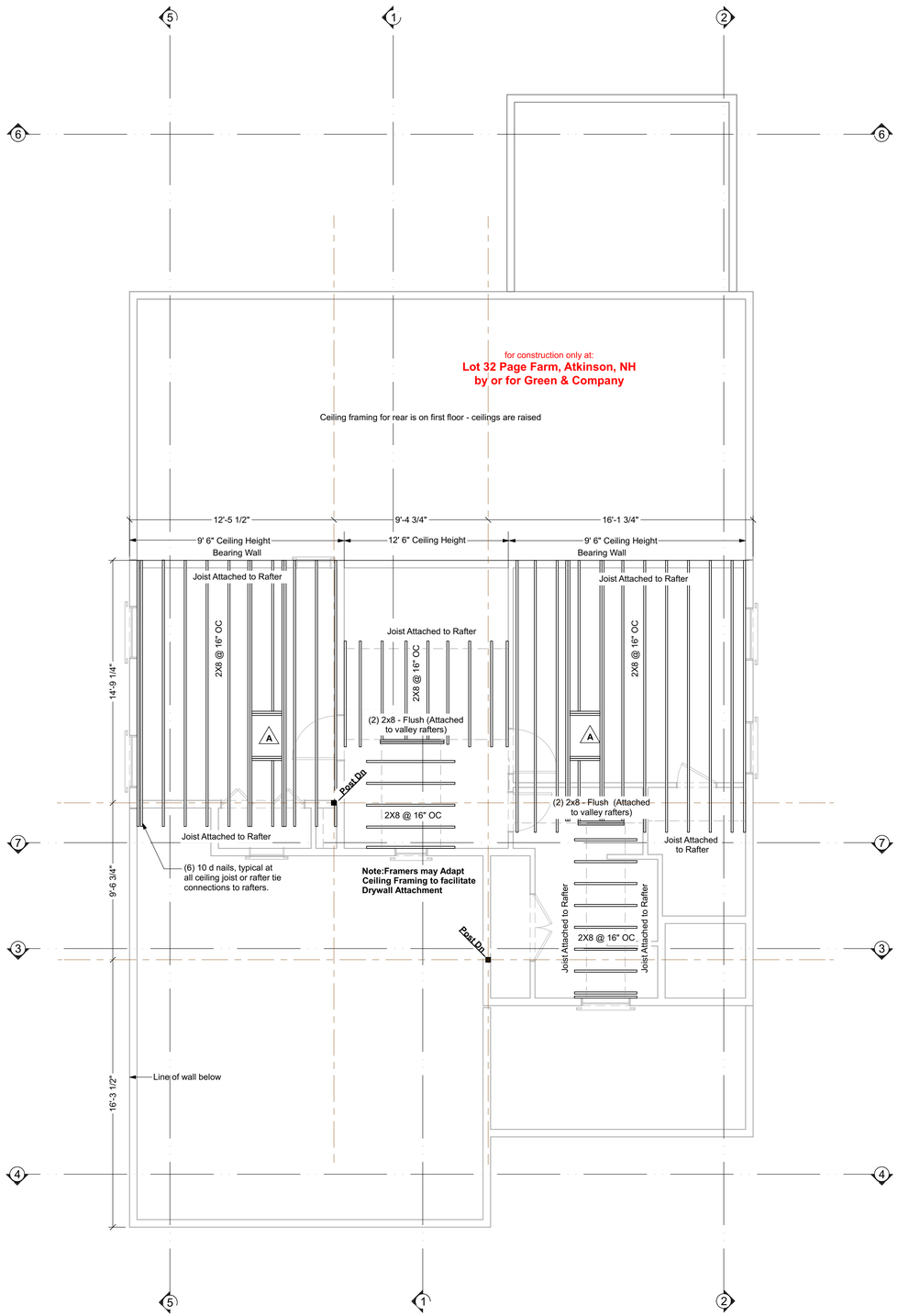
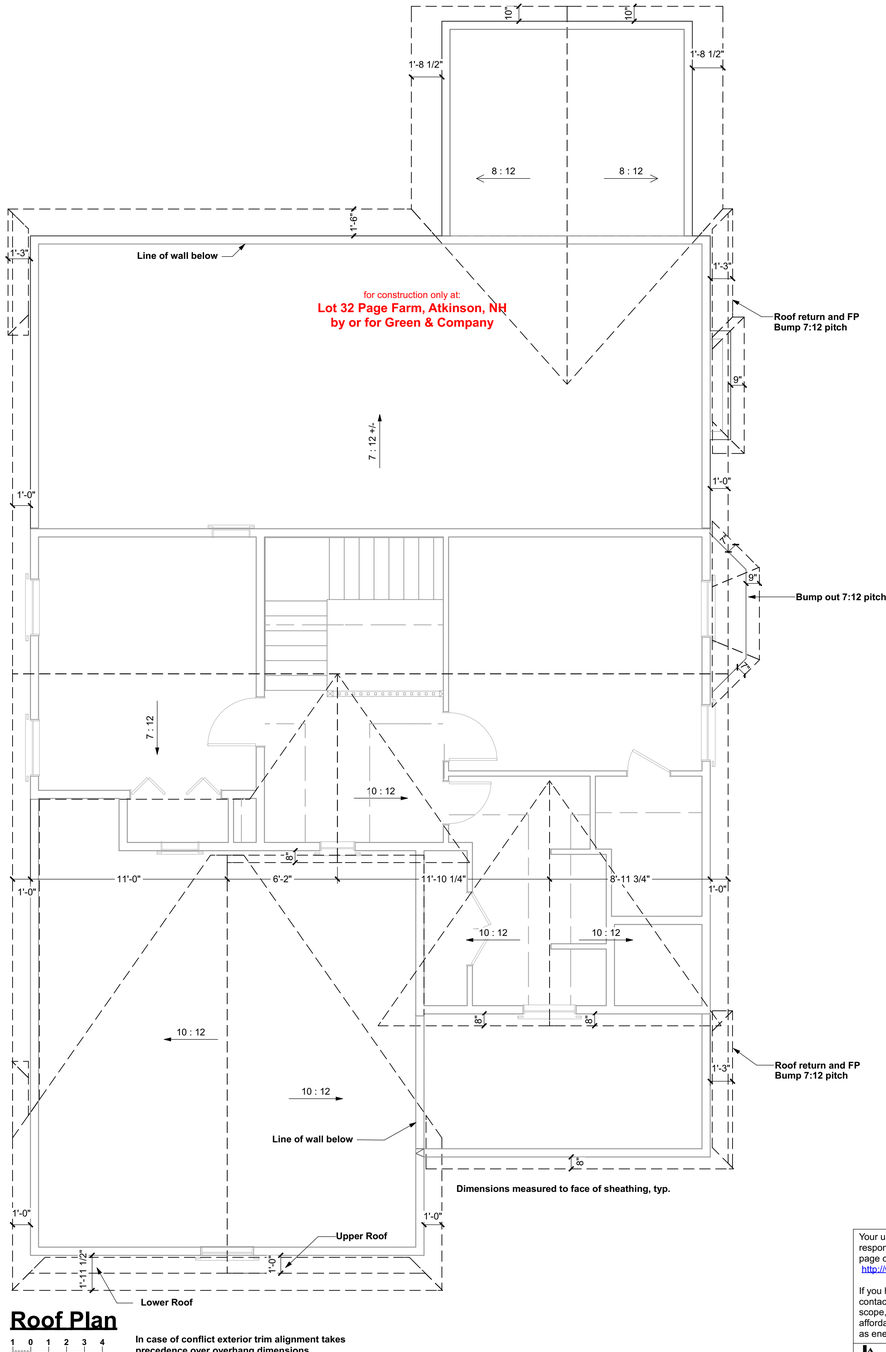


Ceiling Framing

Structure designed for
Snow Load of 55 PSF

1 0 1 2 3 4



Roof Plan

1 0 1 2 3 4

In case of conflict exterior trim alignment takes precedence over overhang dimensions

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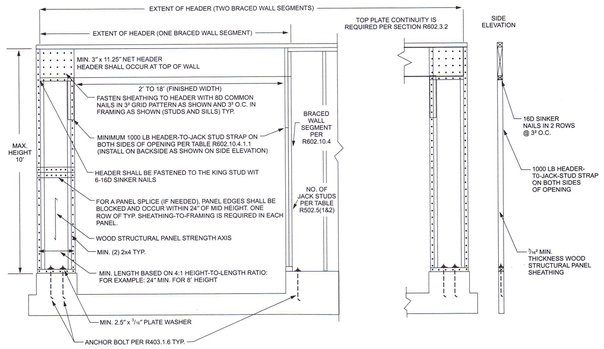
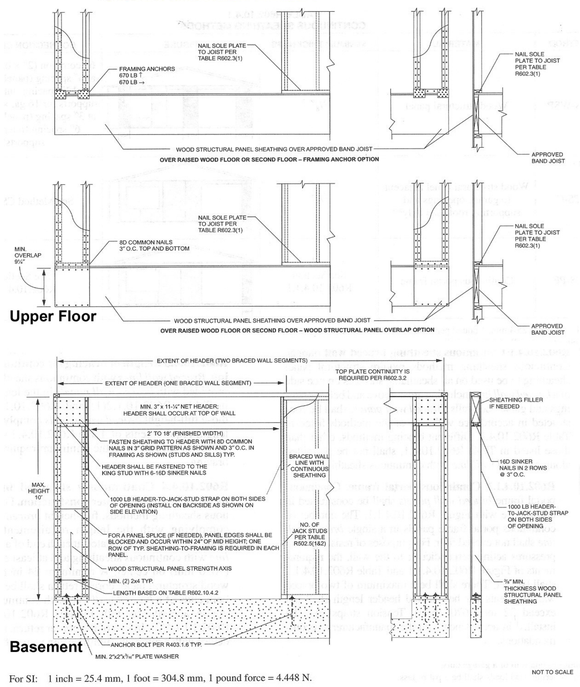
TABLE R602.10.4.1
CONTINUOUS SHEATHING METHODS

METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
CS-WSP	Wood structural panel	3/8"		6d common (2" × 0.113") nails at 6" spacing (panel edges) and at 12" spacing (intermediate supports) or 16 ga. × 1 3/4 staples at 3" spacing (panel edges) and 6" spacing (intermediate supports)



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound force = 4.448 N.

FIGURE R602.10.3.4
METHOD PFG PORTAL FRAME AT GARAGE DOOR OPENINGS IN SEISMIC DESIGN CATEGORIES A, B AND C



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound force = 4.448 N.

FIGURE R602.10.4.1.1
METHOD CS-PF: CONTINUOUS PORTAL FRAME PANEL CONSTRUCTION

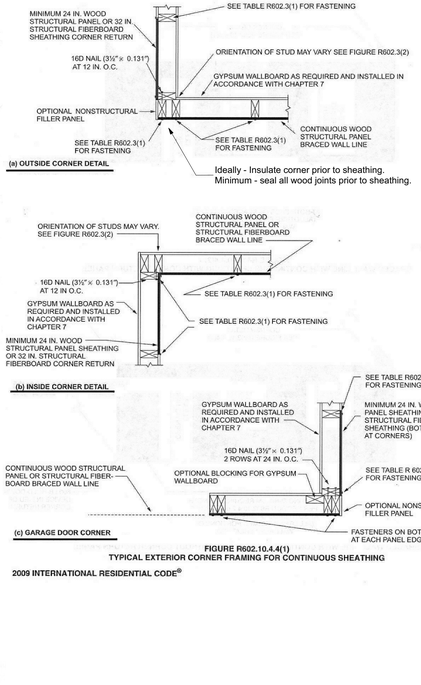


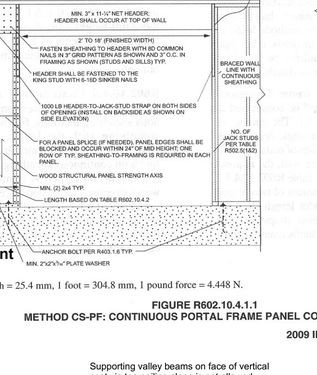
FIGURE R602.10.4.4(1)
TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS SHEATHING

Shear Wall Details

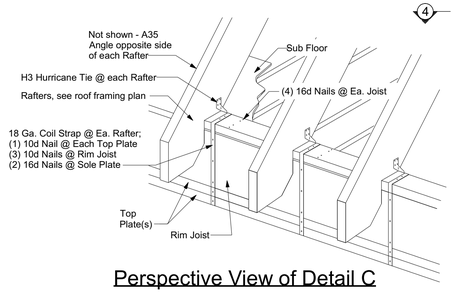
Not to Scale

Notes:

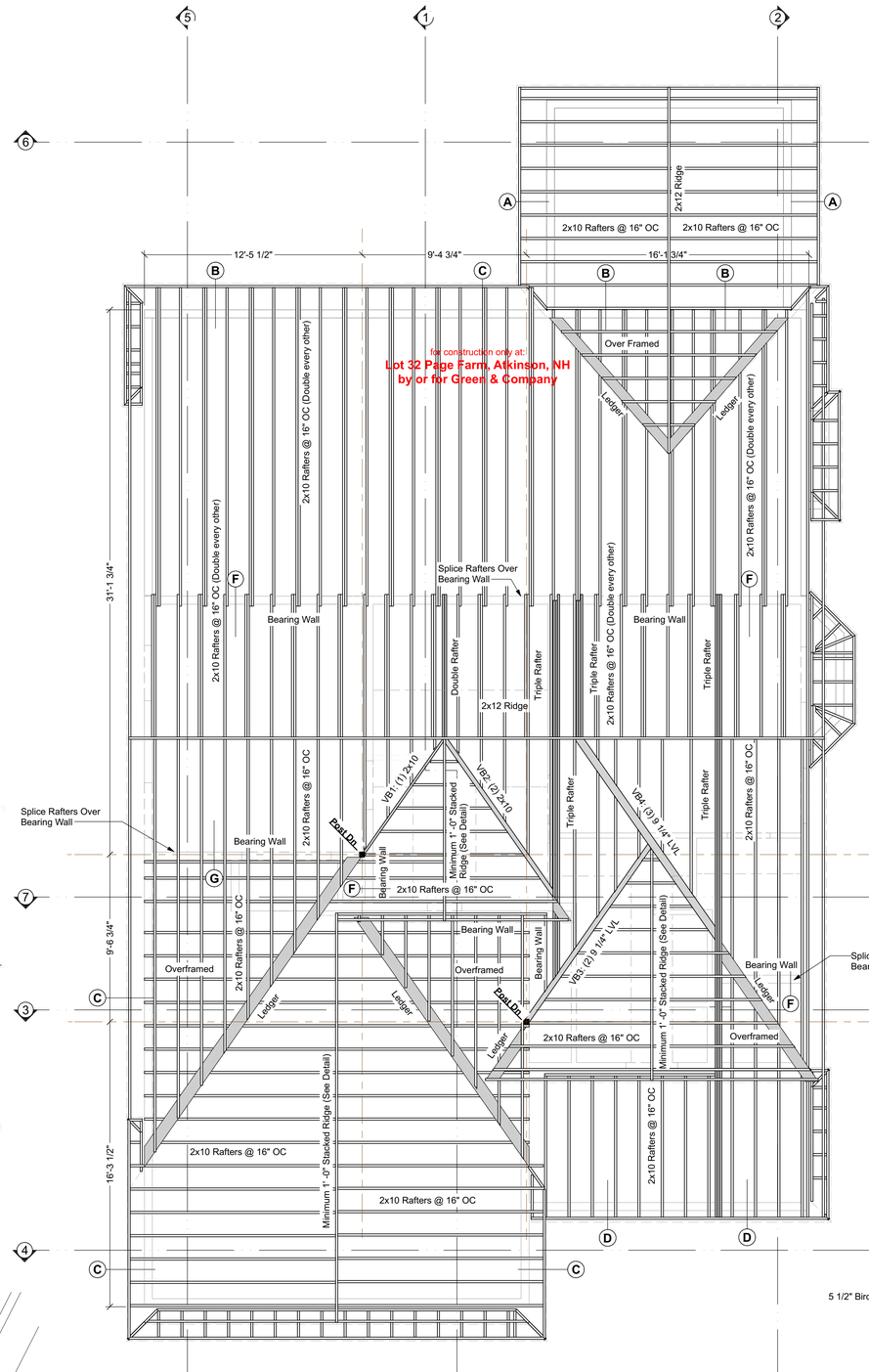
- See plans for locations where shear panels are required.
- Details shown here are for one method and for typical conditions. An alternate shear method allowed per code or approved by the code officer may be substituted.
- If the method at left is used at Garages where width of panel is 20" or more, wall height may be 10 ft as shown in detail at left. Where panel width is 18"-20", wall height may be 9 ft. Where panel is 16"-18", wall height may be 8 ft. Where panel is less, consult architect for additional design.
- If the method at left is used, increase foundation wall height at front and for 2 ft along wall returns as required to meet maximum wood stud wall heights, and extend sheathing and siding in front of wall to achieve desired aesthetics. Untreated wood may not be in direct contact with concrete - use treated wood or provide a barrier, such as a rubber membrane or felt paper.
- Note that if sheathing is to be used as wall bracing all vertical joints in required braced wall panels must be blocked. [2009 IRC section R602.1.8]



Valley Beam Attachment Options



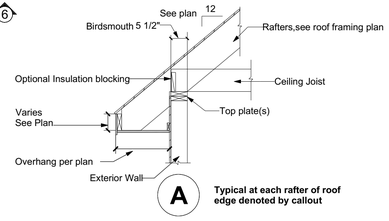
Perspective View of Detail C

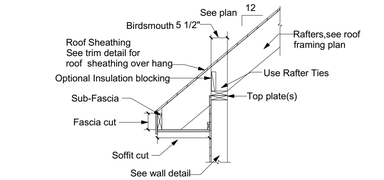


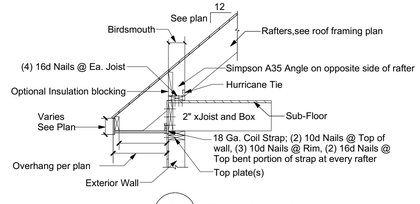
Roof Framing

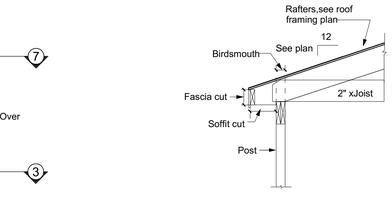
Structure designed for Snow Load of 55 PSF

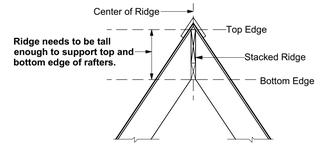
1 0 1 2 3 4



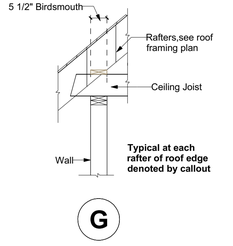


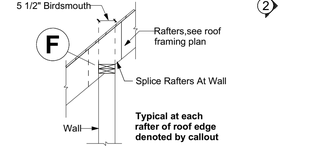






Stacked Ridge Detail





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Wall Types

Exterior walls 2x6 wood stud
Interior walls 2x4 wood stud, unless noted otherwise

Wall Keys

(2) 2x wood studs on the flat

(6) 2x6 wood stud wall, 16" oc

Note: 2x4 wood stud wall, 16" oc unless otherwise noted

Key Notes

(A) 30" x 22" Minimum Attic Access Panel - Insulated (RO 34" x 26")

(F) Field locate for plumbing or mechanical

(V) Verify size of fixture or appliance Adjust dimensions to accommodate

(C) Center - Place door or window centered on wall

(SD) Smoke Detector (HD) Heat Detector

(CO) Carbon Monoxide Detector

Dimensions

1. Dimensions are to face of stud, unless noted otherwise.
2. Closets are 24" clear inside, unless dimensioned otherwise.

Square Footages

1. Sq ft numbers are interior to room for use in calculating finishes.
2. Cabinets and fixtures not subtracted.
3. Add for doorways when floor finishes run through.

Notes

1. Exterior walls 2x6 wood stud @ 16" oc. Provide insulation & vapor barrier conforming to state or local codes. Interior sheathing 1/2" gypsum board. Provide 1/2" exterior rated sheathing, house wrap with drainage plane and siding. Provide step flashing at walls adjacent to roof planes.

2. Interior walls 2x4 wood stud @ 16" oc, unless noted otherwise.

3. Roof - see structural for rafter sizes. Provide 5/8" exterior rated roof sheathing 15# roofing felt, ice & water shield at eaves and valleys, aluminum drip edge and asphalt shingles or metal roofing. Structure not calculated to support slate or tile. Flash all penetrations. Provide cricket at any added chimneys.

4. Provide roof and/or ceiling insulation per code. Provide soffit and ridge vents where required for insulation strategy. (Verify with code officer - closed cell spray foam or dense-pack cellulose installed at rafters and filling ridge and eaves generally contra-indicates venting, batt insulation always requires venting).

5. Provide smoke, carbon monoxide, and heat detectors where shown and where required by code and where required by local authorities.

6. Provide fire resistive materials where required by code, including but not limited to, firestopping at penetrations, 5/8" Type X drywall on walls and ceilings to separate garage (where garage present in design) from dwelling, and separation of dwellings (where more than one dwelling present in design), and protection of flammable insulation materials. See Table R306.6 IRC 2015.

7. Compliance with code requirements for rooms size and clearances, (hallway widths, room sizes, etc) assume 1/2" drywall on walls and 1/2" drywall on 3/4" strapping on ceilings. Adjust as required if materials differ.

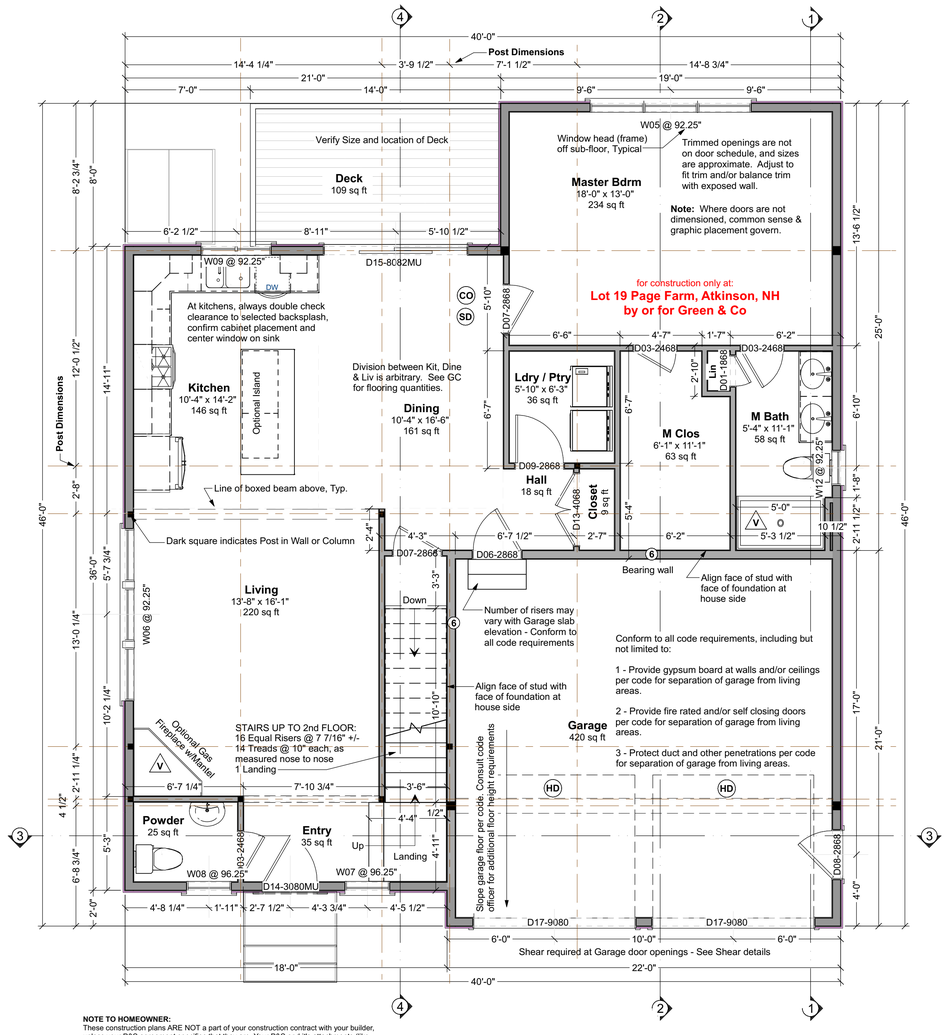
8. Shear is only called out where Continuous Portal Frame will not suffice. See Section R602.10.4 (Pages 177 - 188) of the IRC 2015.

General Design Notes

1 Builder shall consult and follow the building code and other regulations in effect for the building site for all construction details not shown in these drawings. Requirements described here are specific to this design and/or are provided as reference. Additional building code or local requirements may apply.

2 Builder shall maintain a safe worksite, including but not limited to, provision of temporary supports where appropriate and adherence to applicable safety standards.

3 Design is based on the snow load listed on the framing plans, 100 mph basic wind speed, Exposure type B, soil bearing capacity of 2000 psf, and Seismic Category C, unless otherwise noted on the framing plans. Builder shall promptly inform Artform Home Plans of differing conditions.



NOTE TO HOMEOWNER:
These construction plans ARE NOT a part of your construction contract with your builder, unless your P&S agreement specifies that they are. Your P&S and it's attachments (like the builder's specifications or a review set of this design) describes what you and your builder agreed the builder would build for you. We here at Artform Home Plans do not have the authority to obligate your builder to provide you with amenities like fireplaces and spa tubs. The contract between you and your builder governs.

First Floor Plan

1 0 1 2 3 4

Living Area this Floor: 1193 sq ft
9 ft Finished Ceiling Height

Gaira 40x46

Dear Code Officer,

These are predesigned home plans, designed to bring good design and construction drawings to people at more affordable prices and faster time frames than traditional architecture. Where traditional "internet" home plans disclaim all responsibility, we split responsibility between us (Artform) and the owner. We encourage the future homeowners to use a quality builder who can assist them with this. They are responsible for thermal and moisture decisions and for meeting code in ways that a quality builder should know without an explicit detail. We are responsible for things that are directly related to the design and/or that a quality builder couldn't reasonably figure out on their own - specifically the following IRC 2015 code sections:

1 - Room sizes (Section R304)
2 - Ceiling Height (Section R305)
3 - Floor space & ceiling height at Toilet, Bath and Shower Spaces (Section R307)
4 - Hallway widths (Section R311.6)
5 - Door types & sizes (Section R311.2)
6 - Floor space in front of doors (Section R311.3)
7 - Stair width - The stairs in our designs will be a minimum of 36" wide measured wall surface to wall surface, allowing compliance with R311.7.1 with installation of correct handrail.
8 - Stairway headroom (Section R311.7.2)
9 - Stair treads and risers (Section R311.7.5)
10 - Landings for stairways (Section R311.7.6)
11 - Emergency Escape Window Sizes (Section R310.2.1, R310.2.2, R310.2.3 and R310.2.4). Casement windows may require manufacturer's emergency escape window hardware. Will also comply with NFPA 101.
12 - Structural Floor Framing (Section R502.3) Where dimensional lumber is shown, framing members will be sized according to this section of the code. Where engineered wood products are shown, those framing members will be size according to the manufacturer's tables for loads and spans, or sizes will have been calculating using manufacturer's published materials properties.
13 - See structural sheets for additional notes.

The builder can and should add information to this set, such as Rescheck, a hand markup of our generic thermal and moisture section, additional information about doors and windows (such as fire rating, tempering, etc), foundation drops relative to site grading, and sometimes their chosen method of basement egress. These drawings are not intended to be used without that additional information.

Where a construction address is shown on the drawings, it is for copyright control only. We have not inspected the site, adapted the design to state specific laws (except where it says so in the drawings) or site or region specific climate conditions. Homeowner and/or Builder shall be responsible for thermal and moisture control strategies, materials choices and compliance with applicable laws and ordinances.

Please do feel free to call us with any questions. We can and do update our drawings and standard notes to address specific concerns, especially in jurisdictions where our clients will be building again.

Dear Everybody,

With these drawings a copyright license is granted for a single construction only at Lot 19 Page Farm, Atkinson, NH by or for Green & Co. This is a License to Build, and does not include a License to Modify, except as required to conform to building code or fulfill builder's/owners responsibilities.

Permissible uses of these drawings:

1. All activities associated with construction at the listed address.
2. Pricing or preliminary discussions with zoning or code officials for construction at other addresses, with prior notification to Artform Home Plans - just use the Contact form on the web site – http://www.artformhomeplans.com/contact.a5w

Not Permitted:

1. Application for any permits or other approvals for construction at properties other than the listed address, including but not limited to construction, zoning, conservation, or design review.
2. Modification of the basic design.

Use of these drawings outside these parameters is a violation of federal copyright law, punishable by both civil action and criminal prosecution, as it is stealing or enabling theft of "intellectual property". Making modifications to plans, even significant ones, does not change this, under copyright law, that's considered "derivative works".

We can provide drawings suitable for use in obtaining design or zoning approvals without incurring the expense of a full set of construction drawings. Contact us for more information.

AFHP PD Dimensions 19.7 X13 - IRC 2015

These drawings are intended for use by an experienced professional builder in responsible charge of the entire project, including but not limited to mechanical, electrical and sitework. Any additional adaptation for these trades or other trades must be determined prior to start of construction. Contact Artform for any adjustments needed.

Your use of these drawings constitutes an acceptance of responsibility as outlined in "Dear Code Officer" on the first page of these drawings, and on our web site: http://www.artformhomeplans.com/TermsConditions.a5w

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Artform Home Plans

AFHP Design # 742.124.v6 KL

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Gaira 40x46
Lot 19 Page Farm
Atkinson, NH

1

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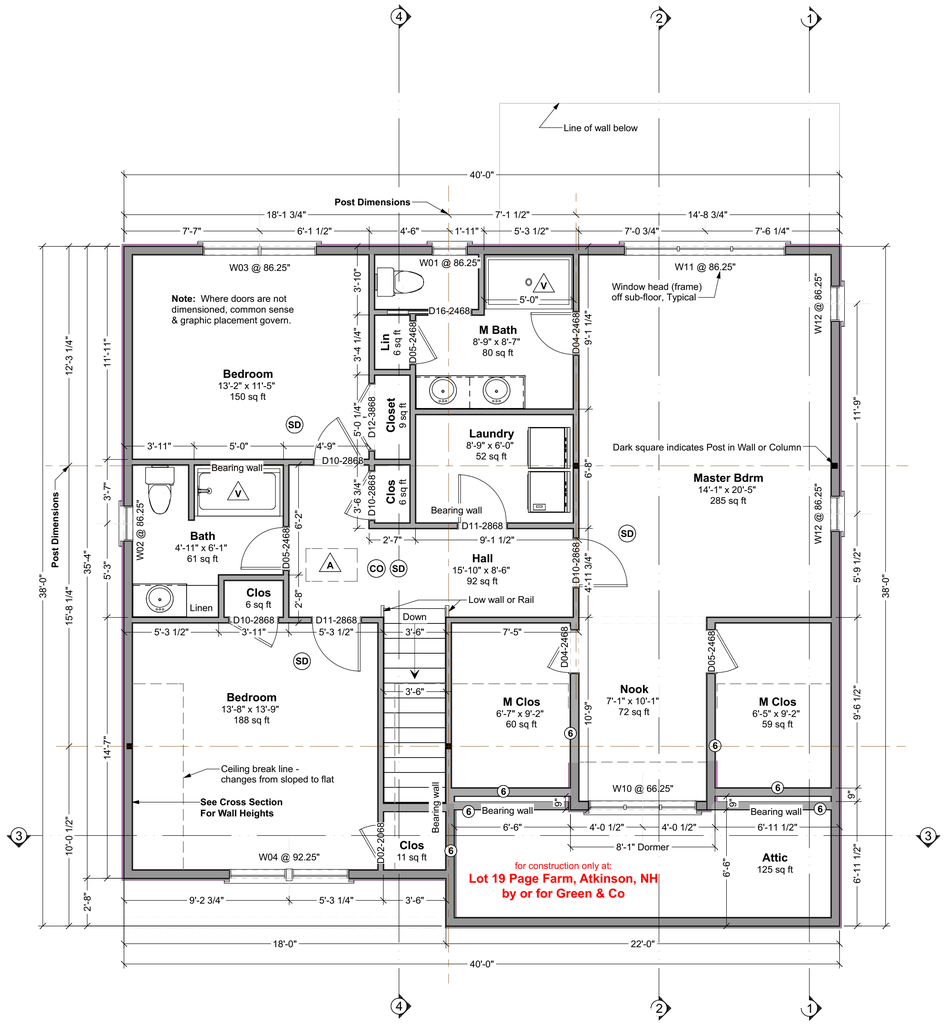
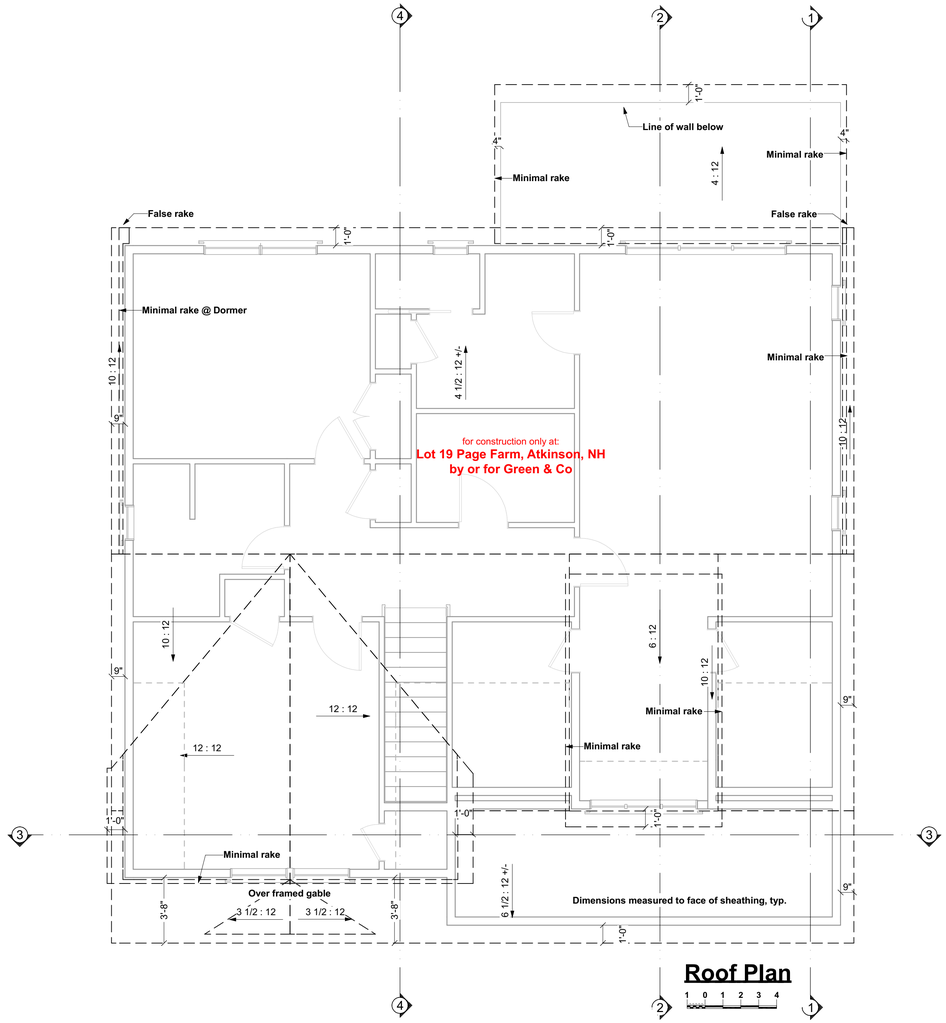


Second Floor Plan

1 0 1 2 3 4

Living Area this Floor: 1321 sq ft
8 ft Finished Ceiling Height



Roof Plan

1 0 1 2 3 4

Door & Window Notes

1. **Rated Doors:** Provide fire rated and/or self-closing doors where required by local codes or local authorities
2. **Trimmed Openings:** Trimmed openings not shown on schedule. See Plan.
3. **Window Tempering:** Provide tempered windows where required by local codes or local authorities. Tempering column provided here for convenience. Windows have not been reviewed for tempering requirements.
4. **Window RO's:** 1/4" or 1/2" on each of 4 sides allowed for window RO's, typical. Review framing size vs RO size. Adjust per manufacturer's requirements and/or builder preference.
5. **Egress Windows:** Provide minimum one door or window meeting egress requirements in basement, in each sleeping room, in each potential sleeping room, and other locations required by local code, in sizes required by local code. Note that casement windows coded by manufacturer as meeting IRC 2015 egress requirements typically need to be ordered with specific hardware. Emergency Escape Window Sizes (Section R310.2.1, R310.2.2, R310.2.3 and R310.2.4). Will also comply with NFPA 101.
6. **Basement Windows:** Add basement windows as required to meet state or local code requirements, including but not limited to egress and light/ventilation.
7. **Skylights:** Skylights are not shown on this schedule, but may be required. Consult builder and/or see floor plan.
8. **Minimum window sill height:** IRC 2015 requires that floor window sills be 24" from floor. Confirm bottom of window opening relative to frame. Conform to IRC 2015 R312.1.

DOOR SCHEDULE

NUMBER	QTY	FLOOR	SIZE	WIDTH	HEIGHT	TYPE	COMMENTS
D01	1	1	1868 L IN	20 "	80 "	HINGED	
D02	1	2	2068 L IN	24 "	80 "	HINGED	
D03	3	1	2468 R IN	28 "	80 "	HINGED	
D04	2	2	2468 R IN	28 "	80 "	HINGED	
D05	3	2	2468 L IN	28 "	80 "	HINGED	
D06	1	1	2868 R EX	32 "	80 "	HINGED	
D07	2	1	2868 R IN	32 "	80 "	HINGED	
D08	1	1	2868 L EX	32 "	80 "	HINGED	
D09	1	1	2868 L IN	32 "	80 "	HINGED	
D10	4	2	2868 R IN	32 "	80 "	HINGED	
D11	2	2	2868 L IN	32 "	80 "	HINGED	
D12	1	2	3868 L/R IN	44 "	80 "	DOUBLE HINGED	
D13	1	1	4068 L/R IN	48 "	80 "	DOUBLE HINGED	
D14	1	1	3080	36 "	95 7/8 "	MULLED UNIT	HINGED W/TRANSOM
D15	1	1	8082	96 "	98 "	MULLED UNIT	SLIDER W/TRANSOM
D16	1	2	2468 R	28 "	80 "	POCKET	
D17	2	1	9080	108 "	96 "	GARAGE	

WINDOW SCHEDULE

NUMBER	QTY	WIDTH	HEIGHT	R/O	EGRESS	TEMPERED	DESCRIPTION	COMMENTS
W01	1	23 1/2 "	35 1/2 "	24"X36"			DOUBLE HUNG	
W02	1	23 1/2 "	47 1/2 "	24"X48"		YES	DOUBLE HUNG	
W03	1	76 "	61 1/2 "	76 1/2"X62"	YES		2X DH	
W04	1	80 "	61 1/2 "	80 1/2"X62"			2X DH	
W05	1	108 "	61 1/2 "	108 1/2"X62"	YES		3X DH	
W06	1	115 1/2 "	61 1/2 "	116"X62"			3X DH	
W07	1	30 "	41 1/2 "	30 1/2"X42"		YES	SINGLE CASEMENT-HR	
W08	1	30 "	41 1/2 "	30 1/2"X42"			SINGLE CASEMENT-HL	
W09	1	47 "	47 1/2 "	47 1/2"X48"			DOUBLE CASEMENT-LHL/RHR	
W10	1	72 "	23 1/2 "	72 1/2"X24"			TRIPLE CASEMENT-LHL/RHR	
W11	1	108 "	47 1/2 "	108 1/2"X48"	YES		TRIPLE CASEMENT-LHL/RHR	
W12	3	23 1/2 "	23 1/2 "	24"X24"			SINGLE AWNING	

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Artform Home Plans

AFHP Design # 742.124.v6 KL
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Gaira 40x46
Lot 19 Page Farm
Atkinson, NH

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Foundations

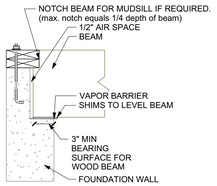
1. No footing shall be poured on loose or unsuitable soils, in water or on frozen ground.

2. All exterior footings to conform to all applicable code requirements for frost protection.

3. All concrete shall have a minimum compressive strength of at least 5000 PSI at 28 days.

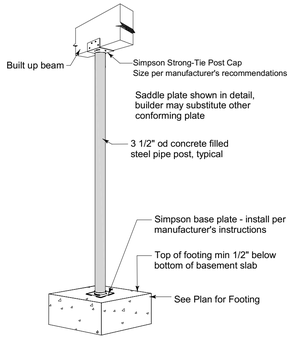
4. Foundation anchorage to comply with IRC 2015 Section R403.1.6, it shall consist of minimum size 1/2" diameter anchor bolts with 3/16" x 2" x 2" washers at a maximum of 72" oc for two stories or 48" oc for more than two stories, max of 12" from each corner, min of 2 bolts per wall. Anchor bolt shall extend 7" into concrete or grouted cells of concrete masonry units. Be aware that a garage under may be counted by your code officer as a story. Additional anchorage may be required at braced walls.

5. Foundation reinforcing steel is to be installed in accordance with all applicable provisions of IRC 2015 Section 404.1.3.2



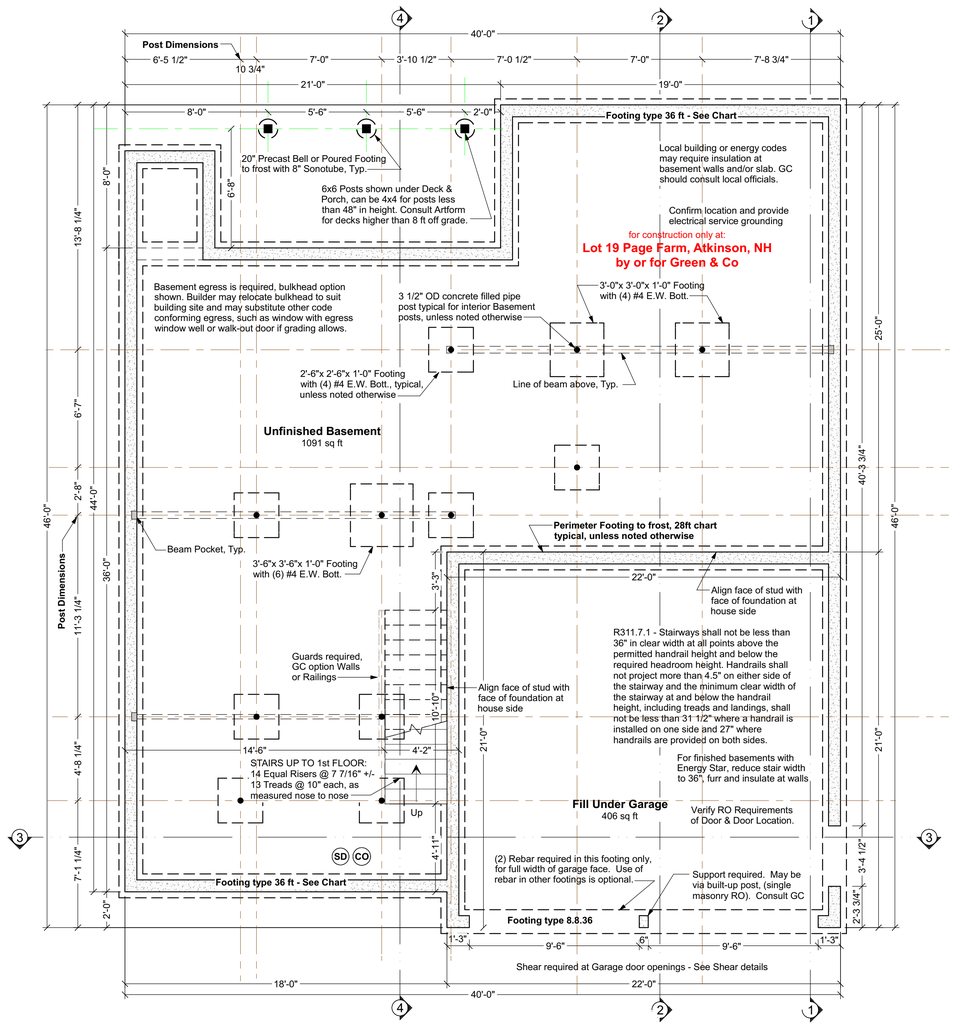
Beam Pocket

Scale 1/2"=1'-0"



Typical Basement Post

Not to Scale



Foundation Plan

Structure designed for
Snow Load of 55 psf

1 0 1 2 3 4

Ceiling Height may vary: 8 ft forms

TYPICAL PERIMETER FOUNDATION WALL:

- 8" poured concrete, 8 ft forms, min 7'-10" finished, with total of 3 rebar, as follows:
- (1) #4 rebar, 4" from top
- (1) #4 rebar @ vertical midpoint. Omit this rebar at walls 4 ft high or less.
- (1) #4 rebar, min 3" from bottom or per code
- Lap corners & splices of rebar per code.
- Secure sill to foundation with 1/2" diameter anchor bolts that extend 7" into concrete and tightened with a nut and washer @ 6' oc & max 12" from each corner & each end @ wood sill splices - if built-up sill, bolts must extend through all sill plates or straps must secure all sill plates.

TYPICAL PERIMETER FOOTING:

1. Use Footing chart(s) below to verify that depth of home matches chart. Depth is foundation dimension eave to eave. Contact Artform Home Plans if you believe the chart does not match the plan.
2. Select row for snow load shown on the structural plans.
3. Select a column for soil bearing pressure based on soil type and/or consultation with code officer.
4. The required footing size is at the intersection of the Snow Load and Soil PSF. Rebar is not required. Key or pin foundation wall to footing per code.

FAQ - Adding rebar to footings does not reduce the required width. Rebar affects performance with earth movement, like an earthquake and has near zero effect on bearing capacity.

8" wall - Footing Size for 28 Ft wide house				
Snow Load	Story and type of structure	Load Bearing Value of Soil (PSF) 1500 PSF	2000 PSF	3000 PSF
50 PSF	2 Story – Plus Basement	23 x 7.5	17 x 6	12 x 6
55 PSF	2 Story – Plus Basement	23.5 x 7.75	17.25 x 6	12 x 6
60 PSF	2 Story – Plus Basement	24 x 8	17.5 x 6	12 x 6
65 PSF	2 Story – Plus Basement	24.5 x 8.25	17.75 x 6	12 x 6
70 PSF	2 Story – Plus Basement	25 x 8.5	18 x 6	12 x 6

8" wall - Footing Size for 32 Ft wide house				
Snow Load	Story and type of structure	Load Bearing Value of Soil (PSF) 1500 PSF	2000 PSF	3000 PSF
50 PSF	2 Story – Plus Basement	25 x 8.5	19 x 6	12 x 6
55 PSF	2 Story – Plus Basement	25.5 x 8.75	19.25 x 6	12.5 x 6
60 PSF	2 Story – Plus Basement	26 x 9	19.5 x 6	13 x 6
65 PSF	2 Story – Plus Basement	26.5 x 9.25	19.75 x 6	13.5 x 6
70 PSF	2 Story – Plus Basement	27 x 9.5	20 x 6	14 x 6

8" wall - Footing Size for 36 Ft wide house				
Snow Load	Story and type of structure	Load Bearing Value of Soil (PSF) 1500 PSF	2000 PSF	3000 PSF
50 PSF	2 Story – Plus Basement	27 x 9.5	21 x 7	14 x 7
55 PSF	2 Story – Plus Basement	27.5 x 9.75	21.25 x 7	14.5 x 7
60 PSF	2 Story – Plus Basement	28 x 10	21.5 x 7	15 x 7
65 PSF	2 Story – Plus Basement	28.5 x 10.25	21.75 x 7	15.5 x 7
70 PSF	2 Story – Plus Basement	29 x 10.5	22 x 7	16 x 7

Foundation Contractor Check List

Confirm or review the following prior to forming & pouring foundation

Initials Date Checked

____ _____ Confirmed soil bearing
____ _____ Checked w/GC for added foundation steps to suit grade
____ _____ Confirm sill plate thickness (foundation bolts to extend through all)
____ _____ Confirmed garage door size
____ _____ Checked w/GC for added basement windows
____ _____ Checked w/GC for added basement man doors
____ _____ Confirmed sizes & locations mech/plbg penetrations
____ _____ Confirmed sizes and locations of beams w/GC, added or adjusted beam pockets
____ _____ Confirmed location and installed electrical service grounding - See GC for location

MINIMUM VERTICAL REINFORCEMENT FOR 8-INCH (203MM) NOMINAL FLAT CONCRETE BASEMENT WALL

MAXIMUM UNSUPPORTED WALL HEIGHT (feet)	MAXIMUM UNBALANCED BACKFILL HEIGHT (feet)	MINIMUM VERTICAL REINFORCEMENT - BAR SIZE AND SPACING (inches) Soil classes and design lateral soil (psf per foot of depth) GW, GP, SW, SP 30	GM, GC, SM, SM-SC and ML 45	SC, ML-CL and inorganic CL 60
8	4	NR	NR	NR
	5	NR	NR	NR
	6	NR	NR	#6 @ 37
	7	NR	#6 @ 36	#6 @ 35
	8	#6 @ 41	#6 @ 35	#6 @ 26

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Artform Home Plans

AFHP Design # 742.124.v6 KL

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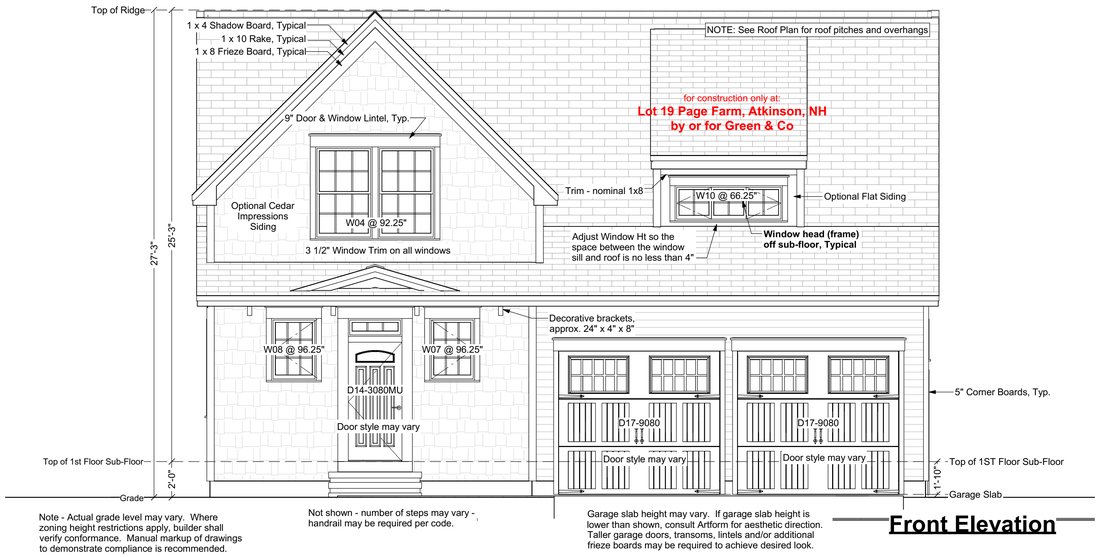
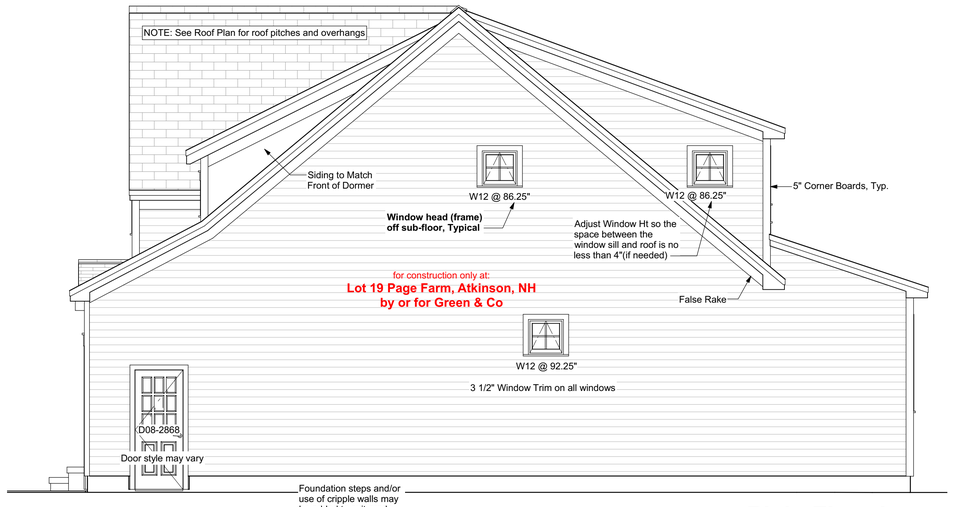


Note - Actual grade level may vary. Where zoning height restrictions apply, builder shall verify conformance. Manual markup of drawings to demonstrate compliance is recommended.

Not shown - number of steps may vary - handrail may be required per code.

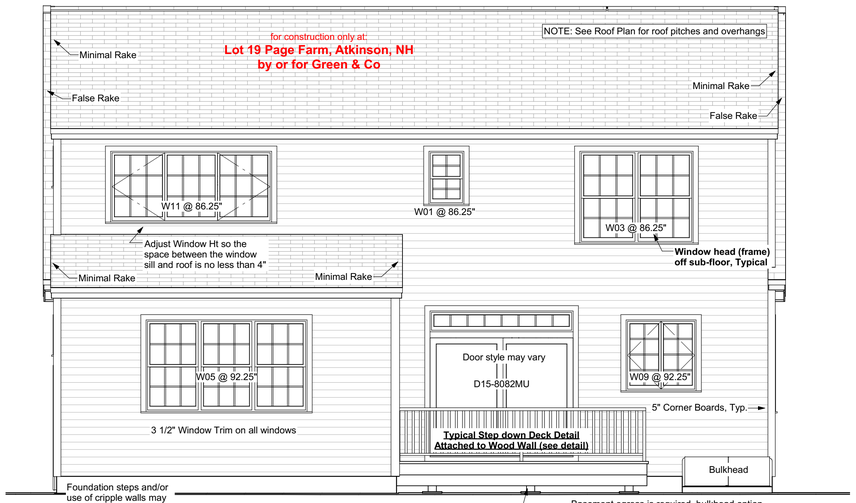
Garage slab height may vary. If garage slab height is lower than shown, consult Artform for aesthetic direction. Taller garage doors, transoms, lintels and/or additional frieze boards may be required to achieve desired look.

Front Elevation



Foundation steps and/or use of cripple walls may be added to suit grade.

Right Elevation

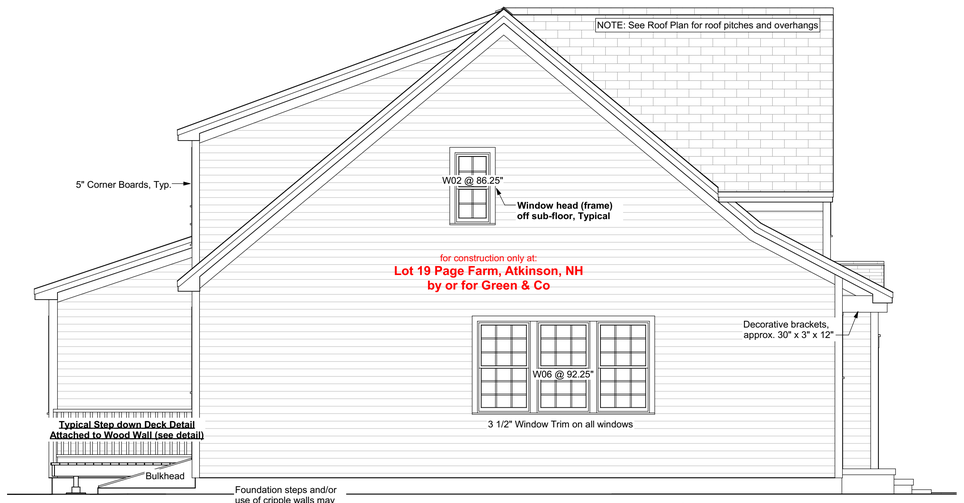


Foundation steps and/or use of cripple walls may be added to suit grade.

6x6 Posts shown under Deck & Porch, can be 4x4 for posts less than 48" in height. Consult Artform for decks higher than 8 ft off grade.

Basement egress is required, bulkhead option shown. Builder may relocate bulkhead to suit building site and may substitute other code conforming egress, such as window with egress window well or walk-out door if grading allows.

Rear Elevation



Foundation steps and/or use of cripple walls may be added to suit grade.

Left Elevation

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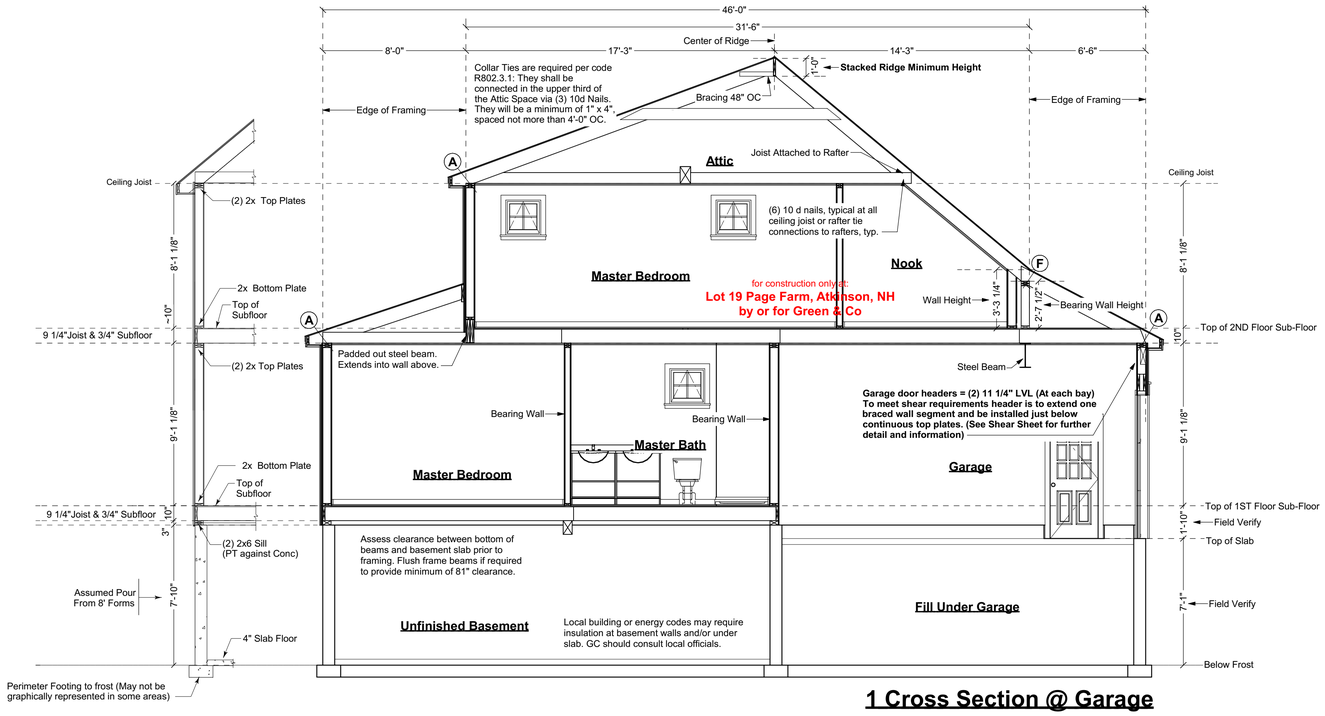
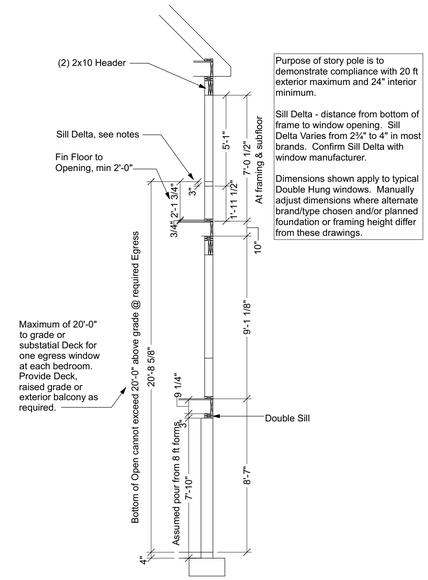
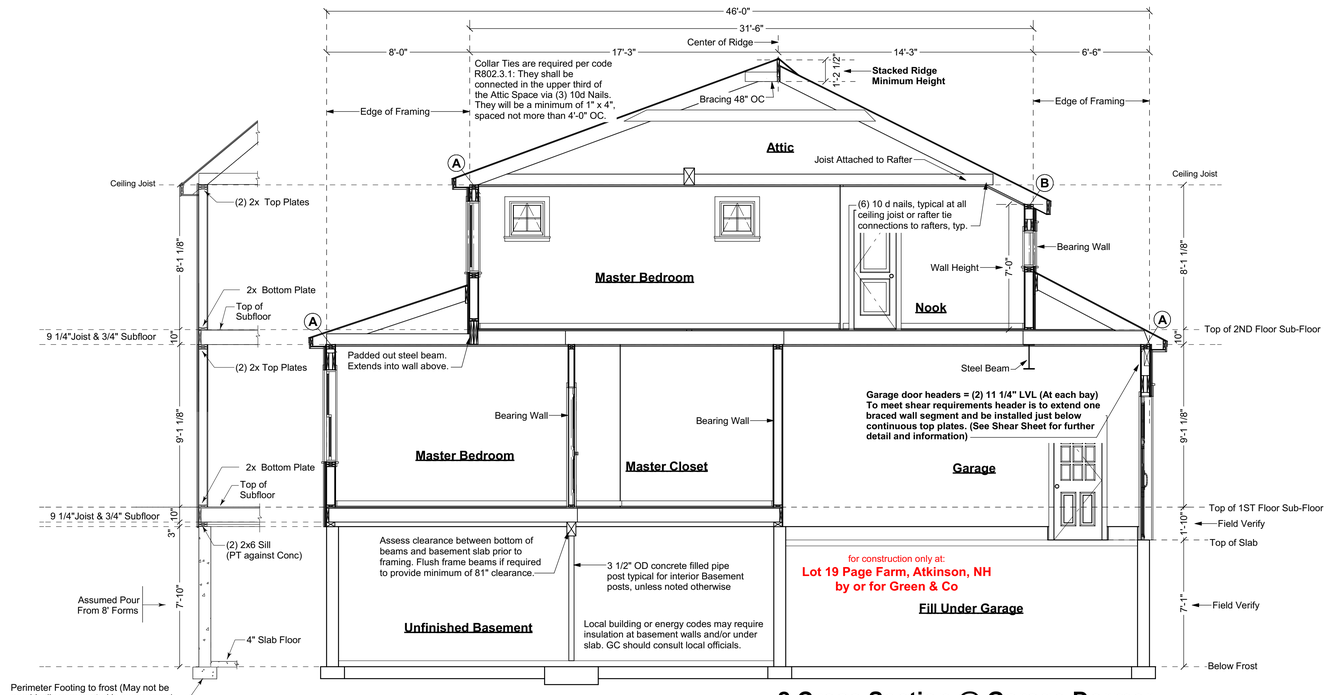


1 Cross Section @ Garage



Window Story Pole

Scale ¼"=1'-0"



2 Cross Section @ Garage Dormer

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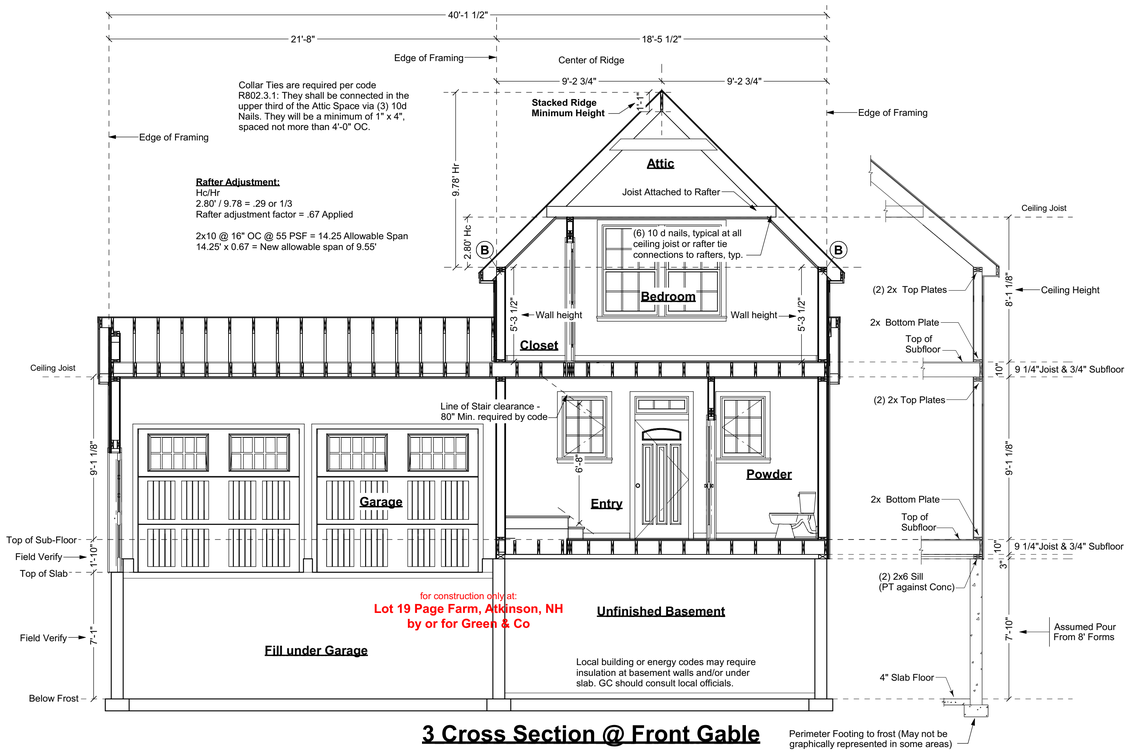
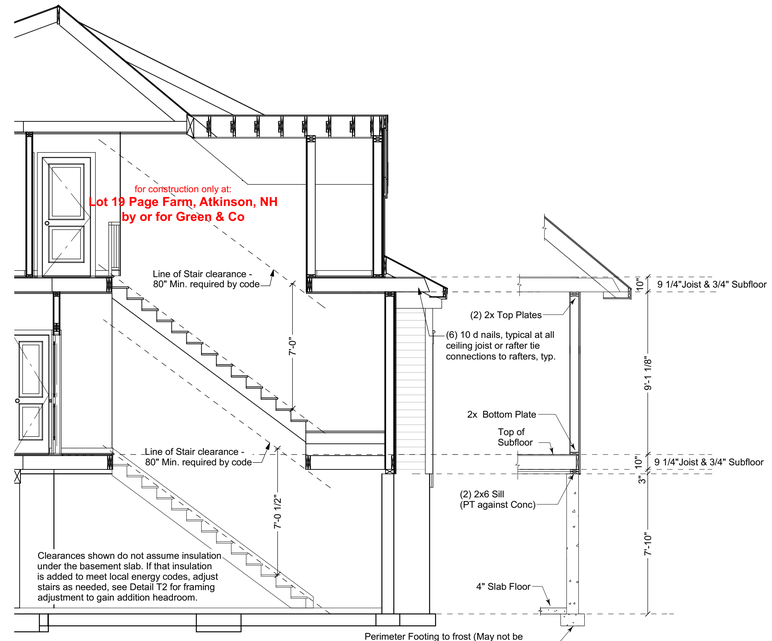
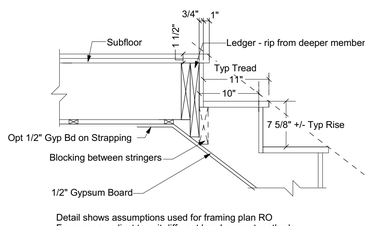


3 Cross Section @ Front Gable



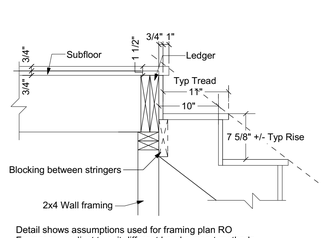
4 Line of Stair Clearance



Detail shows assumptions used for framing plan RO
Framer may adjust to suit different head support methods

Top of Carriage (C)

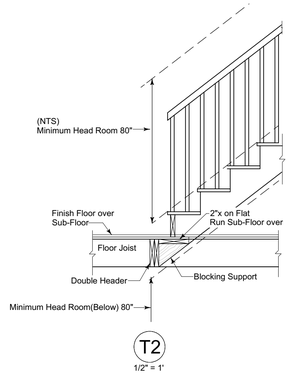
Scale: 1" = 1'-0"



Detail shows assumptions used for framing plan RO
Framer may adjust to suit different head support methods

Top of Carriage (B)

Scale: 1" = 1'-0"



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Gaira 40x46
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TABLE R602.10.4
BRACING METHODS

METHODS, MATERIAL		MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA[a]	
				Fasteners	Spacing
Continuous Sheathing Methods	**CS-WSP** Continuously sheathed wood structural panel	3/8"		Exterior sheathing per Table R602.3(3)	6" edges 12" field
				Interior sheathing per Table R602.3(1) or R602.3(2)	Varies by fastener

Method PFG: Portal frame at garage door openings shall be constructed in accordance with Figure R602.10.6.3. Note this method is allowed on either side of garage door openings.

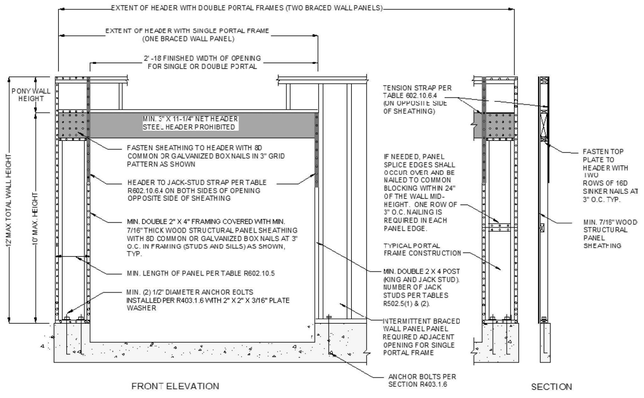


FIGURE R602.10.6.3
METHOD PFG—PORTAL FRAME AT GARAGE DOOR OPENINGS IN SEISMIC DESIGN CATEGORIES A, B AND C

Method CS-PF: Continuously sheathe portal frame shall be constructed in accordance with Figure 602.10.6.4. The number of continuously sheathed portal frame panels in a single braced wall line shall not exceed four.

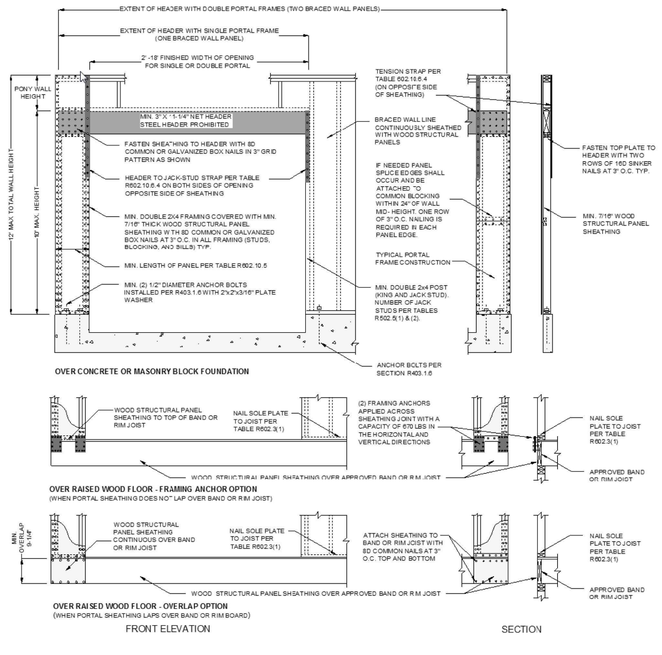
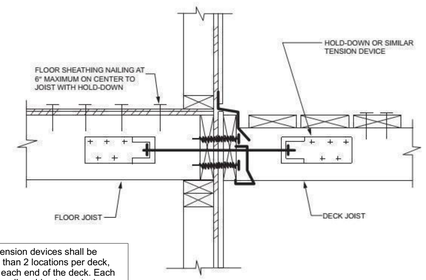
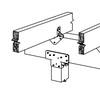


FIGURE R602.10.6.4
METHOD CS-PF—CONTINUOUSLY SHEATHED PORTAL FRAME PANEL CONSTRUCTION



NOTE: hold down tension devices shall be installed in not less than 2 locations per deck, within 24 inches of each end of the deck. Each device shall have an allowable stress design capacity of not less than 1,500 lbs.

FIGURE R507.2.3(1)
DECK ATTACHMENT FOR LATERAL LOADS



SIMPSON STRONG-TIE ACH WITH TWO H1'S

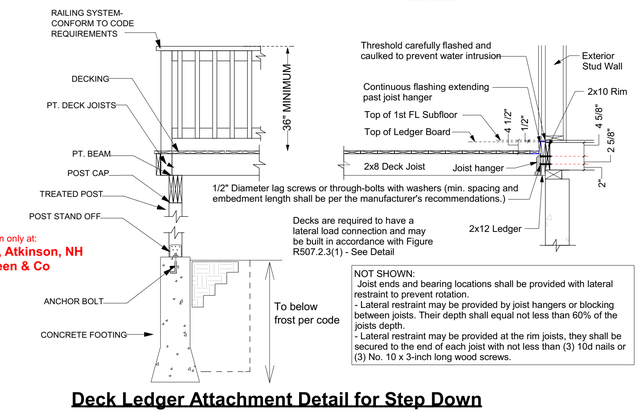
POST CAP & JOIST ATTACHMENT

POST CAP

POST STAND OFF

Follow manufacturer's instructions both for installation of joist hangers to joist and to beam. The illustration below, by Simpson Strong Tie, is provided as a courtesy. Consult their full manual for acceptable fastener sizes and other important instructions.

SHORT NAILS Do not use short (1½") nails for double shear nailing.



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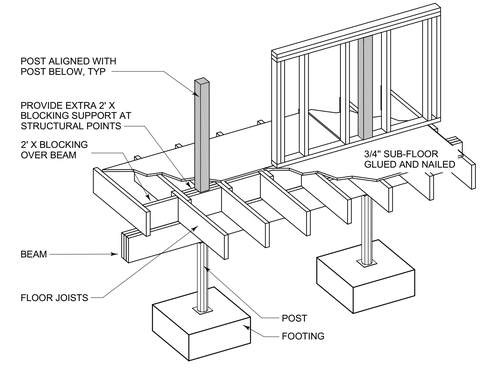
Deck Ledger Attachment Detail for Step Down

Scale: 1/2" = 1'-0"



Shear Wall Details

Not to Scale

Notes:

- See plans for locations where shear panels are required.
- Details shown here are for one method and for typical conditions. An alternate shear method allowed per code or approved by the code officer may be substituted.
- If the method at left is used at Garages where width of panel is 20" or more, wall height may be 10 ft as shown in detail at left. Where panel width is 18"-20", wall height may be 9 ft. Where panel is 16"-18", wall height may be 8 ft. Where panel is less, consult architect for additional design.
- If the method at left is used, increase foundation wall height at front and for 2 ft along wall returns as required to meet maximum wood stud wall heights, and extend sheathing and siding in front of wall to achieve desired aesthetics. Untreaded wood may not be in direct contact with concrete - use treated wood or provide a barrier, such as a rubber membrane or felt paper.
- Note that if sheathing is to be used as wall bracing all vertical joints in required braced wall panels must be blocked. [2015 IRC section R602.10.10]

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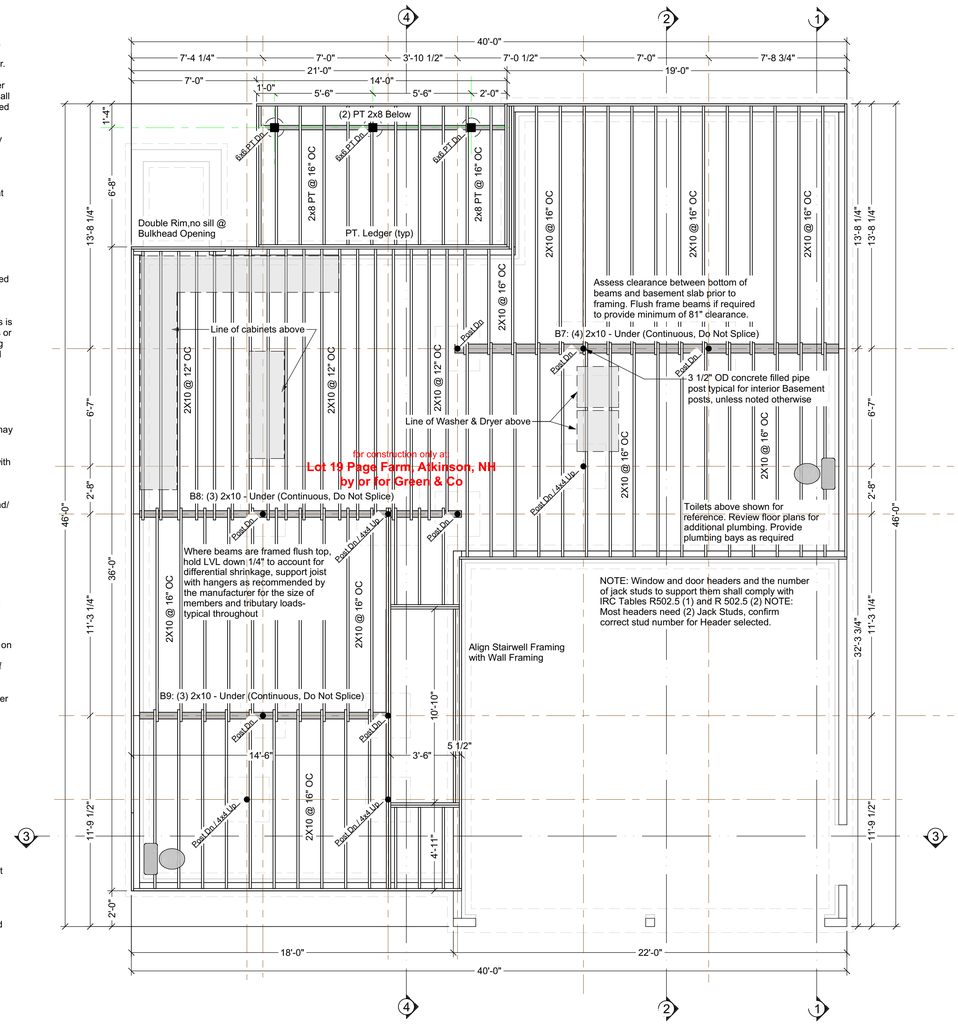
Wood Framing Notes:

1. All structural wood shall be identified by a grade mark or certificate of inspection by a recognized inspection agency.
2. Structural wood shall be Spruce-Pine-Fir (SPF) #2 or better.
3. When used, LVL or PSL indicate Laminated Veneer Lumber or Parallel Strand Lumber, respectively. Products used shall equal or exceed the strength properties for the size indicated as manufactured by TrusJoist.
4. When used, TJI indicates wood I-joists as manufactured by TrusJoist. Products of alternate manufacturers may be substituted provided they meet or exceed the strength properties for the member specified.
5. All floor joists shall have bridging installed at mid-span or at 8'-0" oc maximum.
6. Floor systems are designed for performance with subfloor glued and screwed.
7. Per code R502.6.1 Floor joists splicing over bearing walls allowed, shall lap a min 3" over walls and shall be nailed together with a minimum of (3) 10d face nails. Also permitted is a wood or metal splice with strength equal to or greater than that provided by the nailed lap.
8. Per code R802.3.2 Ceiling joists splicing over bearing walls is allowed, shall lap a min 3" or butted over bearing partitions or beams and toenailed to the bearing member. Where ceiling joists are used to provide resistance to rafter thrust, lapped joists shall be nailed together in accordance with Table R802.5.1(9), and butted joists shall be tied together in a manner to resist such thrust. Joists that do not resist thrust shall be permitted to be nailed together in accordance with Table R602.3(1).
9. Provide blocking in the floor at structural points. Blocking may be 2x's or solid, but must have grain of wood vertical.
10. All wood permanently exposed to the weather, in contact with concrete or in contact with the ground shall meet code requirements for wood in these environments.
11. Deck ledgers shall be securely attached to the structure and/ or independently supported. Deck lateral load connection required see IRC 2015 Section R507.2.4
12. Wherever beams are noted as Flush framed, install joist hangers at all joists, sized appropriately for the members being connected.
13. Support the lower end of roof beams via minimum 2" horizontal bearing on a post, ledger or via an appropriately sized and configured hanger.
14. The ends of each joist, beam or girder shall have not less than 1.5" of bearing on wood or metal and not less then 3" on masonry or concrete except where supported on a 1" x 4" ribbon strip and nailed to the adjacent stud or by the use of approved joist hangers.
15. Post caps where required are typically calculated by supplier using weights based on these framing plans. Contact Art Form if additional information is needed.
16. Hangers, post caps, post bases, ties and other connectors shall be as manufactured by Simpson Strong Tie, as designed to connect the members shown, and shall be installed per manufacturer's instructions.

Prefabricated Wood Trusses

1. Where trusses are indicated on the drawings, truss design shall be provided by truss manufacturer.
2. Trusses shall be designed in accordance with applicable provisions of the latest edition of the National Design Specifications for Wood Construction (NDS), American Forst and Paper Association (APA), and Design Specifications for Metal Plate Connected Wood Trusses (ANSI/TPI 1), Truss Plate Institute (TPI) and code of jurisdiction.
3. Manufacturer shall furnish design drawings bearing seal and registration number of a structural engineer licensed in the state where project will be built.



First Floor Framing

Structure designed for
Snow Load of 55 psf

1 0 1 2 3 4

Built-up Beams:
Unless otherwise noted, connect multiple 1 3/4" ply beams as follows:
3 ply & up, fasteners are per side

(2) 9 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 24" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 24" oc
- Framed under (2) rows 10d nails @ 24" oc

(2) 11 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 19.2" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 19.2" oc
- Framed under (2) rows 10d nails @ 24" oc

(2) 16" LVL or greater:
- Flush framed
  - (3) rows 3 3/8" TrussLock @ 19.2" oc, or
  - (3) rows SDS 1/4x3 1/2 @ 19.2" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 9 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 19.2" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 19.2" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 11 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 16" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 14" LVL:
- Flush framed
  - (3) rows 3 3/8" TrussLock @ 16" oc, or
  - (3) rows SDS 1/4x3 1/2 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 16" LVL or greater:
- Flush framed
  - (3) rows 3 3/8" TrussLock @ 16" oc, or
  - (3) rows SDS 1/4x3 1/2 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(4) 9 1/4" LVL:
- Flush framed
  - (2) rows 5" TrussLock @ 16" oc, or
  - (2) rows SDS 1/4x6 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(4) 11 1/4" LVL:
- Flush framed
  - (2) rows 5" TrussLock @ 16" oc, or
  - (2) rows SDS 1/4x6 @ 16" oc
- Framed under (2) rows 10d nails @ 12" oc

(4) 16" LVL or greater:
- Flush framed
  - (3) rows 5" TrussLock @ 16" oc, or
  - (3) rows SDS 1/4x6 @ 16" oc
- Framed under (2) rows 10d nails @ 12" oc

Beam Substitutions:

(2) 9 1/4" LVL may replace a double or triple 2x10 beam. No other substitutions are allowed. Conventional lumber beams MAY NOT be substituted for LVL beams by any "rule of thumb". Substitutions must be calculated by either Artform or a structural engineer. If calculated by a structural engineer, provide stamped plans and/or calculations.

We specify LVL beams as built up members to allow framers to use existing stock. You may substitute single piece LVLs of equivalent overall size for built-up members, unless otherwise noted.

Built-up members MAY NOT replace single piece LVL's where specified.

Where a beam of 1 3/4" or less in width is specified as framed under, either brace at 48" or double member for lateral stability.

Second Floor Framing

Structure designed for
Snow Load of 55 psf

1 0 1 2 3 4

Notes: Beam & Joist Sizing

1. Our beams sizes often differ from prescriptive code, because our designs are rarely the old style box colonial or cape with a center bearing wall upon which prescriptive code is based. We size our beams via calculations for this specific design, which may carry those loads separately via second floor beams and/or roof transfer beams. Beam or joist sizes, types and/or spacing may not be reduced or alternates substituted without our express permission.
2. Walls intended to be bearing are labeled as such. This information is provided to aid code officer in understanding the framing. It does not indicate permission to add loads to those walls, or any other walls.
3. Framing is sized for normal residential conditions. Contact Artform if additional loads are anticipated, including but not limited to waterbeds, large fish tanks, indoor hot tubs, multiple framed soffits or coffers.
4. In states where the designer is a licensed architect, (NH, MA, ME, CT & NY as of the date of issue) we are happy to stamp our drawings at no additional charge. In other states we are happy to provide calculations. Administration fees apply with provision of calculations. Code officer is encouraged to call with any questions about our methodology.

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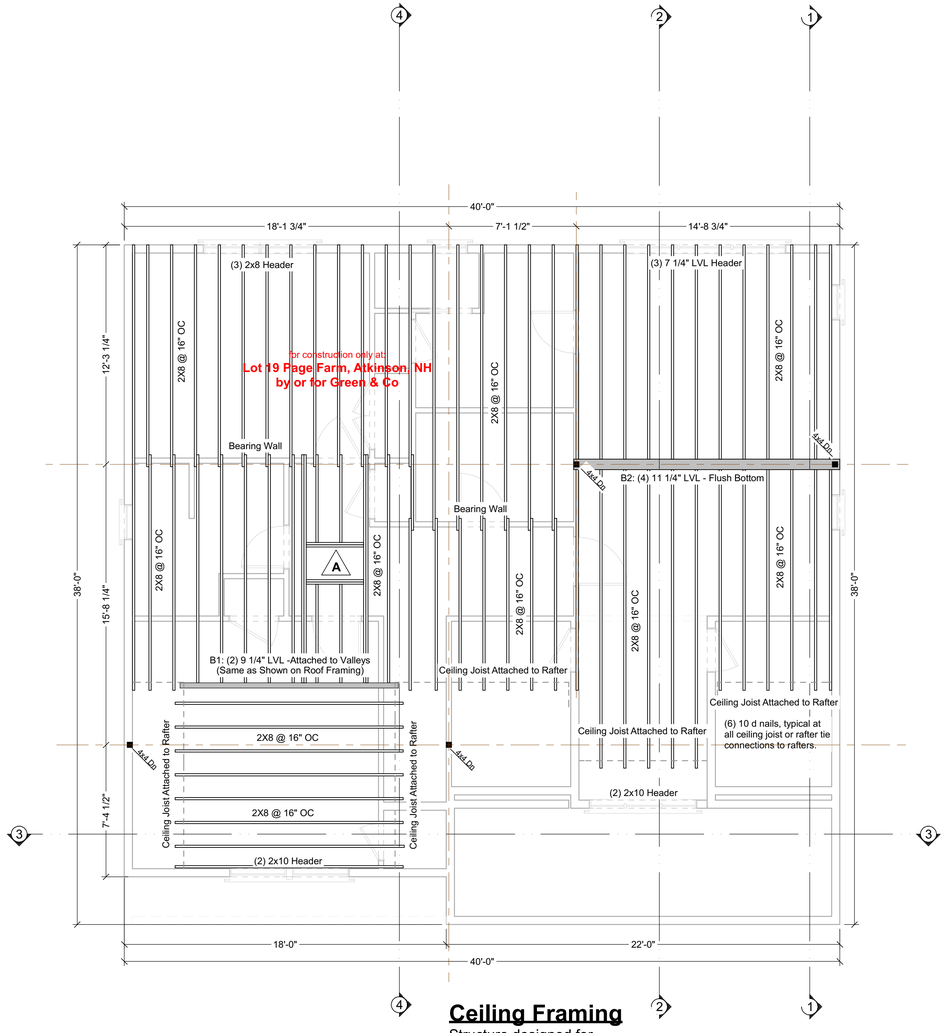
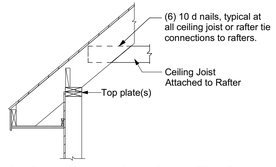


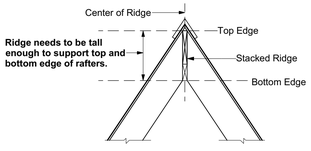
Ceiling Framing

Structure designed for
Snow Load of 55 psf

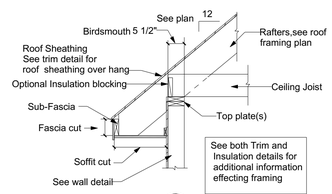
1 0 1 2 3 4



Joist Attached to Rafter



Stacked Ridge Detail



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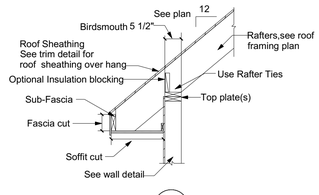

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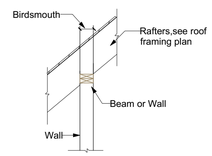

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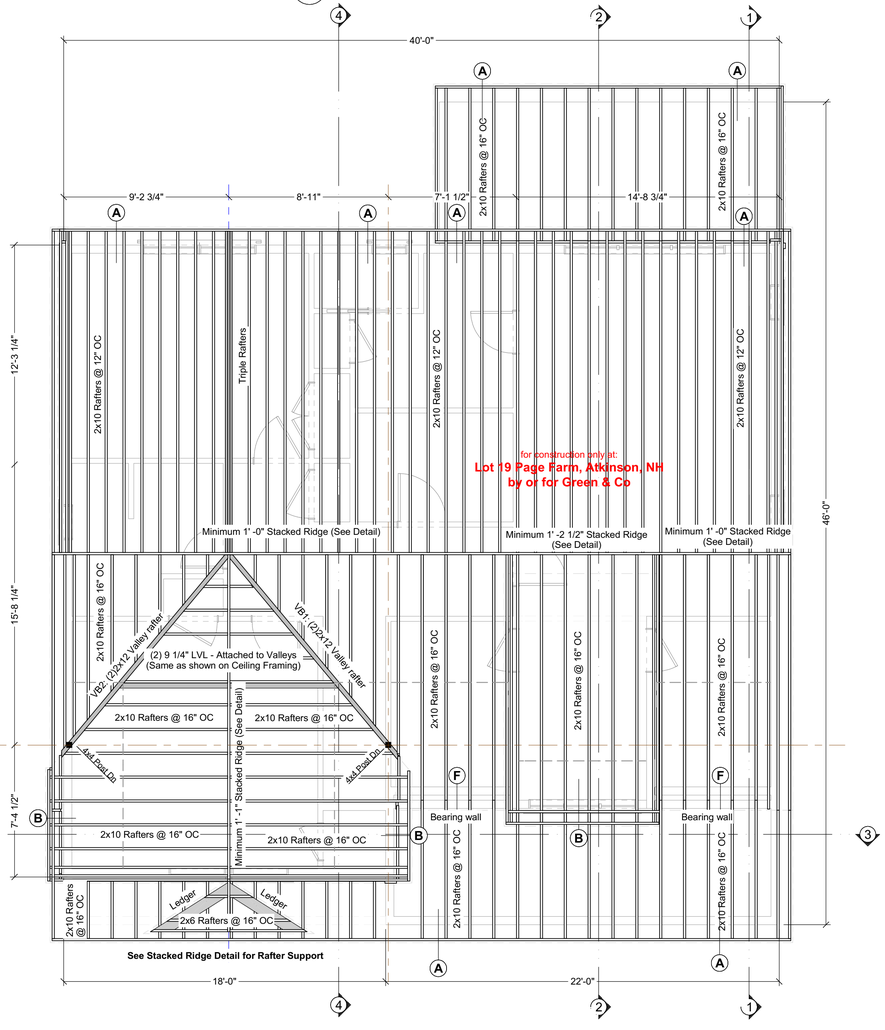


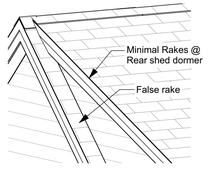
Roof Framing

Provide Hurricane ties per code

Structure designed for
Snow Load of 55 psf

1 0 1 2 3 4

NOTE: See Roof Plan for
roof pitches and overhangs



Alternate:
12" False Rake and a 6" Shed Dormer Rake

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481.124.v10 KR Sweet Cherry Pie

	Main	Future	Apt	Main + Future	Main + Apt	All
Living Area	2404 SF	0 SF	0 SF	2404 SF	2404 SF	2404 SF
Bedrooms	3	1	0	4	3	4
Baths	2.5	0.0	0.0	2.5	2.5	2.5

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Artform Home Plans

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Artform Home Plans ("Artform") requires that our Drawings be built substantially as designed. Artform will not be obligated by or liable for use of this design with markups as part of any builder agreement. While we attempt to accommodate where possible and reasonable, and where the changes do not denigrate our design, any and all changes to Drawings must be approved in writing by Artform. It is recommended that you have your Drawing updated by Artform prior to attaching any Drawing to any builder agreement. Artform shall not be responsible for the misuse of or unauthorized alterations to any of its Drawings.

Facade Changes:

- To maintain design integrity, we pay particular attention to features on the front facade, including but not limited to door surrounds, window casings, finished porch column sizes, and roof friezes. While we may allow builders to add their own flare to aesthetic elements, we don't allow our designs to be stripped of critical details. Any such alterations require the express written consent of Artform.
- Increasing ceiling heights usually requires adjustments to window sizes and other exterior elements.

Floor plan layout and/or Structural Changes:

- Structural changes always require the express written consent of Artform
- If you wish to move or remove walls or structural elements (such as removal of posts, increases in house size, ceiling height changes, addition of dormers, etc), please do not assume it can be done without other additional changes (even if the builder or lumber yard says you can).

481.124.v10 KR Sweet Cherry Pie

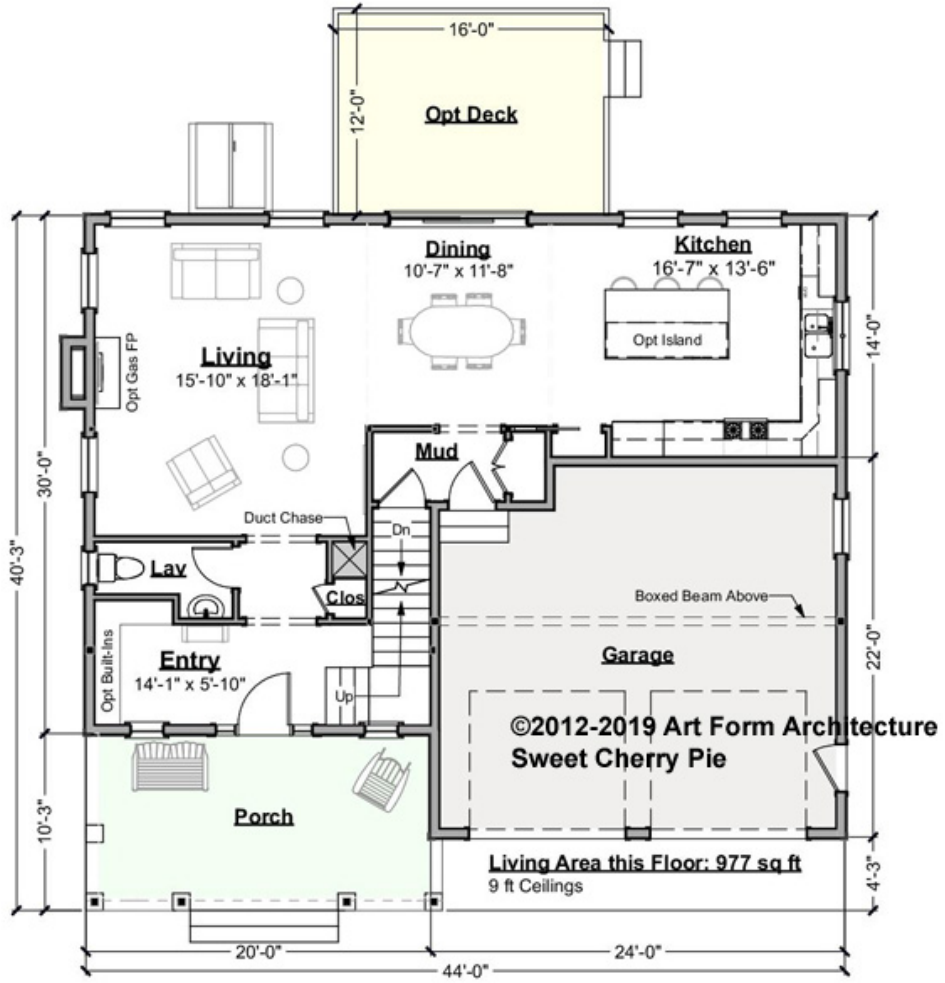
Artform Home Plans

First Floor

	Area	Beds	Baths
Main	977 SF	0	0.5
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**977 SF**	**0**	**0.5**

Ceiling Height	
Shown	9'-0"
Possible*	8'-0"

* See Major Change information on plan page for cost



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481.124.v10 KR Sweet Cherry Pie

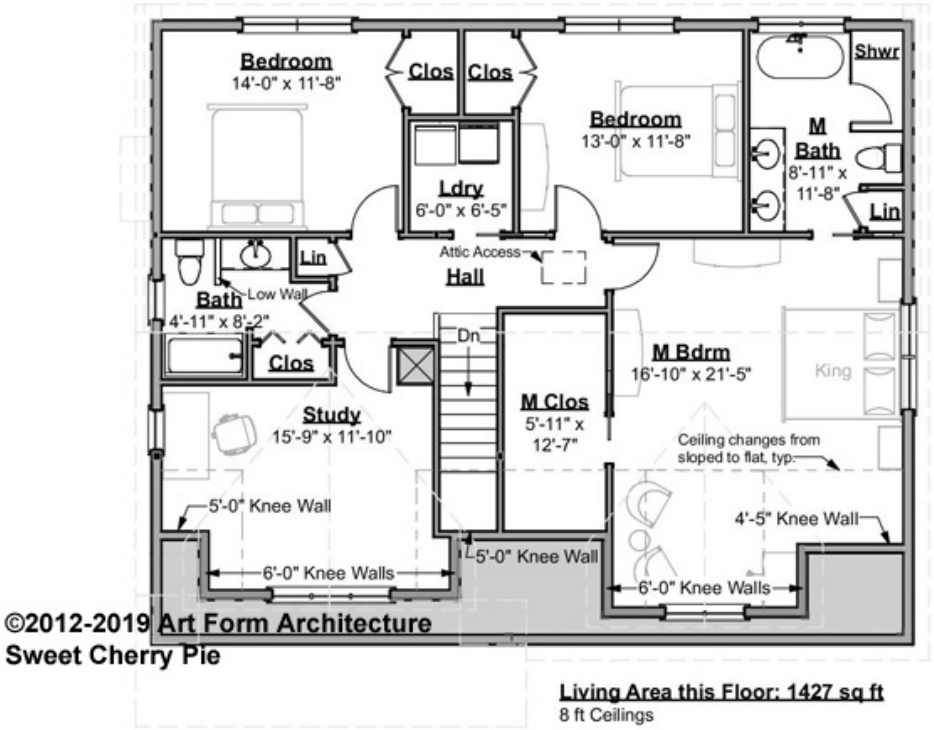
Artform Home Plans

Second Floor

	Area	Beds	Baths
Main	1427 SF	3	2
Future	0 SF	1	0
Apt	0 SF	0	0
Total	**1427 SF**	**4**	**2**

Ceiling Height	
Shown	8'-0"
Possible*	9'-0"

* See Major Change information on plan page for cost



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Sweet Cherry Pie

Living Area this Floor: 1427 sq ft
8 ft Ceilings

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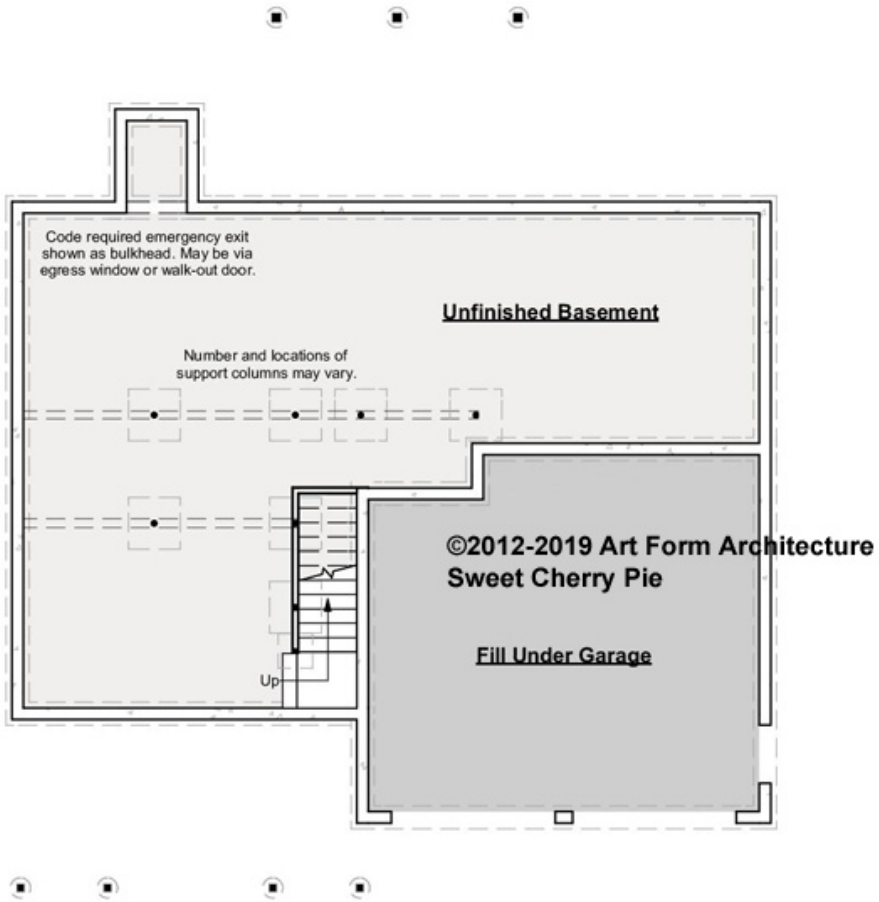
Artform Home Plans

Basement Floor

	Area	Beds	Baths
Main	0 SF	0	0
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**0 SF**	**0**	**0**

Ceiling Height	
Shown	7'-8"
Possible*	9'-0"

* See Major Change information on plan page for cost



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Artform Home Plans

Front Elevation

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Artform Home Plans

Right Elevation

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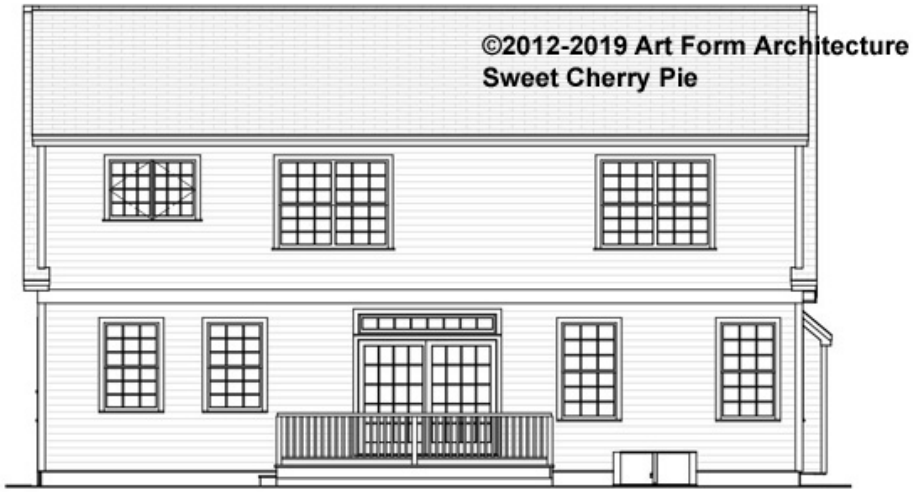
Artform Home Plans

Rear Elevation



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Artform Home Plans

Left Elevation

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1032.124 GL Sinclair

	Main	Future	Apt	Main + Future	Main + Apt	All
Living Area	2886 SF	0 SF	0 SF	2886 SF	2886 SF	2886 SF
Bedrooms	4	1	0	5	4	5
Baths	3.5	0.0	0.0	3.5	3.5	3.5

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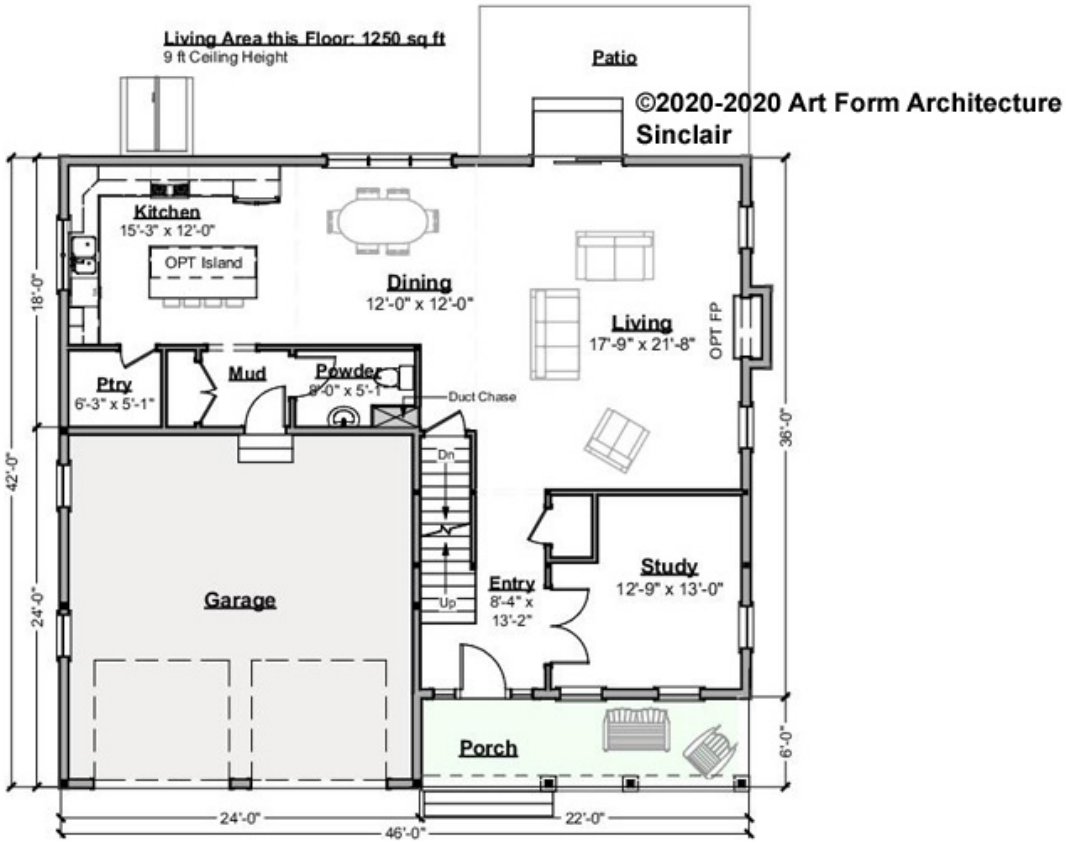
Artform Home Plans

First Floor

	Area	Beds	Baths
Main	1250 SF	0	0.5
Future	0 SF	1	0
Apt	0 SF	0	0
Total	**1250 SF**	**1**	**0.5**

Ceiling Height	
Shown	9'-0"
Possible*	8'-0"

* See Major Change information on plan page for cost



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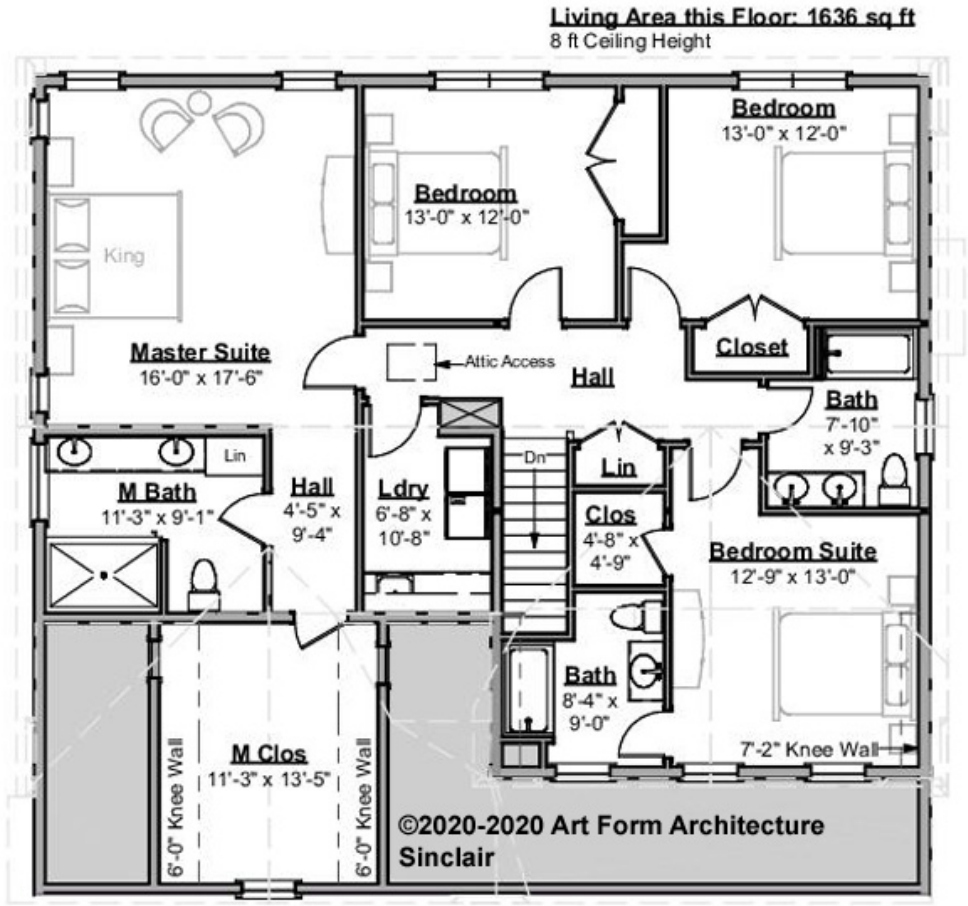
Artform Home Plans

Second Floor

	Area	Beds	Baths
Main	1636 SF	4	3
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**1636 SF**	**4**	**3**

Ceiling Height	
Shown	8'-0"
Possible*	8'-0"

* See Major Change information on plan page for cost



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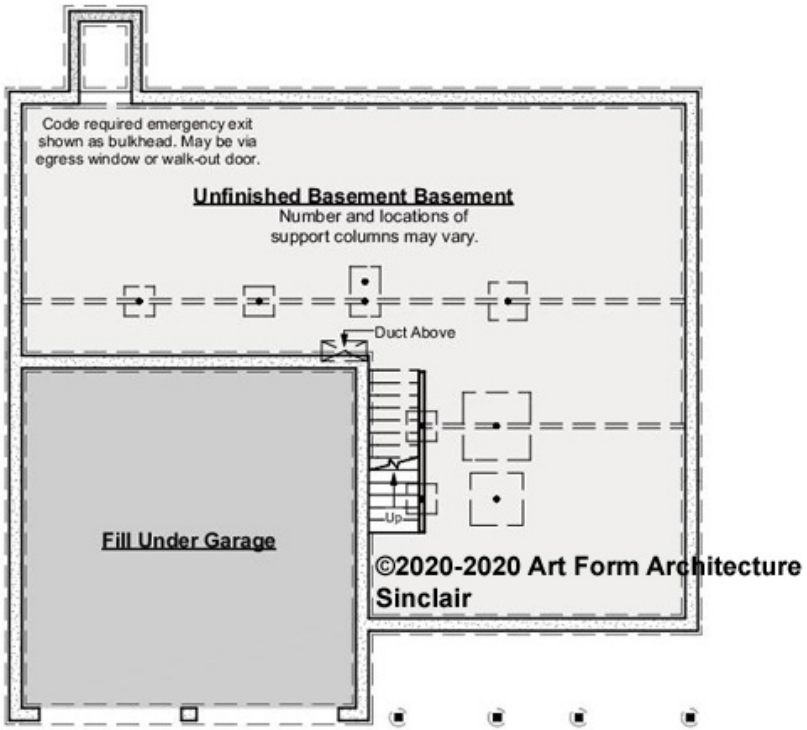
Artform Home Plans

Basement Floor

	Area	Beds	Baths
Main	0 SF	0	0
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**0 SF**	**0**	**0**

Ceiling Height	
Shown	7'-8"
Possible*	9'-0"

* See Major Change information on plan page for cost



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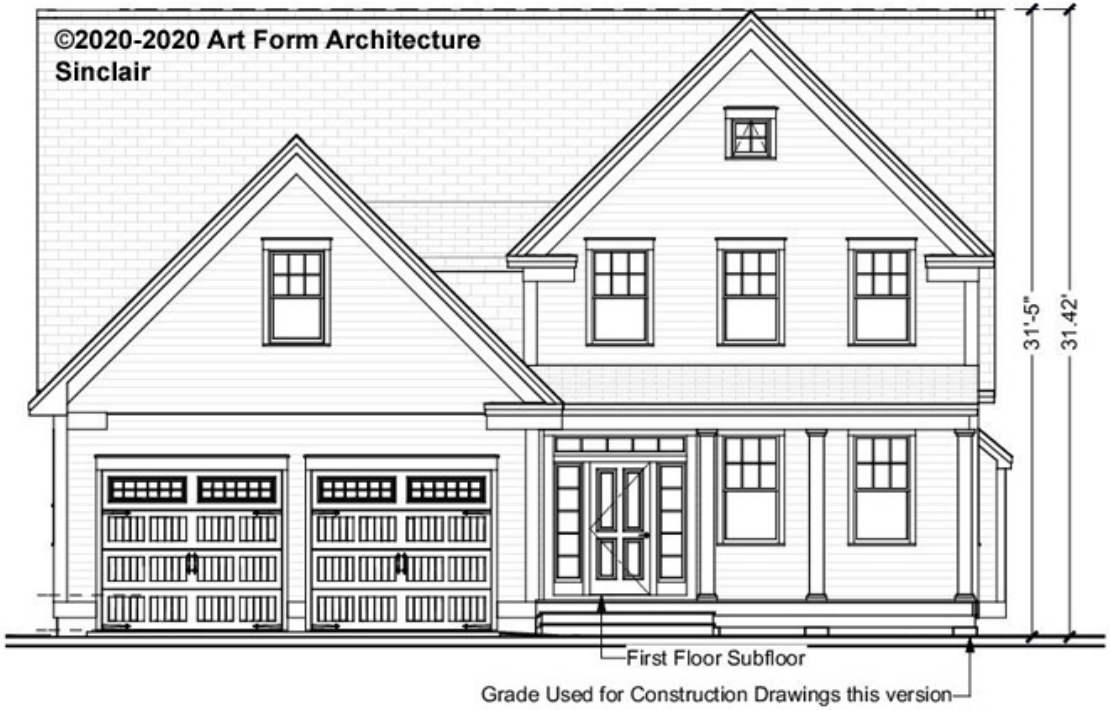
Front Elevation



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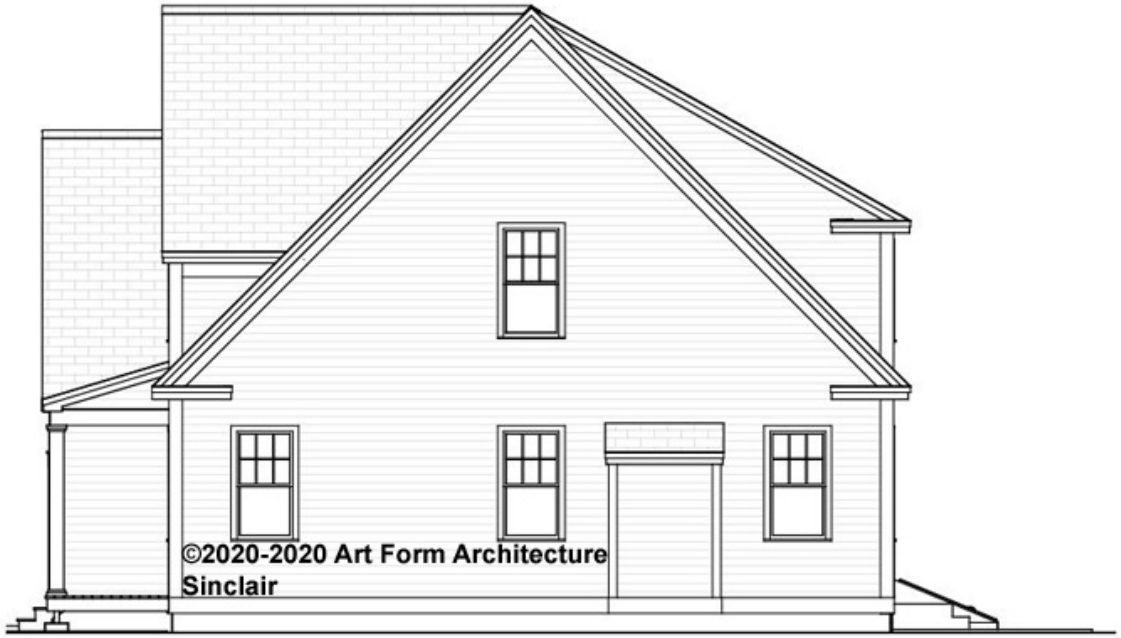
Right Elevation



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Rear Elevation

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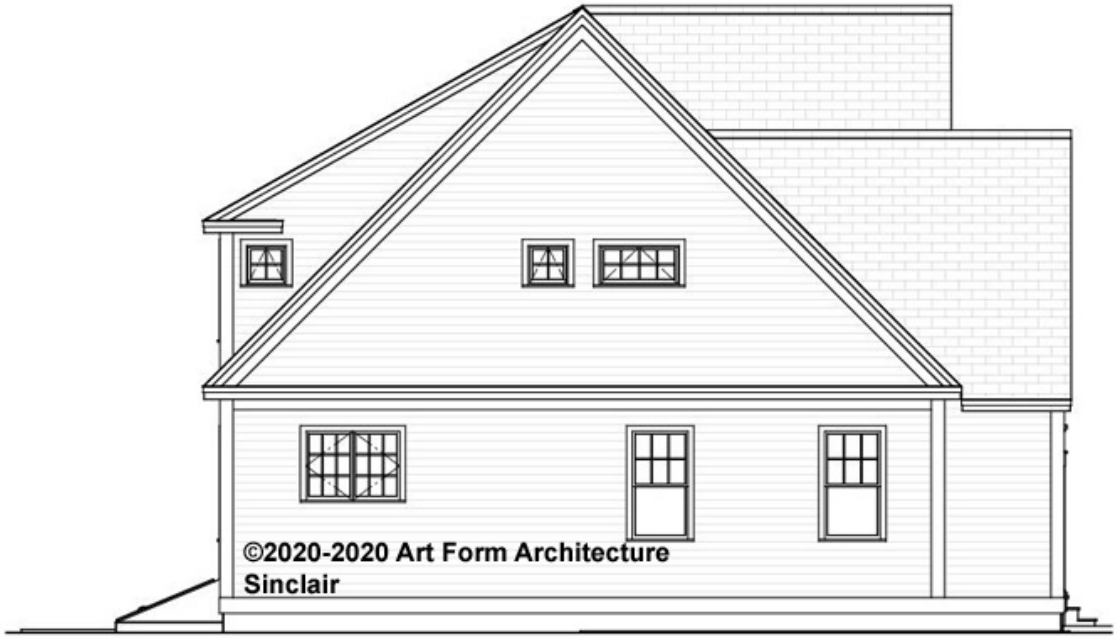
Artform Home Plans

Left Elevation



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405.124.v2 KR Stephanie

	Main	Future	Apt	Main + Future	Main + Apt	All
Living Area	1797 SF	0 SF	0 SF	1797 SF	1797 SF	1797 SF
Bedrooms	3	1	0	4	3	4
Baths	2.5	0.0	0.0	2.5	2.5	2.5

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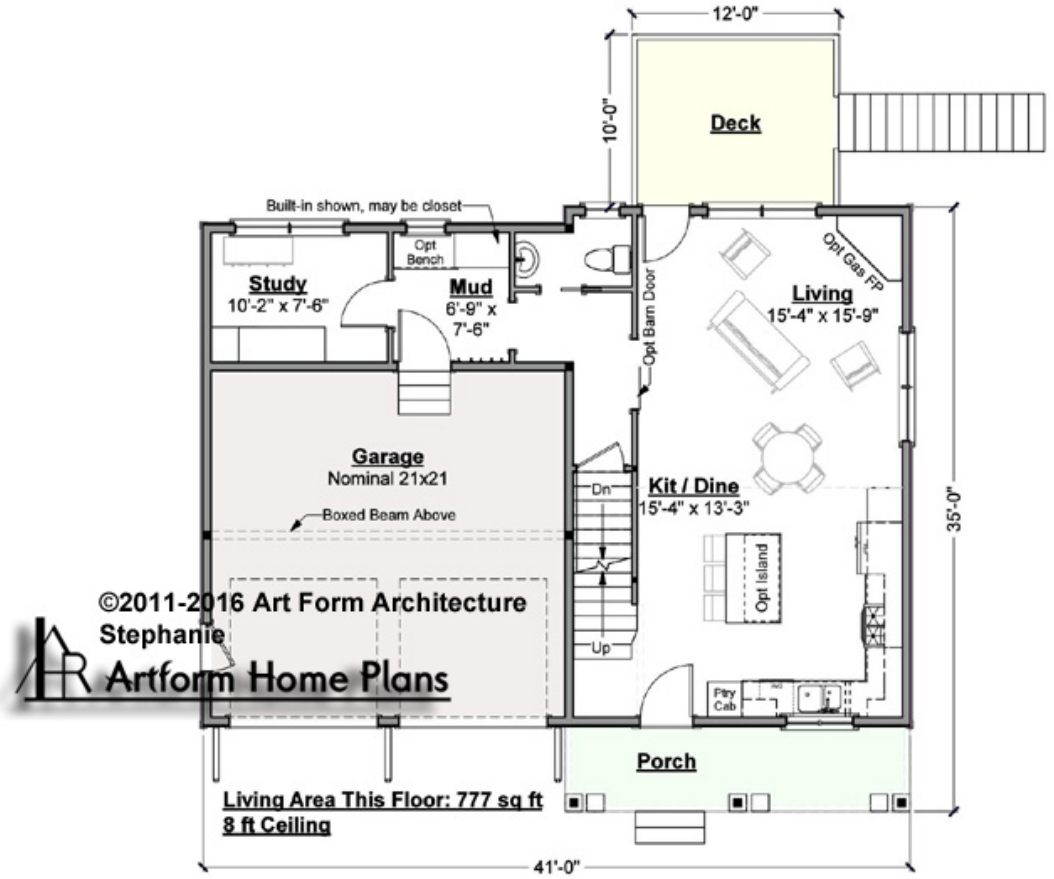
Artform Home Plans

First Floor

	Area	Beds	Baths
Main	777 SF	0	0.5
Future	0 SF	1	0
Apt	0 SF	0	0
Total	**777 SF**	**1**	**0.5**

Ceiling Height	
Shown	8'-0"
Possible*	8'-8"

* See Major Change information on plan page for cost



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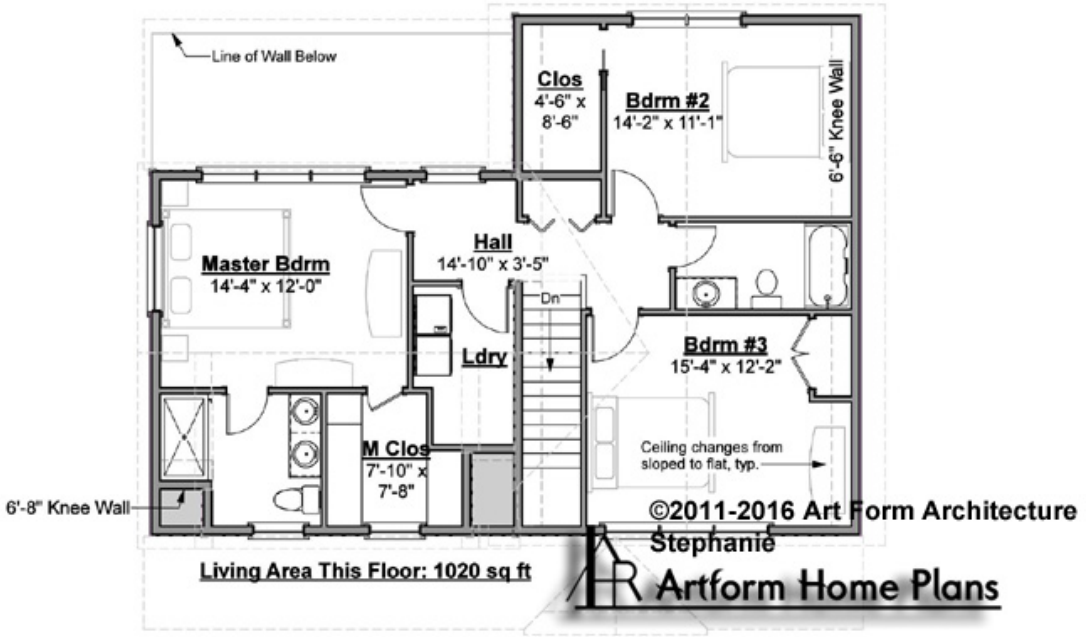
Artform Home Plans

Second Floor

	Area	Beds	Baths
Main	1020 SF	3	2
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**1020 SF**	**3**	**2**

Ceiling Height	
Shown	8'-0"
Possible*	9'-0"

* See Major Change information on plan page for cost



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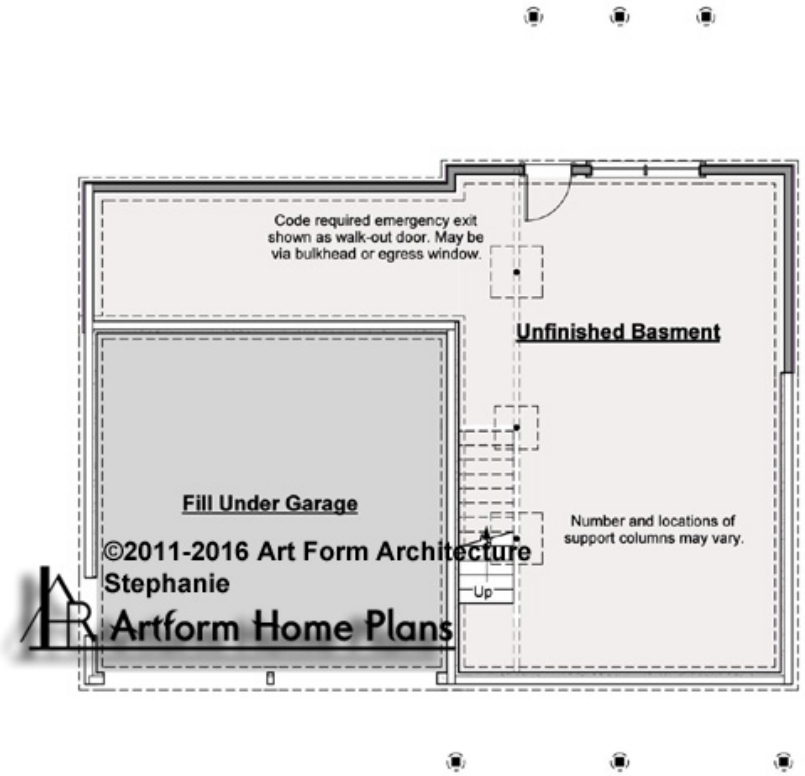
Artform Home Plans

Basement Floor

	Area	Beds	Baths
Main	0 SF	0	0
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**0 SF**	**0**	**0**

Ceiling Height	
Shown	7'-8"
Possible*	9'-0"

* See Major Change information on plan page for cost



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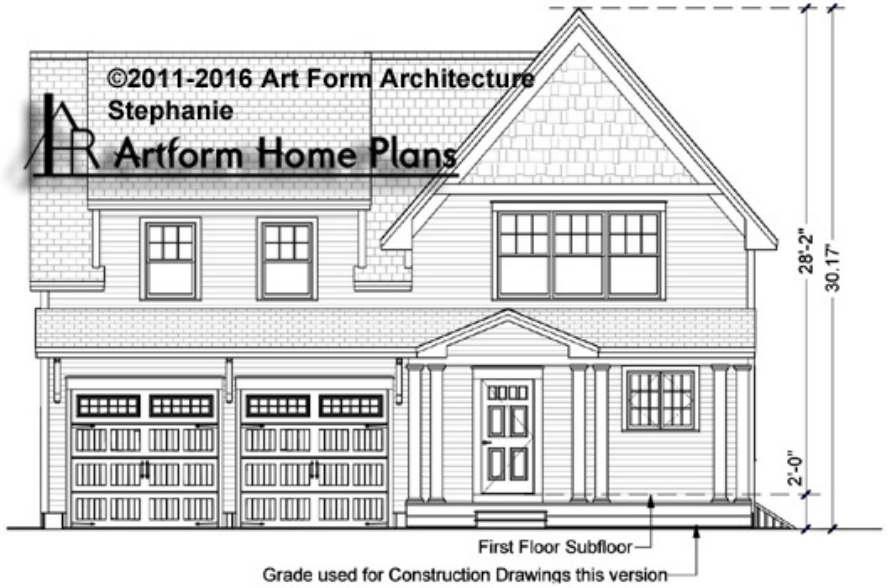
Front Elevation



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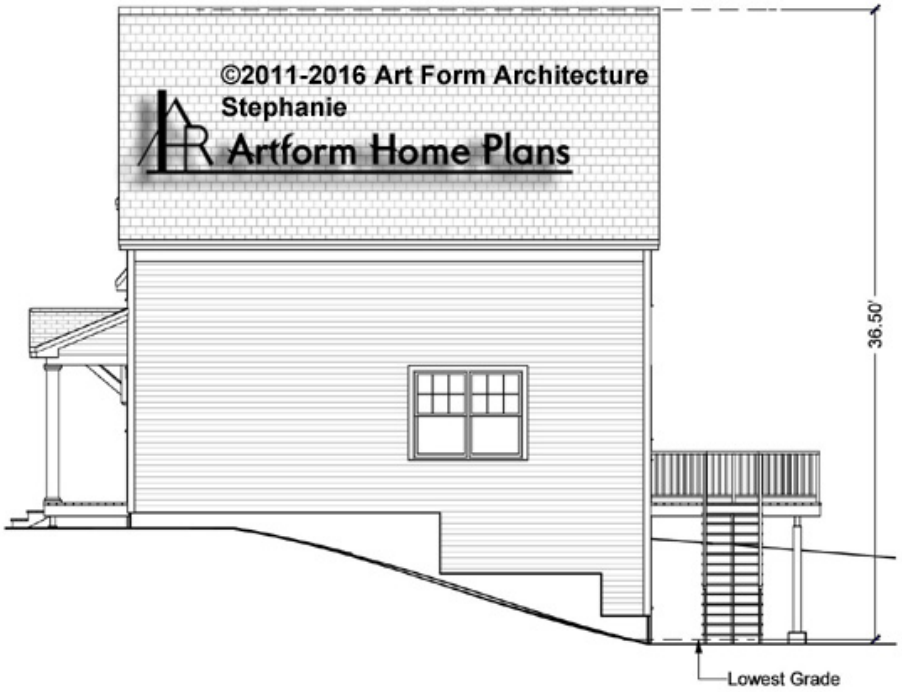
Artform Home Plans

Right Elevation



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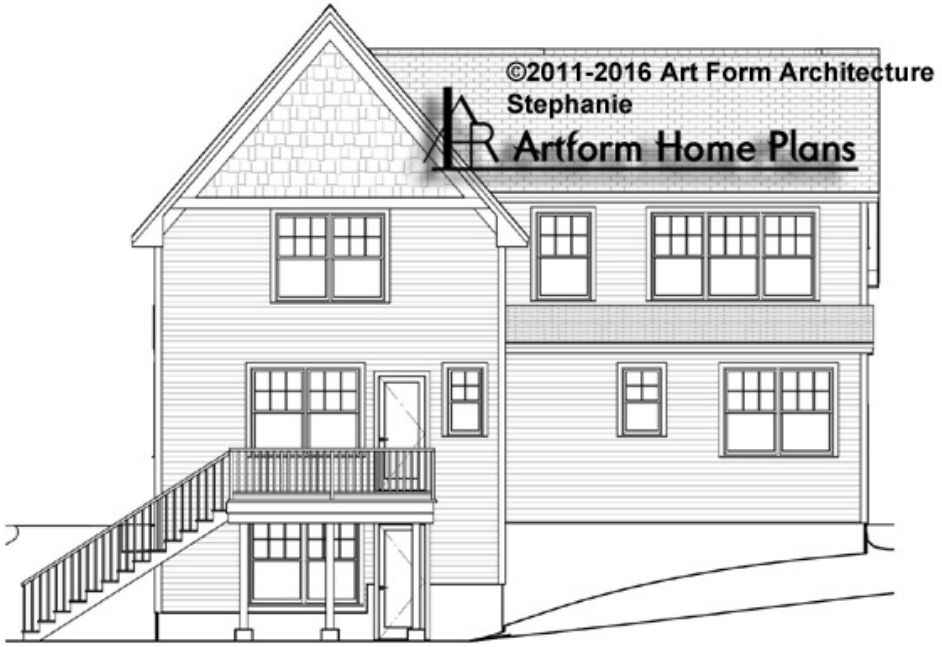
Rear Elevation



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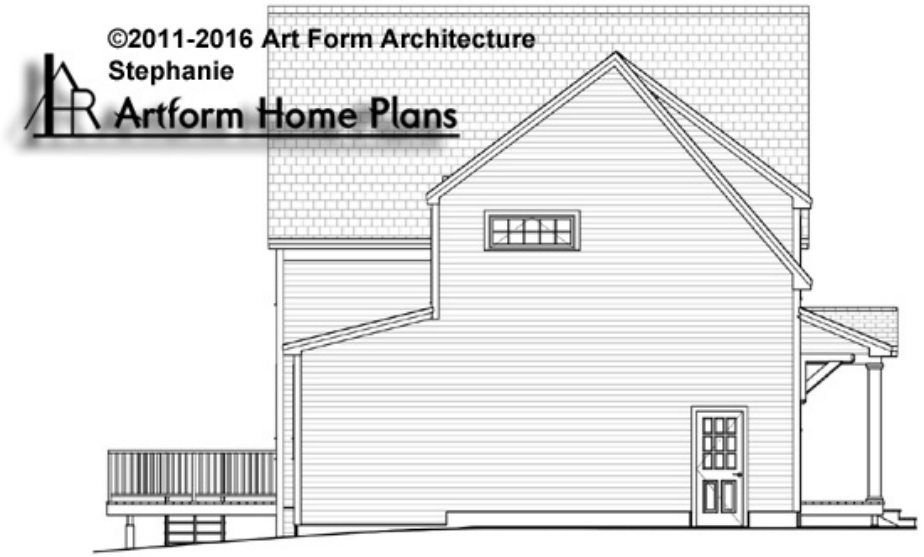
Left Elevation



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148.124.v6 KR Sweet Liberty

	Main	Future	Apt	Main + Future	Main + Apt	All
Living Area	2413 SF	0 SF	0 SF	2413 SF	2413 SF	2413 SF
Bedrooms	3	0	0	3	3	3
Baths	2.5	0.0	0.0	2.5	2.5	2.5

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Facade Changes:

- To maintain design integrity, we pay particular attention to features on the front facade, including but not limited to door surrounds, window casings, finished porch column sizes, and roof friezes. While we may allow builders to add their own flare to aesthetic elements, we don't allow our designs to be stripped of critical details. Any such alterations require the express written consent of Artform.
- Increasing ceiling heights usually requires adjustments to window sizes and other exterior elements.

Floor plan layout and/or Structural Changes:

- Structural changes always require the express written consent of Artform
- If you wish to move or remove walls or structural elements (such as removal of posts, increases in house size, ceiling height changes, addition of dormers, etc), please do not assume it can be done without other additional changes (even if the builder or lumber yard says you can).

148.124.v6 KR Sweet Liberty

Artform Home Plans

First Floor

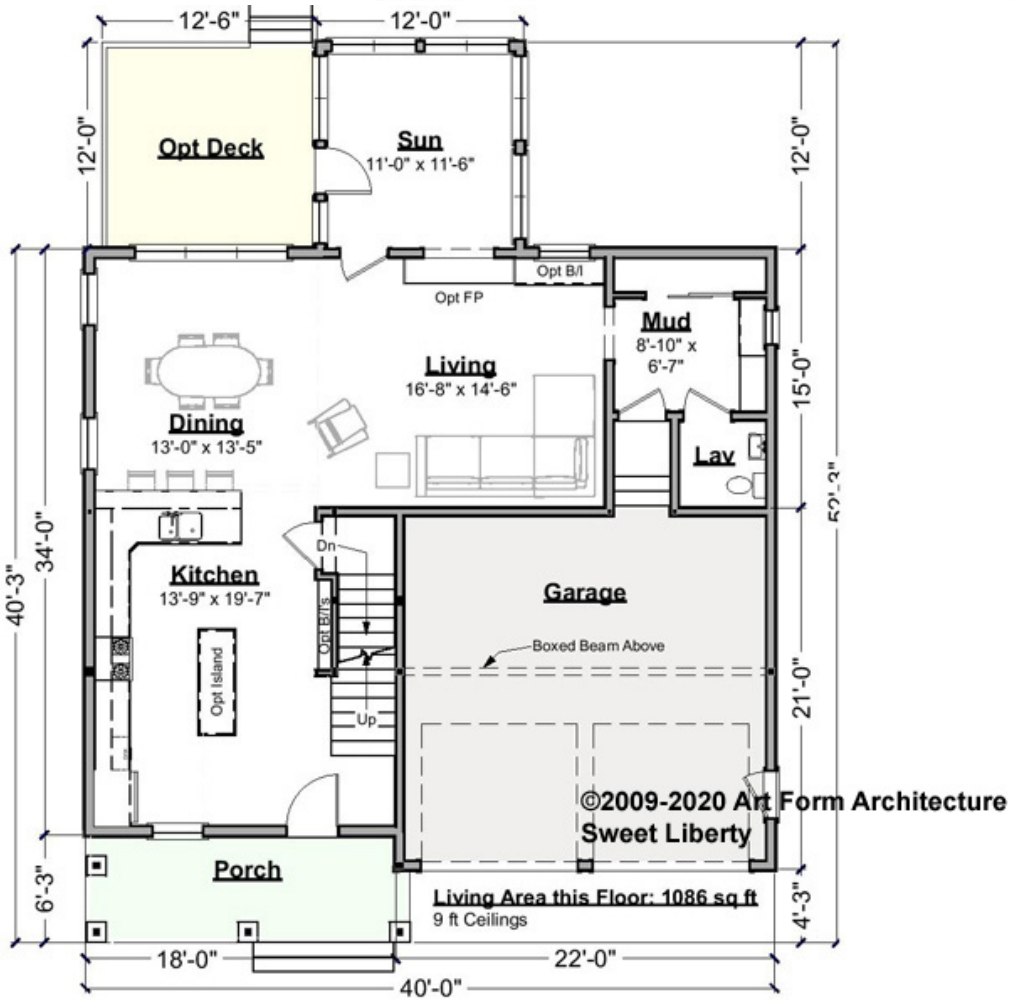
	Area	Beds	Baths
Main	1086 SF	0	0.5
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**1086 SF**	**0**	**0.5**

Ceiling Height	
Shown	9'-0"
Possible*	8'-0"

* See Major Change information on plan page for cost

Notes This Design:

Side entry garage will require some structural redesign - a beam to transfer load from that post.



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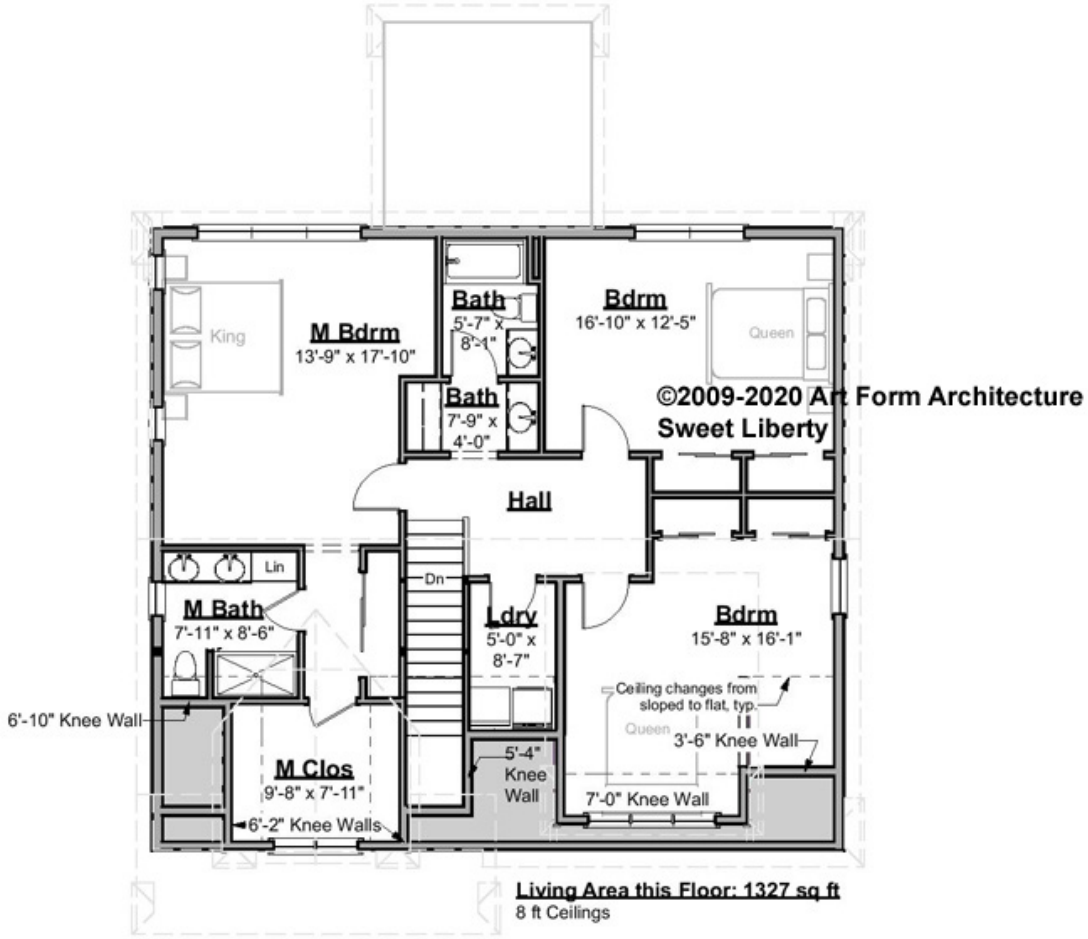
Artform Home Plans

Second Floor

	Area	Beds	Baths
Main	1327 SF	3	2
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**1327 SF**	**3**	**2**

Ceiling Height	
Shown	8'-0"
Possible*	9'-0"

* See Major Change information on plan page for cost



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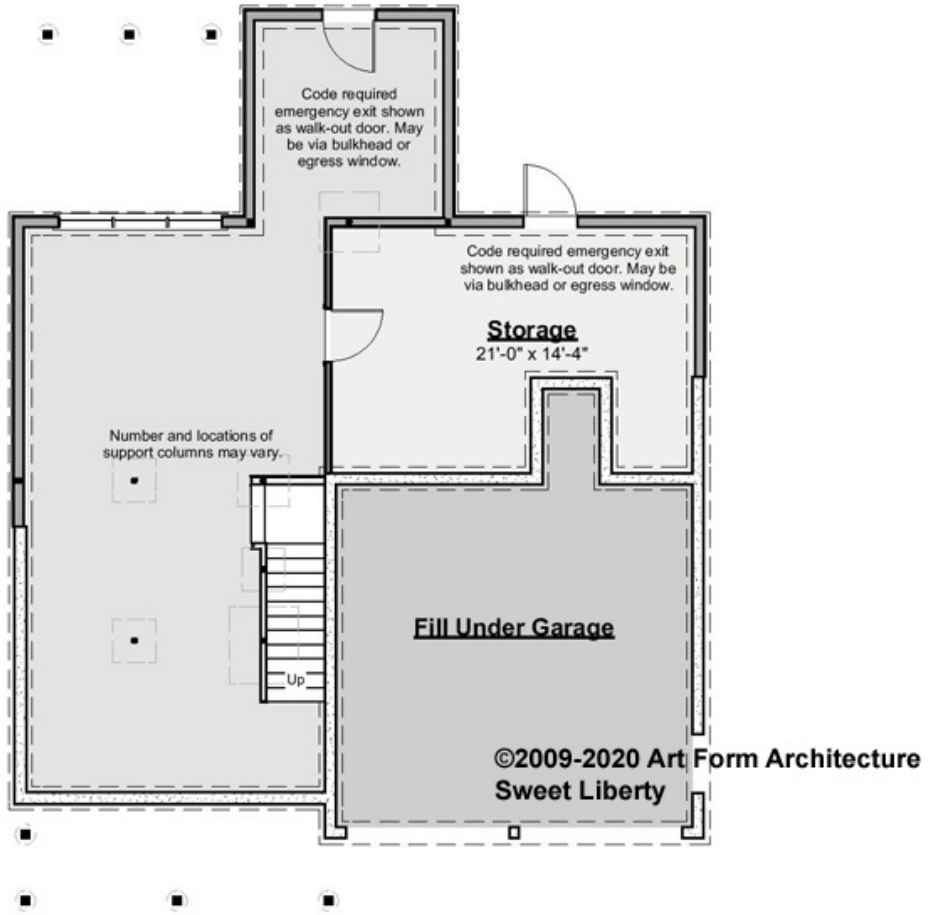
Artform Home Plans

Basement Floor

	Area	Beds	Baths
Main	0 SF	0	0
Future	0 SF	0	0
Apt	0 SF	0	0
Total	**0 SF**	**0**	**0**

Ceiling Height	
Shown	7'-8"
Possible*	9'-0"

* See Major Change information on plan page for cost



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Artform Home Plans

Front Elevation

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Artform Home Plans

Right Elevation

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Artform Home Plans

Rear Elevation

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Artform Home Plans

Left Elevation

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Green & Company

Wall Types

Exterior walls 2x6 wood stud
Interior walls 2x4 wood stud, unless noted otherwise

Wall Keys

(2) 2x wood studs on the flat

(6) 2x6 wood stud wall, 16" oc

Note: 2x4 wood stud wall, 16" oc unless otherwise noted

Key Notes

(A) 30" x 22" Minimum Attic Access Panel - Insulated (RO 34" x 26")

(F) Field locate for plumbing or mechanical

(V) Verify size of fixture or appliance Adjust dimensions to accommodate

(C) Center - Place door or window centered on wall

(SD) Smoke Detector (HD) Heat Detector

(CO) Carbon Monoxide Detector

Dimensions

1. Dimensions are to face of stud, unless noted otherwise.
2. Closets are 24" clear inside, unless dimensioned otherwise.

Square Footages

1. Sq ft numbers are interior to room for use in calculating finishes.
2. Cabinets and fixtures not subtracted.
3. Add for doorways when floor finishes run through.

Notes

1. Exterior walls 2x6 wood stud @ 16" oc. Provide insulation & vapor barrier conforming to state or local codes. Interior sheathing 1/2" gypsum board. Provide 1/2" exterior rated sheathing, house wrap with drainage plane and siding. Provide step flashing at walls adjacent to roof planes.

2. Interior walls 2x4 wood stud @ 16" oc, unless noted otherwise.

3. Roof - see structural for rafter sizes. Provide 5/8" exterior rated roof sheathing 15# roofing felt, ice & water shield at eaves and valleys, aluminum drip edge and asphalt shingles or metal roofing. Structure not calculated to support slate or tile. Flash all penetrations. Provide cricket at any added chimneys.

4. Provide roof and/or ceiling insulation per code. Provide soffit and ridge vents where required for insulation strategy. (Verify with code officer - closed cell spray foam or dense-pack cellulose installed at rafters and filling ridge and eaves generally contra-indicates venting, batt insulation always requires venting).

5. Provide smoke, carbon monoxide, and heat detectors where shown and where required by code and where required by local authorities.

6. Provide fire resistive materials where required by code, including but not limited to, firestopping at penetrations, 5/8" Type X drywall on walls and ceilings to separate garage (where garage present in design) from dwelling, and separation of dwellings (where more than one dwelling present in design), and protection of flammable insulation materials. See Table R306.6 IRC 2015.

7. Compliance with code requirements for rooms size and clearances, (hallway widths, room sizes, etc) assume 1/2" drywall on walls and 1/2" drywall on 3/4" strapping on ceilings. Adjust as required if materials differ.

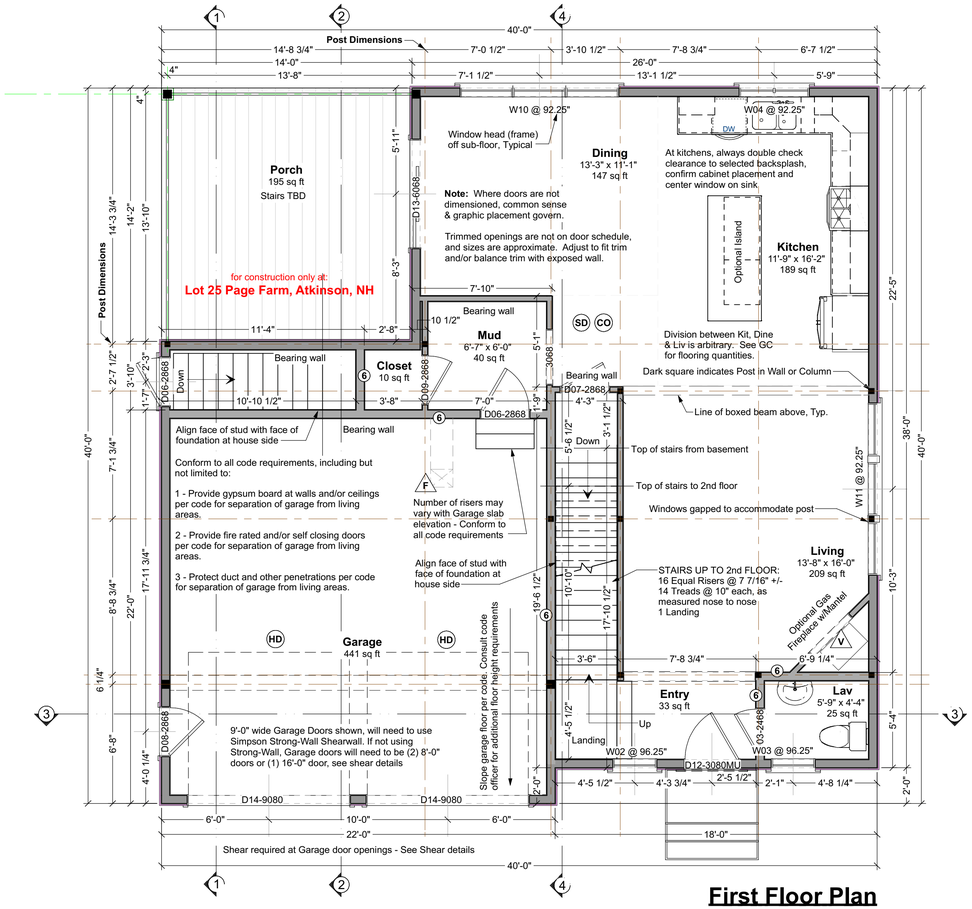
8. Shear is only called out where Continuous Portal Frame will not suffice. See Section R602.10.4 (Pages 177 - 188) of the IRC 2015.

General Design Notes

1 Builder shall consult and follow the building code and other regulations in effect for the building site for all construction details not shown in these drawings. Requirements described here are specific to this design and/or are provided as reference. Additional building code or local requirements may apply.

2 Builder shall maintain a safe worksite, including but not limited to, provision of temporary supports where appropriate and adherence to applicable safety standards.

3 Design is based on the snow load listed on the framing plans, 100 mph basic wind speed, Exposure type B, soil bearing capacity of 2000 psf, and Seismic Category C, unless otherwise noted on the framing plans. Builder shall promptly inform Artform Home Plans of differing conditions.



NOTE TO HOMEOWNER:
These construction plans ARE NOT a part of your construction contract with your builder, unless your P&S agreement specifies that they are. Your P&S and it's attachments (like the builder's specifications or a review set of this design) describes what you and your builder agreed the builder would build for you. We here at Artform Home Plans do not have the authority to obligate your builder to provide you with amenities like fireplaces and spa tubs. The contract between you and your builder governs.

First Floor Plan

Living Area this Floor: 854 sq ft
9 ft Finished Ceiling Height

1 0 1 2 3 4

Door & Window Notes

1. **Rated Doors:** Provide fire rated and/or self-closing doors where required by local codes or local authorities

2. **Trimmed Openings:** Trimmed openings not shown on schedule. See Plan.

3. **Window Tempering:** Provide tempered windows where required by local codes or local authorities. Tempering column provided here for convenience. Windows have not been reviewed for tempering requirements.

4. **Window RO's:** 1/4" or 1/2" on each of 4 sides allowed for window RO's, typical. Review framing size vs RO size. Adjust per manufacturer's requirements and/or builder preference.

5. **Egress Windows:** Provide minimum one door or window meeting egress requirements in basement, in each sleeping room, in each potential sleeping room, and other locations required by local code, in sizes required by local code. Note that casement windows coded by manufacturer as meeting IRC 2015 egress requirements typically need to be ordered with specific hardware. Emergency Escape Window Sizes (Section R310.2.1, R310.2.2, R310.2.3 and R310.2.4). Will also comply with NFPA 101.

6. **Basement Windows:** Add basement windows as required to meet state or local code requirements, including but not limited to egress and light/ventilation.

7. **Skylights:** Skylights are not shown on this schedule, but may be required. Consult builder and/or see floor plan.

8. **Minimum window sill height:** IRC 2015 requires that floor window sills be 24" from floor. Confirm bottom of window opening relative to frame. Conform to IRC 2015 R312.1.

DOOR SCHEDULE

NUMBER	QTY	FLOOR	SIZE	WIDTH	HEIGHT	TYPE	COMMENTS
D01	1	2	2068 R IN	24 "	80 "	HINGED	
D02	1	2	2468 L	28 "	80 "	POCKET	
D03	1	1	2468 L IN	28 "	80 "	HINGED	
D04	3	2	2468 L IN	28 "	80 "	HINGED	
D05	3	2	2468 R IN	28 "	80 "	HINGED	
D06	2	1	2868 L EX	32 "	80 "	HINGED	
D07	1	1	2868 L IN	32 "	80 "	HINGED	
D08	1	1	2868 R EX	32 "	80 "	HINGED	
D09	1	1	2868 R IN	32 "	80 "	HINGED	
D10	3	2	2868 L IN	32 "	80 "	HINGED	
D11	2	2	2868 R IN	32 "	80 "	HINGED	
D12	1	1	3080	36 "	96 "	MULLED UNIT	HINGED W/TRANSOM
D13	1	1	6068 R EX	72 "	80 "	SLIDER	
D14	2	1	9080	108 "	96 "	GARAGE	

WINDOW SCHEDULE

NUMBER	QTY	WIDTH	HEIGHT	R/O	EGRESS	TEMPERED	DESCRIPTION	COMMENTS
W01	2	23 1/2 "	23 1/2 "	24"X24"			SINGLE AWNING	
W02	1	29 1/2 "	41 1/2 "	30"X42"		YES	SINGLE CASEMENT-HL	
W03	1	29 1/2 "	41 1/2 "	30"X42"			SINGLE CASEMENT-HR	
W04	1	47 "	47 1/2 "	47 1/2"X48"			DOUBLE CASEMENT-LHL/RHR	
W05	1	70 1/2 "	23 1/2 "	71"X24"			TRIPLE CASEMENT-LHL/RHR	
W06	1	106 1/2 "	47 1/2 "	107"X48"	YES		TRIPLE CASEMENT-LHL/RHR	
W07	1	23 1/2 "	35 1/2 "	24"X36"			DOUBLE HUNG	
W08	1	23 1/2 "	47 1/2 "	24"X48"		YES	DOUBLE HUNG	
W09	2	76 "	61 1/2 "	76 1/2"X62"	YES		2X DH	
W10	1	106 1/2 "	65 1/2 "	107"X66"			3X DH	
W11	1	115 1/2 "	65 1/2 "	116"X66"			3X DH	

Giselle 40x40

Dear Code Officer,

These are predesigned home plans, designed to bring good design and construction drawings to people at more affordable prices and faster time frames than traditional architecture. Where traditional "internet" home plans disclaim all responsibility, we split responsibility between us (Artform) and the owner. We encourage the future homeowners to use a quality builder who can assist them with this. They are responsible for thermal and moisture decisions and for meeting code in ways that a quality builder should know without an explicit detail. We are responsible for things that are directly related to the design and/or that a quality builder couldn't reasonably figure out on their own - specifically the following IRC 2015 code sections:

1 - Room sizes (Section R304)
2 - Ceiling Height (Section R305)
3 - Floor space & ceiling height at Toilet, Bath and Shower Spaces (Section R307)
4 - Hallway widths (Section R311.6)
5 - Door types & sizes (Section R311.2)
6 - Floor space in front of doors (Section R311.3)
7 - Stair width - The stairs in our designs will be a minimum of 36" wide measured wall surface to wall surface, allowing compliance with R311.7.1 with installation of correct handrail.
8 - Stairway headroom (Section R311.7.2)
9 - Stair treads and risers (Section R311.7.5)
10 - Landings for stairways (Section R311.7.6)
11 - Emergency Escape Window Sizes (Section R310.2.1, R310.2.2, R310.2.3 and R310.2.4). Casement windows may require manufacturer's emergency escape window hardware. Will also comply with NFPA 101.
12 - Structural Floor Framing (Section R502.3) Where dimensional lumber is shown, framing members will be sized according to this section of the code. Where engineered wood products are shown, those framing members will be size according to the manufacturer's tables for loads and spans, or sizes will have been calculating using manufacturer's published materials properties.
13 - See structural sheets for additional notes.

The builder can and should add information to this set, such as Rescheck, a hand markup of our generic thermal and moisture section, additional information about doors and windows (such as fire rating, tempering, etc), foundation drops relative to site grading, and sometimes their chosen method of basement egress. These drawings are not intended to be used without that additional information.

Where a construction address is shown on the drawings, it is for copyright control only. We have not inspected the site, adapted the design to state specific laws (except where it says so in the drawings) or site or region specific climate conditions. Homeowner and/or Builder shall be responsible for thermal and moisture control strategies, materials choices and compliance with applicable laws and ordinances.

Please do feel free to call us with any questions. We can and do update our drawings and standard notes to address specific concerns, especially in jurisdictions where our clients will be building again.

Dear Everybody,

With these drawings a copyright license is granted for a single construction only at Lot 25 Page Farm, Atkinson, NH by or for Green & Company. This is a License to Build, and does not include a License to Modify, except as required to conform to building code or fulfill builder's/owners responsibilities.

Permissible uses of these drawings:
1. All activities associated with construction at the listed address.
2. Pricing or preliminary discussions with zoning or code officials for construction at other addresses, with prior notification to Artform Home Plans - just use the Contact form on the web site – http://www.artformhomeplans.com/contact.a5w.

Not Permitted:
1. Application for any permits or other approvals for construction at properties other than the listed address, including but not limited to construction, zoning, conservation, or design review.
2. Modification of the basic design.

Use of these drawings outside these parameters is a violation of federal copyright law, punishable by both civil action and criminal prosecution, as it is stealing or enabling theft of "intellectual property". Making modifications to plans, even significant ones, does not change this, under copyright law, that's considered "derivative works".

We can provide drawings suitable for use in obtaining design or zoning approvals without incurring the expense of a full set of construction drawings. Contact us for more information.

AFHP CD Commons 20.2 X11 - IRC 2015

These drawings are intended for use by an experienced professional builder in responsible charge of the entire project, including but not limited to mechanical, electrical and sitework. Any additional adaptation for these trades or other trades must be determined prior to start of construction. Contact Artform for any adjustments needed.

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If you have any concerns or questions, please feel free to contact us. We are happy to clarify matters that fall within our scope, as listed on the first page. We can also often provide affordable support for issues that are your responsibility, such as energy design/calcs, or additional detailing.

Artform Home Plans
AFHP Design # 918.124.v3 GL
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Giselle 40x40
Lot 25 Page Farm
Atkinson, NH

1

1/4"=1'-0" unless noted otherwise / Print @ 1:1
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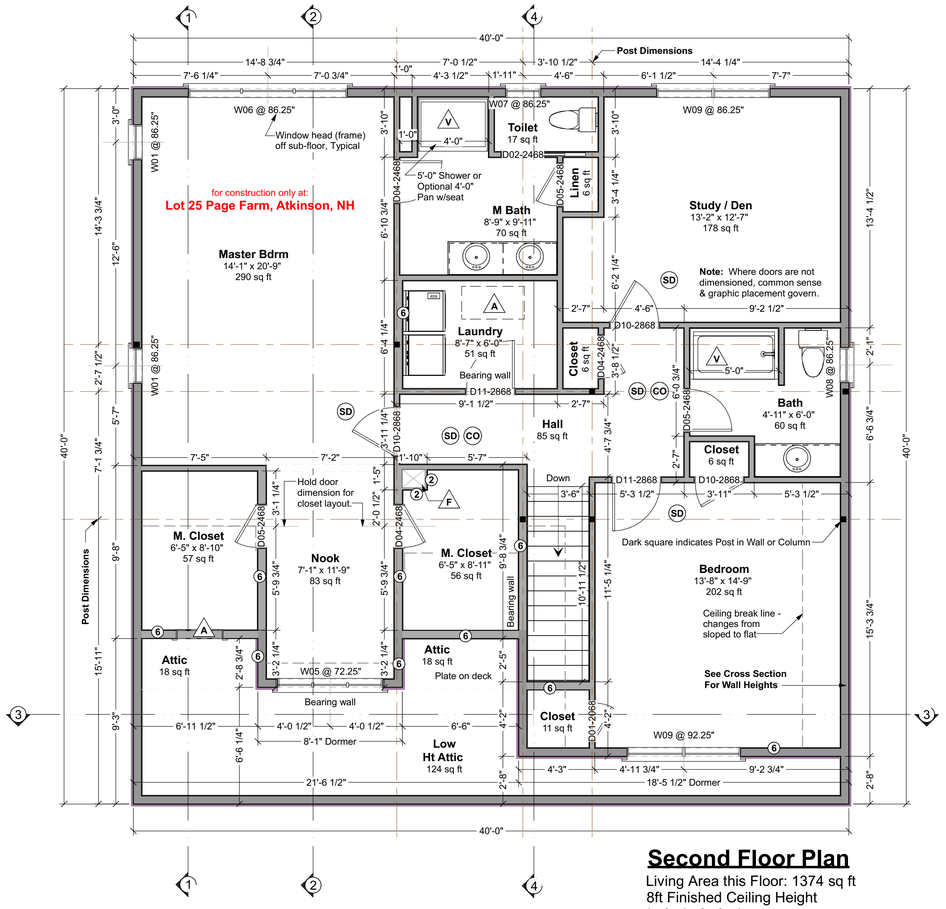
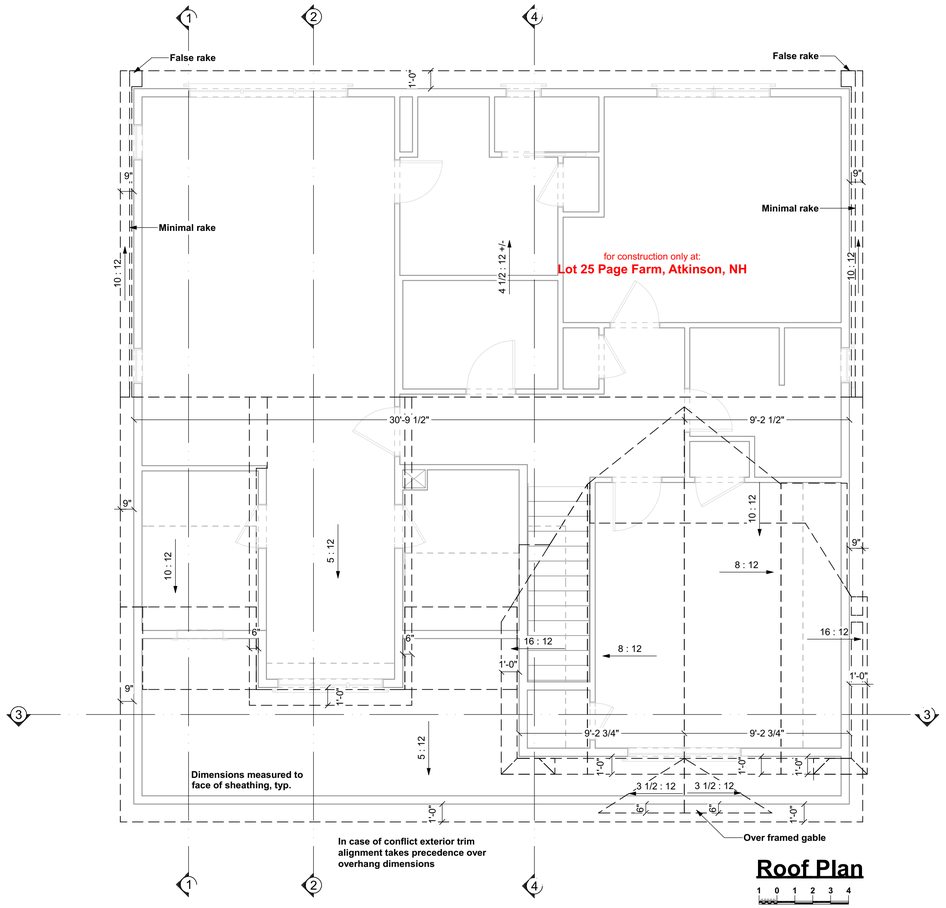


Second Floor Plan

Living Area this Floor: 1374 sq ft
8ft Finished Ceiling Height

1 0 1 2 3 4



Roof Plan

1 0 1 2 3 4

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Giselle 40x40
Lot 25 Page Farm
Atkinson, NH

2

1/4"=1'-0" unless noted otherwise / Print @ 1:1
PDF created on: 4/23/2020, drawn by ACJ

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Construction

Foundations

1. No footing shall be poured on loose or unsuitable soils, in water or on frozen ground.
2. All exterior footings to conform to all applicable code requirements for frost protection.
3. All concrete shall have a minimum compressive strength of at least 3000 PSI at 28 days.
4. Foundation anchorage to comply with IRC 2015 Section R403.1.6, it shall consist of minimum size 1/2" diameter anchor bolts with 3/16" x 2" x 2" washers at a maximum of 72" oc for two stories or 48" oc for more than two stories, max of 12" from each corner, min of 2 bolts per wall. Anchor bolt shall extend 7" into concrete or grouted cells of concrete masonry units. Be aware that a garage under may be counted by your code officer as a story. Additional anchorage may be required at braced walls.
5. Foundation reinforcing steel is to be installed in accordance with all applicable provisions of IRC 2015 Section 404.1.3.2

TYPICAL PERIMETER FOUNDATION WALL:

- 8" poured concrete, 8 ft forms, min 7'-10" finished, with total of 3 rebar, as follows:
- (1) #4 rebar, 4" from top
- (1) #4 rebar @ vertical midpoint. Omit this rebar at walls 4 ft high or less.
- (1) #4 rebar, min 3" from bottom or per code
- Lap corners & splices of rebar per code.
- Secure sill to foundation with 1/2" diameter anchor bolts that extend 7" into concrete and tightened with a nut and washer @ 6' oc & max 12" from each corner & each end @ wood sill splices - if built-up sill, bolts must extend through all sill plates or straps must secure all sill plates.

TYPICAL PERIMETER FOOTING:

1. Use Footing chart(s) below to verify that depth of home matches chart. Depth is foundation dimension eave to eave. Contact Artform Home Plans if you believe the chart does not match the plan.
2. Select row for snow load shown on the structural plans.
3. Select a column for soil bearing pressure based on soil type and/or consultation with code officer.
4. The required footing size is at the intersection of the Snow Load and Soil PSF. Rebar is not required. Key or pin foundation wall to footing per code.

FAQ - Adding rebar to footings does not reduce the required width. Rebar affects performance with earth movement, like an earthquake and has near zero effect on bearing capacity.

Guide to Soil PSF

3,000	Sandy gravel and/or gravel (GW and GP)
2,000	Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC)
1,500	Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH)

8" wall - Footing Size for 28 Ft wide house

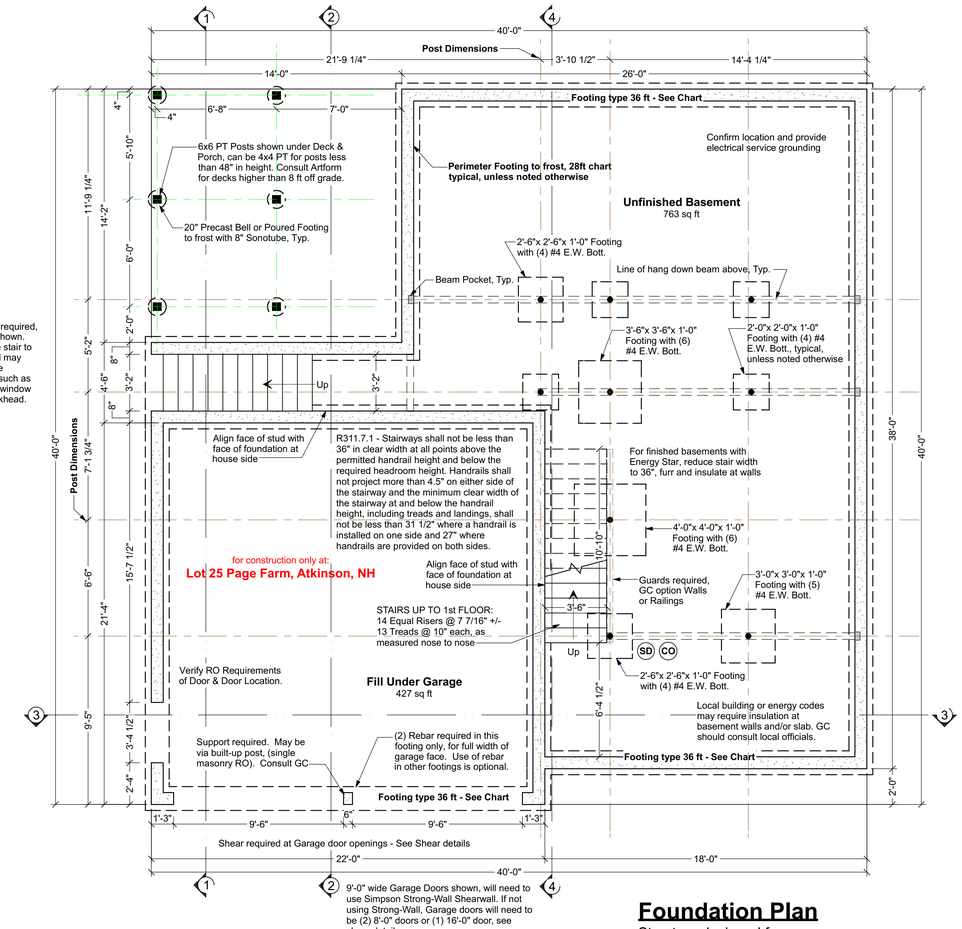
Snow Load	Story and type of structure	Load Bearing Value of Soil (PSF) 1500 PSF	2000 PSF	3000 PSF
50 PSF	2 Story – Plus Basement	23 x 7.5	17 x 6	12 x 6
55 PSF	2 Story – Plus Basement	23.5 x 7.75	17.25 x 6	12 x 6
60 PSF	2 Story – Plus Basement	24 x 8	17.5 x 6	12 x 6
65 PSF	2 Story – Plus Basement	24.5 x 8.25	17.75 x 6	12 x 6
70 PSF	2 Story – Plus Basement	25 x 8.5	18 x 6	12 x 6

8" wall - Footing Size for 32 Ft wide house

Snow Load	Story and type of structure	Load Bearing Value of Soil (PSF) 1500 PSF	2000 PSF	3000 PSF
50 PSF	2 Story – Plus Basement	25 x 8.5	19 x 6	12 x 6
55 PSF	2 Story – Plus Basement	25.5 x 8.75	19.25 x 6	12.5 x 6
60 PSF	2 Story – Plus Basement	26 x 9	19.5 x 6	13 x 6
65 PSF	2 Story – Plus Basement	26.5 x 9.25	19.75 x 6	13.5 x 6
70 PSF	2 Story – Plus Basement	27 x 9.5	20 x 6	14 x 6

8" wall - Footing Size for 36 Ft wide house

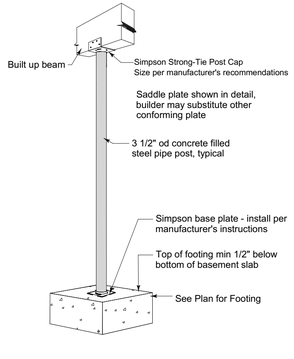
Snow Load	Story and type of structure	Load Bearing Value of Soil (PSF) 1500 PSF	2000 PSF	3000 PSF
50 PSF	2 Story – Plus Basement	27 x 9.5	21 x 7	14 x 7
55 PSF	2 Story – Plus Basement	27.5 x 9.75	21.25 x 7	14.5 x 7
60 PSF	2 Story – Plus Basement	28 x 10	21.5 x 7	15 x 7
65 PSF	2 Story – Plus Basement	28.5 x 10.25	21.75 x 7	15.5 x 7
70 PSF	2 Story – Plus Basement	29 x 10.5	22 x 7	16 x 7



Foundation Plan

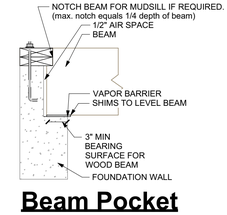
Structure designed for
Snow Load of 55 psf
Ceiling Height may vary: 8 ft forms

1 0 1 2 3 4



Typical Basement Post

Not to Scale



Beam Pocket

Scale 1/2"=1'-0"

Foundation Contractor Check List

Confirm or review the following prior to forming & pouring foundation

Initials Date Checked

____ _____ Confirmed soil bearing
____ _____ Checked w/GC for added foundation steps to suit grade
____ _____ Confirm sill plate thickness (foundation bolts to extend through all)
____ _____ Confirmed garage door size
____ _____ Checked w/GC for added basement windows
____ _____ Checked w/GC for added basement man doors
____ _____ Confirmed sizes & locations mech/plbg penetrations
____ _____ Confirmed sizes and locations of beams w/GC, added or adjusted beam pockets
____ _____ Confirmed location and installed electrical service grounding - See GC for location

MINIMUM VERTICAL REINFORCEMENT FOR 8-INCH (203MM) NOMINAL FLAT CONCRETE BASEMENT WALL

MAXIMUM UNSUPPORTED WALL HEIGHT (feet)	MIAXIMUM UNBALANCED BACKFILL HEIGHT (feet)	MINIMUM VERTICAL REINFORCEMENT - BAR SIZE AND SPACING (inches) Soil classes and design lateral soil (psf per foot of depth) GW, GP, SW, SP 30	GM, GC, SM, SM-SC and ML 45	SC, ML-CL and inorganic CL 60
8	4	NR	NR	NR
	5	NR	NR	NR
	6	NR	NR	6 @ 37
	7	NR	6 @ 36	6 @ 35
	8	6 @ 41	6 @ 35	6 @ 26

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Atkinson, NH

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...

NOTE: See Roof Plan for roof pitches and overhangs

for construction only at:
Lot 25 Page Farm, Atkinson, NH

Top of Ridge
1 x 4 Shadow Board, Typical
1 x 8 Rake, Typical
1 x 8 Frieze Board, Typical
Decorative brackets, approx. 14" D x 4" W x 15 3/4" H
7" Window Lintel, Typ.
5" Corner Boards
Optional Flat Siding
Optional Cedar Impressions Siding
3 1/2" Window Trim on all windows
W05 @ 72.25"
W09 @ 92.25"
Adjust Window Ht so the space between the window sill and roof is no less than 4"
Window head (frame) off sub-floor, Typical
25'-3"
27'-3"
Trim - nominal 1x10
Decorative brackets, approx. 8" D x 3 1/2" W x 8" H
9" Door lintel, typ.
9" Window lintel
W02 @ 96.25"
W03 @ 96.25"
9" Window lintel
D12-3080MU
5" Corner Boards
D14-9080
D14-9080
Door styles may vary
6" Enlarged Casing
Top of 1ST Floor Sub-Floor
Top of 1st Floor Sub-Floor
1'-10"
2'-0"
Garage Slab
Grade

Garage slab height may vary. If garage slab height is lower than shown, consult Artform for aesthetic direction. Taller garage doors, transoms, lintels and/or additional frieze boards may be required to achieve desired look.

Note - Actual grade level may vary. Where zoning height restrictions apply, builder shall verify conformance. Manual markup of drawings to demonstrate compliance is recommended.

Not shown - number of steps may vary - handrail may be required per code.

Front Elevation

NOTE: See Roof Plan for roof pitches and overhangs

5" Corner Boards
W08 @ 86.25"
3 1/2" Window Trim on all windows
Siding to match front gable
for construction only at:
Lot 25 Page Farm, Atkinson, NH
Trim - nominal 1x8
Decorative brackets, approx. 8" D x 3 1/2" W x 8" H
W11 @ 92.25"
Window head (frame) off sub-floor, Typical

Foundation steps and/or use of cripple walls may be added to suit grade.

Right Elevation

APPROX 2" HIGH FLAT STOCK
APPROX 1 1/2" HIGH FLAT STOCK
5 1/2"
APPROX 1 1/2" HIGH FLAT STOCK
APPROX 2" HIGH FLAT STOCK

NOTE: See Roof Plan for roof pitches and overhangs

for construction only at:
Lot 25 Page Farm, Atkinson, NH
Minimal Rake @ Shed Dormer
Minimal Rake @ Shed Dormer
W09 @ 86.25"
3 1/2" Window Trim on all windows
W07 @ 86.25"
Window head (frame) off sub-floor, Typical
W06 @ 86.25"
5" Corner Boards
False Rake
False Rake
Cladded Porch Beam
5 1/2"
W04 @ 92.25"
W10 @ 92.25"
Typical Step down Deck Detail Attached to Wood Wall (see detail)
Foundation steps and/or use of cripple walls may be added to suit grade.
6x6 Posts shown under Deck & Porch, can be 4x4 for posts less than 48" in height. Consult Artform for decks higher than 8 ft off grade.

Rear Elevation

NOTE: See Roof Plan for roof pitches and overhangs

for construction only at:
Lot 25 Page Farm, Atkinson, NH
Siding to Match Front of Dormer
W01 @ 86.25"
W01 @ 86.25"
3 1/2" Window Trim on all windows
Window head (frame) off sub-floor, Typical
Cladded Porch Beam
D13-6068
Typical Step down Deck Detail Attached to Wood Wall (see detail)
D06-2868
D08-2868
Door styles may vary

Foundation steps and/or use of cripple walls may be added to suit grade.

Basement egress is required, walk-out door option shown. Builder may relocate walk-out door to suit building site and may substitute other code conforming egress, such as window with egress window well or bulkhead.

Left Elevation

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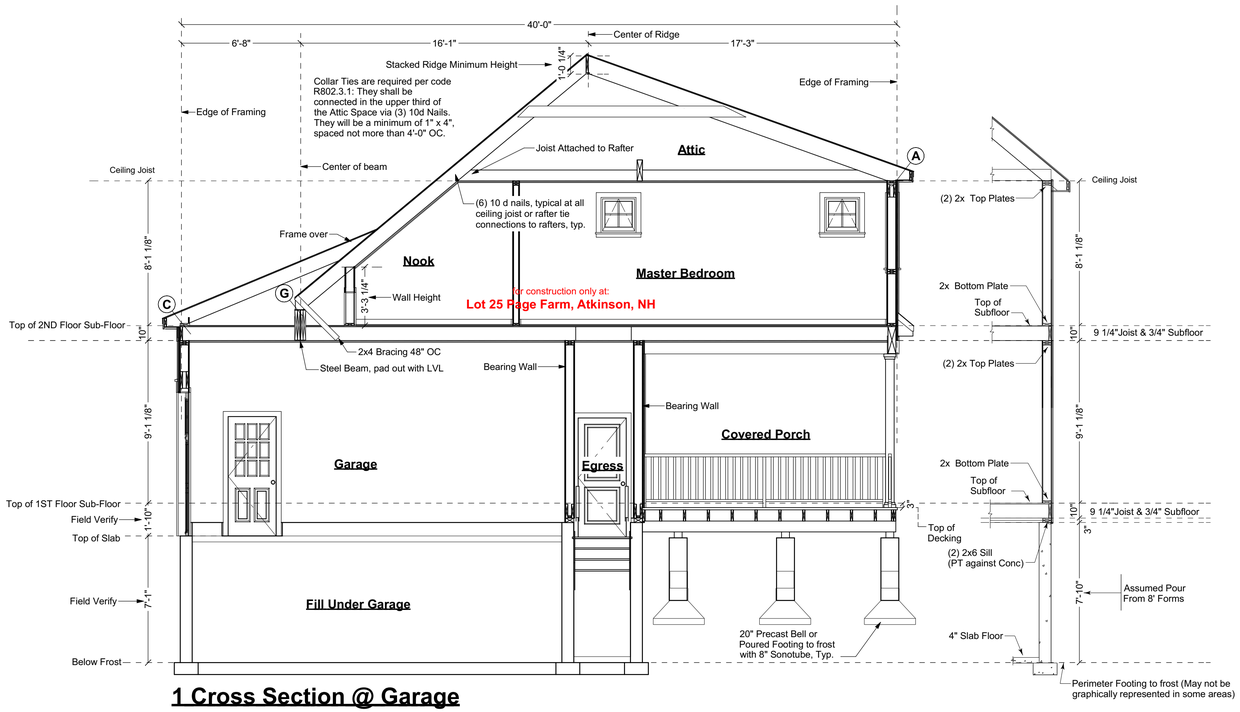
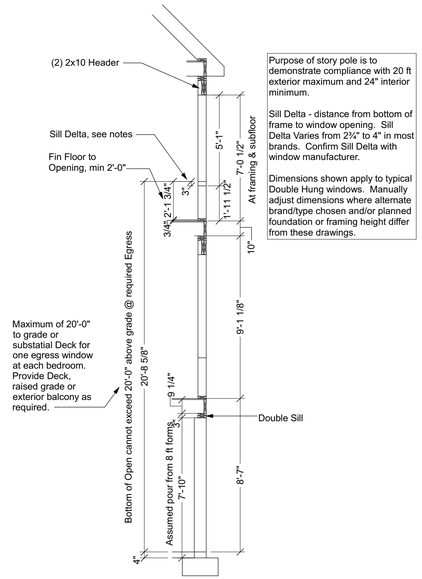
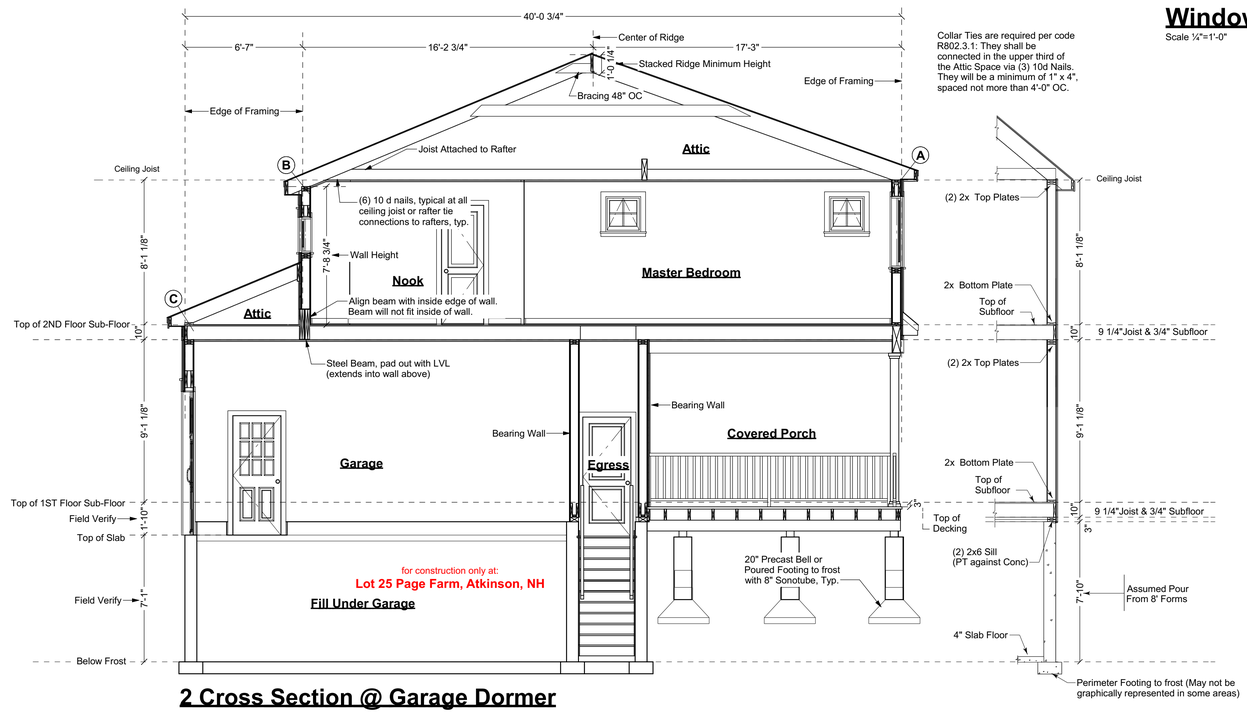


1 Cross Section @ Garage



Window Story Pole

Scale ¼"=1'-0"



2 Cross Section @ Garage Dormer

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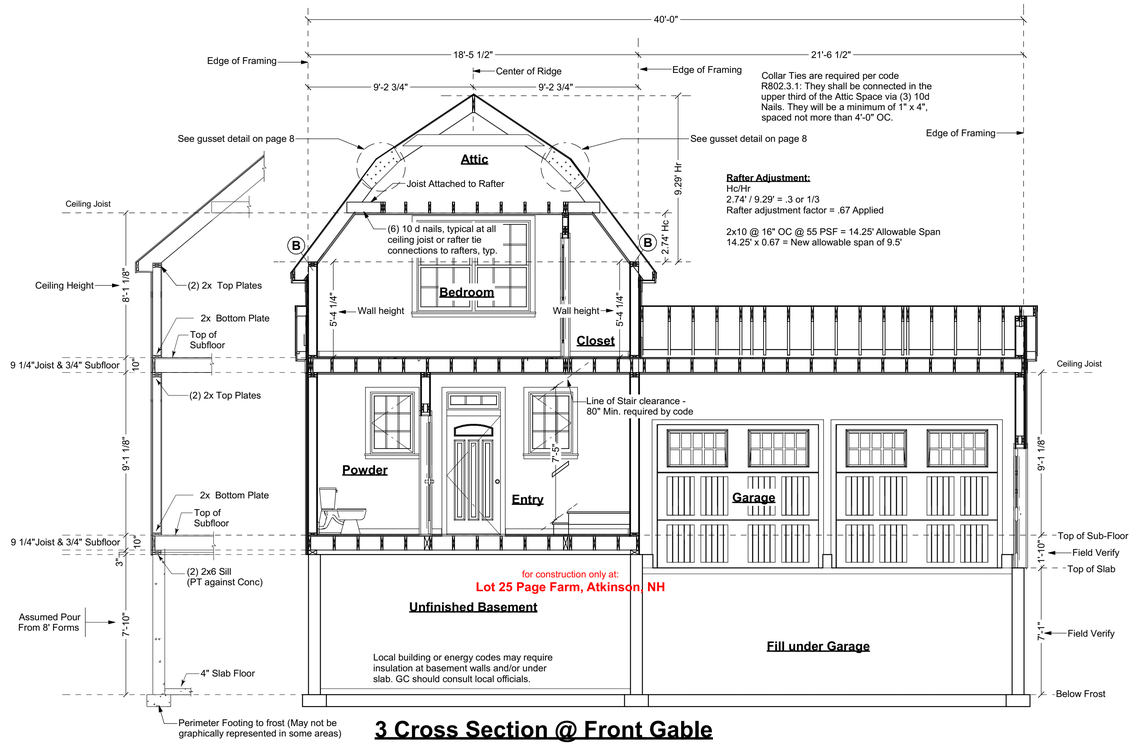
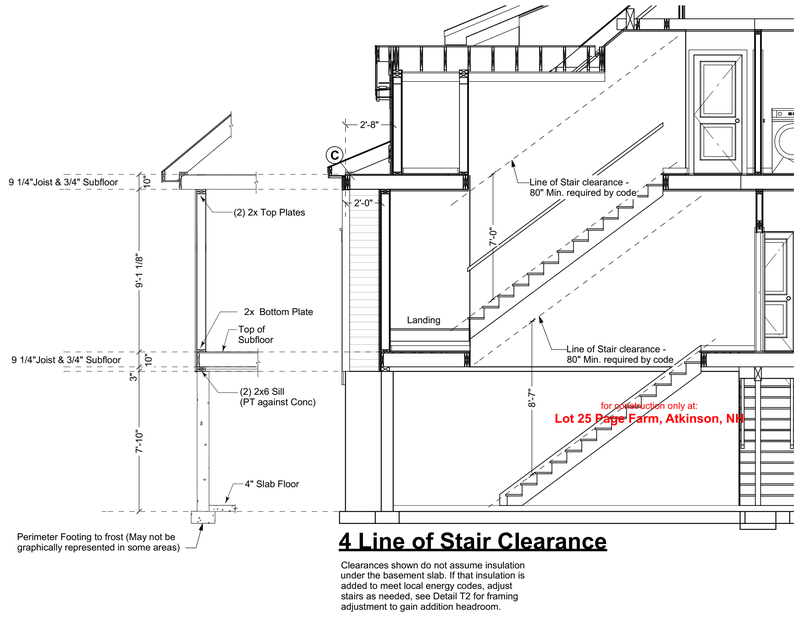
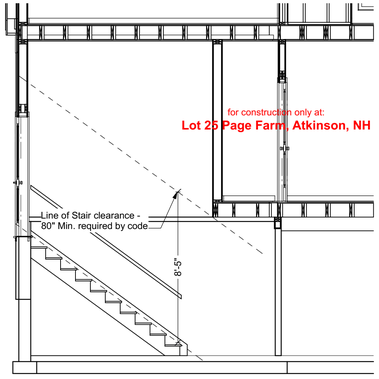


3 Cross Section @ Front Gable

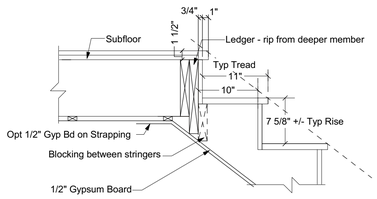


4 Line of Stair Clearance

Clearances shown do not assume insulation under the basement slab. If that insulation is added to meet local energy codes, adjust stairs as needed, see Detail T2 for framing adjustment to gain addition headroom.



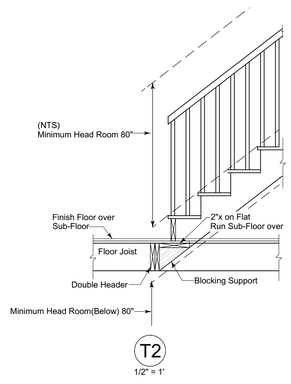
Line of Stair Clearance (Egress)



Detail shows assumptions used for framing plan RO
Framer may adjust to suit different head support methods

Top of Carriage (C)

Scale: 1" = 1'-0"



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Method PFG: Portal frame at garage door openings shall be constructed in accordance with Figure R602.10.6.3. Note this method is allowed on either side of garage door openings.

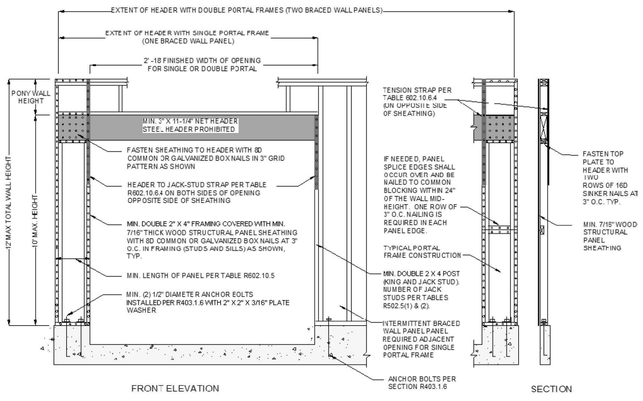


FIGURE R602.10.6.3
METHOD PFG—PORTAL FRAME AT GARAGE DOOR OPENINGS IN SEISMIC DESIGN CATEGORIES A, B AND C

TABLE R602.10.6.4

TENSION STRAP CAPACITY FOR RESISTING WIND PRESSURES PERPENDICULAR TO METHODS PFH, PFG AND CS-PF BRACED WALL PANELS

MINIMUM WALL STUD FRAMING NOMINAL SIZE AND GRADE	MAXIMUM PONY WALL HEIGHT (feet)	MAXIMUM TOTAL WALL HEIGHT (feet)	MAXIMUM OPENING WIDTH (feet)	TENSION STRAP CAPACITY REQUIRED (pounds)[a, b]					
				Ultimate Design Wind Speed V_{ult} (mph)					
				110	115	130	110	115	130
				Exposure B			Exposure C		
2 × 4 No. 2 Grade	0	10	18	1,000	1,000	1,000	1,000	1,000	1,050
	1	10	9	1,000	1,000	1,000	1,000	1,000	1,750
			16	1,000	1,025	2,050	2,075	2,500	3,950
			18	1,000	1,275	2,375	2,400	2,850	DR
	2	10	9	1,000	1,000	1,475	1,500	1,875	3,125
			16	1,775	2,175	3,525	3,550	4,125	DR
			18	2,075	2,500	3,950	3,975	DR	DR
	2	12	9	1,150	1,500	2,650	2,675	3,175	DR
			16	2,875	3,375	DR	DR	DR	DR
			18	3,425	3,975	DR	DR	DR	DR
	4	12	9	2,275	2,750	DR	DR	DR	DR
			12	3,225	3,775	DR	DR	DR	DR
2 × 6 Stud Grade	2	12	9	1,000	1,000	1,700	1,700	2,025	3,050
			16	1,825	2,150	3,225	3,225	3,675	DR
			18	2,200	2,550	3,725	3,750	DR	DR
	4	12	9	1,450	1,750	2,700	2,725	3,125	DR
			16	2,050	2,400	DR	DR	DR	DR
			18	3,350	3,800	DR	DR	DR	DR

For SI: 1 inch = 25.4 mm, 1 mile per hour = 0.447 m/s.

a. DR = Design Required.

b. Straps shall be installed in accordance with manufacturer's recommendations.

R602.10.4 Construction methods for braced wall panels

Intermittent and continuously sheathed braced wall panels shall be constructed in accordance with this section and the methods listed in Table R602.10.4.

TABLE 91.5.602.10.4

BRACING METHODS[f]

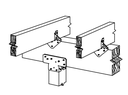
METHODS, MATERIAL		MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA[a]	
				Fasteners	Spacing
Intermittent Bracing Method	**PFG** Portal frame at garage	15/32"		See Section R602.10.6.3	See Section R602.10.6.3
Continuous Sheathing Methods	**CS-WSP** Continuously sheathed wood structural panel	15/32"		Exterior sheathing per Table R602.3(3)	6" edges 12" field
				Interior sheathing per Table 91.5.602.3(1) or 91.5.602.3(2)	Varies by fastener

Shear Wall Details

Not to Scale

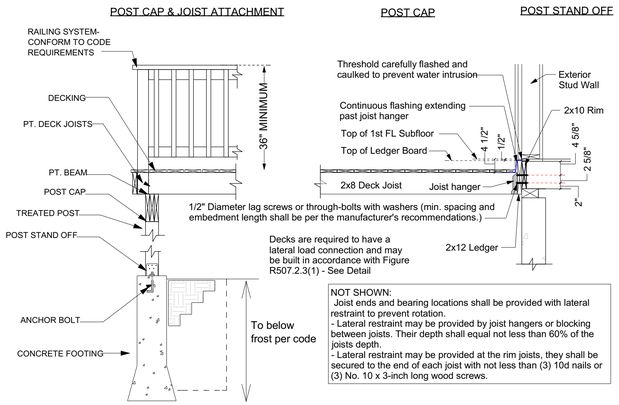
Notes:

- See plans for locations where shear panels are required.
- Details shown here are for one method and for typical conditions. An alternate shear method allowed per code or approved by the code officer may be substituted.
- Note that if sheathing is to be used as wall bracing all vertical joints in required braced wall panels must be blocked. [2015 IRC section R602.10.10]



SIMPSON STRONG-TIE ACH WITH TWO H1'S

POST CAP & JOIST ATTACHMENT



POST CAP

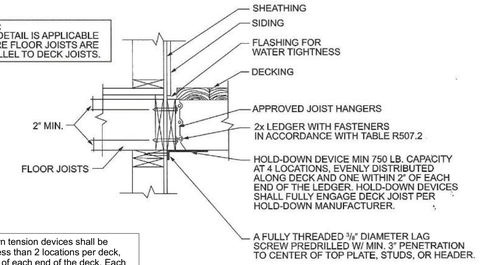
POST STAND OFF

NOT SHOWN:
Joist ends and bearing locations shall be provided with lateral restraint to prevent rotation.
- Lateral restraint may be provided by joist hangers or blocking between joists. Their depth shall equal not less than 60% of the joists depth.
- Lateral restraint may be provided at the rim joists, they shall be secured to the end of each joist with not less than (3) 10d nails or (3) No. 10 x 3-inch long wood screws.

Deck Ledger Attachment Detail for Step Down

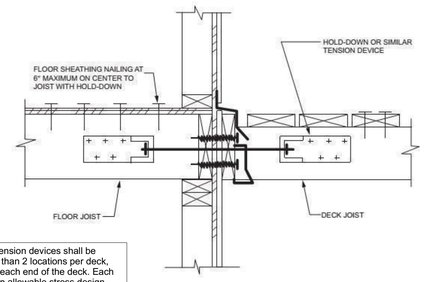
Scale: 1/2" = 1'-0"

NOTE:
THIS DETAIL IS APPLICABLE WHERE FLOOR JOISTS ARE PARALLEL TO DECK JOISTS.



NOTE: hold down tension devices shall be installed in not less than 2 locations per deck, within 24 inches of each end of the deck. Each device shall have an allowable stress design capacity of not less than 1,500 lbs.

FIGURE R507.2.3(2)
DECK ATTACHMENT FOR LATERAL LOADS

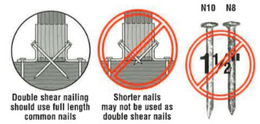


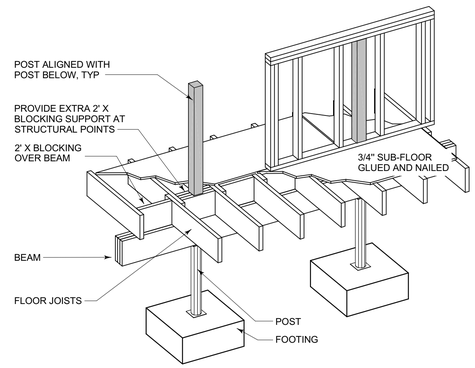
NOTE: hold down tension devices shall be installed in not less than 2 locations per deck, within 24 inches of each end of the deck. Each device shall have an allowable stress design capacity of not less than 1,500 lbs.

FIGURE R507.2.3(1)
DECK ATTACHMENT FOR LATERAL LOADS

Follow manufacturer's instructions both for installation of joist hangers to joist and to beam. The illustration below, by Simpson Strong Tie, is provided as a courtesy. Consult their full manual for acceptable fastener sizes and other important instructions.

SHORT NAILS Do not use short (1½") nails for double shear nailing.





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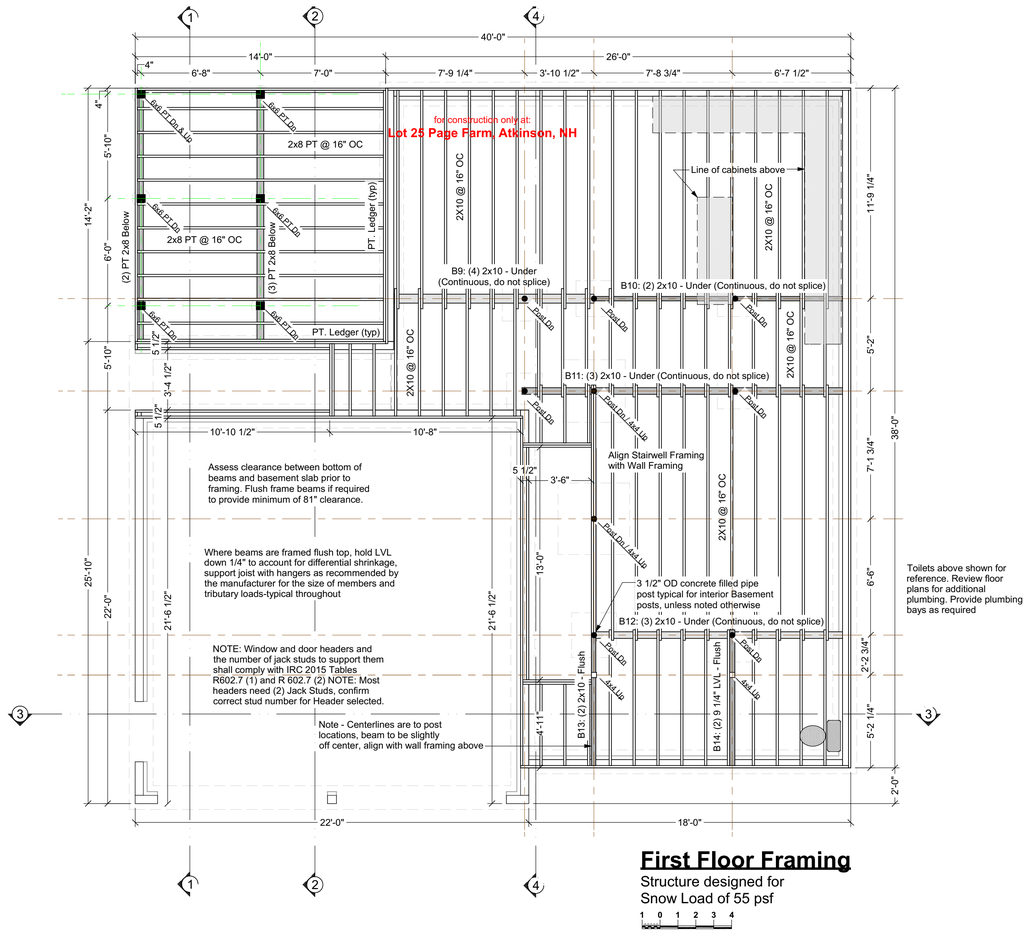
Wood Framing Notes:

1. All structural wood shall be identified by a grade mark or certificate of inspection by a recognized inspection agency.
2. Structural wood shall be Spruce-Pine-Fir (SPF) #2 or better.
3. When used, LVL or PSL indicate Laminated Veneer Lumber or Parallel Strand Lumber, respectively. Products used shall equal or exceed the strength properties for the size indicated as manufactured by TrusJoist.
4. When used, TJI indicates wood I-joists as manufactured by TrusJoist. Products of alternate manufacturers may be substituted provided they meet or exceed the strength properties for the member specified.
5. All floor joists shall have bridging installed at mid-span or at 8'-0" oc maximum.
6. Floor systems are designed for performance with subfloor glued and screwed.
7. Per code R502.6.1 Floor joists splicing over bearing walls allowed, shall lap a min 3" over walls and shall be nailed together with a minimum of (3) 10d face nails. Also permitted is a wood or metal splice with strength equal to or greater than that provided by the nailed lap.
8. Per code R802.3.2 Ceiling joists splicing over bearing walls is allowed, shall lap a min 3" or butted over bearing partitions or beams and toenailed to the bearing member. Where ceiling joists are used to provide resistance to rafter thrust, lapped joists shall be nailed together in accordance with Table R802.5.1(9), and butted joists shall be tied together in a manner to resist such thrust. Joists that do not resist thrust shall be permitted to be nailed together in accordance with Table R602.3(1).
9. Provide blocking in the floor at structural points. Blocking may be 2x's or solid, but must have grain of wood vertical.
10. All wood permanently exposed to the weather, in contact with concrete or in contact with the ground shall meet code requirements for wood in these environments.
11. Deck ledgers shall be securely attached to the structure and/ or independently supported. Deck lateral load connection required see IRC 2015 Section R507.2.4
12. Wherever beams are noted as Flush framed, install joist hangers at all joists, sized appropriately for the members being connected.
13. Support the lower end of roof beams via minimum 2" horizontal bearing on a post, ledger or via an appropriately sized and configured hanger.
14. The ends of each joist, beam or girder shall have not less than 1.5" of bearing on wood or metal and not less then 3" on masonry or concrete except where supported on a 1" x 4" ribbon strip and nailed to the adjacent stud or by the use of approved joist hangers.
15. Post caps where required are typically calculated by supplier using weights based on these framing plans. Contact Art Form if additional information is needed.
16. Hangers, post caps, post bases, ties and other connectors shall be as manufactured by Simpson Strong Tie, as designed to connect the members shown, and shall be installed per manufacturer's instructions.

Prefabricated Wood Trusses

1. Where trusses are indicated on the drawings, truss design shall be provided by truss manufacturer.
2. Trusses shall be designed in accordance with applicable provisions of the latest edition of the National Design Specifications for Wood Construction (NDS), American Forst and Paper Association (APA), and Design Specifications for Metal Plate Connected Wood Trusses (ANSI/TPI 1), Truss Plate Institute (TPI) and code of jurisdiction.
3. Manufacturer shall furnish design drawings bearing seal and registration number of a structural engineer licensed in the state where project will be built.



First Floor Framing

Structure designed for
Snow Load of 55 psf

1 0 1 2 3 4

Built-up Beams:
Unless otherwise noted, connect multiple 1 3/4" ply beams as follows:
3 ply & up, fasteners are per side

(2) 9 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 24" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 24" oc
- Framed under (2) rows 10d nails @ 24" oc

(2) 11 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 19.2" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 19.2" oc
- Framed under (2) rows 10d nails @ 24" oc

(2) 16" LVL or greater:
- Flush framed
  - (3) rows 3 3/8" TrussLock @ 19.2" oc, or
  - (3) rows SDS 1/4x3 1/2 @ 19.2" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 9 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 19.2" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 19.2" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 11 1/4" LVL:
- Flush framed
  - (2) rows 3 3/8" TrussLock @ 16" oc, or
  - (2) rows SDS 1/4x3 1/2 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 14" LVL:
- Flush framed
  - (3) rows 3 3/8" TrussLock @ 16" oc, or
  - (3) rows SDS 1/4x3 1/2 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(3) 16" LVL or greater:
- Flush framed
  - (3) rows 3 3/8" TrussLock @ 16" oc, or
  - (3) rows SDS 1/4x3 1/2 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(4) 9 1/4" LVL:
- Flush framed
  - (2) rows 5" TrussLock @ 16" oc, or
  - (2) rows SDS 1/4x6 @ 16" oc
- Framed under (2) rows 10d nails @ 24" oc

(4) 11 1/4" LVL:
- Flush framed
  - (2) rows 5" TrussLock @ 16" oc, or
  - (2) rows SDS 1/4x6 @ 16" oc
- Framed under (2) rows 10d nails @ 12" oc

(4) 16" LVL or greater:
- Flush framed
  - (3) rows 5" TrussLock @ 16" oc, or
  - (3) rows SDS 1/4x6 @ 16" oc
- Framed under (2) rows 10d nails @ 12" oc

Beam Substitutions:

(2) 9 1/4" LVL may replace a double or triple 2x10 beam. No other substitutions are allowed. Conventional lumber beams MAY NOT be substituted for LVL beams by any "rule of thumb". Substitutions must be calculated by either Artform or a structural engineer. If calculated by a structural engineer, provide stamped plans and/or calculations.

We specify LVL beams as built up members to allow framers to use existing stock. You may substitute single piece LVLs of equivalent overall size for built-up members, unless otherwise noted.

Built-up members MAY NOT replace single piece LVL's where specified.

Where a beam of 1 3/4" or less in width is specified as framed under, either brace at 48" or double member for lateral stability.

Notes: Beam & Joist Sizing

1. Our beams sizes often differ from prescriptive code, because our designs are rarely the old style box colonial or cape with a center bearing wall upon which prescriptive code is based. We size our beams via calculations for this specific design, which may carry those loads separately via second floor beams and/or roof transfer beams. Beam or joist sizes, types and/or spacing may not be reduced or alternates substituted without our express permission.
2. Walls intended to be bearing are labeled as such. This information is provided to aid code officer in understanding the framing. It does not indicate permission to add loads to those walls, or any other walls.
3. Framing is sized for normal residential conditions. Contact Artform if additional loads are anticipated, including but not limited to waterbeds, large fish tanks, indoor hot tubs, multiple framed soffits or coffers.
4. In states where the designer is a licensed architect, (NH, MA, ME, CT & NY as of the date of issue) we are happy to stamp our drawings at no additional charge. In other states we are happy to provide calculations. Administration fees apply with provision of calculations. Code officer is encouraged to call with any questions about our methodology.

Your use of these drawings constitutes an acceptance of responsibility as outlined in "Dear Code Officer" on the first page of these drawings, and on our web site:
http://www.artformhomeplans.com/TermsConditions.a5w

If you have any concerns or questions, please feel free to contact us. We are happy to clarify matters that fall within our scope, as listed on the first page. We can also often provide affordable support for issues that are your responsibility, such as energy design/calcs, or additional detailing.

Artform Home Plans
AFHP Design # 918.124.v3 GL
© 2008-2020 Art Form Architecture 603.431.9559

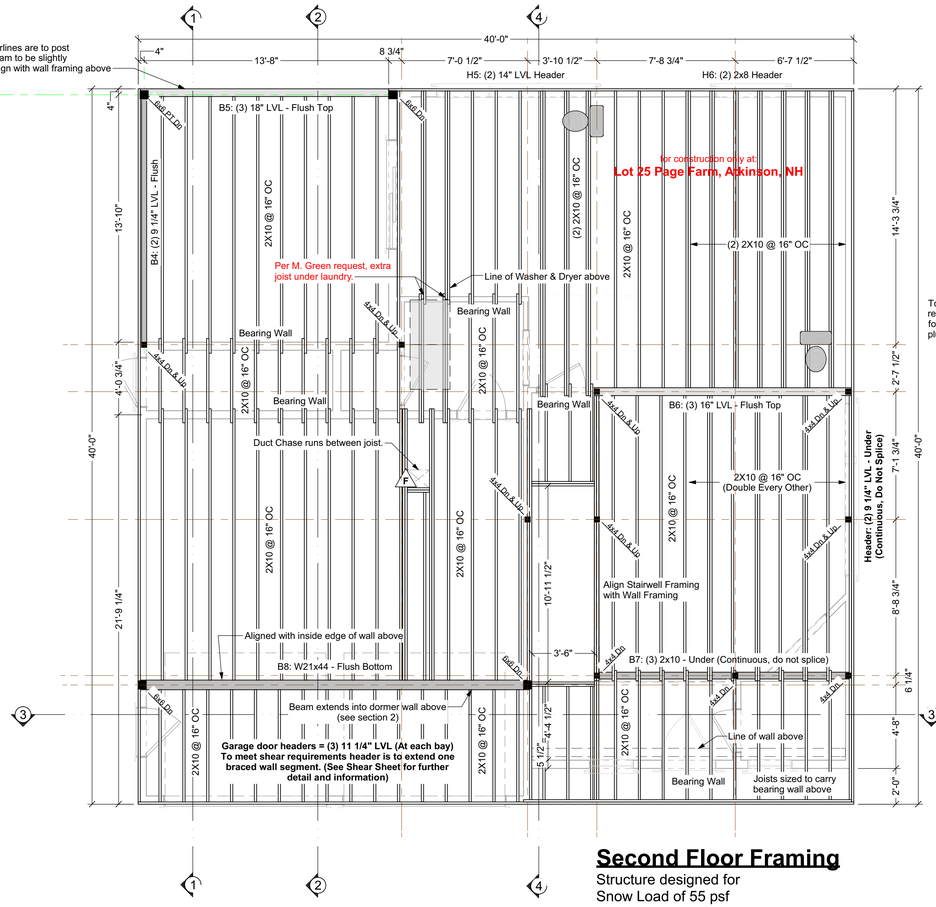
Giselle 40x40
Lot 25 Page Farm
Atkinson, NH

8

1/4"=1'-0" unless noted otherwise / Print @ 1:1
PDF created on: 4/23/2020, drawn by ACJ

Issued for:
Construction

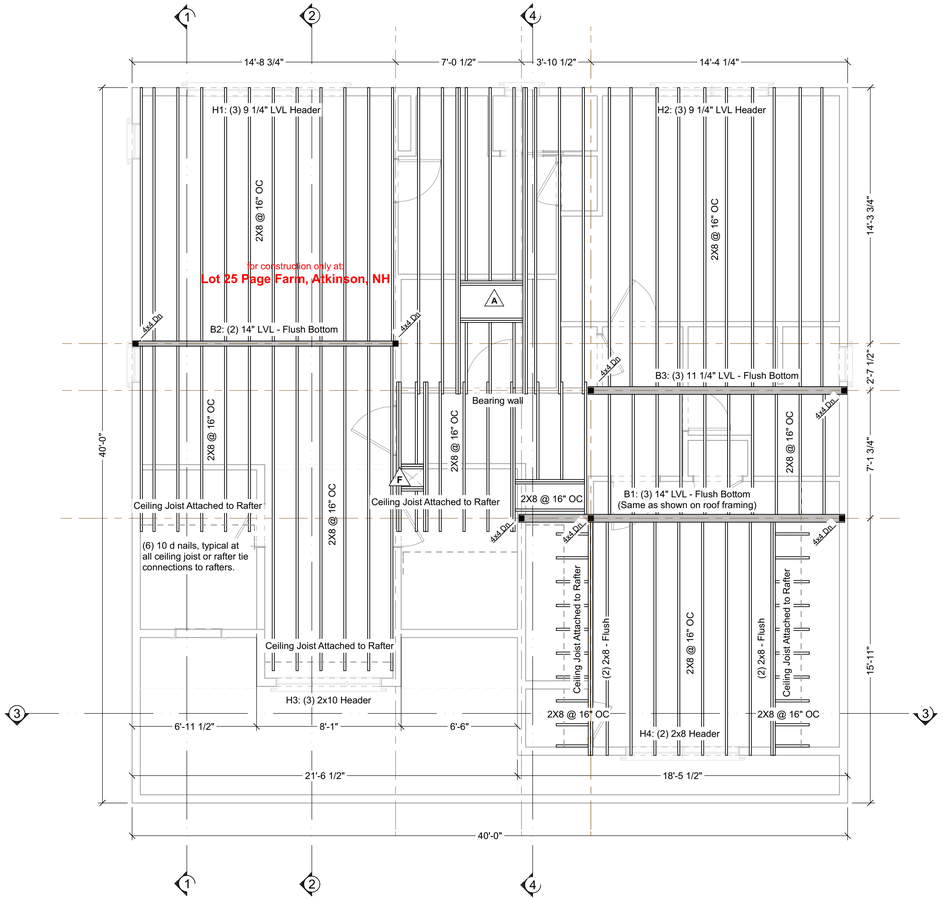
...



Second Floor Framing

Structure designed for
Snow Load of 55 psf

1 0 1 2 3 4



Ceiling Framing

Structure designed for
Snow Load of 55 psf

1 0 1 2 3 4

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Artform Home Plans
AFHP Design # 918.124.v3 GL
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Giselle 40x40
Lot 25 Page Farm
Atkinson, NH

9

1/4"=1'-0" unless noted otherwise / Print @ 1:1
PDF created on: 4/23/2020, drawn by ACJ

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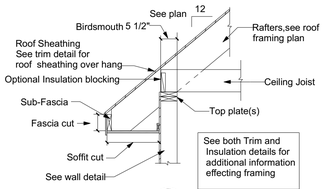
Construction

...



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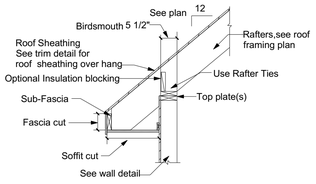

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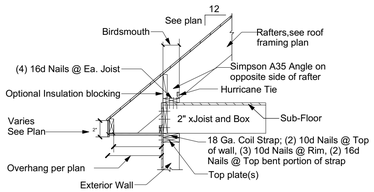

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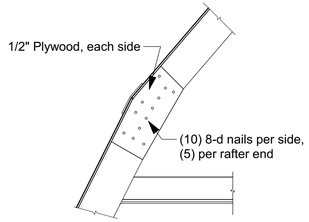
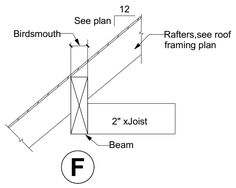


Gusset Detail



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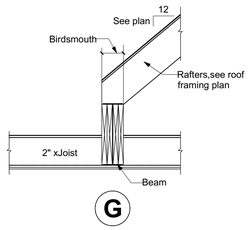

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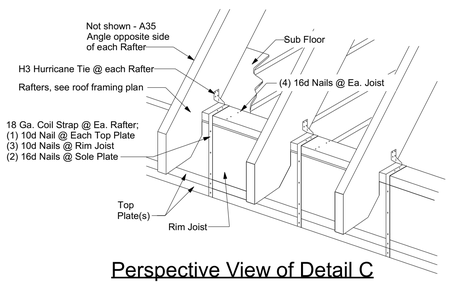
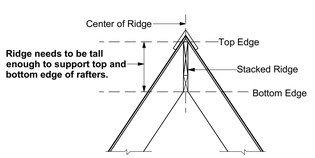
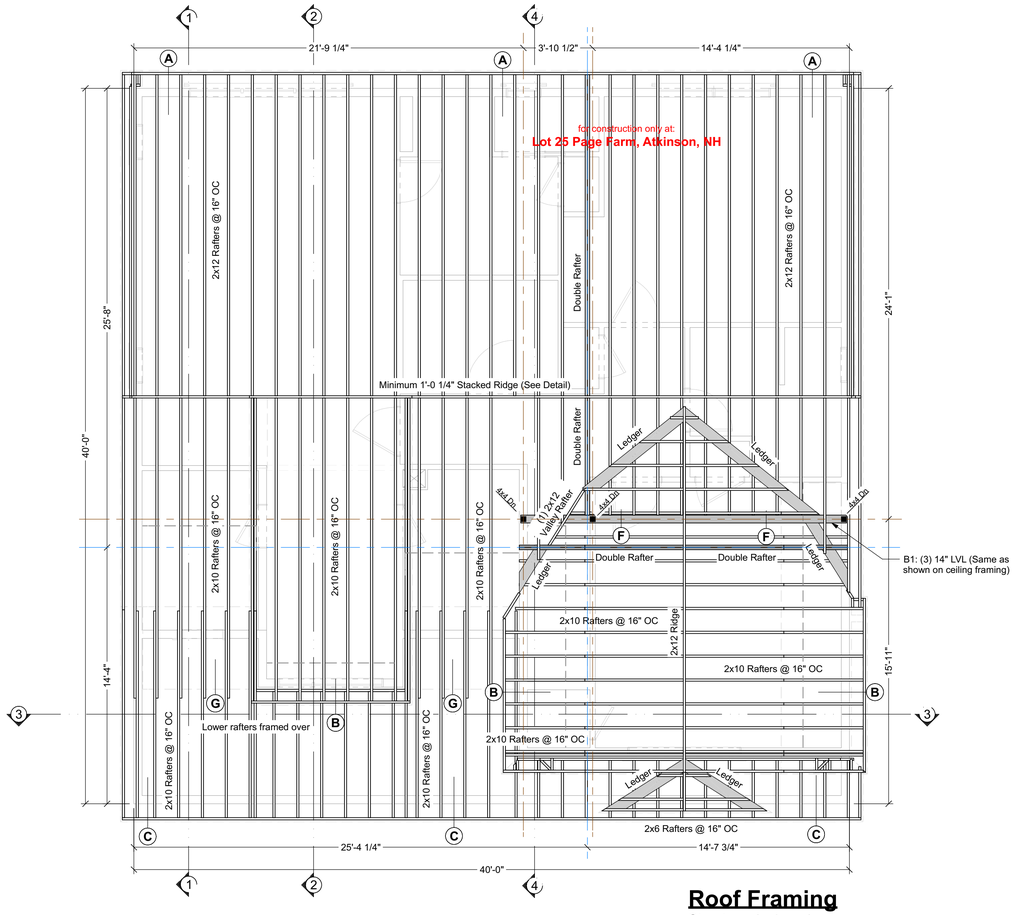


Perspective View of Detail C



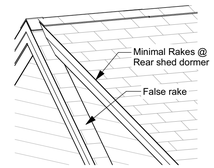
Stacked Ridge Detail



Roof Framing

Structure designed
for Snow Load of 55 psf
Provide Hurricane ties per code

1 0 1 2 3 4



Alternate:
12" False Rake and a 6" Shed Dormer Rake

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http://www.artformhomeplans.com/TermsConditions.a5w

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Artform Home Plans

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Giselle 40x40
Lot 25 Page Farm
Atkinson, NH

10

1/4"=1'-0" unless noted otherwise / Print @ 1:1
PDF created on: 4/23/2020, drawn by ACJ

Issued for:
Construction

...

PUD SITE DATA

DIMENSIONAL REQUIREMENTS (PROPOSED PUD USE)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
MINIMUM LOT SIZE	10 AC	100± AC
FRONTAGE	100 FT OR (2) @ 50'	665± FT
BASE RESIDENTIAL DENSITY:	74 RESIDENCES	56 RESIDENCES
MINIMUM INTERNAL SETBACKS:		
FRONT	20 FT	20 FT
SIDE	25 FT	TBD
REAR	25 FT	25 FT
BETWEEN BUILDINGS	30 FT	30 FT
MINIMUM OPEN SPACE	25%	83%
MINIMUM PERIMETER BUFFER:		
FRONT	100 FT	>100 FT
SIDE	50 FT	>50 FT
REAR	50 FT	>50 FT

BASE RESIDENTIAL DENSITY CALCULATIONS

REQUIRED BASE RESIDENTIAL DENSITY:

SRA:
DEVELOPABLE AREA = TOTAL AREA – WETLANDS – 15% SLOPES
= 3,938,561 SF – 1,684,960 SF – 156,927 SF
= 2,096,674 SF
MINIMUM LOT AREA PER DWELLING = 1 AC = 43,560 SF

SRB:
DEVELOPABLE AREA = TOTAL AREA – WETLANDS – 15% SLOPES
= 665,948 SF – 286,452 SF – 1,217 SF
MINIMUM LOT AREA PER DWELLING = 15,000 SF

TOTAL REQUIRED = DEVELOPABLE AREA / MINIMUM LOT AREA PER DWELLING
(SRA) 2,096,674 SF / 43,560 SF = 48.1 RESIDENCES
(SRB) 378,279 SF / 15,000 SF = 25.2 RESIDENCES
TOTAL = 74 RESIDENCES

ROADWAY LENGTH

TOTAL ROADWAY = 2,945 FT
TOTAL DEAD END ROADWAY = 2,945 FT

HOUSE LEGEND

LETTER	HOUSE TYPE
AB	ABBOTT
AU	AURELIA
B	BALMALCOLM
C	CARTER
G	GIARA
GS	GISELLE
SC	SINCLAIR
SP	SWEET CHEERY PIE
S	SUNROOM

*NO STRUCTURES PERMITTED IN EXTERNAL YARD SETBACKS. EXTERNAL YARDS SHALL BE LANDSCAPED AND SHALL NOT BE USED FOR VEHICULAR PARKING.

HORIZONTAL SCALE 1"=40'
40 20 0 40

SITE DEVELOPMENT PLAN

TAX MAP 242 LOT 4

OVERALL SITE LAYOUT COLOR PLAN

PEVERLY HILL ROAD CONDOMINIUMS

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

SCALE: 1" = 40' (30" X 48") **MAY 4, 2021**

REV'S	DATE	DESCRIPTION	DR	CK
1	8/14/2021	REVISED PLAN TO SHOW NEW ROAD ALIGNMENT	JSM	JJM

Seacoast Division
TFM Civil Engineers, Structural Engineers, Traffic Engineers, Land Surveyors, Landscape Architects, Scientists
170 Commerce Way, Suite 102, Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	JSM	FB	--
47388.11	CK	JJM	CADFILE	C-1

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CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

THIS PLAN IS A PRELIMINARY CONCEPTUAL DESIGN FOR SITE LOCATION FEASIBILITY AND DISCUSSION PURPOSES ONLY. ADDITIONAL PERMITS, WAIVERS, AND VARIANCE MAY BE REQUIRED UPON FURTHER DESIGN, REVIEW, AND COORDINATION WITH THE TOWN.

Jun 18, 2021 - 6:45pm
P:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Concepts\47388-11_PUD_Condo_TAC_Rev2.dwg

PARSON WOODS CONDOMINIUM

83 PEVERLY HILL ROAD
PORTSMOUTH, NEW HAMPSHIRE
APRIL 19, 2021
LAST REVISED JUNE 23, 2021

GENERAL INFORMATION

OWNER
MAP 242 LOT 4
STOKEL SB & NA TRUST 37.5% INT,
PHILIP J 25% INT
83 PEVERLY HILL RD
PORTSMOUTH, NH 03801

APPLICANT/PREPARED FOR
GREEN AND COMPANY REAL ESTATE
11 LAFAYETTE RD
NORTH HAMPTON, NH 03868

RESOURCE LIST

PLANNING/ZONING DEPARTMENT
1 JUNKINS AVE
PORTSMOUTH, NH 03801
603-610-7216

BUILDING DEPARTMENT
1 JUNKINS AVE
PORTSMOUTH, NH 03801
603-610-7243
ROBERT MARSILIA,
CHIEF BUILDING INSPECTOR

PUBLIC WORKS
600 PEVERLY HILL RD
PORTSMOUTH, NH 03801
603-472-1530
PETER RICE, PUBLIC WORKS DIRECTOR

POLICE DEPARTMENT
3 JUNKINS AVE
PORTSMOUTH, NH 03801
603-427-1510
MARK NEWPORT, CHIEF

FIRE DEPARTMENT
170 COURT ST
PORTSMOUTH, NH 03801
603-427-1515
PATRICK HOWE, CHIEF

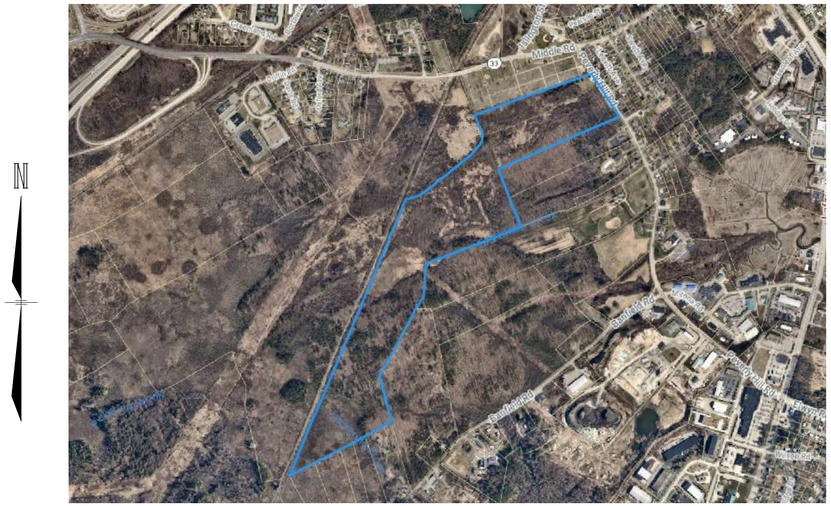
ASSOCIATED PROFESSIONALS

ENVIRONMENTAL SERVICES
GOVE ENVIRONMENTAL SERVICES
8 CONTINENTAL DRIVE
BUILDING 2 – UNIT H
EXETER, NH 03833

SOIL SCIENTIST
GOVE ENVIRONMENTAL SERVICES
8 CONTINENTAL DRIVE
BUILDING 2 – UNIT H
EXETER, NH 03833
JIM GOVE, CERTIFIED SOIL SCIENTIST

TRAFFIC ENGINEER
STEPHEN G. PERNAW & COMPANY, INC.
PO BOX 1721
CONCORD, NH 03302
603-731-8500
STEPHEN G. PERNAW, PE, PTOE

VICINITY PLAN



HORIZONTAL SCALE 1"=1,000'
1,000 500 0 1,000

ZONING MAP

HORIZONTAL SCALE 1"=1,000'
1,000 500 0 1,000

INDEX OF SHEETS

SHEET	SHEET TITLE	REVISION DATE
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S-01 – S-04	EXISTING CONDITIONS PLAN	
S-05	CONDOMINIUM SITE PLAN	
C-02	SITE PREPARATION & DEMOLITION PLAN	
C-03	OVERALL SITE LAYOUT PLAN	
C-04 – C-11	SITE LAYOUT PLANS	
C-12 – C-15	ROAD-A PLAN & PROFILE	
C-16	OVERALL GRADING & DRAINAGE PLAN	
C-17 – C-25	GRADING & DRAINAGE PLANS	
C-26	OVERALL UTILITY PLAN	
C-27 – C-33	UTILITY PLANS	
C-34	OVERALL EROSION CONTROL PLAN	
C-35 – C-44	EROSION CONTROL PLANS	
C-45	OVERALL LANDSCAPE PLAN	
C-46 – C-54	LANDSCAPE PLANS	
C-55	OVERALL LIGHTING PLAN	
C-56 – C-63	LIGHTING PLANS	
C-64 – C-65	FIRE TRUCK MOVEMENT PLAN	
C-66	SITE DISTANCE PLAN & PROFILE	
C-67	PEDESTRIAN & BIKE PATH	
C-68 – C-75	DETAILS	

WAIVERS

THE FOLLOWING WAIVERS FROM THE CITY OF PORTSMOUTH SITE REVIEW REGULATIONS ARE BEING REVIEWED BY THE PLANNING BOARD:

1. PORTSMOUTH SUBDIVISION RULES AND REGULATIONS, RESIDENTIAL STREET MINIMUM STANDARDS (PG. 36), REQUIRING 32' OF PAVEMENT WIDTH.
2. PORTSMOUTH SUBDIVISION RULES AND REGULATIONS SECTION VI(3)(B), MINIMUM RIGHT-OF-WAY FOR MAIN THOROUGHFARES SHALL NOT BE LESS THAN 50 FEET.
3. PORTSMOUTH SITE PLAN REVIEW REGULATIONS SECTION 2.5.4.3(c), TRUCK TURNING MINIMUM VEHICLE ALLOWED BEING A WB-50.

PERMITS/APPROVALS

	NUMBER	APPROVED	EXPIRES
CITY SITE PLAN REVIEW	PENDING	–	–
OPEN SPACE PLANED UNIT DEVELOPMENT CONDITIONAL USE PERMIT	PENDING	–	–
NHDES ALT. OF TERRAIN	PENDING	–	–
NHDES SEWER CONNECTION PERMIT	PENDING	–	–
EPA SWPPP	PENDING	–	–

THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4
COVER
PARSON WOODS CONDOMINIUM LLC
83 PEVERLY HILL ROAD, PORTSMOUTH, NH
OWNED BY
STOKEL SB & NA TRUST, PHILIP J 25% INT
PREPARED FOR
GREEN & COMPANY REAL ESTATE

SCALE: NTS **APRIL 19, 2021**

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_COVER	C-00

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Jun 23, 2021 - 2:18pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_Cover.dwg

LEGEND

PROPOSED

- PROPERTY LINE
- ZONING LINE
- EASEMENT
- BASELINE
- FLOODPLAIN
- EDGE OF WATERBODY
- EDGE OF WETLAND
- SETBACK (WETLAND)
- SETBACK (STRUCTURE)
- SETBACK (PARKING)
- SETBACK (LANDSCAPE)
- GRAVEL ROAD
- EOP — EDGE OF PAVEMENT
- VGC — VERTICAL GRANITE CURB
- SGC — SLOPED GRANITE CURB
- CC — CONCRETE CURB
- ICC — INTEGRATED CONCRETE CURB
- BIT — BUTIMINOUS ASPHALT CURB
- CCB — CAPE COD BERM
- SAWCUT
- BUILDING
- BUILDING ROOF OVERHANG
- BUILDING FOUNDATION
- BUILDING ENTRANCE
- OVERHEAD DOOR
- TREE LINE
- FENCE (CHAIN LINK)
- FENCE (WIRE)
- FENCE (STOCKADE)
- GUARDRAIL
- STONE WALL
- RETAINING WALL
- SILT FENCE
- SILT SOCK
- SOIL BOUNDARY
- LIMIT OF GRADING
- CONTOUR
- SPOT GRADE — TC100.50 / BC100.00 OR X 100.00
- PARKING COUNT — ##
- DSLY — YELLOW DOUBLE SOLID LINE
- SSLY — YELLOW SINGLE SOLID LINE
- SSLW — WHITE SINGLE SOLID LINE
- SBLW — WHITE SINGLE BROKEN LINE
- STOP BAR
- CROSSWALK
- ACCESSIBLE PARKING SYMBOL
- PAVEMENT ARROW
- TRAFFIC FLOW ARROW (NOT PAINTED)
- SIGN (SINGLE POST)
- SIGN (DOUBLE POST)
- SIGN (PYLON)
- SIGN (MONUMENT)
- BOLLARD
- D — DUMPSTER PAD

PROPOSED

- CONCRETE
- GRAVEL
- HEAVY DUTY PAVEMENT
- CONSTRUCTION ENTRANCE
- SNOW STORAGE
- RIPRAP
- INLET PROTECTION
- DRAIN LINE
- DRAINAGE SWALE
- STORMWATER BMP
- S — SEWER LINE
- FM — SEWER FORCE MAIN LINE
- W — WATER LINE
- G — GAS LINE
- OHE — OVERHEAD UTILITY LINE
- UGE — UNDERGROUND UTILITY LINE
- CATCH BASIN
- DRAIN INLET
- OUTLET CONTROL STRUCTURE
- ROOF DRAIN
- DRAIN CLEANOUT
- DRAIN MANHOLE
- FARED END SECTION
- SEWER CLEAN OUT
- SEWER MANHOLE
- SEWER VENT
- DRAIN/SEWER/WATER PLUG OR CAP
- HYDRANT
- FIRE DEPARTMENT CONNECTION
- WATER GATE VALVE
- WATER SHUTOFF
- THRUST BLOCK
- WATER METER
- WATER MANHOLE
- WELL
- GAS GATE VALVE
- GAS SHUT OFF
- GAS METER
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- TRAFFIC CONTROL CABINET
- ELECTRIC HANDHOLE
- ELECTRIC PULL BOX
- ELECTRIC METER
- FLOOD LIGHT
- LIGHT POLE
- UTILITY POLE
- GUY POLE
- T — TRANSFORMER PAD
- B-# — BORING LOCATION
- TP-# — TEST PIT LOCATION
- IT-# — INFILTRATION TEST LOCATION
- MW-# — MONITORING WELL

ABBREVIATIONS

GENERAL

ABAN	ABANDON
AC	ACRES
ADJ	ADJUST
APPROX	APPROXIMATE
BC	BOTTOM OF CURB
BIT	BITUMINOUS
BK/PG	BOOK & PAGE
BLDG	BUILDING
BS	BOTTOM OF SLOPE
BW	BOTTOM OF WALL
CONC	CONCRETE
COORD	COORDINATE
DIA	DIAMETER
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EXIST	EXISTING
FFE	FINISHED FLOOR ELEVATION
FND	FOUNDATION
HP	HIGH POINT
INV	INVERT ELEVATION
IT	INFILTRATION TEST
L	LENGTH
LF	LINEAR FEET
LSA	LANDSCAPE AREA
MAX	MAXIMUM
MIN	MINIMUM
N/F	NOW OR FORMERLY
NTS	NOT TO SCALE
OC	ON CENTER
PAVE	PAVEMENT
PERF	PERFORATED
PROP	PROPOSED
R	RADIUS
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
REM	REMOVE
RET	RETAIN
RIM	RIM ELEVATION
ROW	RIGHT OF WAY
S	SLOPE
SF	SQUARE FEET
SW	SIDEWALK
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TP	TEST PIT
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
WCR	ACCESSIBLE WHEELCHAIR RAMP
W/	WITH

UTILITIES

CB	CATCH BASIN
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
COND	CONDUIT
DCB	DOUBLE CATCH BASIN
DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FES	FLARED END SECTION
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
LP	LIGHT POLE
OCS	OUTLET CONTROL STRUCTURE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
SMH	SEWER MANHOLE
SOS	SEDIMENT OIL SEPARATOR
TSV	TAPPING SLEEVE, VALVE, AND BOX
UP	UTILITY POLE

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DIG SAFE — CALL BEFORE YOU DIG — CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

GENERAL NOTES

1. THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.
2. THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. TFMORAN, INC. ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
3. THE CONDOMINIUM SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
4. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE CITY OF PORTSMOUTH.
5. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF PORTSMOUTH, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. ALL WORK TO CONFORM TO CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS. ALL WORK WITHIN THE RIGHT-OF-WAY OF THE CITY AND/OR STATE SHALL COMPLY WITH APPLICABLE STANDARDS. COORDINATE ALL WORK WITHIN THE RIGHT-OF-WAY WITH APPROPRIATE CITY, COUNTY, AND/OR STATE AGENCY.
6. AN ALTERATION OF TERRAIN PERMIT IS REQUIRED PER ENV-WQ 1503.02. THE SITE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES ENV-WQ 1500 OR AS APPLICABLE.
7. SEE EXISTING CONDITIONS PLAN FOR THE HORIZONTAL AND VERTICAL DATUM.
8. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION. VERIFY TBM ELEVATIONS PRIOR TO CONSTRUCTION.
9. CONTACT EASEMENT OWNERS PRIOR TO COMMENCING ANY WORK WITHIN THE EASEMENTS.
10. PRIOR TO COMMENCING ANY SITE WORK ALL LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD.
11. SITE WORK SHALL BE CONSTRUCTED FROM A COMPLETE SET OF PLANS, NOT ALL FEATURES ARE DETAILED ON EVERY PLAN. THE ENGINEER IS TO BE NOTIFIED OF ANY CONFLICT WITHIN THIS PLAN SET.
12. TFMORAN, INC. ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE ENGINEER OF RECORD.
13. TEMPORARY FENCING SHALL BE PROVIDED AND COVERED WITH A FABRIC MATERIAL TO CONTROL DUST MITIGATION.
14. ALL DEMOLITION SHALL INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKWAYS, AND ANY OTHER ADJACENT OPERATING FACILITIES. PRIOR WRITTEN PERMISSION FROM THE OWNER/DEVELOPER AND LOCAL PERMITTING AUTHORITY IS REQUIRED IF CLOSURE/OBSTRUCTIONS TO ROADS, STREET, WALKWAYS, AND OTHERS IS DEEMED NECESSARY. CONTRACTOR TO PROVIDE ALTERNATE ROUTES AROUND CLOSURES/OBSTRUCTIONS PER LOCAL/STATE/FEDERAL REGULATIONS.
15. REFER TO ARCHITECTURAL PLANS FOR LAYOUT OF BUILDING FOUNDATIONS AND CONCRETE ELEMENTS WHICH ABUT THE BUILDING SUCH AS STAIRS, SIDEWALKS, LOADING DOCK RAMPS, PADS, AND COMPACTOR PADS. DO NOT USE SITE PLANS FOR LAYOUT OF FOUNDATIONS.
16. IN THE EVENT OF A CONFLICT BETWEEN PLANS, SPECIFICATIONS, AND DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
17. IF CONDITIONS AT THE SITE ARE DIFFERENT THAN SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
18. CONTRACTOR'S GENERAL RESPONSIBILITIES:
    - A. BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, AND STANDARDS.
    - B. NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES OF PROPOSED LAYOUT AND/OR EXISTING FEATURES.
    - C. EMPLOY A LICENSED SURVEYOR TO DETERMINE ALL LINES AND GRADES AND LAYOUT OF SITE ELEMENTS AND BUILDINGS.
    - D. THE CONTRACTOR SHALL BE RESPONSIBLE TO BECOME FAMILIAR WITH THE SITE AND ALL SURROUNDING CONDITIONS. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
    - E. TAKE APPROPRIATE MEASURES TO REDUCE, TO THE FULLEST EXTENT POSSIBLE, NOISE, DUST AND UNSIGHTLY DEBRIS. CONSTRUCTION ACTIVITIES SHALL BE CARRIED OUT BETWEEN THE HOURS OF 7:00 AM AND 9:00 PM, MONDAY THROUGH FRIDAY IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR CONSTRUCTION, PORTSMOUTH, NEW HAMPSHIRE"
    - F. MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
    - G. IN ACCORDANCE WITH RSA 430:53 AND AGR 3800, THE CONTRACTOR SHALL NOT TRANSPORT INVASIVE SPECIES OFF THE PROPERTY, AND SHALL DISPOSE OF INVASIVE SPECIES ON-SITE IN A LEGAL MANNER.
    - H. COORDINATE WITH ALL UTILITY COMPANIES AND CONTACT DIGSAFE (811 OR 888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION.
    - I. PROTECT NEW AND EXISTING BURIED UTILITIES DURING INSTALLATION OF ALL SITE ELEMENTS. DAMAGED UTILITIES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
    - J. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TFMORAN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
    - K. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
    - L. VERIFY LAYOUT OF PROPOSED BUILDING FOUNDATIONS WITH ARCHITECT AND THAT PROPOSED FOUNDATION MEETS PROPERTY LINE SETBACKS PRIOR TO COMMENCING ANY FOUNDATION CONSTRUCTION.
    - M. PROVIDE AN AS-BUILT PLAN AT THE COMPLETION OF THE PROJECT TO THE PLANNING DIRECTOR AND PER CITY REGULATIONS.
    - N. IF ANY DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS HAVE BEEN MADE, THE SITE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS STAMPED BY A LICENSED SURVEYOR OR QUALIFIED ENGINEER ALONG WITH A LETTER STAMPED BY A QUALIFIED ENGINEER DESCRIBING ALL SUCH DEVIATIONS, AND BEAR ALL COSTS FOR PREPARING AND FILING ANY NEW PERMITS OR PERMIT AMENDMENTS THAT MAY BE REQUIRED.
    - O. AT COMPLETION OF CONSTRUCTION, THE SITE CONTRACTOR SHALL PROVIDE A LETTER CERTIFYING THAT THE PROJECT WAS COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS, AND A LETTER STAMPED BY A QUALIFIED ENGINEER THAT THEY HAVE OBSERVED ALL UNDERGROUND DETENTION SYSTEMS, INFILTRATION SYSTEMS, OR FILTERING SYSTEMS PRIOR TO BACKFILL, AND THAT SUCH SYSTEMS CONFORM TO THE APPROVED PLANS AND SPECIFICATIONS.

GRADING NOTES

1. THE CONTRACTOR SHALL ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES ENV-WQ 1500 AS APPLICABLE.
2. THE CONTRACTOR SHALL PREPARE, MAINTAIN, AND EXECUTE A S.W.P.P.P. IN ACCORDANCE WITH EPA REGULATIONS AND THE CONSTRUCTION GENERAL PERMIT.
3. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER TO SUBMIT AN eNOI AT LEAST 14 DAYS IN ADVANCE OF ANY EARTHWORK ACTIVITIES AT THE SITE.
4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE ACCURACY OF THE TOPOGRAPHY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ANY EARTHWORK BEING PERFORMED ON THE SITE. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED FOR PAYMENT AFTER EARTHWORK HAS COMMENCED.
5. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR INFORMATION ABOUT SOIL AND GROUNDWATER CONDITIONS. THE CONTRACTOR SHALL FOLLOW THE GEOTECHNICAL ENGINEERS RECOMMENDED METHODS TO ADDRESS ANY SOIL AND GROUNDWATER ISSUES THAT ARE FOUND ON SITE.
6. COORDINATE WITH GEOTECHNICAL/STRUCTURAL PLANS FOR SITE PREPARATION AND OTHER BUILDING INFORMATION.
7. COORDINATE WITH ARCHITECTURAL PLANS FOR DETAILED GRADING AT BUILDING, AND SIZE AND LOCATION OF ALL BUILDING SERVICES.
8. COORDINATE WITH MECHANICAL AND PLUMBING PLANS FOR ROOF DRAIN INFORMATION.
9. LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS, AND ALIGNMENTS.
10. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE, RAMPS AND LOADING AREAS.
11. THE SITE SHALL BE GRADED SO ALL FINISHED PAVEMENT HAS POSITIVE DRAINAGE AND SHALL NOT POND WATER DEEPER THAN 1/4" FOR A PERIOD OF MORE THEN 15 MINUTES AFTER FLOODING.
12. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
13. ALL SIDEWALK AND OTHER CURB REVEALS SHALL BE 6" WITH A TOLERANCE OF PLUS OR MINUS 3/8". WHERE SIDEWALK IS TO BE FLUSH, THE PAVEMENT REVEAL SHALL BE 1/4" WITH A TOLERANCE OF 1/8".
14. THE FINISHED GRADE AT BOTTOM OF ALL ACCESSIBLE RAMPS SHALL BE FLUSH WITH PAVEMENT WITH A TOLERANCE OF PLUS OR MINUS 1/4".
15. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE PRIOR TO INSTALLATION OF FINISHED PAVEMENT.
16. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE NHDOT STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
17. STORMWATER DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. CONSTRUCTION METHODS SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS, SECTION 603. CATCH BASINS AND DRAIN MANHOLES SHALL CONFORM TO SECTION 604. ALL CATCH BASIN GRATES SHALL BE TYPE B AND CONFORM TO NHDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
18. NO FILL SHALL BE PLACED IN ANY WETLAND AREA.
19. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
20. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER AND MULCH.
21. DENSITY REQUIREMENTS:

MINIMUM DENSITY*	LOCATION
95%	BELOW PAVED OR CONCRETE AREAS
95%	TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL
90%	BELOW LOAM AND SEED AREAS

*ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C. FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM D-6938.

UTILITY NOTES

1. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
2. ALL PROPOSED UTILITY WORK, INCLUDING MATERIAL, INSTALLATION, TERMINATION, EXCAVATION, BEDDING, BACKFILL, COMPACTION, TESTING, CONNECTIONS, AND CONSTRUCTION SHALL BE COORDINATED WITH AND COMPLETED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS, CODES, AND STANDARDS OF ALL CORRESPONDING UTILITY ENTITIES AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
4. COORDINATE ALL WORK ADJACENT TO PROPOSED BUILDINGS WITH ARCHITECTURAL BUILDING DRAWINGS. CONFIRM UTILITY PENETRATIONS AND INVERT ELEVATIONS ARE COORDINATED PRIOR TO INSTALLATION.
5. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE EXACT LOCATION OF NEW UTILITY CONNECTIONS SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH UTILITY COMPANY, COUNTY AGENCY, AND/OR PRIVATE UTILITY COMPANY.
7. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE UTILITY INSTALLATION COMPLETE AND OPERATIONAL.
8. ALL UTILITY COMPANIES REQUIRE INDIVIDUAL CONDUITS. CONTRACTOR TO COORDINATE WITH TELEPHONE, CABLE, AND ELECTRIC COMPANIES REGARDING NUMBER, SIZE, AND TYPE OF CONDUITS REQUIRED PRIOR TO INSTALLATION OF ANY CONDUIT.
9. SANITARY SEWER SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATIONS AS SHOWN ON THESE PLANS. ALL SEWER MAINS AND FITTINGS SHALL BE PVC AND SHALL CONFORM TO ASTM F 679 (SDR 35 MINIMUM). ALL SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. SANITARY MANHOLES SHALL CONFORM TO NHDES WATER DIVISION WASTEWATER ENGINEERING BUREAU STANDARDS AND SPECIFICATIONS SHOWN HEREON.
10. ON-SITE WATER DISTRIBUTION SHALL BE TO CITY OF PORTSMOUTH STANDARDS AND SPECIFICATIONS. WATER MAINS SHALL HAVE A MINIMUM OF 5.5' COVER. WHERE WATER PIPES CROSS SEWER LINES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 10' MINIMUM. WHERE A SANITARY LINE CROSSES A WATER LINE, ENCASE THE SANITARY LINE IN 6" THICK CONCRETE FOR A DISTANCE OF 10' EITHER SIDE OF THE CROSSING, OR SUBSTITUTE RUBBER-GASKETED PRESSURE PIPE FOR THE SAME DISTANCE. WHEN SANITARY LINES PASS BELOW WATER LINES, LAY PIPE SO THAT NO JOINT IN THE SANITARY LINE WILL BE CLOSER THAN 3' HORIZONTALLY TO THE WATER LINE.
11. INSTALLATION OF ALL WATER AND SEWER TO BE WITNESSED BY A THIRD-PARTY INSPECTORS.
12. EACH CONDO WILL HAVE A SEPARATE IRRIGATION METER AND IRRIGATION SYSTEM.
13. THRUST BLOCKS SHALL BE PROVIDED AT ALL LOCATIONS WHERE WATER LINE CHANGES DIRECTIONS OR CONNECTS TO ANOTHER WATER LINE.
14. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS. CONDUIT TO BE A MINIMUM OF 24" BELOW FINISH GRADE.
15. ALL PROPOSED UTILITIES SHALL BE UNDERGROUND. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES.
16. THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL INSPECTIONS, TESTING AND RELATED SERVICES AND SUBMIT COPIES OF ACCEPTANCE TO THE OWNER, UNLESS OTHERWISE INDICATED.
17. PROVIDE PERMANENT PAVEMENT REPAIR FOR ALL UTILITY TRENCHES IN EXISTING ROAD OR PAVEMENT TO REMAIN. SAW CUT TRENCH, PAVEMENT AND GRANULAR BASE THICKNESS TO MATCH EXISTING PAVEMENT. OBTAIN ALL PERMITS REQUIRED FOR TRENCHING.
18. UNLESS OTHERWISE SPECIFIED, ALL UNDERGROUND STRUCTURES, PIPES, CHAMBERS, ETC. SHALL BE COVERED WITH A MINIMUM OF 18" OF COMPACTED SOIL BEFORE EXPOSURE TO VEHICLE LOADS.
19. THE PROPERTY WILL BE SERVICED BY THE FOLLOWING:

DRAINAGE	MUNICIPAL
SEWER	MUNICIPAL
WATER	MUNICIPAL
GAS	UNITIL
ELECTRIC	EVERSOURCE
TELEPHONE	CONSOLIDATED COMMUNICATIONS FKA FAIRPOINT COMMUNICATIONS
CABLE	COMCAST

STATE OF NEW HAMPSHIRE — JOHN J. McTIGUE No. 14950 LICENSED PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

NOTES AND LEGEND

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34") **APRIL 19, 2021**

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

Seacoast Division
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Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
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www.tfmoran.com

FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_NOTES	C-01

Jun 23, 2021 - 2:18pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_Notes.dwg

LEGEND:

MAP 137 LOT 11	ASSESSORS MAP AND LOT NUMBER
CHB	CHORD BEARING
CHL	CHORD LENGTH
I	INDUSTRIAL ZONE
L	LENGTH
NRP	NATURAL RESOURCE PROTECTION ZONE
N/F	NOW OR FORMERLY
R	RADIUS
RU	RURAL ZONE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
Δ	CENTRAL ANGLE
S.F.	SQUARE FEET
SRA	SINGLE RESIDENCE A ZONE
SRB	SINGLE RESIDENCE B ZONE
TC	TRANSPORTATION CORRIDOR ZONE
———	BOUNDARY LINE
○○○○○○○○○○○○	STONE WALL
——— X ———	WIRE FENCE
- · - · - · - · -	EDGE OF WETLAND
— — — —	WETLAND BUFFER
W	WELL
· · · · · · · · · · · ·	WETLANDS

PLAN REFERENCES:

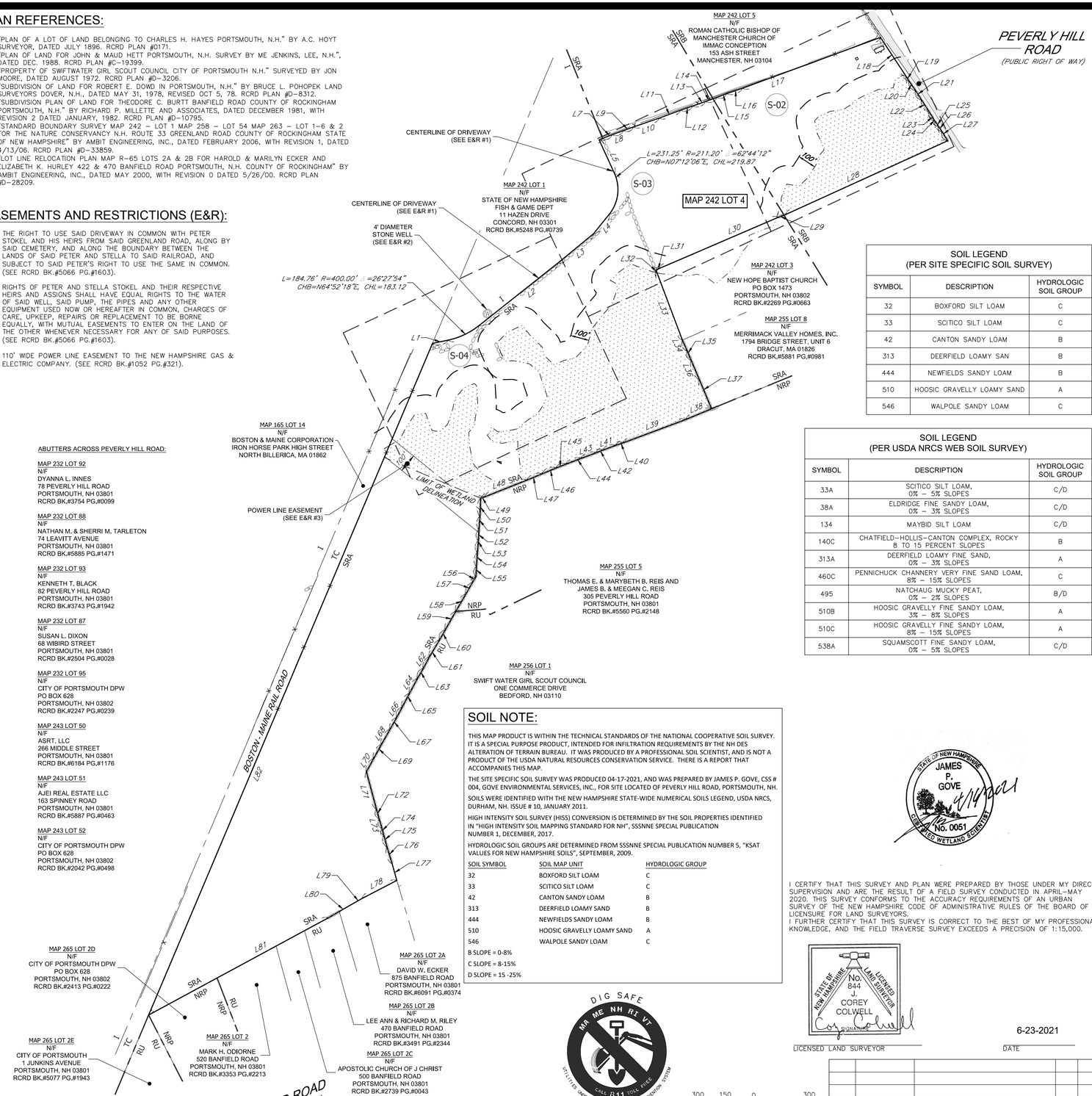
1. "PLAN OF A LOT OF LAND BELONGING TO CHARLES H. HAYES PORTSMOUTH, N.H." BY A.C. HOYT SURVEYOR, DATED JULY 1896. RCRD PLAN #0171.
2. "PLAN OF LAND FOR JOHN & MAUD HETT PORTSMOUTH, N.H. SURVEY BY ME JENKINS, LEE, N.H.", DATED DEC. 1988. RCRD PLAN #C–19399.
3. "PROPERTY OF SWIFTWATER GIRL SCOUT COUNCIL CITY OF PORTSMOUTH N.H." SURVEYED BY JON MOORE, DATED AUGUST 1972. RCRD PLAN #D–3206.
4. "SUBDIVISION OF LAND FOR ROBERT E. DOWD IN PORTSMOUTH, N.H." BY BRUCE L. POHOPEK LAND SURVEYORS DOVER, N.H., DATED MAY 31, 1978, REVISED OCT 5, 78. RCRD PLAN #D–8312.
5. "SUBDIVISION PLAN OF LAND FOR THEODORE C. BURTT BANFIELD ROAD COUNTY OF ROCKINGHAM PORTSMOUTH, N.H." BY RICHARD P. MILLETTE AND ASSOCIATES, DATED DECEMBER 1981, WITH REVISION 2 DATED JANUARY, 1982. RCRD PLAN #D–10795.
6. "STANDARD BOUNDARY SURVEY MAP 242 – LOT 1 MAP 258 – LOT 54 MAP 263 – LOT 1–6 & 2 FOR THE NATURE CONSERVANCY"LL.H. ROUTE 33 GREENLAND ROAD COUNTY OF ROCKINGHAM STATE OF NEW HAMPSHIRE" BY AMBIT ENGINEERING, INC., DATED FEBRUARY 2006, WITH REVISION 1, DATED 4/13/06. RCRD PLAN #D–33859.
7. "LOT LINE RELOCATION PLAN MAP R–65 LOTS 2A & 2B FOR HAROLD & MARILYN ECKER AND ELIZABETH K. HURLEY 422 & 470 BANFIELD ROAD PORTSMOUTH, N.H. COUNTY OF ROCKINGHAM" BY AMBIT ENGINEERING, INC., DATED MAY 2000, WITH REVISION 0 DATED 5/26/00. RCRD PLAN #D–28209.

EASEMENTS AND RESTRICTIONS (E&R):

1. THE RIGHT TO USE SAID DRIVEWAY IN COMMON WITH PETER STOKEL AND HIS HEIRS FROM SAID GREENLAND ROAD, ALONG BY SAID CEMETERY, AND ALONG THE BOUNDARY BETWEEN THE LANDS OF SAID PETER AND STELLA TO SAID RAILROAD, AND SUBJECT TO SAID PETER'S RIGHT TO USE THE SAME IN COMMON. (SEE RCRD BK.#5066 PG.#1603).
2. RIGHTS OF PETER AND STELLA STOKEL AND THEIR RESPECTIVE HEIRS AND ASSIGNS SHALL HAVE EQUAL RIGHTS TO THE WATER OF SAID WELL, SAID PUMP, THE PIPES AND ANY OTHER EQUIPMENT USED NOW OR HEREAFTER IN COMMON, CHARGES OF CARE, UPKEEP, REPAIRS OR REPLACEMENT TO BE BORNE EQUALLY, WITH MUTUAL EASEMENTS TO ENTER ON THE LAND OF THE OTHER WHENEVER NECESSARY FOR ANY OF SAID PURPOSES. (SEE RCRD BK.#5066 PG.#1603).
3. 110' WIDE POWER LINE EASEMENT TO THE NEW HAMPSHIRE GAS & ELECTRIC COMPANY. (SEE RCRD BK.#1052 PG.#321).

LINE TABLE		
LINE #	BEARING	DISTANCE
L1	N78°08'44"E	85.87'
L2	N51°37'18"E	544.02'
L3	N50°33'19"E	248.37'
L4	N38°55'51"E	136.50'
L5	N24°30'55"W	199.99'
L7	N69°17'23"E	56.05'
L8	N69°46'08"E	65.15'
L9	N70°28'21"E	57.22'
L10	N70°58'09"E	146.93'
L11	N69°38'29"E	122.30'
L12	N71°01'01"E	69.20'
L13	N70°36'35"E	73.15'
L14	N70°09'53"E	65.99'
L15	N68°45'39"E	56.30'
L16	N71°22'53"E	90.32'
L17	N69°46'51"E	792.39'
L18	N33°28'11"W	253.49'
L19	N30°43'03"W	25.87'
L20	N34°50'10"W	64.05'
L21	N32°23'37"W	59.65'
L22	N32°36'14"W	75.31'
L23	N32°30'33"W	44.57'
L24	N31°38'38"W	14.39'
L25	N33°17'28"W	36.28'
L26	N33°32'47"W	33.10'
L27	N32°28'55"W	58.19'
L28	S65°32'22"W	961.06'
L29	S69°39'32"W	39.37'
L30	S66°43'10"W	699.69'
L31	S61°50'59"W	21.03'
L32	S21°45'52"E	10.17'
L33	S20°39'30"E	392.22'
L34	S24°19'08"E	65.84'
L35	S22°34'53"E	52.86'
L36	S23°02'43"E	111.50'
L37	S22°45'01"E	171.93'
L38	S67°19'43"W	152.24'
L39	S69°35'00"W	360.76'
L40	S71°11'01"W	41.19'
L41	S69°52'05"W	74.38'
L42	S68°05'19"W	38.26'

LINE TABLE		
LINE #	BEARING	DISTANCE
L43	S69°37'42"W	88.49'
L44	S69°05'04"W	85.94'
L45	S68°46'51"W	56.81'
L46	S67°27'31"W	81.81'
L47	S67°26'04"W	87.58'
L48	S68°24'11"W	247.91'
L49	S70°35'06"W	20.09'
L50	S02°20'46"W	96.94'
L51	S04°10'09"W	71.99'
L52	S02°55'30"W	60.89'
L53	S04°46'48"W	64.75'
L54	S04°06'17"W	73.30'
L55	S02°44'38"W	55.33'
L56	S30°51'45"W	36.06'
L57	S29°37'18"W	72.38'
L58	S30°17'36"W	108.68'
L59	S29°36'04"W	113.60'
L60	S29°36'07"W	62.04'
L61	S30°55'15"W	107.77'
L62	S27°41'10"W	68.75'
L63	S30°19'04"W	62.95'
L64	S28°10'44"W	90.88'
L65	S27°46'33"W	84.72'
L66	S28°09'12"W	63.04'
L67	S29°23'48"W	74.83'
L68	S29°32'16"W	94.54'
L69	S29°00'39"W	86.86'
L70	S28°38'51"W	79.24'
L71	S15°03'54"E	206.01'
L72	S15°34'48"E	56.79'
L73	S16°34'18"E	55.67'
L74	S14°35'44"E	35.23'
L75	S15°16'42"E	66.01'
L76	S16°55'11"E	94.64'
L77	S15°41'57"E	93.63'
L78	N62°33'20"E	210.79'
L79	N60°22'36"E	85.15'
L80	N60°02'43"E	125.36'
L81	N61°36'13"E	1100.89'
L82	S22°55'14"W	3930.00'



SOIL NOTE:

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY WAS PRODUCED 04-17-2021, AND WAS PREPARED BY JAMES P. GOVE, CSS # 004, GOVE ENVIRONMENTAL SERVICES, INC., FOR SITE LOCATED OF PEVERLY HILL ROAD, PORTSMOUTH, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE-WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011.

HIGH INTENSITY SOIL SURVEY (HISS) CONVERSION IS DETERMINED BY THE SOIL PROPERTIES IDENTIFIED IN "HIGH INTENSITY SOIL MAPPING STANDARD FOR NH", SSSNNE SPECIAL PUBLICATION NUMBER 1, DECEMBER, 2017.

HYDROLOGIC SOIL GROUPS ARE DETERMINED FROM SSSNNE SPECIAL PUBLICATION NUMBER 5, "KSAT VALUES FOR NEW HAMPSHIRE SOILS", SEPTEMBER, 2009.

SOIL SYMBOL	SOIL MAP UNIT	HYDROLOGIC GROUP
32	BOXFORD SILT LOAM	C
33	SCITICO SILT LOAM	C
42	CANTON SANDY LOAM	B
313	DEERFIELD LOAMY SAND	B
444	NEWFIELDS SANDY LOAM	B
510	HOOSIC GRAVELLY LOAMY SAND	A
546	WALPOLE SANDY LOAM	C

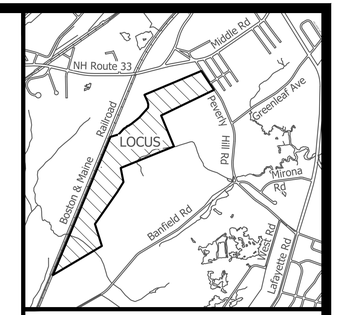
B SLOPE = 0-8%
C SLOPE = 8-15%
D SLOPE = 15 -25%

DIG SAFE
NH ME RI VT
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CALL 811 TOLL FREE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

300 150 0 300
Graphic Scale in Feet

SOIL LEGEND (PER SITE SPECIFIC SOIL SURVEY)		
SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
32	BOXFORD SILT LOAM	C
33	SCITICO SILT LOAM	C
42	CANTON SANDY LOAM	B
313	DEERFIELD LOAMY SAN	B
444	NEWFIELDS SANDY LOAM	B
510	HOOSIC GRAVELLY LOAMY SAND	A
546	WALPOLE SANDY LOAM	C

SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)		
SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP
33A	SCITICO SILT LOAM, 0% – 5% SLOPES	C/D
38A	ELDRIDGE FINE SANDY LOAM, 0% – 3% SLOPES	C/D
134	MAYBID SILT LOAM	C/D
140C	CHATFIELD–HOLLIS–CANTON COMPLEX, ROCKY 8 TO 15 PERCENT SLOPES	B
313A	DEERFIELD LOAMY FINE SAND, 0% – 3% SLOPES	A
460C	PENNICHUCK CHANNERY VERY FINE SAND LOAM, 8% – 15% SLOPES	C
495	NATCHAUG MUCKY PEAT, 0% – 2% SLOPES	B/D
510B	HOOSIC GRAVELLY FINE SANDY LOAM, 3% – 8% SLOPES	A
510C	HOOSIC GRAVELLY FINE SANDY LOAM, 8% – 15% SLOPES	A
538A	SQUAMSCOTT FINE SANDY LOAM, 0% – 5% SLOPES	C/D



LOCATION PLAN

NOTES:

1. THE PARCEL IS LOCATED IN THE SINGLE RESIDENCE A (SRA) & SINGLE RESIDENCE B (SRB) ZONING DISTRICTS.
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 242 AS LOT 4.
3. THE PARCEL IS LOCATED IN ZONE X AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP), FLOOD INSURANCE RATE MAP (FIRM) ROCKINGHAM COUNTY, NEW HAMPSHIRE, PANEL 270 OF 681, MAP NUMBER 33015C0270F, MAP REVISED JANUARY 29, 2021.
4. DIMENSIONAL REQUIREMENTS:

	SRA	SRB
	REQUIRED:	
MINIMUM LOT AREA:	1 ACRE	15,000 SF
LOT AREA PER DWELLING UNIT:	1 ACRE	15,000 SF
CONTINUOUS STREET FRONTAGE:	150'	100'
LOT DEPTH:	200'	100'
MINIMUM YARD DIMENSIONS:		
FRONT:	30'	30'
SIDE:	20'	10'
REAR:	40'	30'
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT:		
SLOPED ROOF	35'	35'
FLAT ROOF	30'	30'
BUILDING COVERAGE:	10%	20%
MINIMUM OPEN SPACE:	50%	40%

PER THE CITY OF PORTSMOUTH ZONING ORDINANCE SECTION 10.520.

5. OWNER OF RECORD:
MAP 242 LOT 4:
STELLA B. STOKEL 1993 TRUST,
NANCY A. STOKEL 1993 TRUST & PHILIP J. STOKEL
83 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#5066 PG.#1603
6. PARCEL AREA:
MAP 242 LOT 4:
4,604,509 S.F.
(105.7050 ACRES)
7. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH THE CURRENT LEGAL DESCRIPTIONS. IT IS NOT AN ATTEMPT TO DEFINE THE EXTENT OF OWNERSHIP OR DEFINE THE LIMITS OF TITLE.
8. THE PURPOSE OF THIS PLAN IS TO SHOW THE OVERALL BOUNDARY LINES OF MAP 242 LOT 4.
9. FIELD SURVEY COMPLETED BY TCE, MVP & PJT IN APRIL–MAY 2020 USING A TOPCON DS103, TOPCON HIPER–SR, TOPCON HIPER–V AND A CARLSON RT4 DATA COLLECTOR.
10. HORIZONTAL DATUM IS NAD83 (2011) PER STATIC GPS OBSERVATIONS. THE VERTICAL DATUM IS NAVD88 (GEOID12B) PER STATIC GPS OBSERVATIONS. THE CONTOUR INTERVAL IS 2 FEET.
11. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL(S) WOULD DETERMINE.
12. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. TFMORAN, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE.
13. WETLAND DELINEATION WAS COMPLETED BY GOVE ENVIRONMENTAL SERVICES ON FEBRUARY 18, 2020 AND REVISED ON MAY 14, 2020 IN ACCORDANCE WITH THE 1987 ARMY CORP OF ENGINEERS WETLAND MANUAL AND THE 2012 REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION. FIELD LOCATED BY TFMORAN, INC.
14. THE ABANDONED CEMETERY SHOWN ON SHEET S–03 IS BELIEVED TO BE THE FORMER HAYES FAMILY CEMETERY. CURRENT OWNERS OF THE PROPERTY ACKNOWLEDGE THAT ALL BODIES HAVE BEEN EXHUMED FROM THIS LOCATION. NO GRAVESTONES EXIST AT THIS CEMETERY. THE 25' BUFFER TO THE CEMETERY IS SHOWN AS AN ABUNDANCE OF CAUTION.

STATE OF NEW HAMPSHIRE
JAMES P. GOVE
4/14/2021
No. 0051
CERTIFIED WETLAND SCIENTIST

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY THOSE UNDER MY DIRECT SUPERVISION AND ARE THE RESULT OF A FIELD SURVEY CONDUCTED IN APRIL–MAY 2020. THIS SURVEY CONFORMS TO THE ACCURACY REQUIREMENTS OF AN URBAN SURVEY OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS.
I FURTHER CERTIFY THAT THIS SURVEY IS CORRECT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, AND THE FIELD TRAVERSE SURVEY EXCEEDS A PRECISION OF 1:15,000.

STATE OF NEW HAMPSHIRE
No. 844
J. COREY COLWELL
LICENSED LAND SURVEYOR
SIGNATURE

6-23-2021
DATE

TAX MAP 242 LOT 4
OVERALL EXISTING CONDITIONS PLAN
PEVERLY HILL ROAD
83 PEVERLY HILL ROAD
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM
OWNED BY
STELLA B. STOKEL 1993 TRUST, NANCY A. STOKEL 1993 TRUST & PHILIP J. STOKEL

SCALE: 1" = 300' (22x34)
1" = 600' (11x17)
APRIL 19, 2021

REV.	DATE	DESCRIPTION	DR	CK
1	6/21/2021	NO REVISIONS THIS SHEET	IID	BMK

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431–2222
Fax (603) 431–0910
www.tfmoran.com

FILE	47388-11	DR	MVP	FB	568	S-01
		CK	BMK	CADFILE		

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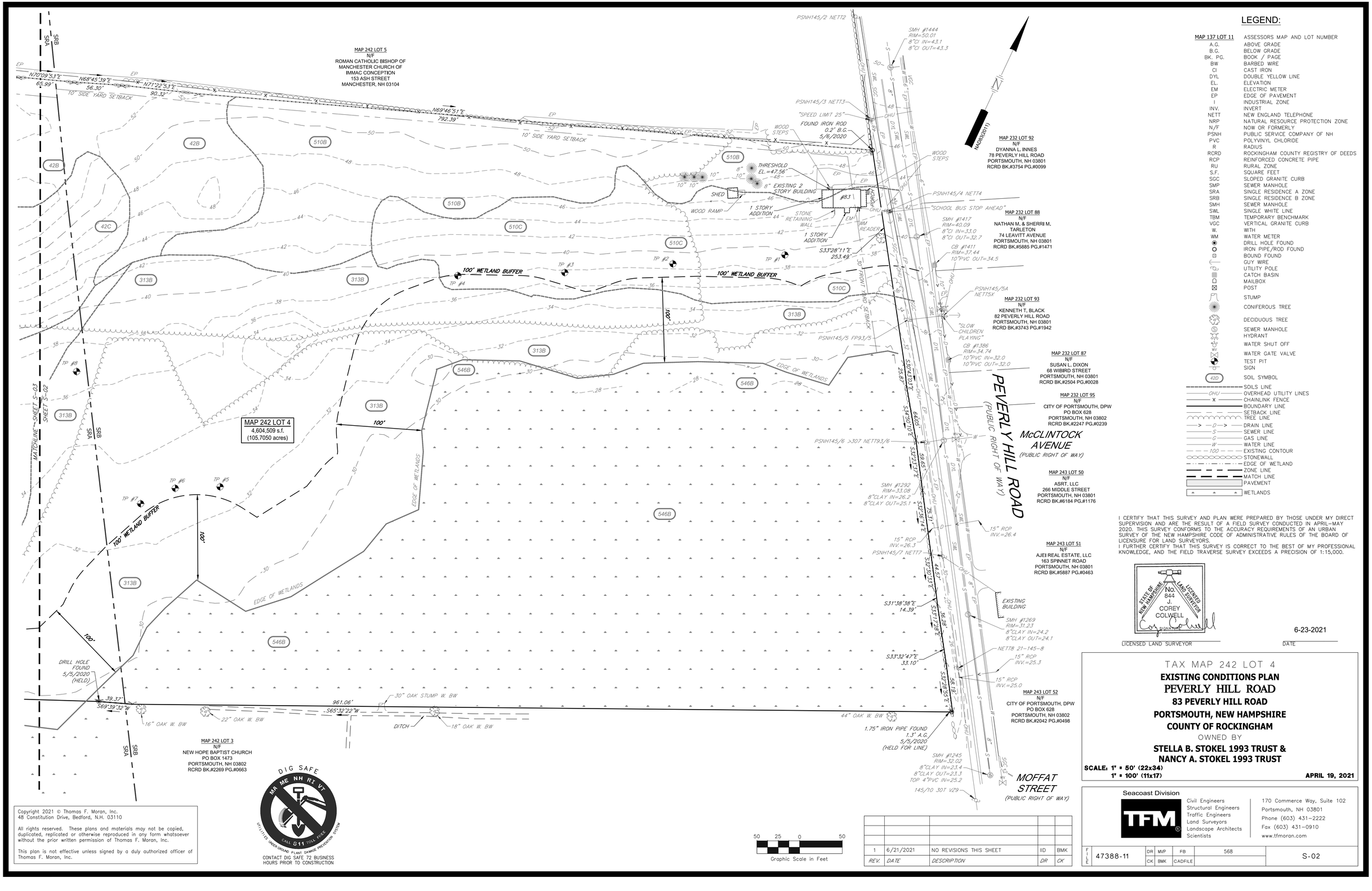
Jun 21, 2021 - 10:12am
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Carlson Survey\Dwgs\47388-11 Overall.dwg


MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF MANCHESTER CHURCH OF IMMAC CONCEPTION
153 ASH STREET
MANCHESTER, NH 03104
N70°09'53"E 65.99'
N68°45'19"E 56.30'
N71°22'53"E 90.32'
N68°46'51"E 792.39'
10' SIDE YARD SETBACK
10' SIDE YARD SETBACK
MAP 242 LOT 4
4,604,509 s.f.
(105.7050 acres)
100' WETLAND BUFFER
100' WETLAND BUFFER
100' WETLAND BUFFER
100'
100'
100'
EDGE OF WETLANDS
EDGE OF WETLANDS
EDGE OF WETLANDS
MATCHLINE - SHEET S-03
MATCHLINE - SHEET S-02
TP #1
TP #2
TP #3
TP #4
TP #5
TP #6
TP #7
TP #8
S33°28'11"E 253.49'
S31°38'38"E 14.39'
S33°32'47"E 33.10'
S65°32'22"W 961.06'
S69°39'32"W 39.37'
DRILL HOLE FOUND 5/5/2020 (HELD)
16" OAK W. BW
22" OAK W. BW
30" OAK STUMP W. BW
18" OAK W. BW
44" OAK W. BW
DITCH
1.75" IRON PIPE FOUND 1.3' A.G. 5/5/2020 (HELD FOR LINE)
MAP 242 LOT 3
N/F
NEW HOPE BAPTIST CHURCH
PO BOX 1473
PORTSMOUTH, NH 03802
RCRD BK.#2269 PG.#0663
MAP 232 LOT 92
N/F
DYANNA L. INNES
78 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3754 PG.#0099
MAP 232 LOT 88
N/F
NATHAN M. & SHERRI M. TARLETON
74 LEAVITT AVENUE
PORTSMOUTH, NH 03801
RCRD BK.#5885 PG.#1471
MAP 232 LOT 93
N/F
KENNETH T. BLACK
82 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3743 PG.#1942
MAP 232 LOT 87
N/F
SUSAN L. DIXON
68 WIBIRD STREET
PORTSMOUTH, NH 03801
RCRD BK.#2504 PG.#0028
MAP 232 LOT 95
N/F
CITY OF PORTSMOUTH, DPW
PO BOX 628
PORTSMOUTH, NH 03802
RCRD BK.#2247 PG.#0239
MAP 243 LOT 50
N/F
ASRT, LLC
266 MIDDLE STREET
PORTSMOUTH, NH 03801
RCRD BK.#6184 PG.#1176
MAP 243 LOT 51
N/F
AJEI REAL ESTATE, LLC
163 SPINNET ROAD
PORTSMOUTH, NH 03801
RCRD BK.#5887 PG.#0463
MAP 243 LOT 52
N/F
CITY OF PORTSMOUTH, DPW
PO BOX 628
PORTSMOUTH, NH 03802
RCRD BK.#2042 PG.#0498
PEVERLY HILL ROAD
(PUBLIC RIGHT OF WAY)
McCLINTOCK AVENUE
(PUBLIC RIGHT OF WAY)
MOFFAT STREET
(PUBLIC RIGHT OF WAY)
N40°53'20"E
SMH #1444 RIM=50.01 8"CI IN=43.1 8"CI OUT=43.3
SMH #1292 RIM=33.08 8"CLAY IN=26.2 8"CLAY OUT=25.1
SMH #1269 RIM=31.23 8"CLAY IN=24.2 8"CLAY OUT=24.1
SMH #1245 RIM=32.02 8"CLAY IN=23.4 8"CLAY OUT=23.3 TOP 4"PVC IN=25.2
SMH #1417 RIM=40.09 8"CI IN=33.0 8"CI OUT=32.7
CB #1411 RIM=37.44 10"PVC OUT=34.5
CB #1386 RIM=34.74 10"PVC IN=32.0 10"PVC OUT=32.0
PSNH145/2 NETT2
PSNH145/3 NETT3
PSNH145/4 NETT4
PSNH145/5A NETT5x
PSNH145/5 FP93/5
PSNH145/6 >307 NETT93/6
PSNH145/7 NETT7
NETT8 21-145-8
"SPEED LIMIT 25"
"SCHOOL BUS STOP AHEAD"
"SLOW CHILDREN PLAYING"
FOUND IRON ROD 0.2' B.G. 5/6/2020
WOOD STEPS
WOOD STEPS
THRESHOLD EL.=47.56'
8" EXISTING 2 STORY BUILDING
#83
PORCH
SHED
WOOD RAMP
1 STORY ADDITION
STONE RETAINING WALL
1 STORY ADDITION
WM READER
EXISTING BUILDING
FRONT YARD SETBACK
15" RCP INV.=26.4
15" RCP INV.=26.3
15" RCP INV.=25.3
15" RCP INV.=25.0
145/10 30T V29
6406'
6405'
N40°53'20"E
S40°53'20"E
S40°53'20"E
S

MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF
MANCHESTER CHURCH OF
IMMAC CONCEPTION
153 ASH STREET
MANCHESTER, NH 03104

N65°56'25"E
19.08'

IRON ROD FOUND
#738 FLUSH
4/28/2020
(HELD)

DRILL HOLE
FOUND
4/28/2020
(HELD)

N69°17'23"E
56.05'

N69°46'08"E
65.15'

N70°28'21"E
57.22'

N70°58'09"E
146.93'

N69°38'29"E
122.30'

N71°01'01"E
69.20'

N70°36'35"E
73.15'

N70°09'53"E
65.99'

REMAINS OF
STONE WALL
(TYPICAL)

20' SIDE YARD SETBACK

SRB

SRA

EP

12" MAPLE W. BW

N24°30'55"W
199.99'

20' SIDE YARD SETBACK

CENTERLINE OF DRIVEWAY
(SEE E&R #1 SHEET S-01)

MAD83(2011)

IRON ROD FOUND
#738 FLUSH
4/28/2020
(HELD)

24" CHESNUT W. BW

L=231.53' R=209.00' Δ=63°28'21"
CHB=N07°12'06"E, CHL=219.87

20" MAPLE W. BW

4" MAPLE W.
BW DEAD

12" CHERRY W. BW

IRON ROD FOUND
#738 FLUSH
4/28/2020
(HELD)

RAILROAD
SPIKE FOUND
0.1' B.G.
4/28/2020
(HELD)

N38°55'51"E
136.50

25'

25' CEMETERY BUFFER

ABANDONED CEMETERY-
NO EVIDENCE OF
GRAVESTONES FOUND.
(SEE NOTE 14 SHEET S-01)

STONE POSTS
W/METAL RAILS
(TYPICAL)

MAP 242 LOT 1
N/F
STATE OF NEW HAMPSHIRE
FISH & GAME DEPT
11 HAZEN DRIVE
CONCORD, NH 03301
RCRD BK.#5248 PG.#0739

N50°33'19"E
248.37'

20' SIDE YARD SETBACK

TP #8

TP #9

TP #10

TP #11

TP #12

TP #13

TP #14

MAP 242 LOT 4
4,604,509 s.f.
(105.7050 acres)

100' WETLAND BUFFER

100'

100'

100' WETLAND BUFFER

100' WETLAND BUFFER

EDGE OF WETLANDS

EDGE OF WETLANDS

EDGE OF WETLANDS

S61°50'59"W
21.03'

699.69'
S66°43'10"W

S21°45'52"E
10.17'

S20°29'30"E
392.22'

7" HICKORY W. BW

9" HICKORY W. BW

9" HICKORY W. BW

12" HICKORY W. BW

9" HICKORY W. BW

MAP 242 LOT 3
N/F
NEW HOPE BAPTIST CHURCH
PO BOX 1473
PORTSMOUTH, NH 03802
RCRD BK.#2269 PG.#0663

MATCHLINE - SHEET S-04
SHEET S-03

MATCHLINE - SHEET S-03
SHEET S-02

42B 42C 42D 444B 313B 32B 33B

LEGEND:

MAP 137 LOT 11	ASSESSORS MAP AND LOT NUMBER
B.G.	BELOW GRADE
BK. PG.	BOOK / PAGE
BW	BARBED WIRE
CHB	CHORD BEARING
CHL	CHORD LENGTH
EP	EDGE OF PAVEMENT
I	INDUSTRIAL ZONE
L	LENGTH
N/F	NOW OR FORMERLY
R	RADIUS
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RU	RURAL ZONE
S.F.	SQUARE FEET
SRA	SINGLE RESIDENCE A ZONE
SRB	SINGLE RESIDENCE B ZONE
TP	TEST PIT
W.	WITH
⊠	POST
Δ	CENTRAL ANGLE
	TEST PIT
	DECIDUOUS TREE
42D	SOIL SYMBOL
	SOILS LINE
x	CHAINLINK FENCE
	BOUNDARY LINE
	SETBACK LINE
	TREE LINE
100	EXISTING CONTOUR
	STONEWALL
	EDGE OF WETLAND
	ZONE LINE
	MATCH LINE
	PAVEMENT
	WETLANDS

NOTES:

1. SEE SHEET S-01 FOR OVERALL BOUNDARY, NOTES, PLAN REFERENCES AND LOCATION PLAN.

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY THOSE UNDER MY DIRECT SUPERVISION AND ARE THE RESULT OF A FIELD SURVEY CONDUCTED IN APRIL-MAY 2020. THIS SURVEY CONFORMS TO THE ACCURACY REQUIREMENTS OF AN URBAN SURVEY OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS.
I FURTHER CERTIFY THAT THIS SURVEY IS CORRECT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, AND THE FIELD TRAVERSE SURVEY EXCEEDS A PRECISION OF 1:15,000.

STATE OF NEW HAMPSHIRE — No. 844 — J. COREY COLWELL — LICENSED LAND SURVEYOR

SIGNATURE

LICENSED LAND SURVEYOR

6-23-2021
DATE

TAX MAP 242 LOT 4

EXISTING CONDITIONS PLAN

PEVERLY HILL ROAD

83 PEVERLY HILL ROAD

PORTSMOUTH, NEW HAMPSHIRE

COUNTY OF ROCKINGHAM

OWNED BY

STELLA B. STOKEL 1993 TRUST &
NANCY A. STOKEL 1993 TRUST

SCALE: 1" = 50' (22x34)
1" = 100' (11x17)

APRIL 19, 2021

DIG SAFE
MA ME NH RI VT
CALL 811 TOLL FREE
UTILITY UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

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50 25 0 50
Graphic Scale in Feet

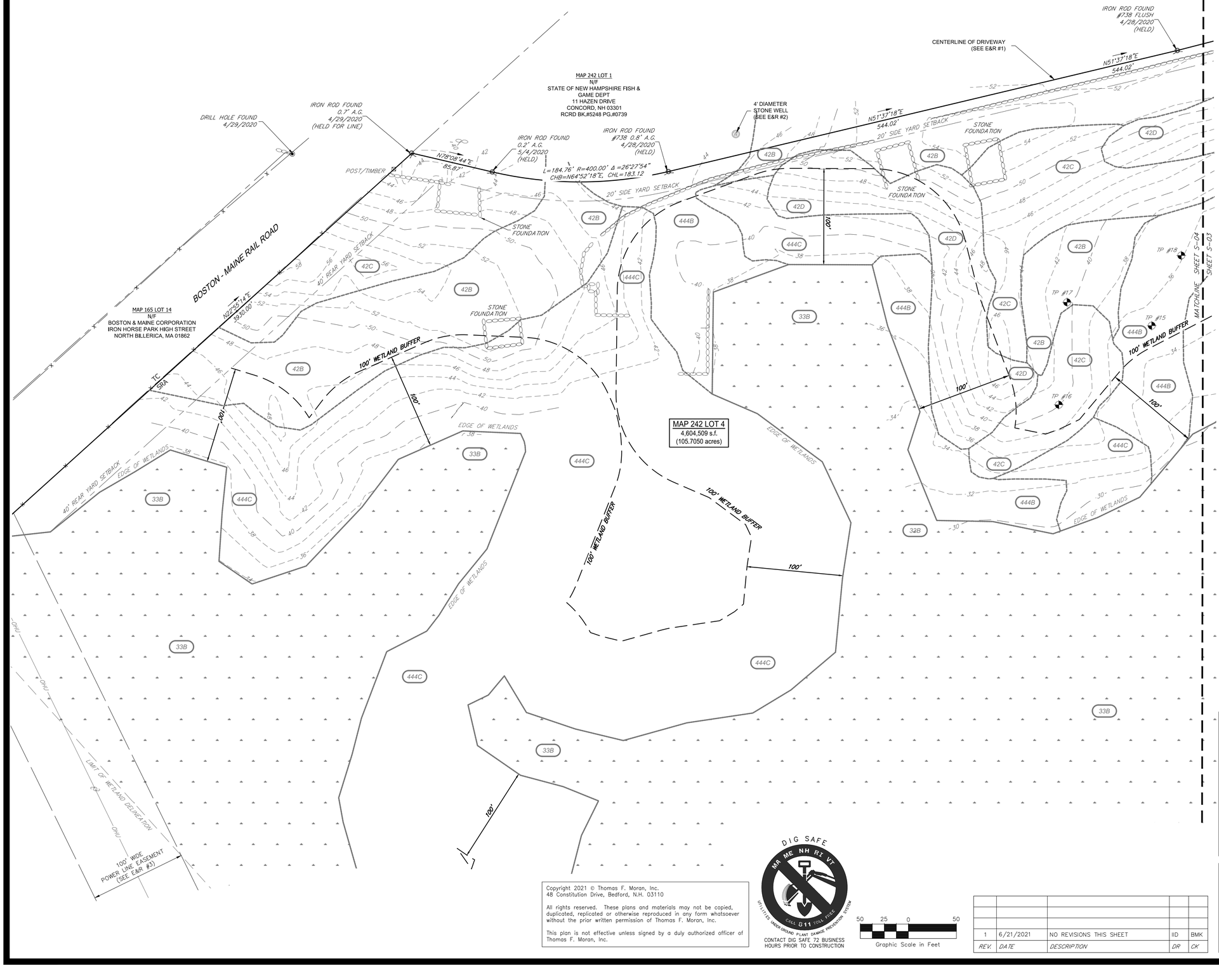
REV.	DATE	DESCRIPTION	DR.	CK.
1	6/21/2021	NO REVISIONS THIS SHEET	IID	BMK

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE		DR	MVP	FB	568	
	47388-11	CK	BMK	CADFILE		S-03

Jun 21, 2021 - 11:37am
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Carlson Survey\Dwgs\47388-11 Survey.dwg



LEGEND:

MAP 137 LOT 11	ASSESSORS MAP AND LOT NUMBER
A.G.	ABOVE GRADE
BK. PG.	BOOK / PAGE
CHB	CHORD BEARING
CHL	CHORD LENGTH
I	INDUSTRIAL ZONE
L	LENGTH
N/F	NOW OR FORMERLY
R	RADIUS
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
S.F.	SQUARE FEET
SRA	SINGLE RESIDENCE A ZONE
TC	TRANSPORTATION CORRIDOR ZONE
TP	TEST PIT
Δ	CENTRAL ANGLE
◉	DRILL HOLE FOUND
○	IRON PIPE/ROD FOUND
⊠	POST
	TEST PIT
42D	SOIL SYMBOL
	SOILS LINE
x	CHAINLINK FENCE
	BOUNDARY LINE
	SETBACK LINE
	TREE LINE
100	EXISTING CONTOUR
	STONEWALL
	EDGE OF WETLAND
	ZONE LINE
	MATCH LINE
	PAVEMENT
	WETLANDS

NOTES:

1. SEE SHEET S-01 FOR OVERALL BOUNDARY, NOTES, PLAN REFERENCES AND LOCATION PLAN.

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY THOSE UNDER MY DIRECT SUPERVISION AND ARE THE RESULT OF A FIELD SURVEY CONDUCTED IN APRIL–MAY 2020. THIS SURVEY CONFORMS TO THE ACCURACY REQUIREMENTS OF AN URBAN SURVEY OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS.
I FURTHER CERTIFY THAT THIS SURVEY IS CORRECT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, AND THE FIELD TRAVERSE SURVEY EXCEEDS A PRECISION OF 1:15,000.

STATE OF NEW HAMPSHIRE No. 844 J. COREY COLWELL LICENSED LAND SURVEYOR

SIGNATURE

LICENSED LAND SURVEYOR

6-23-2021
DATE

TAX MAP 242 LOT 4

EXISTING CONDITIONS PLAN

PEVERLY HILL ROAD

83 PEVERLY HILL ROAD
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

OWNED BY

STELLA B. STOKEL 1993 TRUST &
NANCY A. STOKEL 1993 TRUST

SCALE: 1" = 50' (22x34)
1" = 100' (11x17)

APRIL 19, 2021

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	47388-11	DR	MVP	FB	568	S-04
		CK	BMK	CADFILE		

REV.	DATE	DESCRIPTION	DR	CK
1	6/21/2021	NO REVISIONS THIS SHEET	IID	BMK

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This plan is not effective unless signed by a duly authorized officer of Thomas F. Moran, Inc.

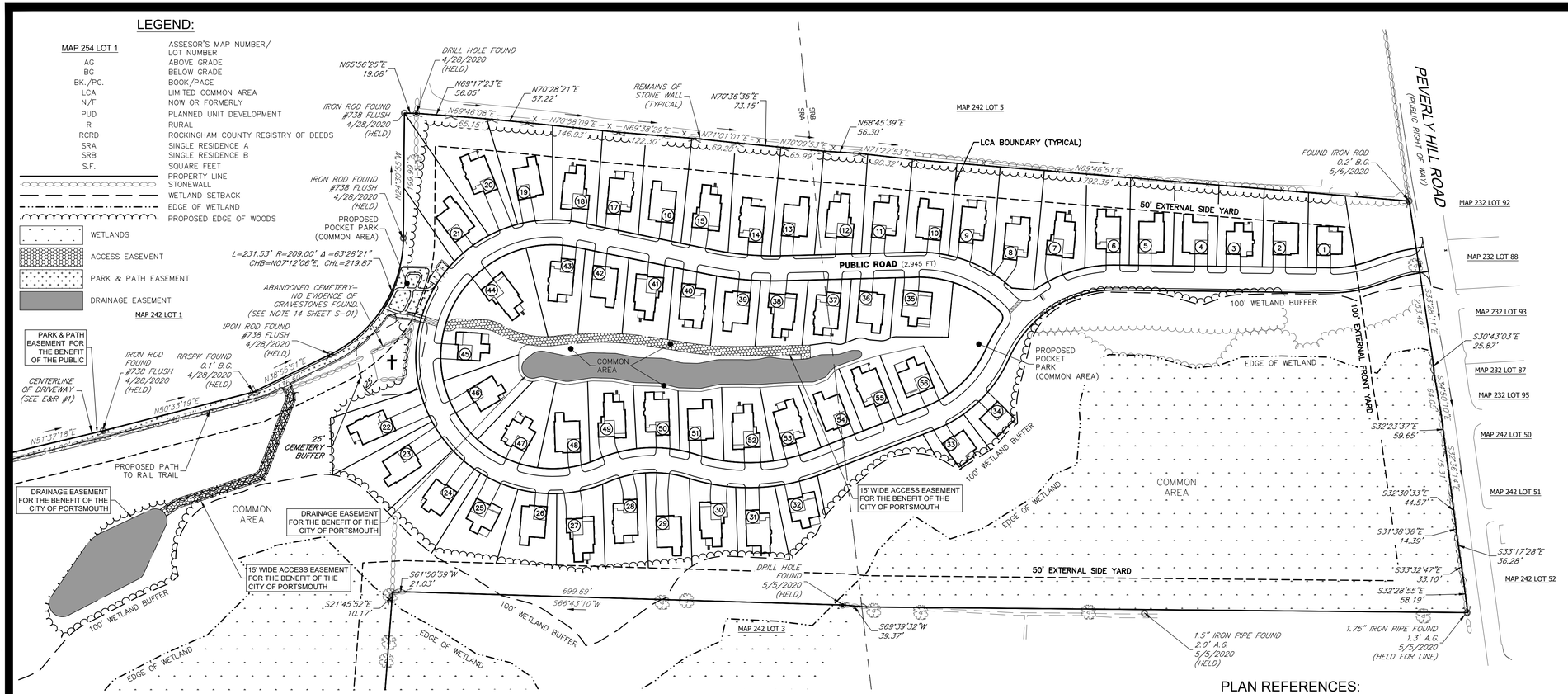
DIG SAFE MA ME NH RI VT UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM CALL 811 TOLL FREE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

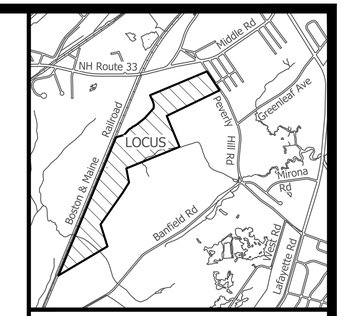
50 25 0 50
Graphic Scale in Feet

Jun 21, 2021 - 11:38am
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Carlson Survey\Dwgs\47388-11 Survey.dwg

LEGEND:

MAP 254 LOT 1	ASSESSOR'S MAP NUMBER/ LOT NUMBER
AG	ABOVE GRADE
BG	BELOW GRADE
BK./PG.	BOOK/PAGE
LCA	LIMITED COMMON AREA
N/F	NOW OR FORMERLY
PUD	PLANNED UNIT DEVELOPMENT
R	RURAL
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
SRA	SINGLE RESIDENCE A
SRB	SINGLE RESIDENCE B
S.F.	SQUARE FEET
	PROPERTY LINE
	STONEWALL
	WETLAND SETBACK
	EDGE OF WETLAND
	PROPOSED EDGE OF WOODS
	WETLANDS
	ACCESS EASEMENT
	PARK & PATH EASEMENT
	DRAINAGE EASEMENT





LOCATION PLAN

NOTES:

1. THE PARCEL IS LOCATED IN THE SINGLE RESIDENCE A (SRA) & SINGLE RESIDENCE B (SRB) ZONING DISTRICTS.
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 242 AS LOT 4.
3. THE PARCEL IS LOCATED IN ZONE X AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP), FLOOD INSURANCE RATE MAP (FIRM) ROCKINGHAM COUNTY, NEW HAMPSHIRE, PANEL 270 OF 681, MAP NUMBER 33015C0270F, MAP REVISED JANUARY 29, 2021.
4. DIMENSIONAL REQUIREMENT OF OPEN SPACE RESIDENTIAL PUD (OS–PUD)

	REQUIRED:	PROPOSED:
MINIMUM LOT AREA:	10 ACRES	105.705 ACRES
MINIMUM STREET FRONTAGE:	100'	665'
MINIMUM EXTERNAL YARDS:		
FRONT:	100'	113.9'
SIDE & REAR:	50'	50.2'; 1,191.4'
MINIMUM INTERNAL YARDS:		
FRONT:	20'	20.9'
SIDE & REAR:	25'	30.0'
MINIMUM SEPARATION BETWEEN STRUCTURES:	30'	30.0'
COMMON OPEN SPACE:	25%	83%

PER THE CITY OF PORTSMOUTH ZONING ORDINANCE SECTION 10.725

5. OWNER OF RECORD:
MAP 242 LOT 4:
STELLA B. STOKEL 1993 TRUST,
NANCY A. STOKEL 1993 TRUST & PHILIP J. STOKEL
83 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#5066 PG.#1603
6. PARCEL AREA:

	SUBMITTED AREA:	COMMON AREA:	LIMITED COMMON AREA:
MAP 242 LOT 4:			
4,604,509 S.F. (105.7050 ACRES)	4,604,509 S.F. (105.7050 ACRES)	4,604,509 S.F. (105.7050 ACRES)	(SEE CHART)

7. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH THE CURRENT LEGAL DESCRIPTIONS. IT IS NOT AN ATTEMPT TO DEFINE THE EXTENT OF OWNERSHIP OR DEFINE THE LIMITS OF TITLE.
8. THE PURPOSE OF THIS PLAN IS TO DEPICT THE COMMON AREAS AND LIMITED COMMON AREAS OF MAP 242 LOT 4. CONSTRUCTION OF UNITS NOT YET BEGUN. THE FINAL METES AND BOUNDS OF THE UNITS AND THEIR ASSIGNED LIMITED COMMON AREAS SHALL BE DETERMINED BY AS–BUILT PLANS WITH AN AMENDED CONDOMINIUM SITE PLAN TO BE RECORDED UPON COMPLETION OF EACH UNIT.
9. THESE UNITS ARE FOR RESIDENTIAL USE ONLY.
10. FIELD SURVEY COMPLETED BY TCE, MVP & PJT IN APRIL–MAY 2020 USING A TOPCON DS103, TOPCON HIPER–SR, TOPCON HIPER–V AND A CARLSON RT4 DATA COLLECTOR.
11. HORIZONTAL DATUM IS NAD83 (2011) PER STATIC GPS OBSERVATIONS.
12. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL(S) WOULD DETERMINE.
13. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. TFMORAN, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE.
14. WETLAND DELINEATION WAS COMPLETED BY GOVE ENVIRONMENTAL SERVICES ON FEBRUARY 18, 2020 AND REVISED ON MAY 14, 2020 IN ACCORDANCE WITH THE 1987 ARMY CORP OF ENGINEERS WETLAND MANUAL AND THE 2012 REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION. FIELD LOCATED BY TFMORAN, INC.
15. THE UNITS SHOWN HEREON ARE TO BE SERVED BY THE CITY OF PORTSMOUTH PUBLIC WATER SUPPLY.
16. THE UNITS SHOWN HERE TO BE SERVICED BY MUNICIPAL SEWER.
17. TRASH AND SNOW REMOVAL IS THE RESPONSIBILITY OF THE PRIVATE HOMEOWNERS.

PLAN REFERENCES:

1. "PLAN OF A LOT OF LAND BELONGING TO CHARLES H. HAYES PORTSMOUTH, N.H." BY A.C. HOYT SURVEYOR, DATED JULY 1896. RCRD PLAN #0171.
2. "PLAN OF LAND FOR JOHN & MAUD HETT PORTSMOUTH, N.H. SURVEY BY ME JENKINS, LEE, N.H.", DATED DEC. 1988. RCRD PLAN #C–19399.
3. "PROPERTY OF SWIFTWATER GIRL SCOUT COUNCIL CITY OF PORTSMOUTH N.H." SURVEYED BY JON MOORE, DATED AUGUST 1972. RCRD PLAN #D–3206.
4. "SUBDIVISION OF LAND FOR ROBERT E. DOWD IN PORTSMOUTH, N.H." BY BRUCE L. POHOPEK LAND SURVEYORS DOVER, N.H., DATED MAY 31, 1978, REVISED OCT 5, 78. RCRD PLAN #D–8312.
5. "SUBDIVISION PLAN OF LAND FOR THEODORE C. BURTT BANFIELD ROAD COUNTY OF ROCKINGHAM PORTSMOUTH, N.H." BY RICHARD P. MILLETTE AND ASSOCIATES, DATED DECEMBER 1981, WITH REVISION 2 DATED JANUARY, 1982. RCRD PLAN #D–10795.
6. "STANDARD BOUNDARY SURVEY MAP 242 – LOT 1 MAP 258 – LOT 54 MAP 263 – LOT 1–6 & 2 FOR THE NATURE CONSERVANCY N.H. ROUTE 33 GREENLAND ROAD COUNTY OF ROCKINGHAM STATE OF NEW HAMPSHIRE" BY AMBIT ENGINEERING, INC., DATED FEBRUARY 2006, WITH REVISION 1, DATED 4/13/06. RCRD PLAN #D–33859.
7. "LOT LINE RELOCATION PLAN MAP R–65 LOTS 2A & 2B FOR HAROLD & MARILYN ECKER AND ELIZABETH K. HURLEY 422 & 470 BANFIELD ROAD PORTSMOUTH, N.H. COUNTY OF ROCKINGHAM" BY AMBIT ENGINEERING, INC., DATED MAY 2000, WITH REVISION 0 DATED 5/26/00. RCRD PLAN #D–28209.

LIMITED COMMON AREA	
LCA 1	7,946 S.F.
LCA 2	8,750 S.F.
LCA 3	9,275 S.F.
LCA 4	9,301 S.F.
LCA 5	9,680 S.F.
LCA 6	10,136 S.F
LCA 7	12,415 S.F.
LCA 8	13,065 S.F.
LCA 9	10,953 S.F.
LCA 10	10,486 S.F.
LCA 11	10,848 S.F.
LCA 12	11,829 S.F.
LCA 13	11,864 S.F.
LCA 14	12,399 S.F.
LCA 15	12,651 S.F.
LCA 16	11,751 S.F.
LCA 17	10,773 S.F.
LCA 18	11,325 S.F.
LCA 19	12,780 S.F.
LCA 20	16,654 S.F.
LCA 21	12,942 S.F.
LCA 22	11,522 S.F.
LCA 23	11,681 S.F.
LCA 24	11,347 S.F.
LCA 25	11,662 S.F.
LCA 26	9,226 S.F.
LCA 27	9,172 S.F.
LCA 28	9,950 S.F.

LCA 29	10,540 S.F.
LCA 30	8,810 S.F.
LCA 31	8,221 S.F.
LCA 32	6,739 S.F.
LCA 33	5,223 S.F.
LCA 34	4,640 S.F.
LCA 35	8,716 S.F.
LCA 36	6,905 S.F.
LCA 37	7,149 S.F.
LCA 38	7,852 S.F.
LCA 39	7,717 S.F.
LCA 40	7,913 S.F.
LCA 41	8,637 S.F.
LCA 42	9,011 S.F.
LCA 43	10,291 S.F.
LCA 44	12,923 S.F.
LCA 45	7,165 S.F.
LCA 46	9,901 S.F.
LCA 47	9,586 S.F.
LCA 48	8,989 S.F.
LCA 49	8,461 S.F.
LCA 50	6,828 S.F.
LCA 51	7,245 S.F.
LCA 52	8,327 S.F.
LCA 53	8,032 S.F.
LCA 54	7,946 S.F.
LCA 55	7,217 S.F.
LCA 56	7,202 S.F.

EASEMENTS AND RESTRICTIONS (E&R):

1. THE RIGHT TO USE SAID DRIVEWAY IN COMMON WITH PETER STOKEL AND HIS HEIRS FROM SAID GREENLAND ROAD, ALONG BY SAID CEMETERY, AND ALONG THE BOUNDARY BETWEEN THE LANDS OF SAID PETER AND STELLA TO SAID RAILROAD, AND SUBJECT TO SAID PETER'S RIGHT TO USE THE SAME IN COMMON. (SEE RCRD BK.#5066 PG.#1603).
2. RIGHTS OF PETER AND STELLA STOKEL AND THEIR RESPECTIVE HEIRS AND ASSIGNS SHALL HAVE EQUAL RIGHTS TO THE WATER OF SAID WELL, SAID PUMP, THE PIPES AND ANY OTHER EQUIPMENT USED NOW OR HEREAFTER IN COMMON, CHARGES OF CARE, UPKEEP, REPAIRS OR REPLACEMENT TO BE BORNE EQUALLY, WITH MUTUAL EASEMENTS TO ENTER ON THE LAND OF THE OTHER WHENEVER NECESSARY FOR ANY OF SAID PURPOSES. (SEE RCRD BK.#5066 PG.#1603).
3. 100' WIDE POWER LINE EASEMENT TO THE NEW HAMPSHIRE GAS & ELECTRIC COMPANY. (SEE RCRD BK.#1052 PG.#321).

ABUTTERS:

MAP 165 LOT 14
N/F
BOSTON & MAINE CORPORATION
IRON HORSE PARK HIGH STREET
NORTH BILLERICA, MA 01862

MAP 242 LOT 1
N/F
STATE OF NEW HAMPSHIRE
FISH & GAME DEPT
11 HAZEN DRIVE
CONCORD, NH 03301
RCRD BK.#5248 PG.#0739

MAP 242 LOT 3
N/F
NEW HOPE BAPTIST CHURCH
PO BOX 1473
PORTSMOUTH, NH 03802
RCRD BK.#2269 PG.#0663

MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF MANCHESTER CHURCH OF IMMAC CONCEPTION
153 ASH STREET
MANCHESTER, NH 03104

MAP 255 LOT 5
N/F
THOMAS E. & MARYBETH B. REIS AND JAMES B. & MEEGAN C. REIS
305 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#5560 PG.#2148

MAP 255 LOT 8
N/F
MERRIMAC VALLEY HOMES, INC.
1794 BRIDGE STREET, UNIT 6
DRACUT, MA 01826
RCRD BK.#5881 PG.#0981

MAP 256 LOT 1
N/F
SWIFT WATER GIRL SCOUT COUNCIL
ONE COMMERCE DRIVE
BEDFORD, NH 03110

MAP 265 LOT 2
N/F
MARK H. ODIORNE
520 BANFIELD ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3353 PG.#2213

MAP 265 LOT 2A
N/F
DAVID W. ECKER
875 BANFIELD ROAD
PORTSMOUTH, NH 03801
RCRD BK.#6091 PG.#0374

MAP 265 LOT 2B
N/F
LEE ANN & RICHARD M. RILEY
470 BANFIELD ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3491 PG.#2344

MAP 265 LOT 2C
N/F
APOSTOLIC CHURCH OF J CHRIST
500 BANFIELD ROAD
PORTSMOUTH, NH 03801
RCRD BK.#2739 PG.#0043

MAP 265 LOT 2D
N/F
CITY OF PORTSMOUTH DPW
PO BOX 628
PORTSMOUTH, NH 03802
RCRD BK.#2413 PG.#0222

MAP 265 LOT 2E
N/F
CITY OF PORTSMOUTH
1 JUNKINS AVENUE
PORTSMOUTH, NH 03801
RCRD BK.#5077 PG.#1943

ABUTTERS ACROSS PEVERLY HILL ROAD:

MAP 232 LOT 92
N/F
DYANNA L. INNES
78 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3754 PG.#0099

MAP 232 LOT 88
N/F
NATHAN M. & SHERRI M. TARLETON
74 LEAVITT AVENUE
PORTSMOUTH, NH 03801
RCRD BK.#5885 PG.#1471

MAP 232 LOT 93
N/F
KENNETH T. BLACK
82 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3743 PG.#1942

MAP 232 LOT 87
N/F
SUSAN L. DIXON
68 WIBIRD STREET
PORTSMOUTH, NH 03801
RCRD BK.#2504 PG.#0028

MAP 232 LOT 95
N/F
CITY OF PORTSMOUTH DPW
PO BOX 628
PORTSMOUTH, NH 03802
RCRD BK.#2247 PG.#0239

MAP 243 LOT 50
N/F
ASRT, LLC
266 MIDDLE STREET
PORTSMOUTH, NH 03801
RCRD BK.#6184 PG.#1176

MAP 243 LOT 51
N/F
AJEI REAL ESTATE LLC
163 SPINNEY ROAD
PORTSMOUTH, NH 03801
RCRD BK.#5887 PG.#0463

MAP 243 LOT 52
N/F
CITY OF PORTSMOUTH DPW
PO BOX 628
PORTSMOUTH, NH 03802
RCRD BK.#2042 PG.#0498

DIG SAFE
ME NH RI VT
811 TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

HORIZONTAL SCALE 1"=100'
100 50 0 100

I HEREBY CERTIFY THAT THIS PLAN IS ACCURATE AND COMPLIES WITH NHRSA 356–B:20(I). ALL UNITS OR PORTIONS THEREOF DEPICTED ON ANY PORTION OF THE SUBMITTED LAND OTHER THAN WITHIN THE BOUNDARIES OF ANY CONVERTIBLE LAND HAVE NOT YET BEGUN.

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION. THIS SURVEY IS AN URBAN SURVEY AS CLASSIFIED IN THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THE TRAVERSE WAS COMPLETED BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

STATE OF NEW HAMPSHIRE No. 844 J. COREY COLWELL LICENSED LAND SURVEYOR
SIGNATURE

LICENSED LAND SURVEYOR

6-23-2021
DATE

1	6/21/2021	REVISE PER REGULATORY COMMENTS	IID	BMK
REV.	DATE	DESCRIPTION	DR	CK

TAX MAP 242 LOT 4
CONDOMINIUM SITE PLAN
PEVERLY HILL ROAD
83 PEVERLY HILL ROAD
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM
OWNED BY
STELLA B. STOKEL 1993 TRUST, NANCY A. STOKEL 1993 TRUST & PHILIP J. STOKEL

SCALE: 1" = 100' (22x34)
1" = 200' (11x17)
APRIL 19, 2021

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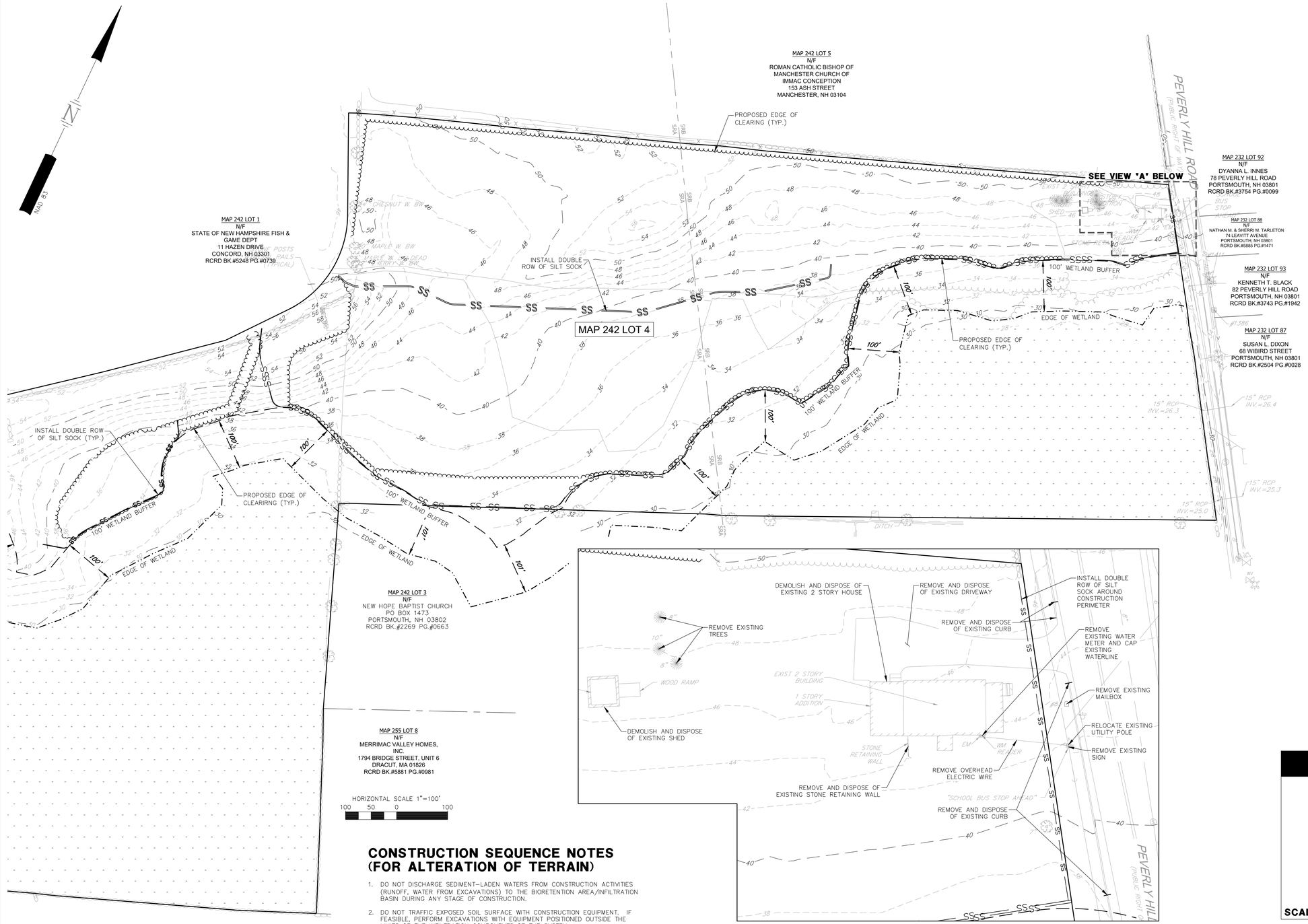
CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON DATE

Jun 21, 2021 - 10:10am
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Carlson Survey\Dwgs\47388-11_Condo Site Plan.dwg



NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATIONS, SIZE, AND ELEVATIONS OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS PRIOR TO THE START OF ANY DEMOLITION. THE LOCATIONS SHOWN ON THESE PLANS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED DEMOLITION TO DETERMINE APPROPRIATE ACTION TO BE TAKEN BEFORE PROCEEDING WITH THE WORK. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ANTICIPATE CONFLICTS AND REPAIR EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
2. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
3. THE CONTRACTOR SHALL VERIFY ALL SURVEY INFORMATION IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO THE START OF CONSTRUCTION.
4. EXISTING UTILITY SERVICES TO BE DISCONTINUED ARE TO BE CAPPED AS REQUIRED BY THE RESPECTIVE UTILITY COMPANIES.
5. CONSTRUCTION DEBRIS AND INVASIVE SPECIES SHALL BE REMOVED FROM SITE AND DISPOSED OF IN A LEGAL MANNER.
6. PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL PLACE ORANGE CONSTRUCTION FENCING AROUND EACH TREE TO BE RETAINED THROUGHOUT CONSTRUCTION. NO STOCKPILES OF MATERIAL ARE PERMITTED WITHIN THE DRIP LINE OF THE TREES TO BE SAVED.
7. CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY IF ANY TREES ARE DAMAGED DURING CONSTRUCTION.

CONSTRUCTION SEQUENCE NOTES

TO MINIMIZE EROSION AND SEDIMENTATION DUE TO CONSTRUCTION, CONSTRUCTION SHALL FOLLOW THIS GENERAL CONSTRUCTION SEQUENCE.

MODIFICATIONS TO THE SEQUENCE NECESSARY DUE TO THE CONTRACTOR'S SCHEDULE SHALL INCLUDE APPROPRIATE TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES.

THE CONTRACTOR SHALL SCHEDULE WORK SUCH THAT ANY CONSTRUCTION AREA IS STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE EXCEPT AS NOTED BELOW. NO MORE THAN 5 ACRES OF DISTURBED LAND SHALL BE UNSTABILIZED AT ANY ONE TIME.

THE PROJECT SHALL BE MANAGED SO THAT IT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER ARG 3800 RELATIVE TO INVASIVE SPECIES.

DO NOT TRAFFIC EXPOSED SOIL SURFACE OF INFILTRATION SYSTEMS WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE INFILTRATION SYSTEM. STORWATER RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMP'S ARE STABILIZED.

DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

AFTER THE INFILTRATION SYSTEM IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE THE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.

1. NOTIFY EASEMENT OWNERS PRIOR TO COMMENCEMENT OF WORK.
2. INSTALL ALL PERIMETER EROSION PROTECTION MEASURES AS INDICATED ON THE PLANS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. PONDS AND SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
4. DURING CONSTRUCTION EVERY EFFORT SHALL BE MADE TO MANAGE SURFACE RUNOFF QUALITY.
5. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT BARRIERS, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED. (TEMPORARY SEED MIXTURE OF WINTER RYE APPLIED AT A RATE OF 2.5 LBS./1000 SF SHALL BE USED).
6. CONDUCT MAJOR EARTHWORK, INCLUDING CLEARING AND GRUBBING, WITHIN THE LIMITS OF WORK. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
7. ALL STRIPPED TOPSOIL AND OTHER EARTH MATERIALS SHALL BE STOCKPILED OUTSIDE THE IMMEDIATE WORK AND WETLAND AREAS. A SILT BARRIER SHALL BE CONSTRUCTED AROUND THESE PILES IN A MANNER TO PROVIDE ACCESS AND AVOID SEDIMENT OUTSIDE OF THE WORK AREA.
8. CONSTRUCT BUILDING PAD AND COMMENCE NEW BUILDING CONSTRUCTION.
9. CONSTRUCT TEMPORARY CULVERTS AND DIVERSIONS AS REQUIRED.
10. BEGIN PERMANENT AND TEMPORARY INSTALLATION OF SEED AND MULCH.
11. PERFORM EARTHWORK NECESSARY TO ESTABLISH ROUGH GRADING AROUND PARKING FIELDS AND ACCESS DRIVES. MANAGE EXPOSED SOIL SURFACES TO AVOID TRANSPORTING SEDIMENTS INTO WETLANDS. PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
12. INSTALL SUBSURFACE UTILITIES (WATER, SEWER, GAS, ELECTRIC, COMMUNICATIONS, DRAINAGE, DRAINAGE FACILITIES, ETC.).
13. CONSTRUCT PROPOSED ROADWAY, RAIN GARDENS, GRAVEL WETLANDS AND DRAINAGE SWALES. ALL DITCHES, SWALES, AND GRAVEL WETLANDS SHALL BE FULLY STABILIZED PRIOR TO DIRECTING FLOW TO THEM.
14. COMPLETE BUILDING AND ALL OFF-SITE IMPROVEMENTS.
15. COMPLETE SEEDING AND MULCHING. SEED TO BE APPLIED WITH BROADCAST SPREADER OR BY HYDRO-SEEDING, THEN ROLLED, RAKED OR DRAGGED TO ASSURE SEED/SOIL CONTACT.
16. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE BECOME FIRMLY ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE.
17. DURING THE COURSE OF THE WORK AND UPON COMPLETION, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT DEPOSITS, EITHER ON OR OFF SITE, INCLUDING CATCH BASINS, AND SUMPS, DRAIN PIPES AND DITCHES, CURB LINES, ALONG SILT BARRIERS, ETC. RESULTING FROM SOIL AND/OR CONSTRUCTION OPERATIONS.
18. SEE WINTER CONSTRUCTION SEQUENCE FOR WORK CONDUCTED AFTER OCTOBER 15TH.

CONSTRUCTION SEQUENCE NOTES (FOR ALTERATION OF TERRAIN)

1. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA/INFILTRATION BASIN DURING ANY STAGE OF CONSTRUCTION.
2. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
3. AFTER THE BASIN IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
4. DO NOT PLACE THE BIORETENTION AREA/INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
5. DO NOT PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

SITE PREPARATION & DEMOLITION PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

SCALE: AS SHOWN **APRIL 19, 2021**

REV.	DATE	DESCRIPTION	DR	CK
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47388.11	CK	JJM	CADFILE	47388-11_SITEPREP	C-02

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JOHN J. McTIGUE No. 14950 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

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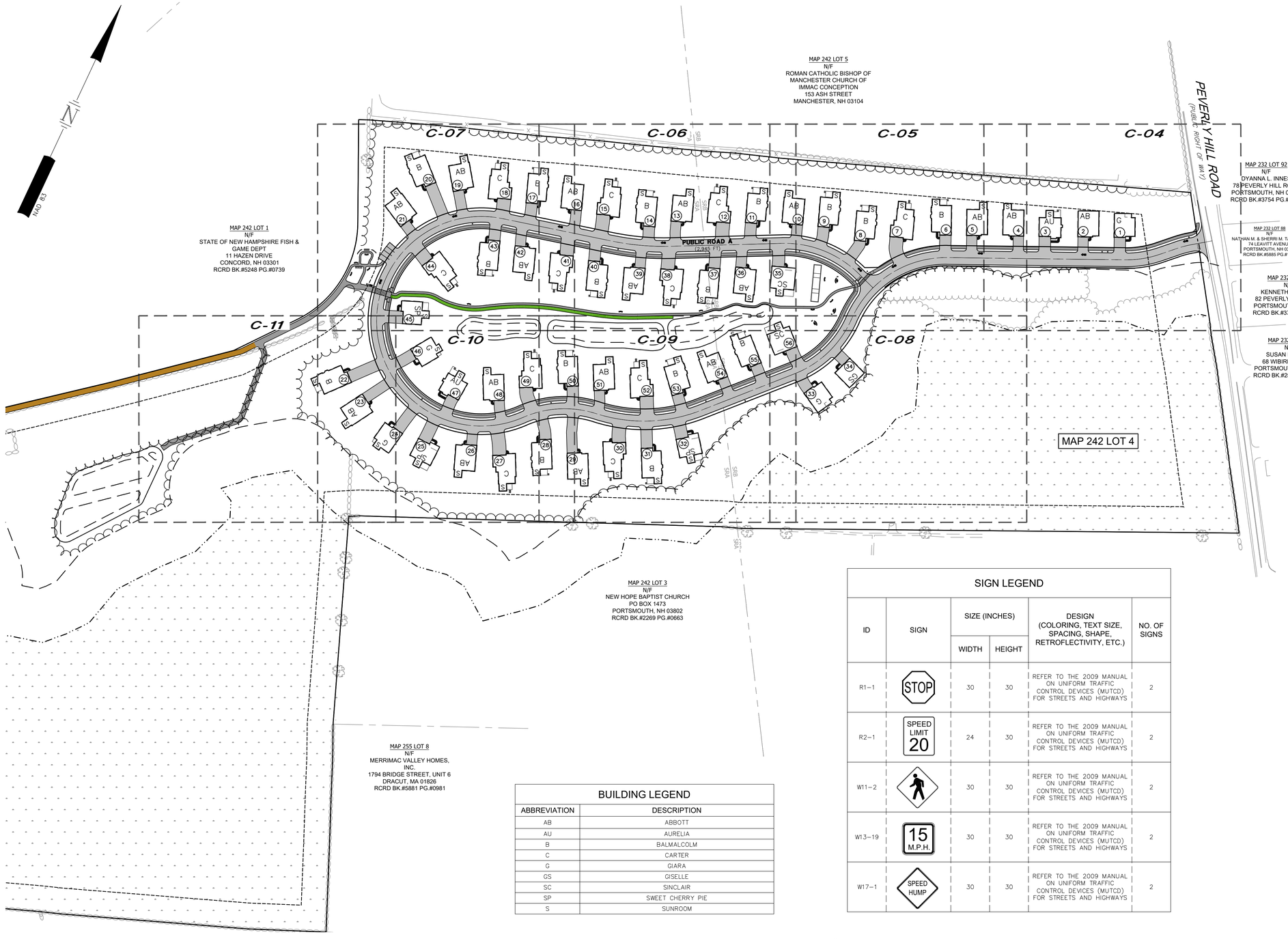

SITE DATA

OWNER OF RECORD OF MAP 242 LOT 4:
STELLA B. STOKEL 1993 TRUST
NANCY A. STOKEL 1993 TRUST & PHILIP J. STOKEL
83 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801

DEED REFERENCE TO PARCEL IS BK 5066 PG 1603
AREA OF PARCEL = 4,801,500± SF OR 110± ACRES

ZONED: SINGLE RESIDENCE A (SRA) & SINGLE RESIDENCE B (SRB)
EXISTING USE: RESIDENTIAL (SINGLE FAMILY DWELLING)
PROPOSED USE: RESIDENTIAL (OPEN SPACE PLANNED UNIT CONDOMINIUM DEVELOPMENT)

THE PURPOSE OF THIS PLAN IS TO DEPICT A DEVELOPMENT OF 56 SINGLE FAMILY CONDOMINIUM UNITS WITH ASSOCIATED ROADWAY, UTILITIES, AND SITE IMPROVEMENTS..

BASE RESIDENTIAL DENSITY CALCULATIONS:

REQUIRED BASE RESIDENTIAL DENSITY:

SRA:
- DEVELOPABLE AREA = TOTAL AREA – WETLANDS – 15% SLOPES
  = 3,938,561 SF – 1,684,960 SF – 156,927 SF
  = 2,096,674 SF
- MINIMUM LOT AREA PER DWELLING = 1 AC = 43,560 SF

SRB:
- DEVELOPABLE AREA = TOTAL AREA – WETLANDS – 15% SLOPE
  = 665,948 SF – 286,452 SF – 1,217 SF
  = 378,279 SF
- MINIMUM LOT AREA PER DWELLING = 15,000 SF

MAXIMUM UNITS FOR DEVELOPMENT = DEVELOPABLE AREA / MINIMUM LOT AREA PER DWELLING
(SRA) 2,096,674 SF / 43,560 SF = 48.1 UNITS
(SRB) 378,279 SF / 15,000 SF = 25.2 UNITS
TOTAL = 74 UNITS
PROPOSED UNITS FOR OS–PUD = 56 UNITS

PARKING CALCULATIONS:
REQUIRED: 1.3 SPACES/UNIT PLUS ONE (1) VISITOR SPACE FOR EVERY 5 DWELLING UNITS.
TOTAL REQUIRED = 84 SPACES

PROPOSED: 224 SPACES (2 GARAGE SPACES PER UNIT, PLUS 2 PRIVATE DRIVEWAY SPACES PER UNIT)

EFFECTIVE IMPERVIOUS SURFACE CALCULATIONS:
IMPERVIOUS AREA/TOTAL LOT AREA = 509,454 SF/45,832,250 SF = 0.011
TOTAL EFFECTIVE IMPERVIOUS SURFACE = 1.10%

NOTES

1. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS NOTED OTHERWISE.
2. SEE GENERAL NOTES ON NOTES & LEGEND SHEET (C–01).
3. LIGHTING, SIGNAGE, LANDSCAPING, AND SCREENING SHALL MEET THE REQUIREMENTS OF THE CITY ZONING ORDINANCE AND SITE PLAN REGULATIONS.
4. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
5. THE 2–FOOT PANEL ALONG THE EDGE OF THE ROADWAY TO BE USED FOR SNOW STORAGE.
6. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
7. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGED SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
8. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
9. BUILDING SIZE, STYLE, AND LOCATION SHOWN ARE APPROXIMATE AND FOR DEMONSTRATIVE PURPOSED ONLY. FINAL BUILDING LOCATION, SIZE, AND STYLES TO BE DETERMINED PRIOR TO ISSUANCE OF A BUILDING PERMIT, AND SHALL MEET ALL APPLICABLE CITY AND STATE REGULATIONS.
10. SETBACKS ARE BASED ON THE BUILDING WALLS NOT OVERHANGS. SEPARATION (BUILDING SEPARATION) IS BASED ON THE DEFINITION OF BUILDING COVERAGE IN THE PORTSMOUTH ZONING REGULATIONS, ARTICLE 15, DEFINITIONS. THIS EXEMPTS OVERHANGS LESS THAN 30" FROM THE VERTICAL WALL, TYING THE SETBACK TO THE VERTICAL WALL.

SIGN LEGEND

ID	SIGN	SIZE (INCHES) WIDTH	SIZE (INCHES) HEIGHT	DESIGN (COLORING, TEXT SIZE, SPACING, SHAPE, RETROFLECTIVITY, ETC.)	NO. OF SIGNS
R1–1	STOP	30	30	REFER TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS	2
R2–1	SPEED LIMIT 20	24	30	REFER TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS	2
W11–2		30	30	REFER TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS	2
W13–19	15 M.P.H.	30	30	REFER TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS	2
W17–1	SPEED HUMP	30	30	REFER TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS	2

BUILDING LEGEND

ABBREVIATION	DESCRIPTION
AB	ABBOTT
AU	AURELIA
B	BALMALCOLM
C	CARTER
G	GIARA
GS	GISELLE
SC	SINCLAIR
SP	SWEET CHERRY PIE
S	SUNROOM

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

OVERALL SITE LAYOUT PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

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PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

APRIL 19, 2021

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STATE OF NEW HAMPSHIRE – JOHN McTIGUE No. 14956 LICENSED PROFESSIONAL ENGINEER

HORIZONTAL SCALE 1"=100'
100 50 0 100

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47388.11	CK	JJM	CADFILE	47388–11_SITELAYOUT	C–03

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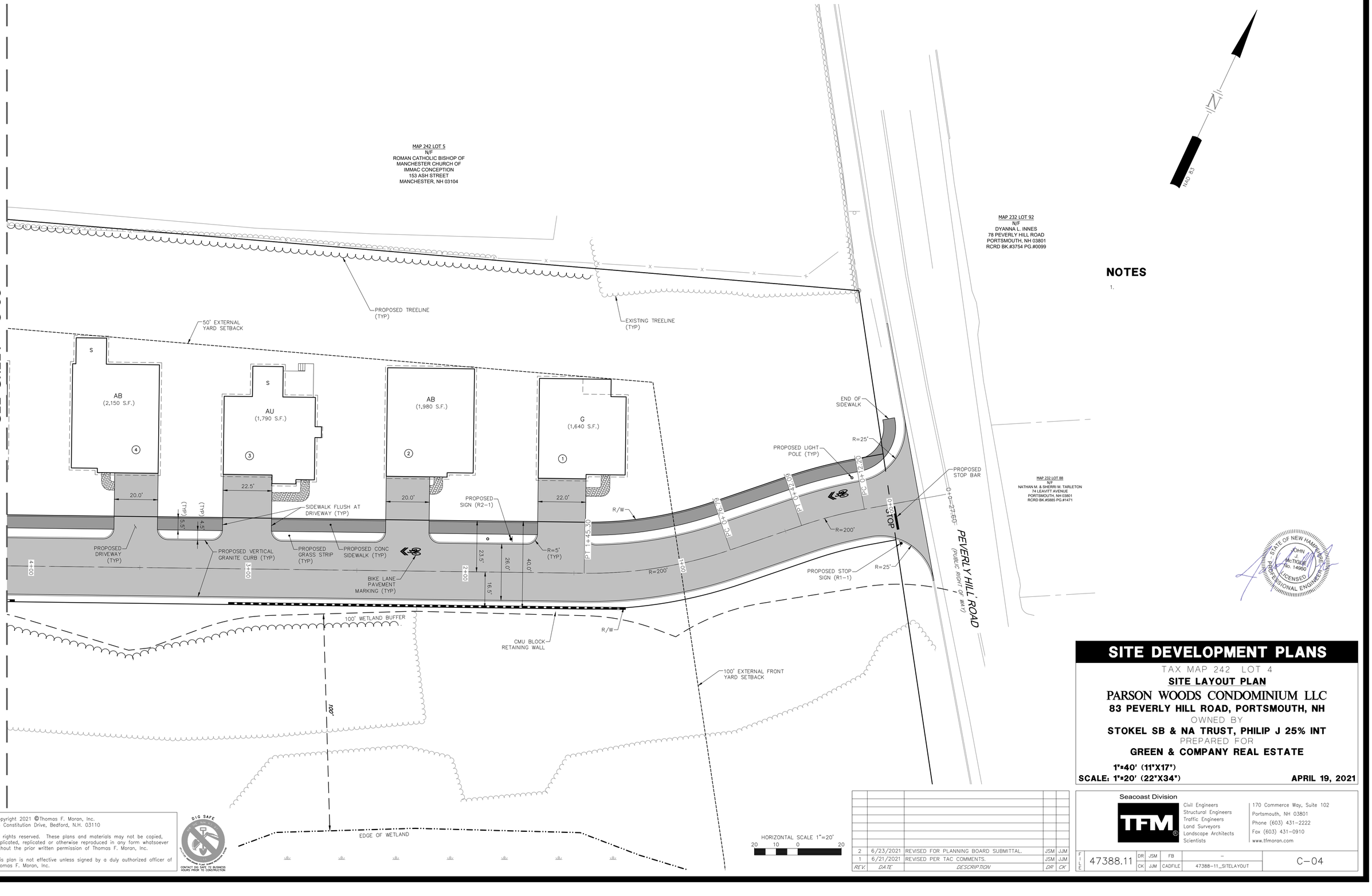

NOTES

1.

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

SITE LAYOUT PLAN

PARSON WOODS CONDOMINIUM LLC

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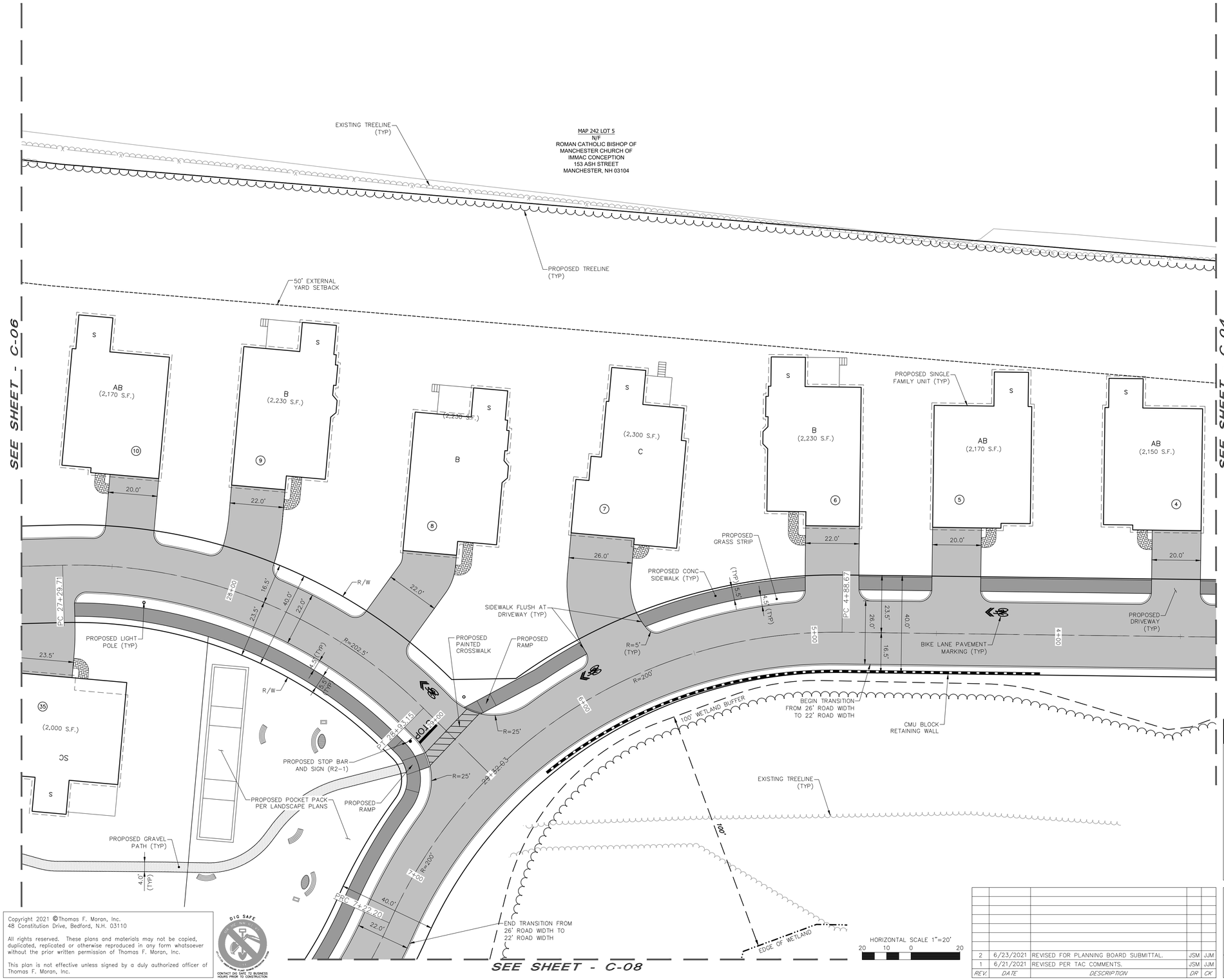

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TAX MAP 242 LOT 4

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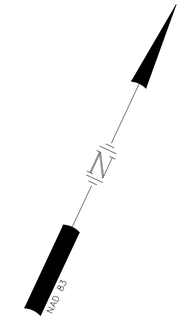

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

SITE LAYOUT PLAN

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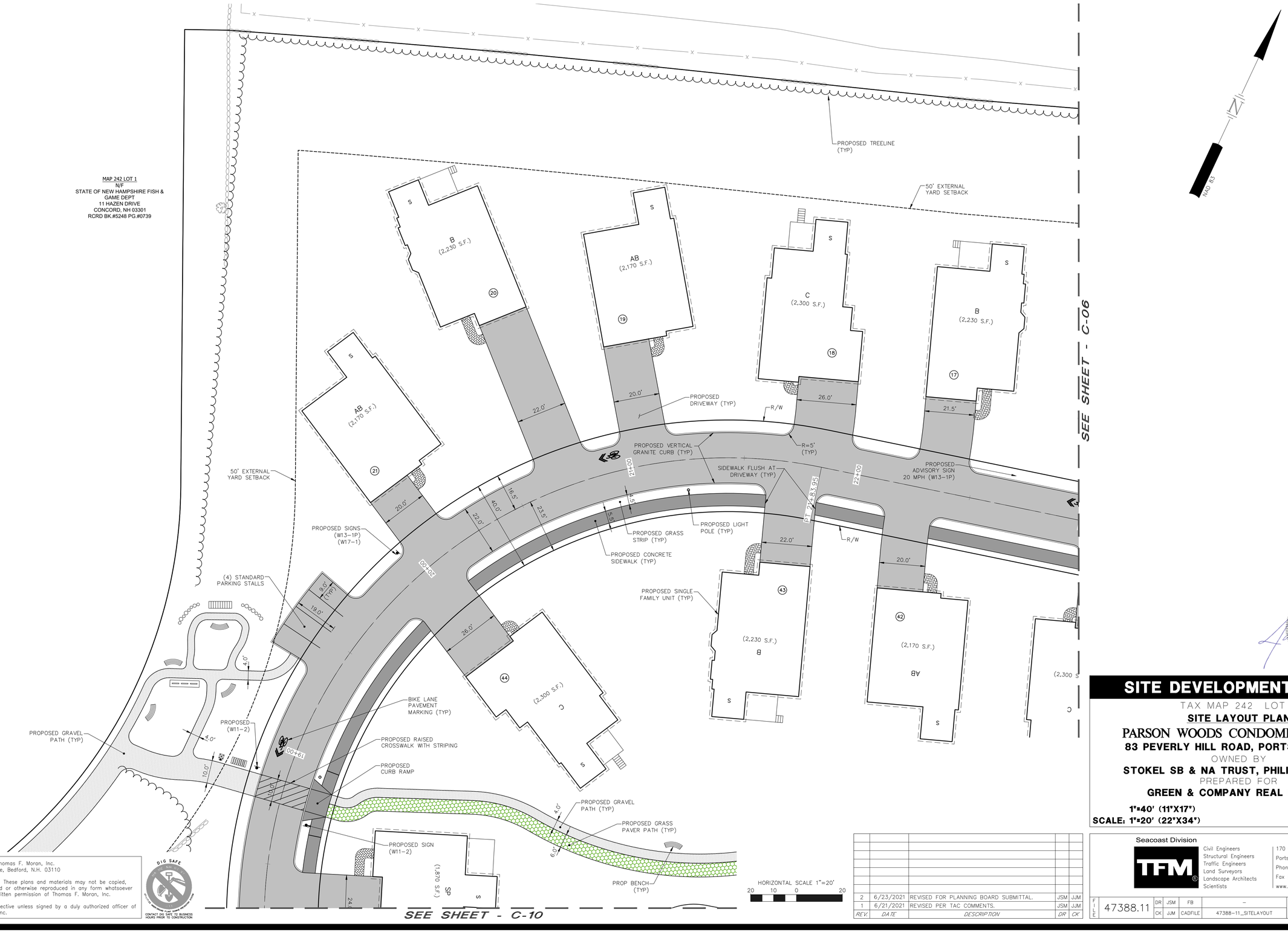

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TAX MAP 242 LOT 4

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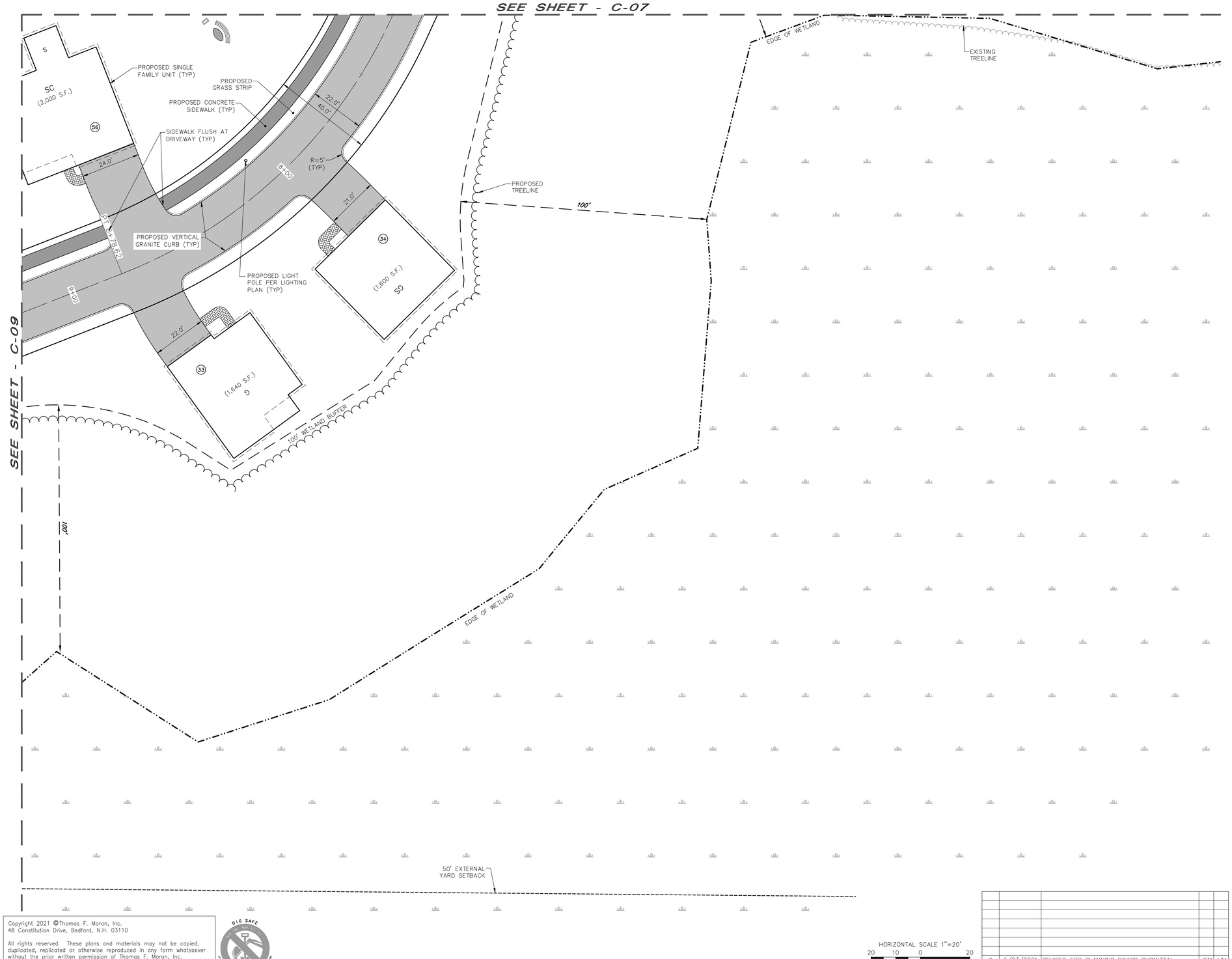

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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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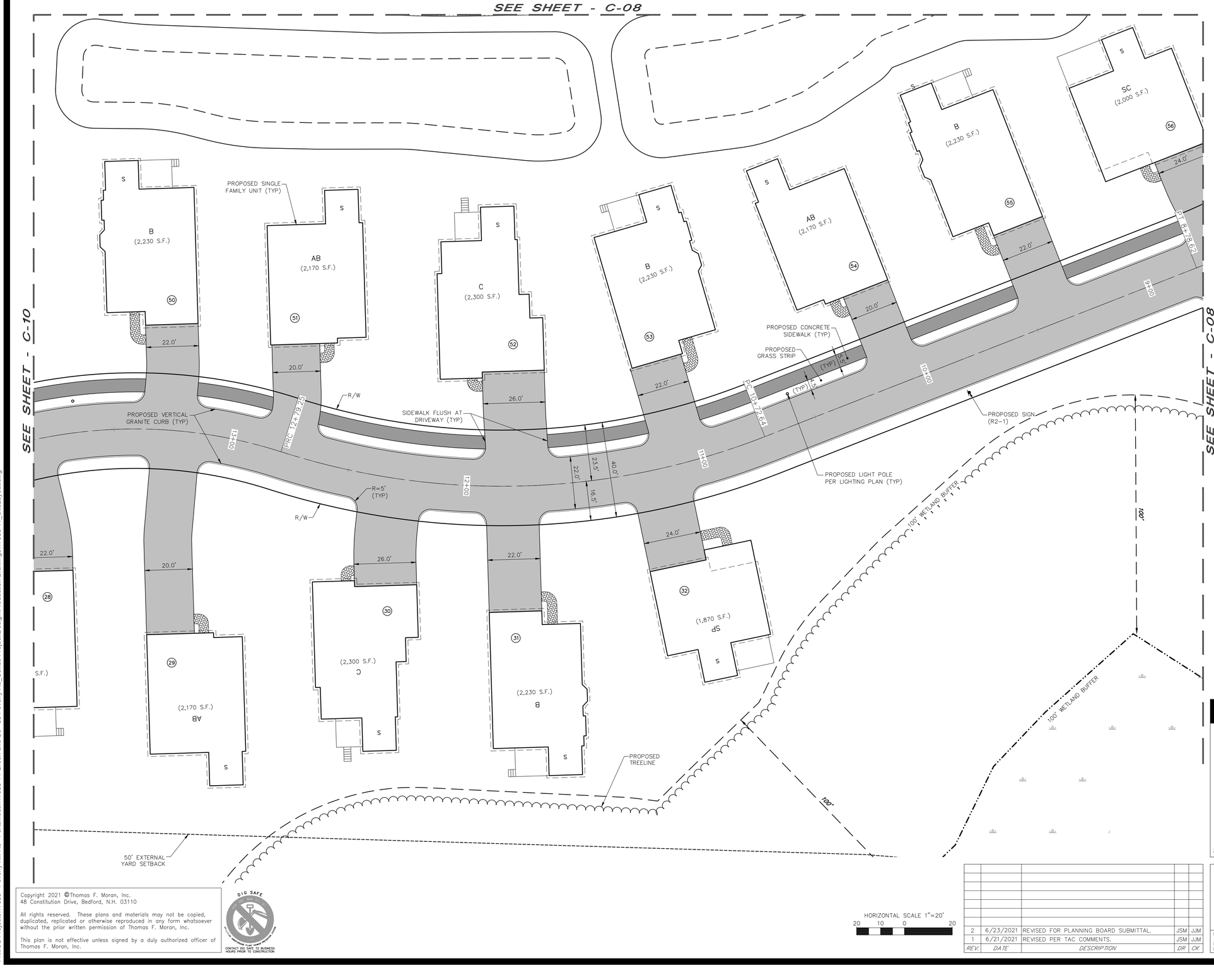

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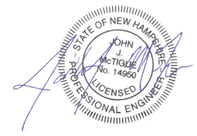

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

SITE LAYOUT PLAN

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HORIZONTAL SCALE 1"=20'

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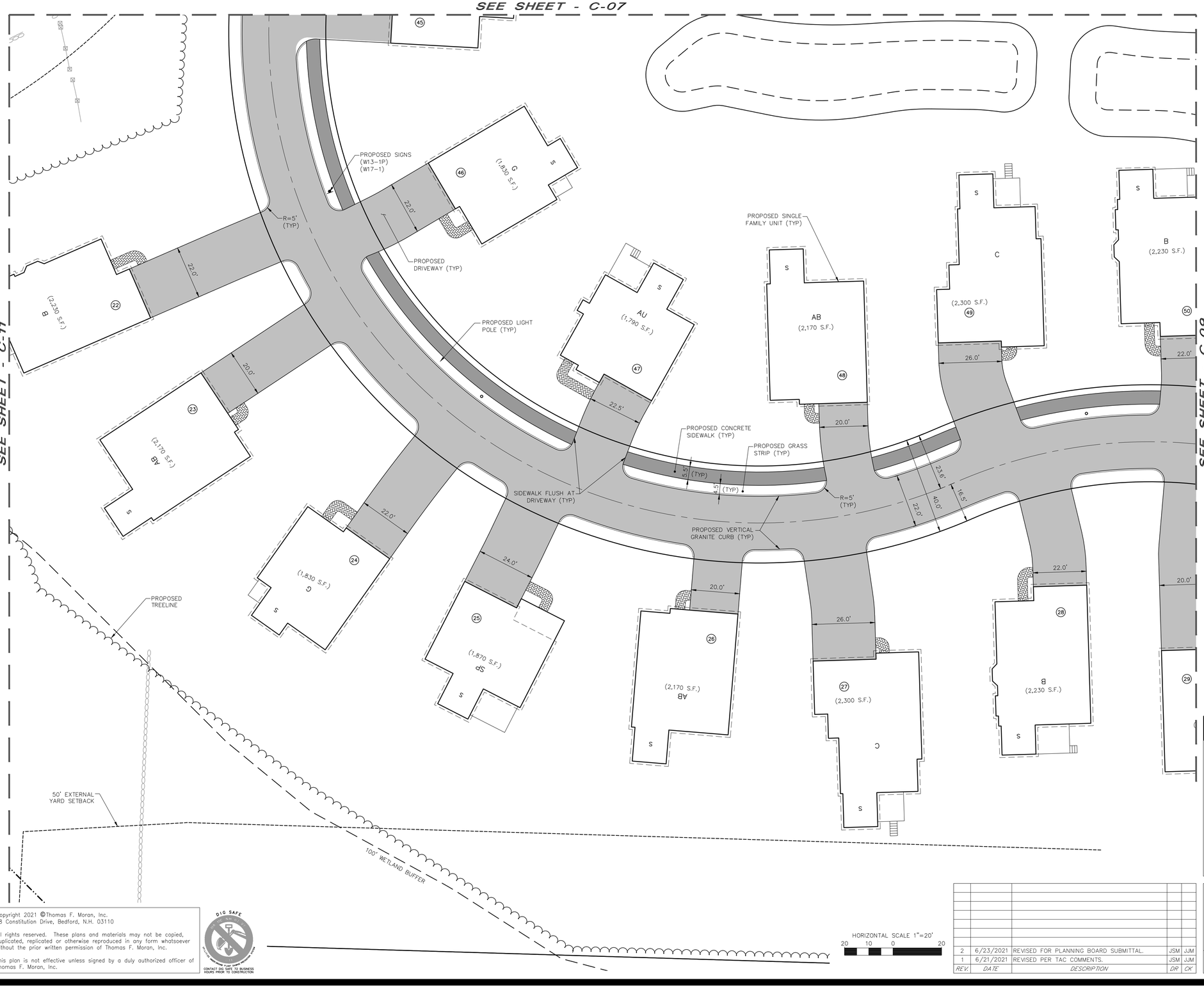

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

SITE LAYOUT PLAN

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Jun 23, 2021 - 3:28pm
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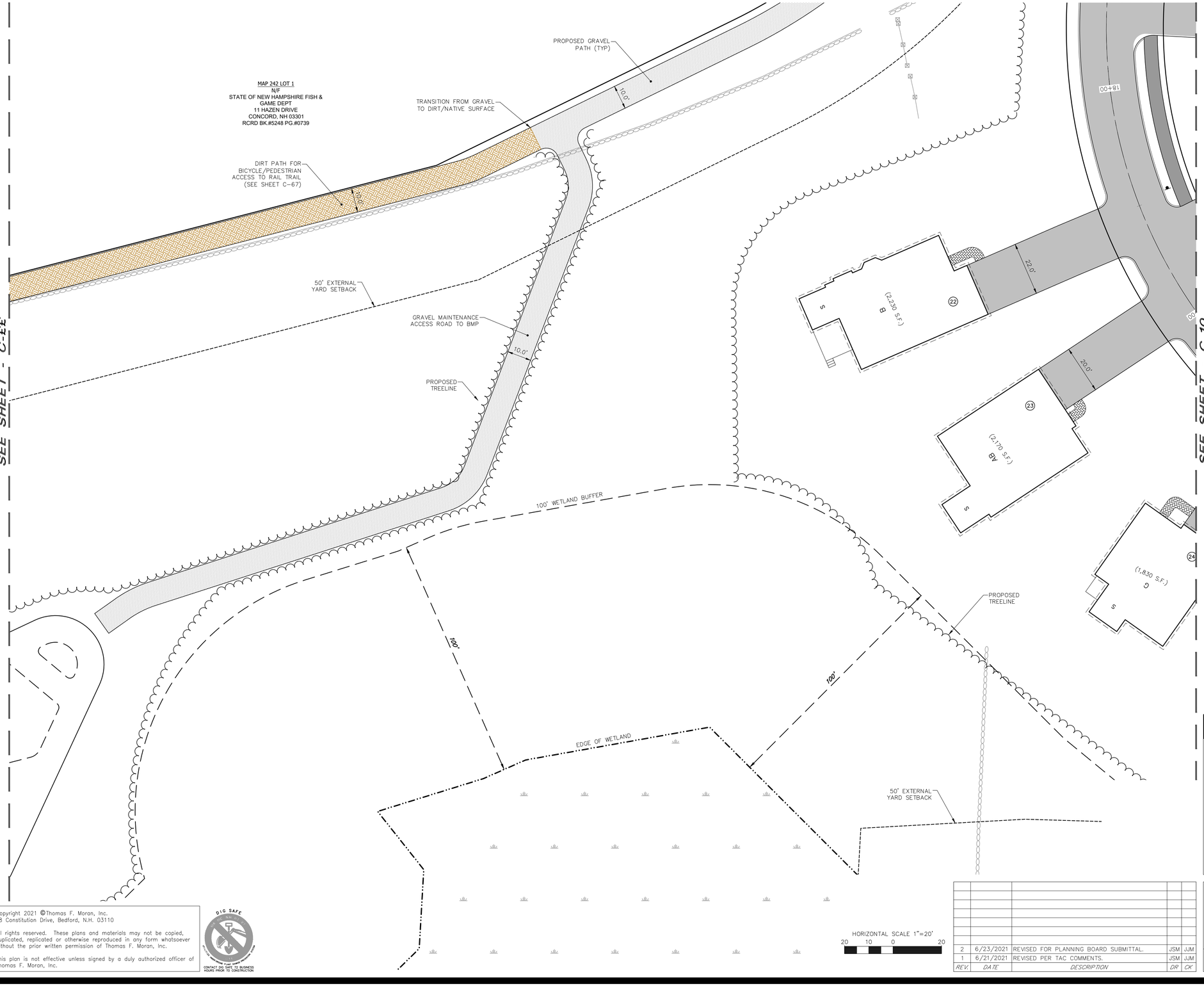

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REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

JOHN J. McTIGUE No. 14950 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

SITE LAYOUT PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

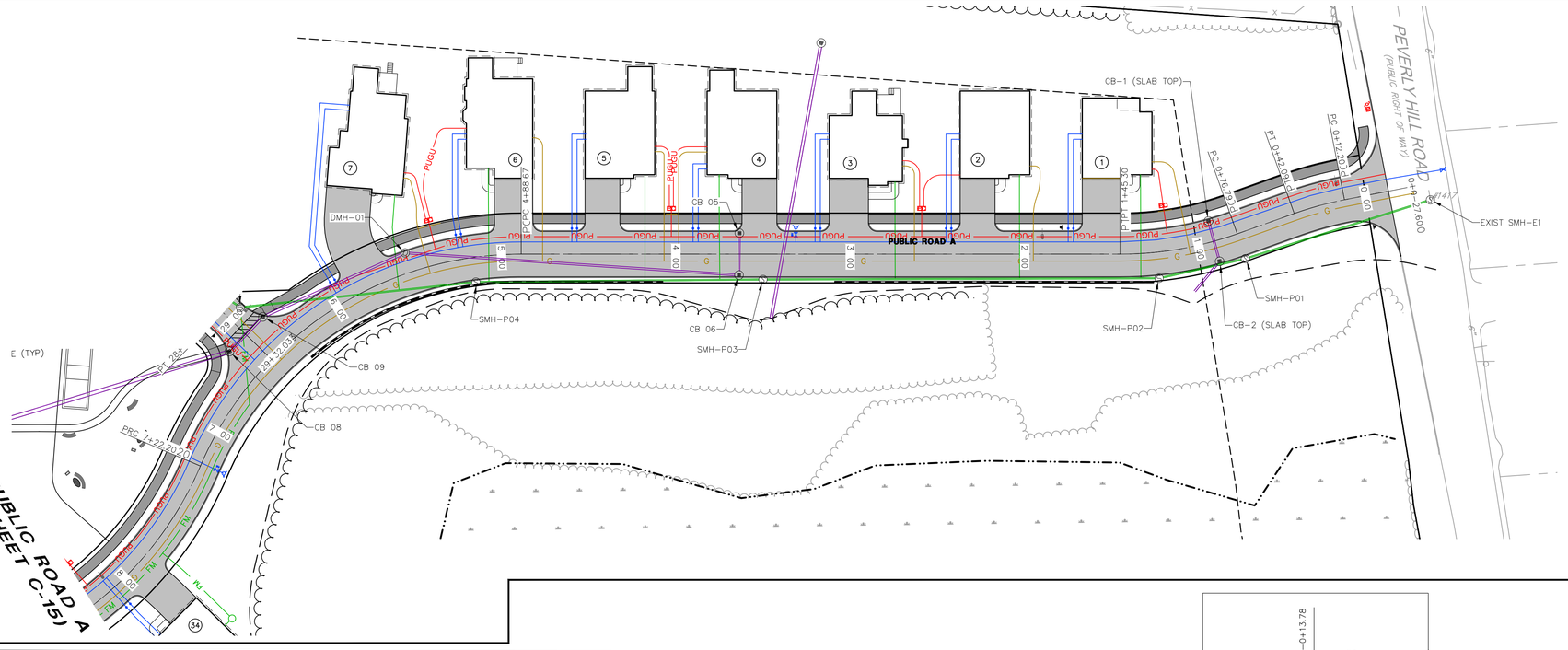
SCALE: 1"=20' (22"X34") **APRIL 19, 2021**

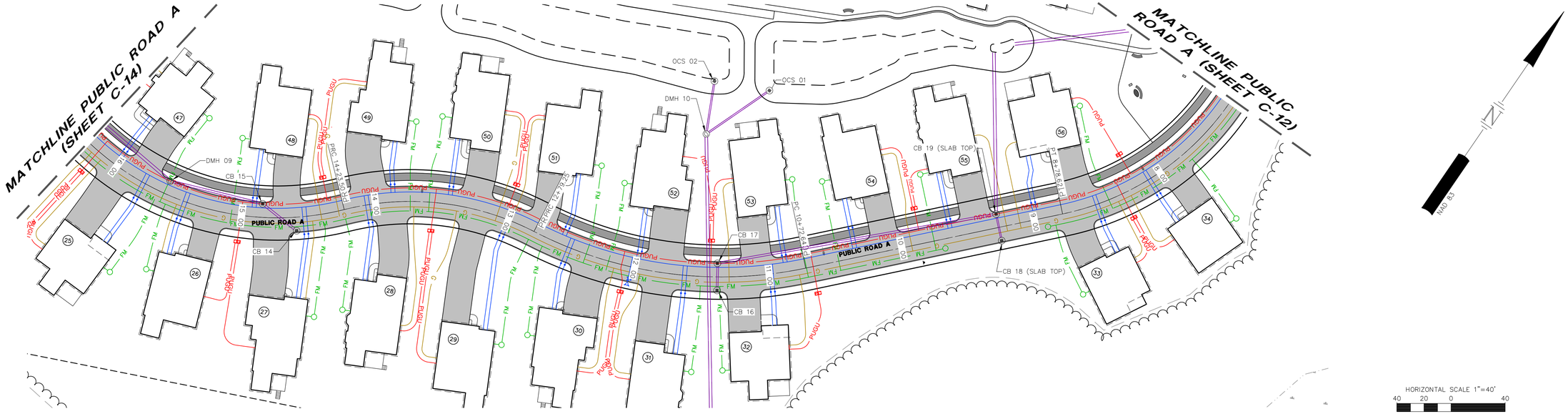
Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

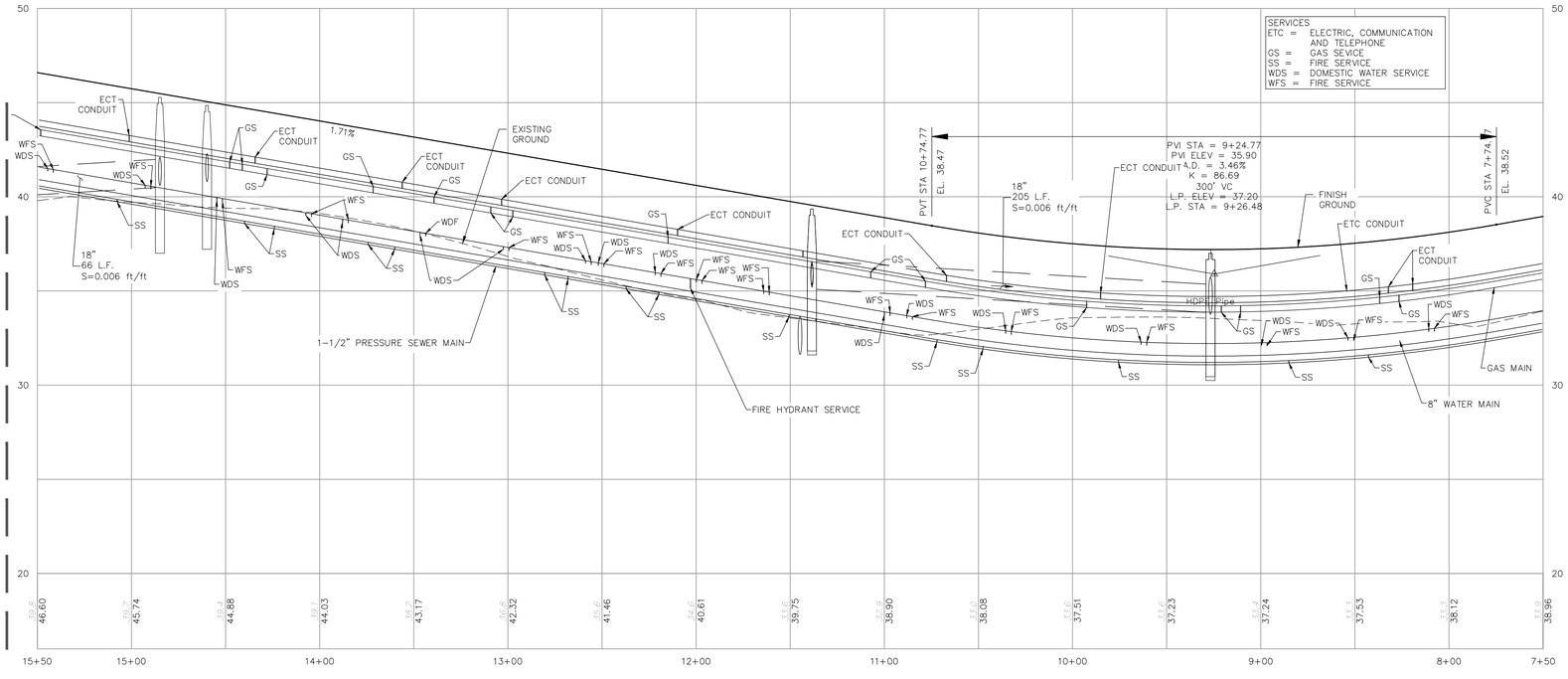
FILE	DR	JSM	FB	–	C-11
47388.11	CK	JJM	CADFILE	47388-11_SITELAYOUT	

Jun 23, 2021 - 3:26pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_SiteLayout.dwg

MATCHLINE PUBLIC ROAD A (SHEET C-13)


PEVERLY HILL ROAD
(PUBLIC RIGHT OF WAY)
PUBLIC ROAD A
CB-1 (SLAB TOP)
CB-2 (SLAB TOP)
EXIST SMH-E1
SMH-P01
SMH-P02
SMH-P03
SMH-P04
CB 05
CB 06
CB 08
CB 09
DMH-01
PC 0+44.67
PT 0+76.97
PC 0+12.20
PT 0+42.80
PC 0+76.97
PT 1+45.30
PRC 1+22.20
PRC 2+34.03
E (TYP)
R 28'
R 25'
N47°-27'-26"E 76.00'
N 42°-32'-34"W 76.00'
N





PUBLIC ROAD A

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

ROAD-A PLAN & PROFILE

PARSON WOODS CONDOMINIUM LLC

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PREPARED FOR

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1"=80' (11"X17")

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STATE OF NEW HAMPSHIRE — JOHN J. McTIGUE No. 14950 — LICENSED PROFESSIONAL ENGINEER

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Land Surveyors
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Scientists
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Phone (603) 431-2222
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FILE	DR	FB		
47388.11	JSM		–	C-13
	CK	CADFILE	47388-11_PLANPROFILE	
	JJM			

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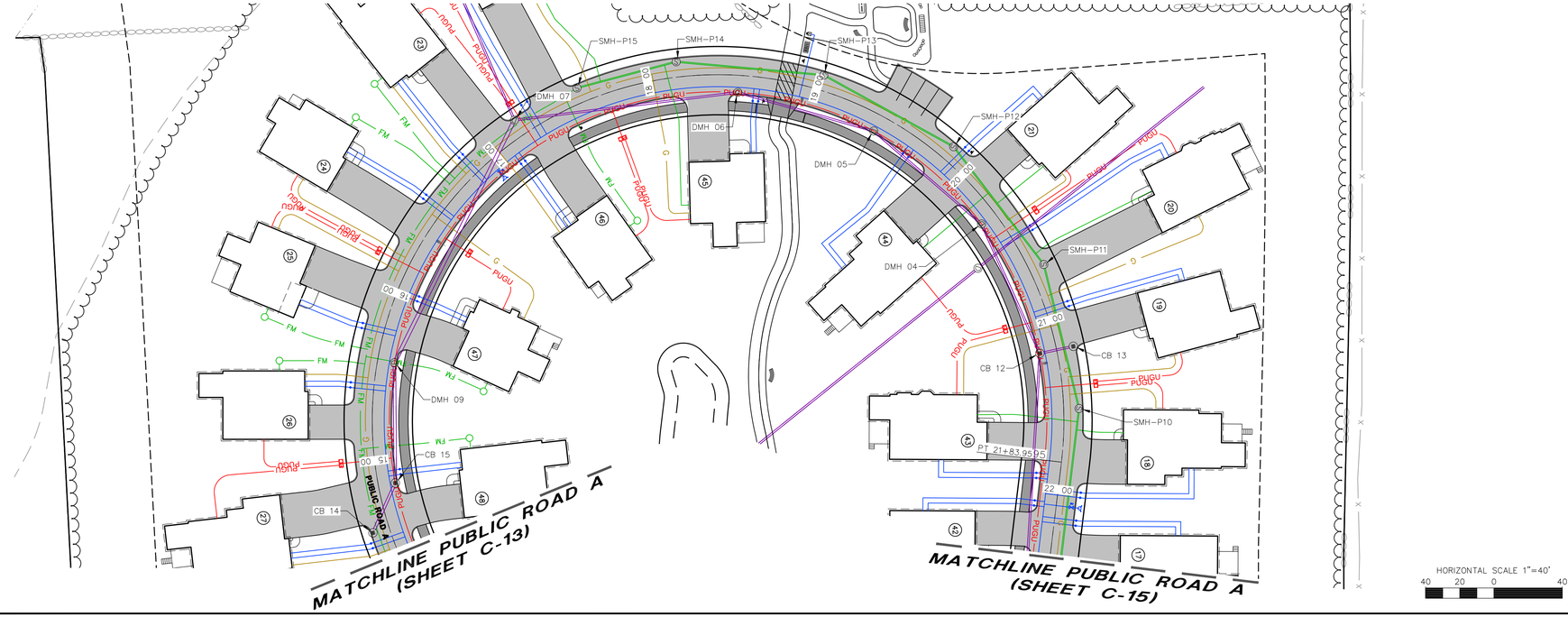

NAD 83

N

HORIZONTAL SCALE 1"=40'
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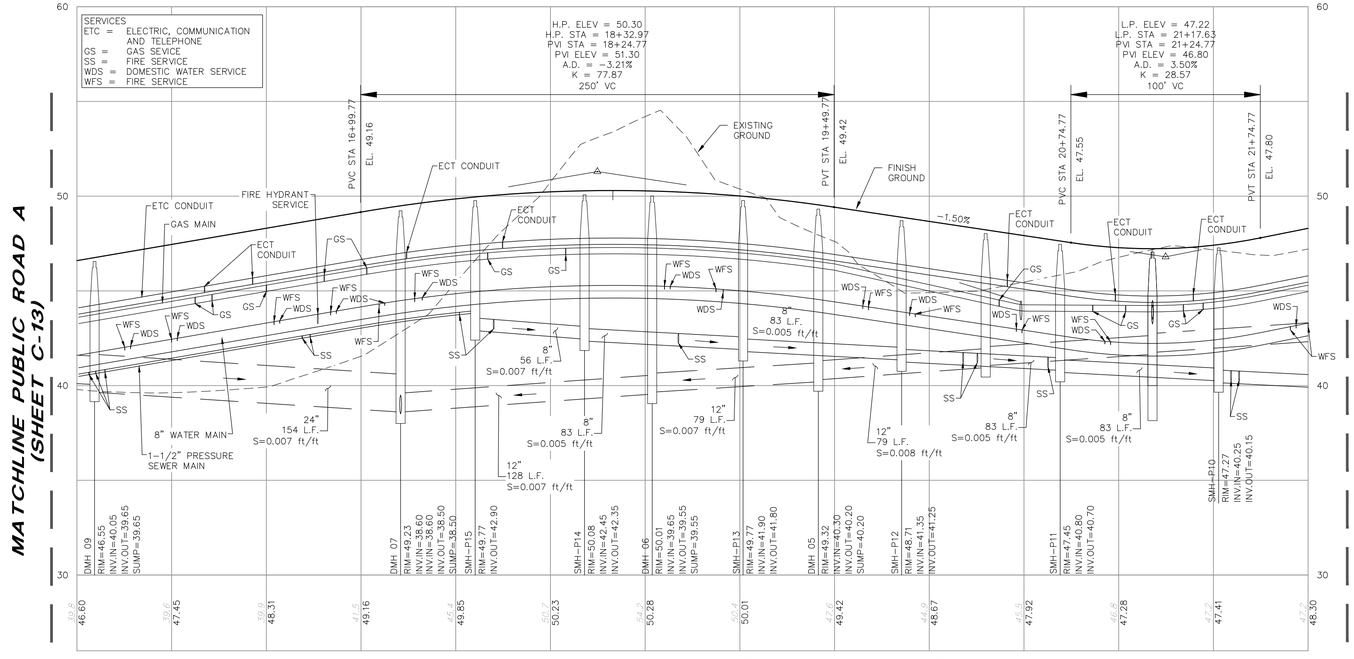

PUBLIC ROAD A

HORIZONTAL SCALE 1"=40'
4 0 4

VERTICAL SCALE 1"=4'

STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE No. 14950
LICENSED PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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FILE	DR	JSM	FB	–	C-14
47388.11	CK	JJM	CADFILE	47388-11_PLANPROFILE	

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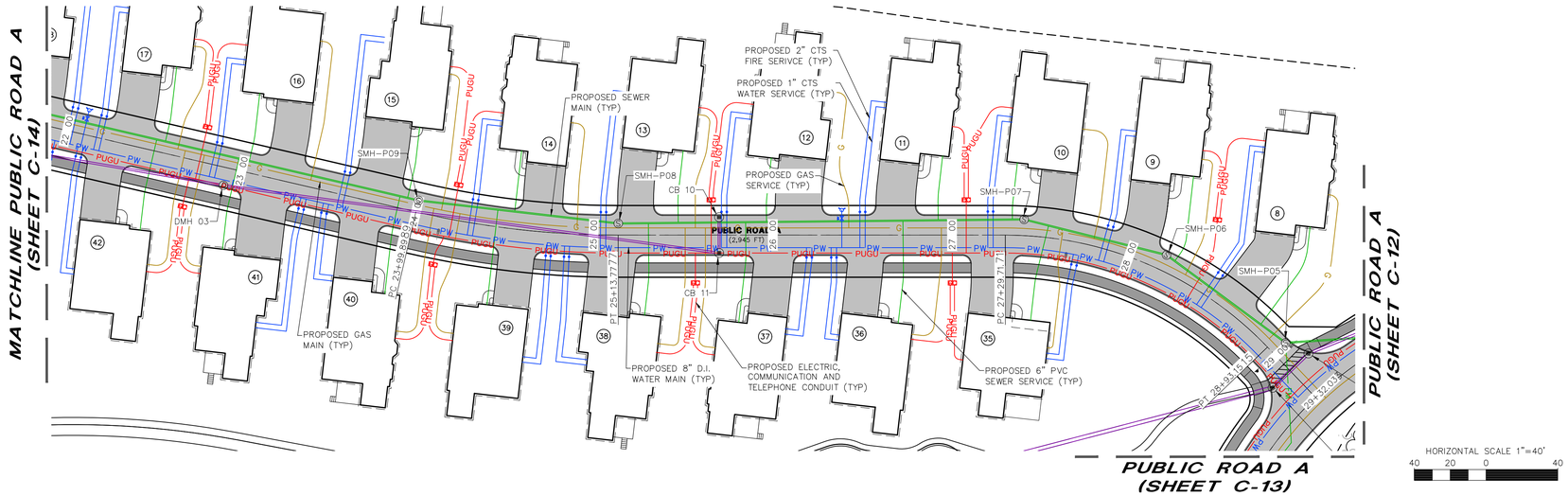

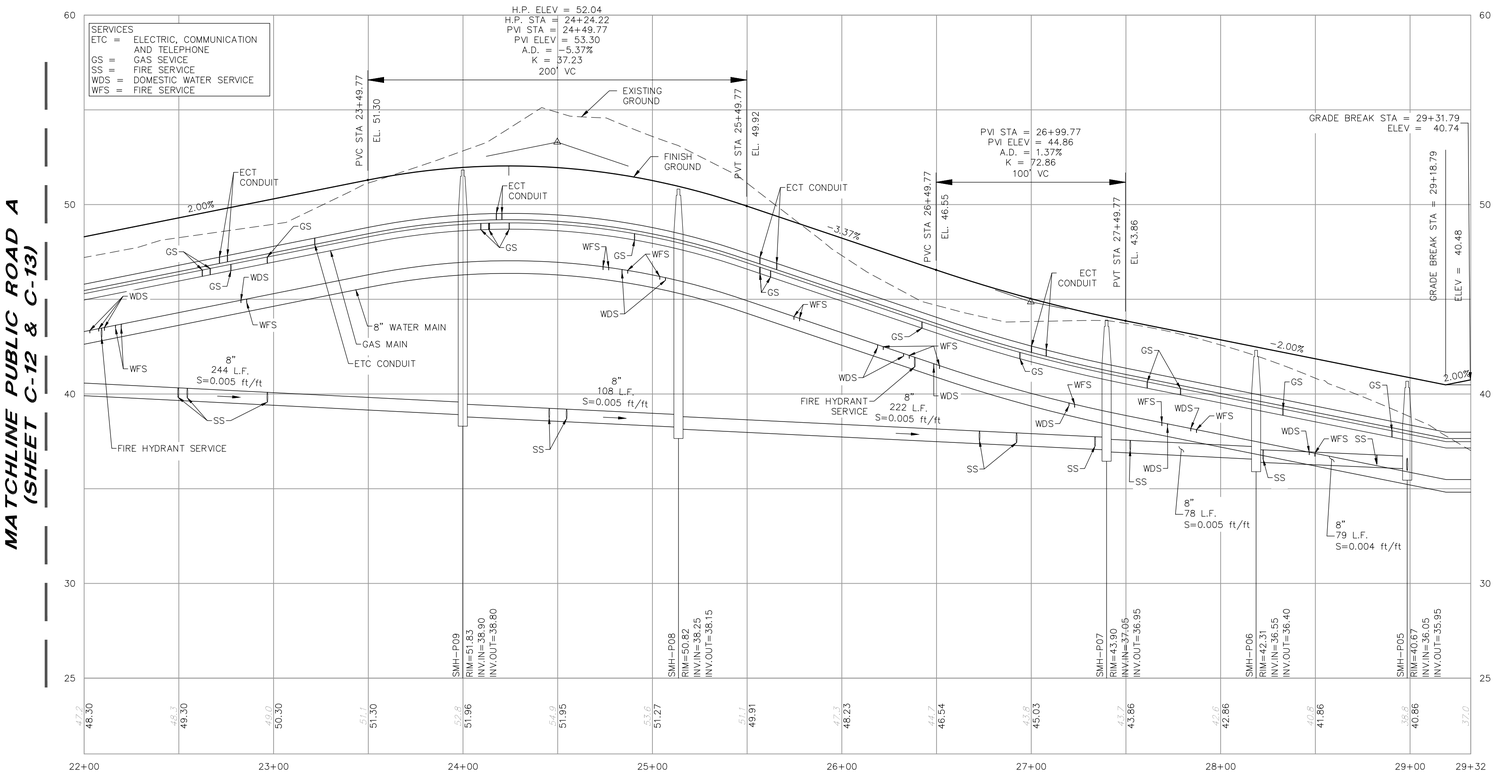

PUBLIC ROAD A

HORIZONTAL SCALE 1"=40'
40 20 0 40
VERTICAL SCALE 1"=4'
4 0 4

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I HEREBY CERTIFY THAT I AM A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE No. 14960
LICENSED PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

ROAD-A PLAN & PROFILE

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

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PREPARED FOR

GREEN & COMPANY REAL ESTATE

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FILE	DR	JSM	FB	–	C-15
47388.11	CK	JJM	CADFILE	47388-11_PLANPROFILE	

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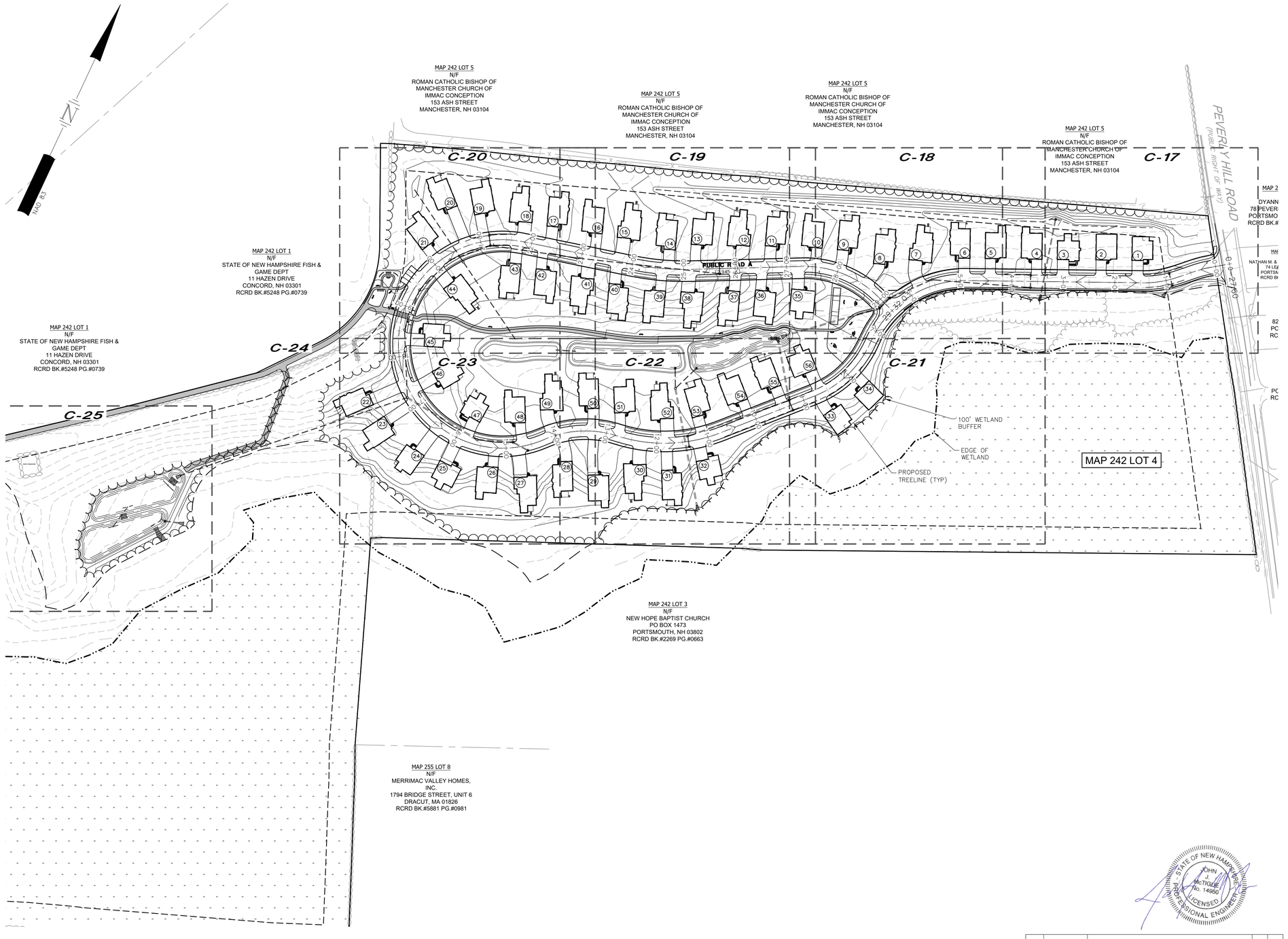

BEST MANAGEMENT PRACTICES FOR BLASTING

1. PURPOSE. THE PURPOSE OF THIS PART IS TO ESTABLISH BEST MANAGEMENT PRACTICES FOR BLASTING TO MINIMIZE THE POTENTIAL FOR GROUNDWATER CONTAMINATION, TO ENSURE THAT THE GROUNDWATER CAN BE USED FOR EXISTING AND FUTURE DRINKING WATER SUPPLY SOURCES. (SEE RN3 AT P. V) #12342, EFF 8-15-17

2. LOADING PRACTICES. THE FOLLOWING BLAST HOLE LOADING PRACTICES SHALL BE IMPLEMENTED:
   - A. THE DRILLER SHALL MAINTAIN DRILLING LOGS TO DOCUMENT:
     - I. THE DEPTHS AND LENGTHS OF VOIDS, CAVITIES, AND FAULT ZONES OR OTHER WEAK ZONES ENCOUNTERED; AND
     - II. GROUNDWATER CONDITIONS;
   - B. THE DRILLER SHALL COMMUNICATE THE CONTENTS OF THE DRILLING LOGS DIRECTLY TO THE BLASTER;
   - C. EXPLOSIVE PRODUCTS SHALL BE MANAGED ON SITE SUCH THAT THEY ARE:
     - I. USED IN THE BOREHOLE;
     - II. RETURNED TO THE DELIVERY VEHICLE; OR
     - III. PLACED IN SECURE CONTAINERS FOR OFF-SITE DISPOSAL;
   - D. SPILLAGE AROUND THE BOREHOLE SHALL BE:
     - I. PLACED IN THE BOREHOLE; OR
     - II. CLEANED UP AND RETURNED TO AN APPROPRIATE VEHICLE FOR HANDLING OR PLACEMENT IN SECURED CONTAINERS FOR OFF-SITE DISPOSAL;
   - E. LOADED EXPLOSIVES SHALL BE DETONATED AS SOON AS POSSIBLE AND NOT LEFT IN THE BLAST HOLES OVERNIGHT, UNLESS WEATHER OR OTHER SAFETY CONCERNS REASONABLY DICTATE THAT DETONATION SHOULD BE POSTPONED;
   - F. LOADING EQUIPMENT SHALL BE CLEANED IN AN AREA WHERE WASTEWATER CAN BE PROPERLY CONTAINED AND HANDLED IN A MANNER THAT PREVENTS RELEASE OF CONTAMINANTS TO THE ENVIRONMENT; AND
   - G. EXPLOSIVES SHALL BE LOADED IN ACCORDANCE WITH INDUSTRY STANDARD PRACTICES FOR PRIMING, STEMMING, DECKING AND COLUMN RISE TO MAINTAIN GOOD CONTINUITY IN THE COLUMN LOAD TO PROMOTE COMPLETE DETONATION. SOURCE. (SEE RN3 AT P. V) #12342, EFF 8-15-17

3. EXPLOSIVE SELECTION. EXPLOSIVE PRODUCTS SHALL BE SELECTED THAT ARE:
   - A. APPROPRIATE FOR SITE CONDITIONS AND SAFE BLAST EXECUTION; AND
   - B. HAVE THE APPROPRIATE WATER RESISTANCE FOR THE SITE CONDITIONS PRESENT.

4. PREVENTION OF MISFIRES. INDUSTRY-STANDARD PRACTICES SHALL BE IMPLEMENTED TO PREVENT MISFIRES.

5. MUCK AND ROCK MANAGEMENT.
   - A. FOR PURPOSES OF THIS PART, THE FOLLOWING DEFINITIONS APPLY:
     - I. "BLASTED MATERIAL" MEANS ALL OF THE EARTH MATERIAL LOOSENED AS A RESULT OF THE BLASTING;
     - II. "MUCK" MEANS THE BLASTED MATERIAL REMAINING AFTER THE ROCKS HAVE BEEN REMOVED; AND
     - III. "ROCKS" MEANS THE LARGER PIECES OF BLASTED MATERIAL THAT ARE SEPARATED FROM THE MUCK FOR USE ELSEWHERE, INCLUDING FOR FEEDSTOCK OF A ROCK CRUSHING OPERATION.
   - B. MUCK SHALL BE REMOVED FROM THE BLAST AREA AS SOON AS REASONABLY POSSIBLE.
   - C. ROCKS SHALL BE MANAGED SO AS TO PREVENT WATER SUPPLY WELLS OR SURFACE WATERS FROM BEING CONTAMINATED BY RUNOFF.

6. SPILL PREVENTION MEASURES AND SPILL MITIGATION.
   - A. FUEL AND OTHER REGULATED SUBSTANCES SHALL BE MANAGED AS REQUIRED BY ENV-WQ 401.04.
   - B. PERSONNEL WORKING AT THE BLAST SITE SHALL BE TRAINED IN HOW TO RESPOND TO A SPILL OF THE REGULATED SUBSTANCES BEING USED AT THE SITE.

7. FUELING AND MAINTENANCE OF CONSTRUCTION EQUIPMENT.
   - A. IF ANY CONSTRUCTION EQUIPMENT, INCLUDING BUT NOT LIMITED TO EARTHMOVING, EXCAVATION, AND BORING EQUIPMENT, WILL BE FUELED FROM A TANK TRUCK OR OTHER CONTAINER THAT IS MOVED AROUND THE SITE, THE FOLLOWING SHALL APPLY:
     - I. PORTABLE CONTAINMENT EQUIPMENT THAT IS SIZED TO CONTAIN THE MOST LIKELY VOLUME OF FUEL TO BE SPILLED DURING A FUEL TRANSFER SHALL BE USED, WHERE THE MOST LIKELY VOLUME TO BE SPILLED IS DETERMINED BASED ON THE FUEL TRANSFER RATE, THE AMOUNT OF FUEL BEING TRANSFERRED, THE DISTANCE BETWEEN THE HOSE NOZZLE AND PUMP SHUT OFF SWITCH, AND THE RESPONSE TIME OF PERSONNEL AND EQUIPMENT AVAILABLE AT THE FACILITY;
     - II. THE CONTAINMENT EQUIPMENT SHALL BE POSITIONED TO CATCH ANY FUEL SPILLS DUE TO OVERFILLING THE EQUIPMENT AND ANY OTHER SPILLS THAT MIGHT OCCUR AT OR NEAR THE FUEL FILLER PORT TO THAT EQUIPMENT;
     - III. THE TYPE OF CONTAINMENT EQUIPMENT USED AND ITS POSITIONING AND USE SHALL ACCOUNT FOR ALL OF THE DRIP POINTS ASSOCIATED WITH THE FUEL FILLING PORT AND THE HOSE FROM THE FUEL DELIVERY TRUCK; AND
     - IV. PERSONNEL SHALL NOT LEAVE THE IMMEDIATE AREA WHILE FUEL IS BEING TRANSFERRED, TO ENSURE THAT ANY SPILLS WILL BE OF LIMITED VOLUME.
   - B. IF THE SITE WILL HAVE A FIXED LOCATION FOR FUELING CONSTRUCTION EQUIPMENT, THE FOLLOWING SHALL APPLY:
     - I. ALL FUEL CONTAINERS, INCLUDING BUT NOT LIMITED TO SKID-MOUNTED TANKS, DRUMS, AND FIVE GALLON CANS, SHALL HAVE SECONDARY CONTAINMENT THAT:
       1. IS CAPABLE OF CONTAINING 110% OF THE VOLUME OF THE LARGEST FUEL STORAGE CONTAINER; AND
       2. HAS AN IMPERVIOUS FLOOR;
     - II. SECONDARY CONTAINMENT FOR TANKS MAY COMPRISE A METAL, PLASTIC, POLYMER OR PRECAST CONCRETE VAULT PROVIDING 110 PERCENT OF THE VOLUME OF THE LARGEST FUEL STORAGE CONTAINER;
     - III. FOR FUEL CONTAINERS, SECONDARY CONTAINMENT MAY COMPRISE CONTAINMENT PALLETS;
     - IV. THE AREA WHERE FUEL IS TRANSFERRED SHALL BE A FLAT, IMPERVIOUS AREA THAT:
       1. IS ADJACENT TO THE FUEL CONTAINER(S); AND
       2. EXTENDS BEYOND THE FULL REACH, OR LENGTH, OF THE FUEL HOSE; AND
     - V. SECONDARY CONTAINMENT AREAS MAY BE IN THE FORM OF A BASIN THAT IS:
       1. SLOPED DOWN TO A CENTRAL LOW POINT OR BERMED ALONG THE PERIMETER;
       2. LINED WITH A CONTINUOUS SHEET OF 20 MIL OR THICKER POLYMER MATERIAL OR APPROPRIATE GEOMEMBRANE LINER; AND
       3. BACKFILLED WITH AT LEAST 6 INCHES OF SAND.

NOTES:

1. A THIRD PARTY SHALL INSPECTOR SHALL BE ON SITE TO INSPECT THE INSTALLATION OF THE STORM DRAINAGE SYSTEMS.
2. SEE GRADING NOTES ON NOTES & LEGEND SHEET (C-01).
3. LOT GRADING SHOWN IS APPROXIMATE AND MAY VARY DEPENDING ON HOUSE SIZE, STYLE, AND LOCATION. STORMWATER SHALL BE DIRECTED TO AREAS SHOWN ON THIS PLAN.

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

OVERALL GRADING & DRAINAGE PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34") **APRIL 19, 2021**

STATE OF NEW HAMPSHIRE — JOHN J. McTIGUE No. 14950 — LICENSED PROFESSIONAL ENGINEER

HORIZONTAL SCALE 1"=100'
100 50 0 100

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FILE	DR	JSM	FB	–	C-16
47388.11	CK	JJM	CADFILE	47388-11_GRADINGDRAINAGE	

Jun 23, 2021 - 2:21pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_GradingDrainage.dwg

MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF
MANCHESTER CHURCH OF
IMMAC CONCEPTION
153 ASH STREET
MANCHESTER, NH 03104

MAP 232 LOT 92
N/F
DYANNA L. INNES
78 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3754 PG.#0099

MAP 232 LOT 88
N/F
NATHAN M. & SHERRI M. TAR
74 LEAVITT AVENUE
PORTSMOUTH, NH 038(
RCRD BK.#5885 PG.#14

NAD 83

PROPOSED 6" PERFORATED HDPE UNDERDRAIN ALONG BASE OF SLOPE (12" BELOW SURFACE)

DROP INLET 01
RIM=38.75
INV.OUT=36.18
SUMP=36.18

18" HDPE Pipe
159 L.F.
S=0.005 ft/ft

CB-1 (SLAB TOP)
RIM=39.17
INV.OUT=36.40
SUMP=33.40

12" HDPE Pipe
20 L.F.
S=0.006 ft/ft

CB 05
RIM=38.93
INV.OUT=35.97
SUMP=32.97

12" HDPE Pipe
20 L.F.
S=0.005 ft/ft

39.17 LP

39.38 LP

40.58 HP

TW=40.0
BW=40.0

INV. 35.37

PROPOSED UNDERDRAIN
50' ONE EACH SIDE
OF BASIN

TW=40.0
BW=39.0

TW=40.6
BW=37.6

TW=40.9
BW=37.4

TW=40.4
BW=37.4

PROPOSED UNDERDRAIN
30' ONE EACH SIDE OF BASIN

TW=40.0
BW=38.75

INV. 36.04

12" HDPE Pipe
20 L.F.
S=0.005 ft/ft

CB-2 (SLAB TOP)
RIM=39.16
INV.IN=36.25
INV.OUT=36.15
SUMP=33.15

CB 06
RIM=38.94
INV.IN=35.85
INV.OUT=35.75
SUMP=32.75

100'

0+27.60

PEVERLY HILL ROAD
(PUBLIC RIGHT OF WAY)

#1411

MATCHLINE SEE SHEET - C-18

HORIZONTAL SCALE 1"=20'
20 10 0 20

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STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE
No. 14950
LICENSED
PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

GRADING & DRAINAGE PLAN

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PROJ.	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_GRADINGDRAINAGE	C-17

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N/F
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153 ASH STREET
MANCHESTER, NH 03104

PROPOSED 6"
PERFORATED HDPE
UNDERDRAIN ALONG
BASE OF SLOPE (12"
BELOW SURFACE)

MATCHLINE SEE SHEET - C-19

MATCHLINE SEE SHEET - C-17

MATCHLINE SEE SHEET - C-21

CB 09
RIM=40.49
INV.IN=34.25
INV.OUT=34.15
SUMP=31.15

15" HDPE Pipe
85 L.F.
S=0.005 ft/ft

12" HDPE Pipe
188 L.F.
S=0.005 ft/ft

41.41 HP

CB 08
RIM=39.80
INV.IN=34.00
INV.OUT=33.90
SUMP=30.90

18" HDPE Pipe
24 L.F.
S=0.005 ft/ft

24" HDPE Pipe
188 L.F.
S=0.005 ft/ft

CB 05
RIM=38.93
INV.OUT=35.97
SUMP=32.97

12" HDPE Pipe
20 L.F.
S=0.005 ft/ft

39.17 LP

CB 06
RIM=38.94
INV.IN=35.85
INV.OUT=35.75
SUMP=32.75

TW=41.0
BW=40.5

TW=41.5
BW=37

TW=41.7
BW=39.7

TW=41.0
BW=39.0

TW=40.7
BW=38.7

TW=40.0
BW=40.0

100'

HORIZONTAL SCALE 1"=20'
20 10 0 20

NAD 83

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

GRADING & DRAINAGE PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34") **APRIL 19, 2021**

JOHN J. McTIGUE No. 14950 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	FB	–
47388.11	JSM		
	CK	CADFILE	47388-11_GRADINGDRAINAGE
	JJM		

C-18

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DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Jun 23, 2021 - 2:21pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_GradingDrainage.dwg

MATCHLINE SEE SHEET - C-20

MATCHLINE SEE SHEET - C-18

PROPOSED 6" PERFORATED HDPE UNDERDRAIN ALONG BASE OF SLOPE (12" BELOW SURFACE)

CB 10
RIM=49.01
INV.OUT=45.25
SUMP=42.25

12" HDPE Pipe
275 L.F.
S=0.007 ft/ft

52.04 HP

12" HDPE Pipe
16 L.F.
S=0.007 ft/ft

PUBLIC ROAD A
(2,945 FT)

DMH 03
RIM=49.93
INV.IN=43.05
OUT=42.95
JMP=42.95

CB 11
RIM=49.01
INV.IN=45.10
INV.OUT=45.00
SUMP=42.00

24" HDPE Pipe
188 L.F.
S=0.005 ft/ft

INV. 33.00

INV. 33.15

PROPOSED BIORETENTION AREA #1

PROPOSED BIORETENTION AREA #2

OCS 02
RIM=37.00
INV.OUT=34.00
SUMP=31.00

OCS 01
RIM=36.00
INV.OUT=32.55
SUMP=29.55

DMH 10
RIM=38.98
INV.IN=32.25

12" HDPE Pipe
36 L.F.

HORIZONTAL SCALE 1"=20'
20 10 0 20

MATCHLINE SEE SHEET - C-22

NAD 83

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

GRADING & DRAINAGE PLAN

PARSON WOODS CONDOMINIUM LLC

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SCALE: 1"=20' (22"X34")

APRIL 19, 2021

STATE OF NEW HAMPSHIRE
JOHN J. MCTIGUE No. 14980
LICENSED PROFESSIONAL ENGINEER

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Fax (603) 431-0910
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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_GRADINGDRAINAGE	C-19

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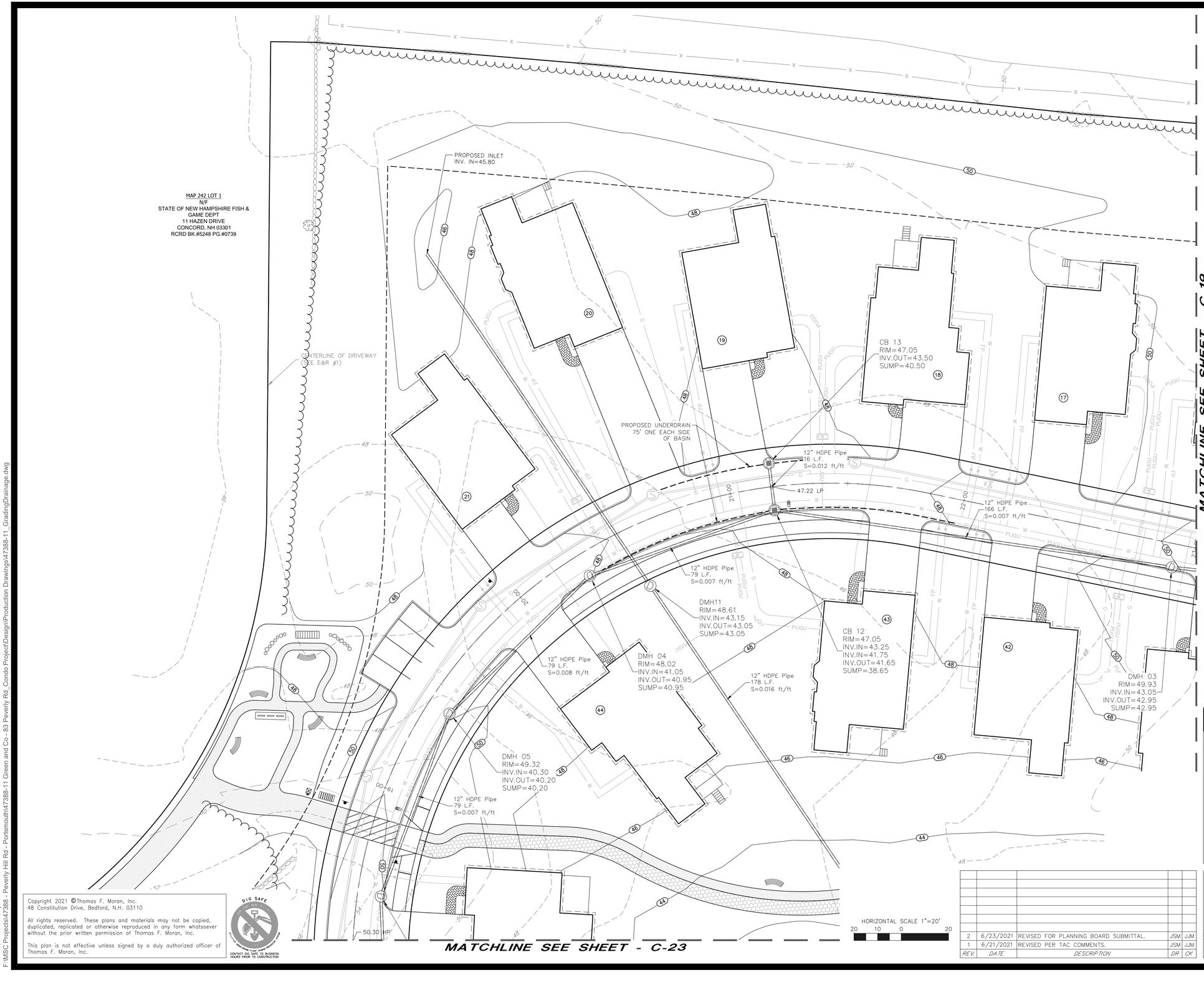
Jun 23, 2021 - 2:21pm
P:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_GradingDrainage.dwg



Jun 23, 2021 - 2:21pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_GradingDrainage.dwg

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JOHN J. McTIGUE No. 14950 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

GRADING & DRAINAGE PLAN

PARSON WOODS CONDOMINIUM LLC

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FILE	DR	JSM	FB	–	C-20
47388.11	CK	JJM	CADFILE	47388-11_GRADINGDRAINAGE	

MATCHLINE SEE SHEET - C-18

MATCHLINE SEE SHEET - C-22

24" HDPE Pipe
117 L.F.
S=0.005 ft/ft

PROPOSED UNDERDRAIN
150' ONE EACH SIDE
OF BASIN

12" HDPE Pipe
16 L.F.
S=0.005 ft/ft

CB 19 (SLAB TOP)
RIM=37.00
INV.IN=33.85
INV.IN=33.85
INV.OUT=33.75
SUMP=30.75

CB 18 (SLAB TOP)
RIM=37.00
INV.OUT=33.95
SUMP=30.95

100'

100'

NAD 83

HORIZONTAL SCALE 1"=20'
20 10 0 20

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STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE
No. 14950
LICENSED
PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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APRIL 19, 2021

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FILE	47388.11	DR	JSM	FB	–	C-21
		CK	JJM	CADFILE	47388-11_GRADINGDRAINAGE	

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MATCHLINE SEE SHEET - C-23

MATCHLINE SEE SHEET - C-21

PROPOSED BIORETENTION AREA #2

PROPOSED BIORETENTION AREA #1

OCS 02
RIM=37.00
INV.OUT=34.00
SUMP=31.00

OCS 01
RIM=36.00
INV.OUT=32.55
SUMP=29.55

DMH 10
RIM=38.98
INV.IN=32.25
INV.IN=33.50
INV.OUT=32.15
SUMP=32.15

12" HDPE Pipe
35 L.F.
S=0.013 ft/ft

12" HDPE Pipe
53 L.F.
S=0.005 ft/ft

24" HDPE Pipe
117 L.F.
S=0.005 ft/ft

CB 17
RIM=39.35
INV.IN=35.20
INV.OUT=35.10
SUMP=32.10

18" HDPE Pipe
205 L.F.
S=0.006 ft/ft

12" HDPE Pipe
16 L.F.
S=0.005 ft/ft

15" HDPE Pipe
16 L.F.
S=0.006 ft/ft

PROPOSED UNDERDRAIN
150' ONE EACH SIDE
OF BASIN

CB 19 (SLAB TOP)
RIM=37.00
INV.IN=33.85
INV.IN=33.85
INV.OUT=33.75
SUMP=30.75

CB 18 (SLAB
RIM=37.00
INV.OUT=33.
SUMP=30.95

24" HDPE Pipe
232 L.F.
S=0.005 ft/ft

CB 16
RIM=39.35
INV.OUT=35.32
SUMP=32.32

INV. 31.00'

100'

NAD 83

HORIZONTAL SCALE 1"=20'
20 10 0 20

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STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE No. 14950
LICENSED PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

GRADING & DRAINAGE PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

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PREPARED FOR

GREEN & COMPANY REAL ESTATE

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SCALE: 1"=20' (22"X34") **APRIL 19, 2021**

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FILE	47388.11	DR	JSM	FB	–	C-22
		CK	JJM	CADFILE	47388-11_GRADINGDRAINAGE	

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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_GRADINGDRAINAGE	C-23

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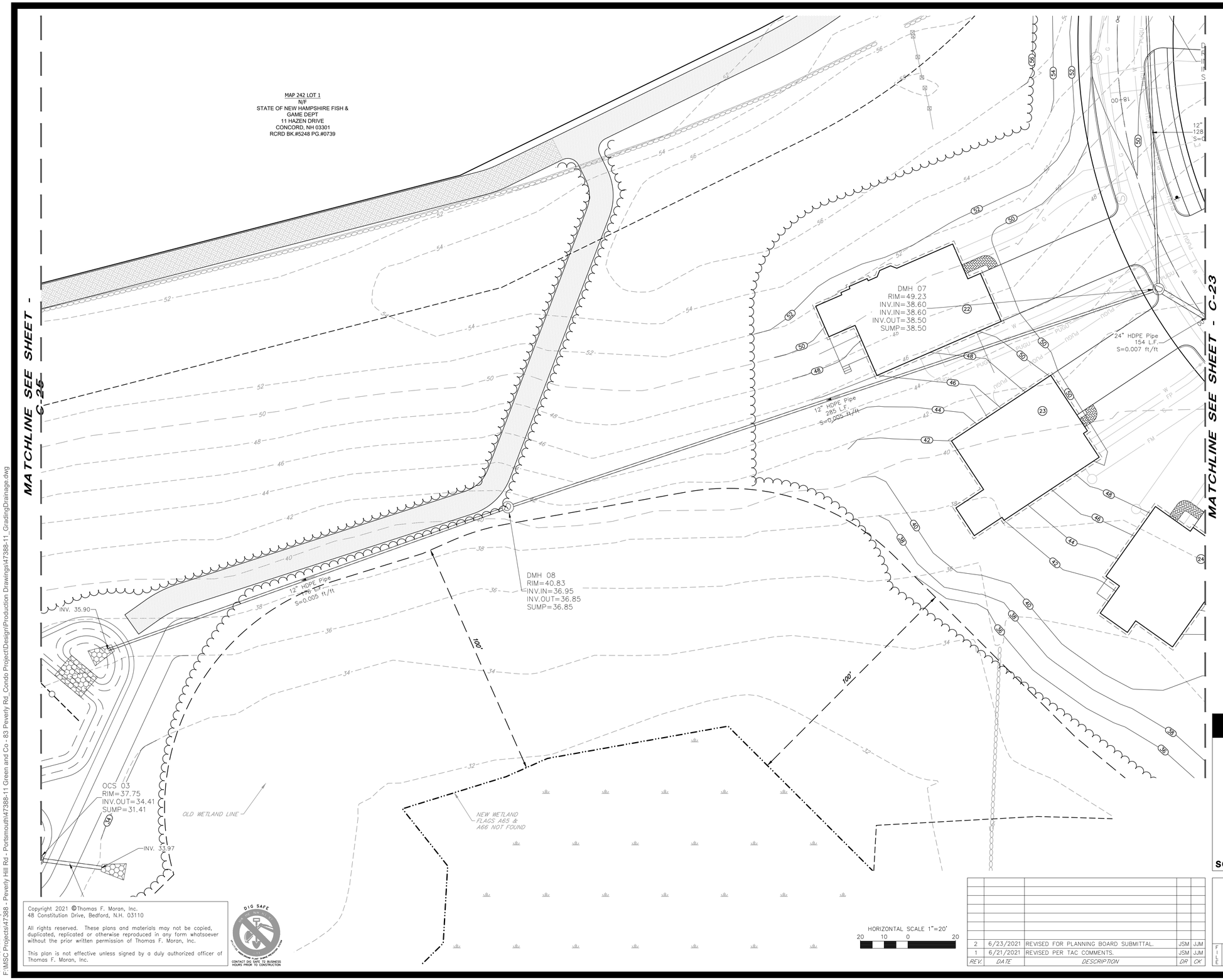

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STATE OF NEW HAMPSHIRE
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PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_GRADINGDRAINAGE	C-24

Jun 23, 2021 - 2:21pm
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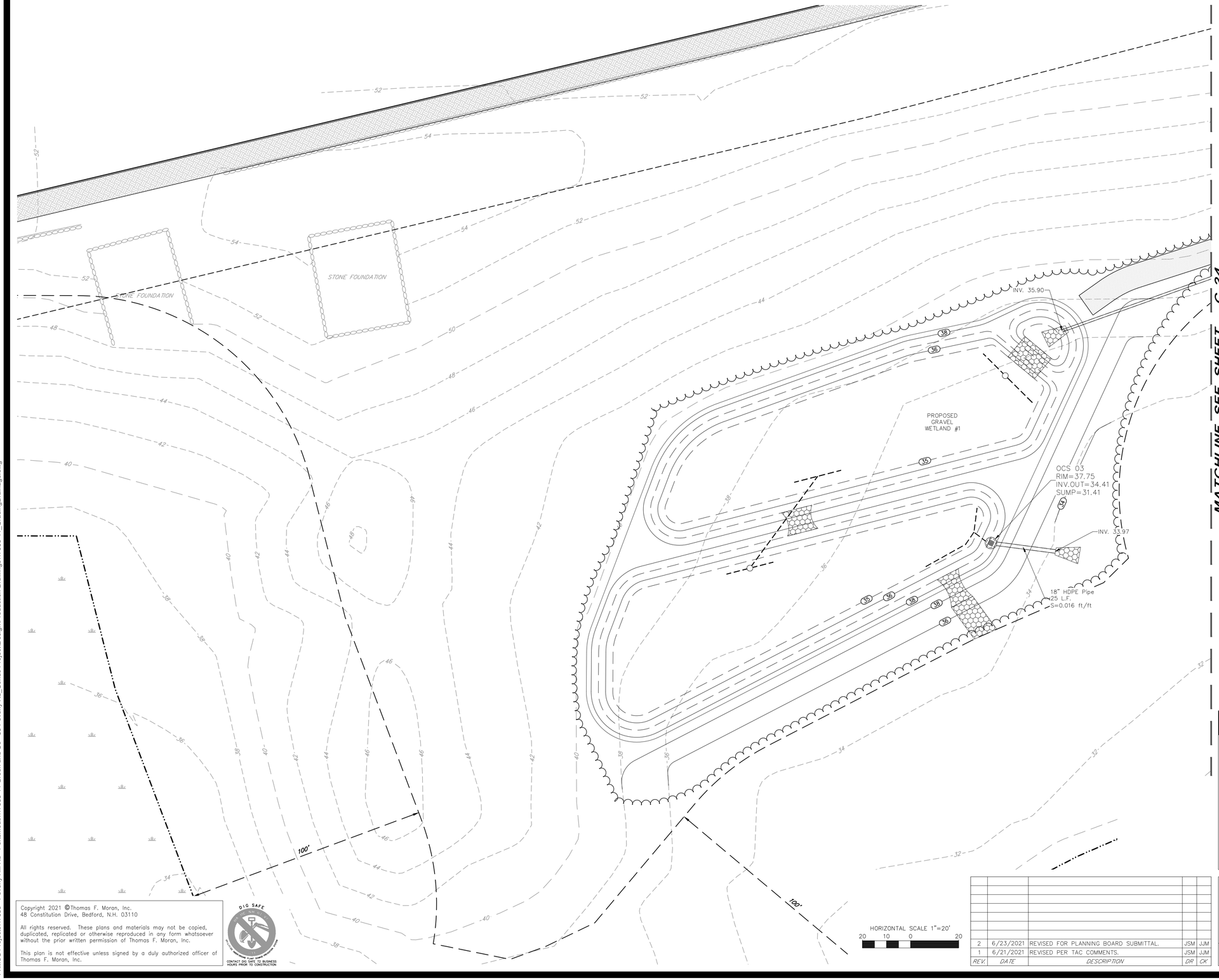

HORIZONTAL SCALE 1"=20'
20 10 0 20

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JOHN J. McTIGUE No. 14950 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

GRADING & DRAINAGE PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

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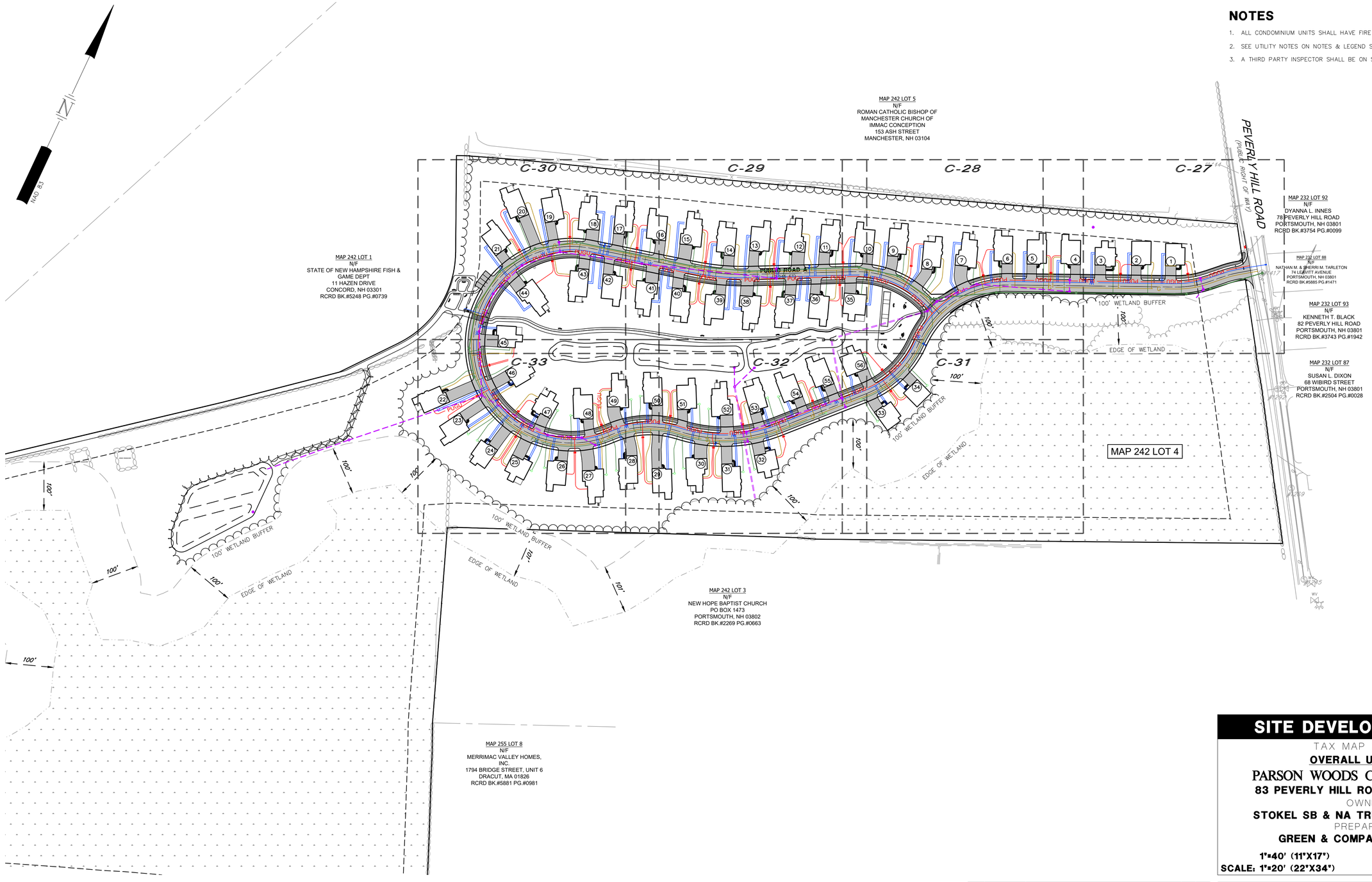
FILE	DR	JSM	FB	–	C-25
47388.11	CK	JJM	CADFILE	47388-11_GRADINGDRAINAGE	

Jun 23, 2021 - 2:21pm
F:\M&C Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_GradingDrainage.dwg

NOTES

1. ALL CONDOMINIUM UNITS SHALL HAVE FIRE SUPPRESSION SPRINKLERS SYSTEMS INSTALLED.
2. SEE UTILITY NOTES ON NOTES & LEGEND SHEET (C-01).
3. A THIRD PARTY INSPECTOR SHALL BE ON SITETO INSPECT THE INSTALLATION OF THE UTILITIES.

UTILITY COLOR LEGEND	
WATER	
SEWER	
ELECTRIC & COMMUNICATIONS	
GAS	
STORM DRAIN	



SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

OVERALL UTILITY PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

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STATE OF NEW HAMPSHIRE — JOHN J. McTIGUE No. 14950 — LICENSED PROFESSIONAL ENGINEER

HORIZONTAL SCALE 1"=100'
100 50 0 100

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FILE	DR	FB		
47388.11	JSM		–	C-26
	CK	JJM	CADFILE	47388-11_UTILITY

Jun 23, 2021 - 3:33pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_Utility.dwg

MATCHLINE SEE SHEET - C-28

MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF
MANCHESTER CHURCH OF
IMMAC CONCEPTION
153 ASH STREET
MANCHESTER, NH 03104

MAP 232 LOT 92
N/F
DYANNA L. INNES
78 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3754 PG.#0099

MAP 232 LOT 88
N/F
NATHAN M. & SHERRI M. TAR
74 LEAVITT AVENUE
PORTSMOUTH, NH 038(
RCRD BK.#5885 PG.#141

PSNH145/3 NETT3
#1444
"SPEED LIMIT 25"
NAD 83
N

PROPOSED TAPPING SADDLE AND 8" GATE VALVE (COORDINATE WITH CITY WATER DEPARTMENT)
RELOCATED UTILITY POLE (PSNH145/4 NETT4) WITH UNDERGROUND ELECTRIC & COMMUNICATION CONDUITS WITH SWEEPS FROM POLE (COORDINATE WITH UTILITY COMPANY)
#83
PROPOSED GAS SERVICE (COORDINATE WITH UTILITY COMPANY)
PROPOSED 2" CTS FIRE SERIVCE (TYP)
PROPOSED 1" CTS WATER SERVICE (TYP)
PROPOSED 6" PVC SEWER SERVICE LINE (TYP)
CONNECT TO FUTURE GAS MAIN (COORDINATE WITH UTILITY COMPANY)
#1417
EXIST SMH-E1
RIM=40.09
INV.IN=32.80
SUMP=32.80
#1411
PEVERLY HILL ROAD
(PUBLIC RIGHT OF WAY)
PROPOSED HYDRANT AND VALVE (TYP)
PROPOSED 8" D.I. WATER MAIN
8" 223 L.F. S=0.0 ft/ft
8" 107 L.F. S=0.0 ft/ft
8" 47 L.F. S=0.0 ft/ft
SMH-P03
RIM=39.64
INV.IN=34.70
INV.OUT=34.60
SUMP=34.60
SMH-P02
RIM=39.96
INV.IN=33.65
INV.OUT=33.55
SUMP=33.55
SMH-P01
RIM=39.79
INV.IN=33.35
INV.OUT=33.25
SUMP=33.25
PROPOSED GAS MAIN (COORDINATE WITH UTILITY COMPANY)
PROPOSED ELECTRIC CONTROL PANEL AND ELECTRIC SERVICE (TYP)
PROPOSED CURB STOP (TYP)
PROPOSED UNDERGROUND UTILITIES (COORDINATE WITH UTILITY COMPANY)
PROPOSED UNDERGROUND UTILITIES (COORDINATE WITH UTILITY COMPANY)
100' WETLAND BUFFER
100'
EDGE OF WETLAND
PSNH145/5 FP93/5
PSNH
PI 1+45.30
4+00
3+00
2+00
1+00
0+00
0+21.50
0+60.00
0+90.00
1+20.00
1+50.00
1+80.00
2+10.00
2+40.00
2+70.00
3+00.00
3+30.00
3+60.00
4+00.00
4+30.00
4+60.00
4+90.00
5+20.00
5+50.00
5+80.00
6+10.00
6+40.00
6+70.00
7+00.00
7+30.00
7+60.00
7+90.00
8+20.00
8+50.00
8+80.00
9+10.00
9+40.00
9+70.00
10+00.00
10+30.00
10+60.00
10+90.00
11+20.00
11+50.00
11+80.00
12+10.00
12+40.00
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13+00.00
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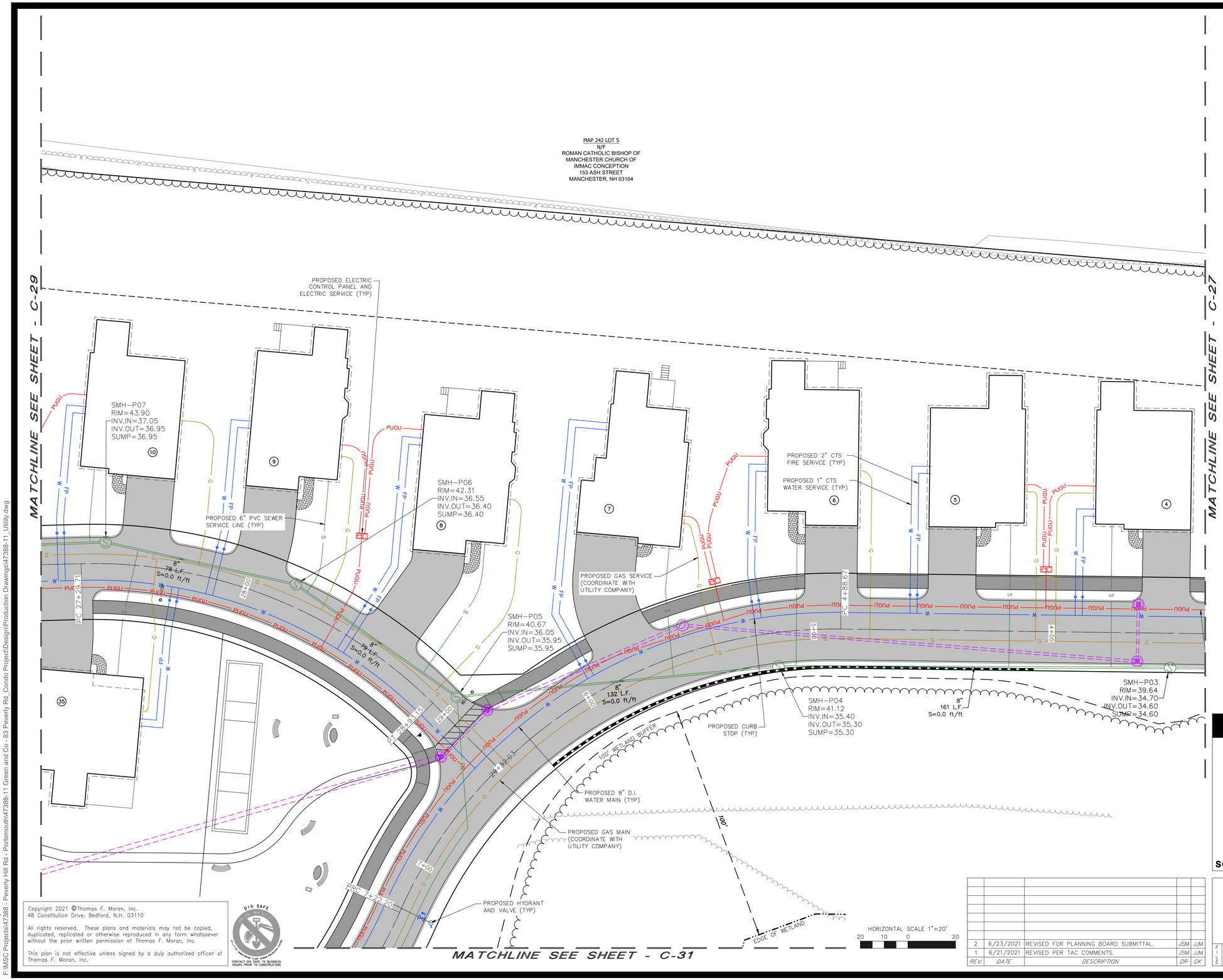
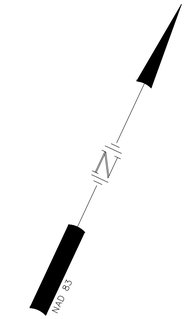
15+70.00





SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

UTILITY PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34") **APRIL 19, 2021**

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1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

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Land Surveyors
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Scientists
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Portsmouth, NH 03801
Phone (603) 431-2222
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FILE	DR	JSM	FB	–	C-28
47388.11	CK	JJM	CADFILE	47388-11_UTILITY	

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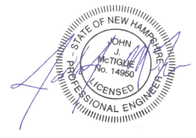

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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PROJECT	47388.11	DR	JSM	FB	–	C-29
		CK	JJM	CADFILE	47388-11_UTILITY	

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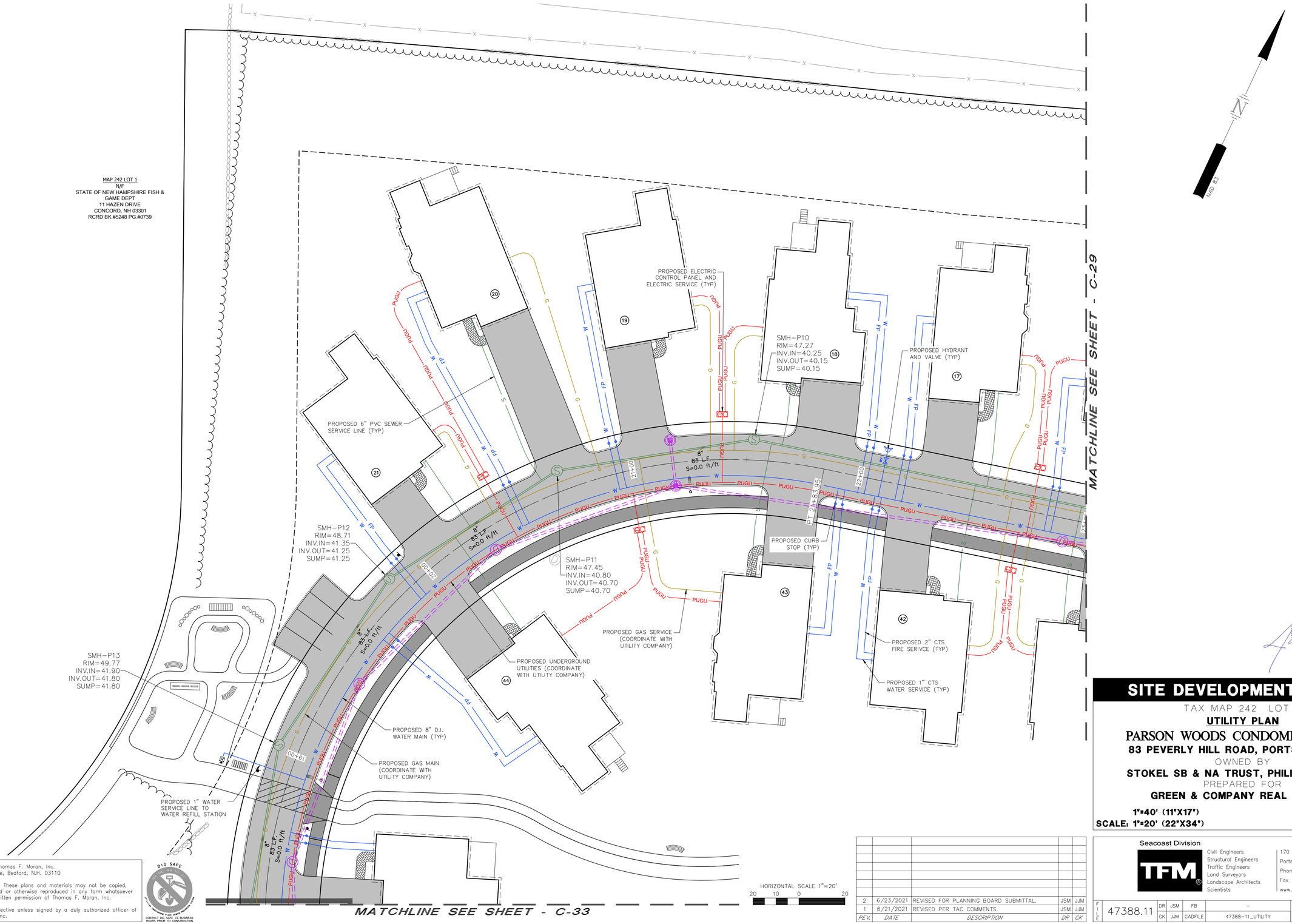

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TAX MAP 242 LOT 4

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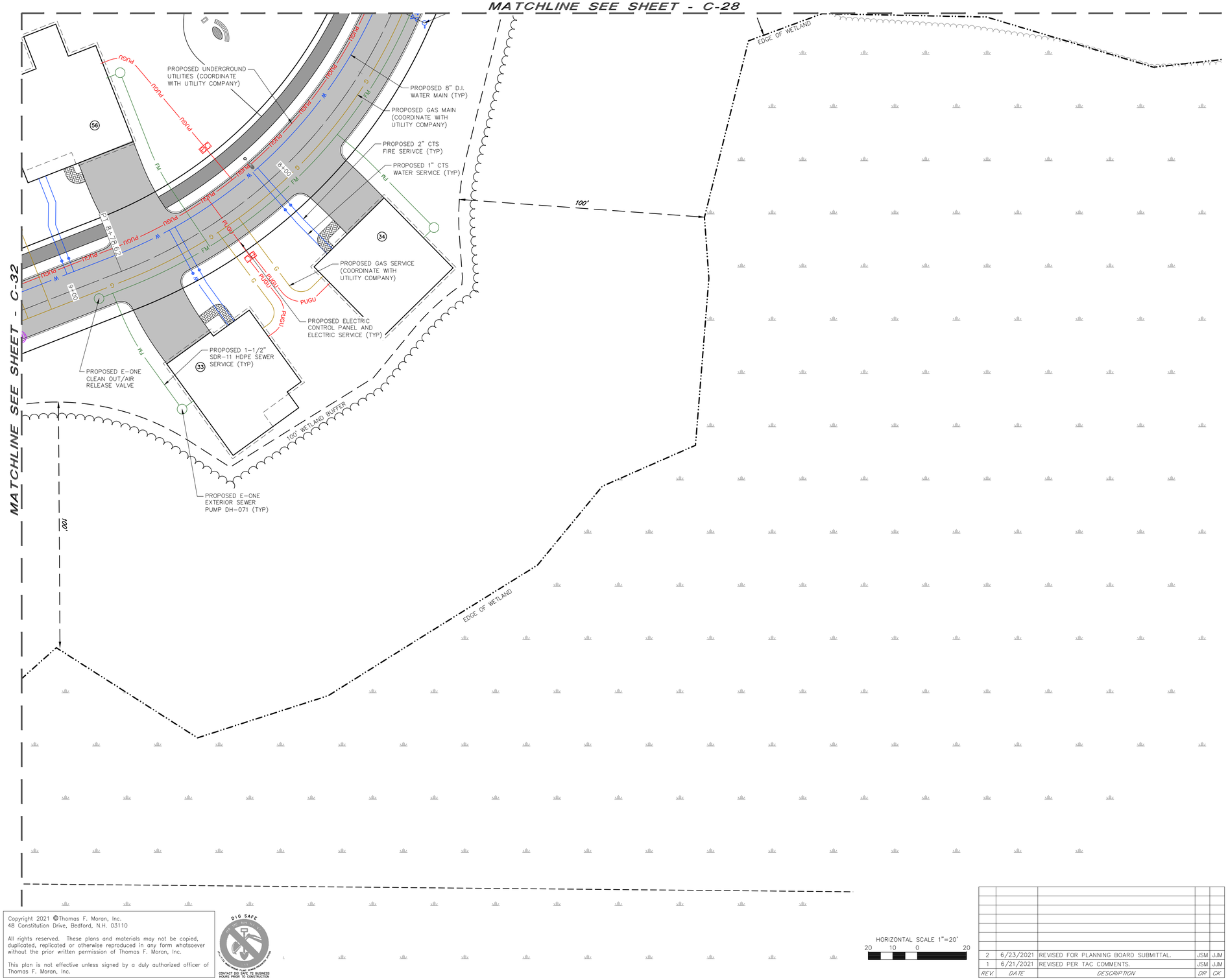
MATCHLINE SEE SHEET - C-28

MATCHLINE SEE SHEET - C-32



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HORIZONTAL SCALE 1"=20'
20 10 0 20

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STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE No. 14960 LICENSED
PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

UTILITY PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

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SCALE: 1"=20' (22"X34")

APRIL 19, 2021

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		CK	JJM	CADFILE	47388-11_UTILITY	

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MATCHLINE SEE SHEET - C-29

MATCHLINE SEE SHEET - C-33

MATCHLINE SEE SHEET - C-31

PROPOSED UNDERGROUND UTILITIES (COORDINATE WITH UTILITY COMPANY)

PROPOSED ELECTRIC CONTROL PANEL AND ELECTRIC SERVICE (TYP)

PROPOSED CURB STOP (TYP)

PROPOSED E-ONE CLEAN OUT/AIR RELEASE VALVE

PROPOSED GAS MAIN (COORDINATE WITH UTILITY COMPANY)

PROPOSED 2" CTS FIRE SERIVCE (TYP)

PROPOSED 1" CTS WATER SERVICE (TYP)

PROPOSED 8" D.I. WATER LINE

PROPOSED 1-1/2" SDR-11 HDPE SEWER SERVICE (TYP)

PROPOSED E-ONE EXTERIOR SEWER PUMP DH-071 (TYP)

PROPOSED HYDRANT AND VALVE (TYP)

PROPOSED 8" D.I. WATER MAIN (TYP)

100' WETLAND BUFFER

100'

NAD 83

HORIZONTAL SCALE 1"=20'

20 10 0 20

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JOHN J. McTIGUE No. 14960 LICENSED PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

UTILITY PLAN

PARSON WOODS CONDOMINIUM LLC

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MATCHLINE SEE SHEET - C-30

MATCHLINE SEE SHEET - C-32

SMH-P14
RIM=50.08
INV.IN=42.45
INV.OUT=42.35
SUMP=42.35

SMH-P15
RIM=49.77
INV.OUT=42.90
SUMP=42.90

PROPOSED 6" PVC SEWER SERVICE LINE (TYP)

PROPOSED E-ONE EXTERIOR SEWER PUMP DH-071 (TYP)

PROPOSED 1-1/2" SDR-11 HDPE SEWER SERVICE (TYP)

PROPOSED HYDRANT AND VALVE (TYP)

PROPOSED GAS MAIN (COORDINATE WITH UTILITY COMPANY)

PROPOSED ELECTRIC CONTROL PANEL AND ELECTRIC SERVICE (TYP)

PROPOSED 8" D.I. WATER MAIN

PROPOSED 8" D.I. WATER MAIN (TYP)

PROPOSED 2" CTS FIRE SERIVCE (TYP)

PROPOSED 1" CTS WATER SERVICE (TYP)

18+00 56 L.F. 8" S=0.00 ft/ft

PVC 14"-23.50

100' WETLAND BUFFER

MAP 242 LOT 3
N/F
NEW HOPE BAPTIST CHURCH
PO BOX 1423
PORTSMOUTH, NH 03802
RCRD BK 4238 PG 2663

HORIZONTAL SCALE 1"=20'
20 10 0 20

NAD 83

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

UTILITY PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

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JOHN J. McTIGUE No. 14950 LICENSED
PROFESSIONAL ENGINEER

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MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF
MANCHESTER CHURCH OF
IMMAC CONCEPTION
153 ASH STREET
MANCHESTER, NH 03104

PEVERLY HILL ROAD
(PUBLIC RIGHT OF WAY)

MAP 83

MAP 242 LOT 1
N/F
STATE OF NEW HAMPSHIRE FISH &
GAME DEPT.
11 HAZEN DRIVE
CONCORD, NH 03301
RCRD BK.#5248 PG.#0739

C-38 C-37 C-36 C-35 C-42 C-41 C-40 C-39 C-43

PUBLIC ROAD A

47.22 LF
52.04 LF
39.17 LF
40.58 LF
37.20 LF

100' WETLAND BUFFER
EDGE OF WETLAND
100'

MAP 242 LOT 4

DITCH

MAP 242 LOT 3
N/F
NEW HOPE BAPTIST CHURCH
PO BOX 1473
PORTSMOUTH, NH 03802
RCRD BK.#2269 PG.#0663

MAP 232 LOT 92
N/F
DYANNA L. INNES
78 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3754 PG.#0099

MAP 232 LOT 88
N/F
NATHAN M. & SHERRI M. TARLETON
74 LEAVITT AVENUE
PORTSMOUTH, NH 03801
RCRD BK.#5885 PG.#1471

MAP 232 LOT 93
N/F
KENNETH T. BLACK
82 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
RCRD BK.#3743 PG.#1942

MAP 232 LOT 87
N/F
SUSAN L. DIXON
68 WIBIRD STREET
PORTSMOUTH, NH 03801
RCRD BK.#2504 PG.#0028

N

HORIZONTAL SCALE 1"=100'
100 50 0 100

JOHN J. McTIGUE No. 14950 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

OVERALL EROSION CONTROL PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

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	47388.11	CK	JJM	CADFILE	47388-11_EROSIONCONTROL	C-34

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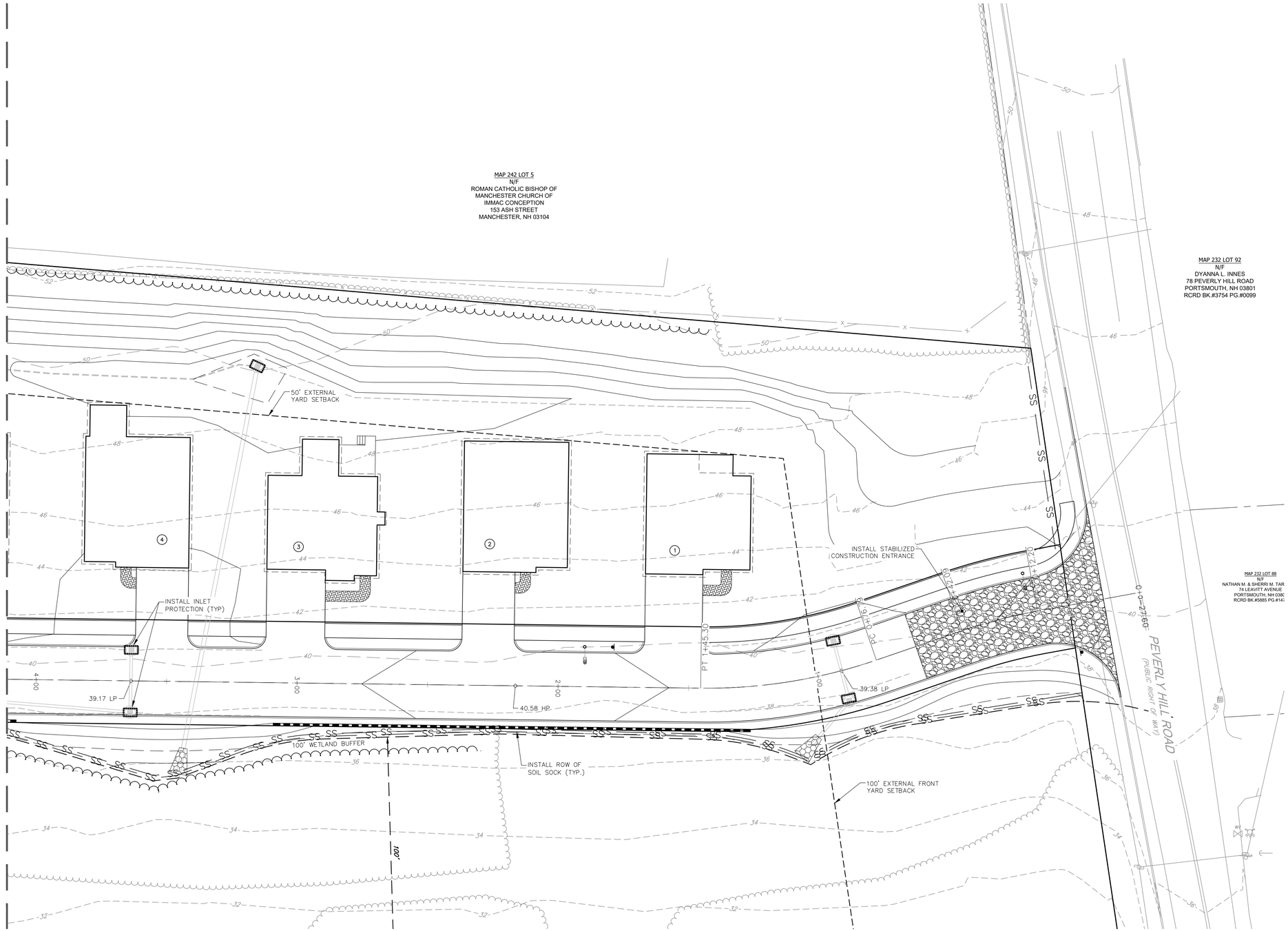

NOTES

1. SEE GENERAL EROSION CONTROL NOTES ON THE EROSION CONTROL DETAIL SHEET AND THE APPROVED SWPPP.
2. INSTALL SILT BARRIER ALONG THE PERIMETER OF THE AREA TO BE DISTURBED AS FIRST ORDER OF WORK.
3. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED. INLET PROTECTION BARRIERS SHALL BE IN PLACE AT ALL CATCH BASINS PRIOR TO THE DISTURBANCE OF SOIL.
4. DUST CONTROL SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. IT SHALL BE ACCOMPLISHED BY THE UNIFORM APPLICATION OF CALCIUM CHLORIDE AT THE RATE OF 1-1/2 POUNDS PER SQUARE YARD BY MEANS OF A LIME SPREADER OR OTHER APPROVED METHOD. WATER MAY ALSO BE USED FOR DUST CONTROL, AND APPLIED BY SPRINKLING WITH WATER TRUCK DISTRIBUTORS, AS REQUIRED.
5. THE SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE SITE CONSTRUCTION SINCE THE DISTURBANCE EXCEEDS ONE ACRE. THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH EPA REGULATIONS AND THE CONSTRUCTION GENERAL PERMIT WHICH SHALL REMAIN ON SITE AND MADE ACCESSIBLE TO THE PUBLIC. THE SITE CONTRACTOR SHALL COORDINATE WITH THE OWNER TO SUBMIT AN eNOI AT LEAST 14 DAYS IN ADVANCE OF ANY EARTHWORK ACTIVITIES AT THE SITE. A COMPLETED NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET: FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE FOR, OR ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
6. SILT PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS CONTAINED IN THIS PLAN SET.
7. CONSTRUCT JUTE MATTING ON ALL SLOPES STEEPER THAN 3:1, DISTURBED AREAS SLOPING TOWARDS WETLANDS AND ALL LOCATIONS SHOWN ON PLAN.
8. INSPECT EROSION CONTROL MEASURES WEEKLY AND AFTER EACH RAIN STORM OF 0.10" OR GREATER. REPAIR/MODIFY SILT BARRIER AS NECESSARY TO MAXIMIZE FILTER EFFICIENCY. REMOVE SEDIMENT WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
9. PROVIDE SILT BARRIERS AT THE BASE OF CUT AND FILL SLOPES UNTIL COMPLETION OF THE PROJECT OR UNTIL VEGETATION BECOMES ESTABLISHED ON SLOPES. EROSION PROTECTION BELOW FILL SLOPES SHALL BE PLACED IMMEDIATELY AFTER CLEARING, PRIOR TO EMBANKMENT CONSTRUCTION.
10. ALL DISTURBED AREAS SHALL BE REVEGETATED AS QUICKLY AS POSSIBLE. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
11. ALL WORK AREAS TO BE STABILIZED AT THE END OF EACH WORK DAY AND PRIOR TO ANY PREDICTED SIGNIFICANT RAIN EVENT.
12. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS ARE INSTALLED IN AREAS TO BE PAVED
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
    C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED
    D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED
13. ALL CATCH BASINS, MANHOLES, AND DRAIN LINES SHALL BE THOROUGHLY CLEANED OF ALL SEDIMENT AND DEBRIS AFTER ALL AREAS HAVE BEEN STABILIZED.
14. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SLOPE STABILITY DURING CONSTRUCTION.
15. THE EROSION CONTROL PRACTICES SHOWN ON THESE PLANS ARE ILLUSTRATIVE ONLY AND SHALL BE SUPPLEMENTED BY THE SITE CONTRACTOR AS NEEDED.
16. EROSION CONTROL BERM MAY BE USED IN PLACE OF ONE LAYER OF SILT SOCK.
17. TURBIDITY CURTAIN TO BE USED IN PLACE OF DOUBLE LAYER OF SILT SOCK WHEN STANDING WATER IS ENCOUNTERED.

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

EROSION CONTROL PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

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PREPARED FOR

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1"=40' (11"X17")

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STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE No. 14950
PROFESSIONAL ENGINEER
LICENSED

HORIZONTAL SCALE 1"=20'
20 10 0 20

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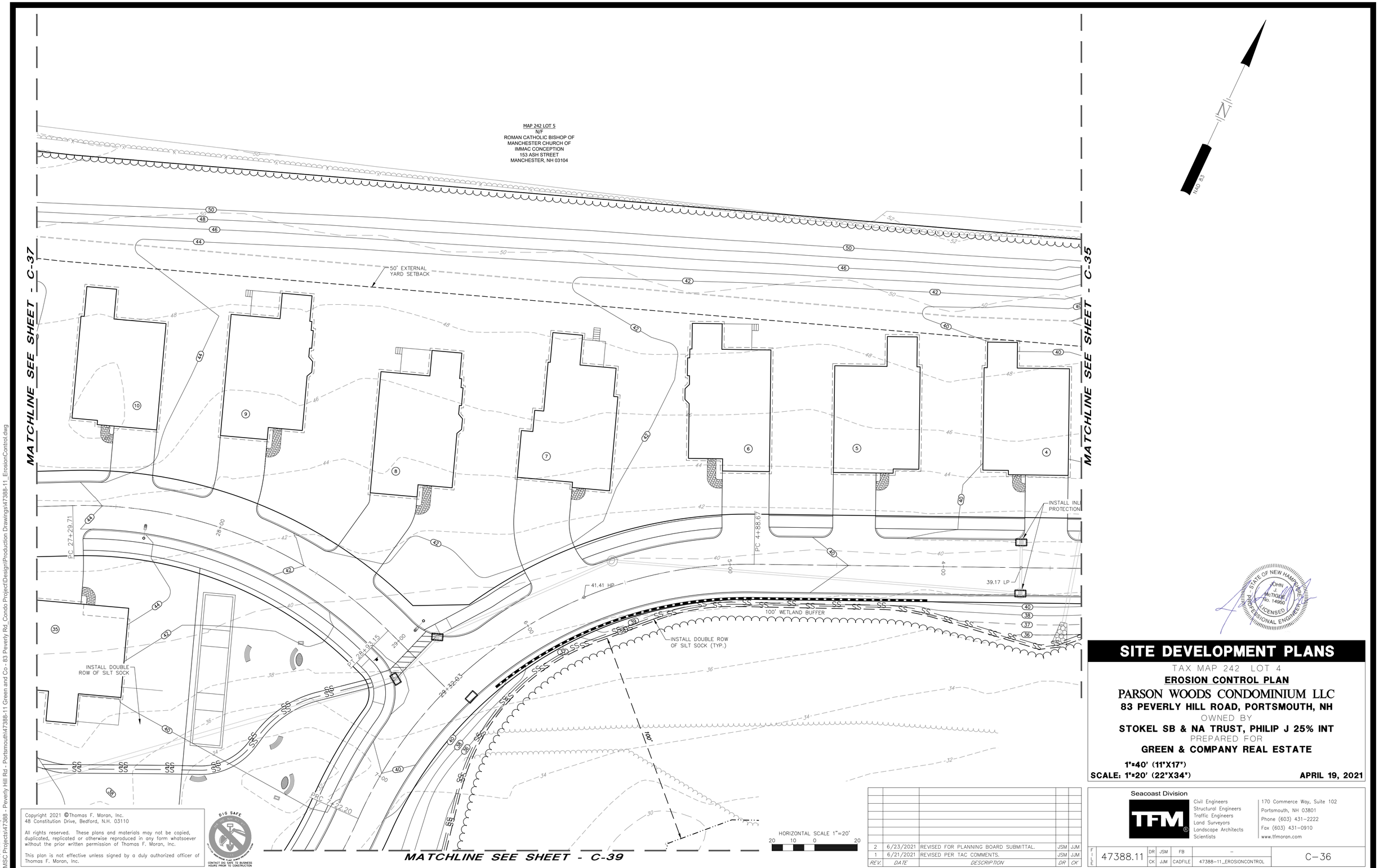

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1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

EROSION CONTROL PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34") **APRIL 19, 2021**

STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE
No. 14950
LICENSED
PROFESSIONAL ENGINEER

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47388.11	CK	JJM	CADFILE	47388-11_EROSIONCONTROL	C-36

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MATCHLINE SEE SHEET - C-38

MATCHLINE SEE SHEET - C-36

50' EXTERNAL YARD SETBACK

INSTALL INLET PROTECTION (TYP)

PUBLIC ROAD 'A' (2,945 FT)

52.04 HP

PC 23+99.89

PT 25+13.77

PC 27+29.71

INSTALL DOUBLE ROW OF SOIL SOCK (TYP.)

MATCHLINE SEE SHEET - C-40

HORIZONTAL SCALE 1"=20'

20 10 0 20

N

NAD 83

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TAX MAP 242 LOT 4

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FILE	47388.11	DR	JSM	FB	–	C-37
		CK	JJM	CADFILE	47388-11_EROSIONCONTROL	

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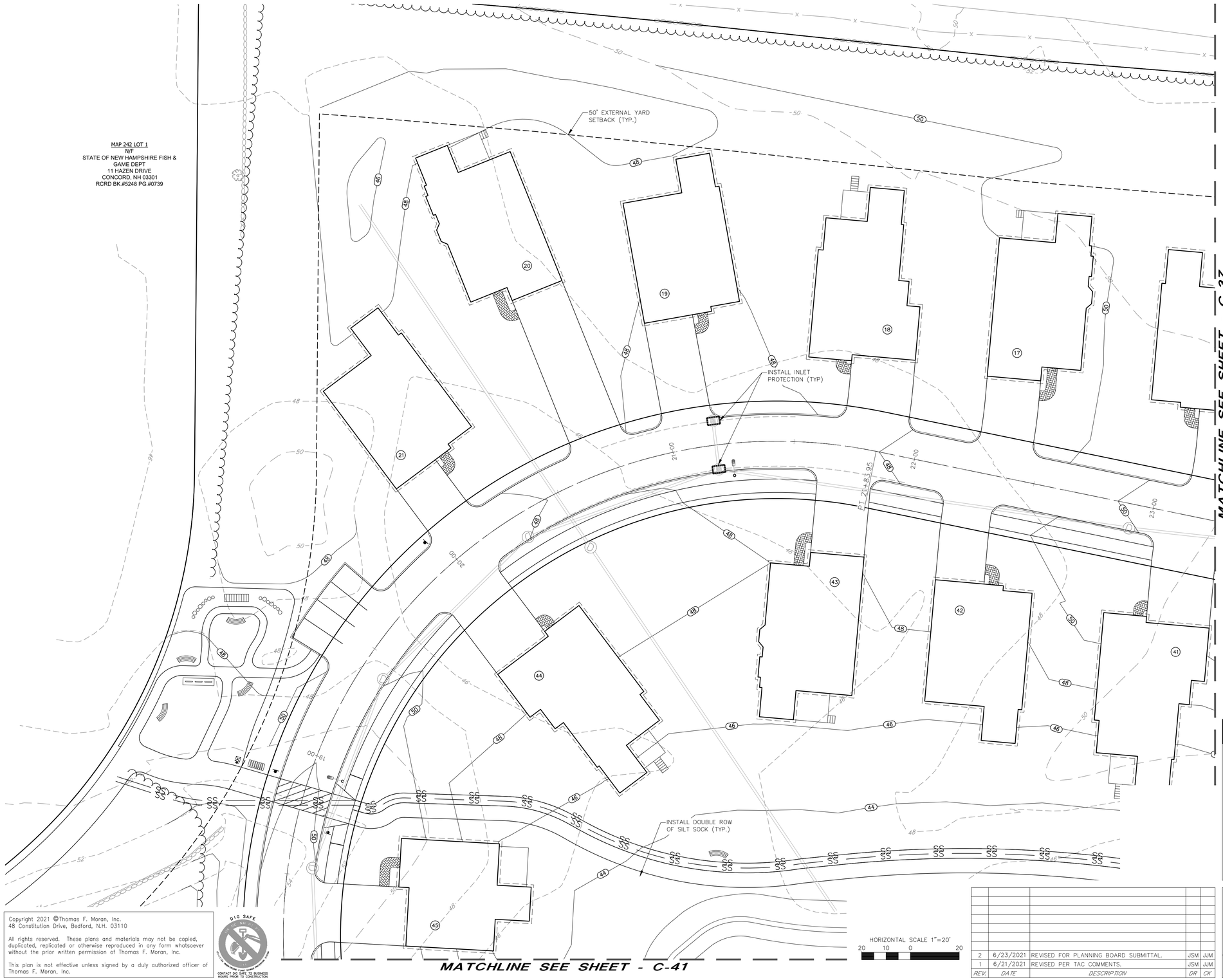

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JOHN J. McTIGUE No. 14960 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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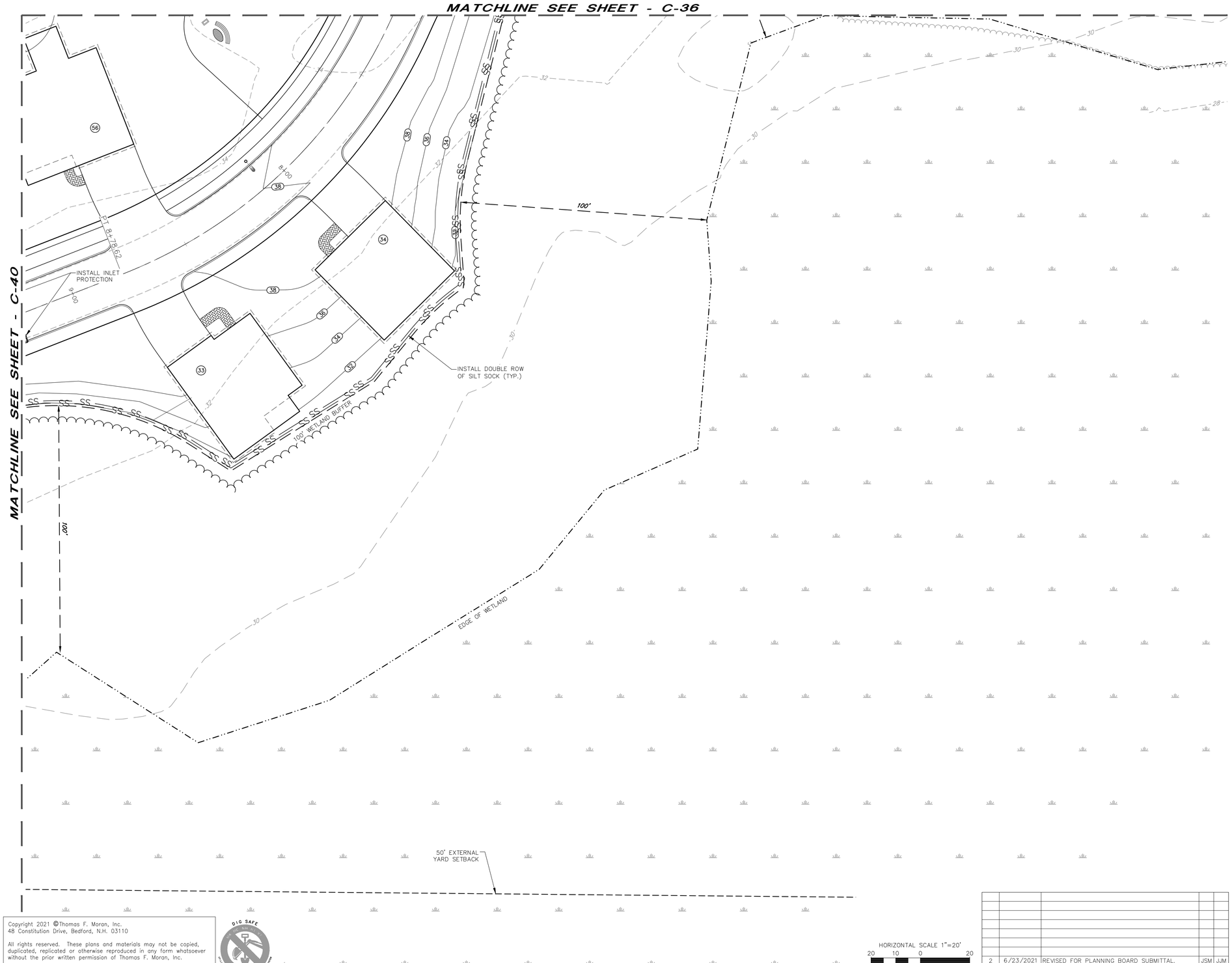

HORIZONTAL SCALE 1"=20'
20 10 0 20

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TAX MAP 242 LOT 4

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		CK	JJM	CADFILE	47388-11_EROSIONCONTROL	

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MATCHLINE SEE SHEET - C-37

MATCHLINE SEE SHEET - C-41

MATCHLINE SEE SHEET - C-39

N

NAD 83

HORIZONTAL SCALE 1"=20'
20 10 0 20

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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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47388.11	CK	JJM	CADFILE	47388-11_EROSIONCONTROL	C-40

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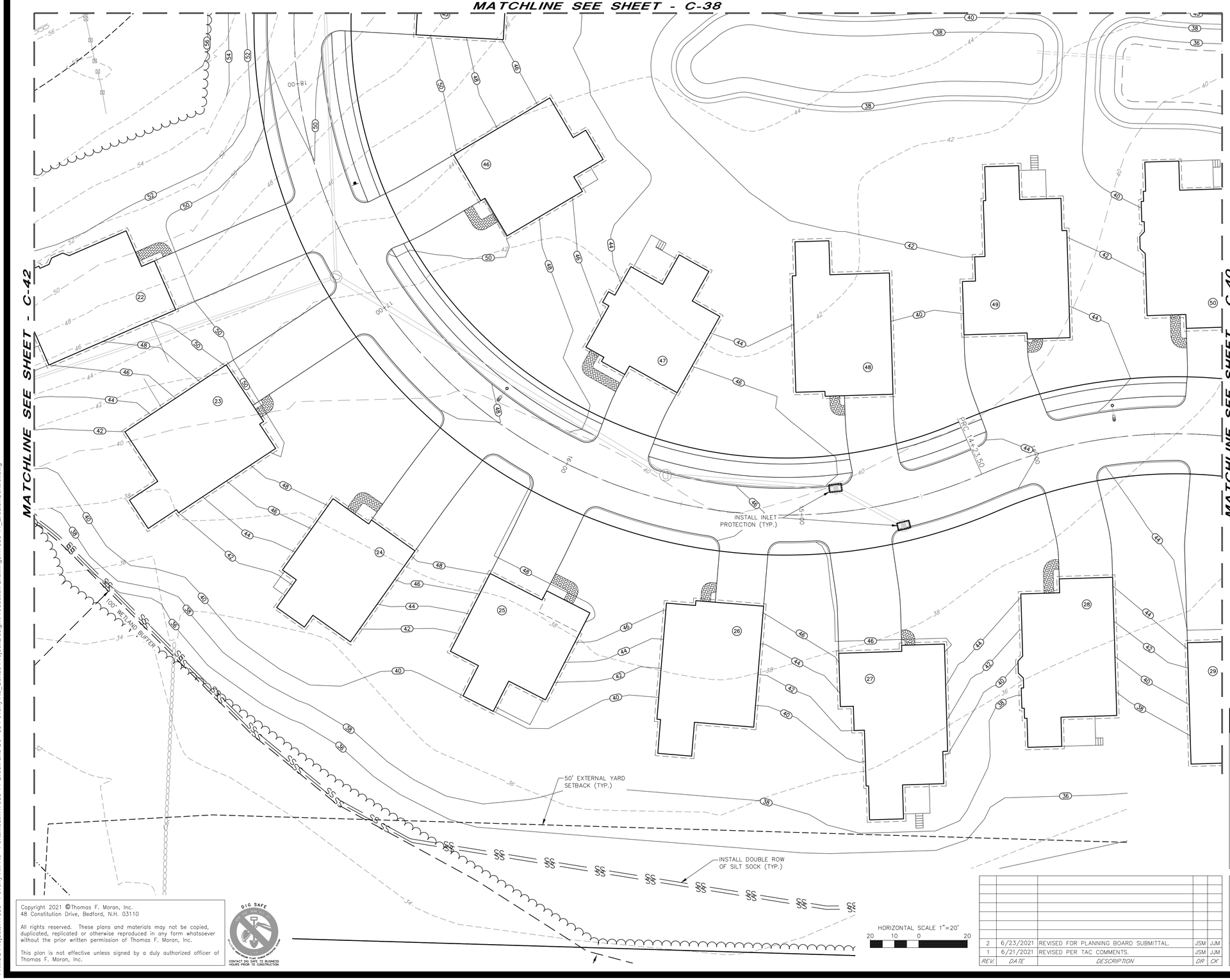

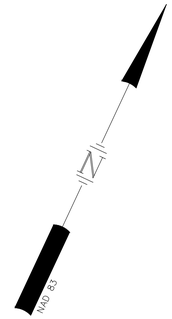

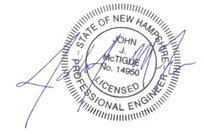

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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MAP 242 LOT 1
N/F
STATE OF NEW HAMPSHIRE FISH &
GAME DEPT
11 HAZEN DRIVE
CONCORD, NH 03301
RCRD BK.#5248 PG.#0739

MATCHLINE SEE SHEET - C-43

MATCHLINE SEE SHEET - C-41

50' EXTERNAL
YARD SETBACK

INSTALL DOUBLE ROW
OF SILT SOCK (TYP.)

INSTALL DOUBLE ROW
OF SILT SOCK (TYP.)

PROPOSED FES
RIPRAP APRON

100' WETLAND BUFFER

100'

100'

EDGE OF WETLAND

NAD 83

HORIZONTAL SCALE 1"=20'
20 10 0 20

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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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FILE	47388.11	DR	JSM	FB	–	C-42
		CK	JJM	CADFILE	47388-11_EROSIONCONTROL	

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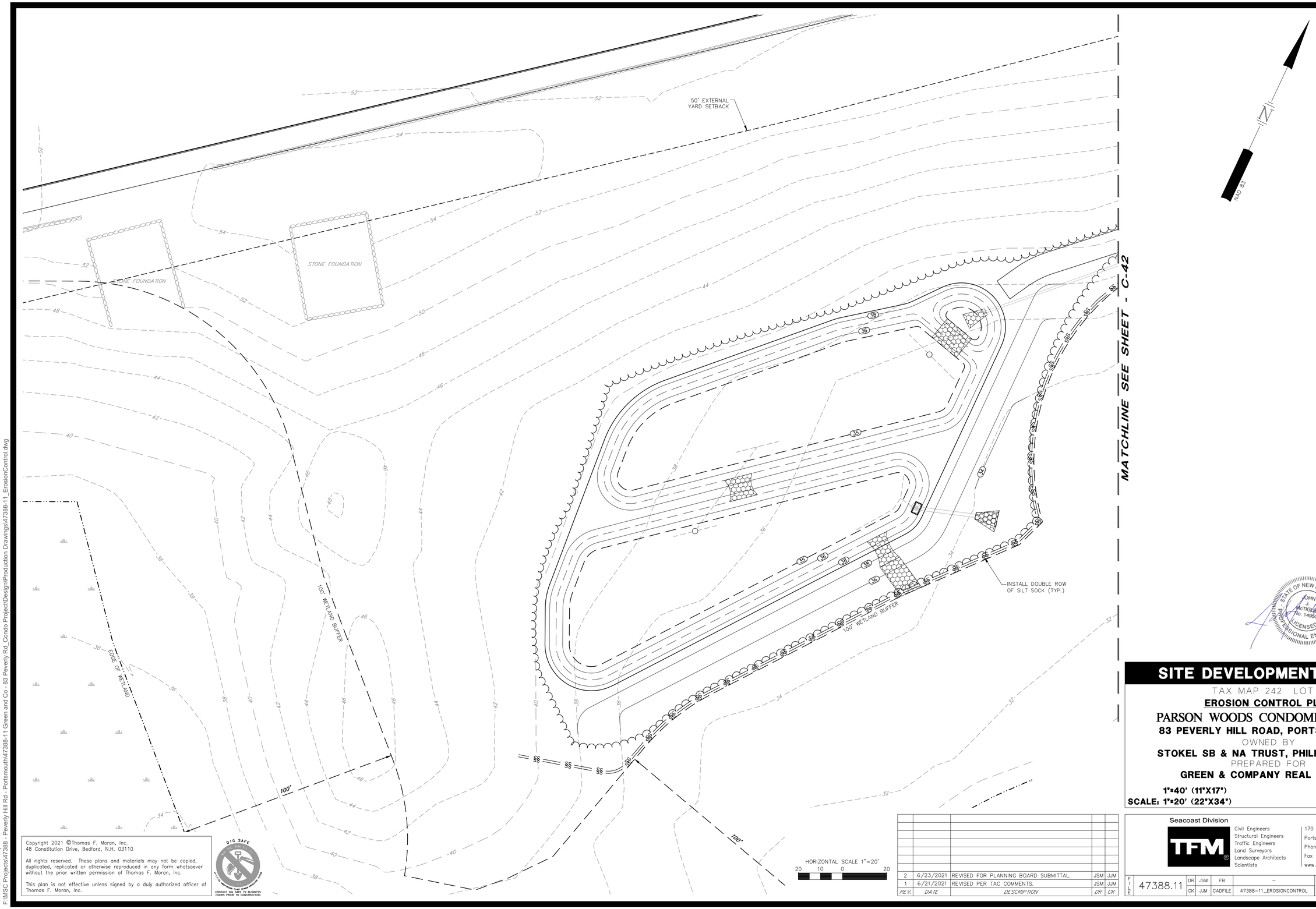

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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FILE	DR	JSM	FB	–	
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SOIL CHARACTERISTICS

THE SOIL IN THE VICINITY OF THE SITE CONSIST OF NEWFIELDS SANDY LOAM, DEERFIELD LOAMY SAND, HOOSIC GRAVELLY LOAMY SAND, CANTON SAND LOAM, BOXFORD SILT LOAM, AND WALPOLE SANDY LOAM. THE MAJORITY OF THE SOIL IS HSG B & C.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 775,000 SQUARE FEET (17.80 ACRES).

CRITICAL NOTE: THIS DRAWING IS PROVIDED FOR GENERAL GUIDANCE. ALL SPECIAL EROSION CONTROL MEASURES MUST BE EXECUTED IN ACCORDANCE WITH CURRENT STATE AND LOCAL REGULATIONS, APPROVED SWPPP AND PERMIT REQUIREMENTS.

SEQUENCE OF MAJOR ACTIVITIES

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND TEMPORARY EROSION CONTROL MEASURES PER APPROVED SWPPP IF REQUIRED.
2. DEMOLISH EXISTING SITE WORK DESIGNATED FOR REMOVAL.
3. COMPLETE MAJOR GRADING OF SITE.
4. CONSTRUCT BUILDING PAD, STORMWATER SYSTEM, AND SITE UTILITIES.
5. CONSTRUCT PARKING LOT.
6. WHEN ALL CONSTRUCTION ACTIVITY IS COMPLETE AND SITE IS STABILIZED, REMOVE ALL INLET PROTECTION, SILT BARRIERS AND SEDIMENT THAT HAS BEEN TRAPPED BY THESE DEVICES.
7. CONSULT APPROVED SWPPP FOR CONDITIONS RELATED TO NOTICE OF TERMINATION, IF REQUIRED.

EROSION AND SEDIMENT CONTROLS AND STABILIZATION PRACTICES

STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES AND DISTURBED AREAS WHERE CONSTRUCTION ACTIVITY WILL NOT OCCUR FOR MORE THAN TWENTY ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:

1. BASE COURSE GRAVELS, WHICH MEET THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2, HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
3. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR
4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT BARRIERS. ALL STORM DRAIN INLETS SHALL BE PROVIDED WITH BARRIER FILTERS. STONE RIPRAP SHALL BE PROVIDED AT THE OUTLETS OF DRAINAGE PIPES WHERE EROSIVE VELOCITIES ARE ENCOUNTERED.

OFF SITE VEHICLE TRACKING

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED.

INSTALLATION, MAINTENANCE AND INSPECTION OF EROSION AND SEDIMENT CONTROLS

A. GENERAL

THESE ARE THE GENERAL INSPECTION AND MAINTENANCE PRACTICES THAT WILL BE USED TO IMPLEMENT THE PLAN.

1. STABILIZATION OF ALL SWALES, DITCHES AND PONDS IS REQUIRED PRIOR TO DIRECTING FLOW TO THEM.
2. THE SMALLEST PRACTICAL PORTION OF THE SITE WILL BE DENUDED AT ONE TIME. (5 AC MAX)
3. ALL CONTROL MEASURES WILL BE INSPECTED AT LEAST ONCE EACH WEEK AND FOLLOWING ANY STORM EVENT OF 0.10" OR GREATER.
4. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF REPORT.
5. BUILT UP SEDIMENT WILL BE REMOVED FROM SILT BARRIER WHEN IT HAS REACHED ONE THIRD THE HEIGHT OF THE BARRIER.
6. ALL DIVERSION DIKES WILL BE INSPECTED AND ANY BREACHES PROMPTLY REPAIRED.
7. TEMPORARY SEEDING AND PLANTING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND UNHEALTHY GROWTH.
8. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION.
9. THE CONTRACTOR'S SITE SUPERINTENDENT WILL BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE AND REPAIR ACTIVITIES, AND FILLING OUT THE INSPECTION AND MAINTENANCE REPORT.

B. FILTERS / BARRIERS

1. SILT SOCKS

   A. KNOTTED MESH NETTING MATERIAL SHALL BE DELIVERED TO SITE IN A 5 MIL CONTINUOUS, TUBULAR, HDPE 3/8" MATERIAL, FILLED WITH COMPOST CONFORMING TO THE FOLLOWING REQUIREMENTS:

PHYSICAL PROPERTY	TEST	REQUIREMENTS
PH	TMECC 04.11-A	5.0 TO 8.0
PARTICLE SIZE	TMECC 02.02-B	2" SIEVE AND MIN. 60% GREATER THAN THE ⅜" SIEVE
MOISTURE CONTENT		STND TESTING < 60%

   MATERIAL SHALL BE RELATIVELY FREE OF INERT OR FOREIGN MAN-MADE MATERIALS

   MATERIAL SHALL BE WEED FREE AND DERIVED FROM A WELL-DECOMPOSED SOURCE OF ORGANIC MATTER, FREE FROM ANY REFUSE, CONTAMINANTS OR OTHER MATERIALS TOXIC TO PLANT GROWTH.

   B. SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK SHALL BE REMOVED ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE SILT SOCK.

   C. SILT BARRIER SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREAS HAS BEEN PERMANENTLY STABILIZED.

2. SEQUENCE OF INSTALLATION

   SEDIMENT BARRIERS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.

3. MAINTENANCE

   A. SILT BARRIERS SHALL BE INSPECTED WEEKLY AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. THEY SHALL BE REPAIRED IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM.

   B. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL IS NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.

   C. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE THIRD (1/3) THE HEIGHT OF THE BARRIER.

   D. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

C. MULCHING

1. TIMING

   IN ORDER FOR MULCH TO BE EFFECTIVE, IT MUST BE IN PLACE PRIOR TO MAJOR STORM EVENTS. THERE ARE TWO (2) TYPES OF STANDARDS WHICH SHALL BE USED TO ASSURE THIS:

   A. APPLY MULCH PRIOR TO ANY STORM EVENT.

   THIS IS APPLICABLE WHEN WORKING WITHIN 100' OF WETLANDS. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS, USUALLY BY CONTACTING THE NATIONAL WEATHER SERVICE, TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.

   B. REQUIRED MULCHING WITHIN A SPECIFIED TIME PERIOD.

   THE TIME PERIOD CAN RANGE FROM 14 TO 21 DAYS OF INACTIVITY ON AN AREA, WHERE THE LENGTH OF TIME VARIES WITH SITE CONDITIONS. PROFESSIONAL JUDGMENT SHALL BE USED TO EVALUATE THE INTERACTION OF SITE CONDITIONS (SOIL ERODIBILITY, SEASON OF YEAR, EXTENT OF DISTURBANCE, PROXIMITY TO SENSITIVE RESOURCES, ETC.) AND THE POTENTIAL IMPACT OF EROSION ON ADJACENT AREAS TO CHOOSE AN APPROPRIATE TIME RESTRICTION.

2. GUIDELINES FOR WINTER MULCH APPLICATION.

   WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWING SEASON) IT SHALL BE AT A RATE OF 6,000 POUNDS OF HAY OR STRAW PER ACRE. A TACKIFIER MAY BE ADDED TO THE MULCH.

3. MAINTENANCE

   ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED.

D. VEGETATIVE PRACTICE

1. AFTER ROUGH GRADING OF THE SUBGRADE HAS BEEN COMPLETED AND APPROVED, THE SUB GRADE SURFACE SHALL BE SCARIFIED TO A DEPTH OF 4". THEN, FURNISH AND INSTALL A LAYER OF LOAM PROVIDING A ROLLED THICKNESS AS SPECIFIED IN THESE PLANS. ANY DEPRESSIONS WHICH MAY OCCUR DURING ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM, REGRADED AND REROLLED UNTIL THE SURFACE IS TRUE TO THE FINISHED LINES AND GRADES. ALL LOAM NECESSARY TO COMPLETE THE WORK UNDER THIS SECTION SHALL BE SUPPLIED BY THE SITE SUBCONTRACTOR.
2. ALL LARGE STIFF CLODS, LUMPS, BRUSH, ROOTS, DEBRIS, GLASS, STUMPS, LITTER AND OTHER FOREIGN MATERIAL, AS WELL AS STONES OVER 1" IN DIAMETER, SHALL BE REMOVED FROM THE LOAM AND DISPOSED OF OFF SITE. THE LOAM SHALL BE RAKED SMOOTH AND EVEN.
3. THE LOAM SHALL BE PREPARED TO RECEIVE SEED BY REMOVING STONES, FOREIGN OBJECTS AND GRADING TO ELIMINATE WATER POCKETS AND IRREGULARITIES PRIOR TO PLACING SEED. FINISH GRADING SHALL RESULT IN STRAIGHT UNIFORM GRADES AND SMOOTH, EVEN SURFACES WITHOUT IRREGULARITIES TO LOW POINTS.
4. SHAPE THE AREAS TO THE LINES AND GRADES REQUIRED. THE SITE SUBCONTRACTOR'S ATTENTION IS DIRECTED TO THE SCHEDULING OF LOAMING AND SEEDING OF GRADED AREAS TO PERMIT SUFFICIENT TIME FOR THE STABILIZATION OF THESE AREAS. IT SHALL BE THE SITE SUBCONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE AREAS DURING THE CONSTRUCTION PERIOD AND REGRADE, LOAM AND RESEED ANY DAMAGED AREAS.
5. ALL AREAS DISTURBED BY CONSTRUCTION WITHIN THE PROPERTY LINES AND NOT COVERED BY STRUCTURES, PAVEMENT, OR MULCH SHALL BE LOAMED AND SEEDED.
6. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF 2 TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5.
7. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 500 POUNDS PER ACRE OF 10-20-20 FERTILIZER.
8. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4 1/2 POUNDS AND 5 1/2 POUNDS PER INCH OF WIDTH.
9. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4" AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH.
10. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AT A RATE OF 1.5 TO 2 TONS PER ACRE. MULCH THAT BLOWS OR WASHES AWAY SHALL BE REPLACED IMMEDIATELY AND ANCHORED USING APPROPRIATE TECHNIQUES FROM THE EROSION AND SEDIMENT CONTROL HANDBOOK.
11. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED.
12. THE SITE SUBCONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED, INCLUDING CUTTING, AS SPECIFIED HEREIN AFTER UNDER MAINTENANCE AND PROTECTION.
13. UNLESS OTHERWISE APPROVED, SEEDING SHALL BE DONE DURING THE APPROXIMATE PERIODS OF EARLY SPRING TO SEPTEMBER 30, WHEN SOIL CONDITIONS AND WEATHER ARE SUITABLE FOR SUCH WORK. IN NO CASE SHALL THE WEED CONTENT EXCEED 1 PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. FOR TEMPORARY PLANTINGS AFTER SEPTEMBER 30, TO EARLY SPRING AND FOR TEMPORARY PROTECTION OF DISTURBED AREAS:

    A. FOLLOW ABOVE SLOPE, LOAM DEPTH AND GRADING REQUIREMENTS.
    B. FERTILIZER SHALL BE SPREAD AND WORKED INTO THE SURFACE AT A RATE OF 500 POUNDS PER ACRE.

    MULCHING AND SEEDING SHALL BE APPLIED AT THE FOLLOWING RATES:

WINTER RYE (FALL SEEDING)	2.5 LBS/1,000 SF
OATS (SPRING SEEDING)	2.0 LBS/1,000 SF
MULCH	1.5 TONS/ACRE

E. CATCH BASIN INLET PROTECTION

1. INLET BASKET STRUCTURE

   A. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY PRIOR TO DISTURBING PAVEMENT AND SHALL REMAIN IN PLACE AND MAINTAINED UNTIL PAVEMENT BINDER COURSE IS COMPLETE.

   B. MOLD 6X6, 42 LB. WIRE SUPPORT AROUND INLET FRAME AND GRATE AND EXTEND 6" BEYOND SIDES. SECURE FILTER FABRIC TO WIRE SUPPORT.

   C. THE FILTER FABRIC SHALL BE A GEOTEXTILE FABRIC; POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE OR POLYVINYLIDENE CHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:

      GRAB STRENGTH: 45 LB. MINIMUM IN ANY PRINCIPAL DIRECTION (ASTM D1682)
      MULLEN BURST STRENGTH: MIN. 60PSI (ASTM D774)

   D. THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 20 U.S. STANDARD SIEVE AND A MINIMUM PERMEABILITY OF 120 GPM.

   E. THE INLET PROTECTION SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM REACHING THE DRAINAGE SYSTEM AND/OR CAUSING SURFACE FLOODING.

   F. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.

F. WINTER CONSTRUCTION SEQUENCE

1. ALL PROPOSED POST-DEVELOPMENT LANDSCAPED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1 AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENT.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE PARKING AREAS WHERE ACTIVE CONSTRUCTION HAS STOPPED FOR THE WINTER ALL TRAVEL SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOWFALL AFTER EACH STORM EVENT.

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES, SILT BARRIERS SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, SILT BARRIERS AND ANY EARTH/DIKES WILL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.

WASTE DISPOSAL

1. WASTE MATERIALS
   ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE
   ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE
   ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION

1. MATERIAL MANAGEMENT PRACTICES
   THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:

   GOOD HOUSEKEEPING:
   THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ON SITE DURING THE CONSTRUCTION PROJECT:

   A. AN EFFORT WILL BE MADE TO STORE ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB.
   B. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
   C. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
   D. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.
   E. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
   F. WHENEVER POSSIBLE ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.

   HAZARDOUS PRODUCTS:
   THE FOLLOWING PRACTICES WILL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:

   A. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
   B. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION.
   C. SURPLUS PRODUCT THAT MUST BE DISPOSED OF WILL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.

2. PRODUCT SPECIFICATION PRACTICES
   THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ON SITE:

   PETROLEUM PRODUCTS:
   ALL ON SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

   FERTILIZERS:
   FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS. ONCE APPLIED FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. STORAGE WILL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

   PAINTS:
   ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.

   CONCRETE TRUCKS:
   CONCRETE TRUCKS WILL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA DESIGNATED ON SITE.

SPILL CONTROL PRACTICES

IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:

A. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.

B. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.

C. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.

D. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.

E. SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.

F. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM RECURRING AND HOW TO CLEANUP THE SPILL IF IT RECURS. A DESCRIPTION OF THE SPILL, ITS CAUSE, AND THE CLEANUP MEASURES WILL BE INCLUDED.

G. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.

DUST CONTROL

THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD. DUST CONTROL METHODS SHALL INCLUDE, BUT NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

STATE OF NEW HAMPSHIRE — JOHN J. McTIGUE No. 14050 LICENSED PROFESSIONAL ENGINEER

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

EROSION CONTROL NOTES

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")
SCALE: 1"=20' (22"X34")

APRIL 19, 2021

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REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_NOTES	C-44

Jun 23, 2021 - 2:23pm
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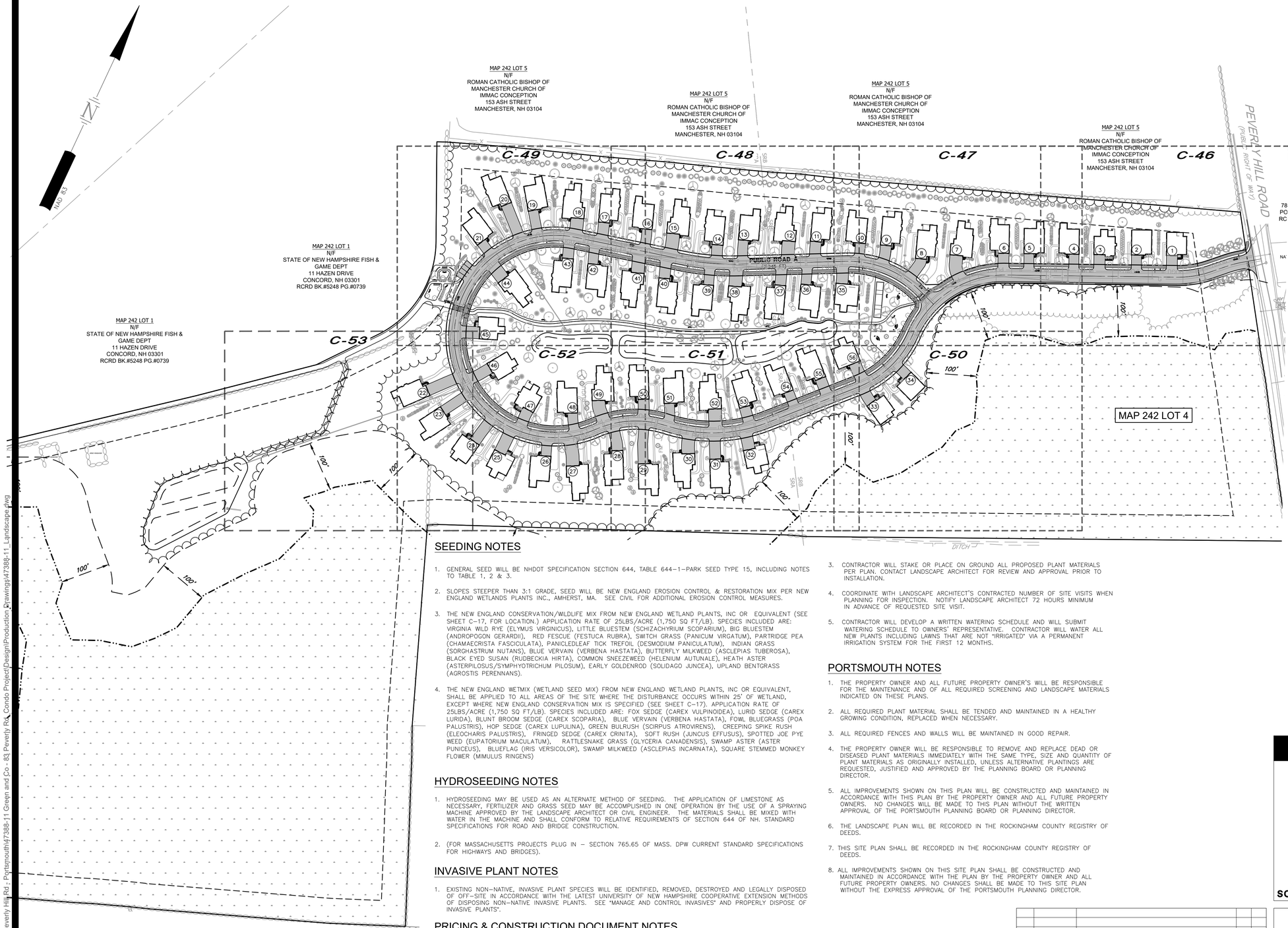
NAD 83
N
MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF
MANCHESTER CHURCH OF
IMMAC CONCEPTION
153 ASH STREET
MANCHESTER, NH 03104
MAP 242 LOT 1
N/F
STATE OF NEW HAMPSHIRE FISH &
GAME DEPT
11 HAZEN DRIVE
CONCORD, NH 03301
RCRD BK.#5248 PG.#0739
C-49
C-48
C-47
C-46
C-53
C-52
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C-50
PEVERLY HILL ROAD
(PUBLIC RIGHT OF WAY)
78
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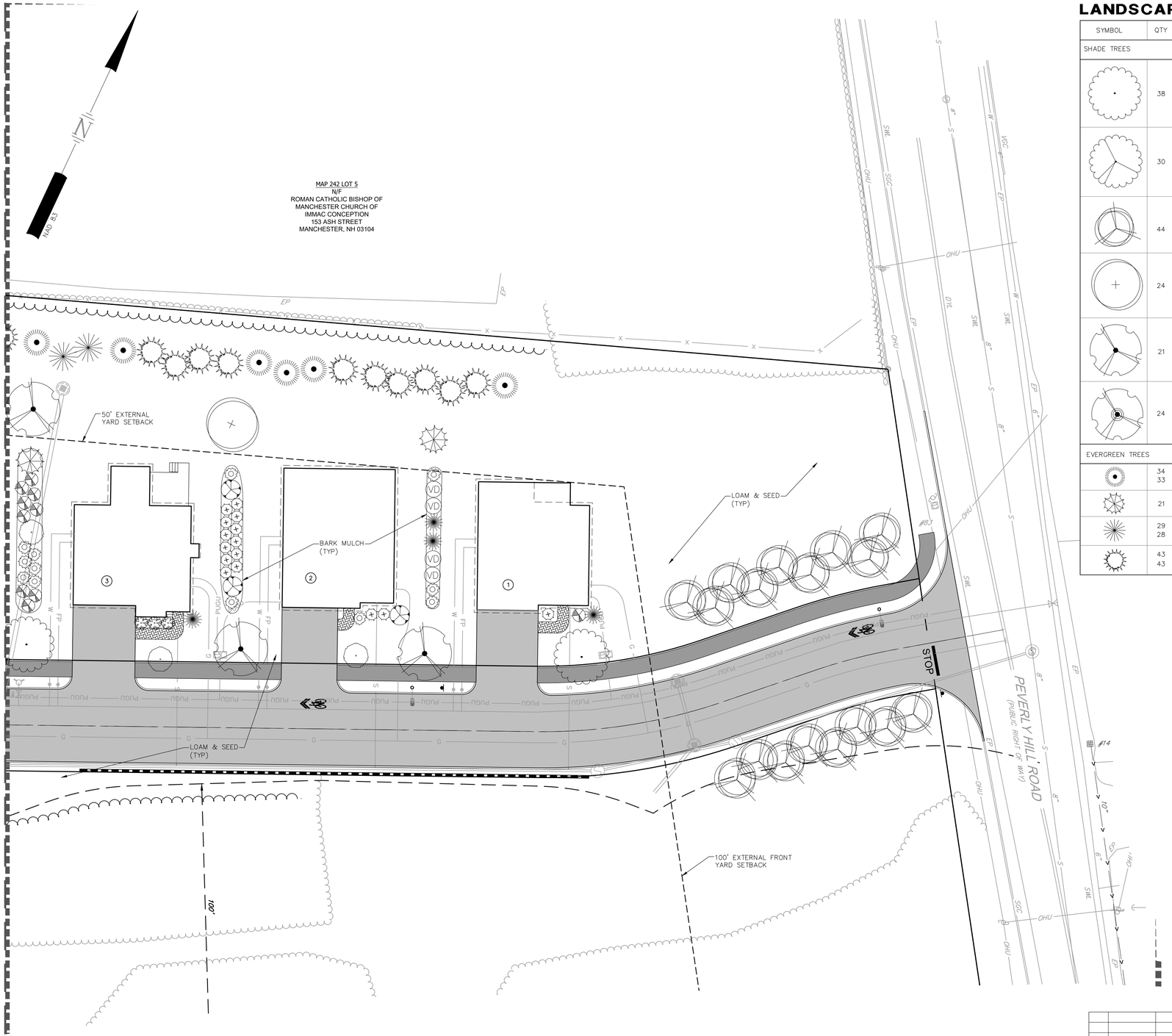
POND
POND



LANDSCAPE LEGEND

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS
SHADE TREES				
	38	ACER RUBRUM 'OCTOBER GLORY' **OCTOBER GLORY RED MAPLE	3" TO 3 1/2" CAL.	B&B
	30	ACER SACCHARUM 'COMMEMORATION' **COMMEMORATION SUGAR MAPLE	3" TO 3 1/2" CAL.	B&B
	44	BETULA N. 'HERITAGE' *RIVER BIRCH	12' TO 14' CLUMP	B&B
	24	NYSSA SYLVATICA *BLACK GUM	2 1/2 TO 3" CAL.	B&B
	21	QUERCUS ALBA *WHITE OAK	3" TO 3 1/2" CAL.	B&B
	24	PLATANUS X A. 'EXCLAMATION' EXCLAMATION PLANETREE	3" TO 3 1/2" CAL.	B&B
EVERGREEN TREES				
	34 33	ABIES BALSAMAE *BALSAM FIR	6' TO 7' 7' TO 8'	B&B
	21	JUNIPERUS VIRGINIANA *EASTERN RED CEDAR	6' TO 7'	B&B
	29 28	PICEA GLAUCA *WHITE SPRUCE	6' TO 7' 7' TO 8'	B&B
	43 43	PINUS STROBUS *WHITE PINE	5' TO 6' 6' TO 7'	B&B

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS
SMALL/FLOWERING TREES				
	45	CRATAEGUS CRUSGALLI INERMIS **THORNLESS COCKSPUR HAWTHORN	2" TO 2 1/2" CAL.	B&B
	23	PRUNUS VIRGINIANA 'SCHUBERT' *CANADA RED CHERRY	2" TO 2 1/2" CAL.	B&B
DECIDUOUS SHRUB				
	53	AMELANCHEIR CANADENSIS *SHADBLOW SERVICEBERRY	5' TO 6' CLUMP	B&B
	86	CLETHRA ALNIFOLIA 'COMPACTA' **COMPACT SUMMERSWEET	7 GAL.	CONT.
	50	CORNUS SERICEA 'ALLEMAN'S COMPACTA' **ALLEMAN'S COMPACT RED-OSIER DOGWOOD	3' TO 4'	CONT.
VD	42	VIBURNUM DENTATUM *ARROWWOOD VIBURNUM	4' TO 5'	B&B
VT	18	VIBURNUM TRILOBUM *AMERICAN CRANBERRY VIBURNUM	4' TO 5'	B&B
EVERGREEN SHRUB				
	145	ILEX GLABRA 'COMPACTA' **COMPACT INKBERRY	3 GAL.	CONT.
	160	JUNIPERUS C. 'PFITZERIANA COMPACTA' COMPACT PFITZER JUNIPER	3 GAL.	CONT.
	155	THUJA O. NIGRA *DARK AMERICAN ARBORVITAE	5' TO 6'	B&B

*NATIVE
** IMPROVED NATIVE

NOTES

1. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
2. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
3. PLANT TYPES MAY VARY BASED ON AVAILABILITY AND SUPPLY. THIS LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY AND REPRESENTS THE INTENT, BUT PLANT SIZES, SPECIES, AND AMOUNTS MAY VARY.

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LANDSCAPE PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40'

SCALE: 1"=20' **APRIL 19, 2021**

HORIZONTAL SCALE 1"=20'
20 10 0 20

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

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FILE	47388.11	DR	JSM	FB	–	C-46
		CK	JJM	CADFILE	47388-11_LANDSCAPE	

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MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF
MANCHESTER CHURCH OF
IMMAC CONCEPTION
153 ASH STREET
MANCHESTER, NH 03104

MATCHLINE SEE SHEET - C-48

MATCHLINE SEE SHEET - C-46

MATCHLINE SEE SHEET - C-50

LOAM & SEED (TYP)

BARK MULCH (TYP)

STOP

100'

HORIZONTAL SCALE 1"=20'
20 10 0 20

NAD 83

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LANDSCAPE PLAN

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83 PEVERLY HILL ROAD, PORTSMOUTH, NH

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FILE	DR	JSM	FB	–	
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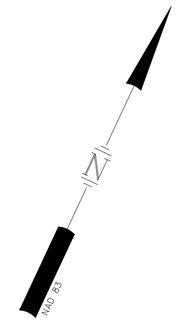

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LANDSCAPE PLAN

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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_LANDSCAPE	C-48

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Jun 23, 2021 - 3:37pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_Landscape.dwg

MAP 242 LOT 1
N/F
STATE OF NEW HAMPSHIRE FISH & GAME DEPT
11 HAZEN DRIVE
CONCORD, NH 03301
RCRD BK.#5248 PG.#0739

LOAM & SEED (TYP)

LOAM & SEED (TYP)

BARK MULCH (TYP)

LOAM & SEED (TYP)

BARK MULCH (TYP)

LOAM & SEED (TYP)

MATCHLINE SEE SHEET - C-48

MATCHLINE SEE SHEET - C-52

NAD 83

HORIZONTAL SCALE 1"=20'
20 10 0 20

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LANDSCAPE PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40'

SCALE: 1"=20' **APRIL 19, 2021**

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

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Traffic Engineers
Land Surveyors
Landscape Architects
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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_LANDSCAPE	C-49

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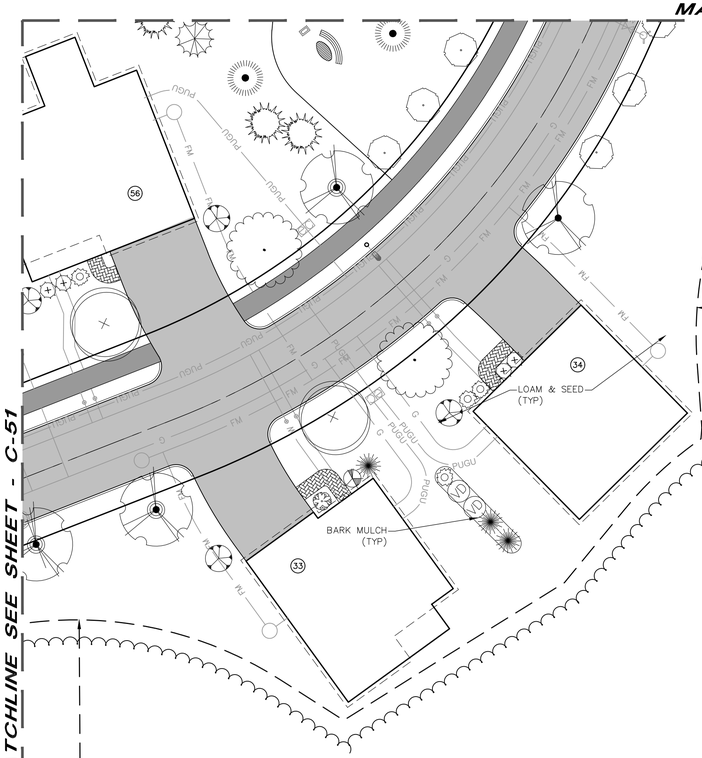
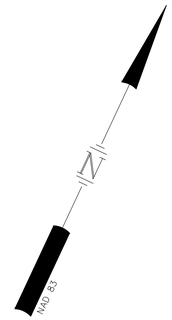
MATCHLINE SEE SHEET - C-47

MATCHLINE SEE SHEET - C-51





HORIZONTAL SCALE 1"=20'
20 10 0 20

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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40'

SCALE: 1"=20'

APRIL 19, 2021

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Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
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FILE	47388.11	DR	JSM	FB	–	C-50
		CK	JJM	CADFILE	47388-11_LANDSCAPE	

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MATCHLINE SEE SHEET - C-48

MATCHLINE SEE SHEET - C-52

MATCHLINE SEE SHEET - C-50

LOAM & SEED (TYP)

BARK MULCH (TYP)

LOAM & SEED (TYP)

BARK MULCH (TYP)

LOAM & SEED (TYP)

100'

100'

NAD 83

HORIZONTAL SCALE 1"=20'
20 10 0 20

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LANDSCAPE PLAN

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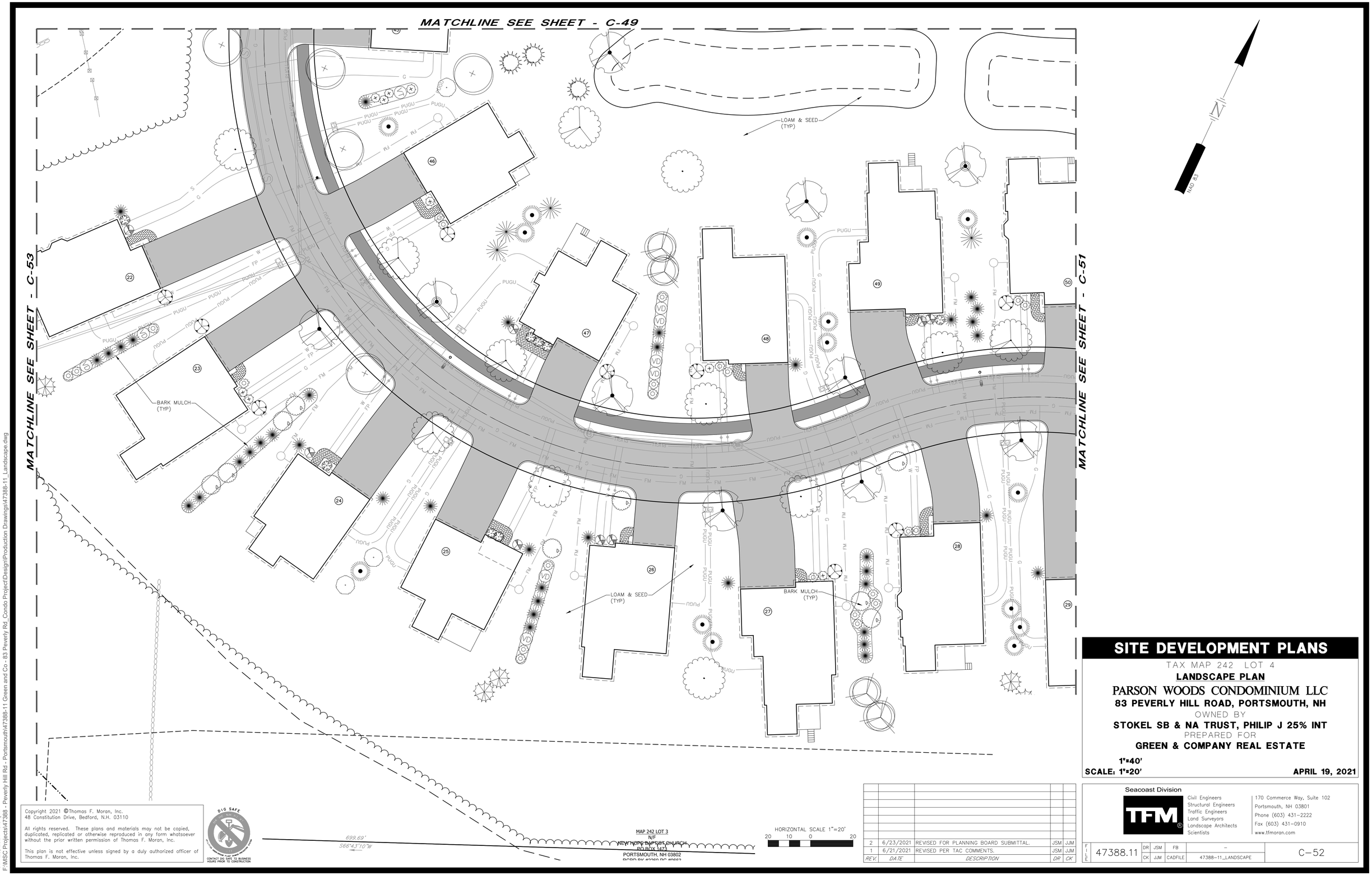

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LANDSCAPE PLAN

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MAP 242 LOT 1
N/F
STATE OF NEW HAMPSHIRE FISH &
GAME DEPT
11 HAZEN DRIVE
CONCORD, NH 03301
RCRD BK.#5248 PG.#0739

MATCHLINE SEE SHEET - C-54

MATCHLINE SEE SHEET - C-52

LOAM & SEED (TYP)

LOAM & SEED (TYP)

100'

100'

22

23

24

PUGU

S

G

W

FP

FM

NAD 83

HORIZONTAL SCALE 1"=20'
20 10 0 20

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LANDSCAPE PLAN

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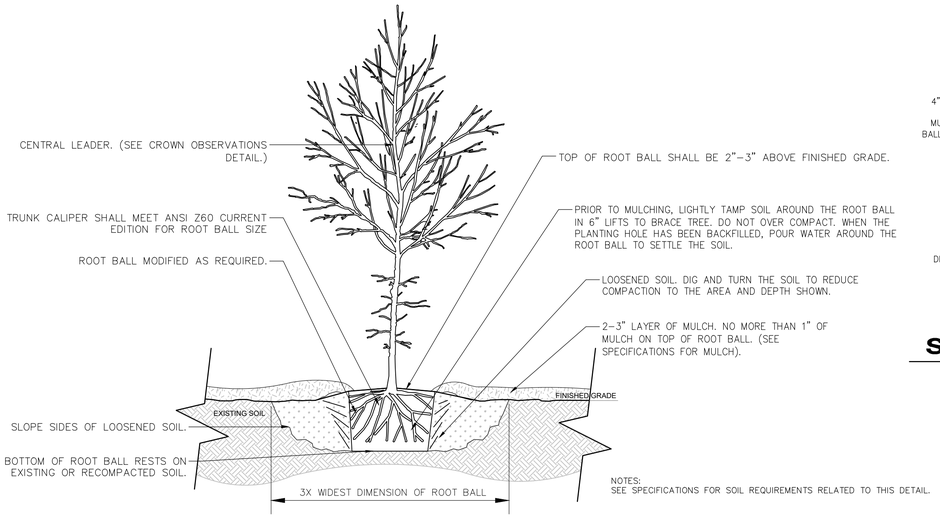
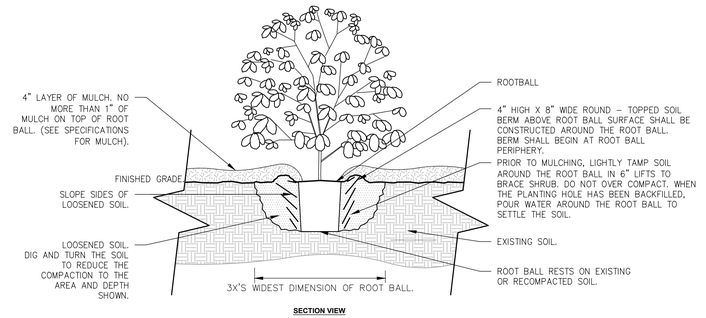


SECTION VIEW

TREE WITH BERM

NOT TO SCALE



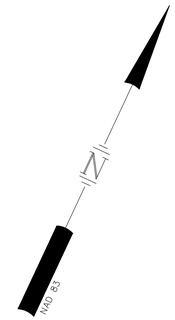
SECTION VIEW

SHRUB PLANTING

NOT TO SCALE

TREE ON SLOPE 5% (20:1) TO 50% (2:1)

NOT TO SCALE



SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LANDSCAPE PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40'

SCALE: 1"=20' **APRIL 19, 2021**

HORIZONTAL SCALE 1"=20'

20 10 0 20

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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_LANDSCAPE	C-54

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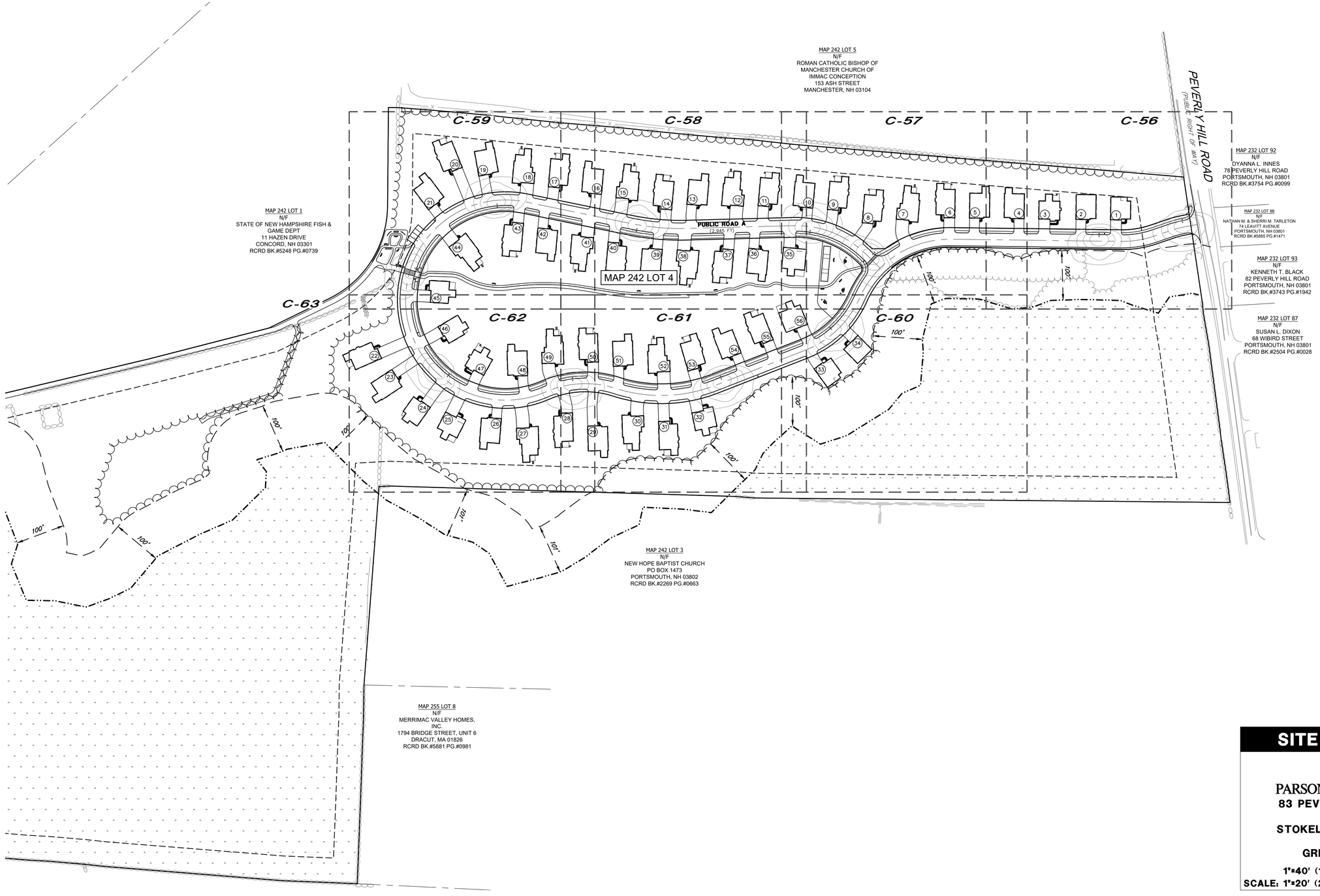

NOTES

1. SEE SHEET C-63 FOR LIGHTING DETAILS.

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

OVERALL LIGHTING PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

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PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34") **APRIL 19, 2021**

HORIZONTAL SCALE 1"=100'

100 50 0 100

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FILE	DR	FB		
47388.11	JSM	–		C-55
	CK	CADFILE	47388-11_LIGHTING	
	JJM			

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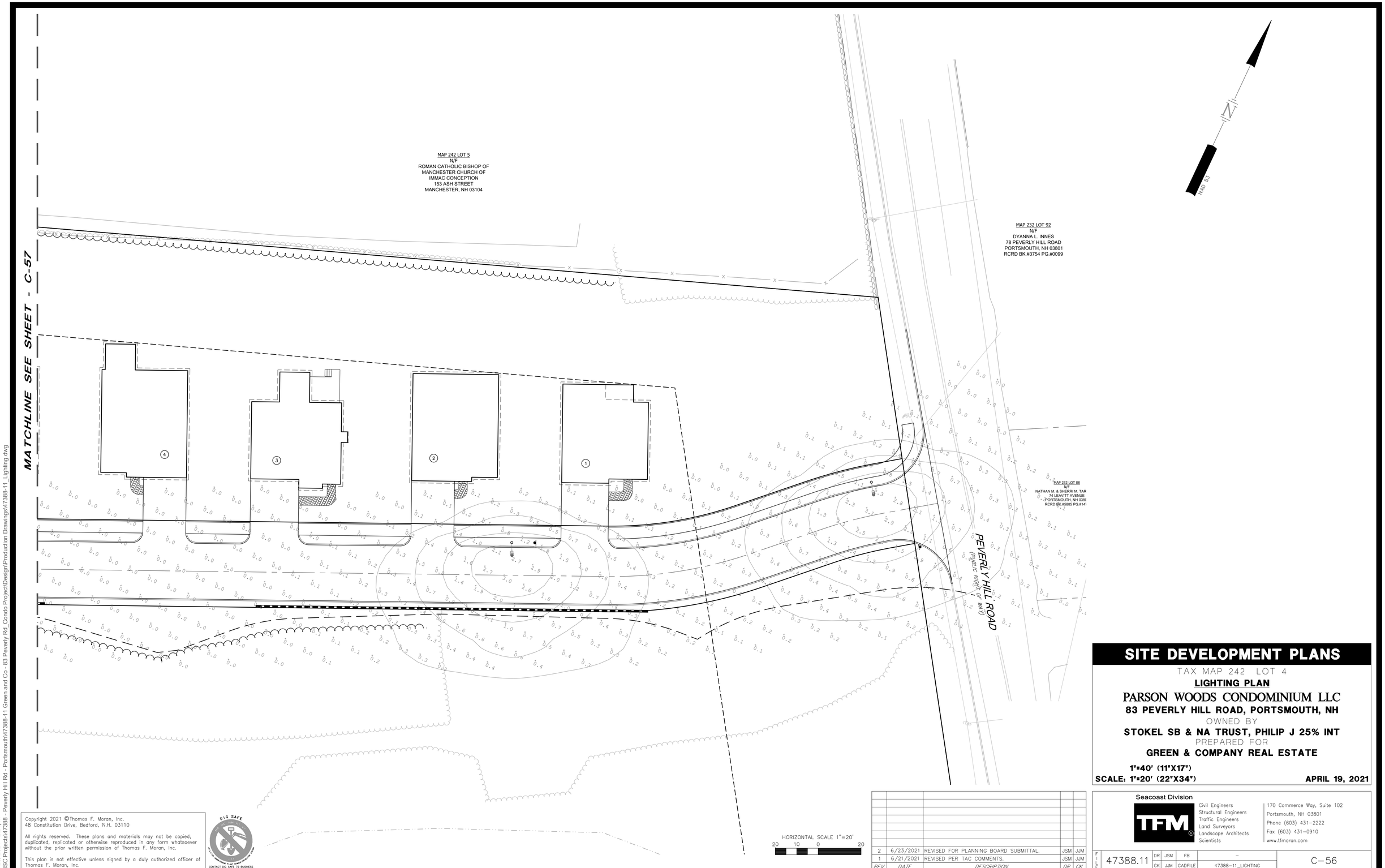

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LIGHTING PLAN

PARSON WOODS CONDOMINIUM LLC

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FILE	47388.11	DR	JSM	FB	–	C-56
		CK	JJM	CADFILE	47388-11_LIGHTING	

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MAP 242 LOT 5
N/F
ROMAN CATHOLIC BISHOP OF
MANCHESTER CHURCH OF
IMMAC CONCEPTION
153 ASH STREET
MANCHESTER, NH 03104

NAD 83

MATCHLINE SEE SHEET - C-58

MATCHLINE SEE SHEET - C-56

MATCHLINE SEE SHEET - C-60

HORIZONTAL SCALE 1"=20'
20 10 0 20

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LIGHTING PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

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SCALE: 1"=20' (22"X34")

APRIL 19, 2021

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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_LIGHTING	C-57

Jun 23, 2021 - 2:24pm
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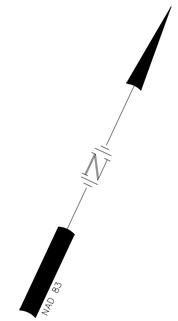

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LIGHTING PLAN

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SCALE: 1"=20' (22"X34")

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HORIZONTAL SCALE 1"=20'
20 10 0 20

MATCHLINE SEE SHEET - C-61

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47388.11	CK	JJM	CADFILE	47388-11_LIGHTING	

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N/F
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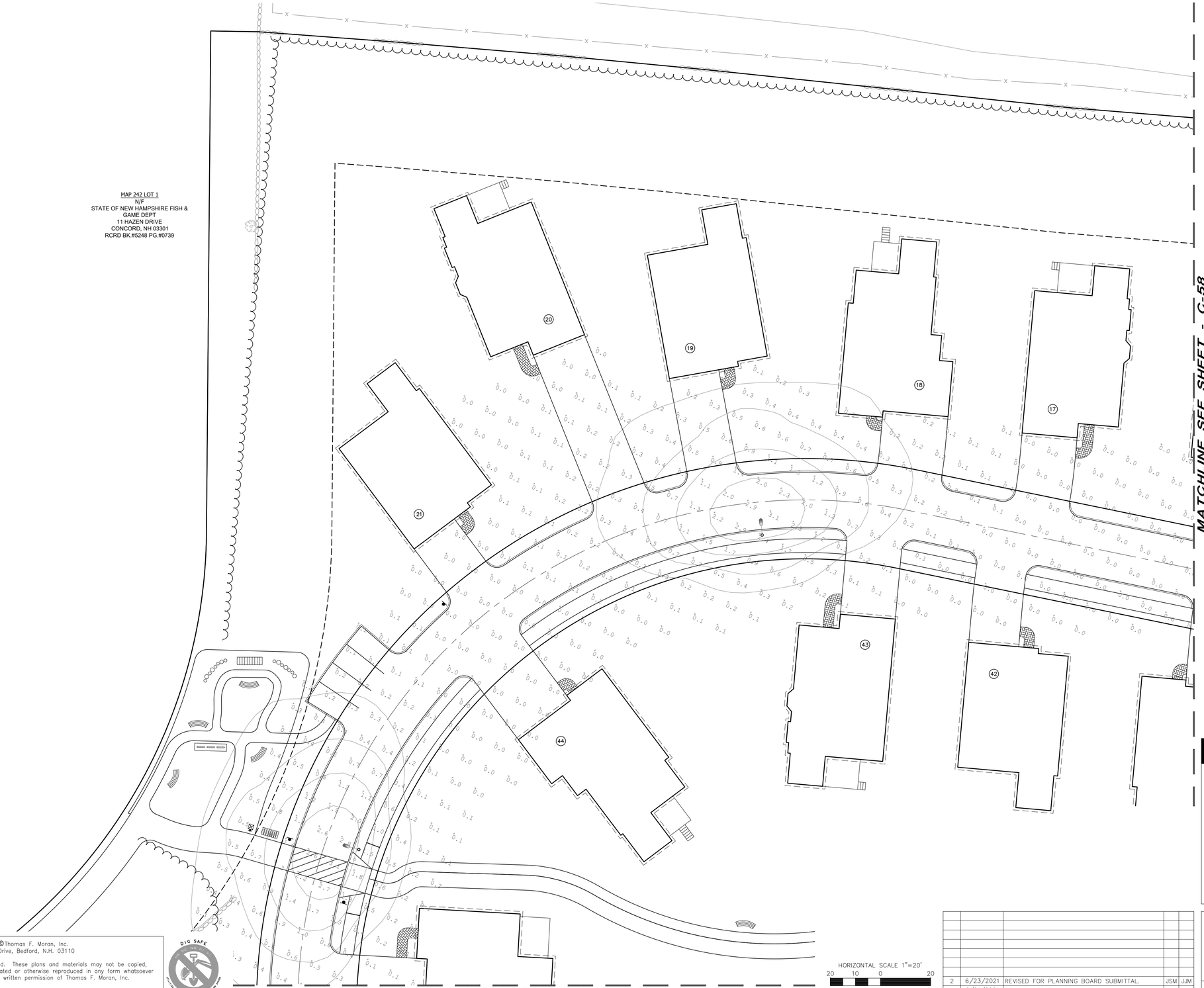
RCRD BK.#5248 PG.#0739



MATCHLINE SEE SHEET - C-58

MATCHLINE SEE SHEET - C-62

HORIZONTAL SCALE 1"=20'
20 10 0 20

NAD 83

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LIGHTING PLAN

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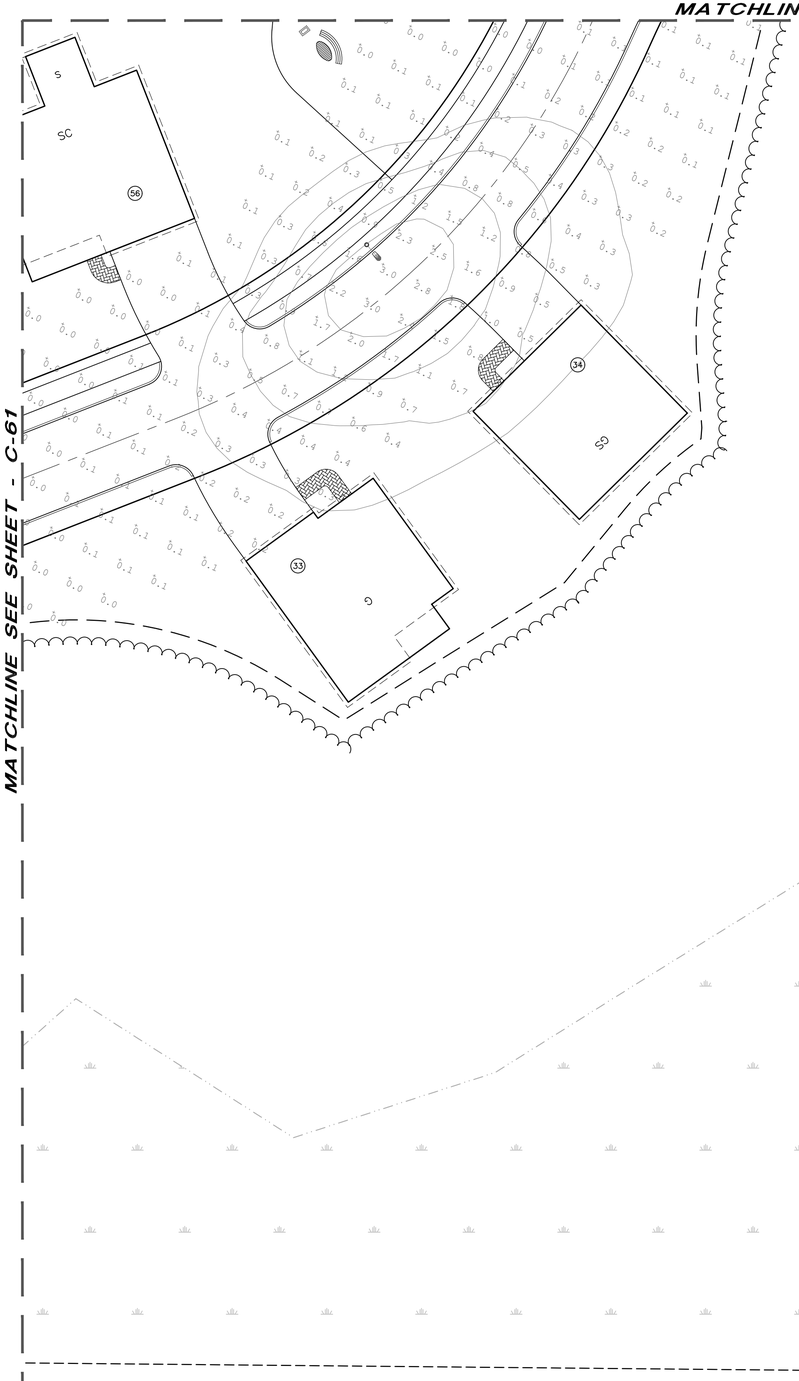
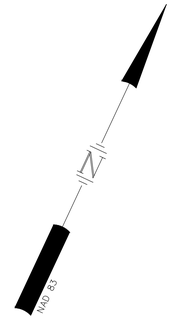
MATCHLINE SEE SHEET - C-57

MATCHLINE SEE SHEET - C-61





HORIZONTAL SCALE 1"=20'
20 10 0 20

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LIGHTING PLAN

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34")

APRIL 19, 2021

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DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_LIGHTING	C-60

Jun 23, 2021 - 2:24pm
P:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_Lighting.dwg

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HORIZONTAL SCALE 1"=20'

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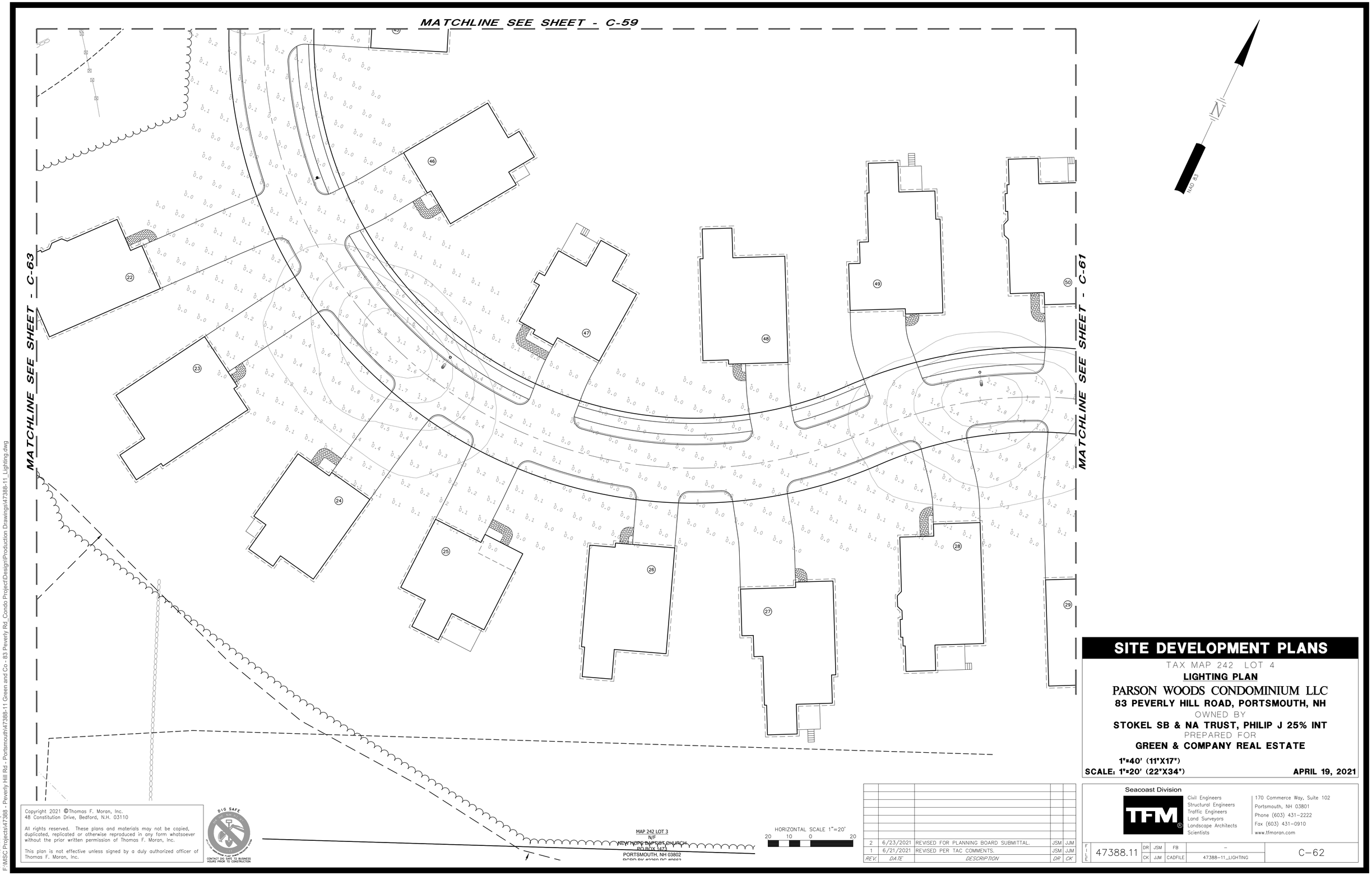

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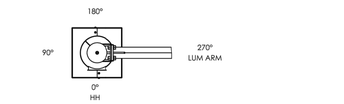
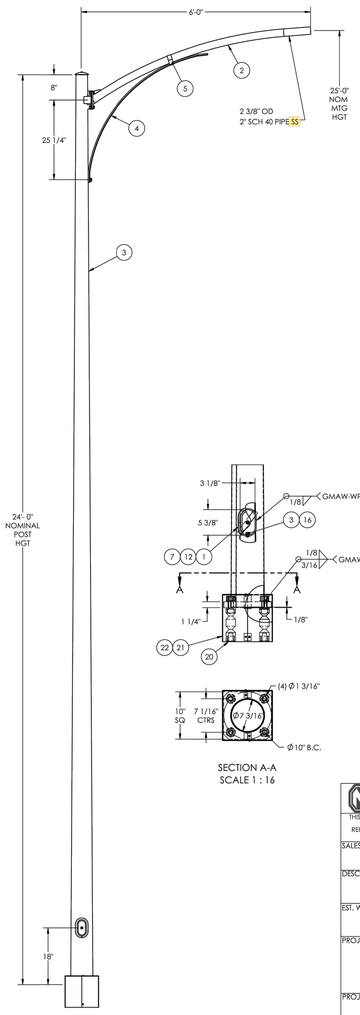
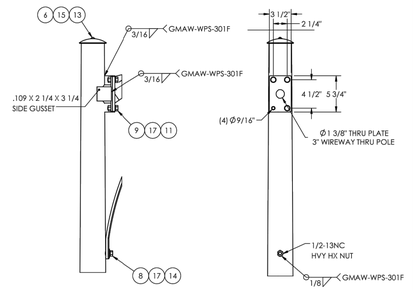
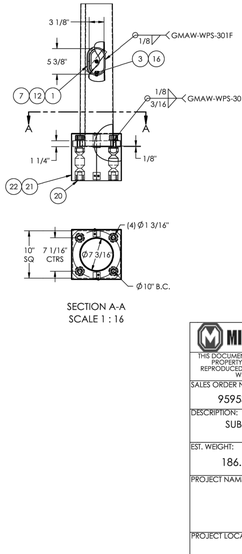
REVISIONS			
REV.	DESCRIPTION	DATE	DRFT
A	ADDED TRANSPO SKIRTS & COUPLINGS	8/31/2020	RK
B	WIND SPEED AS 90 MPH	9/15/2020	RK
C	REPLACED TRANSPO SKIRT WITH FULL BASE COVER; QTY WAS 2	11/2/2020	RK









SECTION A-A
SCALE 1 : 16

ITEM NO.	PART NUMBER	DESCRIPTION	QTY PER	ASSY	FINISH
1	1022512	M15 SS HH COVER	1		X
2	1045144	6' "SN" MASTARM	1		X
3	1045145	WLDMT POLE LIGHT RD .0721X24'0 (.0721X7.0)X(3.64X240)	1		X
4	40A191	SCROLL BRACE (SS)	1		X
5	40A778	SCROLL BRACE CLAMP wSet Screws	1		X
6	8801429-4.0	CAP CAP FITS 3.25 - 3.75 POLE DIA	1		X
7	9900037	LATCH FOR M15 (3" X 5")	1		
8	BOLTA1/2-13X5/8A	BOLTA1-2-13X5-8ABOLT HX HD 1-1-13NC X 5-8 F593C SS	1		
9	BOLTA1/2-13X1-1/4A	BOLT HX HD 1/2-13NC X 1-1/4 F593C SS	4		
10	BOLTA3/8-16X3/4A	BOLT HX HD 3-8-16NC X 3-4 F593C SS	1	X	
11	NUTHX1/2-13SS	NUT HX 1-2-13NC SS	4		
12	SCRWA5/16-18X2"SS	SCRWA HX SK FL HD 5-16-18NC X 2 SS	1		
13	SCRWN1/4-20X3"SS	SCRWSLTDRHDMACH 1-4-20NCX3 ASME B18.6.3 SS	1		
14	WASHFLAT1/2SS-003	WASHER FLAT 1/2 SS 1-3/8"OD(1.1TK)	1		
15	WASHFLAT1/4SS	WASHER FLAT 1/4 SS 5/8 OD ASME B18.22.1 SS	1		
16	WASHFLAT3/8BRASS-001	WASHFLAT3-8BRASS-001	2	X	
17	WASHLOCK1/2SS	WASHER LOCK 1/2 SS	5		
18	PT-1-17-FTU-017-FR	FIN COAT SEMI-GLOSS BLACK FREDA	REF		
19	PT-S-17-FTU-017-FR	FIN COAT SEMI-GLOSS BLACK FREDA	1		
20	TRANSPO 4100 W-HARDWARE	TRANSPO 4100 W/HRDWR NUT, 3 FLWSHRS (SET OF 4)	4		
21	1048574-2	BASE COVER WELDMENT	2		X
22	SCRWN#10-32X1/2SS	SCRW SLTDRDHDMACH #10-32NC X 1-2 SS	4		

MATERIAL SPECIFICATIONS

POST: ASTM A24 (TYPE 2011) GR 50
BASE PLATE: ASTM A240 (TYPE 304L) 25 PSI
MAST ARM:
MOUNTING PLATE:
LUMINAIRE ARM: ASTM A312 (TYPE 304L) 35,000 PSI
HARDWARE FINISH: ASTM A153
ANCHOR BOLTS: ASTM F1554 GR 55 *SIZE:* 1"

DESIGN CRITERIA

2013 AASHTO *STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS ON HIGHWAY SIGNS, LUMINAIRES & TRAFFIC SIGNALS.*

WINDS: 110 MPH *VORTEX SHED:* N/A
FATIGUE CAT: N/A *GALLOPING:* N/A
NATURAL WIND GUST: N/A *TRUCK GUST:* N/A

WELD SPECIFICATION

THE POST AND MAST ARM TO BE A TAPERED TUBE FABRICATION WITH ONE SUBMERGED ARC LONGITUDINAL SEAM WELD WITH 100% PENETRATION 6" FROM BASE PLATE AND 60% FOR REMAINDER. GAS METAL ARC WELDING PROCESS WITH 60% PENETRATION MAY BE USED FOR REMAINDER OF WELDED FABRICATION.

WELD TESTING: 100% OF ALL WELDS VISUAL TESTED (VT), 100% OF ALL COMPLETE JOINT PENETRATION (CJP) WELDS ULTRASONIC TESTED (UT) BASED ON THE THINNEST MATING MATERIAL: (PER AASHTO 2013 5.15.5-WELD INSP) THICKNESS.
< 6MM (0.25 IN) MT
≥ 6MM (0.25 IN UT
A RANDOM 30% OF ALL FILLET WELDS AND PARTIAL JOINT PENETRATION (PJP) LONGITUDINAL SEAM WELDS MAGNETIC PARTICLE TESTED (MT).

FINISH SPECIFICATION

GALV. OR PRIME COAT:
FINISH COAT: PAINT SEMI-GLOSS BLACK
COLOR: PT-1-17-FTU-017-FR
FEDERAL OR RAL SPEC.:
WEIGHT W/GALV.:
WEIGHT W/GALV.&PAINT:
WEIGHT W/PAINT: 157.0
SURFACE AREA: 12766.6
GAL. OF PAINT: 0.491023

MILLERBERND 622 6TH ST. SO.
WINSTED, MN 55395

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SALES ORDER NO.:	QTY:	STATE:	SHEET
95953	3	NH	1 OF 1

DESCRIPTION:
SUB POLE LIGHT RD .0721X24'0/25'0
6' LUM

EST. WEIGHT:	DRAWING NO:
186.1	95953-1

PROJECT NAME:
CATE STREET RELOCATION
PORTSMOUTH, NH

PROJECT LOCATION:
NH

DWN BY: REBEKAH	DATE: 6/3/2020
CHK BY:	DATE:

Luminaire Schedule					
Symbol	Qty	Label	Arrangement	Description	Lum. Lumens
▭	11	T3	SINGLE	GCM2-30H-MV-WW-3R-BK-850-PCR7-CR-CF-PTB-LLPC/ 24' MILLERBERND POLE	13283

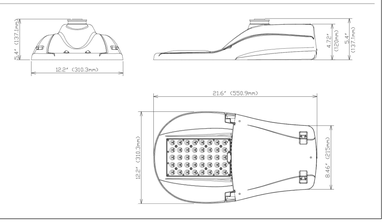
StatArea_1
ROADWAY
Illuminance (Fc)
Average = 0.61
Maximum = 3.2
Minimum = 0.0
Avg/Min Ratio = N.A.
Max/Min Ratio = N.A.

LEOTEK LITE-ON GROUP

GreenCobra™ Midsize LED Street Light
GCM H-Series Specification Data Sheet

Luminaire Data

Weight 10 lbs [4.6 kg]
EPA 0.44 ft²



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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

LIGHTING PLAN

PARSON WOODS CONDOMINIUM LLC
83 PEVERLY HILL ROAD, PORTSMOUTH, NH
OWNED BY
STOKEL SB & NA TRUST, PHILIP J 25% INT
PREPARED FOR
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SCALE: NTS **APRIL 19, 2021**

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TFM
Civil Engineers
Structural Engineers
Traffic Engineers
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FILE	47388.11	DR	JSM	FB	–	C–63
		CK	JJM	CADFILE	47388–11_LIGHTING	

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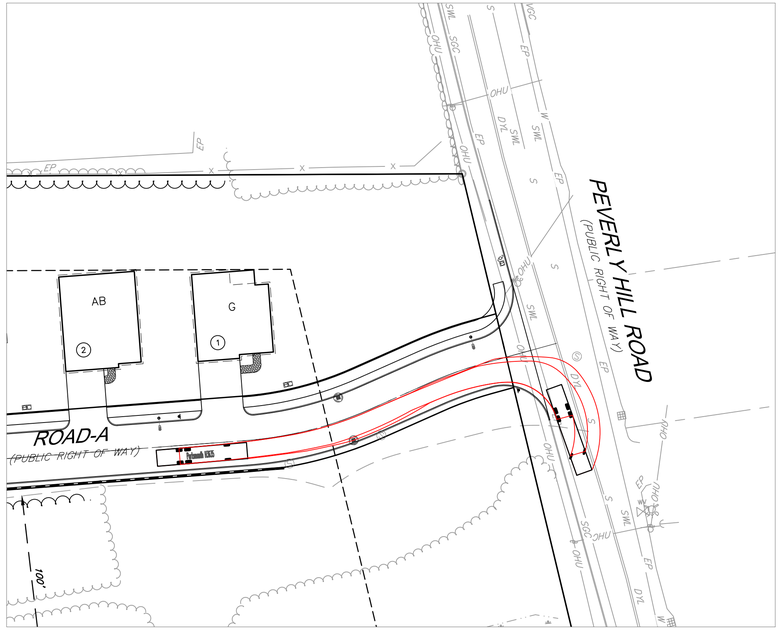
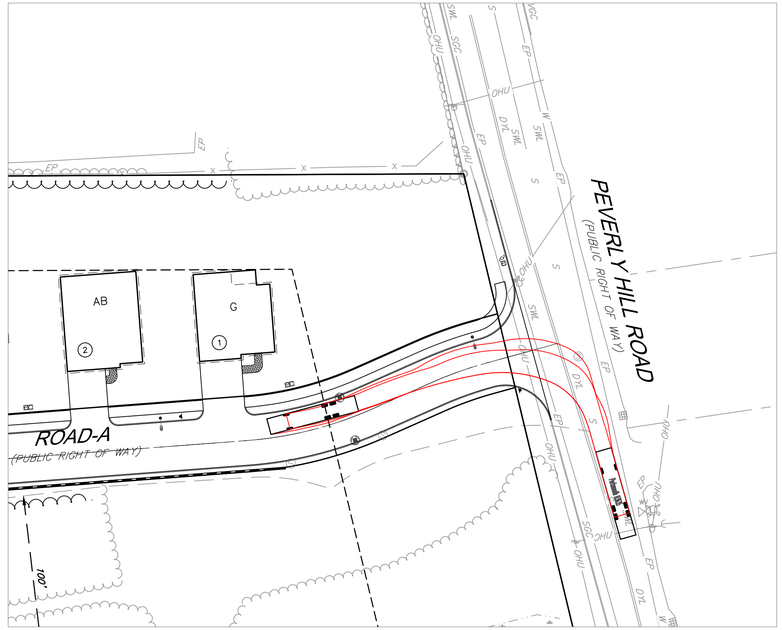
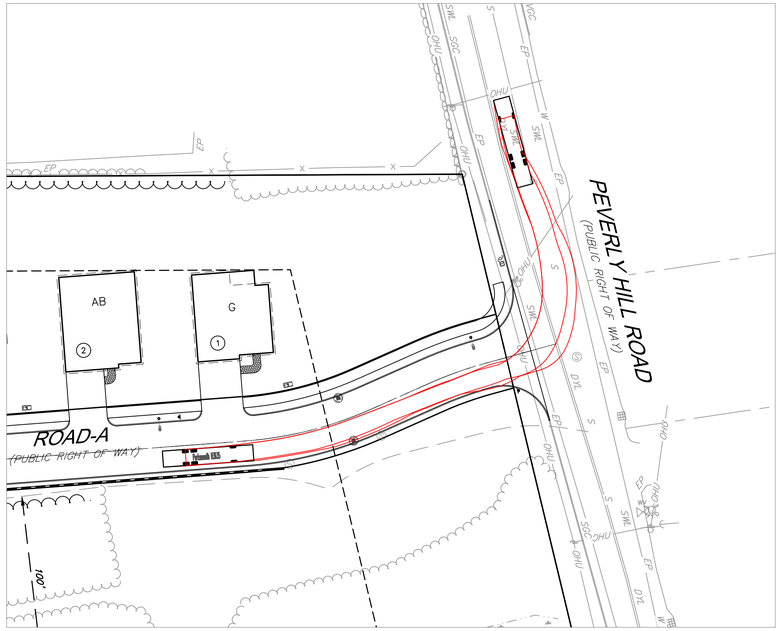


FIRE TUCK TURNING FROM ROAD-A SOUTHEAST ONTO PEVERLY HILL ROAD



FIRE TUCK TURNING FROM PEVERLY HILL ROAD NORTHWEST ONTO ROAD-A



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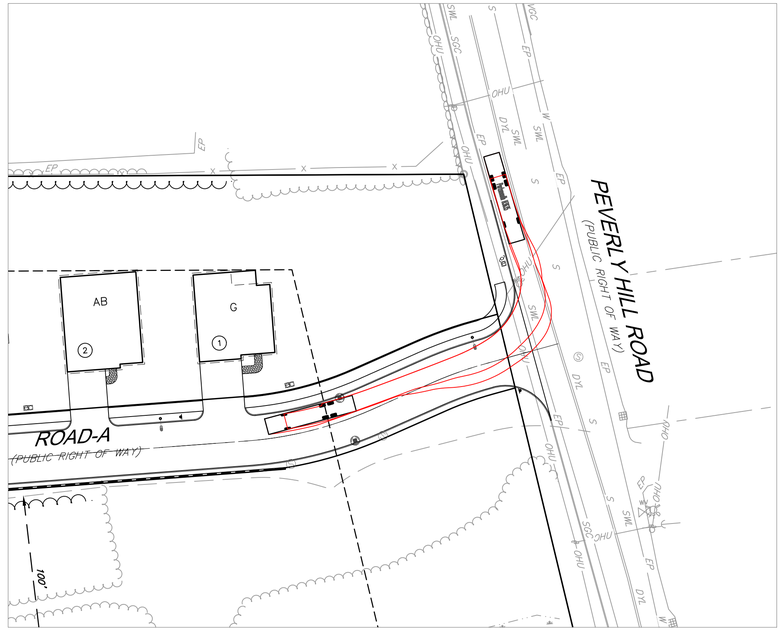

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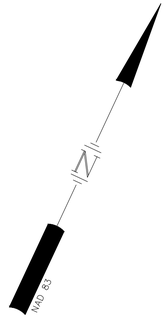
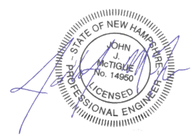


PORTSMOUTH FIRE TRUCK
NTS



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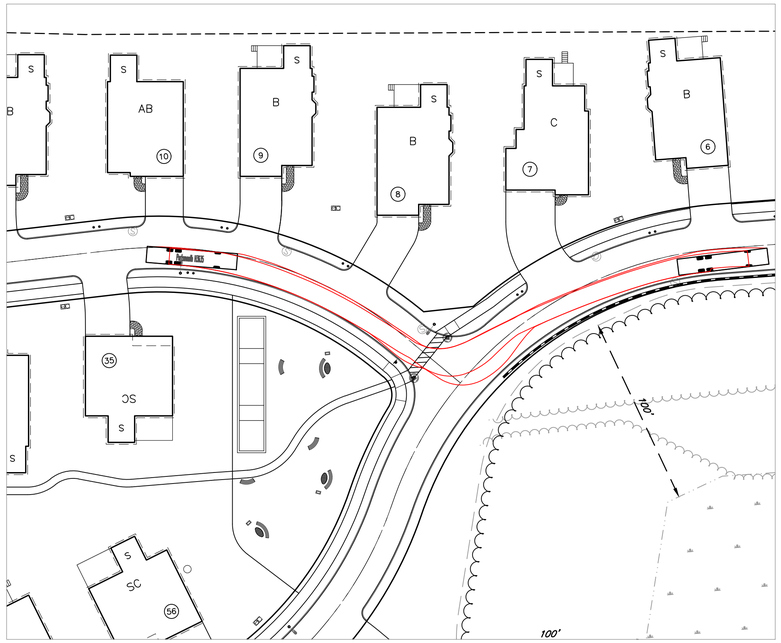

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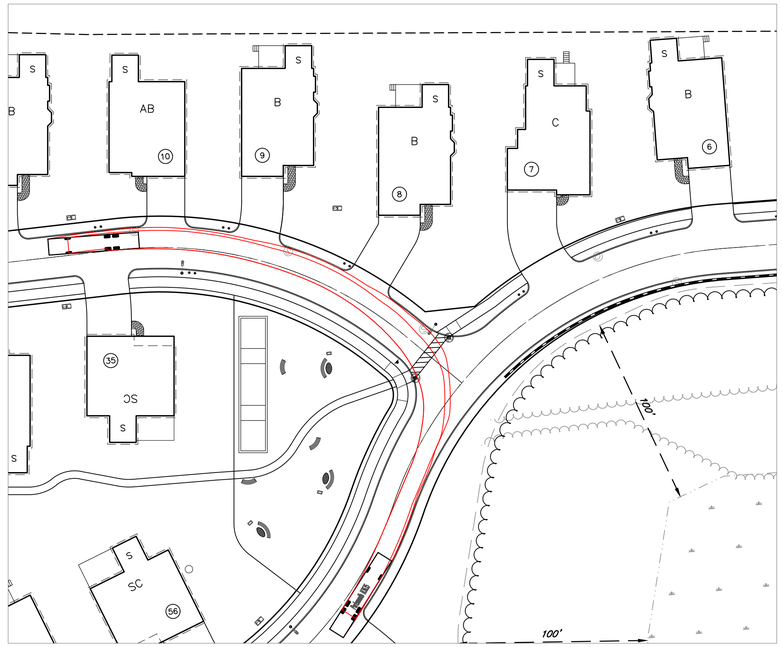

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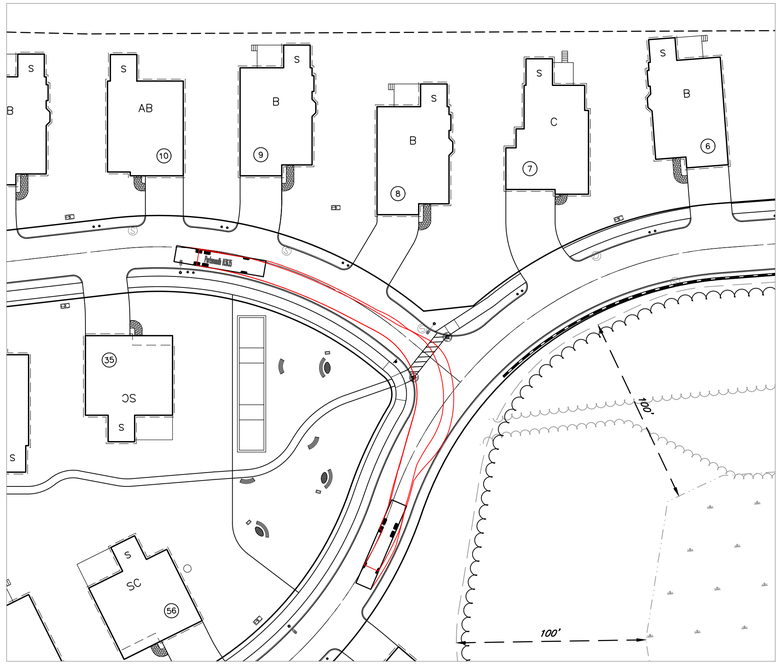

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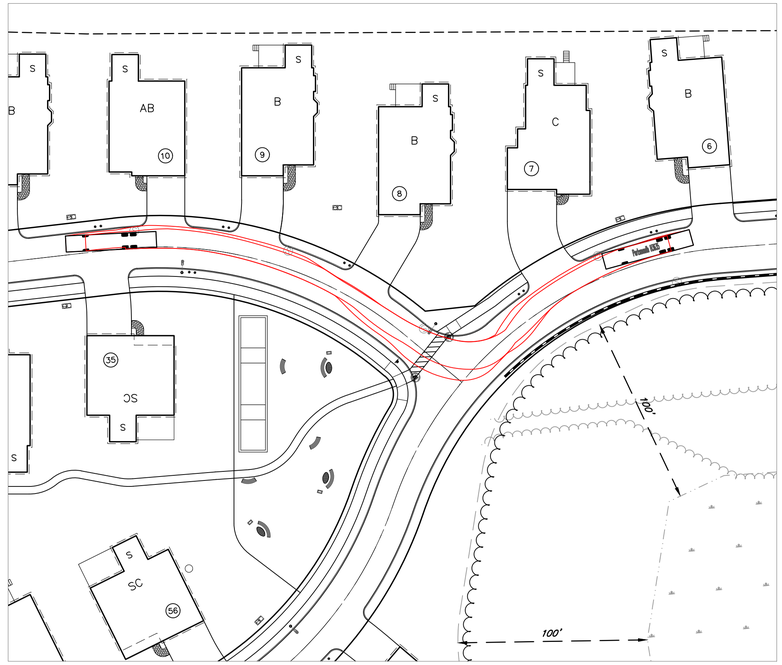

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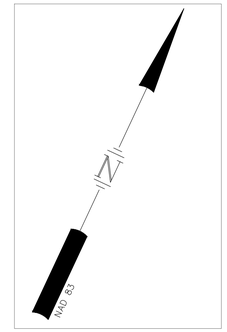

PORTSMOUTH FIRE TRUCK
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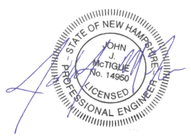

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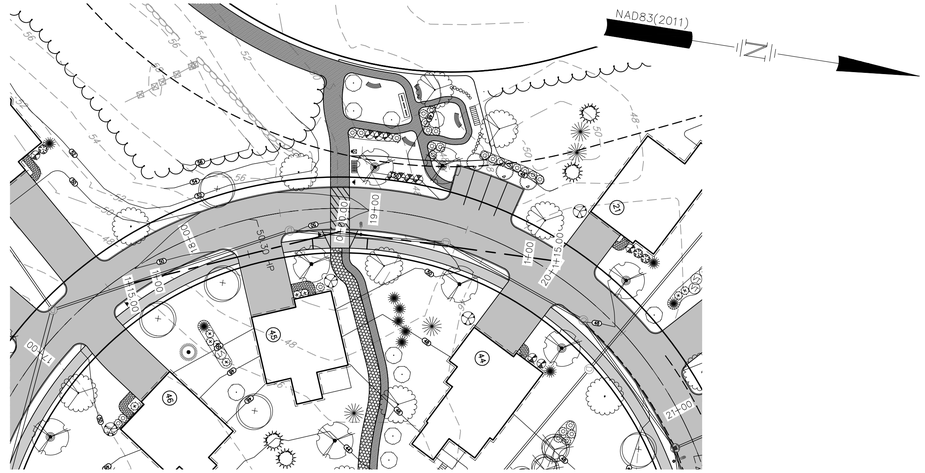
PEVERLY HILL ROAD INTERSECTION
SITE DISTANCE

HORIZONTAL SCALE 1"=40'
40 20 0 40



PEVERLY HILL ROAD INTERSECTION
SITE DISTANCE

HORIZONTAL SCALE 1"=40'
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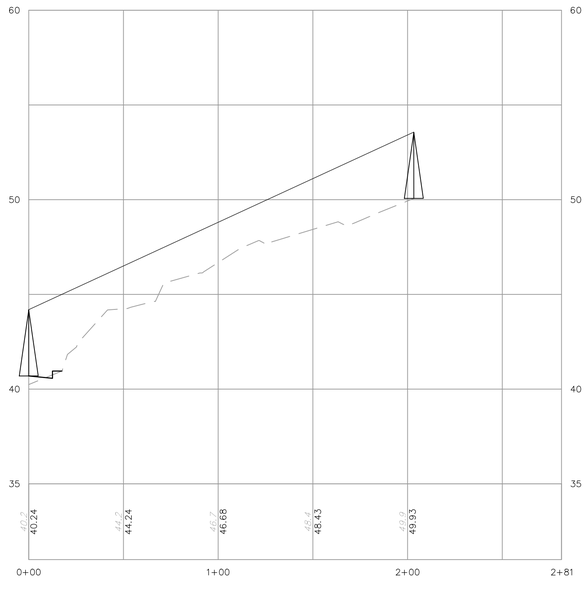
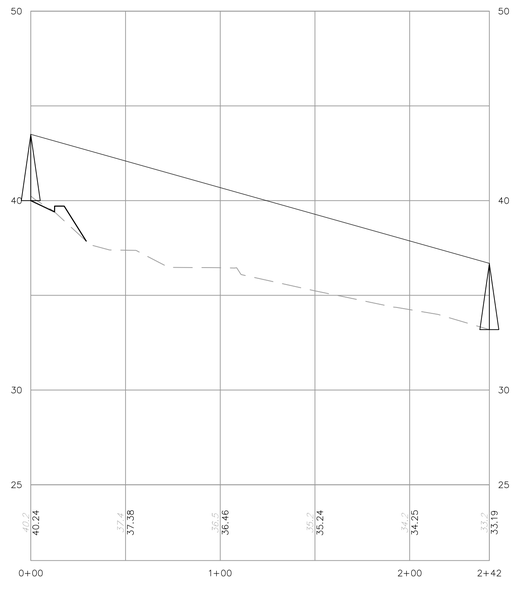
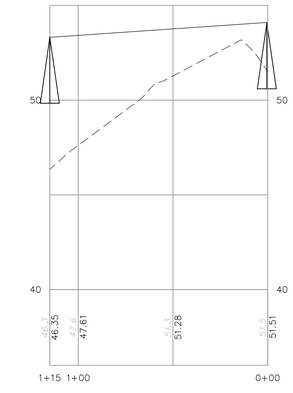


LOOKING LEFT (NORTH)
ONTO PEVERLY HILL ROAD

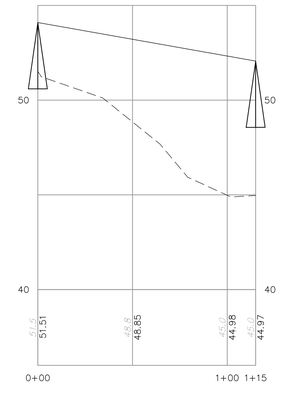


LOOKING RIGHT (SOUTH)
ONTO PEVERLY HILL ROAD

HORIZONTAL SCALE 1"=40'
40 20 0 40
VERTICAL SCALE 1"=4'
4 0 4



FROM CROSSWALK, LOOKING LEFT



FROM CROSSWALK, LOOKING RIGHT

HORIZONTAL SCALE 1"=40'
40 20 0 40
VERTICAL SCALE 1"=4'
4 0 4

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

SITE DISTANCE PLAN & PROFILE

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

(11"X17")

SCALE: AS SHOWN (24"X34") **APRIL 19, 2021**

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	JSM	FB	–	C-66
47388.11	CK	JJM	CADFILE	47388-11_SITEDISTANCE	

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CALL BEFORE YOU DIG
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE
No. 14950
LICENSED PROFESSIONAL ENGINEER

Jun 23, 2021 - 2:25pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_SiteDistance.dwg

EASEMENTS AND RESTRICTIONS (E&R)

1. THE RIGHT TO USE SAID DRIVEWAY IN COMMON WITH PETER STOKEL AND HIS HEIRS FROM SAID GREENLAND ROAD, ALONG BY SAID CEMETERY, AND ALONG THE BOUNDARY BETWEEN THE LANDS OF SAID PETER AND STELLA TO SAID RAILROAD, AND SUBJECT TO SAID PETER'S RIGHT TO USE THE SAME IN COMMON. (SEE RCRD BK.#5066 PG.#1603).

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

PEDESTRIAN & BIKE PATH

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=100'(11"X17")

SCALE: 1"=50' (22"X34")

APRIL 19, 2021

STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE
No. 14950
LICENSED
PROFESSIONAL ENGINEER

HORIZONTAL SCALE 1"=50'
50 25 0 50

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

Seacoast Division
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Traffic Engineers
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170 Commerce Way, Suite 102
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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_PATH	C-67

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Jun 23, 2021 - 3:41pm
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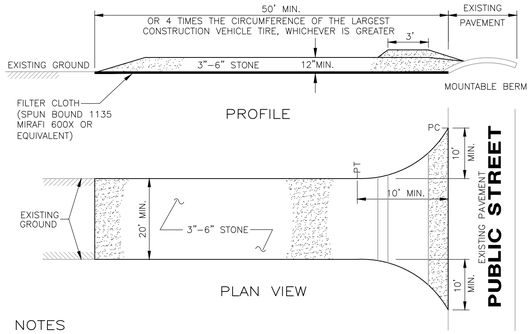
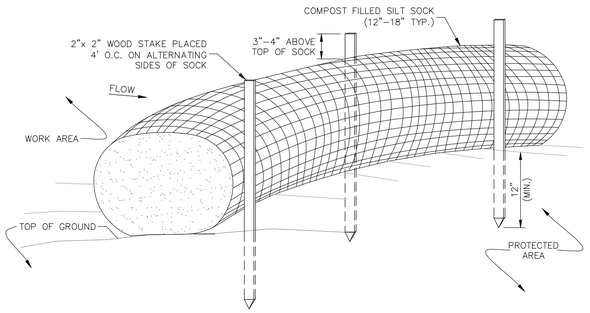


NOTES

1. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE SURFACE.
2. WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
3. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
4. WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN STORM EVENT.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

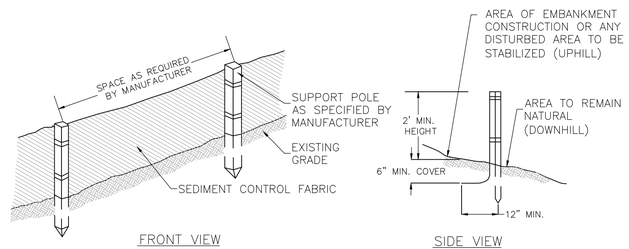


NOTES

1. SILT SOCK SHALL BE FILTREXX™ SILTSOXX™ OR APPROVED EQUIVALENT.
2. SEE SPECIFICATIONS FOR SOCK SIZE AND COMPOST FILL REQUIREMENTS.
3. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.
4. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.

SILT FENCE

NOT TO SCALE



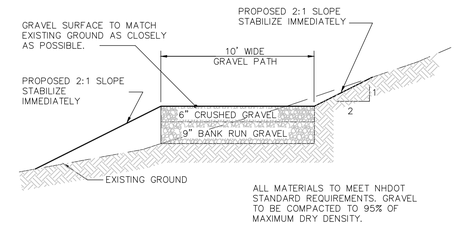
FRONT VIEW SIDE VIEW

NOTES

1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR BEST MANAGEMENT PRACTICE FOR SILT FENCES, OF THE NEW HAMPSHIRE STORMWATER MANUAL, DECEMBER 2008.
2. THE HEIGHT OF THE BARRIER SHALL NOT EXCEED 36 INCHES.
3. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6–INCH OVERLAP, AND SECURELY SEALED. SEE MANUFACTURER'S RECOMMENDATIONS.
4. POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET APART AT THE BARRIER LOCATION AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 16 INCHES). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL BE AS MANUFACTURER RECOMMENDS.
5. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 6 INCHES WIDE AND 6 INCHES DEEP ALONG THE LINE OF POSTS AND UPSLOPE FROM THE BARRIER IN ACCORDANCE WITH RECOMMENDATIONS.
6. THE FABRIC SHALL NOT EXTEND MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACE, AND WILL EXTEND TO A MINIMUM OF 8 INCHES INTO THE TRENCH. FILTER FABRIC SHALL NOT BE STAPLED INTO EXISTING TREES.
7. THE TRENCH SHALL BE BACKFILLED AND THE SOIL COMPACTED OVER THE FILTER FABRIC.
8. FILTER BARRIERS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
9. FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL, AND AT LEAST DAILY DURING PROLONGED RAINFALL; ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
10. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
11. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE–THIRD THE HEIGHT OF THE BARRIER.
12. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED, SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

SILT FENCE

NOT TO SCALE



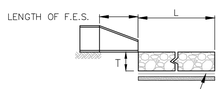
ALL MATERIALS TO MEET NHDOT STANDARD REQUIREMENTS. GRAVEL TO BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY.

GRAVEL PATH CROSS-SECTION (FOR DRAINAGE MAINTENANCE ACCESS)

NOT TO SCALE

MAINTENANCE:

THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

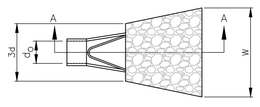


SECTION A–A

CONSTRUCTION SPECIFICATIONS:

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP RAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12".
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. ADD ANIMAL SCREEN TO FLARED END SECTION OUTLET.

% OF WEIGHT SMALLER THAN THE GIVEN SIZE (INCHES)	SIZE OF STONE
100	4.50 TO 6.00
85	3.90 TO 5.40
50	3.00 TO 4.50
15	0.90 TO 1.50

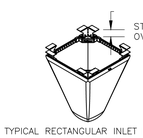


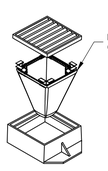
RIPRAP DIMENSIONS

LOCATION	FES01	FES02	FES03	FES04	FES05	FES06	FES07	FES08
d50 STONE SIZE (IN)								
L– LENGTH OF APRON (FT)								
W–WIDTH OF APRON (FT)								
T–DEPTH OF APRON (IN)								

RIP RAP AND FLARED END SECTION WITH OUTLET PROTECTION

NOT TO SCALE





NOTES:

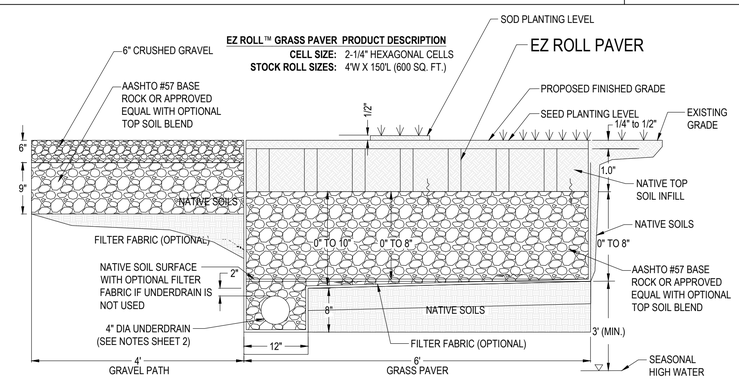
1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. INSPECTION SHOULD OCCUR FOLLOWING ANY RAIN EVENT > ½".
3. EMPTY THE SEDIMENT BAG PER MANUFACTURER'S SPECIFICATIONS.
4. REMOVED CAKED ON SILT FROM SEDIMENT BAG AND FLUSH WITH MEDIUM SPRAY WITH OPTIMAL FILTRATION.
5. REPLACE BAG IF TORN OR PUNCTURED TO > ½" DIAMETER ON LOWER HALF OF BAG.

ALL PRODUCTS MANUFACTURED BY INLET & PIPE PROTECTION, INC. A DIVISION OF ADS, INC. WWW.INLETFILTERS.COM (866) 287–8655 INFO@INLETFILTERS.COM

INLET PROTECTION

NOT TO SCALE

EZ ROLL™ GRASS PAVER PRODUCT DESCRIPTION
CELL SIZE: 2-1/4" HEXAGONAL CELLS
STOCK ROLL SIZES: 4'W X 150'L (600 SQ. FT.)

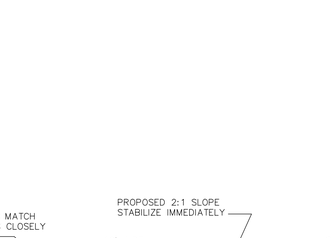


SECTION*

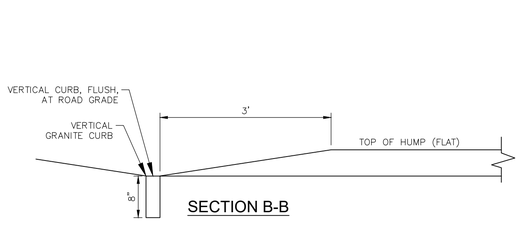
*SEE NOTES SHEET 2

GRASS PAVER PATH

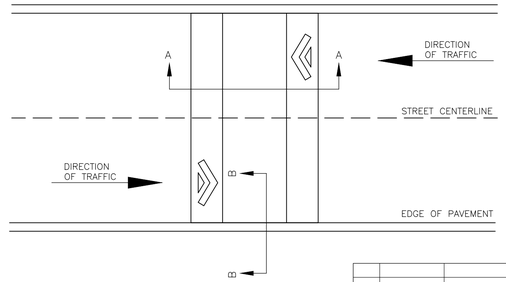
NOT TO SCALE

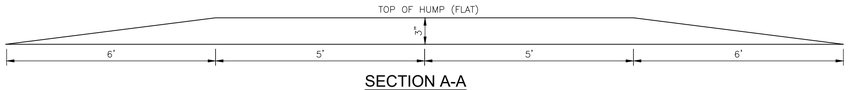


PLAN VIEW

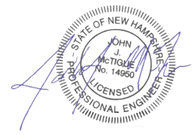


SECTION B-B





SECTION A-A



SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

DETAILS

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

SCALE: AS SHOWN **APRIL 19, 2021**

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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388–11_DETAILS	C–68

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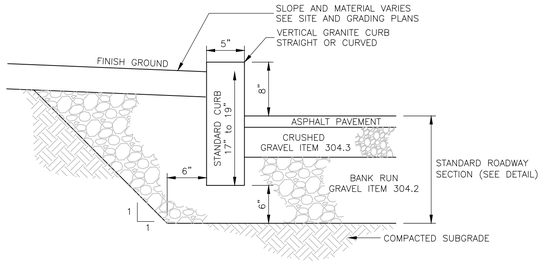
Jun 23, 2021 - 2:26pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_Details.dwg

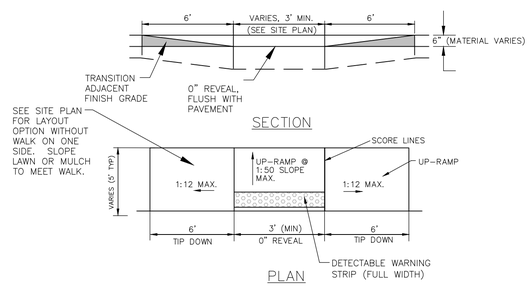


NOTES

1. MORTAR JOINTS AND OTHER INSTALLATION TO BE AS SPECIFIED IN NHDOT SECTION 609.
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. PROVIDE TRANSITIONS & RAMPS PER A.D.A.

VERTICAL GRANITE CURB

NOT TO SCALE

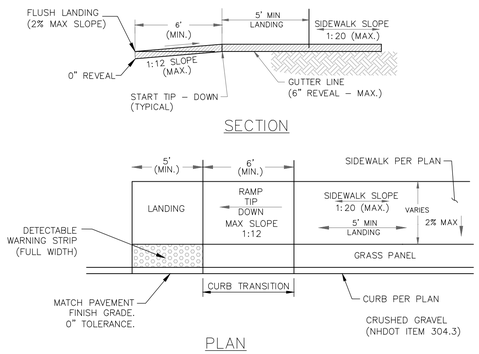


NOTE

1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICAN WITH DISABILITIES ACT, LATEST EDITION.

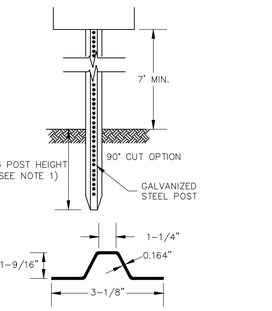
SIDEWALK TIP DOWN RAMP (TYPE D)

NOT TO SCALE



SIDEWALK TIP DOWN RAMP (TYPE E)

NOT TO SCALE

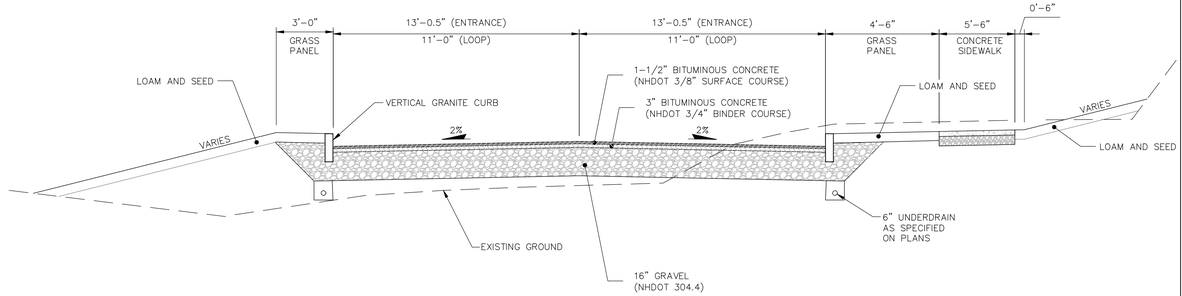


LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN)
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 - 1080)
FINISH: SHALL BE PAINTED WITH 2 COATS OF AN APPROVED MEDIUM GREEN BAKED-ON OR AIR-DRIED PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

NOTE:
1. WHERE LEDGE APPLICATION EXISTS, DRILL & GROUT TO A MINIMUM OF 2'.
2. ALL SIGNAGE SHALL FOLLOW THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES STANDARDS AND NHDOT STANDARDS.
3. SIGN, HARDWARE, AND INSTALLATION SHALL CONFORM TO THE LATEST NHDOT STANDARD SPECIFICATIONS.

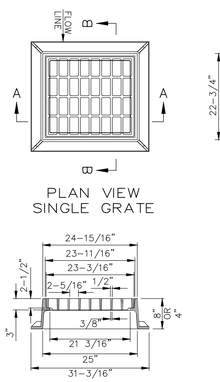
SIGN POST

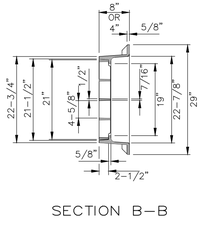
NOT TO SCALE

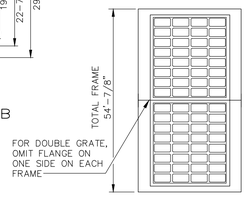


ROADWAY TYPCIAL SECTION

NOT TO SCALE







NOTES

1. FRAME AVAILABLE IN 8" OR 4" HEIGHTS.
2. FREE OPEN AREA = 2.55 S.F.
3. USE 3-FLANGE FRAME IF INSTALLED ADJACENT TO GRANITE CURB.
4. USE NEENAH FOUNDRY R-3570-A GRATE & FRAME OR APPROVED EQUAL.

FRAME & GRATE (TYPE B)

NOT TO SCALE

NOTES

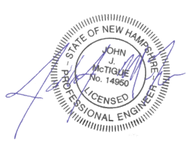
1. TRAFFIC PAINT SHALL BE APPLIED AS SPECIFIED BY THE MANUFACTURER AND SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F". APPLY TWO COATS.
2. SYMBOLS AND PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT, LATEST EDITION.

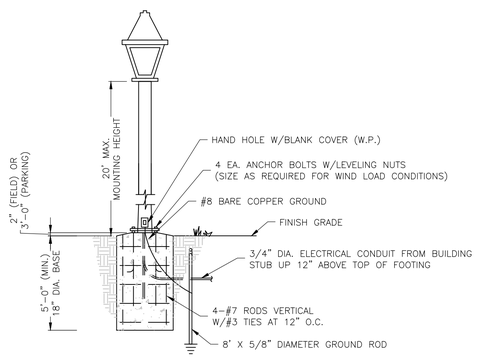
STOP BAR & LEGEND

NOT TO SCALE

NOTES:

1. SEE GRADING & DRAINAGE PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
2. PROVIDE CLEAN BUTT TO EXISTING PAVEMENT- USE TACK COAT. SPECIFICALLY, A TACK COAT SHALL BE PLACED ATOP THE BINDER COURSE PAVEMENT PRIOR TO PLACING THE WEARING COURSE.
3. REMOVE ALL LOAM AND/OR YIELDING MATERIAL BELOW PAVEMENT.
4. ALL ROADWAY TO CONFORM TO THE STREET DESIGN AND CONSTRUCTION REQUIREMENTS IN THE TOWN OF PORTSMOUTH, NH SUBDIVISION REGULATIONS.
5. BITUMINOUS CONCRETE SHALL BE COMPACTED TO AT LEAST 92.5% OF THEORETICAL MAXIMUM DENSITY AS DETERMINED BY ASTM D2041 OR AASHTO T209. PLACEMENT TEMPERATURES OF BITUMINOUS CONCRETE MIXES, IN GENERAL, RANGE BETWEEN 270 AND 310 DEGREES FAHRENHEIT.
6. PAVEMENT BASE COURSE AGGREGATE SHALL CONFORM TO NHDOT SPECIFICATION SECTION 304, ITEM 304.4 AND COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY.
7. PAVEMENT SUBBASE COURSE AGGREGATE AND AGGREGATE FOR SUBGRADE REPAIR AREAS SHALL BE SUITABLE FOR USE AS STRUCTURAL FILL AND BE PROOF ROLLED AND COMPACTED TO 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY.
8. THE EXPOSED SOIL SUBGRADE SHOULD BE PROOF ROLLED PRIOR TO THE PLACEMENT OF SUBBASE GRAVEL, AND SOFT AREAS SHOULD BE REPAIRED AND REPLACED.



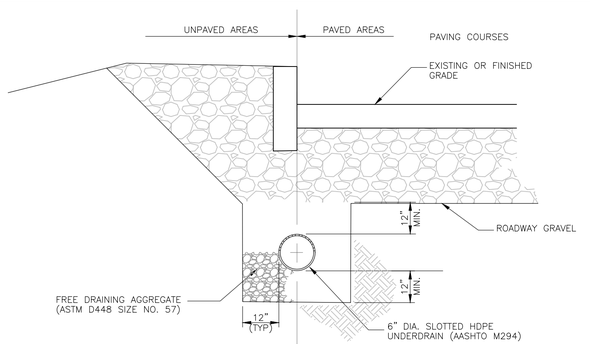


NOTES

1. BASE SHOWN IS PROTOTYPICAL. VERIFY THAT LIGHT POLE BASE INSTALLED MEETS LIGHT POLE MANUFACTURER'S SPECIFICATIONS. COORDINATE WITH ELECTRICAL CONTRACTOR.
2. WHERE LIGHT POLE BASES ARE PLACED IN AREAS NOT PROTECTED BY CURBING, A 3'-0" REVEAL OF BASE IS REQUIRED WITH REVEAL TO BE PAINTED SAFETY YELLOW. WHERE LIGHT POLE BASES ARE PLACED IN FIELD APPLICATIONS OR PROTECTED BY CURBING, THE BASE IS TO BE PLACED 2" ABOVE FINISHED GRADE.
3. BASE CONCRETE TO BE 4,000 PSI, SMOOTH FINISH.
4. POLES SHALL BE FACTORY CUT TO PROVIDE REQUIRED MOUNTING HEIGHTS.
5. PROPOSED ROADWAY LIGHTING SHALL BE DARK SKY FRIENDLY.

LIGHT POLE BASE

NOT TO SCALE



UNDERDRAIN TRENCH DETAIL

NOT TO SCALE

REV.	DATE	DESCRIPTION	DR	CK
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SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

DETAILS

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

SCALE: AS SHOWN **APRIL 19, 2021**

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FILE	47388.11	DR	JSM	FB	-	C-69
		CK	JJM	CADFILE	47388-11_DETAILS	

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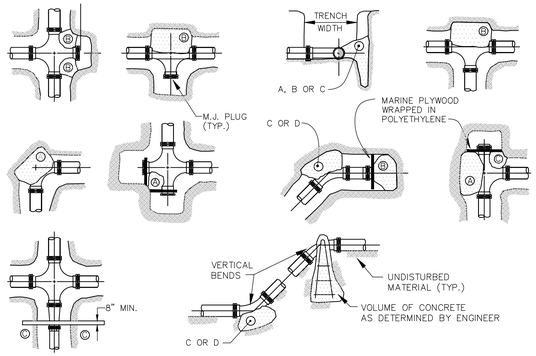


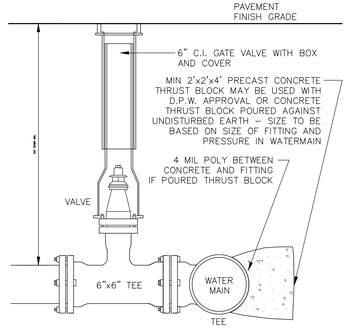
NOTES

1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED. EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO PIPE JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.
4. WHERE MECHANICAL JOINT PIPE IS USED, MECHANICAL JOINT PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
5. INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE CITY/TOWN ESTABLISHED RULES AND PROCEDURES.

TEST PRESSURE = 200psi — SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL

REACTION TYPE		PIPE SIZE 4"	6"	8"	10"	12"
A	90°	0.89	2.19	3.82	11.14	17.24
B	180°	0.65	1.55	2.78	8.38	12.00
C	45°	0.48	1.19	2.12	6.02	9.32
D	22–1/2°	0.25	0.60	1.06	3.08	4.74
E	11–1/4°	0.13	0.30	0.54	1.54	2.38

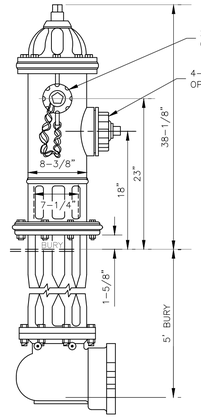
THRUST BLOCKS
NOT TO SCALE



NOTES:

1. VALVE TO OPEN RIGHT.

BURIED GATE VALVE
NOT TO SCALE

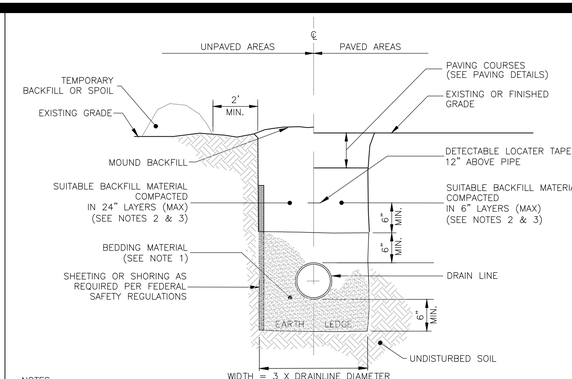


THREE–WAY HYDRANT KENNEDY K–81A GUARDIAN ELMIRA, N.Y.

SPECIFICATIONS

1. 150 PSI WORKING PRESSURE
2. 300 PSI TEST PRESSURE
3. HYDRANT DRAIN SHALL BE PLUGGED
4. DRY TOP DESIGN VALVE SHALL OPEN WHEN OPERATING NUT IS TURNED CLOCKWISE AND BE SO INDICATED ON HYDRANT
5. OPERATING NUT SHALL BE STANDARD AWWA PENTAGON OPERATING NUT WITH 1 1/2" POINT TO FLAT DIMENSION
6. THREADS SHALL BE NATIONAL STANDARD HOSE THREAD NOZZLES
7. HYDRANT TO OPEN RIGHT.

PORTSMOUTH FIRE HYDRANT
NOT TO SCALE



NOTES

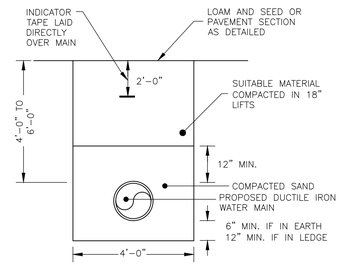
1. BEDDING – BEDDING FOR PIPES SHALL CONSIST OF PREPARING THE BOTTOM OF THE TRENCH TO SUPPORT THE ENTIRE LENGTH OF THE PIPE AT A UNIFORM SLOPE AND ALIGNMENT. CRUSHED STONE SHALL BE USED TO BED THE PIPE TO THE ELEVATION SHOWN ON THE DRAWINGS. NORMAL PIPE BEDDING IS CRUSHED STONE TO THE HAUNCH OF THE PIPE AND SAND BEDDING 6" ABOVE THE CROWN. IF THE TOP OF THE PIPE IS LESS THAN 30" FROM FINISH GRADE, BED PIPE COMPLETELY IN STONE UP TO 6" ABOVE PIPE CROWN. UNDERDRAIN TO HAVE 4" MINIMUM OF STONE OVER PIPE OR AS NECESSARY TO BE IN CONTACT WITH GRAVEL LAYER OF SELECTS ABOVE.
2. COMPACTION – ALL BACKFILL SHALL BE COMPACTED AT OR NEAR OPTIMUM MOISTURE CONTENT BY PNEUMATIC TAMPERS, VIBRATORY COMPACTORS OR OTHER APPROVED MEANS. BACKFILL BENEATH PAVED SURFACES SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T99, METHOD C.
3. SUITABLE MATERIAL – IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ROCKS OVER 6" IN LARGEST DIMENSION; FROZEN EARTH AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.
4. BASE COURSE AND PAVEMENT – SHALL MEET THE REQUIREMENT OF THE NHDOT LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DIVISION 300 AND 400 RESPECTIVELY.

TRENCH FOR DRAIN LINE
NOT TO SCALE

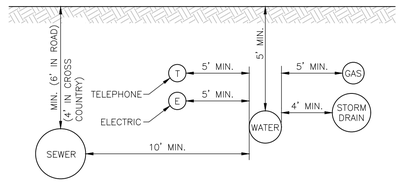
NOTES

1. ALL SECTIONS SHALL BE PRECAST CONCRETE NHDOT CLASS AA, 4,000 PSI.
2. ALL COMPONENTS OF CATCH BASINS SHALL MEET NHDOT SPECIFICATIONS.
3. ALL COMPONENTS SHALL BE DESIGNED FOR HS–20 LOADING.
4. LARGER DIAMETER STRUCTURES SHALL BE USED AS REQUIRED DUE TO NUMBER, ANGLE OR SIZE OF PIPES AT THE STRUCTURE.
5. ALL CASTINGS SHALL BE MADE IN THE USA.

ECCENTRIC CATCH BASIN WITH HOODED OUTLET
NOT TO SCALE



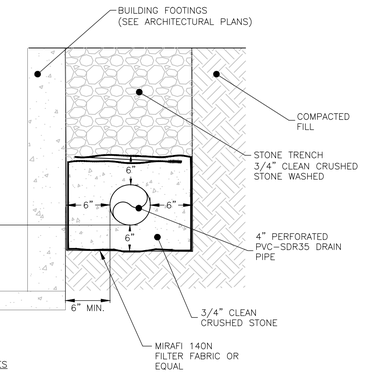
WATER MAIN TRENCH
NOT TO SCALE



NOTES:

1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO EXETER DPW TECHNICAL SPECIFICATIONS.
2. ALL WATER MAIN SHOULD HAVE A MINIMUM DEPTH OF 5' FROM TOP OF PIPE TO FINISH GRADE.
3. GAS MAIN SHALL HAVE A TYPICAL DEPTH OF 3' FROM THE TOP OF PIPE TO FINISH GRADE
4. DETAIL REPRESENTS LATERAL SEPARATION ONLY UNLESS OTHERWISE NOTED. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANY FOR DEPTHS FOR GAS, TELEPHONE, AND ELECTRIC.

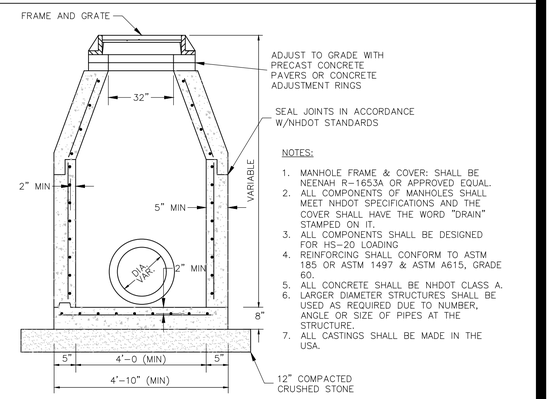
TYPICAL UTILITY LATERAL SEPARATION
NOT TO SCALE



NOTES

1. FOR MINIMUM DIMENSIONAL REQUIREMENT REFER TO THE GEOTECHNICAL REPORT PREPARED BY JOHN TURNER COUNSULTING, INC. ON JULY 3, 2013.

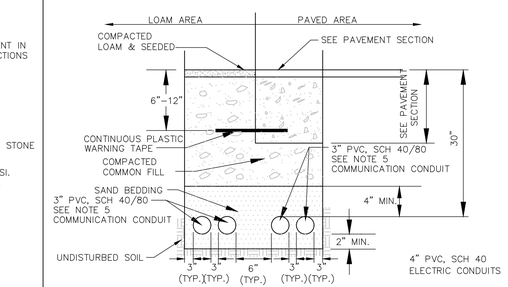
FOUNDATION DRAIN LINES
NOT TO SCALE



NOTES:

1. MANHOLE FRAME & COVER: SHALL BE NEENAH R–1653A OR APPROVED EQUAL.
2. ALL COMPONENTS OF MANHOLES SHALL MEET NHDOT SPECIFICATIONS AND THE COVER SHALL HAVE THE WORD "DRAIN" STAMPED ON IT.
3. ALL COMPONENTS SHALL BE DESIGNED FOR HS–20 LOADING
4. REINFORCING SHALL CONFORM TO ASTM 185 OR ASTM 1497 & ASTM A615, GRADE 60.
5. ALL CONCRETE SHALL BE NHDOT CLASS A.
6. LARGER DIAMETER STRUCTURES SHALL BE USED AS REQUIRED DUE TO NUMBER, ANGLE OR SIZE OF PIPES AT THE STRUCTURE.
7. ALL CASTINGS SHALL BE MADE IN THE USA.

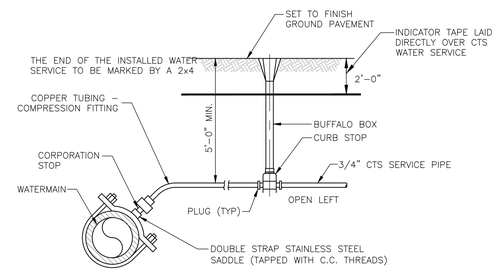
DRAIN MANHOLE
NOT TO SCALE



NOTES

1. ELECTRIC SERVICE INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL CODES.
2. COMMUNICATION SERVICE INSTALLATION SHALL MEET ALL CONSTRUCTION REQUIREMENTS.
3. ACTUAL NUMBER OF CONDUITS TO BE DETERMINED BY RESPECTIVE COMPANIES.
4. VERIFY INSTALLATION REQUIREMENTS WITH RESPECTIVE COMPANIES.
5. SCHEDULE 80 CONDUIT TO BE USED UNDER TRAFFIC SITUATIONS (PRIMARY AND SECONDARY LINES).
6. ALL 90 DEGREE SWEEPS MUST BE STEEL AND THE FIRST 10' STICK OUT OF THE 90 MUST BE STEEL ON ALL PRIMARY CONDUIT RUNS

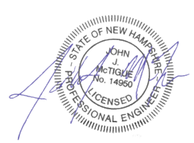
ELECTRIC/COMMUNICATIONS CONDUIT
NOT TO SCALE



WATER SERVICE CONNECTION
NOT TO SCALE

NOTES

1. CURB STOPS TO OPEN TO THE RICHT.



SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

SCALE: AS SHOWN **APRIL 19, 2021**

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Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
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Portsmouth, NH 03801
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FILE	DR	JSM	FB	–	
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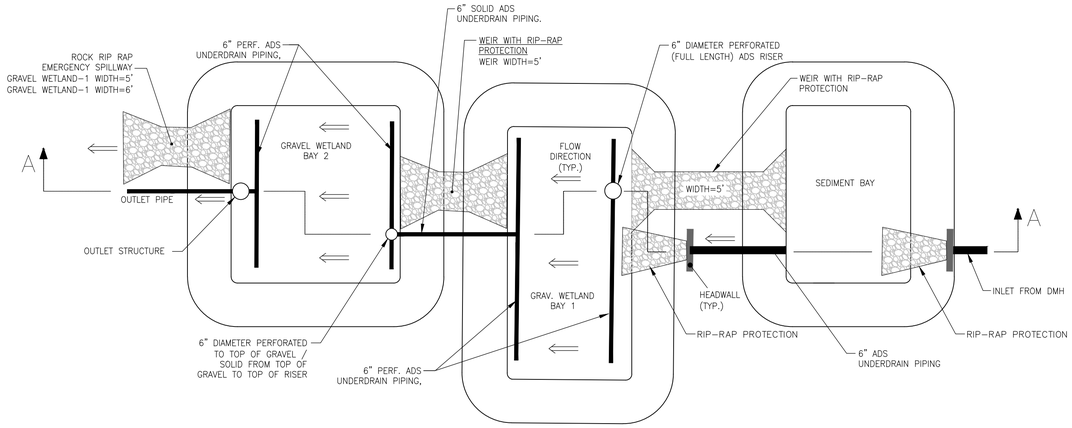
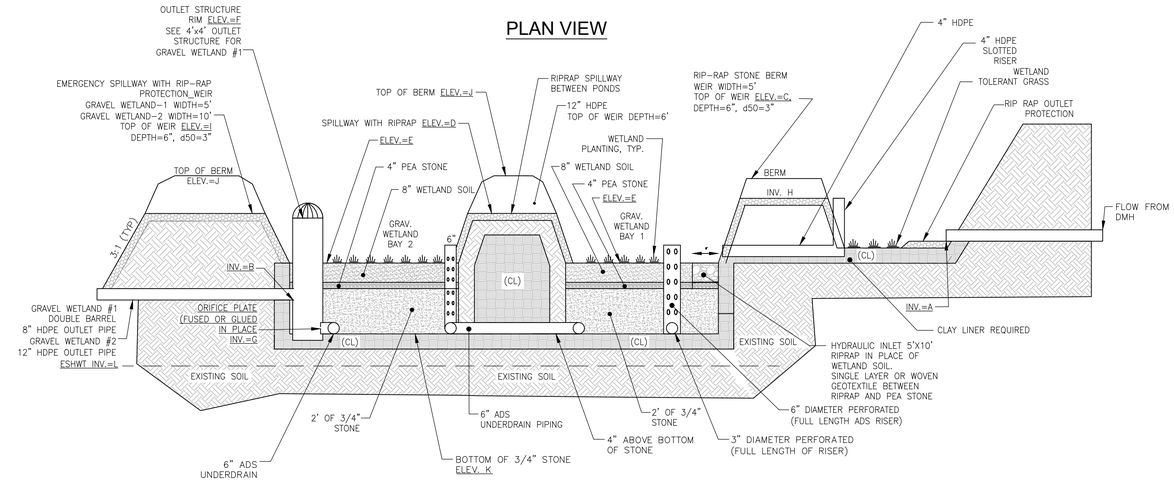


PLAN VIEW



SECTION A-A

ELEVATION TABLE	
INV. ID	GRAVEL WETLAND 1
A	37.85
B	34.41
C	38.25
D	37.75
E	35.00
F	37.00
G	UNDERDRAIN INV.=32.33 (1.75" ORIFICE INV=32.53)
I	37.75
J	38.25
K	32.00
L	33.00

INSPECTION AND MAINTENANCE.

FOREBAYS: INSPECT FOREBAYS FOR SEDIMENT ACCUMULATION TWICE PER YEAR MINIMUM AND REMOVE WHEN LEVEL REACHES 4 INCHES OR MORE. INSPECT FOR AND REMOVE ACCUMULATED DEBRIS TWICE PER YEAR MINIMUM. MOW FOREBAY SIDES AND BOTTOM WEEKLY TO PREVENT WOODY GROWTH AND PROMOTE GRASS GROWTH.

WETLANDS: INSPECT WETLANDS FOR AREAS OF DEAD OR STRESSED WETLAND GRASSES, REEDS, HERBACEOUS PLANTS, OR SHRUBS A MINIMUM OF TWICE PER YEAR AND REPLANT AS NECESSARY. MOW GRASSED SIDESLOPES ON A REGULAR BASIS TO KEEP HEIGHT OF VEGETATION BELOW 4 INCHES. INSPECT FOR AND REMOVE ACCUMULATED DEBRIS TWICE PER YEAR MINIMUM.

DESIGN LIFE: FOLLOWING THE MINIMAL MAINTENANCE PROCEDURES ABOVE, STUDIES CONDUCTED AT UNH INDICATE THE SYSTEM WILL CONTINUE TO DEVELOP INTO A HEALTHY DIVERSE WETLAND WITH NO QUANTIFIABLE DESIGN LIFE EXTENT.

NOTE:

1. GRAVEL WETLAND TO BE SEEDED WITH NEW ENGLAND WETMIX. APPLICATION RATE: 18 LBS PER ACRE OR 1 LB PER 2,500 S.F.

SUBSURFACE GRAVEL WETLAND MATERIAL LAYERS

THE SURFACE INFILTRATION RATES OF THE GRAVEL WETLAND SOIL SHOULD BE SIMILAR TO A LOW HYDRAULIC CONDUCTIVITY WETLAND SOIL (0.1–0.01 FT/DAY = 3.5 X 10–5 CM/SEC TO 3.5 X 10–6 CM/SEC). THIS SOIL MAY BE MANUFACTURED USING A COMBINATION OF LOAM, SAND, AND SOME FINE SOILS BLENDED TO A HIGH PERCENT ORGANIC MATTER CONTENT SOIL (>15% ORGANIC MATTER). FINAL WETLAND SOIL MIX WITH CLAY CONTENT NOT TO EXCEED 15% THAT MAY RESULT IN DRYING AND CRACKING AND POTENTIAL MIGRATION OF FINES INTO THE SUBSURFACE GRAVEL LAYER. DO NOT USE GEOTEXTILES BETWEEN THE HORIZONTAL LAYERS OF THIS SYSTEM AS THEY WILL CLOG DUE TO FINES AND MAY RESTRICT ROOT GROWTH.

THE PROPOSED PARTICLE SIZE DISTRIBUTION (PSD) FOR WETLAND SOIL IS PROVIDED IN THE TABLE BELOW AND REFLECTS A POORLY DRAINED SOIL WITH A MEDIAN PARTICLE SIZE (D50) OF 0.15 MM AND IS A CLAY OR SILT LOAM IN THE USDA SOIL TEXTURAL TRIANGLE. THIS WETLAND SOIL MUST EXCLUDE ANY STICKS, ROOTS, STONES, ETC. THAT VIOLATE THE SUGGESTED PSD. ONSITE MATERIALS SHOULD BE EVALUATED BY THE CONSTRUCTION ENGINEER TO ENSURE APPLICABILITY.

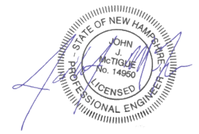
PARTICLE SIZE DISTRIBUTION

SIEVE SIZE (in./mm)	% PASSING BY WEIGHT	% PASSING TESTING TOLERANCE
0.5/12.5	100%	± 10.0%
#10/2.00	90–75%	± 5.0%
#100/0.15	40–50%	± 5.0%
#200/0.15	25–50%	± 5.0%

SEE UNHSC SUBSURFACE GRAVEL WETLAND DESIGN SPECIFICATIONS, JUNE 2016 FOR MORE DETAIL.

TYPICAL GRAVEL WETLAND

NOT TO SCALE



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1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

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FILE	DR	JSM	FB	–	
47388.11	CK	JJM	CADFILE	47388-11_DETAILS	C-71

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DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Jun 23, 2021 - 2:27pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_Details.dwg

BIORETENTION FILTER MEDIA MIXTURES			
COMPONENT MATERIAL	% OF MIXTURE BY VOLUME	GRADATION OF MATERIAL	
		SIEVE NO.	% BY WEIGHT PASSING STANDARD SIEVE
BIORETENTION FILTER MEDIA OPTION A			
ASTM C-33 CONCRETE SAND	50-55		
LOAMY SAND TOPSOIL WITH FINES AS INDICATED	20-30	200	15 TO 25
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH WITH FINES AS INDICATED	20-30	200	<5

3/8" WASHED CRUSHED STONE*	
SIEVE SIZE	% PASSING BY WIGHT
1/2"	100
3/8"	95-100
#4	22-55
#8	0-10

*EQUIVALENT TO STANDARD WASHED STONE-SECTION 702 OF NHDOT STANDARD SPECIFICATIONS

3/4" WASHED CRUSHED STONE*	
SIEVE SIZE	% PASSING BY WIGHT
1"	100
3/4"	90-100
1/2"	15-55
#10	0-5

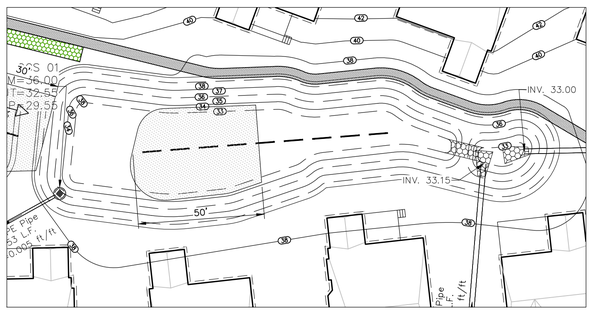
*EQUIVALENT TO STANDARD WASHED STONE-SECTION 702 OF NHDOT STANDARD SPECIFICATIONS

HYBRID BIORETENTION AREA MIX:

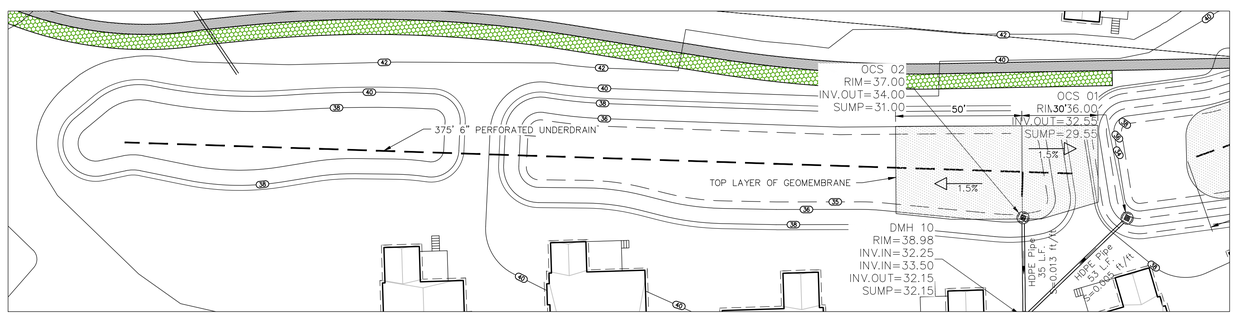
THE GRASS THAT IS PLANTED WITHIN A BIO-FILTRATION SYSTEM WITHIN THE BIO-MEDIA MUST CONSIST OF A COMBINATION OF WARM SEASON GRASS SEED AND COLD SEASON GRASS SEED IN ORDER FOR THE GRASS TO START GROWING FOR STABILIZATION AND CONTINUE GROWING IN THE SANDY WELL-DRAINED ENVIRONMENT. PLANTING SPECIFICATION WILL MEET REQUIREMENTS AS OUTLINED IN 'VEGETATION NEW HAMPSHIRE SAND AND GRAVEL PITS' MIX 1 (WARM SEASON GRASSES) (15 LBS/AC) AND INCLUDE ANNUAL AND PERENNIAL RYE GRASS SEED (15 LBS/AC); THE NEW ENGLAND NATIVE WARM SEASON GRASS MIX (23 LBS/AC) BY NEW ENGLAND WETLAND PLANTS, INC.; RAIN GARDEN MIX 180 (15 LBS/AC & 15 LBS/AC OF RYE)/RAIN GARDEN GRASS MIX 180 (20 LBS/AC & 10 LBS/AC OF RYE) BY ERNST CONSERVATION SEEDS, OR APPROVED EQUAL.

ENHANCED BIO-FILTRATION WITH INTERNAL STORAGE RESERVOIR (ISR):

1. THE INTERNAL STORAGE RESERVOIR (ISR) WILL PROVIDE A RETENTION TIME OF AT LEAST 24 HOURS IN THE SYSTEM TO ALLOW FOR SUFFICIENT TIME FOR DENITRIFICATION AND NITROGEN REDUCTION TO OCCUR PRIOR TO DISCHARGE, THE FILTER MEDIA HAS BEEN AUGMENTED WITH MATERIALS DESIGNED AND/OR KNOW TO BE EFFECTIVE AT CAPTURING PHOSPHOROUS. THE TOP TWELVE INCHES OF THE BIO-MEDIA WILL BE AMENDED WITH EITHER 5% BY VOLUME ELEMENTAL IRON FILINGS; 5% BY COLUME CONTECH IMBRIUM SORPTIVE MEDIA. ABS MATERIALS BIOMAX MEDIA. OR APPROVED EQUAL. OR 5% BY WEIGHT WATER TREATMENT RESIDUALS (WTR). THE COLUME OF THE ISR WILL EXCEED 25% OF THE WATER QUALITY VOLUME (WQV).



PLAN VIEW - BIORETENTION AREA #1 (WITH ISR)
NOT TO SCALE



PLAN VIEW - BIORETENTION AREA #1 (WITH ISR)
NOT TO SCALE

NOTES

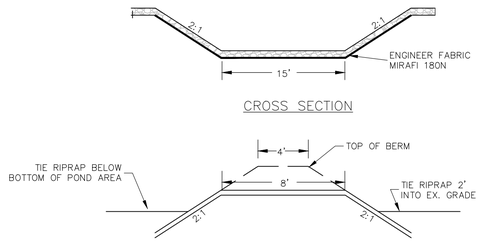
1. WHEN CONTRACTOR EXCAVATES BIORETENTION AREA TO SUBGRADE, DESIGN ENGINEER SHALL PERFORM SUBSURFACE EVALUATION PRIOR TO THE PLACEMENT OF ANY SELECT MATERIAL OR OTHER BACKFILL.
2. SOIL BIORETENTION FILTER MEDIA SHALL BE AS SHOWN ABOVE. "BIO-MEDIA" MEANS BIORETENTION FILTER MEDIA.
3. DO NOT PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
4. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF WATER FROM EXCAVATION) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
5. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF INFILTRATION COMPONENTS OF THE SYSTEM.
6. A PROFESSIONAL ENGINEER SHALL BE PRESENT DURING THE CONSTRUCTION OF THE RAIN GARDENS TO ENSURE THAT ALL OF THE CRITERIA ARE MET AND THAT A REPORT BE SUBMITTED TO NHDES WHEN CONSTRUCTION OF THE BIORETENTION AREAS ARE COMPLETED.

MAINTENANCE REQUIREMENTS

1. SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 2.5 INCHES IN A 25-HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED SUCH INSPECTION.
2. PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
3. AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THAN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION. INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED OF SEDIMENTS OR RECONSTRUCTION OF FILTER MEDIA.
4. VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY AND MAINTAINED IN HEALTHY CONDITION, INCLUDING PRUNING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

DESIGN REFERENCES:

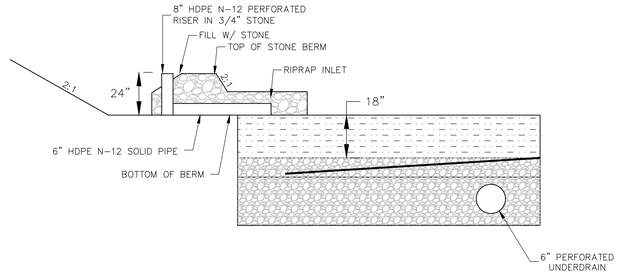
1. UNH STORMWATER CENTER
2. NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS UHSC - WWW.UNH.EDU/UNHSC/NEWS/UNHSC-INNOVATIVE-BIORETENTION-TEMPLATE-POLLUTION-REDUCTIONS-GREATBAY-ESTUARY-WATERSHEDS



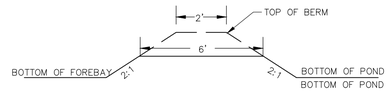
CROSS SECTION

EMERGENCY SPILLWAY PROFILE
NOT TO SCALE

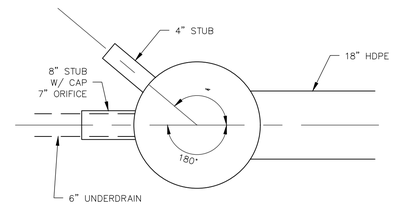
ELEVATION TABLE		
INV.	BIO-01	BIO-02
	ELEV	ELEV
A	32.75	35.00
B	31.25	33.50
C	30.25	32.50
D	29.25	31.50
E	36.00	37.00
F	35.00	36.00
G	NA	NA
H	32.70	34.00
J	29.58	31.83



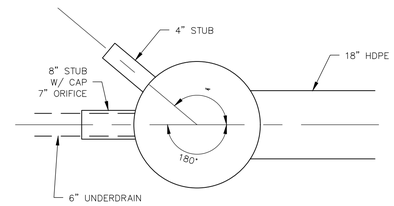
STONE BERM FOR FOREBAY
NOT TO SCALE



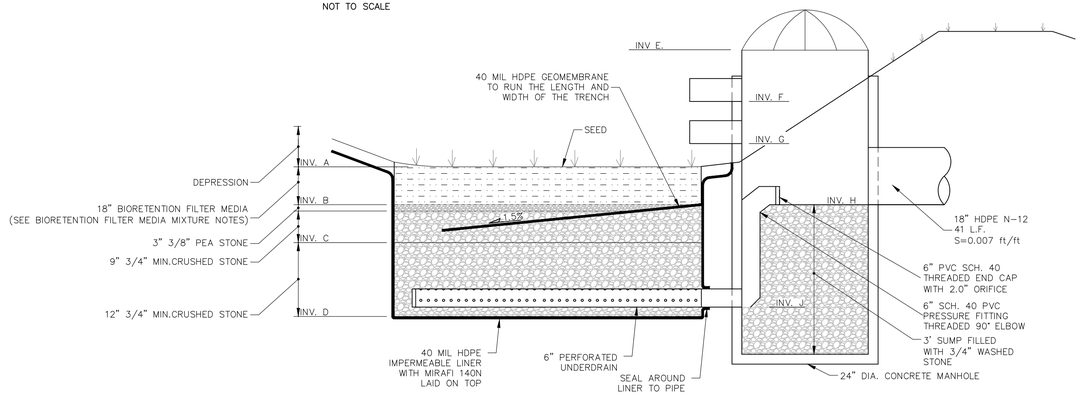
RIPRAP SEDIMENT FOREBAY SPILLWAY PROFILE
NOT TO SCALE



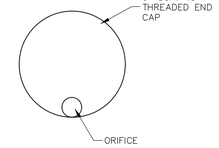
TOP VIEW - BIORETENTION AREA #1 (WITH ISR)
NOT TO SCALE



TOP VIEW - BIORETENTION AREA #2 (WITH ISR)
NOT TO SCALE



BIORETENTION AREA (WITH ISR)
NOT TO SCALE



CAP W/ CONTROL ORIFICE
NOT TO SCALE

LINER NOTES
ACCEPTABLE OPTIONS INCLUDE:
A. 6-12" IN CLAY SOIL (MINIMUM 15% PASSING #200 SIEVE AND A MAXIMUM PERMEABILITY OF $1X10^{-5}$ CM/S)
* A 40 MIL PVC LINER WITH SAND BEDDING AND NON-WOVEN GEOTEXTILE

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

DETAILS

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

SCALE: AS SHOWN **APRIL 19, 2021**

STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE
No. 14950
LICENSED
PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
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FILE	47388.11	DR	JSM	FB	-	C-72
		CK	JJM	CADFILE	47388-11_DETAILS	

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Jun 23, 2021 - 2:27pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_Details.dwg

SEWER SERVICE NOTES

1. MINIMUM SIZE PIPE FOR SEWER SERVICE SHALL BE FOUR INCHES.

2. PIPE AND JOINT MATERIALS:
   A. PLASTIC SEWER PIPE
      1. PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034	*PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F789	PVC (SOLID WALL)	4" THROUGH 18" (T-1 TO T-3)
F794	PVC (RIBBED WALL)	8" THROUGH 36"
D2680	*ABS (COMPOSITES WALL)	8" THROUGH 15"

      *PVC: POLY VINYL CHLORIDE
      *ABS: ACRYLONITRILE-BUTADIENE-STYRENE

      2. JOINTS SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D-3212 AND SHALL BE PUSH-ON, BELL AND SPIGOT TYPE.

      ABS TRUSS PIPE AND FITTINGS SHALL CONFORM TO ASTM D-2680, POLYMER COMPOUNDING SHALL BE TO ASTM D-1788 (CLASS 322).

      JOINTS FOR ABS TRUSS PIPE SHALL BE CHEMICAL WELDED COUPLINGS TYPE SC IN ACCORDANCE WITH ASTM D-2680, FORMING A CHEMICAL WELDED JOINT.

   B. DUCTILE-IRON PIPE, FITTINGS AND JOINTS.

      1. DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE UNITED STATES OF AMERICA STANDARDS INSTITUTE:
         A21.50 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536 DUCTILE IRON CASTINGS.
         A21.51 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND-LINED MOLDS FOR WATER OR OTHER LIQUIDS.
      2. JOINTS SHALL BE OF THE MECHANICAL OR PUSH-ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO:
         A21.11 RUBBER GASKETS JOINTS FOR CAST IRON PRESSURE PIPE & FITTINGS

3. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

4. JOINTS SHALL BE DEPENDENT UPON A NEOPRENE OR ELASTOMERIC GASKET FOR WATER-TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.

5. TEES AND WYES: WHERE A TEE OR WYE IS NOT AVAILABLE IN THE EXISTING STREET SEWER, AN APPROPRIATE CONNECTION SHALL BE MADE, FOLLOWING MANUFACTURERS' INSTRUCTIONS USING A BOLTED, CLAMPED OR EPOXY-CEMENTED SADDLE TAPPED INTO A SMOOTHLY DRILLED OR SAWN OPENING IN THE SEWER. THE PRACTICE OF BREAKING AN OPENING WITH A SLEDGE HAMMER, STUFFING CLOTH OR OTHER SUCH MATERIAL AROUND THE JOINT, OR APPLYING MORTAR TO HOLD THE CONNECTION, AND ANY OTHER SIMILAR CRUDE PRACTICES OR INEPT OR HASTY IMPROVISATIONS WILL NOT BE PERMITTED. THE CONNECTION SHALL BE CONCRETE ENCASED AS SHOWN IN THE DETAIL UP TO AND INCLUDING 15" DIAMETER.

6. SEWER SERVICE INSTALLATION: THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 6 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 10. BEDDING AND RE-FILL FOR DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES.

   THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE FOUNDATION AT A GRADE OF NOT LESS THAN 1/4" INCH PER FOOT. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.

7. TESTING: THE COMPLETED SEWER SERVICE SHALL BE SUBJECTED TO A THIRD PARTY LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS: (PRIOR TO BACKFILLING)

   A. AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE INSERTED JUST UPSTREAM FROM THE OPENING IN THE TEE. AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYSTEM ABOVE THE PLUG TO A HEIGHT OF 5 FEET ABOVE THE LEVEL OF THE PLUG.

   B. THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER, TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEANOUT WITH A FLASHLIGHT.

   C. DRY FLUORESCENE DYE SHALL BE SPRINKLED INTO THE TRENCH OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER, OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWN-STREAM MANHOLE.

   LEAKAGE OBSERVED IN ANY ONE OF THE ABOVE ALTERNATE TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE AND THE PIPE SHALL BE DUG-UP IF NECESSARY AND RE-LAID SO AS TO ASSURE WATER TIGHTNESS.

8. ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR OTHER SIMILAR CONNECTIONS CARRYING RAIN WATER, DRAINAGE OR GROUND WATER SHALL NOT BE PERMITTED.

9. WATER SERVICE SHALL NOT BE LAID IN SAME TRENCH AS SEWER SERVICE.

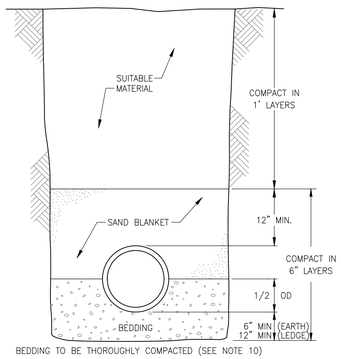
10. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATERIAL AND MEETING ASTM C33-67.

100% PASSING	1 INCH SCREEN
90%-100% PASSING	3/4 INCH SCREEN
20%-55% PASSING	3/8 INCH SCREEN
0%-10% PASSING	#4 SIEVE
0%-5% PASSING	#8 SIEVE

   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1 1/2 INCH SHALL BE USED.

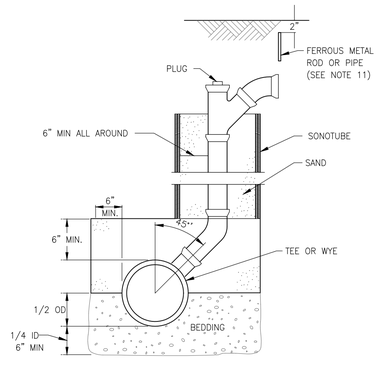
11. LOCATION: THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS METAL ROD OR PIPE SHALL BE PLACED OVER THE TEE OR WYE AS DESCRIBED IN THE TYPICAL "CHIMNEY" DETAIL, TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPEFINDER.

12. CHIMNEYS: IF VERTICAL DROP INTO SEWER IS GREATER THAN 4 FEET, A CHIMNEY SHALL BE CONSTRUCTED FOR THE SEWER CONNECTION. CHIMNEY INSTALLATION AS RECOMMENDED BY THE PIPE MANUFACTURER MAY BE USED IF APPROVED BY THE ENGINEER.



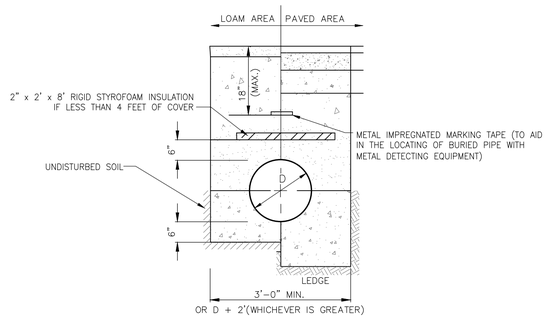
BEDDING TO BE THOROUGHLY COMPACTED (SEE NOTE 10)

TRENCH CROSS-SECTION
NOT TO SCALE



BACKFILLING TO BE BROUGHT UP EVENLY ON ALL SIDES.

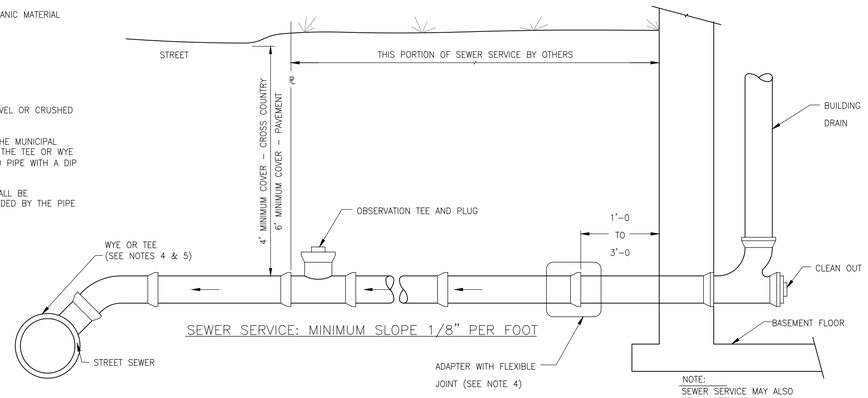
CHIMNEY (SEE NOTE 12)
NOT TO SCALE



NOTES

1. GAPS BETWEEN SECTIONS OF INSULATION TO BE COVERED WITH 2" x 2' x 2' PIECE OF INSULATION CENTERED OVER GAP.

SEWER TRENCH WITH INSULATION
NOT TO SCALE



SEWER SERVICE DETAILS
NOT TO SCALE

GRAVITY SEWER NOTES

1. MINIMUM SIZE PIPE FOR GRAVITY SEWER SHALL BE 8-INCHES.

2. PIPE AND JOINT MATERIALS FOR PLASTIC SEWER PIPE SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034-04a	* PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679-03	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F794-03	PVC (RIBBED WALL)	8" THROUGH 36"
F1760-01(2005)e1	PVC, RECYCLED	ALL DIAMETERS

   *PVC: POLY VINYL CHLORIDE

3. PLASTIC SEWER PIPE SHALL HAVE A PIPE STIFFNESS RATING OF AT LEAST 46 POUNDS PER SQUARE INCH AT 5 PERCENT PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2412-02 DURING MANUFACTURE.

4. JOINTS SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D-3212-96(a)(2003)e1 AND SHALL BE PUSH-ON, BELL AND SPIGOT TYPE.

5. DUCTILE-IRON PIPE, FITTINGS AND JOINTS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA).

   AWWA C151/A21.51-02 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536-84 (2004) DUCTILE IRON CASTINGS.

   AWWA C151/A21.51-02 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND-LINED MOLDS FOR WATER OR OTHER LIQUIDS.

   JOINTS SHALL BE OF THE MECHANICAL OR PUSH-ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO AWWA C151/A21.11 RUBBER GASKETS JOINTS FOR CAST IRON PRESSURE PIPE & FITTINGS.

6. CONCRETE PIPE SHALL CONFORM TO AWWA C302-04.

7. PRESTRESSED CONCRETE CYLINDER PIPE AND FITTINGS SHALL CONFORM TO AWWA C301-99.

   JOINTS SEALS FOR CONCRETE CYLINDER PIPE SHALL BE OIL RESISTANT ELASTOMERIC MATERIAL CONFORMING TO ASWWA C301-99 SPECIFICATIONS.

8. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

9. GRAVITY SEWER PIPE TESTING SHALL BE AS FOLLOWS:

   ALL NEW GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW-PRESSURE AIR TESTS.

   LOW PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:

   ASTM F1417-92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW PRESSURE AIR".

   UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW PRESSURE AIR TESTING OF INSTALLED SEWER PIPE".

10. ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED AND SHALL BE TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE AND VISUALLY INSPECT USING LAMP TEST.

11. ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS AND NO MORE THAN 90 DAYS FOLLOWING INSTALLATION.

12. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5 PERCENT OF THE AVERAGE INSIDE DIAMETER.

13. TRENCH CONSTUCTION SHALL CONFORM TO THE FOLLOWING:

   SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6' BELOW GRADE IN ALL ROADWAY LOCATIONS AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS COUNTRY LOCATIONS.

   WHERE SEWER LINES CROSS WATER PIPES, A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. AT SEWER/WATER INTERSECTIONS, A MINIMUM OF 6 FEET SHALL BE PROVIDED FROM THE WATER LINE TO THE SEWER PIPE JOINT. 12" SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE REQUIRED BETWEEN SEWER LINES AND ALL OTHER PIPES.

   TRENCH DIMENSIONS FOR SEWER PIPE LESS THAN 15 INCHES IN DIAMETER, THE ALLOWABLE TRENCH WIDTH AT A PLANE 12 INCHES ABOVE THE PIPE SHALL BE NO MORE THAN 36 INCHES AND FOR PIPE 15 INCHES AND LARGER, THE ALLOWABLE WIDTH SHALL BE EQUAL TO THE PIPES OUTSIDE DIAMETER PLUS 24 INCHES.

   PIPE TRENCH BEDDING MATERIAL AND FILL MATERIAL FOR EXCAVATION BELOW GRADE SHALL BE SCREENED GRAVEL OR CRUSHED STONE TO ASTM C33-03 STONE SIZE NO. 67. THE PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND FREE FROM ANY ORGANIC MATERIALS, GRADED SUCH THAT 100 PERCENT PASSED THE 1/2-INCH SIEVE AND A MAXIMUM OF 15 PERCENT PASSES A #200 SIEVE. IN LIEU OF A SAND BLANKET, A STONE ENVELOPE 6 INCHES THICK COMPLETELY AROUND THE PIPE USING 3/4-INCH STONE MAY BE USED.

   PIPE BEDDING MATERIAL SHALL EXTEND FROM A HORIZONTAL PLANE THROUGH THE PIPE AXIS TO 6-INCHES BELOW THE BOTTOM OF THE OUTSIDE SURFACE OF THE PIPE.

   PIPE SAND BLANKET MATERIAL SHALL COVER THE PIPE A MINIMUM OF 12 INCHES ABOVE THE CROWN OF THE OUTSIDE SURFACE.

   COMPACTION SHALL BE IN 12-INCH LAYERS FOR BEDDING AND BLANKET MATERIALS.

   BACKFILL MATERIAL SHALL BE IN 3-FOOT LAYERS TO THE GROUND SURFACE EXCEPT FOR ROAD CONSTRUCTION WHERE THE FINAL 3-FEET SHALL BE COMPACTED IN 12-INCH LAYERS TO THE ROAD BASE SURFACE.

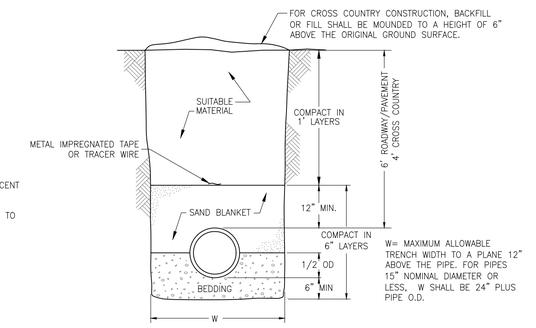
   TRENCH BACKFILL MATERIAL IN ROADWAY LOCATIONS SHALL BE NATURAL MATERIALS EXCAVATED FROM THE TRENCH DURING CONSTRUCTION, EXCLUDING DEBRIS, PAVEMENT PIECES, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT, CLAY, EXCAVATED LEDGE, ROCKS OVER 6 INCHES IN THE LARGEST DIMENSION, OR ANY OTHER UNSUITABLE MATERIAL NOT APPROVED BY THE ENGINEER.

   TRENCH BACKFILL AT CROSS-COUNTRY LOCATIONS SHALL BE AS DESCRIBED ABOVE EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLE RECONSTRUCTION, WHEN NECESSARY WILL BE PRESERVED. BACKFILL SHALL BE MOUNDED 6-INCHES ABOVE ORIGINAL GROUND.

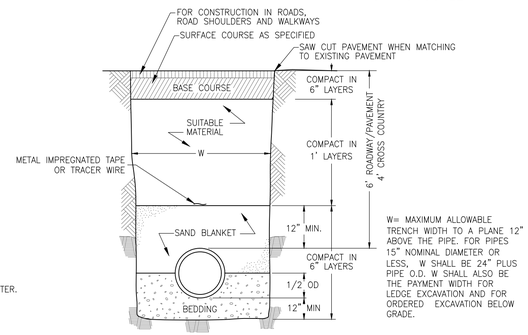
   BASE COURSE MATERIALS FOR TRENCH REPAIRS SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.

   WHERE SHEETING IS PLACED ALONG SIDE OF THE PIPE AND EXTENDS BELOW MID-DIAMETER, THE SHEETING SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN ONE FOOT ABOVE THE TOP OF THE PIPE AND AT LEAST 3 FEET BELOW FINISH GRADE.

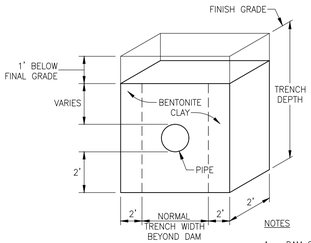
   TRENCHES FOR SEWER PIPES WITH SLOPES OVER 0.08 FEET PER FOOT AND TRENCHES FOR SEWER PIPES BELOW THE SEASONAL HIGH GROUND WATER LEVEL SHALL HAVE IMPERVIOUS TRENCH DAMS CONSTRUCTED EVERY 300 FEET TO PREVENT POTENTIAL DISTURBANCE TO PIPE BEDDING AND BLANKET MATERIALS.



EARTH CONSTRUCTION
NOT TO SCALE



LEDGE CONSTRUCTION
NOT TO SCALE



INSTALL AT CENTER OF EACH GRAVITY PIPE RUN

NOTES

1. DAM SHALL BE LOCATED EVERY 300' OF SEWER PIPE RUN.
2. NO FITTING SHALL BE LOCATED WITHIN 4' OF DAM.

SEWER TRENCH DAM
NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

DETAILS

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34") **APRIL 19, 2021**

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DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

STATE OF NEW HAMPSHIRE
JOHN J. McTIGUE
No. 14950
LICENSED PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	DR	JSM	FB	
47388.11	CK	JJM	CADFILE	Sewer Details.dwg

C-73

Jun 23, 2021 - 2:27pm
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GENERAL NOTES

1. IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2. BARRELS, CONE SECTIONS AND CONCRETE GRADE RINGS SHALL BE PRECAST REINFORCED CONCRETE AND SHALL CONFORM ENV-WQ 704.12 & 704.13.

3. PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478-06.

4. BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE INCOMING PIPE.

5. MANHOLE CONE SECTIONS SHALL BE ECCENTRIC IN SHAPE.

6. ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDELIBLY MARKED ON THE INSIDE WALL.

7. ALL PRECAST SECTIONS AND BASES SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING.

8. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.

9. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT. APPROVED ELASTOMERIC SEALANTS ARE:

   SIKAFLEX-12-SL

   SONNEBORN BUILING PRODUCTS-SONOLASTIC SL-1

10. THE MINIMUM INTERNAL DIAMETER OF MANHOLES SHALL BE 48 INCHES. FOR SEWERS LARGER THAN 24-INCH DIAMETER. MANHOLE DIAMETERS SHALL BE INCREASED SO AS TO PROVIDE AT LEAST 12-INCHES OF SHELF ON EACH SIDE OF THE SEWER.

11. LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE TO ENV-WQ 704.17.

    (a) ALL MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST IN ACCORDANCE WITH THE ASTM C1244 STARNDARD IN EFFECT WHEN THE TESTING IS PERFORMED.

    (b) THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:

        1. THE INITIAL VACUUM GUAGE TEST PRESSURE SHALL BE 10 INCHES Hg.

        2. THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR 1-INCH Hg PRESSURE DROP TO 9 INCHES SHALL BE:

           A. NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP.

           B. NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP.

           C. NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP.

    (c) THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN (b) ABOVE.

    (d) INVERTS AND SHELVES SHALL NOT BE INSTALLED UNTIL AFTER SUCCESSFUL TESTING IS COMPLETE.

    (e) FOLLOWING COMPLETION OF THE LEAKAGE TEST, THE FRAME AND COVER SHALL BE PLACED ON TOP OF THE MANHOLE OR SOME OTHER MEANS USED TO PREVENT ACCIDENTAL ENTRY BY UNAUTHORIZED PERSONS, CHILDREN OR ANIMALS, UNTIL THE CONTRACTOR IS READY TO MAKE FINAL ADJUSTMENT TO GRADE.

12. BRICK MASONRY FOR SHELF, INVERT AND GRADE ADJUSTMENT SHALL COMPLY WITH ASTM C32-05, CLAY OR SHALE, FOR GRADE SS HARD BRICK.

13. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
    (a) 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
    (b) 4.5 PARTS SAND, 1 PART CEMENT AND 0.5 PART HYDRATED LIME

    CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05. HYDRATED LIME SHALL BE TYPE S CONFORMING TO ASTM C207-06 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES". SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO ASTM C33-03 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES".

14. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED OR PRECAST CONCRETE SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.

15. FRAMES AND COVERS: MANHOLES FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN, CLASS 30, CONFORMING TO ASTM A48/48M AND PROVIDE A 30-INCH CLEAR OPENING. 3-INCH WORD (MINIMUM HEIGHT) LETTERS "SEWER" SHALL BE PLAINLY CAST INTO THE TOP SURFACE. THE CASTING SHALL BE OF EVEN GRAINED CAST IRON, SMOOTH, AND FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES AND DEFECTS. CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVERS IN ANY ORIENTATION.

16. BEDDING: PRECAST BASES SHALL BE PLACED ON A 6-INCH LAYER OF COMPACTED BEDDING MATERIAL THAT CONFORMS TO ASTM C33-03 NO. 67 STONE AND FREE FROM CLAY, LOAM AND ORGANNIC MATTER. THE EXCAVATION SHALL BE PROPERLY DEWATERED WHILE PLACING BEDDING MATERIAL AND SETTING OF THE BASE OR POURING CONCRETE. WATER-STOPS SHALL BE USED AT THE HORIZONTAL JOINT OF THE CAST-IN-PLACE MANHOLES.

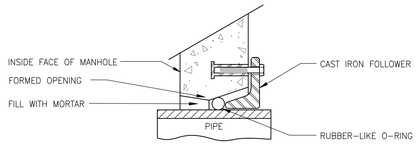
100% PASSING	1" SCREEN
90-100% PASSING	3/4" SCREEN
20-55% PASSING	3/8" SCREEN
0-10% PASSING	#4 SIEVE
0-5% PASSING	#8 SIEVE

17. FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WIbHIN THE FOLLOWING DISTANCES FROM ANY MANHOLE CONNECTION: (a) WITHIN 48 INCHES FOR REINFORCED CONCRETE PIPE (RCP). (b) WITHIN 60 INCHES FOR PVC PIPE LARGER THAN 15" DIAMETER.

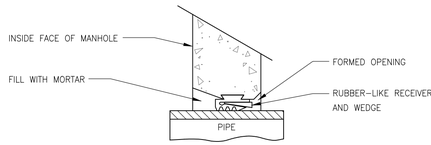
18. NO FLEXIBLE JOINT SHALL BE REQUIRED FOR DUCTILE IRON PIPE OR PVC PIPE UP THROUGH 15-INCH DIAMETER.

19. INTERNAL STEPS ARE PROHIBITED PER EXETER DPW STANDARDS.

20. REFERENCE NHDES ENV-WQ 700 IN PLACE OF ASTM STANDARDS.



RES-SEAL
(OR ACCEPTABLE SUBSTITUTE)



PRESS-WEDGE II
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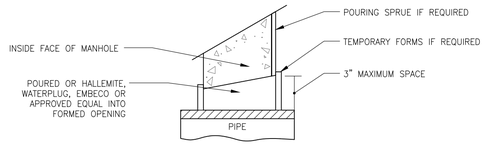

MORTARED JOINT
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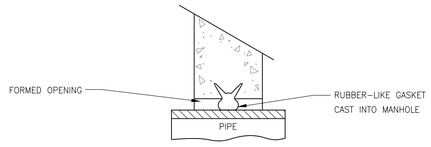
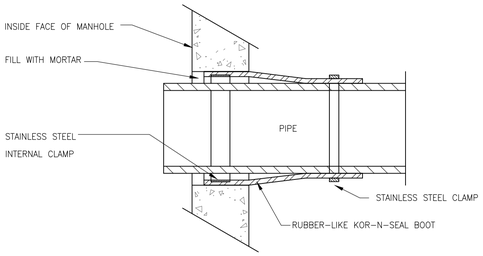
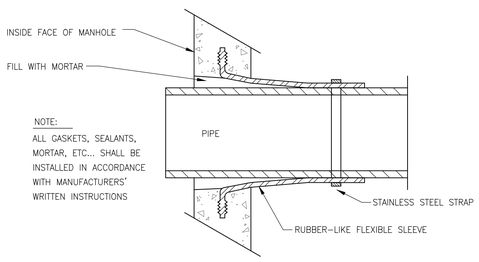


A-LOK
(OR ACCEPTABLE SUBSTITUTE)



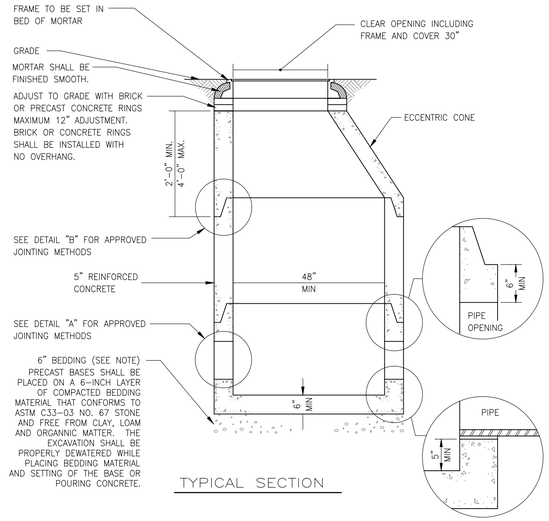
KOR-N-SEAL JOINT SLEEVE
(OR ACCEPTABLE SUBSTITUTE)



NOTE:
ALL GASKETS, SEALANTS, MORTAR, ETC... SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS

LOCK-JOINT FLEXIBLE MANHOLE SLEEVE
(OR ACCEPTABLE SUBSTITUTE)

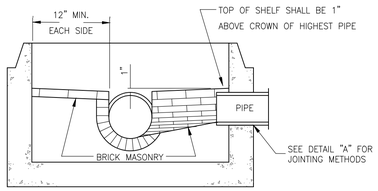
DETAIL "A" - PIPE TO MANHOLE JOINTS



TYPICAL SECTION

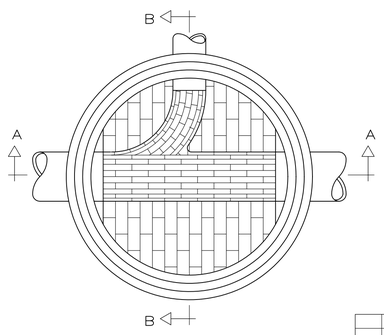
NOTES:

1. INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE.
3. BASE SECTION TO BE FULL WALL THICKNESS AND MONOLITHIC TO A POINT 6" ABOVE THE PIPE CROWN.
4. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.
5. NO STEPS ARE ALLOWED PER EXETER DPW STANDARDS.
6. BITUMINOUS COATING.



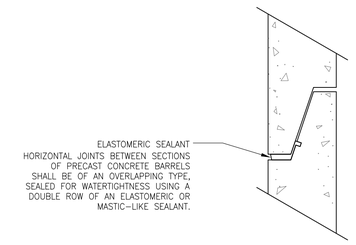
SECTION "B-B"

SECTION "A-A"



TYPICAL MANHOLE - PLAN VIEW

STANDARD MANHOLE

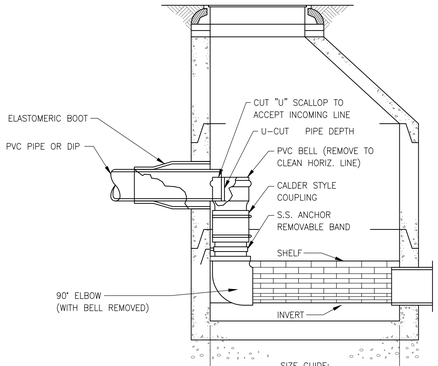


ELASTOMERIC SEALANT

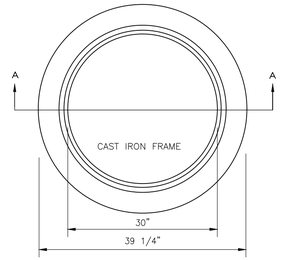
NOTES:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

STATE OF NEW HAMPSHIRE APPROVED PRODUCTS
A) SIKAFLEX-12-SL
B) SONNEBORN BUILDING PRODUCTS SONOLASTIC SL-1

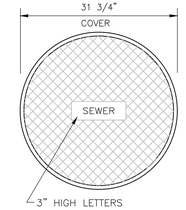
DETAIL "B" - HORIZONTAL JOINTS



INSIDE DROP MANHOLE

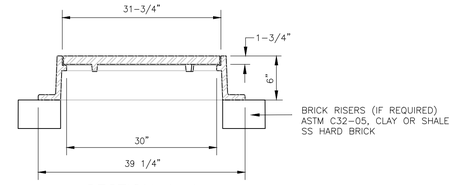


PLAN VIEW



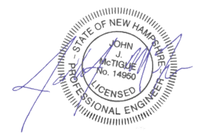
CAST IRON COVER
MIN. WEIGHT 265 LBS.
NEENAH R-1743 OR EQUAL

COVER



SECTION A-A

MANHOLE FRAME & COVER



SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

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DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

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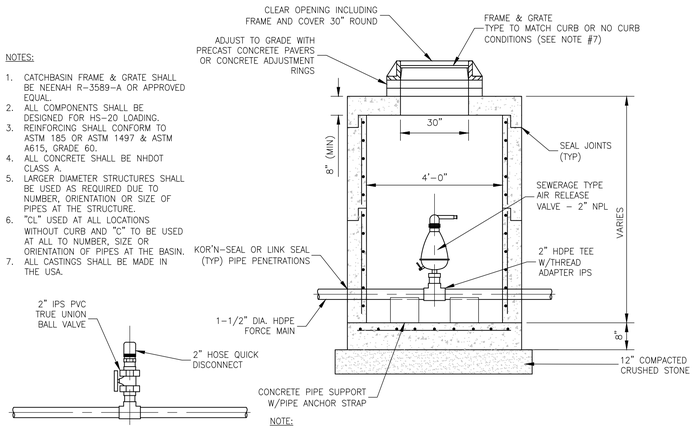


NOTES:

1. CATCHBASIN FRAME & GRATE SHALL BE NEENAH R-3589-A OR APPROVED EQUAL.
2. ALL COMPONENTS SHALL BE DESIGNED FOR HS-20 LOADING.
3. REINFORCING SHALL CONFORM TO ASTM 185 OR ASTM 1497 & ASTM A615, GRADE 60.
4. ALL CONCRETE SHALL BE NHDOT CLASS A.
5. LARGER DIAMETER STRUCTURES SHALL BE USED AS REQUIRED DUE TO NUMBER, ORIENTATION OR SIZE OF PIPES AT THE STRUCTURE.
6. "CL" USED AT ALL LOCATIONS WITHOUT CURB AND "C" TO BE USED AT ALL TO NUMBER, SIZE OR ORIENTATION OF PIPES AT THE BASIN.
7. ALL CASTINGS SHALL BE MADE IN THE USA.

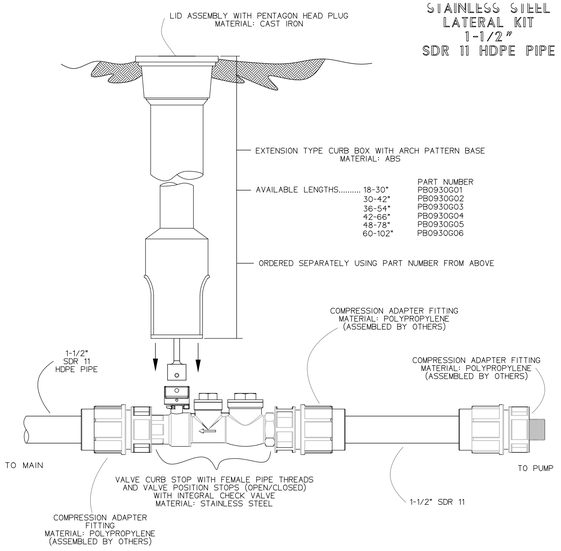
CLEANOUT

NOTE:

1. 2" TRUE UNION BALL VALVE TO BE USED IN PLACE OF 2" AIR/VACUUM VALVE FOR CLEANOUT MANHOLE.

E-ONE CLEANOUT AND AIR VACUUM DETAIL

NOT TO SCALE



STAINLESS STEEL LATERAL KIT
1-1/2" SDR 11 HDPE PIPE

NOTES:

1. SS CURB STOP/CHECK VALVE AND FITTINGS ARE PROVIDED SEPARATELY, TO BE ASSEMBLED BY OTHERS
2. TO ASSEMBLE, APPLY A DOUBLE LAYER OF TEFLON TAPE, AND A LAYER OF PIPE DOPE (SUPPLIED BY OTHERS) TO THE THREADS ON THE PLASTIC FITTINGS AND INSTALL PER THE MANUFACTURER'S INSTRUCTIONS
   *FOR SS FITTING INTO SS THREAD, USE EITHER PIPE DOPE OR TEFLON TAPE, NOT BOTH
3. ASSEMBLY IS TO BE PRESSURE TESTED (BY OTHERS)
4. ASSEMBLY IS TO BE USED WITH SDR11 HDPE PIPE
5. TO ORDER SS LATERAL KIT, USE PART NUMBER NC0193G02
6. CURB BOX IS TO BE ORDERED SEPARATELY, SEE ABOVE

KIT PARTS ARE NOT ASSEMBLED

SGS	DN	11/02/11	B	3/16
DR BY	CHK'D	DATE	ISSUE	SCALE

e/one SEWER SYSTEMS

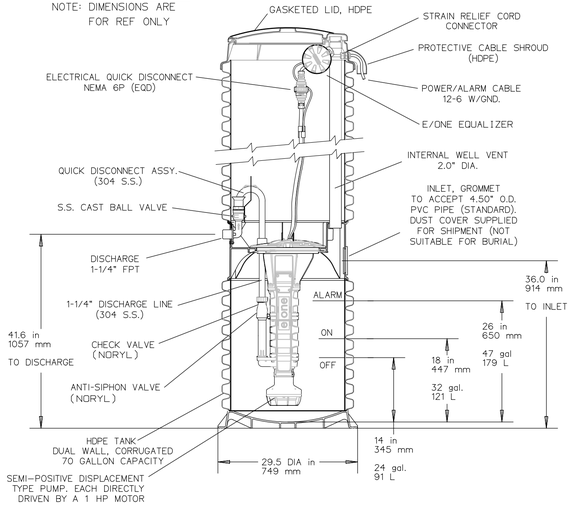
STAINLESS STEEL LATERAL KIT
1-1/2" SDR 11 HDPE PIPE

NA0330P03

OPTIONS : ☐ DH071 (HARD WIRED LEVEL CONTROLS)
☐ DR071 (WIRELESS LEVEL CONTROLS)

FIELD JOINT REQUIRED FOR MODELS DH071-129 / DR071-129 & DH071-160 / DR071-160

NOTE: DIMENSIONS ARE FOR REF ONLY



CONCRETE BALLAST MAY BE REQUIRED SEE INSTALLATION INSTRUCTION FOR DETAILS

E-ONE GRINDER PUMP

NOT TO SCALE

NOTES:

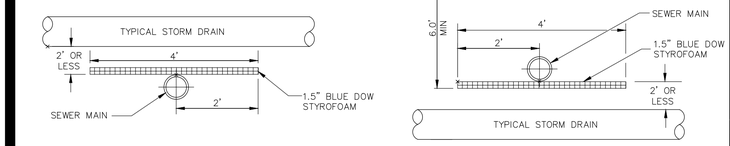
1. THE PUMP CORE CONTAINS BUILT IN CHECK AND ANTI-SIPHON VALVES. IN ADDITION, THERE IS A REDUNDANT UNILATERAL CHECK AND ISOLATION VALVE AT THE LOT LINE WITH THE STAINLESS STEEL ASSEMBLY.
2. THE STATION MONITOR CONTAINS A HIGH LEVEL ALARM. THE HIGH LEVEL ALARM IS RUN OFF A REDUNDANT RUN SWITCH THAT OVERRIDES THE RUN SWITCH IF IT SHOULD SEE A POWER FAILURE.
3. THE ALARM PANEL HAS THE OPTION TO CONNECT A PORTABLE GENERATOR WITH A 20 AMP, 240 VOLT SUPPLY. POWER TRANSFERS AUTOMATICALLY IF THE PUMP IS CALLING TO RUN.
4. THE PUMP IS RATED TO CONTINUOUS DUTY HEADS OF 185-FEET. THE SYSTEM AS DESIGNED WILL OPERATE AT 14.92 GPM AT 5.64-FEET TDH.
5. THE PUMP RATED TO 700 GPD.
6. THE TANK HAS A 70-GAL VOLUME AND ALLOWS FOR 43 GALLONS ABOVE THE "ON" LEVEL.
7. A BACKUP GENERATOR WILL BE PROVIDED THAT SHALL BE AMPLE ENOUGH TO SUPPLY POWER TO RUN THE GRINDER PUMP AND ALARM SYSTEM. THERE SHALL BE ENOUGH FUEL ON SITE TO RUN THE GENERATOR FOR A MINIMUM OF 6 HRS.
8. IN CASE OF A POWER FAILURE, A BATTERY BACKUP REMOTE SENTRY ALARM PANEL SHALL BE USED IN CONJUCTION WITH THE E-ONE PUMP SYSTEM.

AD	CH	10/20/10	D	
DR BY	CHK'D	DATE	ISSUE	SCALE

e/one SEWER SYSTEMS

MODEL DH071 / DR071
DETAIL SHEET

NA0050P02



CONDITION I

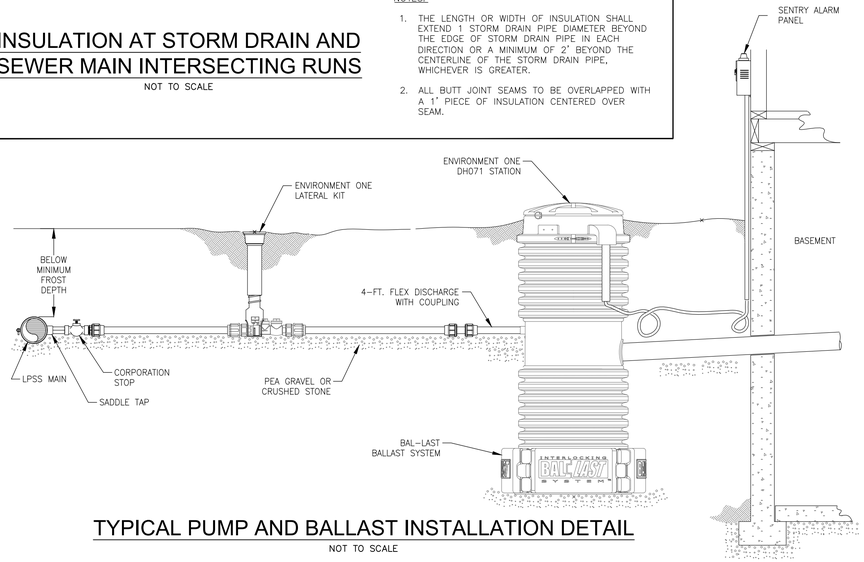
CONDITION II

NOTES:

1. THE LENGTH OR WIDTH OF INSULATION SHALL EXTEND 1 STORM DRAIN PIPE DIAMETER BEYOND THE EDGE OF STORM DRAIN PIPE IN EACH DIRECTION OR A MINIMUM OF 2' BEYOND THE CENTERLINE OF THE STORM DRAIN PIPE, WHICHEVER IS GREATER.
2. ALL BUTT JOINT SEAMS TO BE OVERLAPPED WITH A 1" PIECE OF INSULATION CENTERED OVER SEAM.

INSULATION AT STORM DRAIN AND SEWER MAIN INTERSECTING RUNS

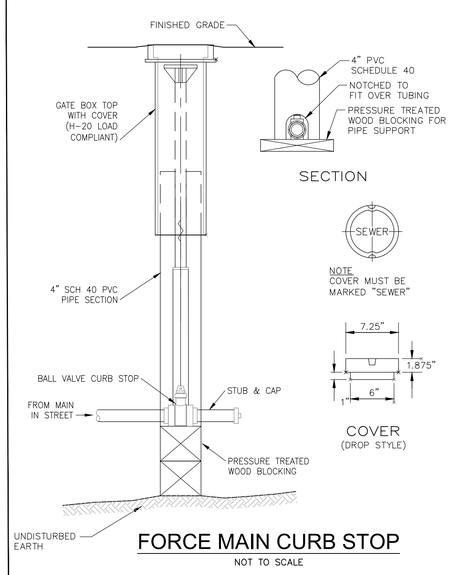
NOT TO SCALE



TYPICAL PUMP AND BALLAST INSTALLATION DETAIL

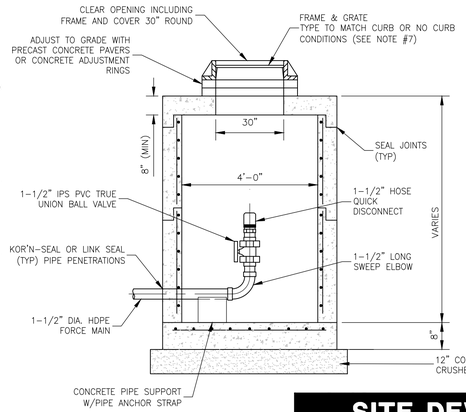
NOT TO SCALE

BAL-LAST 114C



FORCE MAIN CURB STOP

NOT TO SCALE



NOTES:

1. CATCHBASIN FRAME & GRATE SHALL BE NEENAH R-3589-A OR APPROVED EQUAL.
2. ALL COMPONENTS SHALL BE DESIGNED FOR HS-20 LOADING.
3. REINFORCING SHALL CONFORM TO ASTM 185 OR ASTM 1497 & ASTM A615, GRADE 60.
4. ALL CONCRETE SHALL BE NHDOT CLASS A.
5. LARGER DIAMETER STRUCTURES SHALL BE USED AS REQUIRED DUE TO NUMBER, ORIENTATION OR SIZE OF PIPES AT THE STRUCTURE.
6. "CL" USED AT ALL LOCATIONS WITHOUT CURB AND "C" TO BE USED AT ALL TO NUMBER, SIZE OR ORIENTATION OF PIPES AT THE BASIN.
7. ALL CASTINGS SHALL BE MADE IN THE USA.
8. INSTALL PIPE SUPPORTS ON THE SWEEP ELBOW.
9. ALL PIPE FITTINGS ARE TO BE RESTRAINED JOINT STYLE.
   A. HDPE TO BE FUSION, ELECTROFUSION OR MECHANICAL JOINT.
   B. PVC WOULD BE SOLVENT GLUE,
   C. ALL JOINTS TO BE THREADED AND PRESSURE RATED TO 200 PSI

E-ONE TERMINAL FLUSHING MANHOLE

NOT TO SCALE

PRESSURE SEWER TESTING NOTES

1. FORCE MAINS AND PRESSURE SEWERS SHALL BE TESTED IN ACCORDANCE WITH SECTION 5 OF THE AWWA C600, "INSTALLATION OF CAST IRON WATER MAINS AND THEIR APPURTENANCES" STANDARD IN EFFECT WHEN THE TEST IS CONDUCTED, AVAILABLE AS NOTED IN APPENDIX D, AT A PRESSURE EQUAL TO THE GREATER OF 150 PERCENT OF THE DESIGN OPERATING TOTAL DYNAMIC HEAD OR AT LEAST 100 PSI.

SITE DEVELOPMENT PLANS

TAX MAP 242 LOT 4

DETAILS

PARSON WOODS CONDOMINIUM LLC

83 PEVERLY HILL ROAD, PORTSMOUTH, NH

OWNED BY

STOKEL SB & NA TRUST, PHILIP J 25% INT

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=40' (11"X17")

SCALE: 1"=20' (22"X34") **APRIL 19, 2021**

REV.	DATE	DESCRIPTION	DR	CK
2	6/23/2021	REVISED FOR PLANNING BOARD SUBMITTAL.	JSM	JJM
1	6/21/2021	REVISED PER TAC COMMENTS.	JSM	JJM

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431-2222
Fax (603) 431-0910
www.tfmoran.com

FILE	47388.11	DR	JSM	FB		C-75
		CK	JJM	CADFILE	Sewer Details.dwg	

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48 Constitution Drive, Bedford, N.H. 03110

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This plan is not effective unless signed by a duly authorized officer of Thomas F. Moran, Inc.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

Jun 23, 2021 - 2:27pm
F:\MSC Projects\47388 - Peverly Hill Rd - Portsmouth\47388-11 Green and Co - 83 Peverly Rd_Condo Project\Design\Production Drawings\47388-11_SewerDetails.dwg

THIS DRAWING SET HAS NOT BEEN RELEASED FOR CONSTRUCTION

64 VAUGHAN MALL BUILDING RESTORATION

64 Vaughan Mall, Portsmouth, New Hampshire

Assessor's Parcel 126, Lot 1

Issued for: TAC

Plan Issue Date:

June 21, 2021

Owner:
64 Vaughan Mall, LLC

41 Industrial Drive
Exeter, NH 03833

Applicant:
Hampshire
Development Corp.
41 Industrial Drive
Exeter, NH 03833
(603) 778-9999

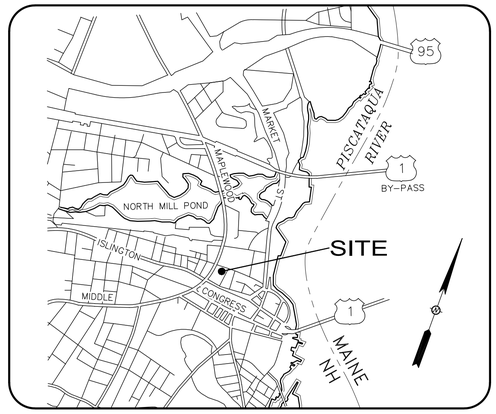
Civil Engineer:

ALTUS ENGINEERING, INC.
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

Architect:
JSA Design

273 Corporate Drive, Suite 100
Portsmouth, NH 03801
(603) 436-2551

Surveyor:
James Verra
& Associates Inc.
LAND SURVEYORS
101 SHATTUCK WAY, SUITE 8
Newington, New Hampshire
03801-7876
Tel 603-436-3557



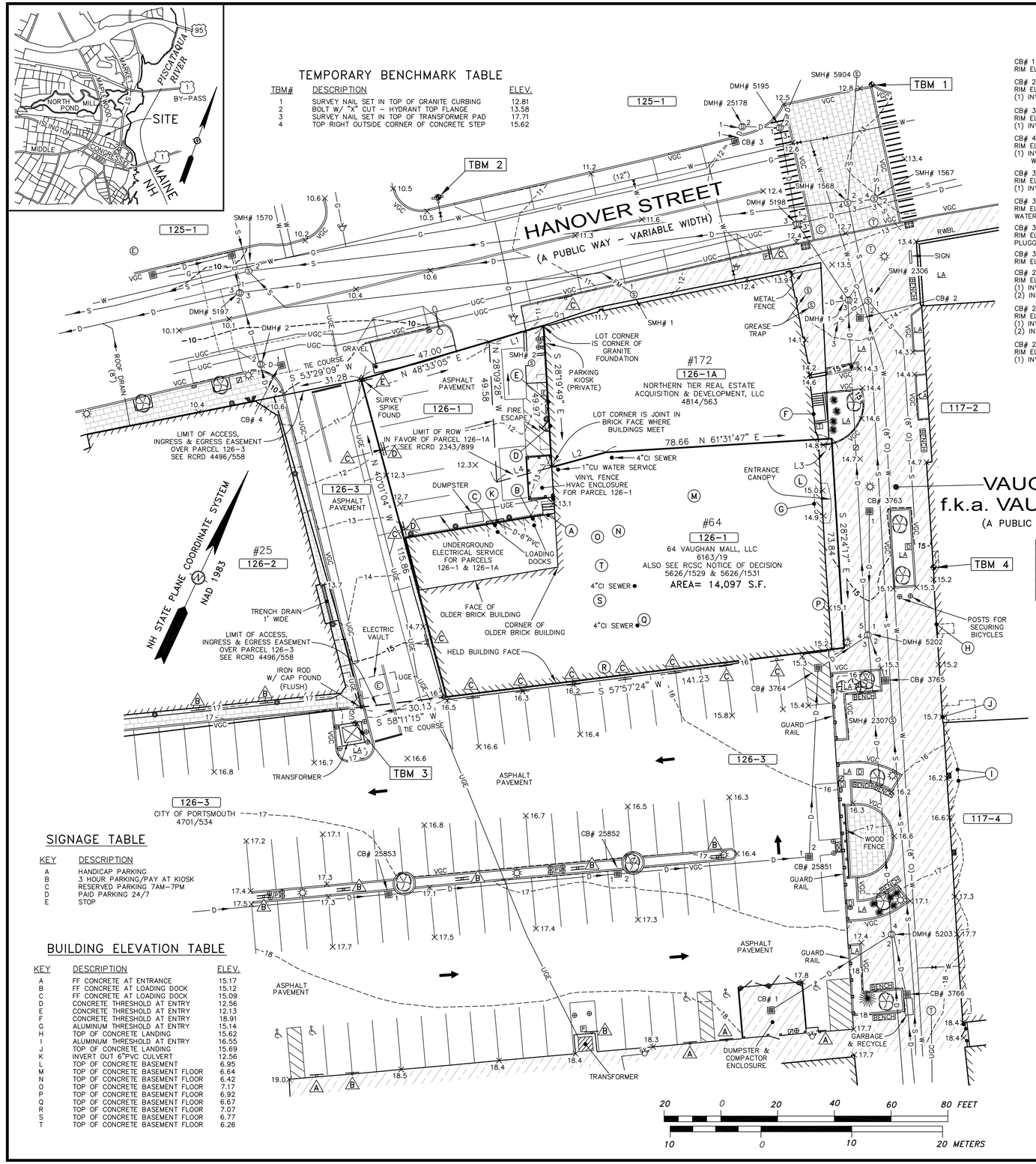
LOCUS MAP
Not to Scale

Sheet Index Title	*Sheet No.:*	*Rev.*	*Date*
Existing Conditions Plan	1 of 1	1	04/19/20
Lot Line Adjustment Plan	C-1	0	06/21/21
Demolition Plan	C-2	7	06/21/21
Site Plan	C-3	9	06/21/21
Grading and Drainage Plan	C-4	7	06/21/21
Utilities Plan	C-5	7	06/21/21
Detail Sheet	D-1	3	06/21/21
Detail Sheet	D-2	4	06/21/21
Detail Sheet	D-3	2	03/22/21
Detail Sheet	D-4	2	03/22/21
Exterior Elevations	A3		06/16/21
Exterior Elevations	A4		06/16/21
Perspective Views	A5		06/16/21

P5042

TEMPORARY BENCHMARK TABLE

TBM#	DESCRIPTION	ELEV.
1	SURVEY NAIL SET IN TOP OF GRANITE CURBING	12.81
2	BOLT W/ "X" CUT – HYDRANT TOP FLANGE	13.58
3	SURVEY NAIL SET IN TOP OF TRANSFORMER PAD	17.71
4	TOP RIGHT OUTSIDE CORNER OF CONCRETE STEP	15.62



SIGNAGE TABLE

KEY	DESCRIPTION
A	HANDICAP PARKING
B	3 HOUR PARKING/PAY AT KIOSK
C	RESERVED PARKING 7AM–7PM
D	PAID PARKING 24/7
E	STOP

BUILDING ELEVATION TABLE

KEY	DESCRIPTION	ELEV.
A	FF CONCRETE AT ENTRANCE	15.17
B	FF CONCRETE AT LOADING DOCK	15.12
C	FF CONCRETE AT LOADING DOCK	15.09
D	CONCRETE THRESHOLD AT ENTRY	12.56
E	CONCRETE THRESHOLD AT ENTRY	12.13
F	CONCRETE THRESHOLD AT ENTRY	18.91
G	ALUMINUM THRESHOLD AT ENTRY	15.14
H	TOP OF CONCRETE LANDING	15.62
I	ALUMINUM THRESHOLD AT ENTRY	16.55
J	TOP OF CONCRETE LANDING	15.69
K	INVERT OUT 6"PVC CULVERT	12.56
L	TOP OF CONCRETE BASEMENT	6.95
M	TOP OF CONCRETE BASEMENT FLOOR	6.64
N	TOP OF CONCRETE BASEMENT FLOOR	6.42
O	TOP OF CONCRETE BASEMENT FLOOR	7.17
P	TOP OF CONCRETE BASEMENT FLOOR	6.92
Q	TOP OF CONCRETE BASEMENT FLOOR	6.67
R	TOP OF CONCRETE BASEMENT FLOOR	7.07
S	TOP OF CONCRETE BASEMENT FLOOR	6.77
T	TOP OF CONCRETE BASEMENT FLOOR	6.26

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 48°33'05" E	20.00
L2	N 49°44'19" E	19.83
L3	N 61°31'47" E	1.00
L4	S 49°44'19" W	20.06

DRAIN TABLE

CB# 1
RIM EL= 17.62

CB# 2
RIM EL= 13.77
(1) INV OUT 12"RCP= 10.12

CB# 3
RIM EL= 11.98
(1) INV OUT 12"HDPE= 7.74

CB# 4
RIM EL= 9.57
(1) INV OUT 12"PVC= 7.32±
W/ TRAP ON OUTLET

CB# 3763
RIM EL= 14.71
(1) INV OUT 12"RCP= 12.03

CB# 3764
RIM EL= 15.05
WATER LEVEL= 11.10

CB# 3765
RIM EL= 15.35
PLUGGED 13.5±

CB# 3766
RIM EL= 17.59

CB# 25851
RIM EL= 16.26
(1) INV IN 12"HDPE= 12.08
(2) INV OUT 12"HDPE= 12.01

CB# 25852
RIM EL= 16.81
(1) INV IN 10"HDPE= 12.29
(2) INV OUT 12"HDPE= 12.26

CB# 25853
RIM EL= 17.12
(1) INV OUT 10"HDPE= 12.78

DMH# 1
RIM EL= 13.75
(1) 12"RCP (PLUGGED)
(2) INV IN 12"RCP= 9.76
(3) INV IN 18"RCP= 8.75
(4) 12"RCP (PLUGGED)
(5) INV OUT ___RCP= 8.77

DMH# 2
RIM EL= 9.68
(1) INV IN 6"PVC= 7.10
(2) INV OUT 12"RCP= 6.99

DMH# 5195
RIM EL= 12.56
(1) INV IN 12"HDPE= 6.81
(2) INV IN 12"HDPE= 6.11
(3) INV OUT (2) 12"PVC= 5.92

DMH# 5197
RIM EL= 10.14
(1) INV IN 12"RCP= 6.79
(2) INV IN 12"RCP= 6.83
(3) CL FLOW 36"RCP= 5.26

DMH# 5198
RIM EL= 12.50
(1) INV IN (2) 12"PVC= 5.95
(2) INV IN 18"RCP= 7.60
(3) CL FLOW ___RCP= 5.85

DMH# 5202
RIM EL= 15.14
(1) INV IN 12"RCP= 11.47
(2) INV IN 12"RCP= 11.51
(3) INV IN 18"RCP= 9.96
(4) INV IN 12"RCP= 11.60
(5) INV OUT 18"RCP= 9.91

DMH# 5203
RIM EL= 17.38
(1) INV IN 12"DI= 13.82
(2) INV IN 15"CI= 11.30
(3) INV IN 12"CI= 11.83
(4) INV OUT 15"CI= 11.32

DMH# 25178
RIM EL= 12.66
(1) INV IN 12"HDPE= 7.48
(2) 12"HDPE W/ TRAP

SEWER TABLE

SMH# 1
RIM EL= 11.80
(1) INV OUT 4"PVC FM= 7.47

SMH# 2
RIM EL= 11.53
(COULD NOT OPEN)

SMH# 1567
RIM EL= 12.96
(1) PLUGGED
(2) INV IN 12"RCP= 5.19
(3) INACTIVE
(4) INV OUT 12"___=4.71

SMH# 1568
RIM EL= 12.86
(1) INV IN 8"PVC= 4.88
(2) INV IN 12"___= 4.68
(3) INV IN 24"RCP= 5.05
(4) INV OUT 12"RCP= 4.70

SMH# 1570
RIM EL= 10.16
(2) INV IN 15"RCP= 3.74

SMH# 2306
RIM EL= 13.84
(1) INV IN 10"VCP= 6.86
(2) INV IN 24"RCP= 8.88
(3) INV IN 6"PVC= 11.24
(4) INV OUT 24"RCP= 6.83
(23" CSU PER DPW)

SMH# 2307
RIM EL= 15.50
CL FLOW= 10.66
(OVAL RCP 15"W X 18"H)
(23" CSU PER DPW)

ABUTTERS LIST

MAP–LOT	OWNER OF RECORD	DEED REF.
117–2	JAMER REALTY, INC. 80 HANOVER ST, PORTSMOUTH, NH 03801	3093/1283
117–4	SJW LTD C/O GENE FISK & ASSOCIATES, LLC 4 GRENLEAF WOODS DR, SUITE 102 PORTSMOUTH, NH 03801	2574/495
125–1	HANOVER APARTMENTS, LLC (195 HANOVER ST #1) C/O CATHARTES PRIVATE INVESTMENTS 100 SUMMER STREET, SUITE 1600, BOSTON, MA 02110	N/A
125–1	PORTWALK HI, LLC (195 HANOVER ST #2) C/O CATHARTES PRIVATE INVESTMENTS 100 SUMMER STREET, SUITE 1600, BOSTON, MA 02110	N/A
126–1A	NORTHERN TIER REAL ESTATE ACQUISITION & DEVELOPMENT, LLC C/O JOHN J. DUSSI 4 MOODY LN, WEST NEWBURY, MA 01985	4814/563
126–3	CITY OF PORTSMOUTH 1 JUNKINS AVE, PORTSMOUTH, NH 03801	4701/534

LEGEND:

- 110–5 ..... TAX SHEET – LOT NUMBER
- RCRD ..... ROCKINGHAM COUNTY REGISTRY OF DEEDS
- RCSC ..... ROCKINGHAM COUNTY SUPERIOR COURT
- VGC ..... VERTICAL FACED GRANITE CURB
- RWBL ..... MODULAR BLOCK RETAINING WALL
- ..... PARK METER KIOSK
- ..... BOLLARD
- ..... SIGN
- ..... HANDICAP SPACE
- ..... LIGHT POLE
- ..... UTILITY POLE WITH ARM & LIGHT
- ..... ELECTRICAL MANHOLE
- ..... ELECTRICAL CONDUIT
- ..... ELECTRIC METER
- ..... GAS SHUT OFF
- ..... GAS VALVE
- ..... WATER GATE VALVE
- ..... WATER SHUT OFF VALVE
- ..... HYDRANT
- ..... FIRE CONNECTION
- ..... CATCH BASIN
- ..... DRAIN MANHOLE
- ..... ROOF DOWNSPOUT
- ..... SEWER MANHOLE
- ..... DECIDUOUS TREE
- ..... CONIFEROUS SHRUB
- ..... DECIDUOUS SHRUB
- — W — ..... WATER LINE
- — S — ..... SEWER LINE
- — D — ..... DRAIN LINE
- — G — ..... GAS LINE
- —UGE— ..... UNDERGROUND ELECTRIC
- —UGC— ..... UNDERGROUND COMMUNICATIONS
- ..... CEMENT CONCRETE
- ..... BRICK PAVERS
- ..... RETAINING WALL
- LA ..... LANDSCAPED AREA
- ×12.5 ..... SPOT GRADE
- (A) ..... SEE SIGNAGE TABLE
- (A) ..... SEE BUILDING ELEVATION TABLE
- ..... EXISTING TRAFFIC FLOW SYMBOL

NOTES:

1. OWNER OF RECORD.....64 VAUGHAN MALL, LLC
   ADDRESS.....41 INDUSTRIAL DRIVE, UNIT 20, EXETER, NH 03833
   DEED REFERENCE.....6163/19
   TAX SHEET / LOT.....126–1
2. THIS PLAN IS BASED ON A FIELD SURVEY BY JAMES VERRA AND ASSOCIATES, INC. 3/2014, 4/2017 & 12/2019. ON SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS UNITS.
   HORIZONTAL DATUM: NAD 1983 (1986 ADJUSTMENT)
   PRIMARY BM: NHDOT 379–0150 (PORTSMOUTH TRAFFIC CIRCLE)
   VERTICAL DATUM: NAVD 1988
   PRIMARY BM: CITY CONTROL POINT "ALBA"
3. CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE SETTING OR ESTABLISHMENT OF ANY GRADES/ELEVATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA AND ASSOC., INC.
4. THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE CATCH BASINS, MANHOLES, WATER GATES ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY COMPANIES AND GOVERNMENTAL AGENCIES. ALL CONTRACTORS SHOULD NOTIFY, IN WRITING, SAID AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG–SAFE @ 1–888–DIG–SAFE.
5. SEE ROCKINGHAM COUNTY SUPERIOR COURT NOTICE OF DECISION DATED 3/18/2015, RCRD BOOK 5626, PAGE 1529. ALSO SEE STIPULATION DATED 1/30/2015, RCRD BOOK 5626, PAGE 1531.
6. THE SUBJECT TRACT LIES IN ZONE X (UNSHADED), AS SHOWN ON FLOOD INSURANCE RATE MAP 33015C0259F, EFFECTIVE DATE JANUARY 29, 2021, BY FEMA.

REFERENCE PLANS:

1. PLAT OF LAND, 64 VAUGHAN MALL, PORTSMOUTH, N.H., FOR BENDETSON–PORTSMOUTH REALTY TRUST, REVISED TO 9/17/2018, RCRD PLAN D–41080.
2. CONDOMINIUM SITE PLAN, THE PROVIDENT CONDOMINIUM, 25 MAPLEWOOD AVENUE, PORTSMOUTH, N.H., FOR 25 MAPLEWOOD AVENUE, LLC., DATED 12/20/2019, RCRD PLAN D–41922.
3. EXISTING CONDITIONS PLAN, PROPOSED SITE DEVELOPMENT PLANS, 25 MAPLEWOOD AVENUE, PORTSMOUTH, N.H., BY JAMES VERRA AND ASSOCIATES, INC., DATED 4/18/2017, NOT RECORDED.

STATE OF NEW HAMPSHIRE — No. 625 JAMES VERRA — LICENSED LAND SURVEYOR — SIGNATURE

P5042

SURVEYOR:
James Verra and Associates, Inc.
LAND SURVEYORS
101 SHATTUCK WAY – SUITE 8
NEWINGTON, N.H. 03801– 7876
603–436–3557
JOB NO: 23524–A
PLAN NO: 23524–A

ENGINEER:
ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

ISSUED FOR:
APPROVAL

ISSUE DATE:
APRIL 19, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
1	APPROVAL	JV	4/19/21

DRAWN BY: JCS
APPROVED BY: JV
DRAWING FILE: 23524–A.DWG

SCALE:
22" x 34" – 1" = 20'
11" x 17" – 1" = 40'

OWNER:
64 VAUGHAN MALL, LLC
41 INDUSTRIAL DRIVE
UNIT 20
EXETER, NH 03833

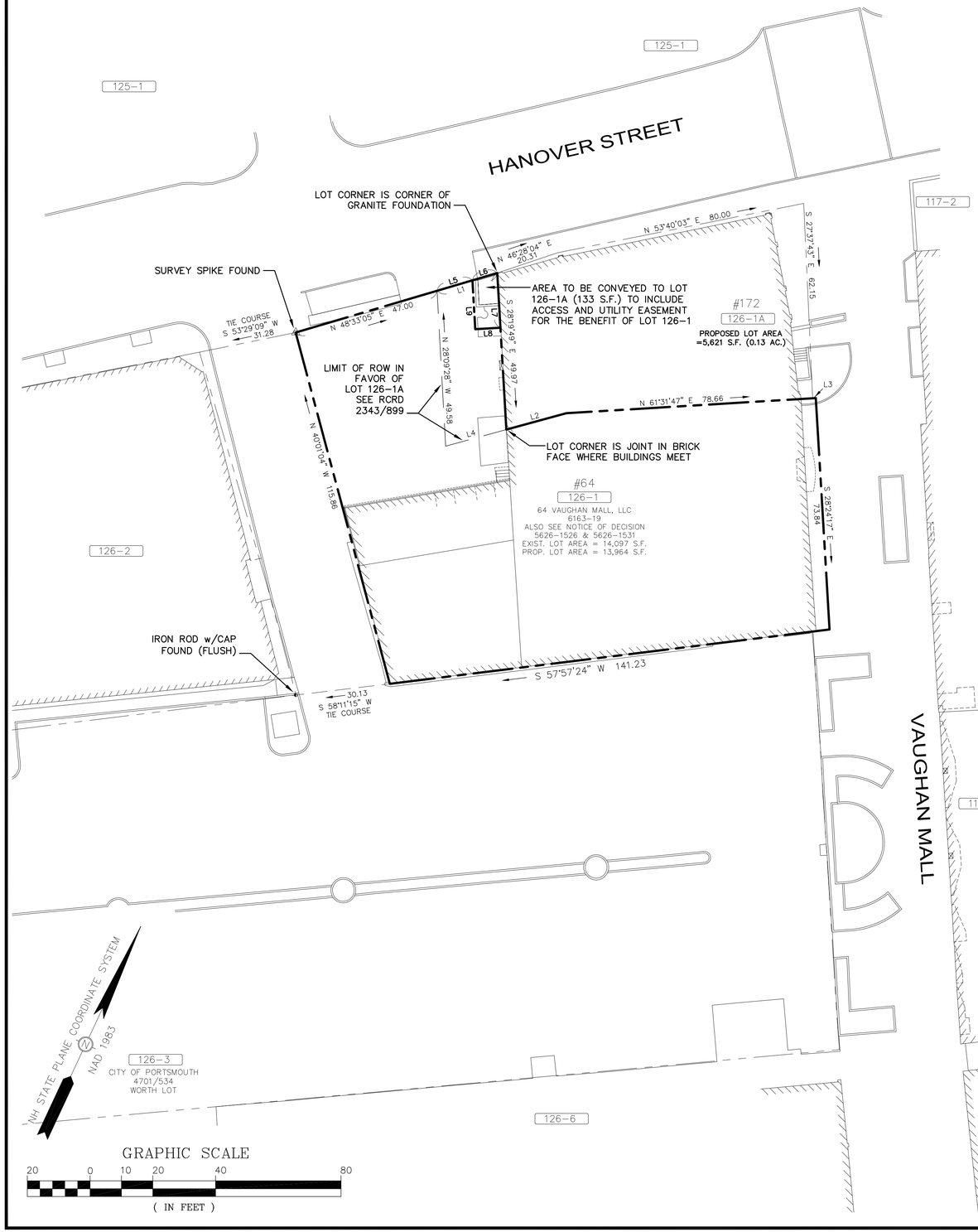
ASSESSOR'S PARCEL
126–1

PROJECT:
PROPOSED SITE DEVELOPMENT PLANS
64 VAUGHAN MALL
PORTSMOUTH, N.H.

ASSESSOR'S PARCEL
126–1

TITLE:
EXISTING CONDITIONS PLAN

SHEET NUMBER:
1 OF 1



LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 48°33'05" E	20.00
L2	N 49°44'19" E	19.83
L3	N 61°31'47" E	1.00
L4	S 49°44'19" W	20.06
L5	N 48°33'05" E	11.75
L6	N 49°44'19" E	8.25
L7	S 28°19'49" E	17.46
L8	S 61°40'10" W	8.03
L9	N 28°19'49" W	15.59

NOTES

1. OWNER OF RECORD: 64 VAUGHAN MALL, LLC
   ADDRESS: 41 INDUSTRIAL DRIVE, EXETER, NH 03833
   DEED REFERENCE:
   TAX SHEET / LOT: 126/1
2. THIS PLAN IS BASED ON A FIELD SURVEY BY JAMES VERRA AND ASSOCIATES, INC. 3/2014, 4/2017 & 12/2019. ON SITE CONTROL ESTABLISHED USING SURVEY GRADE GPS UNITS. HORIZONTAL DATUM: NAD 1983 (1986 ADJUSTMENT) PRIMARY BM: NHDOT 379-0150 (PORTSMOUTH TRAFFIC CIRCLE) VERTICAL DATUM: NAVD 1988 PRIMARY BM: CITY CONTROL POINT "ALBA".
3. CONTRACTOR TO VERIFY SITE BENCHMARKS BY LEVELING BETWEEN 2 BENCHMARKS PRIOR TO THE SETTING OR ESTABLISHMENT OF ANY GRADES/ELEVATIONS. DISCREPANCIES ARE TO BE REPORTED TO JAMES VERRA AND ASSOC., INC.
4. SEE ROCKINGHAM COUNTY SUPERIOR COURT NOTICE OF DECISION DATED 3/18/2015, RCRD BOOK 5626, PAGE 1529. ALSO SEE STIPULATION DATED 1/30/2015, RCRD BOOK 5626, PAGE 1531.
5. THE SUBJECT TRACT LIES IN ZONE X (UNSHADED), AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON FLOOD INSURANCE RATE MAP 33015C0259E, EFFECTIVE DATE MAY 17, 2005, BY FEMA.

REFERENCE PLANS;

1. PLAT OF LAND, 64 VAUGHAN MALL, PORTSMOUTH, N.H., FOR BENDETSON-PORTSMOUTH REALTY TRUST, REVISED TO 9/17/2018, RCRD PLAN D-41080.
2. CONDOMINIUM SITE PLAN, THE PROVIDENT CONDOMINIUM, 25 MAPLEWOOD AVENUE, PORTSMOUTH, N.H., FOR 25 MAPLEWOOD AVENUE, LLC., DATED 12/20/2019, RCRD PLAN D-41922.
3. EXISTING CONDITIONS PLAN, PROPOSED SITE DEVELOPMENT PLANS, 25 MAPLEWOOD AVENUE, PORTSMOUTH, N.H., BY JAMES VERRA AND ASSOCIATES, INC., DATED 4/18/2017, NOT RECORDED.

ABUTTERS LIST

MAP-LOT	OWNER OF RECORD	DEED REF.
117-2	JAMER REALTY, INC. 80 HANOVER ST, PORTSMOUTH, NH 03801	3093/1283
117-4	SJW LTD C/O GENE FISK & ASSOCIATES, LLC 4 GREENLEAF WOODS DR, SUITE 102 PORTSMOUTH, NH 03801	2574/495
125-1	PARADE OFFICE, LLC C/O CATHARTES PRIVATE INVESTMENTS 31 MILK STREET, SUITE 501, BOSTON, MA 02109	N/A
126-1A	NORTHERN TIER REAL ESTATE ACQUISITION & DEVELOPMENT, LLC C/O JOHN J. DUSSI 4 MOODY LN, WEST NEWBURY, MA 01985	4814/563
126-2	25 MAPLEWOOD AVENUE, LLC 41 INDUSTRIAL DR, EXETER, NH 03833	6068/2230
126-3	CITY OF PORTSMOUTH 1 JUNKINS AVE, PORTSMOUTH, NH 03801	4701/534

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

P5042

James Verra
& Associates Inc.
LAND SURVEYORS
101 SHATTUCK WAY, SUITE 8
Newington, New Hampshire
03801-7876
Tel 603-436-3557

ALTUS ENGINEERING, INC.
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: JUNE 21, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TAC	EBS	06/21/21

DRAWN BY: EBS
APPROVED BY: EDW
DRAWING FILE: 5042-SITE.dwg
SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

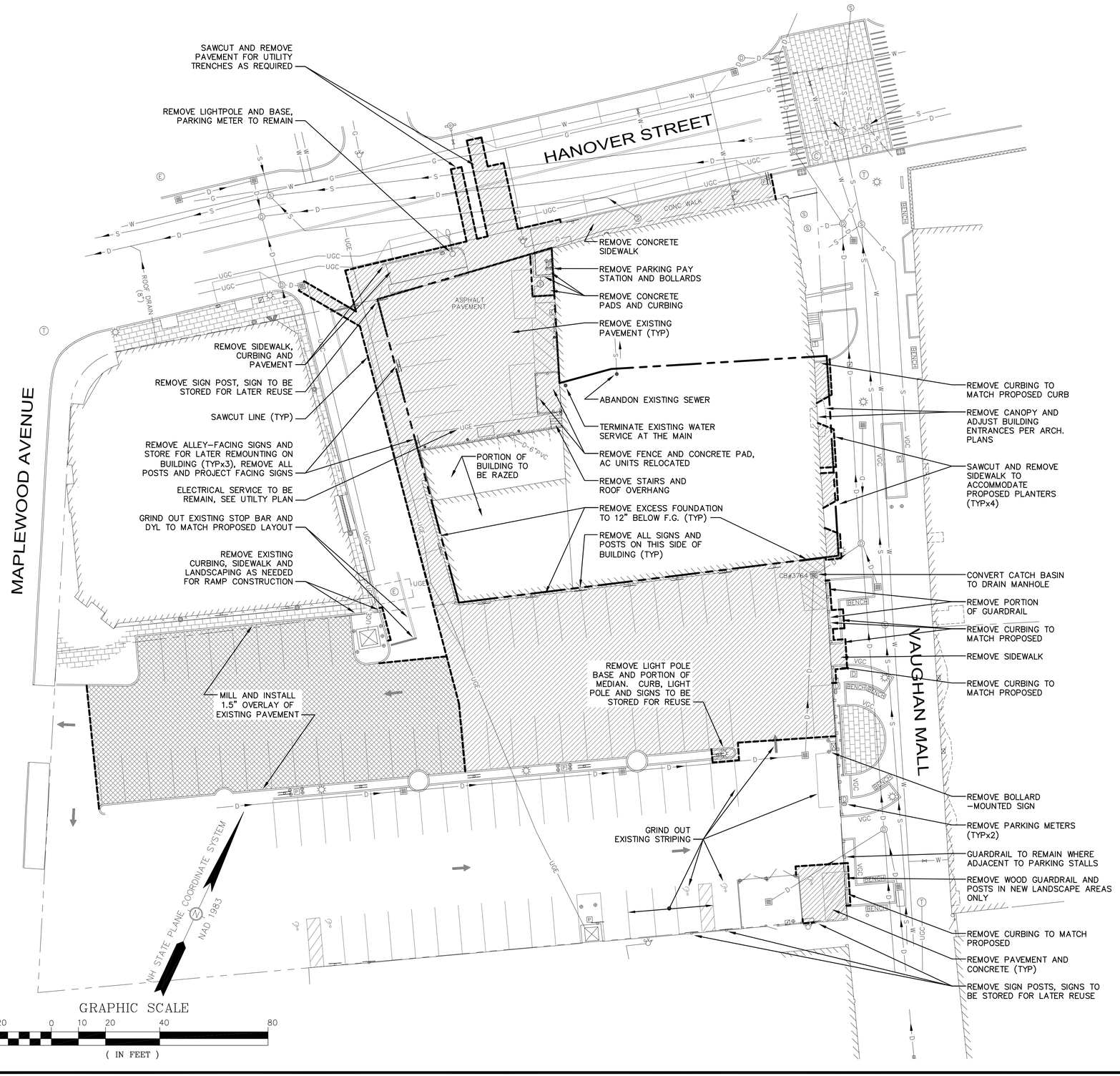
OWNER:
64 VAUGHAN MALL, LLC
41 INDUSTRIAL DRIVE
EXETER, NH 03833

APPLICANT:
HAMPSHIRE DEVELOPMENT CORP.
41 INDUSTRIAL DRIVE
EXETER, NH 03833

PROJECT:
64 VAUGHAN MALL BUILDING RESTORATION
TAX MAP 126, LOT 1
64 VAUGHAN MALL
PORTSMOUTH, NH 03801

TITLE:
LOT LINE ADJUSTMENT PLAN

SHEET NUMBER:
C-1



DEMOLITION NOTES

1. CITY DEMOLITION PERMIT REQUIRED PRIOR TO ANY DEMOLITION ACTIVITIES. CONTRACTOR IS NOTIFIED THAT THIS PERMIT PROCESS MAY REQUIRE A 30-DAY LEAD TIME.
2. CONTRACTOR SHALL SAFELY SECURE THE SITE AND WORK LIMITS WITH SECURITY FENCING WHICH SHALL BE LOCKED DURING NON-WORK HOURS.
3. CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING UTILITIES SCHEDULED TO REMAIN.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TIMELY NOTIFICATION OF ALL PARTIES, CORPORATIONS, COMPANIES, INDIVIDUALS AND STATE AND LOCAL AUTHORITIES OWNING AND/OR HAVING JURISDICTION OVER ANY UTILITIES RUNNING TO, THROUGH OR ACROSS AREAS TO BE DISTURBED BY DEMOLITION AND/OR CONSTRUCTION ACTIVITIES WHETHER OR NOT SAID UTILITIES ARE SUBJECT TO DEMOLITION, RELOCATION, MODIFICATION AND/OR CONSTRUCTION.
5. ALL UTILITY DISCONNECTIONS/DEMOLITIONS/RELOCATIONS SHALL BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES, PORTSMOUTH DPW AND ABUTTING PROPERTY OWNERS. UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELATED EXCAVATION, TRENCHING AND BACKFILLING.
6. WHERE SPECIFIED TO REMAIN, MANHOLE RIMS, CATCH BASIN GRATES, VALVE COVERS, HANDHOLES, ETC. SHALL BE ADJUSTED TO FINISH GRADE UNLESS OTHERWISE SPECIFIED.
7. CONTRACTOR SHALL OBTAIN AN ENCUMBRANCE PERMIT FROM THE CITY OF PORTSMOUTH TO USE PORTIONS OF THE ALLEYWAY, PUBLIC STREETS AND THE WORTH LOT DURING CONSTRUCTION AS STAGING AND CONSTRUCTION AREAS.
8. SEE EROSION CONTROL PLANS FOR EROSION AND SEDIMENT CONTROL MEASURES THAT SHALL BE IN PLACE PRIOR TO DEMOLITION ACTIVITIES.
9. ALL MATERIALS SCHEDULED FOR DEMOLITION OR REMOVAL ON PRIVATE PROPERTY SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. GRANITE CURBING AND BRICK SCHEDULED TO BE REMOVED FROM PUBLIC PROPERTY SHALL BE SALVAGED TO PORTSMOUTH DPW.
10. ALL MATERIAL SCHEDULED TO BE REMOVED SHALL BE LEGALLY DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS/CODES.
11. WATER: PORTSMOUTH DPW, JIM TOW, (603) 427-1530.
12. TELECOMMUNICATIONS: FAIRPOINT, JOE CONSIDINE, (603) 427-5525.
13. CABLE: COMCAST, MIKE COLLINS, (603) 679-5695, EXT. 1037.
14. ELECTRICAL: EVERSOURCE, MICHAEL BUSBY, (603) 332-4227, EXT. 5555334.
15. GAS: UNITIL, DAVID BEAULIEU, (603) 294-5144.
16. CONTRACTOR TO CONTACT PORTSMOUTH DPW A MINIMUM OF TWO WEEKS PRIOR TO ANY DEMOLITION TO COORDINATE ALL WORK CONCERNING DISCONNECTION/DEMOLITION OF ANY PROPOSED WATER AND SEWER LINE IMPROVEMENTS.
17. ALL WATER MAIN AND SERVICE DISCONNECTIONS SHALL CONFORM TO PORTSMOUTH DPW STANDARDS.
18. NO BURNING SHALL BE PERMITTED PER LOCAL REGULATIONS.
19. HAZARDOUS MATERIALS ENCOUNTERED DURING DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL BE ABATED IN STRICT ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REGULATIONS.
20. AT NO TIME SHALL ANY UTILITY SERVICE OR VEHICULAR ACCESS TO ABUTTING PROPERTIES BE COMPLETELY INTERRUPTED UNLESS A FULL SHUTDOWN IS COORDINATED WITH ALL AFFECTED PARTIES AND UTILITY PROVIDER(S).
21. SHOULD GROUNDWATER BE ENCOUNTERED DURING EXCAVATION, APPROPRIATE BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED TO ENSURE SEDIMENT LADEN WATER IS NOT DISCHARGED INTO THE CITY DRAINAGE SYSTEM. A DISCHARGE PERMIT SHALL BE OBTAINED PRIOR TO DISCHARGING GROUNDWATER.
22. THIS PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR THE DEMOLITION OF EXISTING SITE FEATURES. UNLESS OTHERWISE NOTED TO REMAIN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL BUILDINGS, PAVEMENT, CONCRETE, CURBING, SIGNS, POLES, UTILITIES, FENCES, VEGETATION AND OTHER EXISTING FEATURES AS NECESSARY TO FULLY CONSTRUCT THE PROJECT.

ALTUS ENGINEERING, INC.
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 (LICENSED) - STATE OF NEW HAMPSHIRE - PROFESSIONAL ENGINEER
6/21/21

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: JUNE 21, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TAC WORK SESSION	EBS	05/05/20
1	TAC WORK SESSION	EBS	07/07/20
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7	TAC	EBS	06/21/21

DRAWN BY: EBS
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OWNER:
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41 INDUSTRIAL DRIVE
EXETER, NH 03833

APPLICANT:
HAMPSHIRE DEVELOPMENT CORP.
41 INDUSTRIAL DRIVE
EXETER, NH 03833

PROJECT:
64 VAUGHAN MALL BUILDING RESTORATION
TAX MAP 126, LOT 1
64 VAUGHAN MALL
PORTSMOUTH, NH 03801

TITLE:
DEMOLITION PLAN

SHEET NUMBER:
C-2

P5042

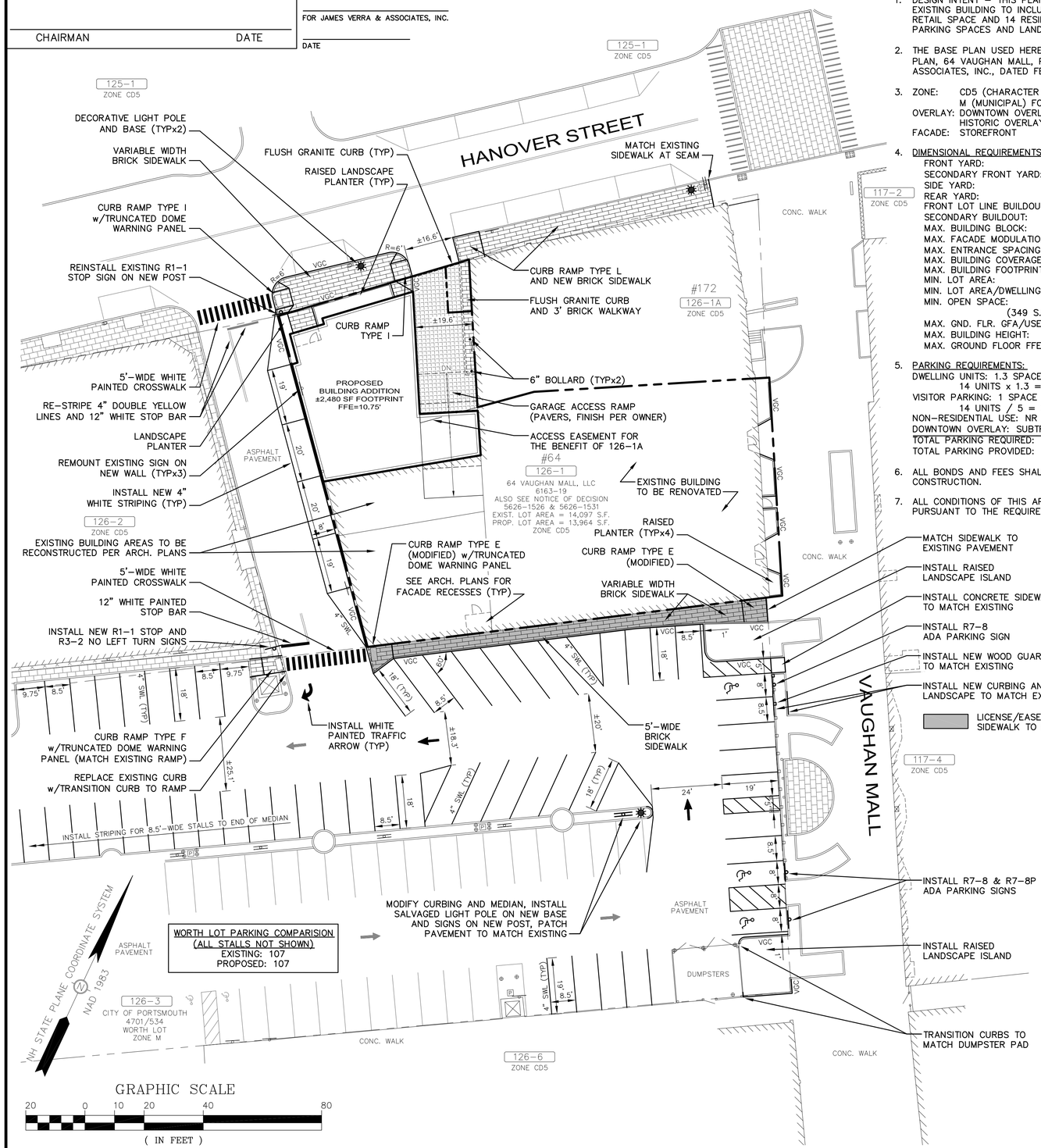
APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

THE SOLE PURPOSE OF THIS PLAN IS TO DEPICT THE LOCATION OF EXISTING AND PROPOSED IMPROVEMENTS ON THE SITE. RECORDING OF THIS PLAN WAS A REQUIREMENT OF THE PORTSMOUTH PLANNING BOARD AS PART OF THEIR APPROVAL.

FOR JAMES VERRA & ASSOCIATES, INC.

DATE



NOTES

1. DESIGN INTENT – THIS PLAN IS INTENDED TO DEPICT THE RETROFIT OF THE EXISTING BUILDING TO INCLUDE AN ADDITION, UNDERGROUND PARKING GARAGE, RETAIL SPACE AND 14 RESIDENTIAL UNITS ALONG WITH A SIDEWALK, MODIFIED PARKING SPACES AND LANDSCAPE ISLANDS ON THE ABUTTING WORTH LOT.
2. THE BASE PLAN USED HERE WAS DEVELOPED FROM "EXISTING CONDITIONS PLAN, 64 VAUGHAN MALL, PORTSMOUTH, NH" BY JAMES VERRA AND ASSOCIATES, INC., DATED FEBRUARY 3, 2020.
3. ZONE: CD5 (CHARACTER 5)
   M (MUNICIPAL) FOR OFFSITE IMPROVEMENTS ON WORTH LOT
   OVERLAY: DOWNTOWN OVERLAY DISTRICT
   HISTORIC OVERLAY DISTRICT
   FACADE: STOREFRONT
4. DIMENSIONAL REQUIREMENTS:

		EXISTING	PROPOSED
FRONT YARD:	5' MAX.	4.3'	SAME
SECONDARY FRONT YARD:	5' MAX.	58.1'	5'
SIDE YARD:	NR	0'	SAME
REAR YARD:	5'	0.15'	SAME
FRONT LOT LINE BUILDOUT:	80% WIDTH MIN.	100%	SAME
SECONDARY BUILDOUT:	80% WIDTH MIN.	0%	80% (47')
MAX. BUILDING BLOCK:	225'		
MAX. FACADE MODULATION:	100'		
MAX. ENTRANCE SPACING:	50'		
MAX. BUILDING COVERAGE:	95%	70.0%	89.4%
MAX. BUILDING FOOTPRINT:	20,000 S.F.	10,008 S.F.	12,488 S.F.
MIN. LOT AREA:	NR	14,097 S.F.	13,964 S.F.
MIN. LOT AREA/DWELLING:	NR		
MIN. OPEN SPACE:	5%	0% (0 SF)	5% (698 SF)
		(349 S.F. (VAUGHAN) + 349 S.F. (HANOVER) = 698 S.F.)	
MAX. GND. FLR. GFA/USE:	15,000 S.F.	±10,014 S.F.	12,476 S.F.
MAX. BUILDING HEIGHT:	3 STORIES or 40'	±40'	40'
MAX. GROUND FLOOR FFE:	SIDEWALK GRADE +3'		

5. PARKING REQUIREMENTS:
   DWELLING UNITS: 1.3 SPACES / DWELLING UNIT OVER 750 S.F.
   14 UNITS x 1.3 = 18.2 SPACES REQUIRED
   VISITOR PARKING: 1 SPACE / 5 DWELLING UNITS (FOR LOT w/OVER 4 UNITS)
   14 UNITS / 5 = 2.8 SPACES REQUIRED
   NON-RESIDENTIAL USE: NR
   DOWNTOWN OVERLAY: SUBTRACT 4 SPACES/LOT
   TOTAL PARKING REQUIRED: 17 SPACES
   TOTAL PARKING PROVIDED: 20 SPACES (UNDERGROUND)
6. ALL BONDS AND FEES SHALL BE PAID/POSTED PRIOR TO INITIATING CONSTRUCTION.
7. ALL CONDITIONS OF THIS APPROVAL SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
8. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH & NHDOT'S STANDARD SPECIFICATIONS FOR ROAD & BRIDGE, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
9. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINE WITH RS-1 IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
10. THE CONTRACTOR SHALL VERIFY ALL BENCHMARKS AND TOPOGRAPHY IN THE FIELD PRIOR TO CONSTRUCTION.
11. AREA OF DISTURBANCE IS UNDER 43,560 SF, COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT IS NOT REQUIRED.
12. PAVEMENT MARKINGS SHALL BE CONSTRUCTED USING WHITE, YELLOW, OR BLUE TRAFFIC PAINT (WHERE SPECIFIED) MEETING THE REQUIREMENTS OF AASHTO M248, TYPE F OR EQUAL. PAINTED ISLANDS AND LOADING ZONES SHALL BE 4"-WIDE DIAGONAL WHITE LINES 3'-0" O.C. BORDERED BY 4"-WIDE WHITE LINES. PARKING STALLS SHALL BE SEPARATED BY 4"-WIDE WHITE LINES. SEE DETAILS FOR HANDICAP SYMBOLS, SIGNS AND SIGN DETAILS. PAVEMENT MARKINGS SHALL BE INSTALLED AT LEAST 14-DAYS AFTER INSTALLATION OF WEARING COURSE PAVEMENT. CONTRACTOR SHALL APPLY TWO (2) COATS OF ALL PAVEMENT MARKINGS.
13. PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC DEVICES," "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AND THE AMERICANS WITH DISABILITIES ACT (ADA), LATEST EDITIONS.
14. UNLESS OTHERWISE NOTED, ALL NEW CURBING SHALL BE VERTICAL GRANITE WITH A MINIMUM RADIUS OF 4'.
15. THE CONTRACTOR SHALL VERIFY ALL BUILDING DIMENSIONS WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS PRIOR TO CONSTRUCTION. ANY AND ALL DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF BOTH THE ARCHITECT AND CIVIL ENGINEER FOR RESOLUTION.
16. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
17. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR
18. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
19. SITEWORK CONTRACTOR SHALL PREPARE A STAMPED AS-BUILT SITE PLAN STAMPED BY A LICENSED LAND SURVEYOR (LLS) & PROVIDE A DIGITAL (CAD FORMAT) COPY FOR THE CITY'S G.I.S. DATA BASE.
20. TRASH AND RECYCLING SHALL BE STORED INSIDE BUILDING.
21. THIS DEVELOPMENT IS SUBJECT TO LICENSING AGREEMENTS w/THE PORTSMOUTH CITY COUNCIL.
22. RESTAURANTS SHALL NOT OCCUPY BUILDING WITHOUT THE INSTALLATION OF A GREASE TRAP MEETING CITY CODE.
23. ALL SIDEWALKS TO BE CONSTRUCTED WITHIN PROJECT LIMITS SHALL BE BRICK. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING PORTSMOUTH DPW TO CONFIRM BRICK SPECIFICATIONS.
24. STREET ADDRESSES FOR EACH USE SHALL BE DETERMINED BY PORTSMOUTH FIRE DEPARTMENT & DPW.
25. SNOW SHALL BE STORED AT THE EDGE OF PAVEMENT, IN AREAS SHOWN ON THE PLAN, OR TRUCKED OFF SITE.
26. BUILDING USES BY FLOOR (BY FOOTPRINT, ACTUAL SPACE MAY VARY):
    BASEMENT: ±9,326 S.F. PARKING
    FLOOR 1: ±12,334 S.F. RETAIL
    FLOORS 2-4: ±12,488 S.F. RESIDENTIAL
    TOTAL: ±59,124 S.F.

MATCH SIDEWALK TO EXISTING PAVEMENT

INSTALL RAISED LANDSCAPE ISLAND

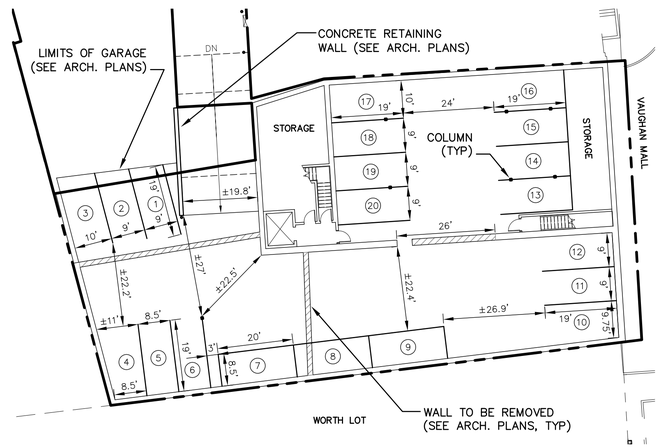
INSTALL CONCRETE SIDEWALK TO MATCH EXISTING

INSTALL R7-8 ADA PARKING SIGN

INSTALL NEW WOOD GUARDRAIL TO MATCH EXISTING

INSTALL NEW CURBING AND LANDSCAPE TO MATCH EXISTING

LICENSE/EASEMENT AREA TO APPLICANT (±768 S.F.)
SIDEWALK TO BE MAINTAINED BY APPLICANT



BASEMENT GARAGE PARKING LAYOUT

P5042

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ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE -
6/21/21

NOT FOR CONSTRUCTION

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3	PB CONSULTATION	EBS	11/02/20
4	REV. BLDG. HEIGHT	EBS	01/26/21
5	TAC	EBS	03/22/21
6	REV. FOOTPRINT FOR HDC	EBS	04/08/21
7	TAC	EBS	04/19/21
8	TAC	EBS	05/19/21
9	TAC	EBS	06/21/21

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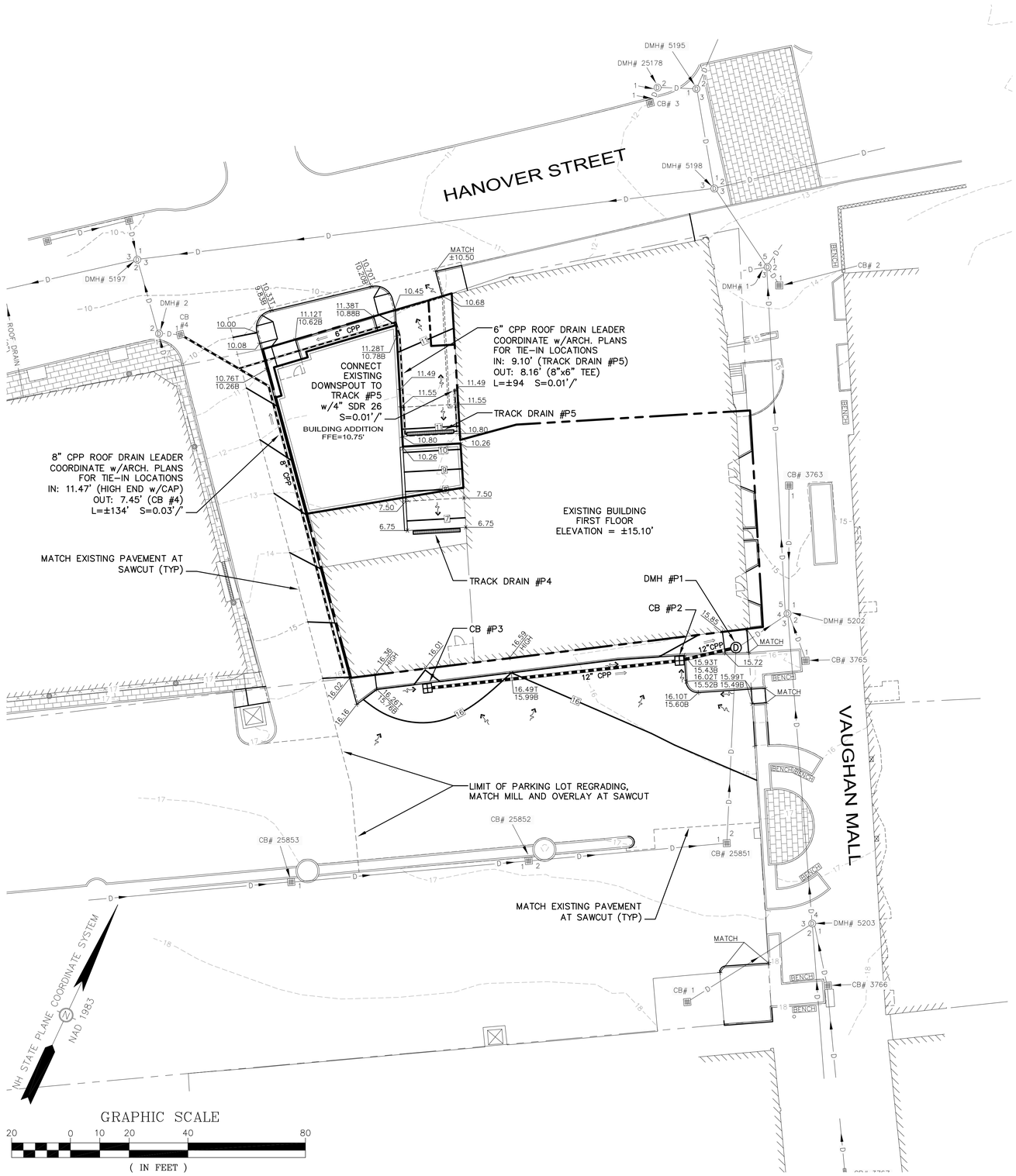
PROJECT:
64 VAUGHAN MALL BUILDING RESTORATION
TAX MAP 126, LOT 1
64 VAUGHAN MALL
PORTSMOUTH, NH 03801

TITLE:
SITE PLAN

SHEET NUMBER:
C-3



DRAINAGE SCHEDULE

CB #4 (EXISTING)
RIM=9.57'
IN: 7.45' (NEW 8" ROOF LEADER)
OUT: ±7.32' (EXISTING TO DMH #2)
12" PVC (EXISTING)

DMH #P1
(FORMER CB #3764)
RIM=±15.45'(ADJUST RIM TO MATCH RAMP SLOPE)
IN: 11.30' (NEW 12" CB #P2)
IN: ±11.20' (EXIST. 12" CB #25851)
OUT: ±11.10' (TO DMH #5202)
12" RCP (EXISTING)

CB #P2
RIM=15.30'
IN: 11.46' (12" CB #P3)
OUT: 11.36' (TO DMH #P1)
12" CPP
L=±12' S=0.005'/'

CB #P3
RIM=15.35'
OUT: 11.89' (TO CB #P2)
12" CPP
L=±86' S=0.005'/'

TRACK DRAIN #P4
RIM=6.75'
16' LONG x 1.17' WIDE
w/EVAPORATOR (COORDINATE w/ARCH. PLANS FOR MODEL, CONDUIT, WIRING AND CIRCUITRY)

TRACK DRAIN #P5
RIM=10.82'
16' LONG x 1.17' WIDE
IN: 9.57' (4" ROOF LEADER)
OUT: 9.57'
w/EXTERNAL DROP TO 9.10'
6" CPP (TO 8" ROOF LEADER)
L=±94' S=0.01'/'

GRADING AND DRAINAGE NOTES

1. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE AND LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
2. CONTRACTOR SHALL OBTAIN A "DIGSAFE" NUMBER AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
3. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
4. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION.
5. UNLESS OTHERWISE AGREED IN WRITING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING TEMPORARY BENCHMARKS (TBMS) AND PERFORMING ALL CONSTRUCTION SURVEY LAYOUT.
6. PRIOR TO CONSTRUCTION, FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING STORMWATER AND UTILITY LINES. PRESERVE AND PROTECT LINES TO BE RETAINED.
7. TEMPORARY INLET PROTECTION MEASURES SHALL BE INSTALLED IN ALL CATCH BASINS WITHIN 100' OF THE PROJECT SITE WHEN SITE WORK WITHIN CONTRIBUTING AREAS IS ACTIVE OR SAID AREAS HAVE NOT BEEN STABILIZED.
8. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL. IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
9. IF SUITABLE, EXCAVATED MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS. PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.
10. ALL CATCH BASIN, MANHOLE AND OTHER DRAINAGE RIMS SHALL BE SET FLUSH WITH OR NO LESS THAN 0.1' BELOW FINISH GRADE. ANY RIM ABOVE SURROUNDING FINISH GRADE SHALL NOT BE ACCEPTED.
11. ALL SPOT GRADES ARE AT FINISH GRADE AND BOTTOM OF CURB WHERE APPLICABLE.
12. IN ORDER TO PROVIDE VISUAL CLARITY ON THE PLANS, DRAINAGE AND OTHER UTILITY STRUCTURES MAY NOT BE DRAWN TO SCALE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SIZING AND LOCATION OF ALL STRUCTURES AND IS DIRECTED TO RESOLVE ANY POTENTIAL DISCREPANCY WITH THE ENGINEER PRIOR TO CONSTRUCTION.

LEGEND

- PROPERTY LINE
- EASEMENT LINE
- EXISTING PAVEMENT/CURB
- VGC — PROPOSED PAVEMENT/VERTICAL GRANITE CURB
- 60 — EXISTING CONTOUR
- 60 — PROPOSED CONTOUR
- 100.00 — PROPOSED SPOT GRADE/TOP & BOTTOM OR CURB/WALL
- W — EXISTING WATER/CURB STOP/VALVE/HYDRANT
- S — EXISTING SEWER/MANHOLE
- G — EXISTING GAS/VALVE
- OHW UGE — EXIST. OVER/UNDERGROUND UTILITIES/POLE
- D — EXISTING DRAINAGE/CB/DMH
- PW — PROPOSED THRUST BLOCK/WATER/CURB STOP/VALVE/HYDRANT
- PW F — PROPOSED DOMESTIC WATER SERVICE/FIRE WATER SERVICE
- S — PROPOSED SEWER/MANHOLE/CLEANOUT
- G — PROPOSED GAS SERVICE
- OHW — PROPOSED OVERHEAD UTILITIES/UTILITY POLE
- UGE — PROPOSED UNDERGROUND ELECTRIC/PHONE/TV
- PROPOSED DRAINAGE (HARD PIPE)/CB/DCB/DMH/FES
- CPP FES HDWL — CORRUGATED PLASTIC PIPE/FLARED END SECTION/HEADWALL
- 4% — PROPOSED GROUND SLOPE/APPROX. GRADE/STONE CHECK DAM
- X — SILTFENCE/SEDIMENT BARRIER/CONST. FENCE
- STABILIZED CONSTRUCTION EXIT
- PROPOSED SAWCUT LINE

P5042

ALTUS ENGINEERING, INC.
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE –
6/21/21

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: JUNE 21, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TAC WORK SESSION	EBS	05/05/20
1	TAC WORK SESSION	EBS	07/07/20
2	TAC	EBS	10/19/20
3	PB CONSULTATION	EBS	11/02/20
4	TAC	EBS	03/22/21
5	TAC	EBS	04/19/21
6	TAC	EBS	05/19/21
7	TAC	EBS	06/21/21

DRAWN BY: EBS
APPROVED BY: EDW
DRAWING FILE: 5042-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

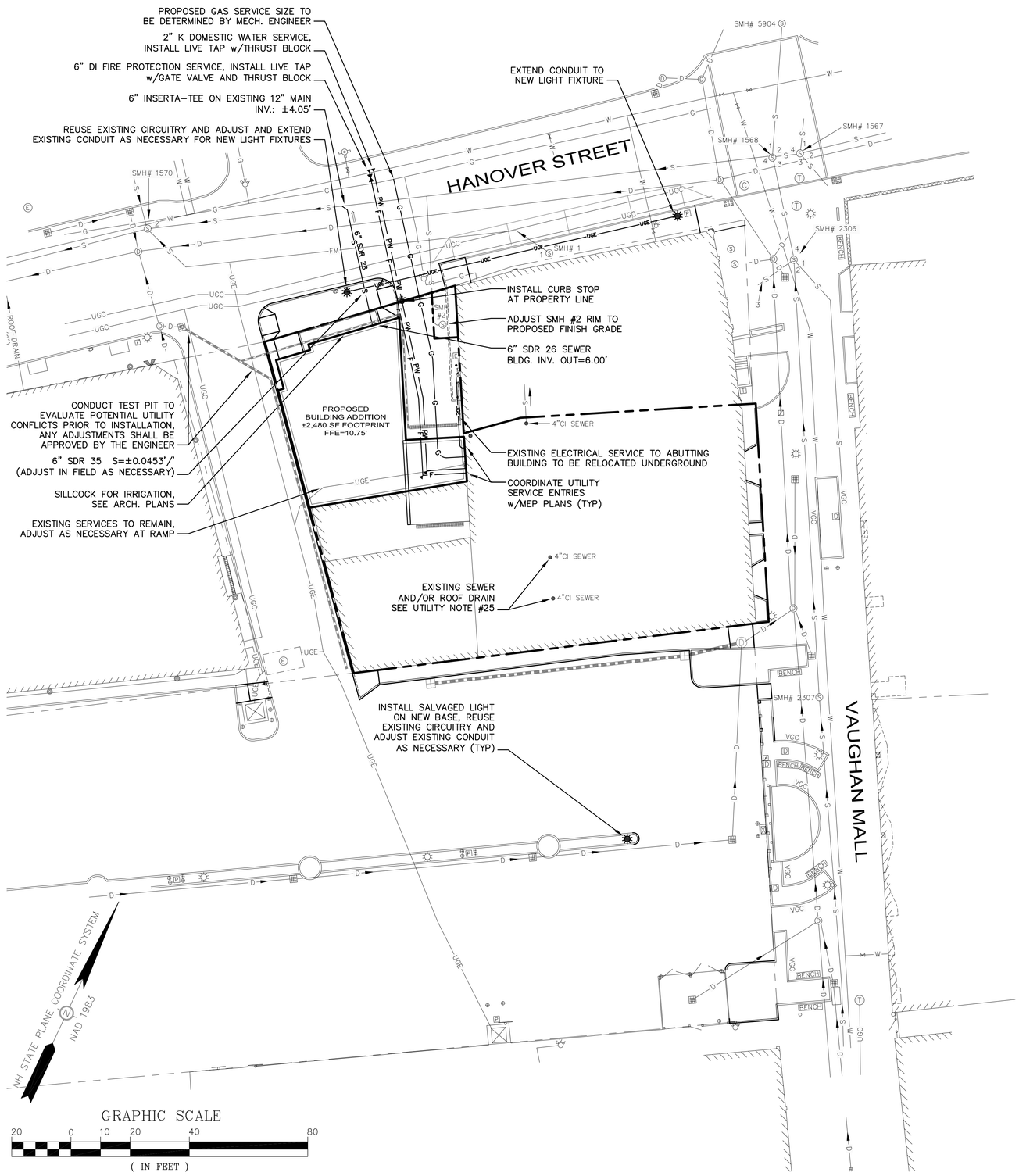
OWNER:
64 VAUGHAN MALL, LLC
41 INDUSTRIAL DRIVE EXETER, NH 03833

APPLICANT:
HAMPSHIRE DEVELOPMENT CORP.
41 INDUSTRIAL DRIVE EXETER, NH 03833

PROJECT:
64 VAUGHAN MALL BUILDING RESTORATION
TAX MAP 126, LOT 1
64 VAUGHAN MALL PORTSMOUTH, NH 03801

TITLE:
GRADING AND DRAINAGE PLAN

SHEET NUMBER:
C-4



SEWER TABLE

SMH# 1
RIM EL= 11.80
(1) INV OUT 4"PVC FM= 7.47

SMH# 2
RIM EL= 11.53
(COULD NOT OPEN)

SMH# 1567
RIM EL= 12.96
(1) PLUGGED
(2) INV IN 12"RCP= 5.19
(3) INACTIVE
(4) INV OUT 12"UNK.= 4.71

SMH# 1568
RIM EL= 12.86
(1) INV IN 8"PVC= 4.88
(2) INV IN 12"UNK.= 4.68
(3) INV IN 24"RCP= 5.05
(4) INV OUT 12"RCP= 4.70

SMH# 1570
RIM EL= 10.16
(2) INV IN 15"RCP= 3.74

SMH# 2306
RIM EL= 13.84
(1) INV IN 10"VCP= 6.86
(2) INV IN 24"RCP= 8.88
(3) INV IN 6"PVC= 11.24
(4) INV OUT 24"RCP= 6.83
(23" CSU PER DPW)

SMH# 2307
RIM EL= 15.50
CL FLOW= 10.66
(OVAL RCP 15"W X 18"H)
(23" CSU PER DPW)

SEWER FLOW CALCS.

APARTMENT:
38 GPD/PERSON
(14) 2 PERSON UNITS = 28 PEOPLE
28 x 38 GPD = 1,064 GPD

SHOPPING CENTER:
ASSUME 4 RETAIL SPACES
8 GPD/EMPLOYEE
1.5 GPD/PARKING SPACE
4 x 2 EMPL./EA. = 8 EMPLOYEES
8 x 8 GPD = 64 GPD
(NO ONSITE RETAIL PARKING)

1,064 + 64 = 1,028 GPD TOTAL

*AVERAGE DAILY PER CAPITA FLOW CALCULATED FROM METCALF & EDDY/AECOM "WASTEWATER ENGINEERING TREATMENT AND RESOURCE RECOVERY", 5TH EDITION

UTILITY NOTES

1. THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON THE FIELD LOCATION OF ALL VISIBLE STRUCTURES (IE. CATCH BASINS, MANHOLES, WATER GATES, ETC.) AND INFORMATION COMPILED FROM PLANS PROVIDED BY UTILITY PROVIDERS AND GOVERNMENTAL AGENCIES. AS SUCH, THEY ARE NOT INCLUSIVE AS OTHER UTILITIES AND UNDERGROUND STRUCTURES THAT ARE NOT SHOWN ON THE PLANS MAY EXIST. THE ENGINEER, SURVEYOR AND OWNER ACCEPT NO RESPONSIBILITY FOR POTENTIAL INACCURACIES IN THE PLAN AND/OR UNFORESEEN CONDITIONS. THE CONTRACTOR SHALL NOTIFY, IN WRITING, SAID AGENCIES, UTILITY PROVIDERS, CITY OF PORTSMOUTH DPW AND OWNER'S AUTHORIZED REPRESENTATIVE AND CALL DIG SAFE AT 1 (800) DIG-SAFE AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO ANY EXCAVATION WORK.
2. PRIOR TO CONSTRUCTION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING AND PROPOSED STORMWATER AND UTILITY LINES. CONFLICTS SHALL BE ANTICIPATED AND ALL EXISTING LINES TO BE RETAINED SHALL BE PROTECTED. ANY DAMAGE DONE TO EXISTING UTILITIES SHALL BE REPAIRED AND, IF NECESSARY, EXISTING UTILITIES SHALL BE RELOCATED AT NO EXTRA COST TO THE OWNER. ALL CONFLICTS SHALL BE RESOLVED WITH THE INVOLVEMENT OF THE ENGINEER, DPW AND APPROPRIATE UTILITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE POSTING OF ALL BONDS AND PAYMENT OF ALL TAP, TIE-IN AND CONNECTION FEES.
4. ALL ROAD/LANE CLOSURES OR OTHER TRAFFIC INTERRUPTIONS SHALL BE COORDINATED WITH THE PORTSMOUTH POLICE DEPARTMENT AND DPW AT LEAST TWO WEEKS PRIOR TO COMMENCING RELATED CONSTRUCTION.
5. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH AND NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRENCHING, BEDDING, BACKFILL & COMPACTION FOR ALL UTILITY TRENCHING IN ADDITION TO ALL CONDUIT INSTALLATION AND COORDINATION OF ALL REQUIRED INSPECTIONS.
7. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL CONFORM TO FEDERAL OSHA AND CITY REGULATIONS.
8. SEE ARCHITECTURAL/MECHANICAL DRAWINGS FOR EXACT LOCATIONS & ELEVATIONS OF UTILITY CONNECTIONS AT BUILDING. COORDINATE ALL WORK WITHIN FIVE (5) FEET OF BUILDINGS WITH BUILDING CONTRACTOR AND ARCHITECTURAL/MECHANICAL DRAWINGS. ALL CONFLICTS AND DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY AND PRIOR TO COMMENCING RELATED WORK.
9. FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE ARCHITECT, CONTRACTOR, APPROPRIATE UTILITY COMPANIES AND THE PORTSMOUTH DPW.
10. WATER: PORTSMOUTH DPW, JIM TOW, (603) 427-1530.
11. TELECOMMUNICATIONS: CONSOLIDATED, JOE CONSIDINE, (603) 427-5525.
12. CABLE: COMCAST, MIKE COLLINS, (603) 679-5695, EXT. 1037.
13. ELECTRICAL: EVERSOURCE, MICHEAL BUSBY, (603) 332-4227, EXT. 5555334. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL, 48-HOUR MINIMUM NOTICE REQUIRED.
14. GAS: UNITIL, DAVID BEAULIEU, (603) 294-5144.
15. DETECTABLE WARNING TAPE SHALL BE PLACED OVER THE ENTIRE LENGTH OF ALL BURIED UTILITIES, COLORS PER THE RESPECTIVE UTILITY PROVIDERS.
16. ALL WATER MAIN AND SERVICE INSTALLATIONS SHALL BE CONSTRUCTED AND TESTED PER PORTSMOUTH DPW STANDARDS AND SPECIFICATIONS. ALL OTHER UTILITIES SHALL BE TO THE STANDARDS AND SPECIFICATIONS OF THE RESPECTIVE UTILITY PROVIDERS.
17. WHERE WATER LINES CROSS, RUN ADJACENT TO OR ARE WITHIN 5' OF STORM DRAINAGE PIPES OR STRUCTURES, 2"-THICK CLOSED CELL RIGID BOARD INSULATION SHALL BE INSTALLED FOR FROST PROTECTION.
18. PER PORTSMOUTH DPW SPECIFICATIONS, ALL NEW WATERLINES SHALL BE WRAPPED WAITH A WATER TIGHT POLYETHYLENE WRAPPING FOR THEIR FULL LENGTH, ALL DOMESTIC WATER SERVICES SHALL BE PROVIDED WITH BACKFLOW PREVENTERS AND ALL JOINTS SHALL HAVE THREE (3) WEDGES PER JOINT.
19. WATER AND SANITARY SEWER LINES SHALL BE LOCATED AT LEAST 10' HORIZONTALLY FROM EACH OTHER. WHERE CROSSING, 18" MINIMUM VERTICAL CLEARANCE SHALL BE PROVIDED WITH WATER INSTALLED OVER SEWER.
20. SOLAR PANEL INSTALLATION, IF PROPOSED, SHALL COMPLY WITH NFPA 1, 2012, SECTION 11.12. AS AMENDED.
21. ALL STORM WATER CONNECTIONS/RECONNECTIONS TO THE CITY DRAINAGE SYSTEM SHALL REQUIRE A STORM WATER CONNECTION PERMIT. A CAPACITY USE SURCHARGE MAY APPLY.
22. FIRE ALARM PANEL SHALL BE MONITORED THROUGH A THIRD-PARTY SECURITY COMPANY. CONTRACTOR SHALL COORDINATE PANEL LOCATION AND INTERCONNECTION WITH CITY FIRE DEPT. AND ARCHITECT.
23. APPLICANT SHALL HAVE A SITE SURVEY CONDUCTED BY A RADIO COMMUNICATIONS CARRIER APPROVED BY THE CITY'S COMMUNICATION DIVISION. THE RADIO COMMUNICATIONS CARRIER MUST BE FAMILIAR AND CONVERSANT WITH THE POLICE AND RADIO CONFIGURATION. IF THE SITE SURVEY INDICATES IT IS NECESSARY TO INSTALL A SIGNAL REPEATER EITHER ON OR NEAR THE PROPOSED PROJECT, THOSE COSTS SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. THE APPLICANT SHALL BE REQUIRED TO PAY FOR THE SITE SURVEY WHETHER OR NOT THE SURVEY INDICATES A REPEATER IS NECESSARY. THE OWNER SHALL COORDINATE WITH THE SUPERVISOR OF RADIO COMMUNICATIONS FOR THE CITY. THE SURVEY SHALL BE COMPLETED AND THE REPEATER, IF DETERMINED IT IS REQUIRED, SHALL BE INSTALLED PRIOR TO THE ISSUANCE OF CERTIFICATE OF OCCUPANCY.
24. CONTRTACTOR/OWNER SHALL PROVIDE DPW WITH DETAILS OF TEMPORARY & PERMANENT GROUNDWATER DEWATERING DESIGN IF NECESSARY.
25. CONTRACTOR SHALL VERIFY USE OF ALL INTERIOR STORM & SANITARY PIPING. CONTRATOR SHALL TAKE ALL NECESSARY MEASURES TO ENSURE THAT ALL STORMWATER IS SEPARATED FROM SANITARY FLOW.

P5042

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6/21/21

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ISSUED FOR: TAC

ISSUE DATE: JUNE 21, 2021

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41 INDUSTRIAL DRIVE
EXETER, NH 03833

APPLICANT:
HAMPSHIRE DEVELOPMENT CORP.
41 INDUSTRIAL DRIVE
EXETER, NH 03833

PROJECT:
64 VAUGHAN MALL BUILDING RESTORATION
TAX MAP 126, LOT 1
64 VAUGHAN MALL
PORTSMOUTH, NH 03801

TITLE:
UTILITIES PLAN

SHEET NUMBER:
C-5

SEDIMENT AND EROSION CONTROL NOTES

PROJECT NAME AND LOCATION

64 VAUGHAN MALL
PORTSMOUTH, NEW HAMPSHIRE
TAX MAP 126 LOT 1

LATITUDE: 043° 04' 36" N
LONGITUDE: 070° 45' 40" W

OWNER:

64 VAUGHAN MALL, LLC
10 INDUSTRIAL WAY
AMESBURY, MA 01913

APPLICANT:

HAMPSHIRE DEVELOPMENT CORP.
41 INDUSTRIAL PARK DRIVE
EXETER, NH 03833

DESCRIPTION

The project consists of the redevelopment of the existing building for commercial and residential purposes along with associated site improvements.

DISTURBED AREA

The total area to be disturbed for the redevelopment is approximately ±9,500 S.F. (±0.22 acres). USEPA NPDES Phase II compliance not required.

PROJECT PHASING

The proposed project will be completed in one phase.

NAME OF RECEIVING WATER

The site drains via an existing municipal closed drainage system to the Piscataqua River.

SEQUENCE OF MAJOR ACTIVITIES

1. Install temporary erosion control measures including silt fences, stabilized construction entrance and inlet sediment filters as noted on the plan. All temporary erosion control measures shall be maintained in good working condition for the duration of the project.
2. Demolish existing building and utilities as shown on Demolition Plan and reclaim pavement.
3. Rough grade site including placement of borrow materials.
4. Construct buildings and associated improvements.
5. Construct drainage structures, culverts, utilities, swales & pavement base course materials.
6. Install base course paving & curbing.
7. Install top course paving.
8. Install pavement markings and signs.
9. Loam (6" min) and seed all disturbed areas not paved or otherwise stabilized.
10. When all construction activity is complete and site is stabilized, remove all temporary erosion control measures and any sediment that has been trapped by these devices.

TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 – 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, the silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt fences and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with hay bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Stabilize all ditches, swales, & level spreaders prior to directing flow to them.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is established.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL

These are general inspection and maintenance practices that shall be used to implement the plan:

1. The smallest practical portion of the site shall be denuded at one time.
2. All control measures shall be inspected at least once each week and following any storm event of 0.5 inches or greater.
3. All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.
4. Built–up sediment shall be removed from silt fence or other barriers when it has reached one–third the height of the fence or bale, or when "bulges" occur.
5. All diversion dikes shall be inspected and any breaches promptly repaired.
6. Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy growth.
7. The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the Plans.
8. An area shall be considered stable if one of the following has occurred:
   a. Base coarse gravels have been installed in areas to be paved;
   b. A minimum of 85% vegetated growth as been established;
   c. A minimum of 3 inches of non–erosive material such as stone of riprap has been installed; – or –
   d. Erosion control blankets have been properly installed.
9. The length of time of exposure of area disturbed during construction shall not exceed 45 days.

B. MULCHING

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

1. Timing – In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this:
   a. Apply mulch prior to any storm event. This is applicable when working within 100 feet of wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.
   b. Required Mulching within a specified time period. The time period can range from 21 to 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

2. Guidelines for Winter Mulch Application –

Type	Rate per 1,000 s.f.	Use and Comments
Hay or Straw	70 to 90 lbs.	Must be dry and free from mold. May be used with plantings.
Wood Chips or Bark Mulch	460 to 920 lbs.	Used mostly with trees and shrub plantings.
Jute and Fibrous Matting (Erosion Blanket	As per manufacturer Specifications	Used in slope areas, water courses and other Control areas.
Crushed Stone 1/4" to 1–1/2" dia.	Spread more than 1/2" thick	Effective in controlling wind and water erosion.
Erosion Control Mix	2" thick (min)	* The organic matter content is between 80 and 100%, dry weight basis. * Particle size by weight is 100% passing a 6"screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen. * The organic portion needs to be fibrous and elongated. * Large portions of silts, clays or fine sands are not acceptable in the mix. * Soluble salts content is less than 4.0 mmhos/cm. * The pH should fall between 5.0 and 8.0.

3. Maintenance – All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

C. FILTERS

1. Silt Fence
   a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

Physical Property	Test	Requirements
Filtering Efficiency	VTM–51	75% minimum
Tensile Strength at 20% Maximum Elongation*	VTM–52	Extra Strength 50 lb/lin in (min) Standard Strength 30 lb/lin in (min)
Flow Rate	VTM–51	0.3 gal/sf/min (min)

   * Requirements reduced by 50 percent after six (6) months of installation.

   Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizer to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120° F.

   b. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer and driven securely into the ground (minimum of 16 inches).

   c. A trench shall be excavated approximately six (6) inches wide and eight (8) inches deep along the line of posts and upslope from the barrier.

   d. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.

   e. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

   f. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (g) applying.

   g. The trench shall be backfilled and the soil compacted over the filter fabric.

   h. Silt fences shall be removed when they have served their useful purpose but not before the upslope areas has been permanently stabilized.

2. Sequence of Installation –
   Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.

3. Maintenance –
   a. Silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary stone check dam.

   b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.

   c. Sediment deposits must be removed when deposits reach approximately one–third (1/3) the height of the barrier.

   d. Any sediment deposits remaining in place after the silt fence or other barrier is no longer required shall be removed. The area shall be prepared and seeded.

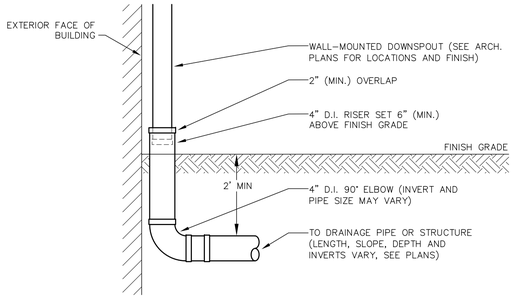
   e. Additional stone may have to be added to the construction entrance, rock barrier and riprap lined swales, etc., periodically to maintain proper function of the erosion control structure.

WINTER CONSTRUCTION NOTES

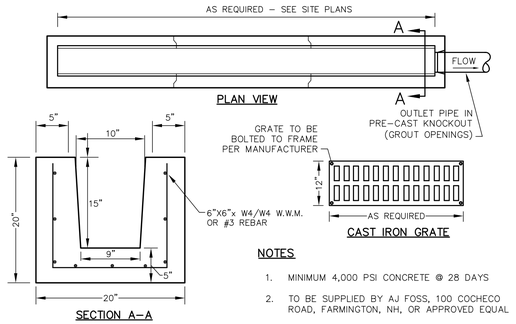
1. All proposed vegetated areas which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events;

2. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and

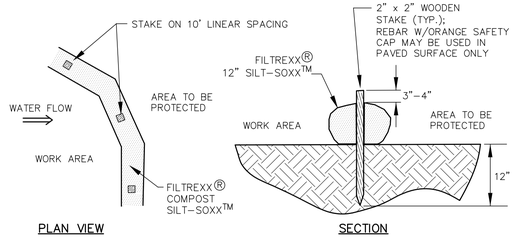
3. After November 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.



EXTERIOR ROOF DRAIN CONNECTION NOT TO SCALE

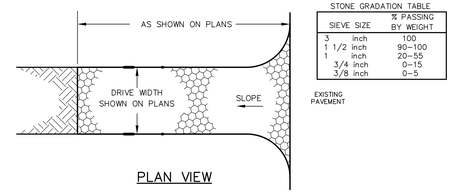


TRENCH DRAIN NOT TO SCALE



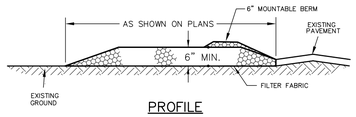
NOTES:
1. SILTSOXX MAY BY USED IN PLACE OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. SILTSOXX COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
4. ALL SEDIMENT TRAPPED BY SILTSOXX SHALL BE DISPOSED OF PROPERLY.

TUBULAR SEDIMENT BARRIER NOT TO SCALE



STONE GRADATION TABLE	
SIEVE SIZE	% PASSING BY WEIGHT
3 inch	100
1 1/2 inch	90–100
1 inch	20–55
3/4 inch	0–15
3/8 inch	0–5

PLAN VIEW

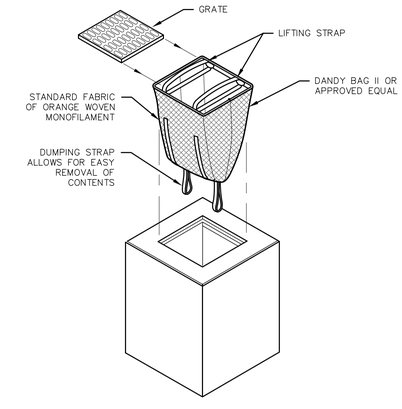


PROFILE

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – NHDOT STANDARD STONE SIZE #4 – SECTION 703 OF NHDOT STANDARD.
2. LENGTH – DETAILED ON PLANS (50 FOOT MINIMUM).
3. THICKNESS – SIX (6) INCHES (MINIMUM).
4. WIDTH – FULL DRIVE WIDTH UNLESS OTHERWISE SPECIFIED.
5. FILTER FABRIC – MIRAFI 600X OR EQUAL APPROVED BY ENGINEER.
6. SURFACE WATER CONTROL – ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AT ALL ENTRANCES TO PUBLIC RIGHTS–OF–WAY, AT LOCATIONS SHOWN ON THE PLANS, AND/OR WHERE AS DIRECTED BY THE ENGINEER.

STABILIZED CONSTRUCTION EXIT NOT TO SCALE



INSTALLATION AND MAINTENANCE:

INSTALLATION: REMOVE THE GRATE FROM CATCH BASIN. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO CATCH BASIN INSERT SO THE GRATE IS BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING DEVICES, INSERT THE GRATE INTO THE INLET.

MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF THE UNIT AFTER EACH STORM EVENT. AFTER EACH STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE CATCH BASIN INSERT. IF THE CONTAINMENT AREA IS MORE THAN 1/3 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED. TO EMPTY THE UNIT, LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE. IF USING OPTIONAL ABSORBENTS; REPLACE ABSORBENT WHEN NEAR SATURATION.

UNACCEPTABLE INLET PROTECTION METHOD:

A SIMPLE SHEET OF GEOTEXTILE UNDER THE GRATE IS NOT ACCEPTABLE.

STORM DRAIN INLET PROTECTION NOT TO SCALE

P5042

ALTUS ENGINEERING, INC.
133 Court Street Portsmouth, NH 03801
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ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
6/21/21

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: JUNE 21, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TAC WORK SESSION	EBS	05/05/20
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3	TAC	EBS	06/21/21

DRAWN BY: EBS
APPROVED BY: EDW
DRAWING FILE: 5042–SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

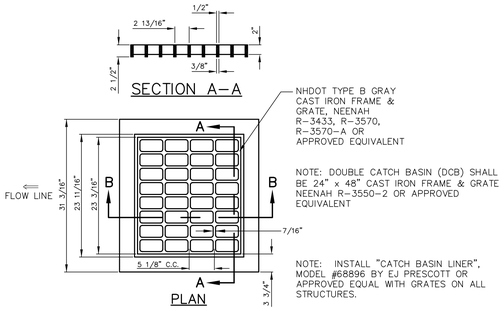
OWNER:
64 VAUGHAN MALL, LLC
41 INDUSTRIAL DRIVE
EXETER, NH 03833

APPLICANT:
HAMPSHIRE DEVELOPMENT CORP.
41 INDUSTRIAL DRIVE
EXETER, NH 03833

PROJECT:
64 VAUGHAN MALL BUILDING RESTORATION
TAX MAP 126, LOT 1
64 VAUGHAN MALL
PORTSMOUTH, NH 03801

TITLE:
DETAIL SHEET

SHEET NUMBER:
D-1

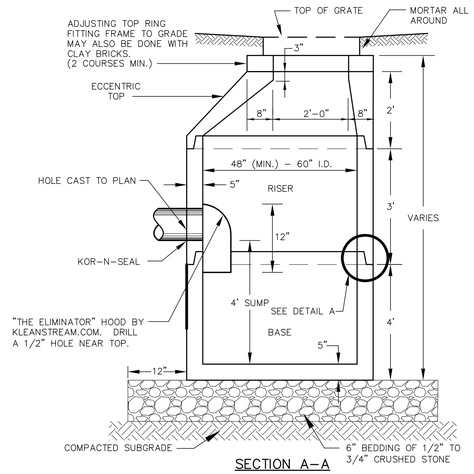


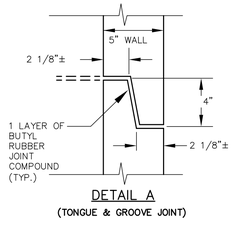
NOTES

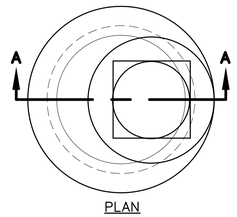
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. USE H20 LOADING SLAB TOP SECTION IN LIEU OF ECCENTRIC TOP WHERE PIPE INVERT IS WITHIN 4' OF FINISH GRADE.
7. FRAME AND GRATE DIMENSIONS ARE TYPICAL BUT MAY VARY BASED ON PRODUCT SELECTED OR EQUIVALENT APPROVED BY THE ENGINEER.

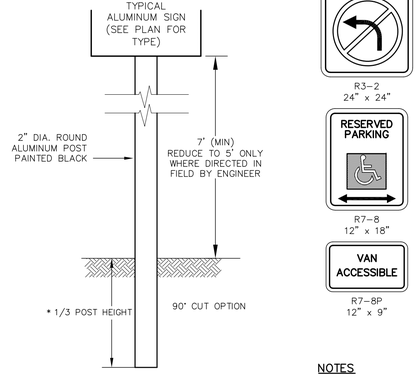
DEEP SUMP CATCH BASIN

NOT TO SCALE







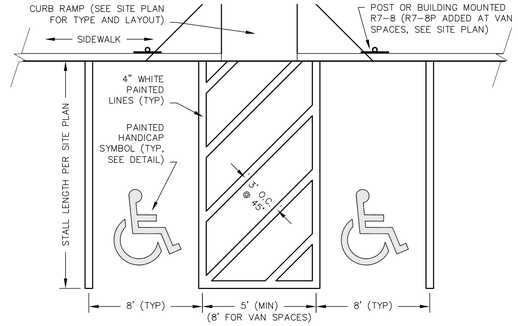


NOTES

1. ALL SIGNS SHALL MEET THE REQUIREMENTS OF AND BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

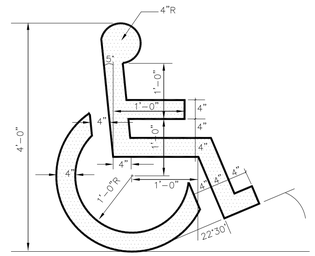
SIGN DETAILS

NOT TO SCALE



HANDICAP PARKING STALL LAYOUT

NOT TO SCALE

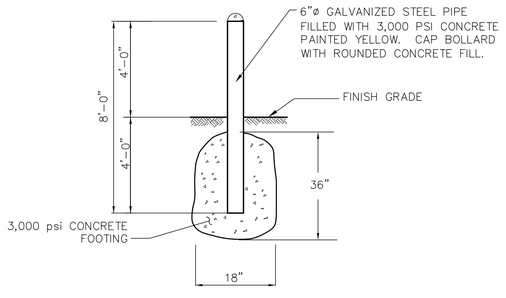


NOTES

1. SYMBOL TO BE PAINTED IN ALL HANDICAPPED ACCESSIBLE SPACES IN WHITE PAINT (BLUE-PAINTED SQUARE BACKGROUND OPTIONAL).

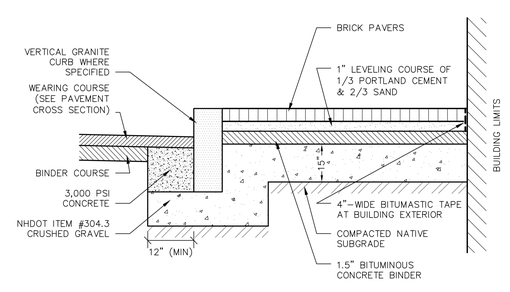
PAINTED HANDICAP SYMBOL

NOT TO SCALE



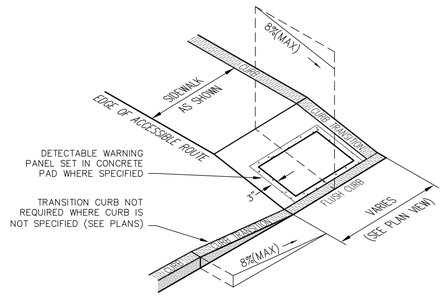
BOLLARD

NOT TO SCALE



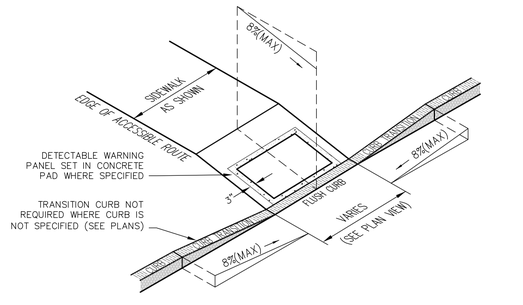
BRICK / PAVER INSTALLATION

NOT TO SCALE



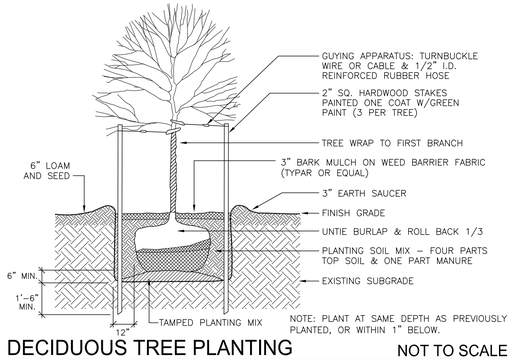
CURB RAMP (TYPE 'E')

NOT TO SCALE



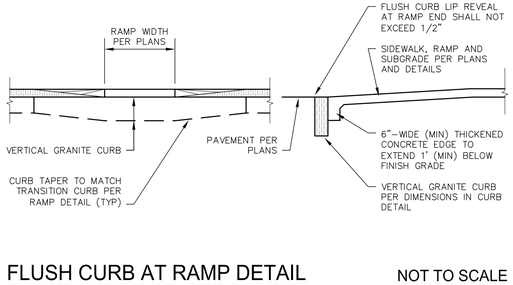
CURB RAMP (TYPE 'F')

NOT TO SCALE



DECIDUOUS TREE PLANTING

NOT TO SCALE



FLUSH CURB AT RAMP DETAIL

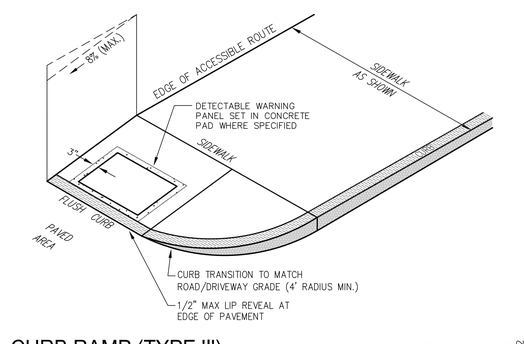
NOT TO SCALE

NOTES APPLICABLE TO ALL CURB RAMPS AND SIDEWALKS:

1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF AN ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 1.5%.
2. THE MAXIMUM ALLOWABLE SLOPE OF AN ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF AN ACCESSIBLE ROUTE (SIDEWALK) CURB RAMP SHALL BE 8%.
4. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
5. BASE OF RAMP SHALL BE GRADED TO PREVENT THE PONDING OF WATER.
6. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
7. ALL CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH AMERICANS WITH DISABILITIES ACT (ADA) AND ALL APPLICABLE CODES.
8. FLUSH CURB SECTIONS SHALL HAVE A MAXIMUM LIP REVEAL OF 1/2" AT THE EDGE OF PAVEMENT.
9. EDGES OF SIDEWALK FOOTINGS ALONG FLUSH CURBS SHALL BE HAUNCHED SO AS TO EXTEND TO A MINIMUM DEPTH OF 1' BELOW FINISH GRADE.
10. NO RAMP SHALL BE LESS THAN 4' IN WIDTH.

CURB RAMP & SIDEWALK NOTES

NOT TO SCALE



CURB RAMP (TYPE 'I')

NOT TO SCALE

P5042

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ERIC D. WEINRIEB No. 7634 (LICENSED) – STATE OF NEW HAMPSHIRE – PROFESSIONAL ENGINEER

6/21/21

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ISSUE DATE: JUNE 21, 2021

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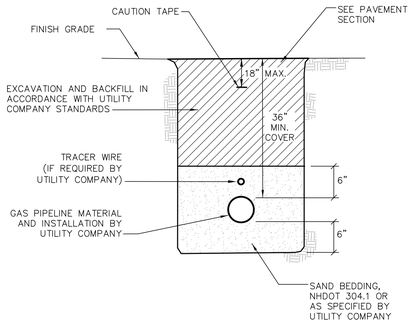
PORTSMOUTH, NH 03801

TITLE:
DETAIL SHEET

SHEET NUMBER:
D-2



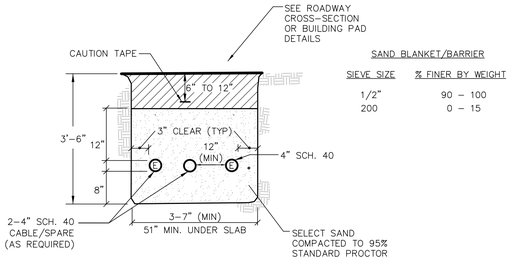
SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

NOTES

1. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY AND PROVIDE ALL EXCAVATION, COMPACTION AND BACKFILL FOR PIPE INSTALLATION WITHIN THE PROJECT SITE.
2. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

GAS TRENCH NOT TO SCALE



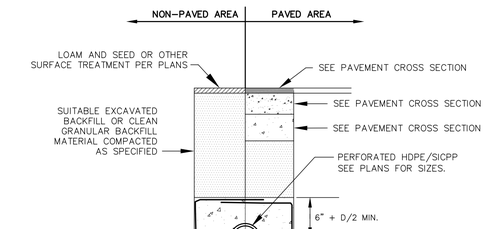
SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

NOTES

1. ALL CONDUIT IS TO BE SCHEDULE 40 PVC, ELECTRICAL GRADE, GRAY IN COLOR AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS. A 10-FOOT HORIZONTAL SECTION OF RIGID GALVANIZED STEEL CONDUIT WILL BE REQUIRED AT EACH SWEEP, UNLESS IN THE OPINION OF THE SERVICE PROVIDER DESIGNER, THE SWEEP-PVC JOINT IS NOT SUBJECT TO FAILURE DURING PULLING OF THE CABLE. ALL JOINTS ARE TO BE WATERTIGHT.
2. ALL 90 DEGREE SWEEPS WILL BE MADE WITH RIGID GALVANIZED STEEL WITH A MINIMUM RADIUS OF 36 INCHES FOR PRIMARY CABLES AND 24 INCHES FOR SECONDARY CABLES.
3. BACKFILL MAY BE MADE WITH EXCAVATED MATERIAL OR COMPARABLE, UNLESS MATERIAL IS DEEMED UNSUITABLE BY SERVICE PROVIDER. BACKFILL SHALL BE FREE OF FROZEN LUMPS, ROCKS, DEBRIS, AND RUBBISH. ORGANIC MATERIAL SHALL NOT BE USED AS BACKFILL. BACKFILL SHALL BE IN 6-INCH LAYERS AND THOROUGHLY COMPACTED.
4. A SUITABLE PULLING STRING, CAPABLE OF 300 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE SERVICE PROVIDER IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT. A MINIMUM OF TWENTY-FOUR (24") INCHES OF ROPE SLACK SHALL REMAIN AT THE END OF EACH DUCT. PULL ROPE SHALL BE INSTALLED IN ALL CONDUIT FOR FUTURE PULLS. PULL ROPE SHALL BE NYLON ROPE HAVING A MINIMUM TENSILE STRENGTH OF THREE HUNDRED (300#) LBS.
5. SERVICE PROVIDER SHALL BE GIVEN THE OPPORTUNITY TO INSPECT ALL CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD SERVICE PROVIDER BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. TYPICAL CONDUIT SIZES ARE 3-INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4-INCH FOR THREE PHASE SECONDARY, AND 5-INCH FOR THREE PHASE PRIMARY. HOWEVER, SERVICE PROVIDERS MAY REQUIRE DIFFERENT NUMBERS, TYPES AND SIZES OF CONDUIT THAN THOSE SHOWN HERE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL CONDUIT SIZES, TYPES AND NUMBERS WITH EACH SERVICE PROVIDER PRIOR TO ORDERING THEM.
7. ROUTING OF CONDUIT, LOCATION OF MANHOLES, TRANSFORMERS, CABINETS, HANDHOLES, ETC., SHALL BE DETERMINED BY SERVICE PROVIDER DESIGN PERSONNEL. THE CONTRACTOR SHALL COORDINATE WITH ALL SERVICE PROVIDERS PRIOR TO THE INSTALLATION OF ANY CONDUIT.
8. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE. WHERE REQUIRED BY UTILITY PROVIDER, CONDUIT SHALL BE SUPPORTED IN PLACE USING PIPE STANCHIONS PLACED EVERY FIVE (5') FEET ALONG THE CONDUIT RUN.
9. UNDER A BUILDING SLAB THE CONDUIT SHALL BE ENCASED IN 8" OF CONCRETE ON ALL SIDES.
10. ALL CONDUIT TERMINATIONS SHALL BE CAPPED TO PREVENT DEBRIS FROM ENTERING CONDUIT.

ELECTRIC / COMMUNICATION TRENCH NOT TO SCALE



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SAND BLANKET/BARRIER

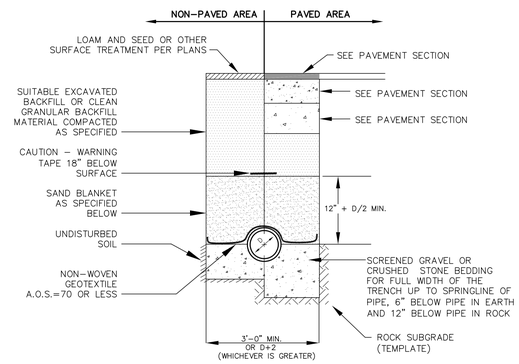
SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

SCREENED GRAVEL OR CRUSHED STONE BEDDING*

SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 – 100
3/8"	20 – 55
# 4	0 – 10
# 8	0 – 5

* EQUIVALENT TO STANDARD STONE SIZE #67 – SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

UNDERDRAIN TRENCH SECTION NOT TO SCALE



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SAND BLANKET/BARRIER

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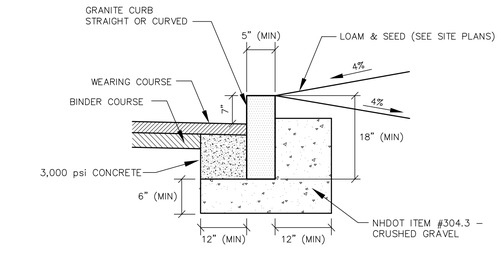
DRAINAGE TRENCH SECTION NOT TO SCALE

PAVEMENT CROSS SECTION NOT TO SCALE

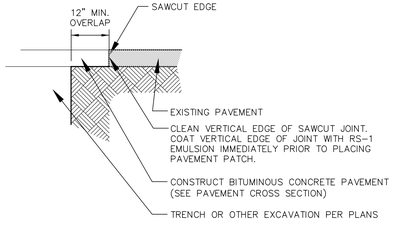


NOTES

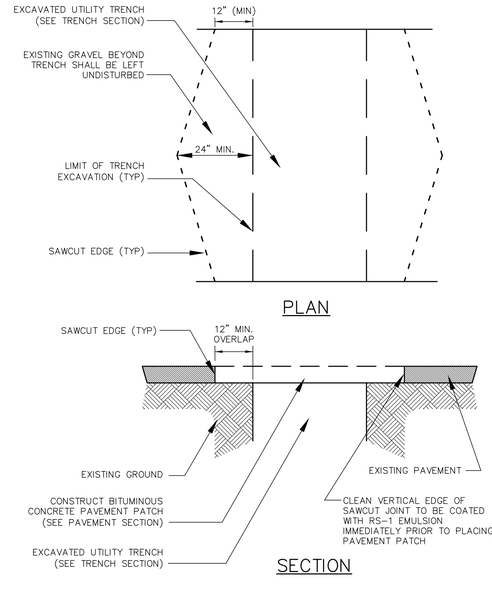
1. SEE PLANS FOR CURB LOCATION.
2. SEE PLANS FOR PAVEMENT CROSS SECTION.
3. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
4. MINIMUM LENGTH OF CURB STONES = 4'.
5. MAXIMUM LENGTH OF CURB STONES = 10'.
6. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES – SEE CHART.
7. CURB ENDS TO ROUNDED AND BATTERED FACES TO BE CUT WHEN CALLED FOR ON THE PLANS.
8. CURB SHALL BE INSTALLED PRIOR TO PLACEMENT OF TOP PAVEMENT COURSE.
9. JOINTS BETWEEN CURB STONES SHALL BE MORTARED.

RADIUS	MAX. LENGTH
21'	3'
22'–28'	4'
29'–35'	5'
36'–42'	6'
43'–49'	7'
50'–56'	8'
57'–60'	9'
OVER 60'	10'

VERTICAL GRANITE CURB NOT TO SCALE



TYPICAL PAVEMENT SAWCUT NOT TO SCALE



NOTES

1. MACHINE CUT EXISTING PAVEMENT.
2. ALL TEMPORARY, DAMAGED OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
3. DIAMOND PATCHES, SHALL BE REQUIRED FOR ALL TRENCHES CROSSING ROADWAY. DIAMOND PATCHES SHALL MEET NHDOT REQUIREMENTS.

TYPICAL TRENCH PATCH NOT TO SCALE

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3/22/21

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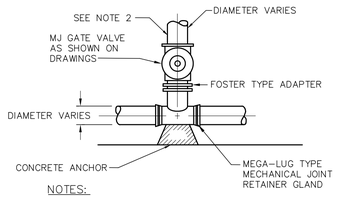
64 VAUGHAN MALL
PORTSMOUTH, NH 03801

TITLE:
DETAIL SHEET

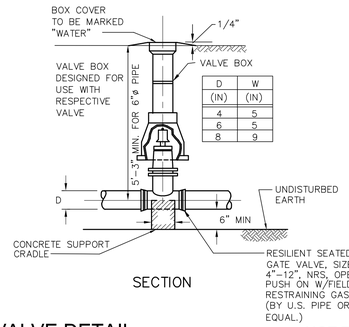
SHEET NUMBER:
D-3



NOTES:

1. GATE VALVES SHALL OPEN RIGHT, PER CITY STANDARDS.
2. BRANCH PIPING SHALL BE MECHANICALLY RESTRAINED AS NOTED UNDER THRUST BLOCK DETAIL REQUIREMENTS.

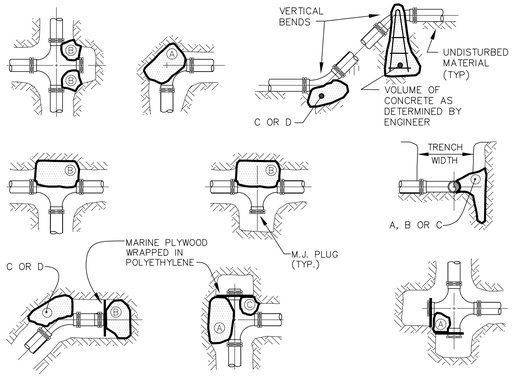
TEE & GATE VALVE ASSEMBLY DETAIL NOT TO SCALE



D (IN)	W (IN)
4	5
6	5
8	9

SECTION

WATER VALVE DETAIL NOT TO SCALE

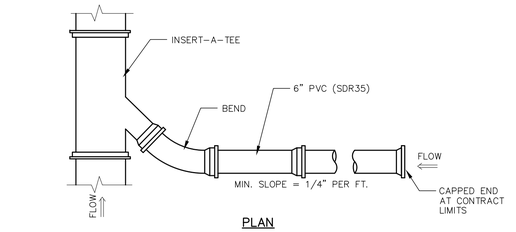


TEST PRESSURE = 150 psi	SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL					
	REACTION TYPE	PIPE SIZE				
		4"	6"	8"	10"	12"
	A 90°	0.89	2.19	3.82	11.14	17.24
	B 180°	0.65	1.55	2.78	8.38	12.00
	C 45°	0.48	1.19	2.12	6.02	9.32
	D 22-1/2°	0.25	0.60	1.06	3.08	4.74
	E 11-1/4°	0.13	0.30	0.54	1.54	2.38

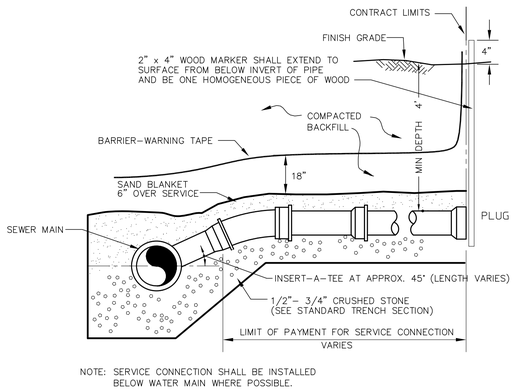
NOTES

1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL.
2. NO JOINTS SHALL BE COVERED WITH CONCRETE. POLYETHYLENE (6 MIL) SHALL BE PLACED AROUND FITTINGS PRIOR TO CONCRETE PLACEMENT.
3. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
4. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS. WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
5. X
6. POLYETHYLENE (6 MIL) SHALL BE PLACED AROUND ALL FITTINGS PRIOR TO CONCRETE PLACEMENT.

THRUST BLOCKING NOT TO SCALE



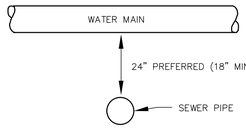
PLAN



NOTE: SERVICE CONNECTION SHALL BE INSTALLED BELOW WATER MAIN WHERE POSSIBLE.

ELEVATION

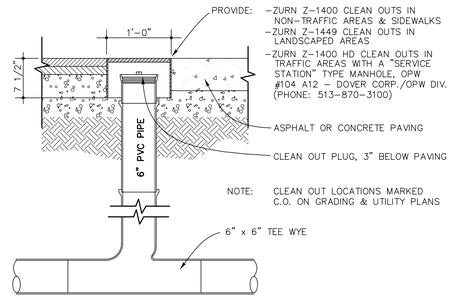
SEWER SERVICE CONNECTION NOT TO SCALE



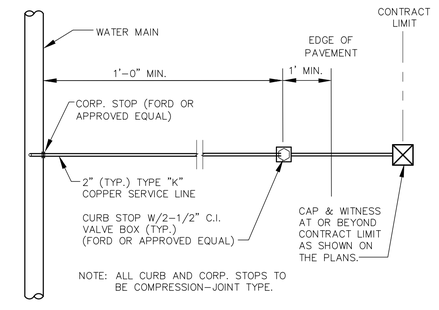
NOTES

1. A MINIMUM HORIZONTAL DISTANCE OF 10 FEET SHALL BE MAINTAINED BETWEEN WATER AND SEWER MAINS. A MINIMUM VERTICAL DISTANCE WITH WATER ABOVE SEWER SHALL BE MAINTAINED.
2. SEWER PIPE JOINTS SHALL BE LOCATED A MINIMUM OF 6 FEET HORIZONTALLY FROM WATER MAIN.
3. IF THE REQUIRED CONFIGURATION CANNOT BE MET, THE SEWER MAIN SHALL BE CONSTRUCTED TO MEET THE NHDES REQUIREMENTS FOR FORCE MAIN CONSTRUCTION.

WATER MAIN / SEWER CROSSING NOT TO SCALE

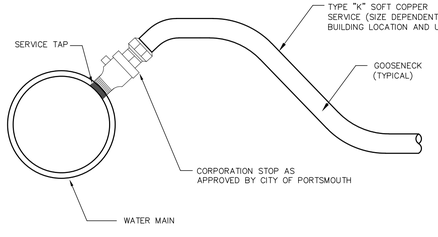


SEWER CLEANOUT NOT TO SCALE

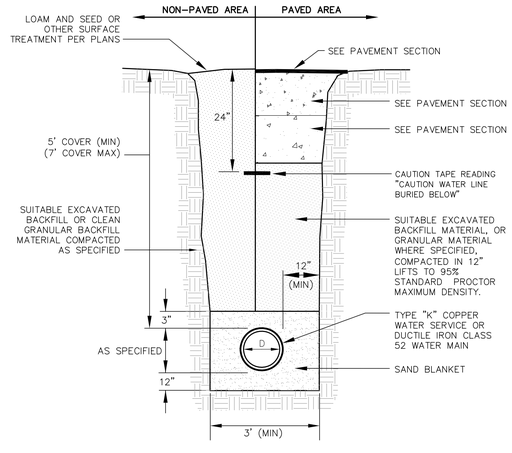


NOTE: ALL CURB AND CORP. STOPS TO BE COMPRESSION-JOINT TYPE.

NOTE: ALL MATERIALS AND SPECIFICATIONS SHALL CONFORM TO CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS AND REQUIREMENTS. VERIFY PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES.



WATER SERVICE CONNECTION NOT TO SCALE



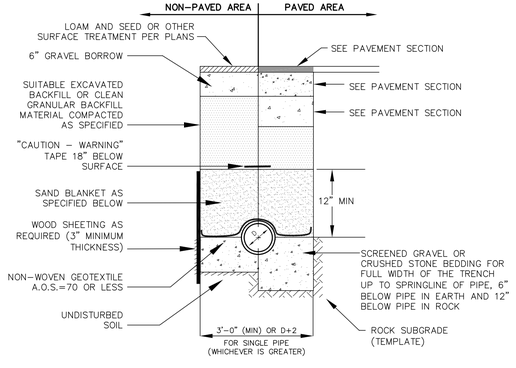
SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 - 100
200	0 - 15

NOTES

1. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

WATER MAIN TRENCH NOT TO SCALE



NOTES

1. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.
2. INSULATE GRAVITY SEWER AND FORCEMAINS WHERE THERE IS LESS THAN 5'-0" OF COVER WITH 2" THICK CLOSED CELL RIGID BOARD INSULATION, 18" ON EACH SIDE OF PIPE.
3. MAINTAIN 12" MINIMUM HORIZONTAL SEPARATION AND WIDEN TRENCH ACCORDINGLY IF MULTIPLE PIPES ARE IN TRENCH.

SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 - 100
200	0 - 15

SCREENED GRAVEL OR CRUSHED STONE BEDDING*

SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 - 100
3/8"	20 - 55
# 4	0 - 10
# 8	0 - 5

* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

SEWER & FORCEMAIN TRENCH NOT TO SCALE

STANDARD TRENCH NOTES

1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN ON THE DRAWING.
2. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING THE GRADATION SHOWN IN THE TRENCH DETAIL. WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2 INCH TO 1/2 INCH SHALL BE USED.
3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER MEETING THE GRADATION SHOWN IN THE TRENCH DETAIL. BLANKET MAY BE REPLACED WITH BEDDING MATERIAL FOR CAST-IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE AND THE GEOTEXTILE IS RELOCATED ACCORDINGLY.
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT, OR CLAY, ALL EXCAVATED LEDGE MATERIAL, ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. IN CROSS COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK, OR PEAT, IF SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLE RECONSTRUCTION WILL BE PRESERVED.
5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES - DIVISIONS 300 AND 400 RESPECTIVELY.
6. SHEETING, IF REQUIRED: WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION 1 FOOT ABOVE THE TOP OF PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAT 1 FOOT ABOVE THE TOP OF THE PIPE.
7. W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.) ALSO, W SHALL BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
8. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL, FILL AND/OR LOAM SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
9. CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATION REQUIREMENTS FOR CLASS A (3000#)
   CONCRETE AS FOLLOWS:
   CEMENT: 6.0 BAGS PER CUBIC YARD
   WATER: 5.75 GALLONS PER BAG
   CEMENT MAXIMUM SIZE OF AGGREGATE: 1 INCH
   CONCRETE ENCASEMENT IS NOT ALLOWED FOR PVC PIPE.
10. CONCRETE FULL ENCASEMENT: IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MINIMUM). BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.
11. NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES DESIGN STANDARDS REQUIRE TEN FEET (10') SEPARATION BETWEEN WATER AND SEWER. REFER TO TOWN'S STANDARD SPECIFICATIONS FOR METHODS OF PROTECTION IN AREAS THAT CANNOT MEET THESE REQUIREMENTS.

P5042

ALTUS ENGINEERING, INC.
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
3/22/21

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: MARCH 22, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TAC WORK SESSION	EBS	05/05/20
1	TAC	EBS	10/19/20
2	TAC	EBS	03/22/21

DRAWN BY: EBS
APPROVED BY: EDW
DRAWING FILE: 5042-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER:
64 VAUGHAN MALL, LLC
41 INDUSTRIAL DRIVE
EXETER, NH 03833

APPLICANT:
HAMPSHIRE DEVELOPMENT CORP.
41 INDUSTRIAL DRIVE
EXETER, NH 03833

PROJECT:
64 VAUGHAN MALL BUILDING RESTORATION
TAX MAP 126, LOT 1
64 VAUGHAN MALL
PORTSMOUTH, NH 03801

TITLE:
DETAIL SHEET

SHEET NUMBER:
D-4

1 **SOUTH ELEVATION**
1/16" = 1'-0"

2 **EAST ELEVATION**
1/16" = 1'-0"

A3 EXTERIOR ELEVATIONS

64 Vaughan Mall

06/16/2021
SCALE: 1/16" = 1'-0"

JSA ARCHITECTS INTERIORS PLANNERS

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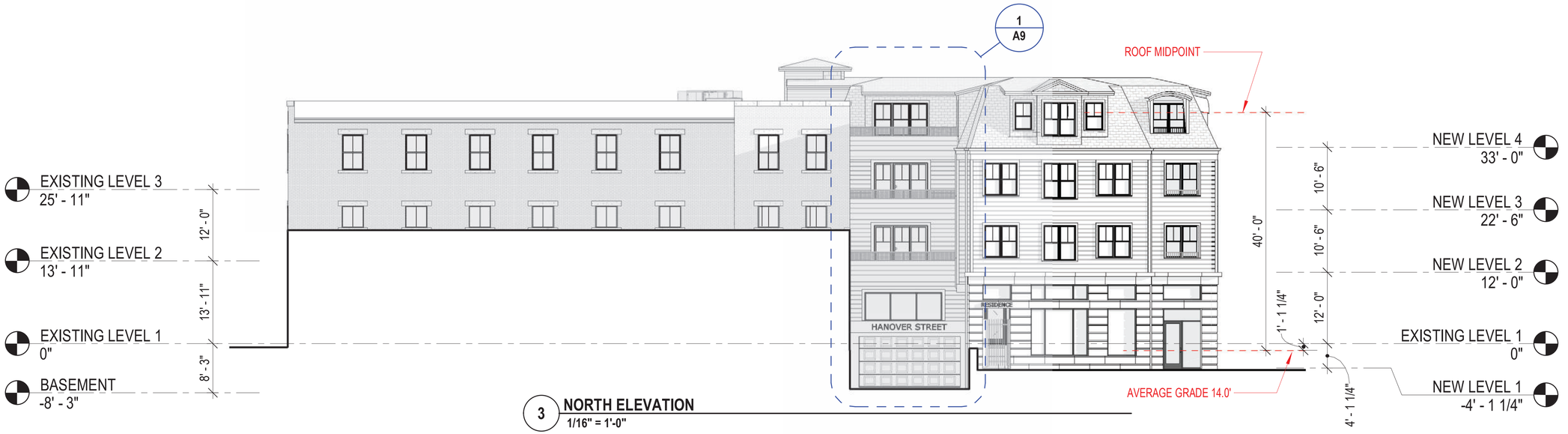

3 **NORTH ELEVATION**
1/16" = 1'-0"

4 **WEST ELEVATION**
1/16" = 1'-0"

A4 EXTERIOR ELEVATIONS

64 Vaughan Mall

06/16/2021
SCALE: 1/16" = 1'-0"

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INTERIORS
PLANNERS

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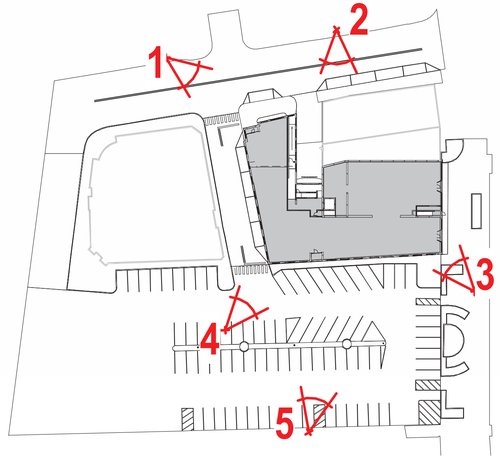
2 VIEW 02

3 VIEW 03

4 VIEW 04

1 VIEW 01



P LEVEL 1 - PERSPECTIVE PLAN
1" = 100'-0"

5 VIEW 05

A5 PERSPECTIVE VIEWS

64 Vaughan Mall

06/16/2021
SCALE: 1" = 100'-0"

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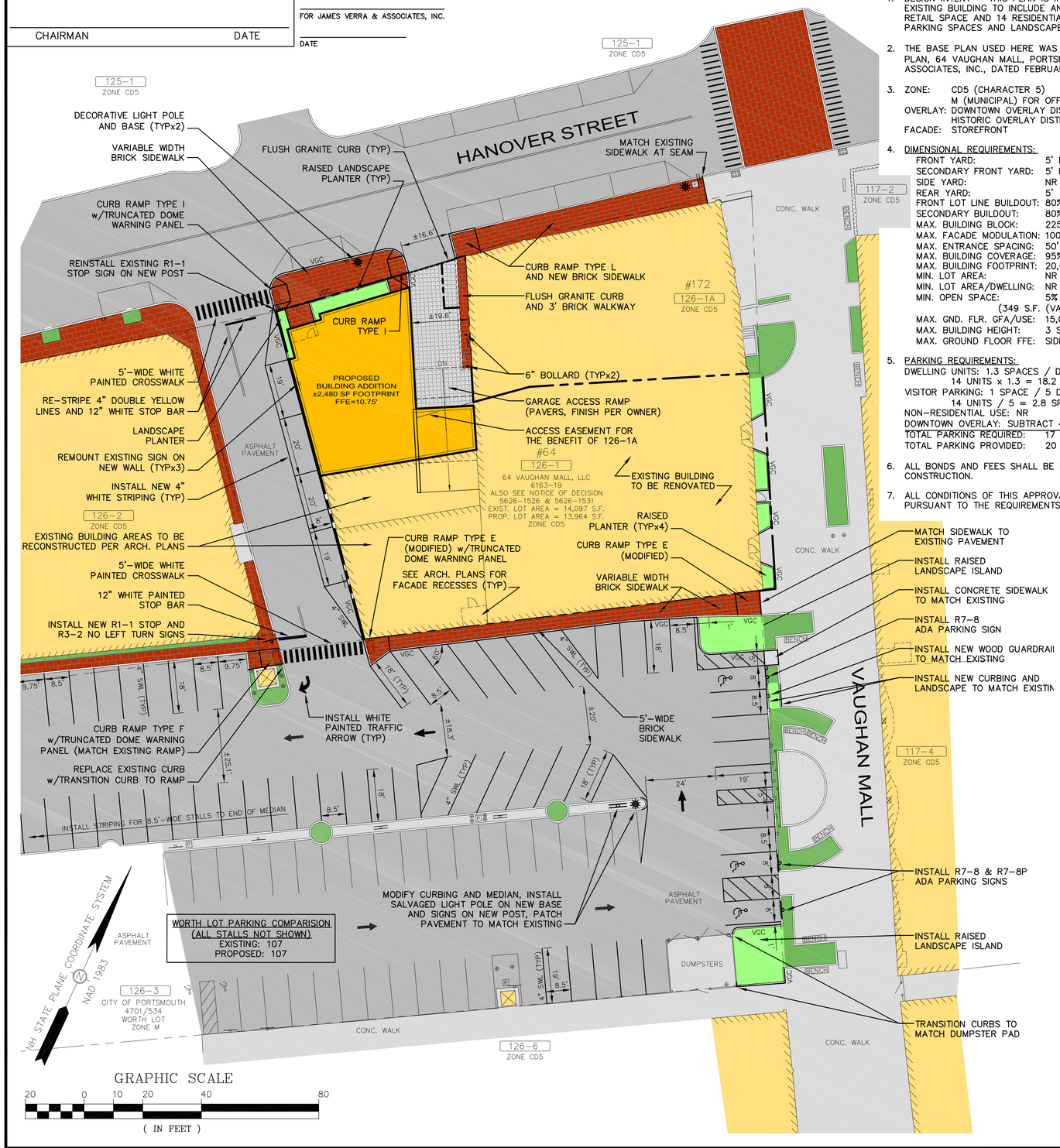
APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

THE SOLE PURPOSE OF THIS PLAN IS TO DEPICT THE LOCATION OF EXISTING AND PROPOSED IMPROVEMENTS ON THE SITE. RECORDING OF THIS PLAN WAS A REQUIREMENT OF THE PORTSMOUTH PLANNING BOARD AS PART OF THEIR APPROVAL.

FOR JAMES VERRA & ASSOCIATES, INC.

DATE



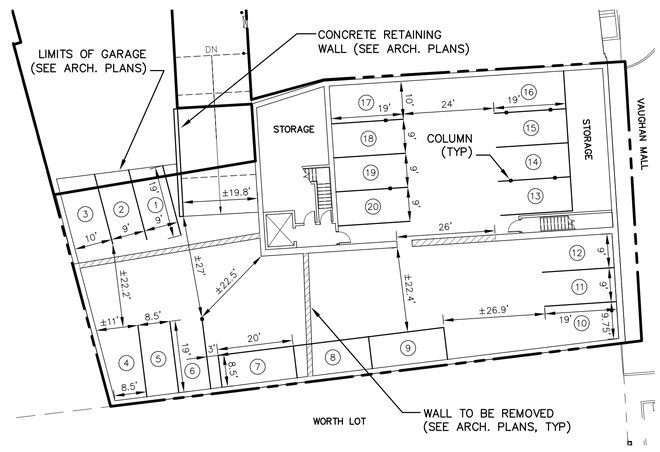
NOTES

1. DESIGN INTENT – THIS PLAN IS INTENDED TO DEPICT THE RETROFIT OF THE EXISTING BUILDING TO INCLUDE AN ADDITION, UNDERGROUND PARKING GARAGE, RETAIL SPACE AND 14 RESIDENTIAL UNITS ALONG WITH A SIDEWALK, MODIFIED PARKING SPACES AND LANDSCAPE ISLANDS ON THE ABUTTING WORTH LOT.
2. THE BASE PLAN USED HERE WAS DEVELOPED FROM "EXISTING CONDITIONS PLAN, 64 VAUGHAN MALL, PORTSMOUTH, NH" BY JAMES VERRA AND ASSOCIATES, INC., DATED FEBRUARY 3, 2020.
3. ZONE: CD5 (CHARACTER 5)
   M (MUNICIPAL) FOR OFFSITE IMPROVEMENTS ON WORTH LOT
   OVERLAY: DOWNTOWN OVERLAY DISTRICT
   HISTORIC OVERLAY DISTRICT
   FACADE: STOREFRONT
4. DIMENSIONAL REQUIREMENTS:

		EXISTING	PROPOSED
FRONT YARD:	5' MAX.	4.3'	SAME
SECONDARY FRONT YARD:	5' MAX.	58.1'	5'
SIDE YARD:	NR	0'	SAME
REAR YARD:	5'	0.15'	SAME
FRONT LOT LINE BUILDOUT:	80% WIDTH MIN.	100%	SAME
SECONDARY BUILDOUT:	80% WIDTH MIN.	0%	80% (47')
MAX. BUILDING BLOCK:	225'		
MAX. FACADE MODULATION:	100'		
MAX. ENTRANCE SPACING:	50'		
MAX. BUILDING COVERAGE:	95%	70.0%	89.4%
MAX. BUILDING FOOTPRINT:	20,000 S.F.	10,008 S.F.	12,488 S.F.
MIN. LOT AREA:	NR	14,097 S.F.	13,964 S.F.
MIN. LOT AREA/DWELLING:	NR		
MIN. OPEN SPACE:	5%	0% (0 SF)	5% (698 SF)
	(349 S.F. (VAUGHAN) + 349 S.F. (HANOVER) = 698 S.F.)		
MAX. GND. FLR. GFA/USE:	15,000 S.F.	±10,014 S.F.	12,476 S.F.
MAX. BUILDING HEIGHT:	3 STORIES or 40'	±40'	40'
MAX. GROUND FLOOR FFE:	SIDEWALK GRADE +3'		

5. PARKING REQUIREMENTS:
   DWELLING UNITS: 1.3 SPACES / DWELLING UNIT OVER 750 S.F.
   14 UNITS x 1.3 = 18.2 SPACES REQUIRED
   VISITOR PARKING: 1 SPACE / 5 DWELLING UNITS (FOR LOT w/OVER 4 UNITS)
   14 UNITS / 5 = 2.8 SPACES REQUIRED
   NON-RESIDENTIAL USE: NR
   DOWNTOWN OVERLAY: SUBTRACT 4 SPACES/LOT
   TOTAL PARKING REQUIRED: 17 SPACES
   TOTAL PARKING PROVIDED: 20 SPACES (UNDERGROUND)
6. ALL BONDS AND FEES SHALL BE PAID/POSTED PRIOR TO INITIATING CONSTRUCTION.
7. ALL CONDITIONS OF THIS APPROVAL SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
8. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH & NHDOT'S STANDARD SPECIFICATIONS FOR ROAD & BRIDGE, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
9. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINE WITH RS-1 IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
10. THE CONTRACTOR SHALL VERIFY ALL BENCHMARKS AND TOPOGRAPHY IN THE FIELD PRIOR TO CONSTRUCTION.
11. AREA OF DISTURBANCE IS UNDER 43,560 SF, COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT IS NOT REQUIRED.
12. PAVEMENT MARKINGS SHALL BE CONSTRUCTED USING WHITE, YELLOW, OR BLUE TRAFFIC PAINT (WHERE SPECIFIED) MEETING THE REQUIREMENTS OF AASHTO M248, TYPE F OR EQUAL. PAINTED ISLANDS AND LOADING ZONES SHALL BE 4"-WIDE DIAGONAL WHITE LINES 3'-0" O.C. BORDERED BY 4"-WIDE WHITE LINES. PARKING STALLS SHALL BE SEPARATED BY 4"-WIDE WHITE LINES. SEE DETAILS FOR HANDICAP SYMBOLS, SIGNS AND SIGN DETAILS. PAVEMENT MARKINGS SHALL BE INSTALLED AT LEAST 14-DAYS AFTER INSTALLATION OF WEARING COURSE PAVEMENT. CONTRACTOR SHALL APPLY TWO (2) COATS OF ALL PAVEMENT MARKINGS.
13. PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC DEVICES," "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AND THE AMERICANS WITH DISABILITIES ACT (ADA), LATEST EDITIONS.
14. UNLESS OTHERWISE NOTED, ALL NEW CURBING SHALL BE VERTICAL GRANITE WITH A MINIMUM RADIUS OF 4'.
15. THE CONTRACTOR SHALL VERIFY ALL BUILDING DIMENSIONS WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS PRIOR TO CONSTRUCTION. ANY AND ALL DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF BOTH THE ARCHITECT AND CIVIL ENGINEER FOR RESOLUTION.
16. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
17. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR
18. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
19. SITEWORK CONTRACTOR SHALL PREPARE A STAMPED AS-BUILT SITE PLAN STAMPED BY A LICENSED LAND SURVEYOR (LLS) & PROVIDE A DIGITAL (CAD FORMAT) COPY FOR THE CITY'S G.I.S. DATA BASE.
20. TRASH AND RECYCLING SHALL BE STORED INSIDE BUILDING.
21. THIS DEVELOPMENT IS SUBJECT TO LICENSING AGREEMENTS w/THE PORTSMOUTH CITY COUNCIL.
22. RESTAURANTS SHALL NOT OCCUPY BUILDING WITHOUT THE INSTALLATION OF A GREASE TRAP MEETING CITY CODE.
23. ALL SIDEWALKS TO BE CONSTRUCTED WITHIN PROJECT LIMITS SHALL BE BRICK. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING PORTSMOUTH DPW TO CONFIRM BRICK SPECIFICATIONS.
24. STREET ADDRESSES FOR EACH USE SHALL BE DETERMINED BY PORTSMOUTH FIRE DEPARTMENT & DPW.
25. SNOW SHALL BE STORED AT THE EDGE OF PAVEMENT, IN AREAS SHOWN ON THE PLAN, OR TRUCKED OFF SITE.
26. BUILDING USES BY FLOOR (BY FOOTPRINT, ACTUAL SPACE MAY VARY):

BASEMENT:	±9,326 S.F. PARKING
FLOOR 1:	±12,334 S.F. RETAIL
FLOORS 2-4:	±12,488 S.F. RESIDENTIAL
TOTAL:	±59,124 S.F.



BASEMENT GARAGE PARKING LAYOUT

P5042

ALTUS ENGINEERING, INC.
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

ERIC D. WEINRIEB No. 7634 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE
6/21/21

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: JUNE 21, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	CLIENT REVIEW	EBS	05/21/20
1	TAC WORK SESSION	EBS	07/07/20
2	TAC	EBS	10/19/20
3	PB CONSULTATION	EBS	12/30/20
4	REV. BLDG. HEIGHT	EBS	01/26/21
5	TAC	EBS	03/22/21
6	REV. FOOTPRINT FOR HDC	EBS	04/08/21
7	TAC	EBS	04/19/21
8	TAC	EBS	05/19/21
9	TAC	EBS	06/21/21

DRAWN BY: EBS
APPROVED BY: EDW
DRAWING FILE: 5042-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER:
64 VAUGHAN MALL, LLC
41 INDUSTRIAL DRIVE
EXETER, NH 0383

APPLICANT:
HAMPSHIRE DEVELOPMENT CORP.
41 INDUSTRIAL DRIVE
EXETER, NH 03833

PROJECT:
64 VAUGHAN MALL BUILDING RESTORATION
TAX MAP 126, LOT 1
64 VAUGHAN MALL
PORTSMOUTH, NH 03801

TITLE:
SITE PLAN

SHEET NUMBER:
C-3

DRAINAGE ANALYSIS

FOR

Site Redevelopment
of
64 Vaughan Street

64 Vaughan Street
Portsmouth, NH

Tax Map 126, Lot 1

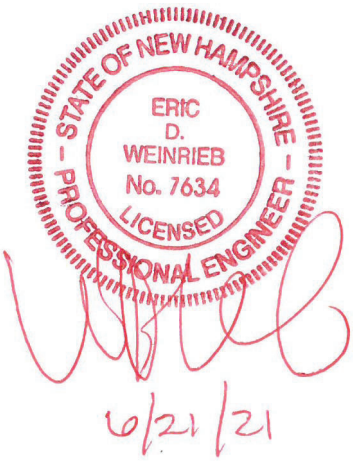
June 21, 2021

Prepared For:

Hampshire Development Corp.
41 Industrial Drive
Exeter, NH 03833

Prepared By:

ALTUS ENGINEERING, INC.
133 Court Street
Portsmouth, NH 03801
Phone: (603) 433-2335



ALTUS ENGINEERING, INC.

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- Pre-Development Watershed Plan
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Section 1

Narrative

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PROJECT DESCRIPTION

Hampshire Development Corp. is proposing to redevelop an existing urban site located at 64 Vaughan Street in Portsmouth, NH. Identified as Assessor's Map 126, Lot 1, the property is approximately 0.32 (+/-) acres in size and is located in the City's Character District 5 (CD-5), Downtown and Historic Overlay zoning districts. The site is currently 99.94% impervious and hosts a building formerly used as a furniture store and a paved parking lot.

The proposed project will rehabilitate a portion of the existing structure, raze and rebuild another portion, construct an addition and install an underground parking garage in the existing basement. The finished product will consist of fourteen residential units and over 12,000sf of ground floor retail space. The project also envisions constructing a new sidewalk along the adjacent City-owned Worth parking lot and installing new landscape areas in the Worth lot and along the site's frontage on Vaughan Mall and Hanover Street.

Runoff from the redevelopment will be directed to an existing municipal closed drainage system by way of two new catch basins in the Worth lot and roof leaders that will collect the building downspouts along Hanover Street and the adjacent alley.

Site Soils

The NRCS indicates that the subject property consists of one primary soil classification:

699 – Urban Land, HSG C

Pre-Development (Existing Conditions)

The pre-development site conditions reflect the existing conditions of the site, which include the existing building and parking lot in addition to the surrounding area. The site discharges to the City's closed drainage systems in Hanover Street and Vaughan Mall. Identified as Point of Analysis (POA) #'s 1 (CB #4) and 2 (DMH #5202), these drainage systems are the analysis points for the Pre-Development drainage model.

The majority of the grades and elevations shown on the plans are based on a site survey completed by James Verra and Associates, Inc. One limited offsite area on Hanover Street was modeled using data from the City's GIS system. The study pre-development area was analyzed as four (4) watersheds, which discharge to POA #'s 1 and 2 as identified above.

Post-Development (Proposed Site Design)

A portion of the existing building will remain and be rehabilitated, another portion reconstructed and an addition added for a total of fourteen residential units and ground floor retail space. The adjacent Worth parking lot will be also reconfigured to add a new sidewalk and landscape islands.

The proposed stormwater system is depicted on the attached Post-Development Watershed Plan. For the post development analysis, the site was divided into eight (8) watershed areas to more accurately depict the post-development conditions. The same points of analysis used in the Pre-Development model (POA #'s1 and 2) were used for comparison of the Pre and Post development conditions.

The Post-Development Watershed Plan illustrates the proposed stormwater management system. Site topography, existing features, proposed site improvements, proposed grading, drainage and erosion control measures are shown on the accompanying plans. Recommended erosion control measures are based upon the December 2008 edition of the "*New Hampshire Stormwater Manual Volumes 1 through 3*" prepared by NHDES and Comprehensive Environmental, Inc. as amended.

CALCULATION METHODS

The drainage study was completed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. Reservoir routing was performed with the Dynamic Storage Indication method with automated calculation of tailwater conditions. Times of concentration (Tc) were set to a minimum of 6 minutes per TR-55. A Type III 24-hour rainfall distribution was utilized in analyzing the data for the 2, 10, 25 and 50 year - 24-hour storm events using rainfall data provided by the Northeast Regional Climate Center (NRCC). As the project site lies within a Coastal and Great Bay Community as identified by the NHDES Alteration of Terrain Bureau, all rainfall amounts were increased by 15% to account for potential future increases in rainfall due to climate change.

Disclaimer

Altus Engineering, Inc. notes that stormwater modeling is limited in its capacity to precisely predict peak rates of runoff and flood elevations. Results should not be considered to represent actual storm events due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients (n), entrance loss coefficients (ke), velocity factors (kv) and times of concentration (Tc) are based on subjective field observations and engineering judgment using available data. For design purposes, curve numbers (Cn) describe the average conditions. However, curve numbers will vary from storm to storm depending on the antecedent runoff conditions (ARC) including saturation and frozen ground. Also, higher water elevations than predicted by modeling could occur if drainage channels, closed drain systems or culverts are not maintained and/or become blocked by debris before and/or during a storm event as this will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within relevant drainage areas in order to assess any required design modifications.

Drainage Analysis

A complete summary of the drainage model is included in the appendix of this report. The following table compares pre- and post-development peak rates at the Point of Analysis identified on the plans for the 2, 10, 25, and 50-year storm events:

Stormwater Modeling Summary
Peak Q (cfs) for Type III 24-Hour Storm Events

*Rainfall Intensities Reflect 15% Increase per AoT	**2-Yr Storm (3.69 inch)**	**10-Yr Storm (5.60 inch)**	**25-Yr Storm (7.10 inch)**	**50-Yr Storm (8.50 inch)**
POA #1 (Hanover Street)				
Pre	2.59	3.95	5.01	6.01
Post	2.56	3.92	4.99	5.98
Change	**-0.03**	**-0.03**	**-0.02**	**-0.03**
POA #2 (Vaughan Mall)				
Pre	1.47	2.25	2.86	3.43
Post	1.45	2.23	2.84	3.40
Change	**-0.02**	**-0.02**	**-0.02**	**-0.03**

As the above table demonstrates, the proposed peak rates of runoff will be decreased from the existing conditions for all analyzed storm events.

CONCLUSION

This proposed site redevelopment of 64 Vaughan Mall in Portsmouth, NH will have minimal adverse effect on abutting properties and infrastructure as a result of stormwater runoff or siltation. Post-construction peak rates of runoff from the site will be lower than the existing conditions for all analyzed storm events. Appropriate steps will be taken to properly mitigate erosion and sedimentation through the use of Best Management Practices for sediment and erosion control, including perimeter barriers during construction and permanent deep sump catch basins with grease hoods.

Section 2

Aerial Photo and USGS Map

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SITE

SITE
Piscataqua
Atlantic Heights
Wentworth Acres
Christian Shore
Bersum Gardens
Oak Terrace
Creek Area
Meadowbrook
Pannaway Manor
PORTSMOUTH
Portsmouth Plains
Elwyn Park
Portsmouth International Airport at Pease
Great Bay Community College
Christian Remick Memorial Site
Dixon Street Cem
Cole Cem
Cole Family Burial Ground
Spinney Plot
Keen Plot
Rice Cem
Willey Lot
Badgers Island
Memorial Bridge
North Cem
Union Cem
Saint John's Cem
Paul Mitchell, the School
Point of Grave Burial Ground
African Burying Ground
Proprietors Cem
Calvary Cem
Saint Marys Cem
Temple Israel Cem
Sagamore Hill
Peverly Hill
Freemans Point
Nobles Island
Old Harbour
South Mill Pond
Sagamore Creek
Sagamore Cr
Great Bog
Pickering Brook
Hodgson Brook
Paul Brook
Spinney Creek
Piscataqua River
Bellyhack Bog
Perrys Brook
MAINE
NEW HAMPSHIRE
YORK CO
ROCKINGHAM CO
Byp 1

Section 3

Drainage Calculations

Pre-Development
2-Year, 24-Hour Summary
10-Year, 24-Hour Complete
25-Year, 24-Hour Summary
50-Year, 24-Hour Summary

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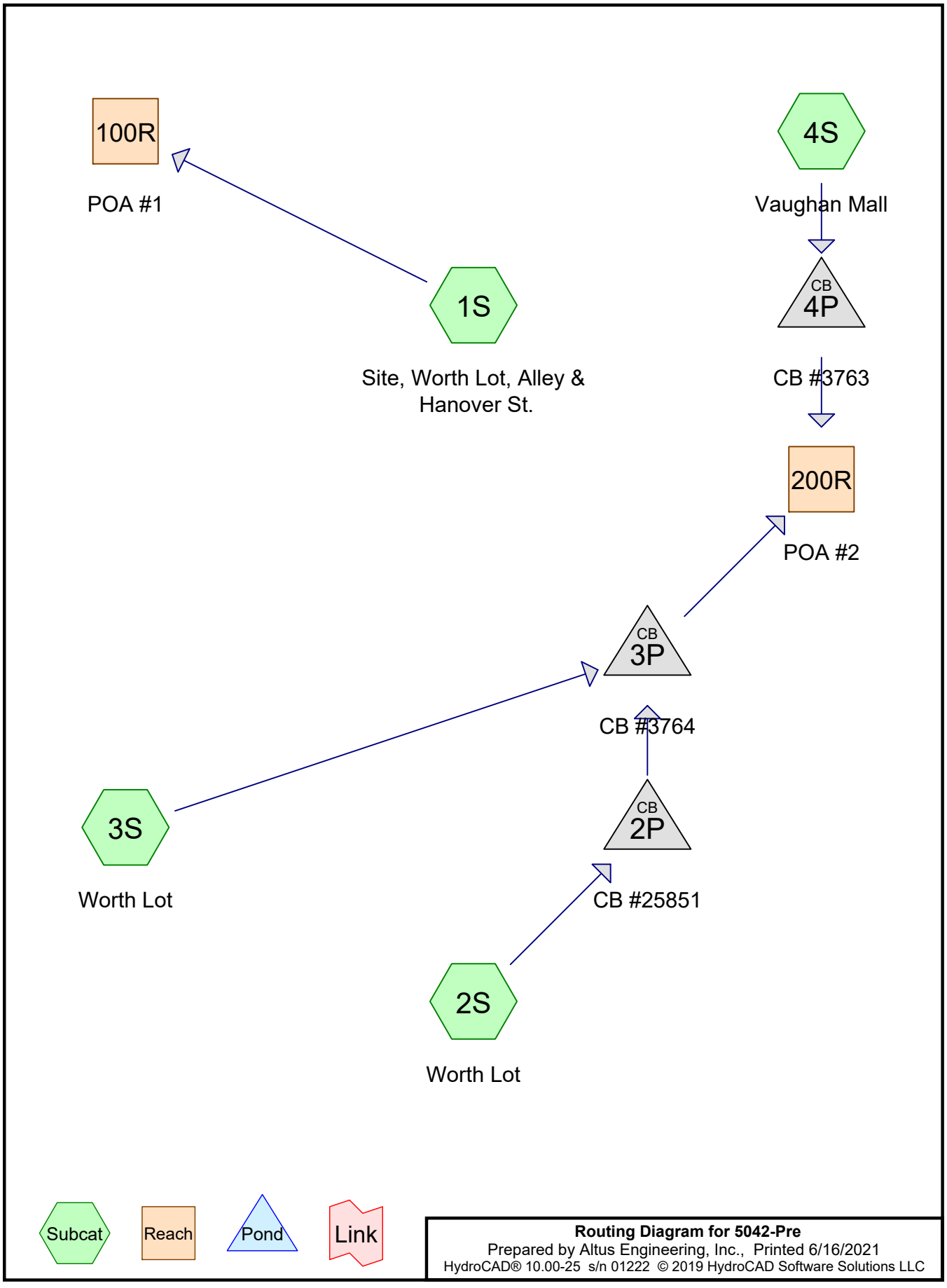


Routing Diagram for 5042-Pre
Prepared by Altus Engineering, Inc., Printed 6/16/2021
HydroCAD® 10.00-25 s/n 01222 © 2019 HydroCAD Software Solutions LLC

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Site, Worth Lot, Alley & Runoff Area=32,094 sf 99.25% Impervious Runoff Depth=3.46"
Flow Length=347' Tc=6.0 min CN=98 Runoff=2.59 cfs 0.212 af

Subcatchment 2S: Worth Lot Runoff Area=4,739 sf 98.48% Impervious Runoff Depth=3.46"
Flow Length=124' Tc=6.0 min CN=98 Runoff=0.38 cfs 0.031 af

Subcatchment 3S: Worth Lot Runoff Area=10,680 sf 98.58% Impervious Runoff Depth=3.46"
Flow Length=213' Tc=6.0 min CN=98 Runoff=0.86 cfs 0.071 af

Subcatchment 4S: Vaughan Mall Runoff Area=2,908 sf 92.61% Impervious Runoff Depth=3.23"
Flow Length=61' Tc=6.0 min CN=96 Runoff=0.23 cfs 0.018 af

Reach 100R: POA #1 Inflow=2.59 cfs 0.212 af
Outflow=2.59 cfs 0.212 af

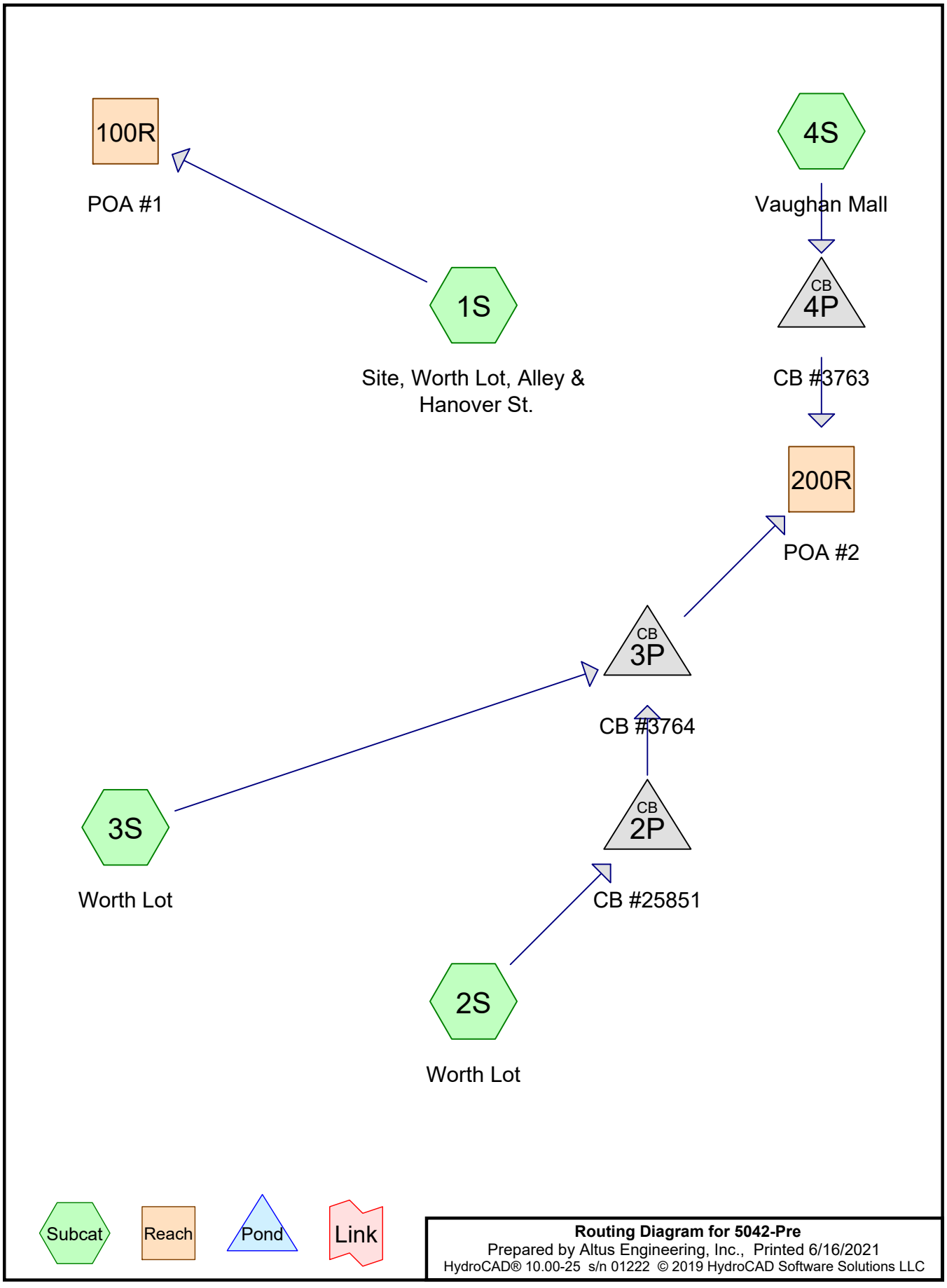
Reach 200R: POA #2 Inflow=1.47 cfs 0.120 af
Outflow=1.47 cfs 0.120 af

Pond 2P: CB #25851 Peak Elev=12.32' Inflow=0.38 cfs 0.031 af
12.0" Round Culvert n=0.012 L=64.0' S=0.0127 '/' Outflow=0.38 cfs 0.031 af

Pond 3P: CB #3764 Peak Elev=11.74' Inflow=1.24 cfs 0.102 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0100 '/' Outflow=1.24 cfs 0.102 af

Pond 4P: CB #3763 Peak Elev=12.26' Inflow=0.23 cfs 0.018 af
12.0" Round Culvert n=0.012 L=40.0' S=0.0140 '/' Outflow=0.23 cfs 0.018 af

Total Runoff Area = 1.158 ac Runoff Volume = 0.332 af Average Runoff Depth = 3.44"
1.35% Pervious = 0.016 ac 98.65% Impervious = 1.142 ac



Routing Diagram for 5042-Pre
Prepared by Altus Engineering, Inc., Printed 6/16/2021
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.016	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S)
0.411	98	Paved parking, HSG C (2S, 3S, 4S)
0.494	98	Paved roads w/curbs & sewers, HSG C (1S)
0.237	98	Roofs, HSG C (1S)
1.158	**98**	**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Site, Worth Lot, Alley & Runoff Area=32,094 sf 99.25% Impervious Runoff Depth=5.36"
Flow Length=347' Tc=6.0 min CN=98 Runoff=3.95 cfs 0.329 af

Subcatchment 2S: Worth Lot Runoff Area=4,739 sf 98.48% Impervious Runoff Depth=5.36"
Flow Length=124' Tc=6.0 min CN=98 Runoff=0.58 cfs 0.049 af

Subcatchment 3S: Worth Lot Runoff Area=10,680 sf 98.58% Impervious Runoff Depth=5.36"
Flow Length=213' Tc=6.0 min CN=98 Runoff=1.31 cfs 0.110 af

Subcatchment 4S: Vaughan Mall Runoff Area=2,908 sf 92.61% Impervious Runoff Depth=5.13"
Flow Length=61' Tc=6.0 min CN=96 Runoff=0.35 cfs 0.029 af

Reach 100R: POA #1 Inflow=3.95 cfs 0.329 af
Outflow=3.95 cfs 0.329 af

Reach 200R: POA #2 Inflow=2.25 cfs 0.187 af
Outflow=2.25 cfs 0.187 af

Pond 2P: CB #25851 Peak Elev=12.39' Inflow=0.58 cfs 0.049 af
12.0" Round Culvert n=0.012 L=64.0' S=0.0127 '/' Outflow=0.58 cfs 0.049 af

Pond 3P: CB #3764 Peak Elev=11.94' Inflow=1.90 cfs 0.158 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0100 '/' Outflow=1.90 cfs 0.158 af

Pond 4P: CB #3763 Peak Elev=12.32' Inflow=0.35 cfs 0.029 af
12.0" Round Culvert n=0.012 L=40.0' S=0.0140 '/' Outflow=0.35 cfs 0.029 af

Total Runoff Area = 1.158 ac Runoff Volume = 0.516 af Average Runoff Depth = 5.35"
1.35% Pervious = 0.016 ac 98.65% Impervious = 1.142 ac

Summary for Subcatchment 1S: Site, Worth Lot, Alley & Hanover St.

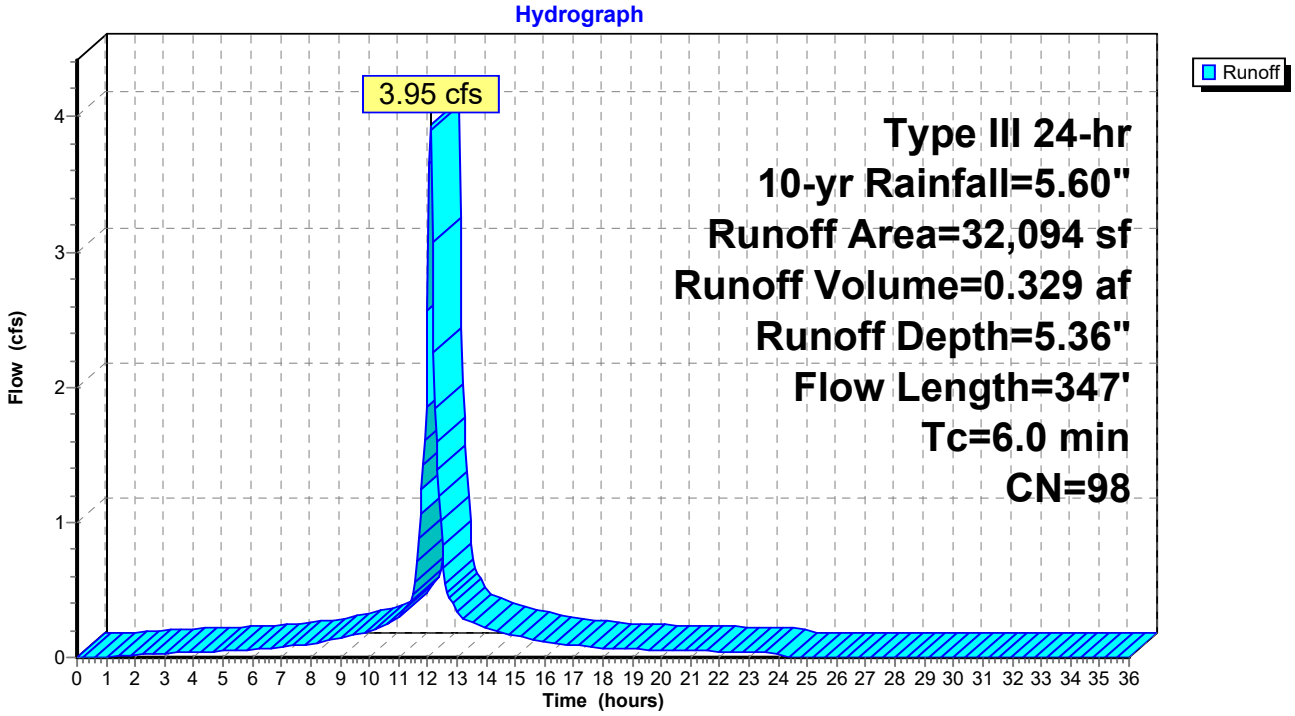
Runoff = 3.95 cfs @ 12.09 hrs, Volume= 0.329 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
242	74	>75% Grass cover, Good, HSG C
21,524	98	Paved roads w/curbs & sewers, HSG C
10,328	98	Roofs, HSG C
32,094	98	Weighted Average
242		0.75% Pervious Area
31,852		99.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	29	0.0200	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
2.0	318	0.0171	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	347	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S: Site, Worth Lot, Alley & Hanover St.



Summary for Subcatchment 2S: Worth Lot

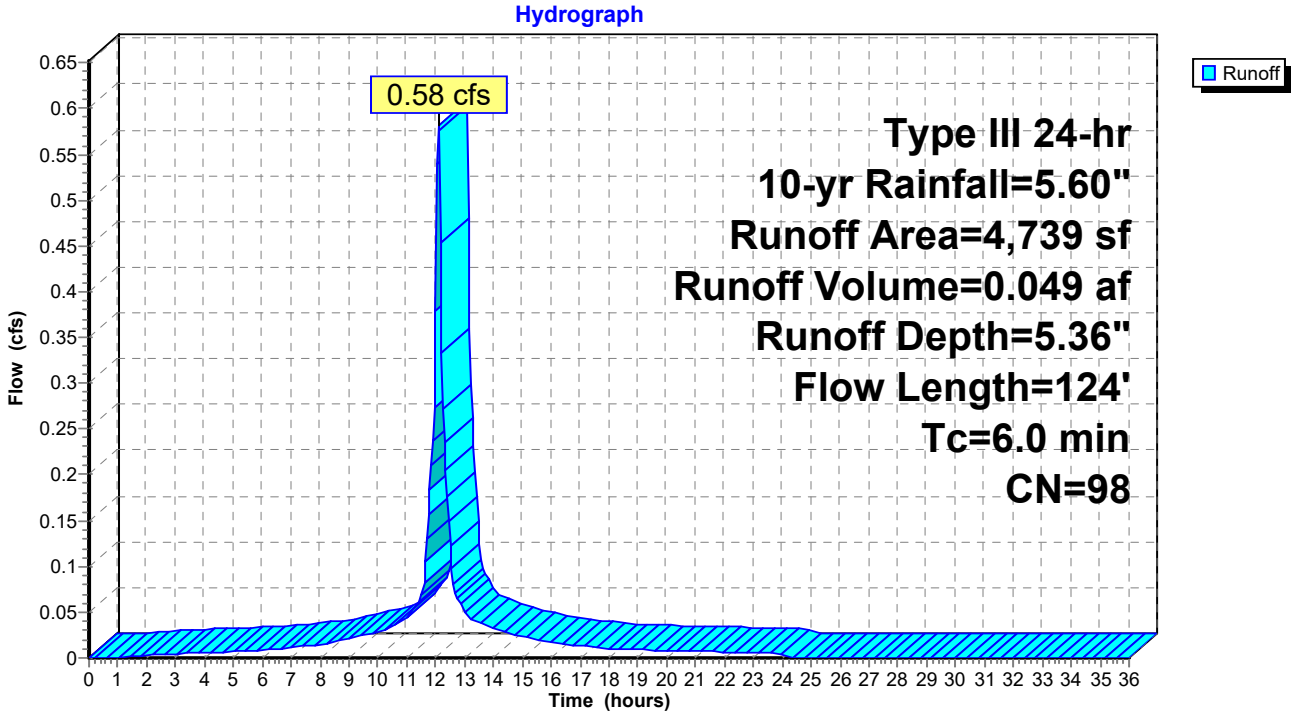
Runoff = 0.58 cfs @ 12.09 hrs, Volume= 0.049 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
72	74	>75% Grass cover, Good, HSG C
4,667	98	Paved parking, HSG C
4,739	98	Weighted Average
72		1.52% Pervious Area
4,667		98.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
0.2	45	0.0281	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	49	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	124	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: Worth Lot



Summary for Subcatchment 3S: Worth Lot

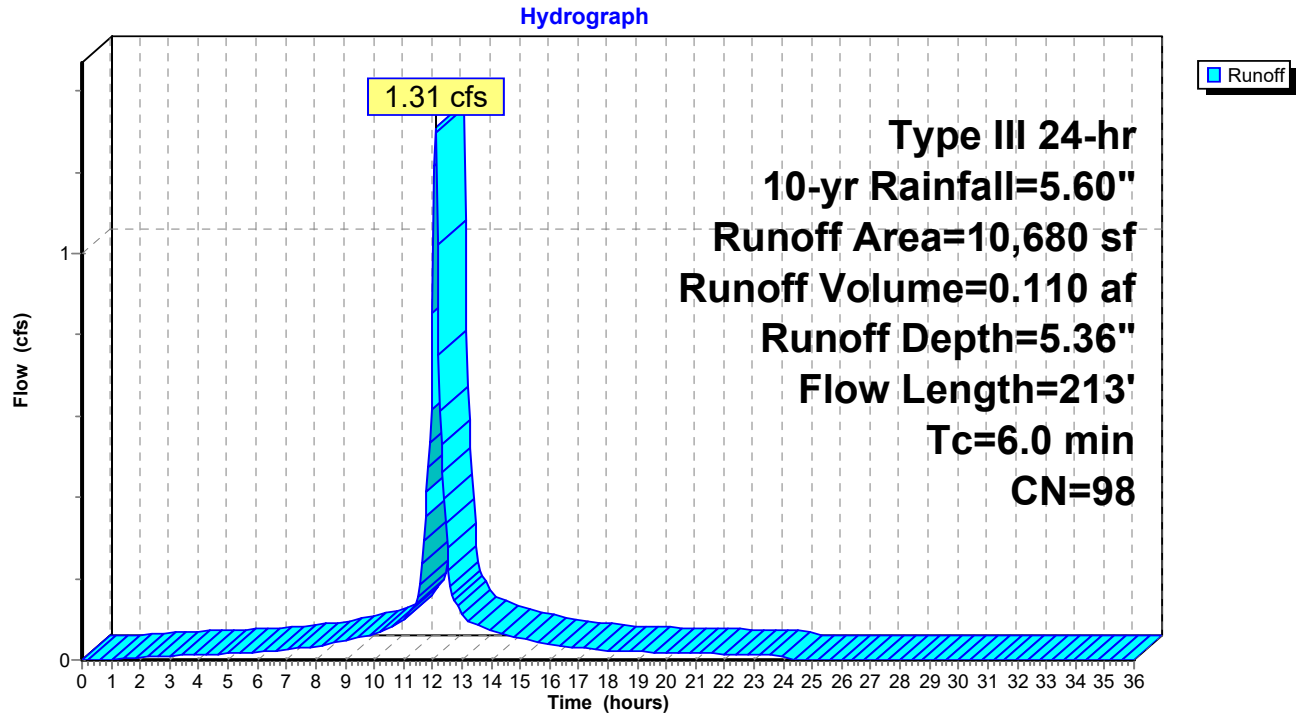
Runoff = 1.31 cfs @ 12.09 hrs, Volume= 0.110 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
152	74	>75% Grass cover, Good, HSG C
10,528	98	Paved parking, HSG C
10,680	98	Weighted Average
152		1.42% Pervious Area
10,528		98.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	24	0.0100	0.84		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
0.5	59	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	130	0.0103	2.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.1	213	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 3S: Worth Lot



Summary for Subcatchment 4S: Vaughan Mall

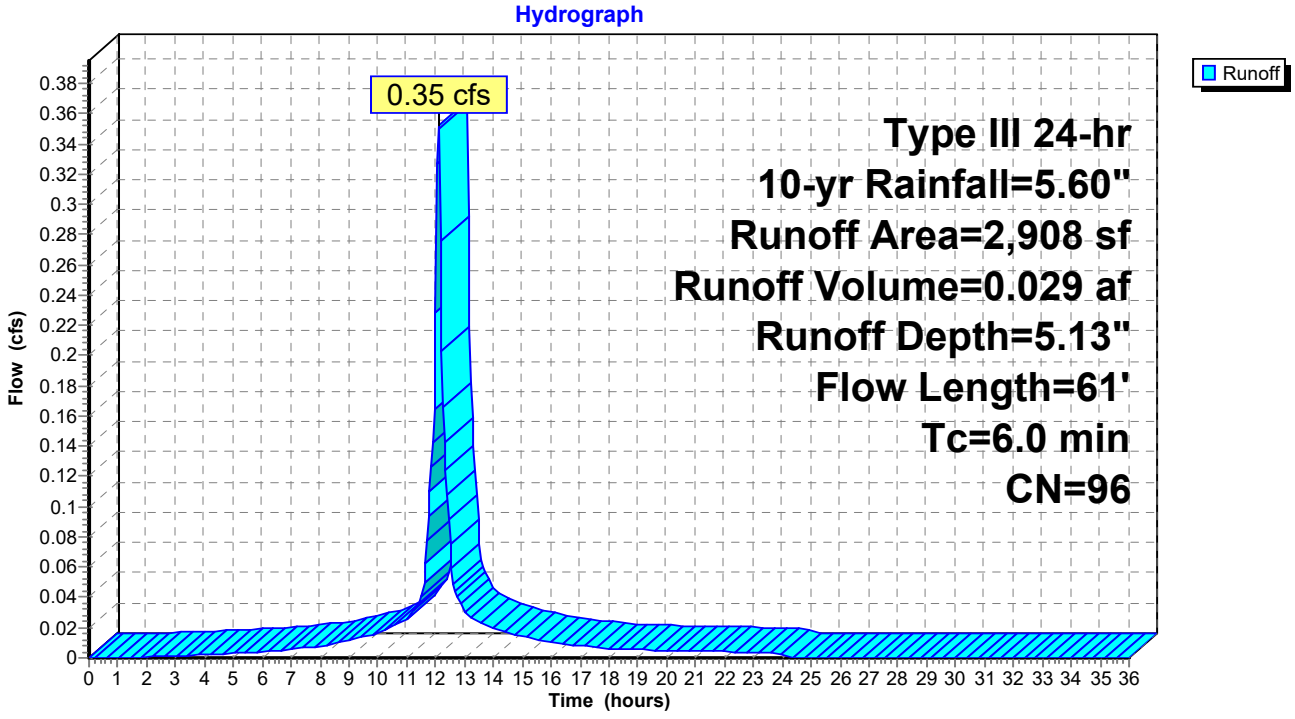
Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
215	74	>75% Grass cover, Good, HSG C
2,693	98	Paved parking, HSG C
2,908	96	Weighted Average
215		7.39% Pervious Area
2,693		92.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0097	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
0.3	31	0.0093	1.96		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	61	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 4S: Vaughan Mall

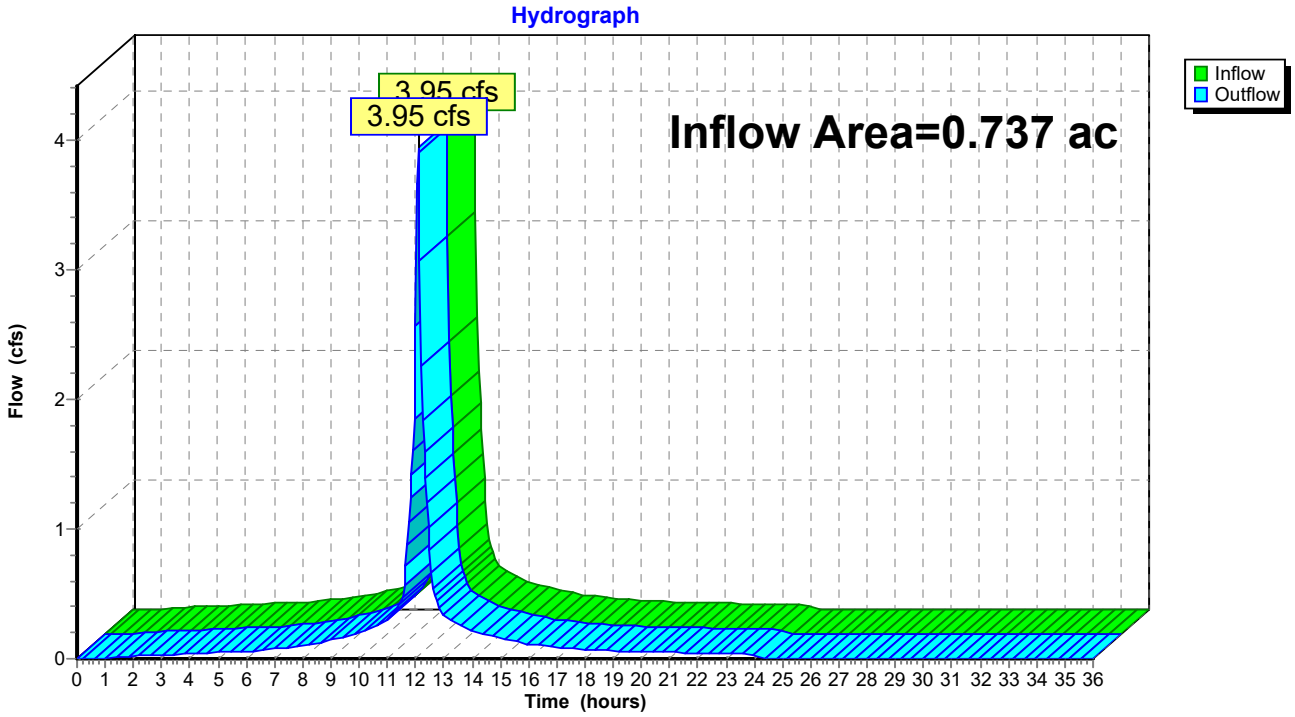


Summary for Reach 100R: POA #1

Inflow Area = 0.737 ac, 99.25% Impervious, Inflow Depth = 5.36" for 10-yr event
Inflow = 3.95 cfs @ 12.09 hrs, Volume= 0.329 af
Outflow = 3.95 cfs @ 12.09 hrs, Volume= 0.329 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach 100R: POA #1

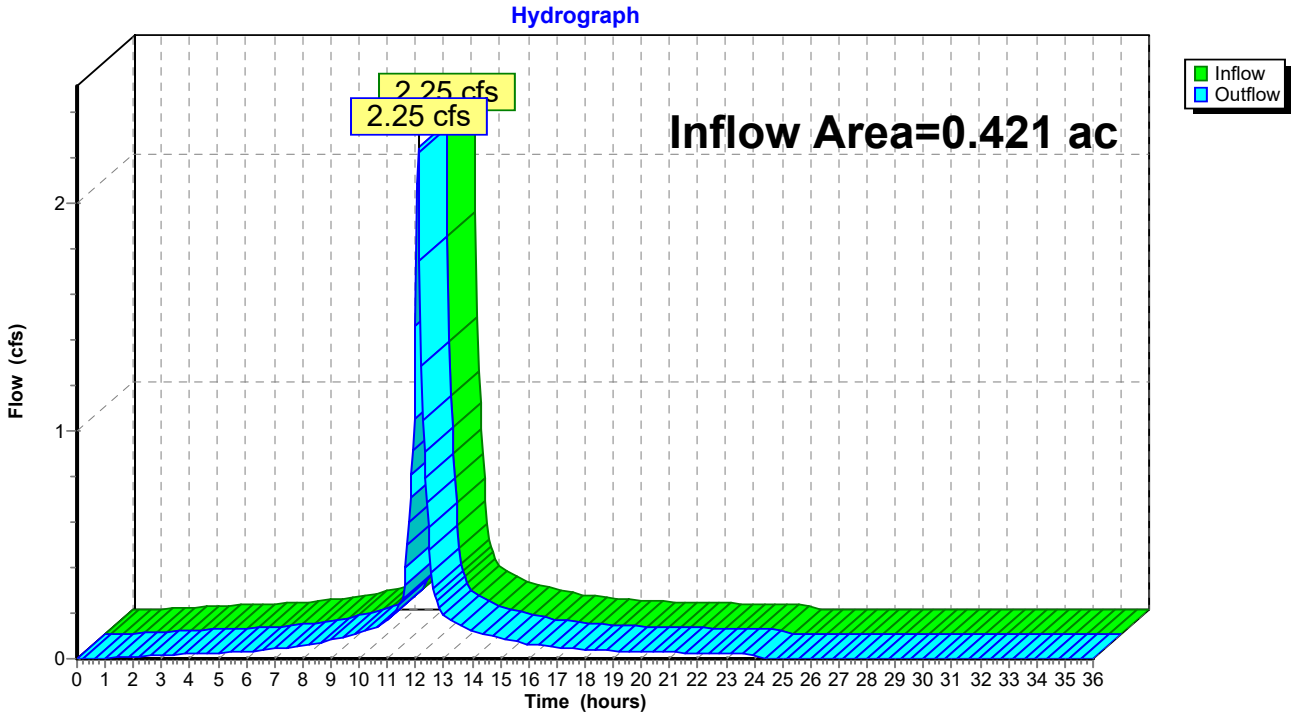


Summary for Reach 200R: POA #2

Inflow Area = 0.421 ac, 97.60% Impervious, Inflow Depth = 5.33" for 10-yr event
Inflow = 2.25 cfs @ 12.09 hrs, Volume= 0.187 af
Outflow = 2.25 cfs @ 12.09 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach 200R: POA #2



Summary for Pond 2P: CB #25851

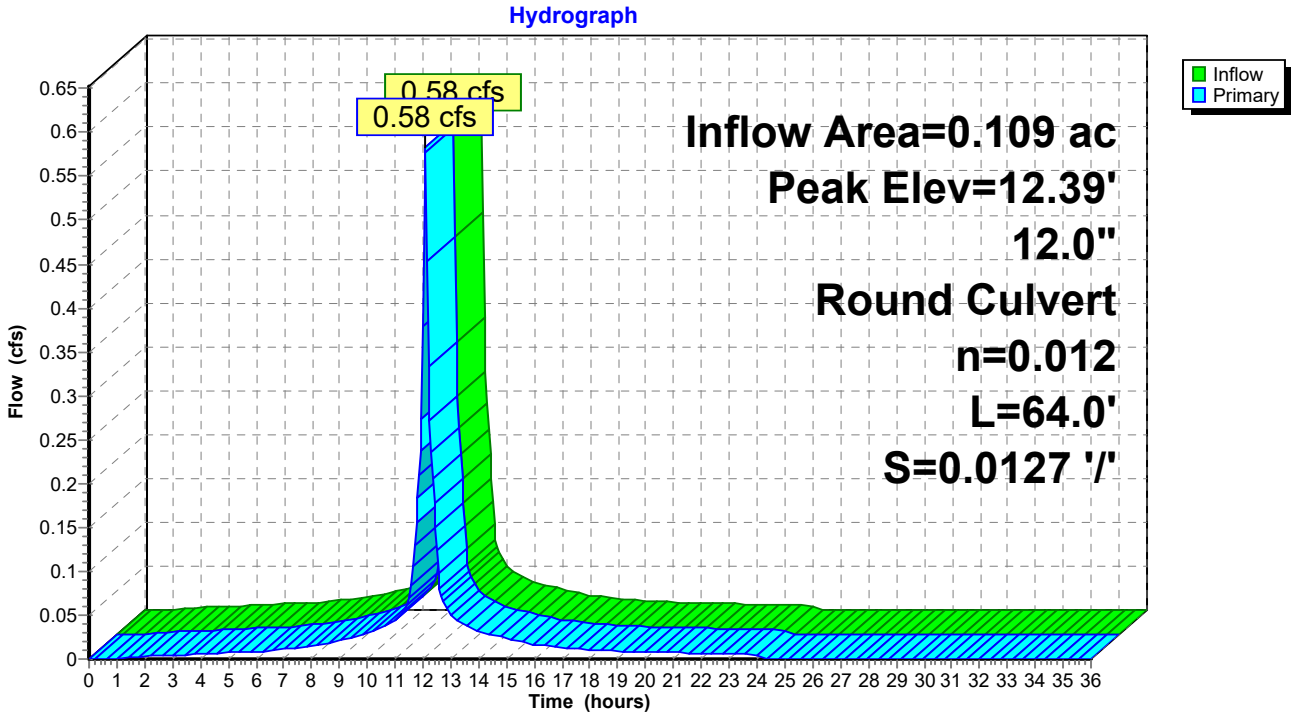
Inflow Area = 0.109 ac, 98.48% Impervious, Inflow Depth = 5.36" for 10-yr event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 0.049 af
Outflow = 0.58 cfs @ 12.09 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.09 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 12.39' @ 12.09 hrs
Flood Elev= 16.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.01'	**12.0" Round Culvert** L= 64.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.01' / 11.20' S= 0.0127 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.57 cfs @ 12.09 hrs HW=12.39' (Free Discharge)
1=Culvert (Inlet Controls 0.57 cfs @ 2.09 fps)

Pond 2P: CB #25851



Summary for Pond 3P: CB #3764

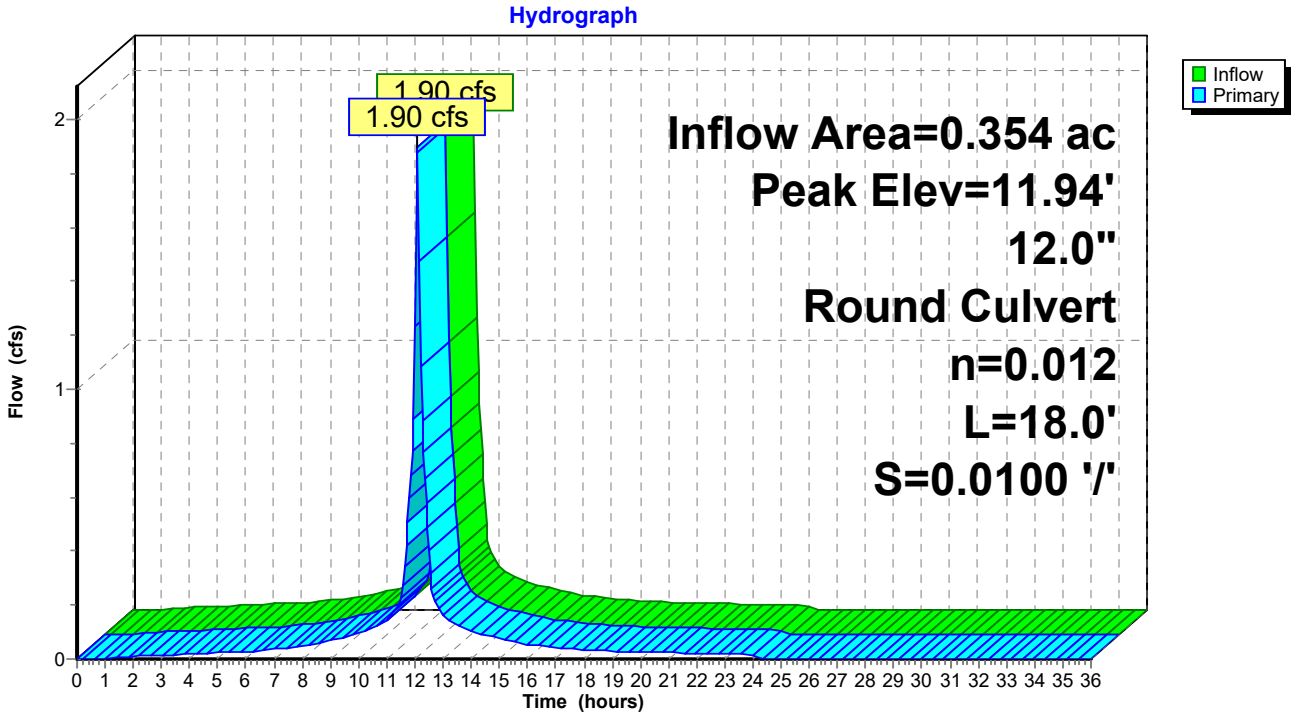
Inflow Area = 0.354 ac, 98.55% Impervious, Inflow Depth = 5.36" for 10-yr event
Inflow = 1.90 cfs @ 12.09 hrs, Volume= 0.158 af
Outflow = 1.90 cfs @ 12.09 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min
Primary = 1.90 cfs @ 12.09 hrs, Volume= 0.158 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 11.94' @ 12.09 hrs
Flood Elev= 15.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.10'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.10' / 10.92' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.84 cfs @ 12.09 hrs HW=11.93' (Free Discharge)
1=Culvert (Barrel Controls 1.84 cfs @ 3.61 fps)

Pond 3P: CB #3764



Summary for Pond 4P: CB #3763

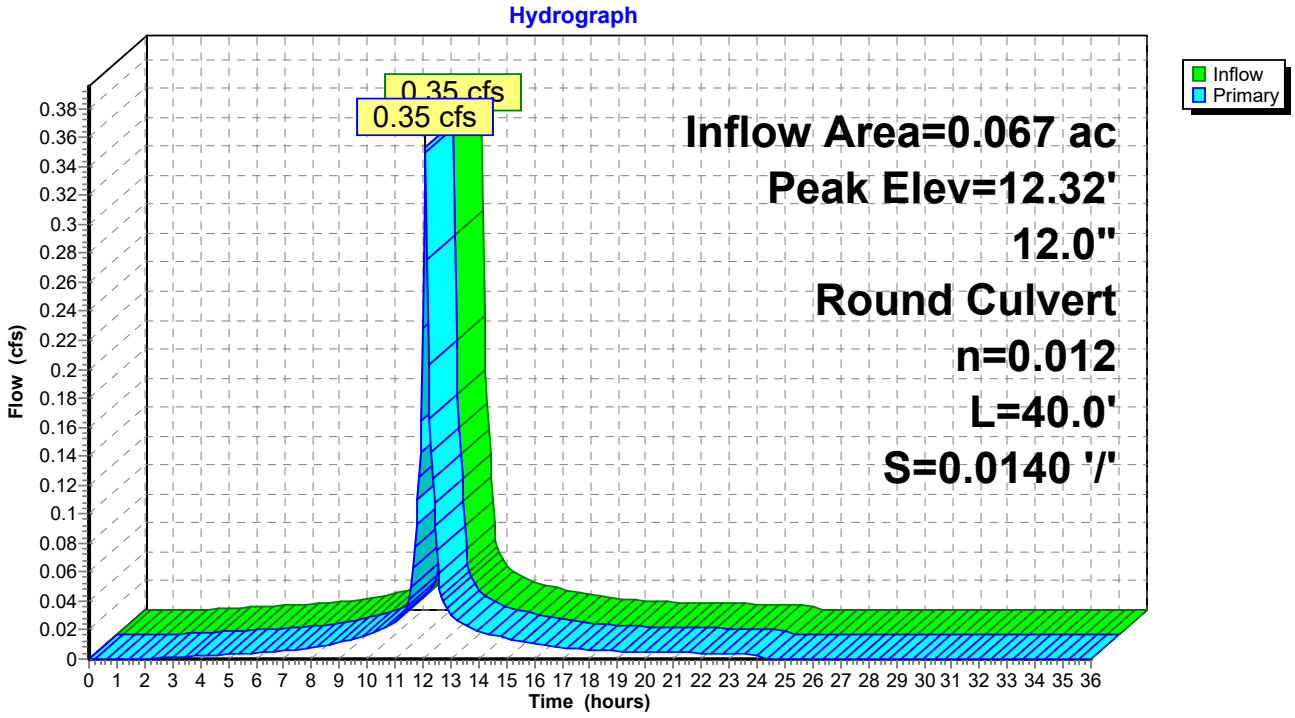
Inflow Area = 0.067 ac, 92.61% Impervious, Inflow Depth = 5.13" for 10-yr event
Inflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af

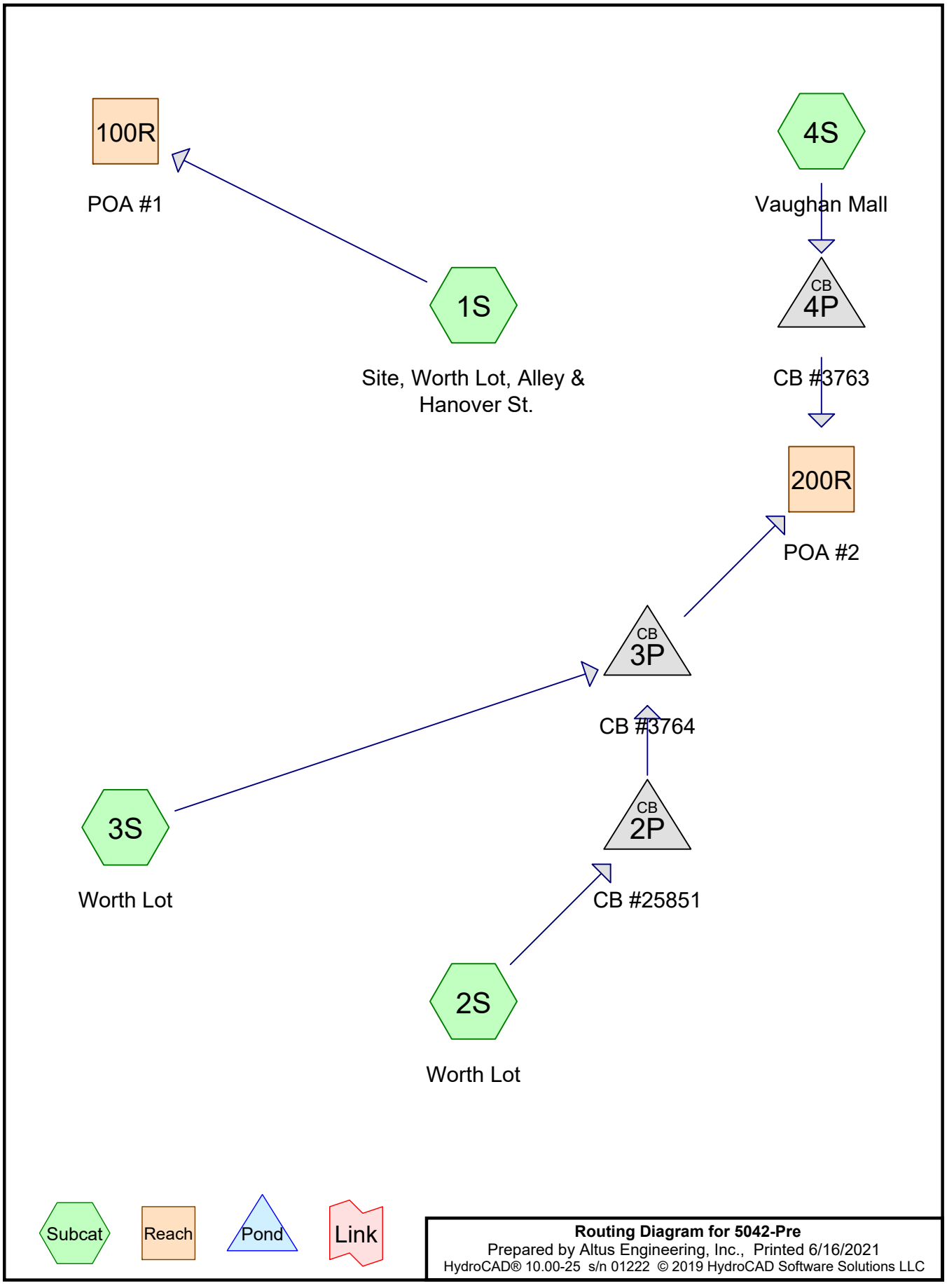
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 12.32' @ 12.09 hrs
Flood Elev= 14.71'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.03'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.03' / 11.47' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.09 hrs HW=12.32' (Free Discharge)
1=Culvert (Inlet Controls 0.34 cfs @ 1.83 fps)

Pond 4P: CB #3763





Routing Diagram for 5042-Pre
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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Site, Worth Lot, Alley & Runoff Area=32,094 sf 99.25% Impervious Runoff Depth=6.86"
Flow Length=347' Tc=6.0 min CN=98 Runoff=5.01 cfs 0.421 af

Subcatchment 2S: Worth Lot Runoff Area=4,739 sf 98.48% Impervious Runoff Depth=6.86"
Flow Length=124' Tc=6.0 min CN=98 Runoff=0.74 cfs 0.062 af

Subcatchment 3S: Worth Lot Runoff Area=10,680 sf 98.58% Impervious Runoff Depth=6.86"
Flow Length=213' Tc=6.0 min CN=98 Runoff=1.67 cfs 0.140 af

Subcatchment 4S: Vaughan Mall Runoff Area=2,908 sf 92.61% Impervious Runoff Depth=6.62"
Flow Length=61' Tc=6.0 min CN=96 Runoff=0.45 cfs 0.037 af

Reach 100R: POA #1 Inflow=5.01 cfs 0.421 af
Outflow=5.01 cfs 0.421 af

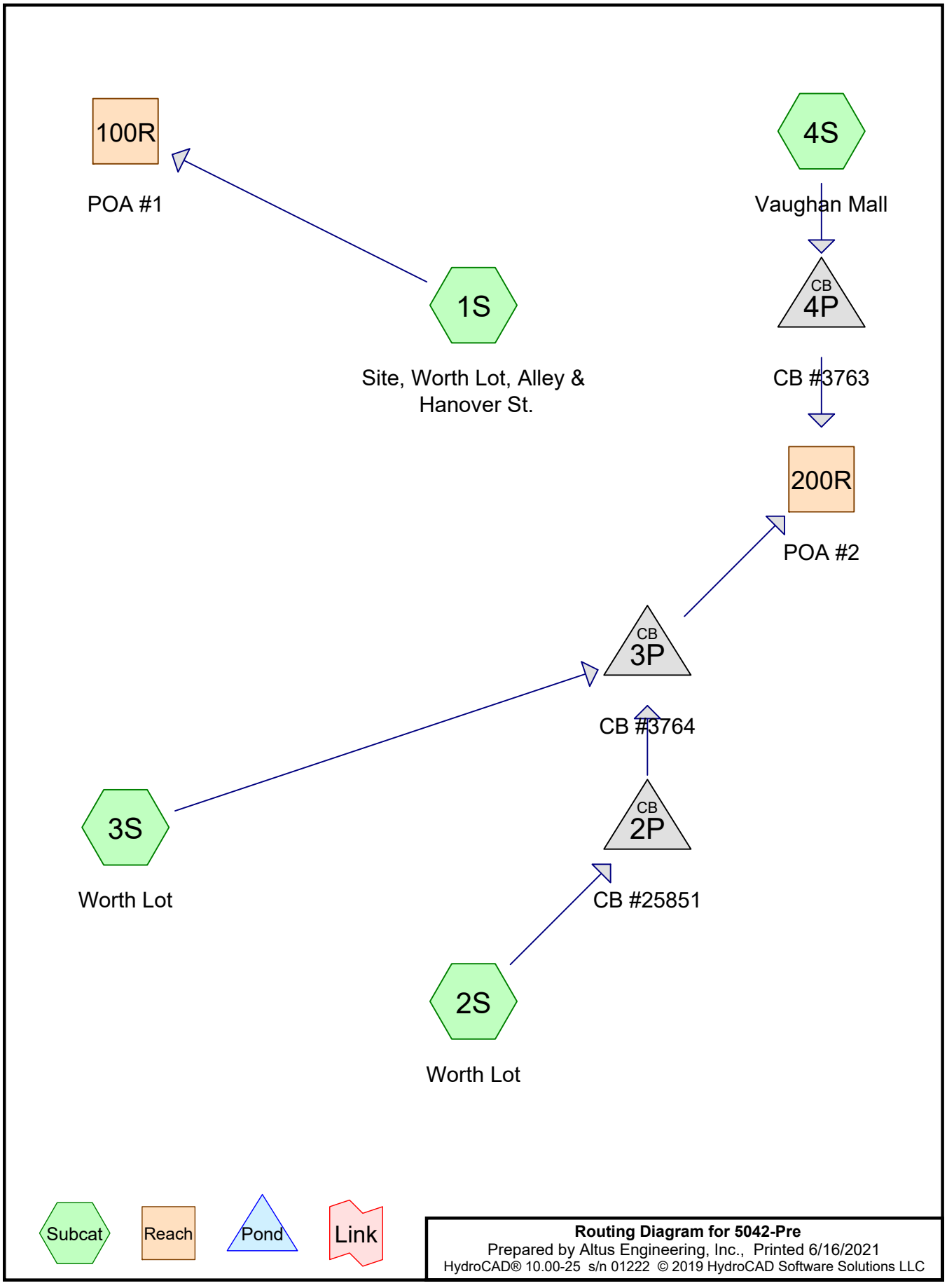
Reach 200R: POA #2 Inflow=2.86 cfs 0.239 af
Outflow=2.86 cfs 0.239 af

Pond 2P: CB #25851 Peak Elev=12.45' Inflow=0.74 cfs 0.062 af
12.0" Round Culvert n=0.012 L=64.0' S=0.0127 '/' Outflow=0.74 cfs 0.062 af

Pond 3P: CB #3764 Peak Elev=12.09' Inflow=2.41 cfs 0.202 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0100 '/' Outflow=2.41 cfs 0.202 af

Pond 4P: CB #3763 Peak Elev=12.36' Inflow=0.45 cfs 0.037 af
12.0" Round Culvert n=0.012 L=40.0' S=0.0140 '/' Outflow=0.45 cfs 0.037 af

Total Runoff Area = 1.158 ac Runoff Volume = 0.660 af Average Runoff Depth = 6.85"
1.35% Pervious = 0.016 ac 98.65% Impervious = 1.142 ac



Routing Diagram for 5042-Pre
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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Site, Worth Lot, Alley & Runoff Area=32,094 sf 99.25% Impervious Runoff Depth=8.26"
Flow Length=347' Tc=6.0 min CN=98 Runoff=6.01 cfs 0.507 af

Subcatchment 2S: Worth Lot Runoff Area=4,739 sf 98.48% Impervious Runoff Depth=8.26"
Flow Length=124' Tc=6.0 min CN=98 Runoff=0.89 cfs 0.075 af

Subcatchment 3S: Worth Lot Runoff Area=10,680 sf 98.58% Impervious Runoff Depth=8.26"
Flow Length=213' Tc=6.0 min CN=98 Runoff=2.00 cfs 0.169 af

Subcatchment 4S: Vaughan Mall Runoff Area=2,908 sf 92.61% Impervious Runoff Depth=8.02"
Flow Length=61' Tc=6.0 min CN=96 Runoff=0.54 cfs 0.045 af

Reach 100R: POA #1 Inflow=6.01 cfs 0.507 af
Outflow=6.01 cfs 0.507 af

Reach 200R: POA #2 Inflow=3.43 cfs 0.288 af
Outflow=3.43 cfs 0.288 af

Pond 2P: CB #25851 Peak Elev=12.49' Inflow=0.89 cfs 0.075 af
12.0" Round Culvert n=0.012 L=64.0' S=0.0127 '/' Outflow=0.89 cfs 0.075 af

Pond 3P: CB #3764 Peak Elev=12.25' Inflow=2.89 cfs 0.244 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0100 '/' Outflow=2.89 cfs 0.244 af

Pond 4P: CB #3763 Peak Elev=12.40' Inflow=0.54 cfs 0.045 af
12.0" Round Culvert n=0.012 L=40.0' S=0.0140 '/' Outflow=0.54 cfs 0.045 af

Total Runoff Area = 1.158 ac Runoff Volume = 0.795 af Average Runoff Depth = 8.25"
1.35% Pervious = 0.016 ac 98.65% Impervious = 1.142 ac

Section 4

Drainage Calculations

Post-Development
2-Year, 24-Hour Summary
10-Year, 24-Hour Complete
25-Year, 24-Hour Summary
50-Year, 24-Hour Summary

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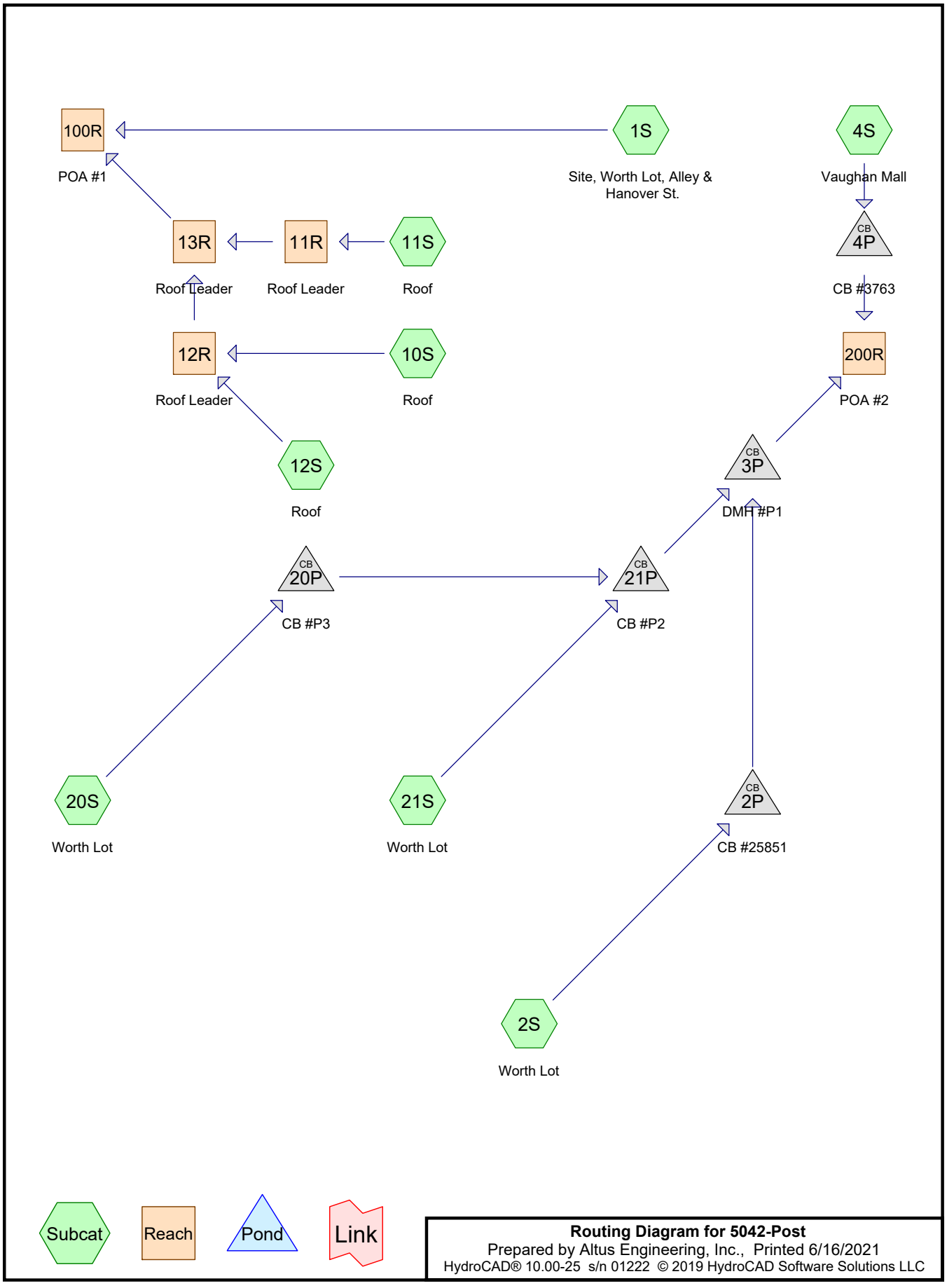

Routing Diagram for 5042-Post
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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Site, Worth Lot, Alley & Runoff Area=19,157 sf 98.39% Impervious Runoff Depth=3.46"
Flow Length=347' Tc=6.0 min CN=98 Runoff=1.54 cfs 0.127 af

Subcatchment 2S: Worth Lot Runoff Area=4,739 sf 91.90% Impervious Runoff Depth=3.23"
Flow Length=124' Tc=6.0 min CN=96 Runoff=0.37 cfs 0.029 af

Subcatchment 4S: Vaughan Mall Runoff Area=2,908 sf 92.61% Impervious Runoff Depth=3.23"
Flow Length=61' Tc=6.0 min CN=96 Runoff=0.23 cfs 0.018 af

Subcatchment 10S: Roof Runoff Area=8,053 sf 100.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=98 Runoff=0.65 cfs 0.053 af

Subcatchment 11S: Roof Runoff Area=2,409 sf 88.71% Impervious Runoff Depth=3.13"
Tc=6.0 min CN=95 Runoff=0.19 cfs 0.014 af

Subcatchment 12S: Roof Runoff Area=2,555 sf 100.00% Impervious Runoff Depth=3.46"
Tc=6.0 min CN=98 Runoff=0.21 cfs 0.017 af

Subcatchment 20S: Worth Lot Runoff Area=4,709 sf 99.17% Impervious Runoff Depth=3.46"
Flow Length=100' Tc=6.0 min CN=98 Runoff=0.38 cfs 0.031 af

Subcatchment 21S: Worth Lot Runoff Area=5,891 sf 95.25% Impervious Runoff Depth=3.34"
Flow Length=105' Tc=6.0 min CN=97 Runoff=0.47 cfs 0.038 af

Reach 11R: Roof Leader Avg. Flow Depth=0.19' Max Vel=2.72 fps Inflow=0.19 cfs 0.014 af
6.0" Round Pipe n=0.012 L=94.0' S=0.0100 '/' Capacity=0.61 cfs Outflow=0.18 cfs 0.014 af

Reach 12R: Roof Leader Avg. Flow Depth=0.28' Max Vel=6.04 fps Inflow=0.85 cfs 0.070 af
8.0" Round Pipe n=0.012 L=113.0' S=0.0300 '/' Capacity=2.27 cfs Outflow=0.85 cfs 0.070 af

Reach 13R: Roof Leader Avg. Flow Depth=0.31' Max Vel=6.33 fps Inflow=1.03 cfs 0.085 af
8.0" Round Pipe n=0.012 L=21.0' S=0.0300 '/' Capacity=2.27 cfs Outflow=1.02 cfs 0.085 af

Reach 100R: POA #1 Inflow=2.56 cfs 0.211 af
Outflow=2.56 cfs 0.211 af

Reach 200R: POA #2 Inflow=1.45 cfs 0.116 af
Outflow=1.45 cfs 0.116 af

Pond 2P: CB #25851 Peak Elev=12.31' Inflow=0.37 cfs 0.029 af
12.0" Round Culvert n=0.012 L=64.0' S=0.0127 '/' Outflow=0.37 cfs 0.029 af

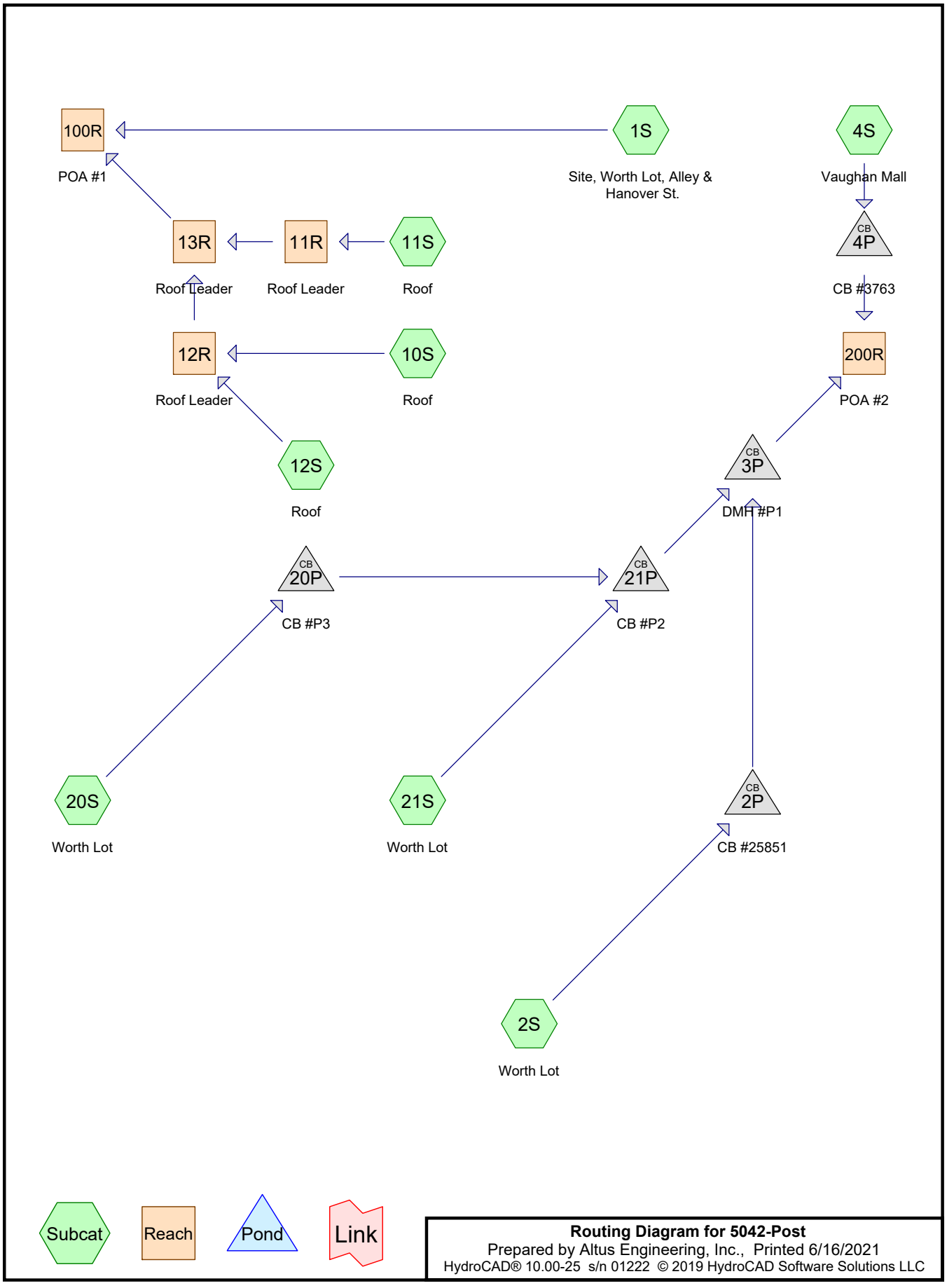
Pond 3P: DMH #P1 Peak Elev=11.74' Inflow=1.22 cfs 0.098 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0100 '/' Outflow=1.22 cfs 0.098 af

Pond 4P: CB #3763 Peak Elev=12.26' Inflow=0.23 cfs 0.018 af
12.0" Round Culvert n=0.012 L=40.0' S=0.0140 '/' Outflow=0.23 cfs 0.018 af

Pond 20P: CB #P3 Peak Elev=12.24' Inflow=0.38 cfs 0.031 af
12.0" Round Culvert n=0.012 L=86.0' S=0.0050 '/' Outflow=0.38 cfs 0.031 af

Pond 21P: CB #P2 Peak Elev=11.93' Inflow=0.85 cfs 0.069 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0050 '/' Outflow=0.85 cfs 0.069 af

Total Runoff Area = 1.158 ac Runoff Volume = 0.327 af Average Runoff Depth = 3.39"
2.97% Pervious = 0.034 ac 97.03% Impervious = 1.123 ac



Routing Diagram for 5042-Post
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.034	74	>75% Grass cover, Good, HSG C (1S, 2S, 4S, 11S, 20S, 21S)
0.398	98	Paved parking, HSG C (2S, 4S, 20S, 21S)
0.433	98	Paved roads w/curbs & sewers, HSG C (1S)
0.293	98	Roofs, HSG C (10S, 11S, 12S)
1.158	**97**	**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Site, Worth Lot, Alley & Runoff Area=19,157 sf 98.39% Impervious Runoff Depth=5.36"
Flow Length=347' Tc=6.0 min CN=98 Runoff=2.36 cfs 0.197 af

Subcatchment 2S: Worth Lot Runoff Area=4,739 sf 91.90% Impervious Runoff Depth=5.13"
Flow Length=124' Tc=6.0 min CN=96 Runoff=0.58 cfs 0.047 af

Subcatchment 4S: Vaughan Mall Runoff Area=2,908 sf 92.61% Impervious Runoff Depth=5.13"
Flow Length=61' Tc=6.0 min CN=96 Runoff=0.35 cfs 0.029 af

Subcatchment 10S: Roof Runoff Area=8,053 sf 100.00% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=98 Runoff=0.99 cfs 0.083 af

Subcatchment 11S: Roof Runoff Area=2,409 sf 88.71% Impervious Runoff Depth=5.01"
Tc=6.0 min CN=95 Runoff=0.29 cfs 0.023 af

Subcatchment 12S: Roof Runoff Area=2,555 sf 100.00% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=98 Runoff=0.31 cfs 0.026 af

Subcatchment 20S: Worth Lot Runoff Area=4,709 sf 99.17% Impervious Runoff Depth=5.36"
Flow Length=100' Tc=6.0 min CN=98 Runoff=0.58 cfs 0.048 af

Subcatchment 21S: Worth Lot Runoff Area=5,891 sf 95.25% Impervious Runoff Depth=5.25"
Flow Length=105' Tc=6.0 min CN=97 Runoff=0.72 cfs 0.059 af

Reach 11R: Roof Leader Avg. Flow Depth=0.24' Max Vel=3.06 fps Inflow=0.29 cfs 0.023 af
6.0" Round Pipe n=0.012 L=94.0' S=0.0100 '/' Capacity=0.61 cfs Outflow=0.28 cfs 0.023 af

Reach 12R: Roof Leader Avg. Flow Depth=0.36' Max Vel=6.72 fps Inflow=1.30 cfs 0.109 af
8.0" Round Pipe n=0.012 L=113.0' S=0.0300 '/' Capacity=2.27 cfs Outflow=1.29 cfs 0.109 af

Reach 13R: Roof Leader Avg. Flow Depth=0.41' Max Vel=7.02 fps Inflow=1.58 cfs 0.132 af
8.0" Round Pipe n=0.012 L=21.0' S=0.0300 '/' Capacity=2.27 cfs Outflow=1.57 cfs 0.132 af

Reach 100R: POA #1 Inflow=3.92 cfs 0.328 af
Outflow=3.92 cfs 0.328 af

Reach 200R: POA #2 Inflow=2.23 cfs 0.182 af
Outflow=2.23 cfs 0.182 af

Pond 2P: CB #25851 Peak Elev=12.39' Inflow=0.58 cfs 0.047 af
12.0" Round Culvert n=0.012 L=64.0' S=0.0127 '/' Outflow=0.58 cfs 0.047 af

Pond 3P: DMH #P1 Peak Elev=11.93' Inflow=1.87 cfs 0.154 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0100 '/' Outflow=1.87 cfs 0.154 af

Pond 4P: CB #3763 Peak Elev=12.32' Inflow=0.35 cfs 0.029 af
12.0" Round Culvert n=0.012 L=40.0' S=0.0140 '/' Outflow=0.35 cfs 0.029 af

Pond 20P: CB #P3 Peak Elev=12.32' Inflow=0.58 cfs 0.048 af
12.0" Round Culvert n=0.012 L=86.0' S=0.0050 '/' Outflow=0.58 cfs 0.048 af

Pond 21P: CB #P2 Peak Elev=12.09' Inflow=1.30 cfs 0.107 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0050 '/' Outflow=1.30 cfs 0.107 af

Total Runoff Area = 1.158 ac Runoff Volume = 0.511 af Average Runoff Depth = 5.30"
2.97% Pervious = 0.034 ac 97.03% Impervious = 1.123 ac

Summary for Subcatchment 1S: Site, Worth Lot, Alley & Hanover St.

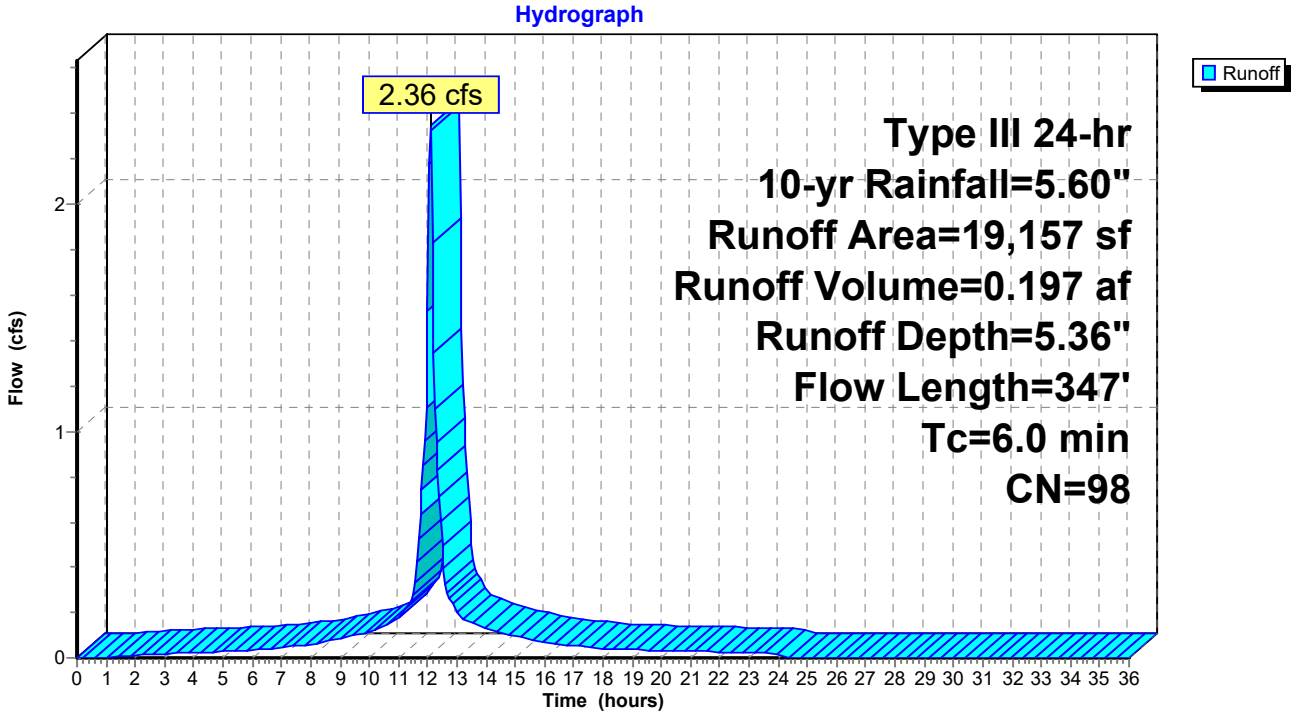
Runoff = 2.36 cfs @ 12.09 hrs, Volume= 0.197 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
308	74	>75% Grass cover, Good, HSG C
18,849	98	Paved roads w/curbs & sewers, HSG C
19,157	98	Weighted Average
308		1.61% Pervious Area
18,849		98.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	29	0.0200	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
2.0	318	0.0171	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	347	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 1S: Site, Worth Lot, Alley & Hanover St.



Summary for Subcatchment 2S: Worth Lot

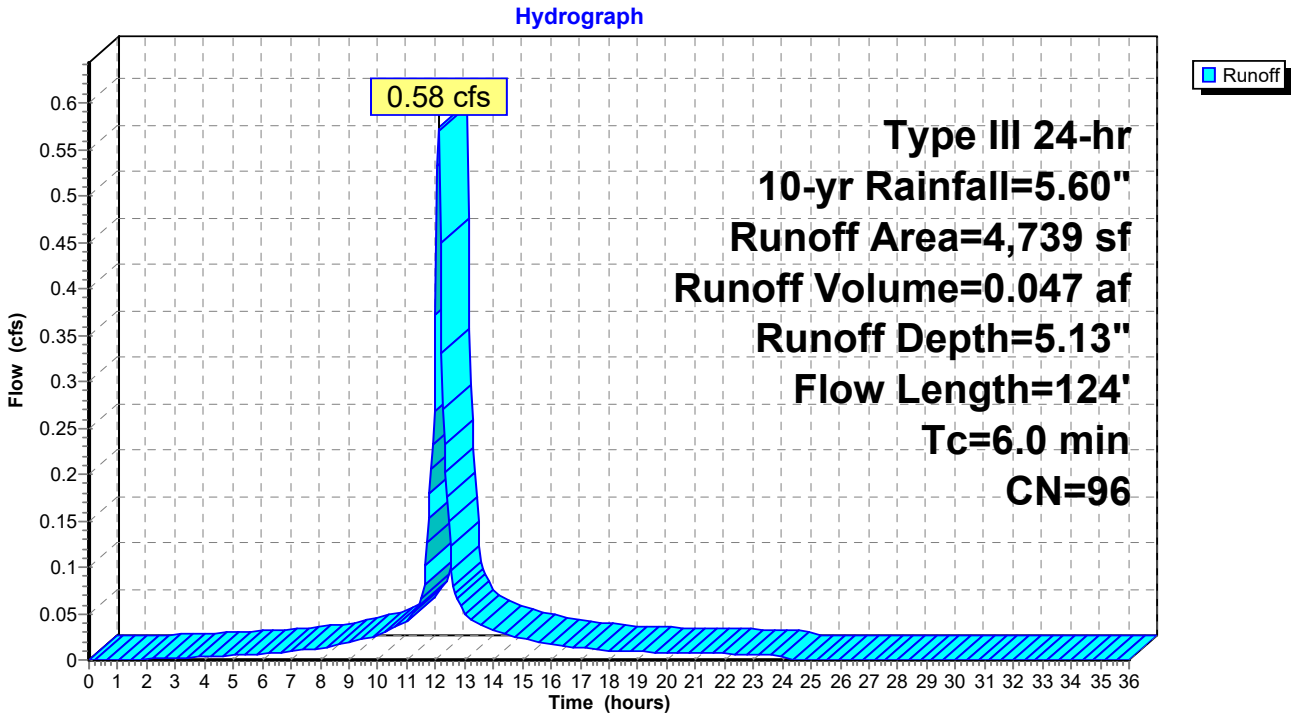
Runoff = 0.58 cfs @ 12.09 hrs, Volume= 0.047 af, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
384	74	>75% Grass cover, Good, HSG C
4,355	98	Paved parking, HSG C
4,739	96	Weighted Average
384		8.10% Pervious Area
4,355		91.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	1.03		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
0.2	45	0.0281	3.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	49	0.0240	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.0	124	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: Worth Lot



Summary for Subcatchment 4S: Vaughan Mall

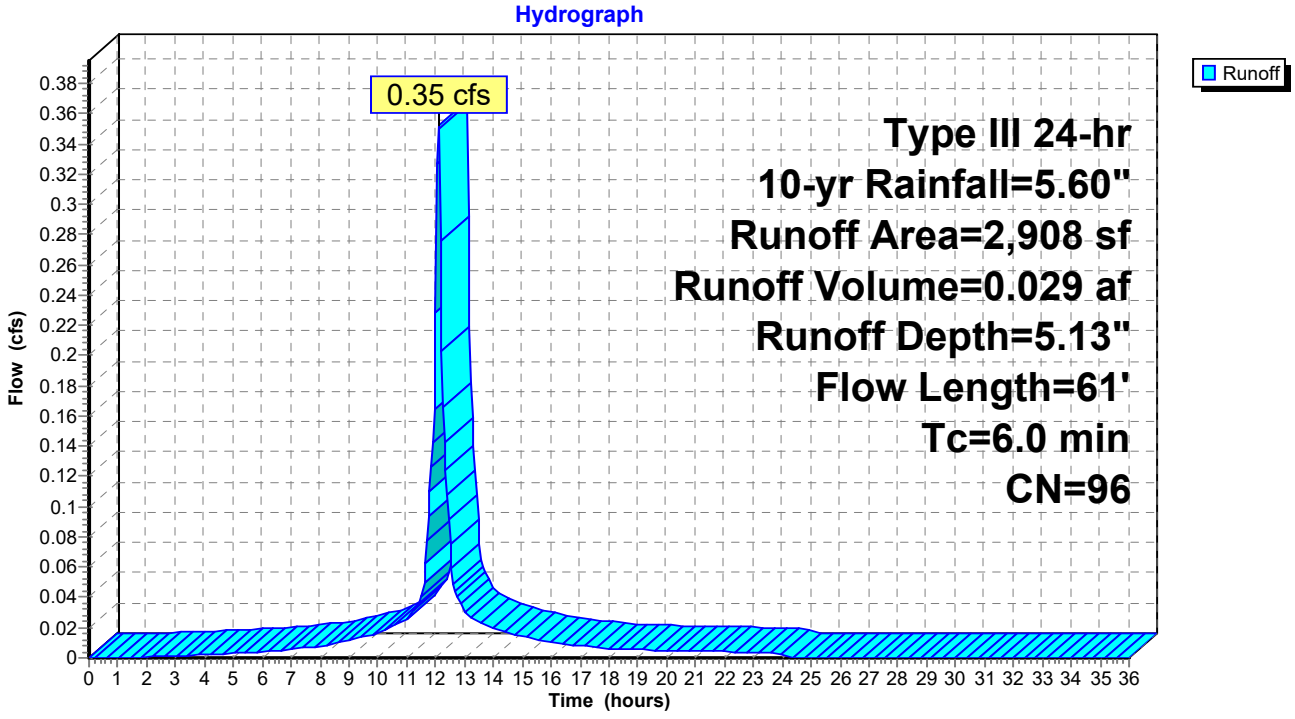
Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
215	74	>75% Grass cover, Good, HSG C
2,693	98	Paved parking, HSG C
2,908	96	Weighted Average
215		7.39% Pervious Area
2,693		92.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0097	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
0.3	31	0.0093	1.96		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	61	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 4S: Vaughan Mall



Summary for Subcatchment 10S: Roof

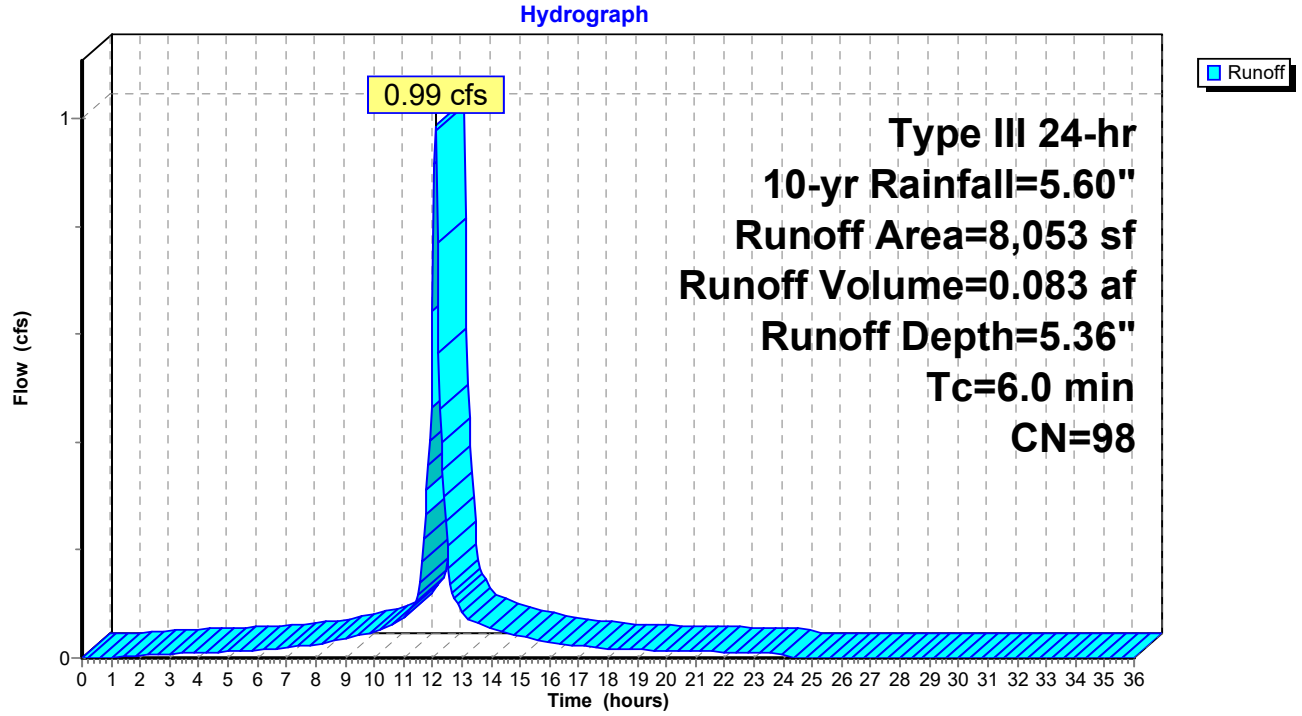
Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.083 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
8,053	98	Roofs, HSG C
8,053		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 10S: Roof



Summary for Subcatchment 11S: Roof

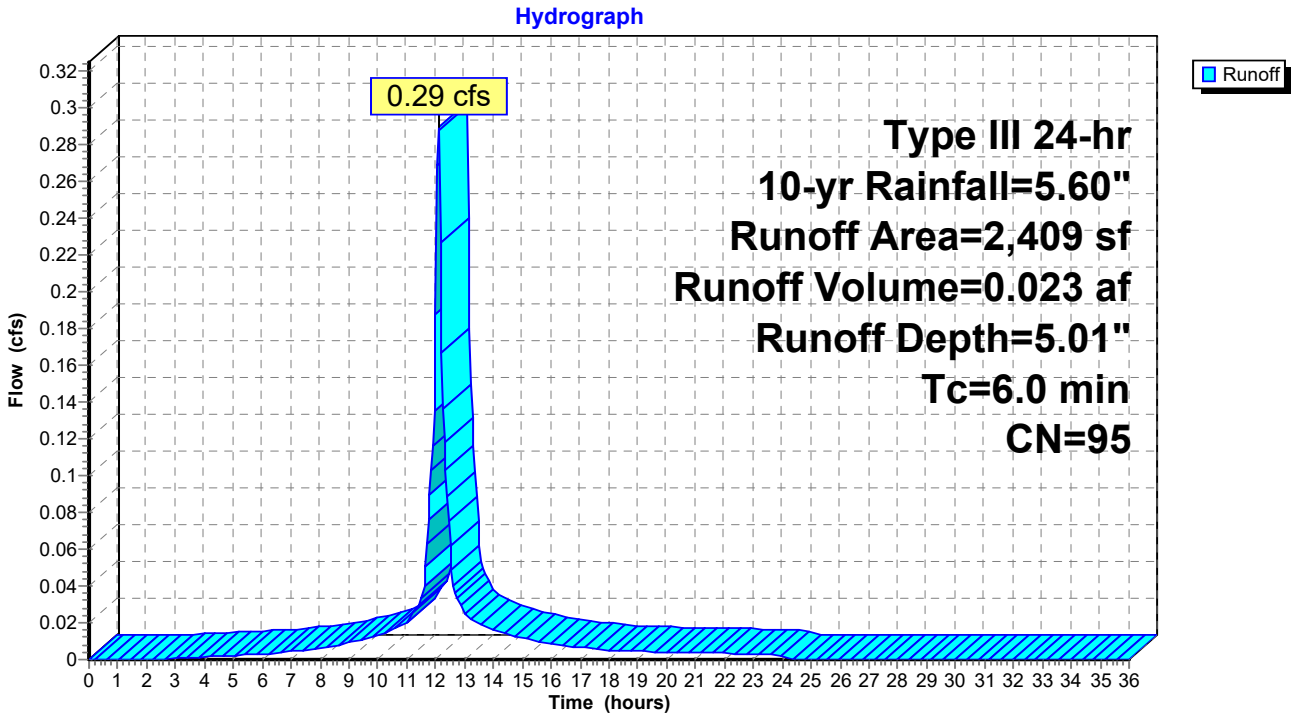
Runoff = 0.29 cfs @ 12.09 hrs, Volume= 0.023 af, Depth= 5.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
272	74	>75% Grass cover, Good, HSG C
2,137	98	Roofs, HSG C
2,409	95	Weighted Average
272		11.29% Pervious Area
2,137		88.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 11S: Roof



Summary for Subcatchment 12S: Roof

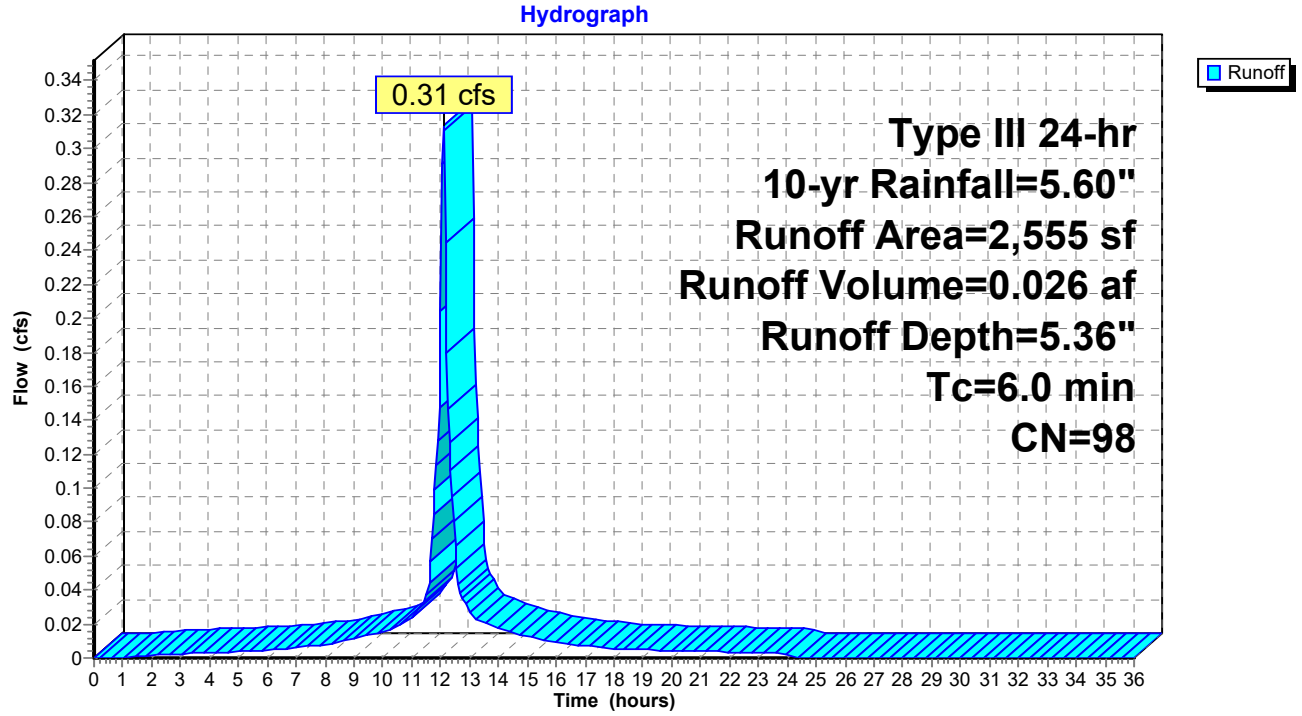
Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.026 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
2,555	98	Roofs, HSG C
2,555		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 12S: Roof



Summary for Subcatchment 20S: Worth Lot

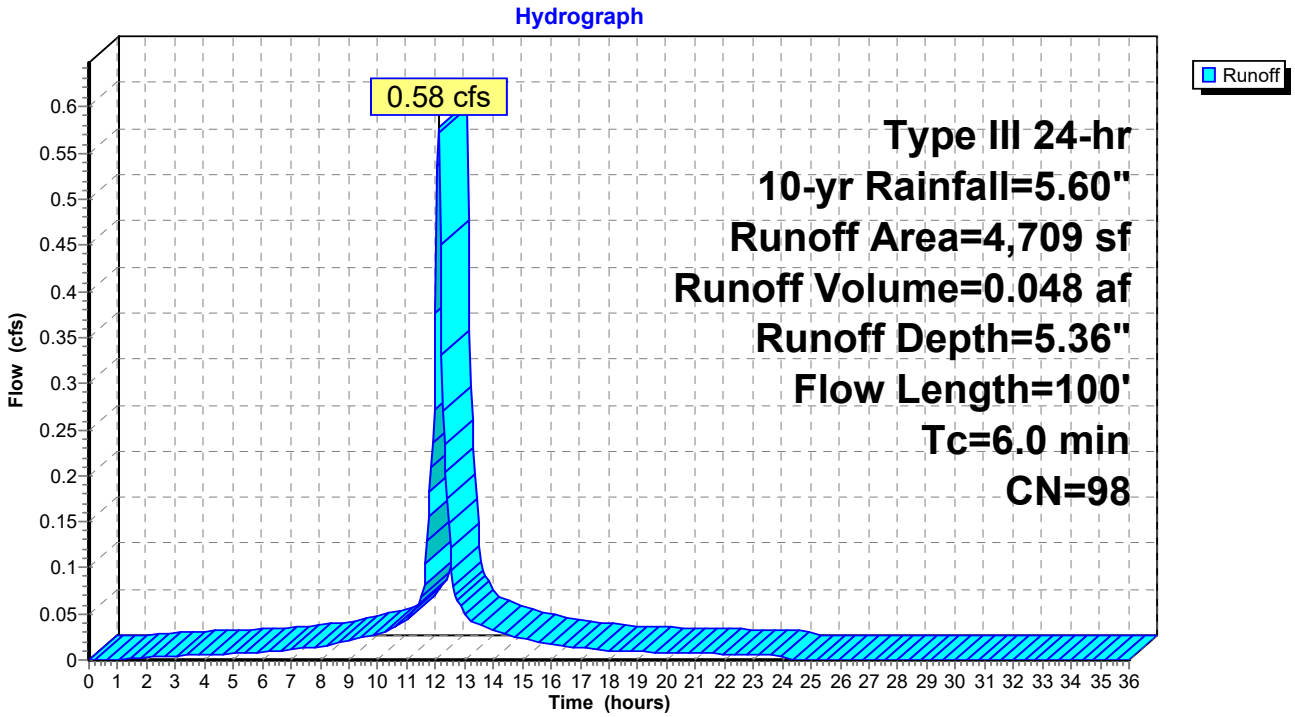
Runoff = 0.58 cfs @ 12.09 hrs, Volume= 0.048 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
39	74	>75% Grass cover, Good, HSG C
4,670	98	Paved parking, HSG C
4,709	98	Weighted Average
39		0.83% Pervious Area
4,670		99.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	24	0.0100	0.84		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
0.5	59	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	17	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	100	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 20S: Worth Lot



Summary for Subcatchment 21S: Worth Lot

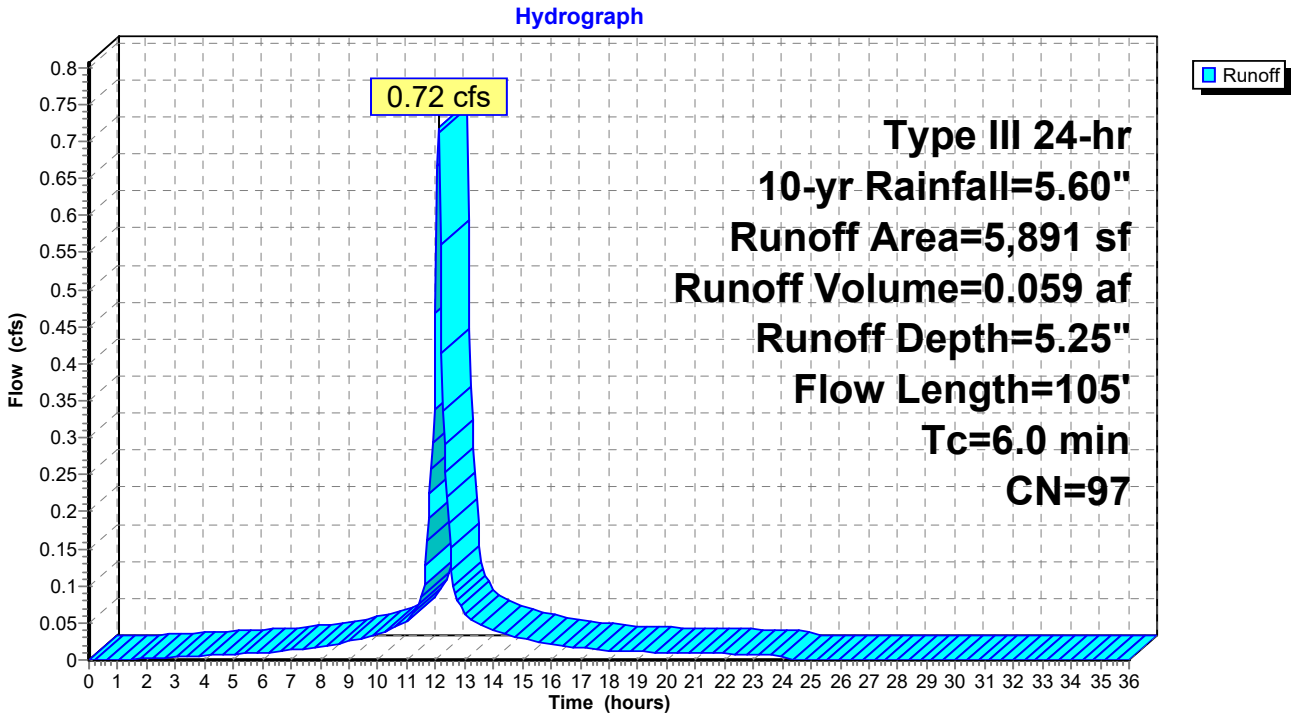
Runoff = 0.72 cfs @ 12.09 hrs, Volume= 0.059 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=5.60"

Area (sf)	CN	Description
280	74	>75% Grass cover, Good, HSG C
5,611	98	Paved parking, HSG C
5,891	97	Weighted Average
280		4.75% Pervious Area
5,611		95.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0100	0.88		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.69"
0.2	40	0.0180	2.72		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.3	35	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	105	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: Worth Lot



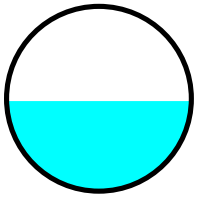
Summary for Reach 11R: Roof Leader

Inflow Area = 0.055 ac, 88.71% Impervious, Inflow Depth = 5.01" for 10-yr event
Inflow = 0.29 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.28 cfs @ 12.10 hrs, Volume= 0.023 af, Atten= 2%, Lag= 0.8 min

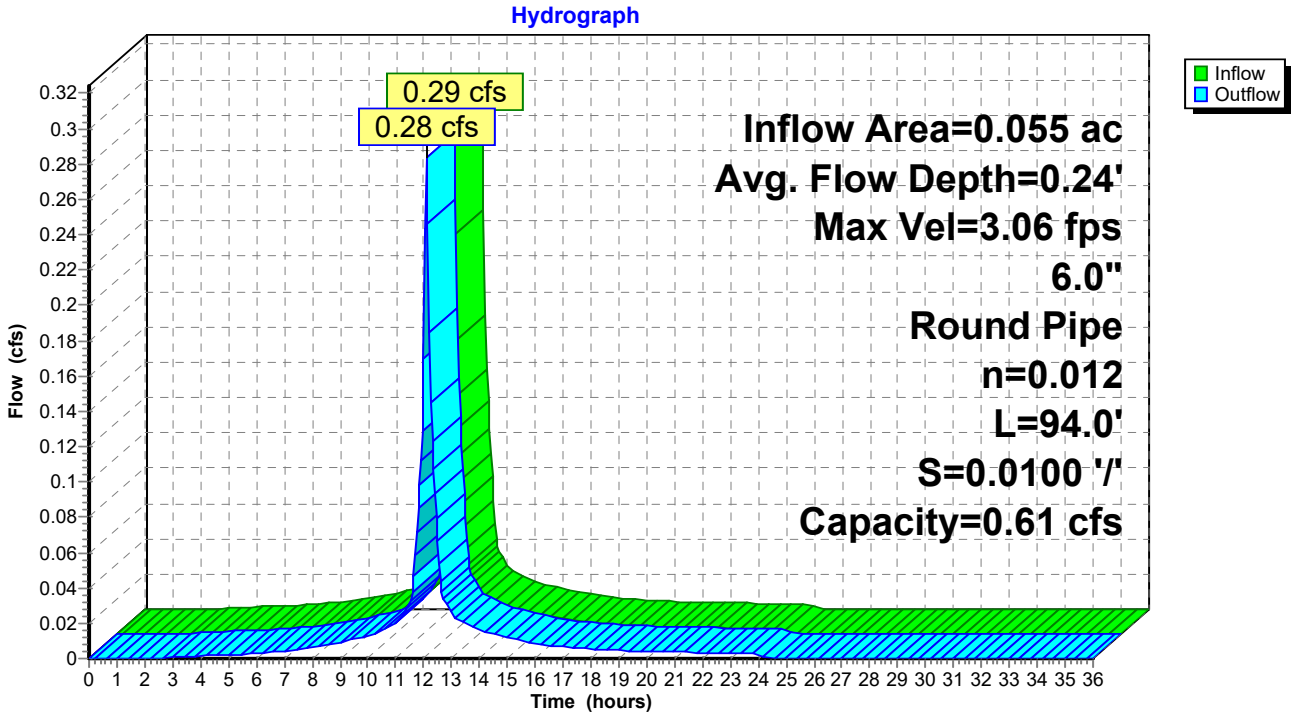
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.06 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.03 fps, Avg. Travel Time= 1.5 min

Peak Storage= 9 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 94.0' Slope= 0.0100 '/'
Inlet Invert= 9.10', Outlet Invert= 8.16'



Reach 11R: Roof Leader



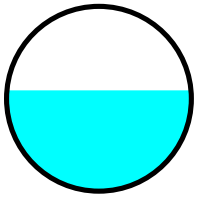
Summary for Reach 12R: Roof Leader

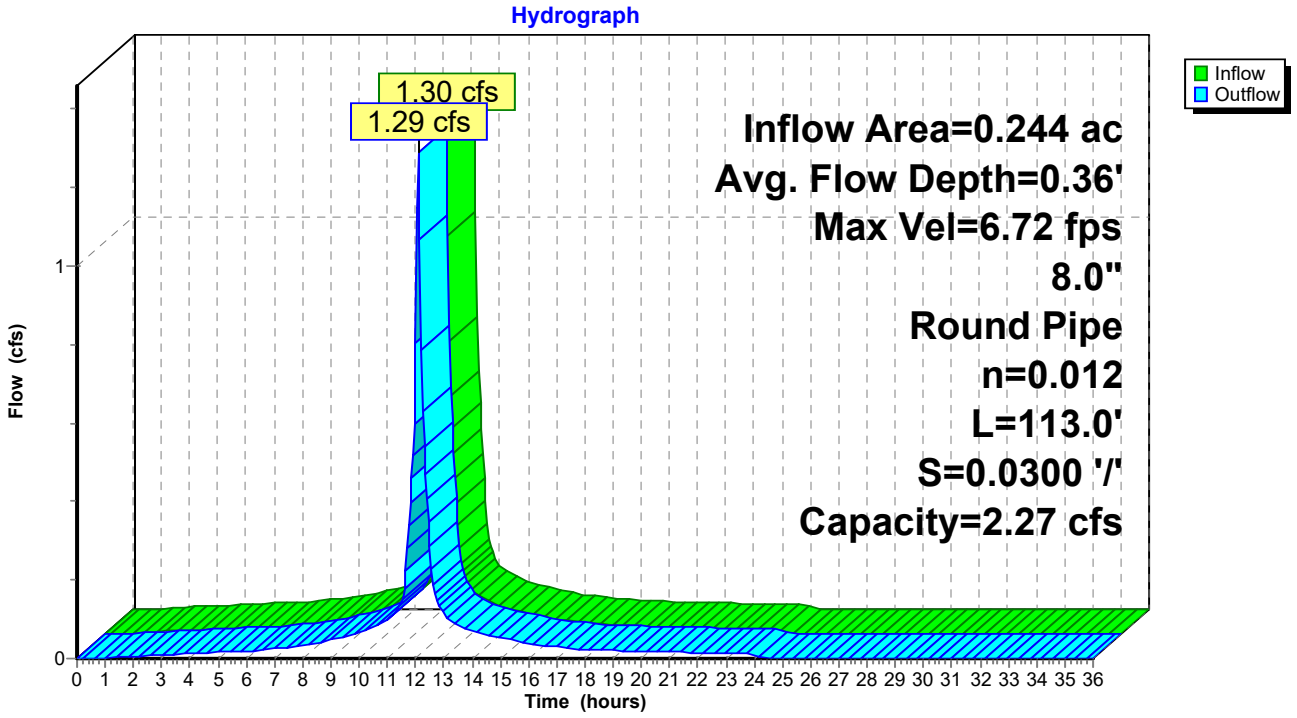
Inflow Area = 0.244 ac,100.00% Impervious, Inflow Depth = 5.36" for 10-yr event
Inflow = 1.30 cfs @ 12.09 hrs, Volume= 0.109 af
Outflow = 1.29 cfs @ 12.09 hrs, Volume= 0.109 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.72 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.31 fps, Avg. Travel Time= 0.8 min

Peak Storage= 22 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 2.27 cfs

8.0" Round Pipe
n= 0.012
Length= 113.0' Slope= 0.0300 '/'
Inlet Invert= 11.47', Outlet Invert= 8.08'





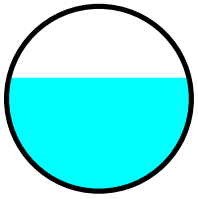
Summary for Reach 13R: Roof Leader

Inflow Area = 0.299 ac, 97.91% Impervious, Inflow Depth = 5.30" for 10-yr event
Inflow = 1.58 cfs @ 12.10 hrs, Volume= 0.132 af
Outflow = 1.57 cfs @ 12.10 hrs, Volume= 0.132 af, Atten= 0%, Lag= 0.1 min

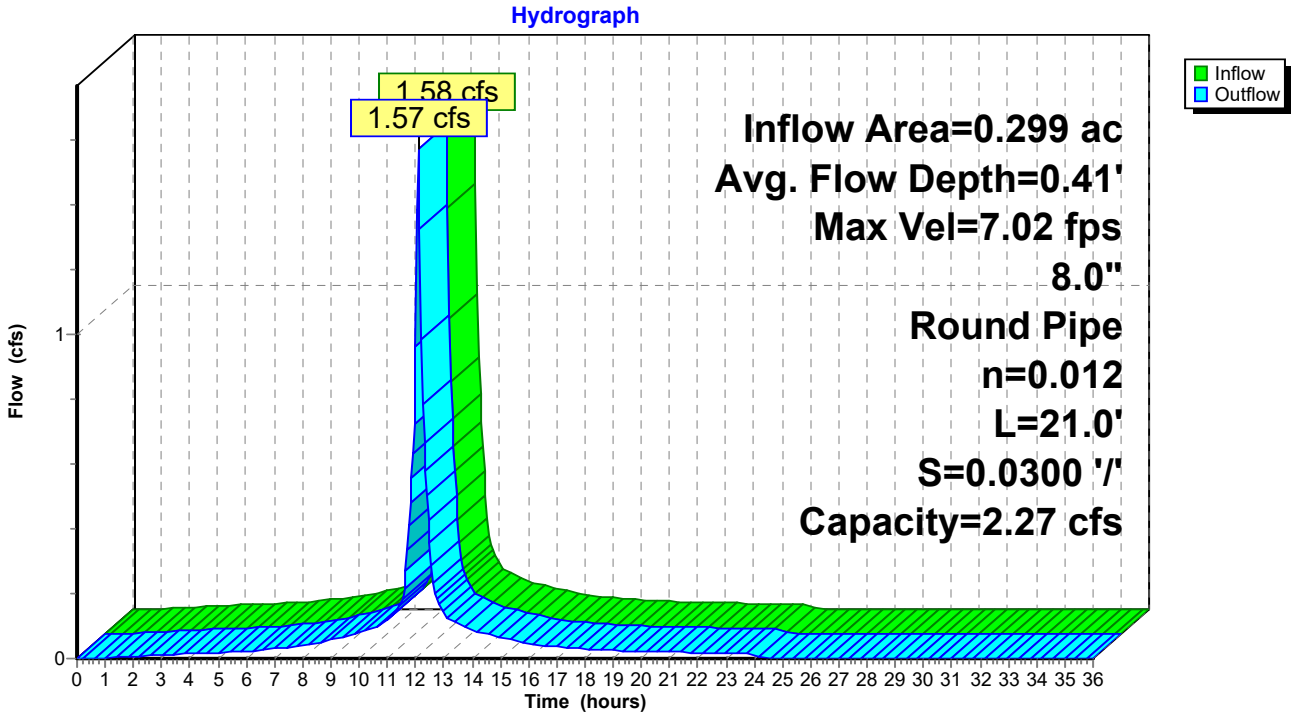
Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.02 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.43 fps, Avg. Travel Time= 0.1 min

Peak Storage= 5 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 2.27 cfs

8.0" Round Pipe
n= 0.012
Length= 21.0' Slope= 0.0300 '/'
Inlet Invert= 8.08', Outlet Invert= 7.45'



Reach 13R: Roof Leader

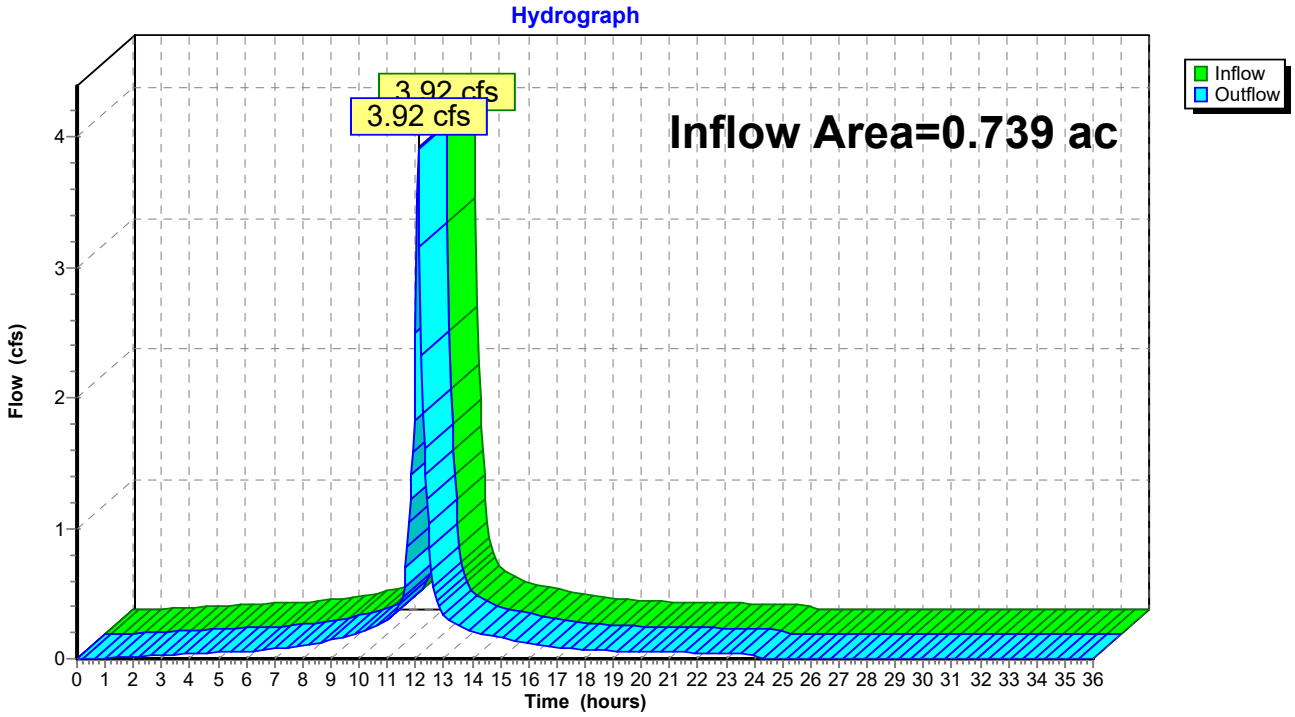


Summary for Reach 100R: POA #1

Inflow Area = 0.739 ac, 98.20% Impervious, Inflow Depth = 5.34" for 10-yr event
Inflow = 3.92 cfs @ 12.09 hrs, Volume= 0.328 af
Outflow = 3.92 cfs @ 12.09 hrs, Volume= 0.328 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach 100R: POA #1

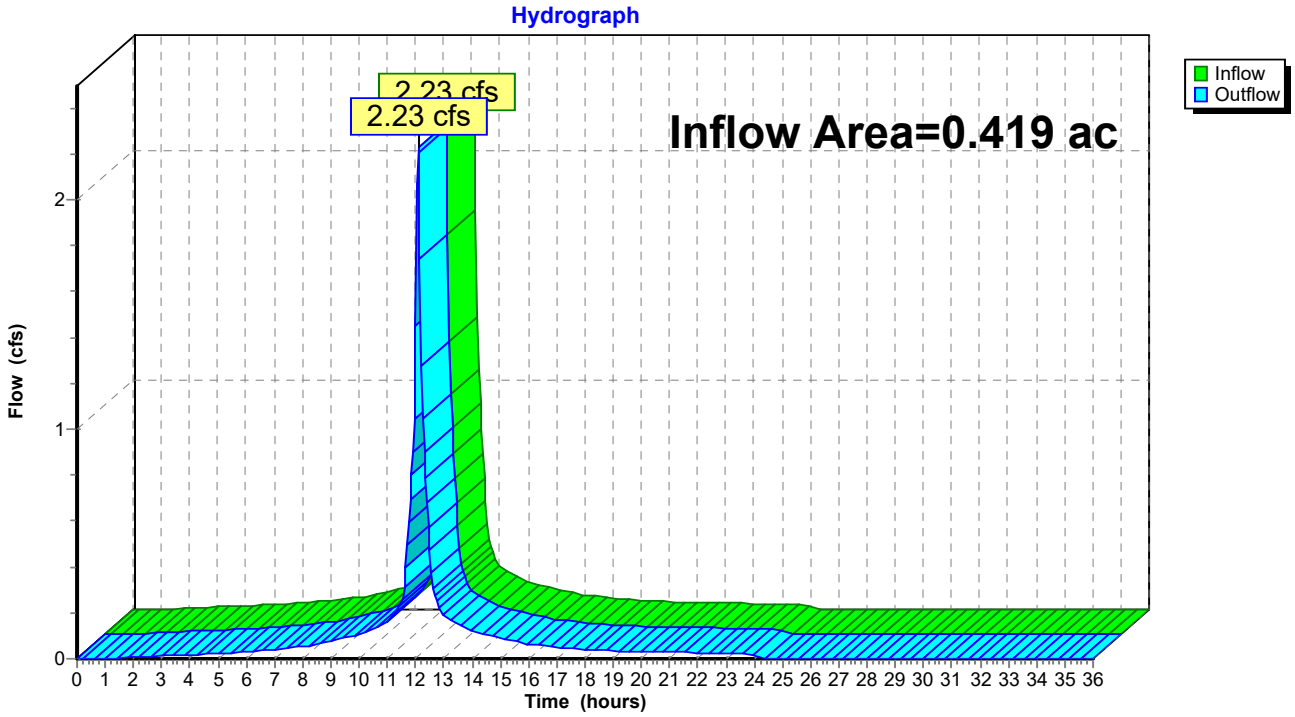


Summary for Reach 200R: POA #2

Inflow Area = 0.419 ac, 94.97% Impervious, Inflow Depth = 5.23" for 10-yr event
Inflow = 2.23 cfs @ 12.09 hrs, Volume= 0.182 af
Outflow = 2.23 cfs @ 12.09 hrs, Volume= 0.182 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Reach 200R: POA #2



Summary for Pond 2P: CB #25851

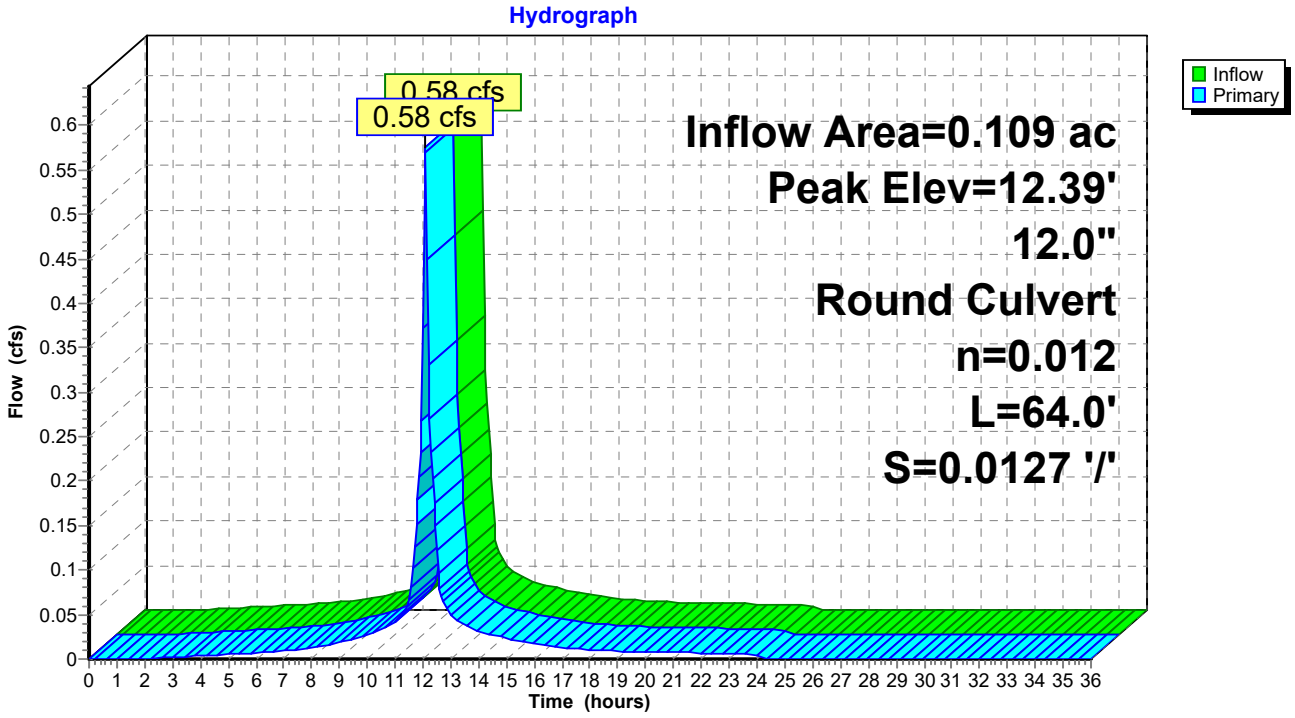
Inflow Area = 0.109 ac, 91.90% Impervious, Inflow Depth = 5.13" for 10-yr event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 0.047 af
Outflow = 0.58 cfs @ 12.09 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.09 hrs, Volume= 0.047 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 12.39' @ 12.09 hrs
Flood Elev= 16.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.01'	**12.0" Round Culvert** L= 64.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.01' / 11.20' S= 0.0127 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.56 cfs @ 12.09 hrs HW=12.38' (Free Discharge)
1=Culvert (Inlet Controls 0.56 cfs @ 2.08 fps)

Pond 2P: CB #25851



Summary for Pond 3P: DMH #P1

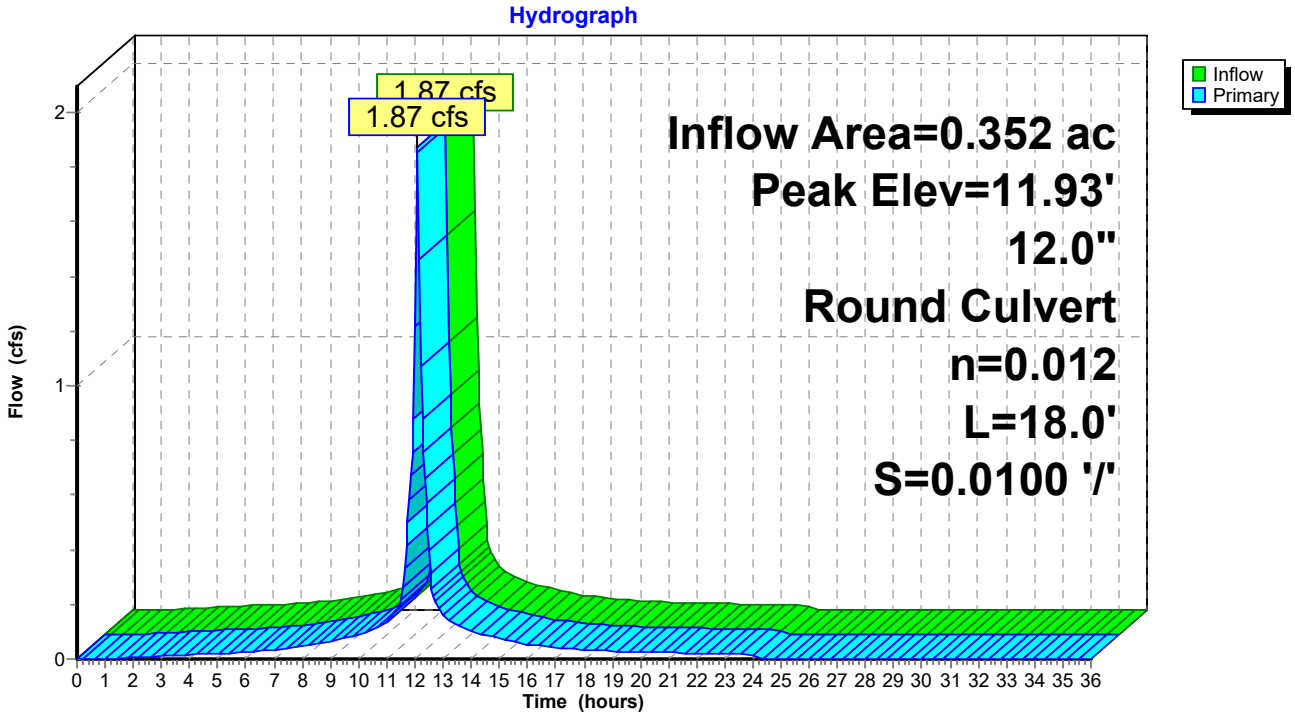
Inflow Area = 0.352 ac, 95.42% Impervious, Inflow Depth = 5.25" for 10-yr event
Inflow = 1.87 cfs @ 12.09 hrs, Volume= 0.154 af
Outflow = 1.87 cfs @ 12.09 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min
Primary = 1.87 cfs @ 12.09 hrs, Volume= 0.154 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 11.93' @ 12.09 hrs
Flood Elev= 15.45'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.10'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.10' / 10.92' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.82 cfs @ 12.09 hrs HW=11.92' (Free Discharge)
1=Culvert (Barrel Controls 1.82 cfs @ 3.60 fps)

Pond 3P: DMH #P1



Summary for Pond 4P: CB #3763

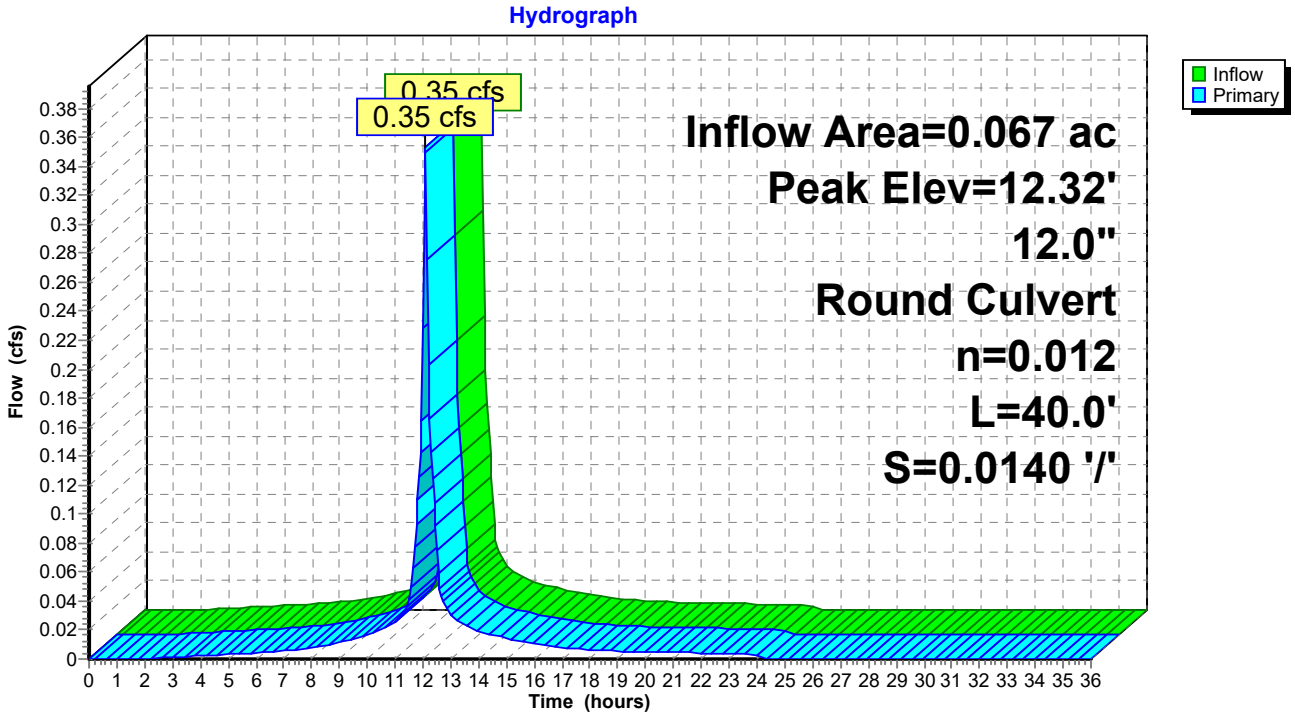
Inflow Area = 0.067 ac, 92.61% Impervious, Inflow Depth = 5.13" for 10-yr event
Inflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.09 hrs, Volume= 0.029 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 12.32' @ 12.09 hrs
Flood Elev= 14.71'

Device	Routing	Invert	Outlet Devices
#1	Primary	12.03'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.03' / 11.47' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.09 hrs HW=12.32' (Free Discharge)
1=Culvert (Inlet Controls 0.34 cfs @ 1.83 fps)

Pond 4P: CB #3763



Summary for Pond 20P: CB #P3

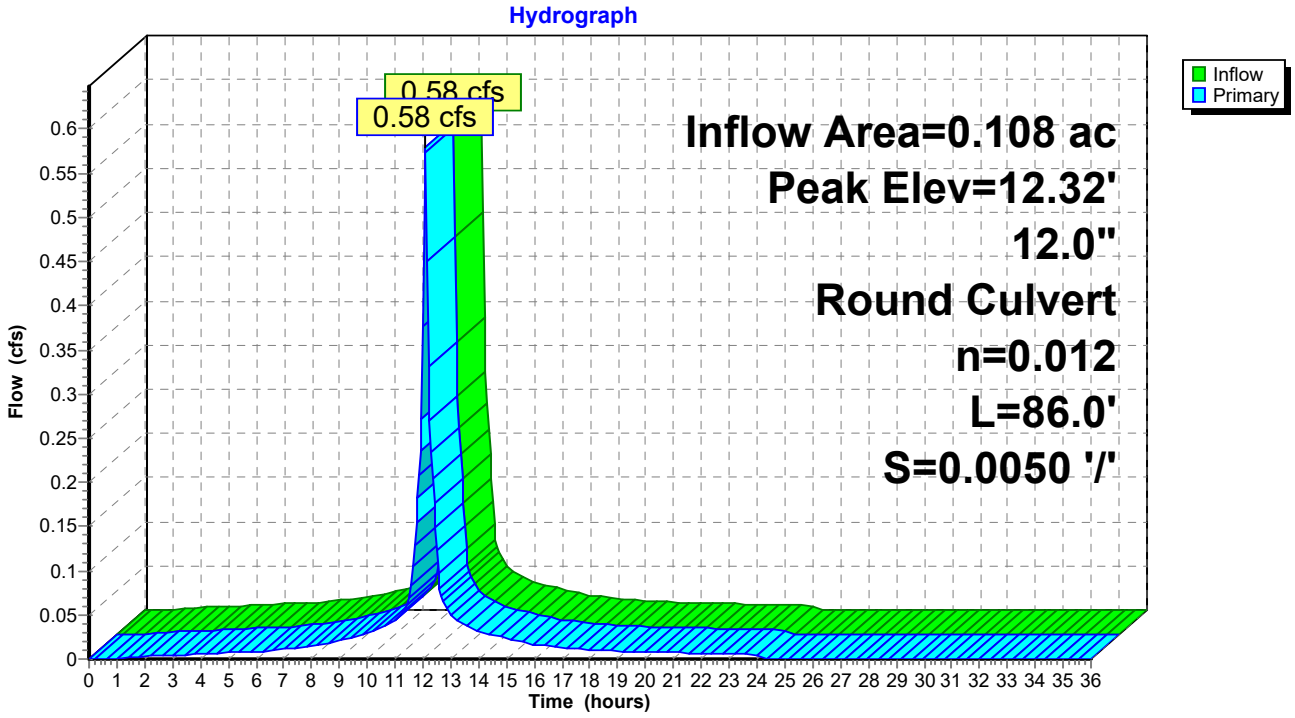
Inflow Area = 0.108 ac, 99.17% Impervious, Inflow Depth = 5.36" for 10-yr event
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 0.58 cfs @ 12.09 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.09 hrs, Volume= 0.048 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 12.32' @ 12.09 hrs
Flood Elev= 15.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.89'	**12.0" Round Culvert** L= 86.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.89' / 11.46' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.56 cfs @ 12.09 hrs HW=12.32' (Free Discharge)
1=Culvert (Barrel Controls 0.56 cfs @ 2.61 fps)

Pond 20P: CB #P3



Summary for Pond 21P: CB #P2

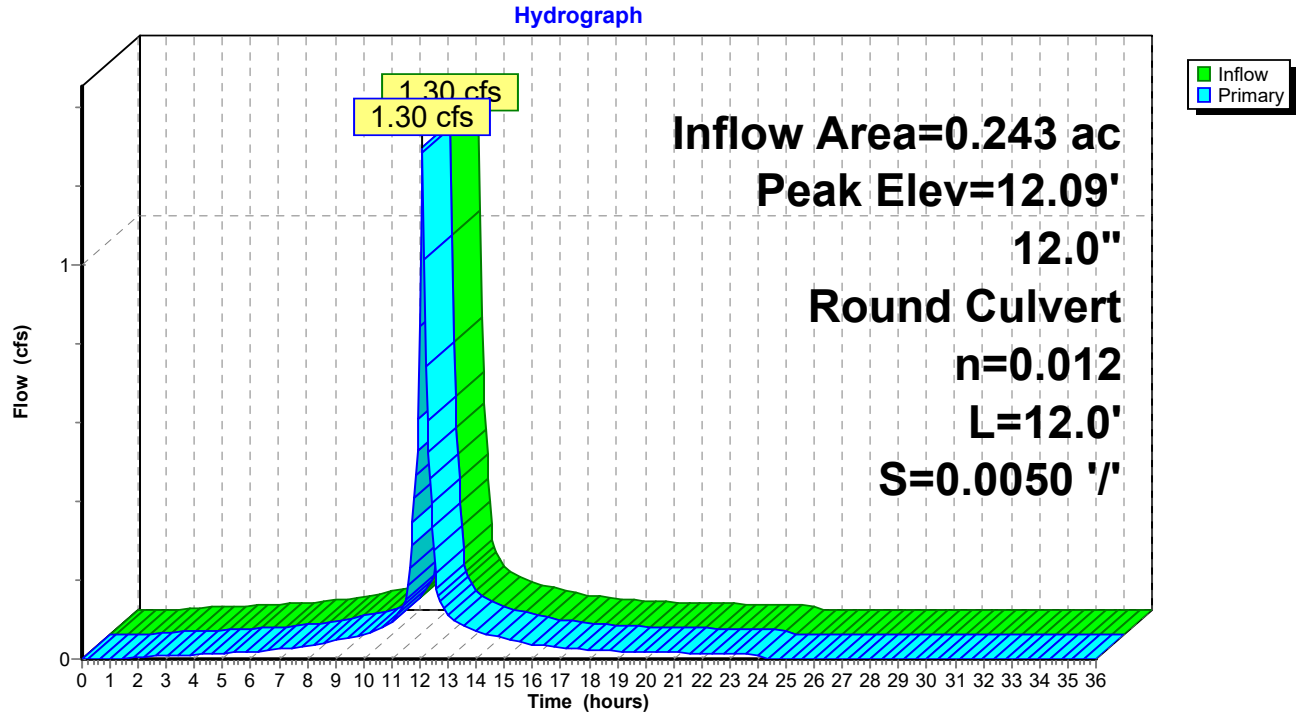
Inflow Area = 0.243 ac, 96.99% Impervious, Inflow Depth = 5.30" for 10-yr event
Inflow = 1.30 cfs @ 12.09 hrs, Volume= 0.107 af
Outflow = 1.30 cfs @ 12.09 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min
Primary = 1.30 cfs @ 12.09 hrs, Volume= 0.107 af

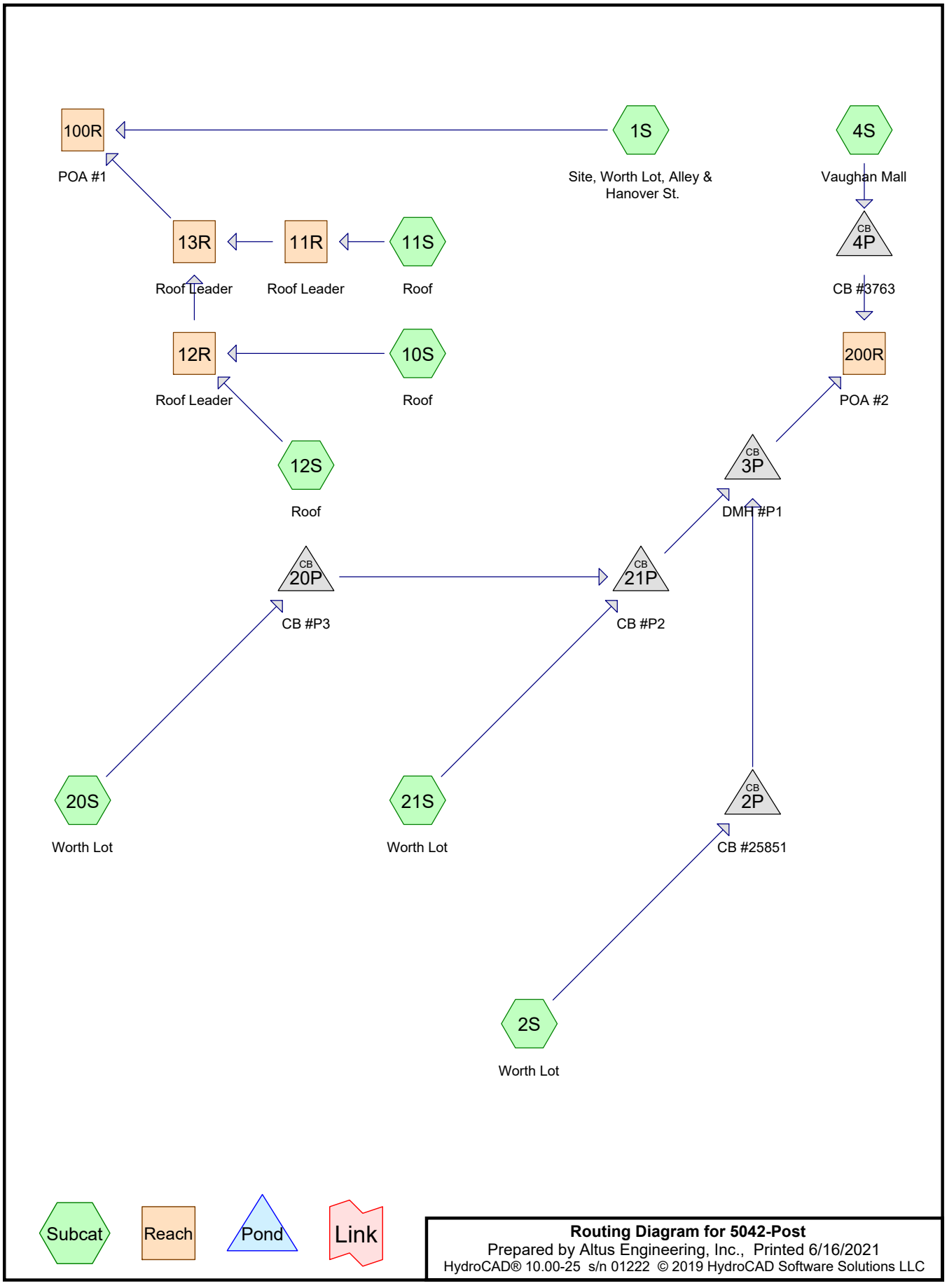
Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 12.09' @ 12.09 hrs
Flood Elev= 15.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	11.36'	**12.0" Round Culvert** L= 12.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.36' / 11.30' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.26 cfs @ 12.09 hrs HW=12.08' (Free Discharge)
1=Culvert (Barrel Controls 1.26 cfs @ 2.93 fps)

Pond 21P: CB #P2





Routing Diagram for 5042-Post
Prepared by Altus Engineering, Inc., Printed 6/16/2021
HydroCAD® 10.00-25 s/n 01222 © 2019 HydroCAD Software Solutions LLC

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Site, Worth Lot, Alley & Runoff Area=19,157 sf 98.39% Impervious Runoff Depth=6.86"
Flow Length=347' Tc=6.0 min CN=98 Runoff=2.99 cfs 0.251 af

Subcatchment 2S: Worth Lot Runoff Area=4,739 sf 91.90% Impervious Runoff Depth=6.62"
Flow Length=124' Tc=6.0 min CN=96 Runoff=0.73 cfs 0.060 af

Subcatchment 4S: Vaughan Mall Runoff Area=2,908 sf 92.61% Impervious Runoff Depth=6.62"
Flow Length=61' Tc=6.0 min CN=96 Runoff=0.45 cfs 0.037 af

Subcatchment 10S: Roof Runoff Area=8,053 sf 100.00% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=98 Runoff=1.26 cfs 0.106 af

Subcatchment 11S: Roof Runoff Area=2,409 sf 88.71% Impervious Runoff Depth=6.51"
Tc=6.0 min CN=95 Runoff=0.37 cfs 0.030 af

Subcatchment 12S: Roof Runoff Area=2,555 sf 100.00% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=98 Runoff=0.40 cfs 0.034 af

Subcatchment 20S: Worth Lot Runoff Area=4,709 sf 99.17% Impervious Runoff Depth=6.86"
Flow Length=100' Tc=6.0 min CN=98 Runoff=0.74 cfs 0.062 af

Subcatchment 21S: Worth Lot Runoff Area=5,891 sf 95.25% Impervious Runoff Depth=6.74"
Flow Length=105' Tc=6.0 min CN=97 Runoff=0.92 cfs 0.076 af

Reach 11R: Roof Leader Avg. Flow Depth=0.28' Max Vel=3.25 fps Inflow=0.37 cfs 0.030 af
6.0" Round Pipe n=0.012 L=94.0' S=0.0100 '/' Capacity=0.61 cfs Outflow=0.36 cfs 0.030 af

Reach 12R: Roof Leader Avg. Flow Depth=0.42' Max Vel=7.09 fps Inflow=1.66 cfs 0.139 af
8.0" Round Pipe n=0.012 L=113.0' S=0.0300 '/' Capacity=2.27 cfs Outflow=1.64 cfs 0.139 af

Reach 13R: Roof Leader Avg. Flow Depth=0.49' Max Vel=7.33 fps Inflow=2.01 cfs 0.169 af
8.0" Round Pipe n=0.012 L=21.0' S=0.0300 '/' Capacity=2.27 cfs Outflow=2.00 cfs 0.169 af

Reach 100R: POA #1 Inflow=4.99 cfs 0.421 af
Outflow=4.99 cfs 0.421 af

Reach 200R: POA #2 Inflow=2.84 cfs 0.235 af
Outflow=2.84 cfs 0.235 af

Pond 2P: CB #25851 Peak Elev=12.44' Inflow=0.73 cfs 0.060 af
12.0" Round Culvert n=0.012 L=64.0' S=0.0127 '/' Outflow=0.73 cfs 0.060 af

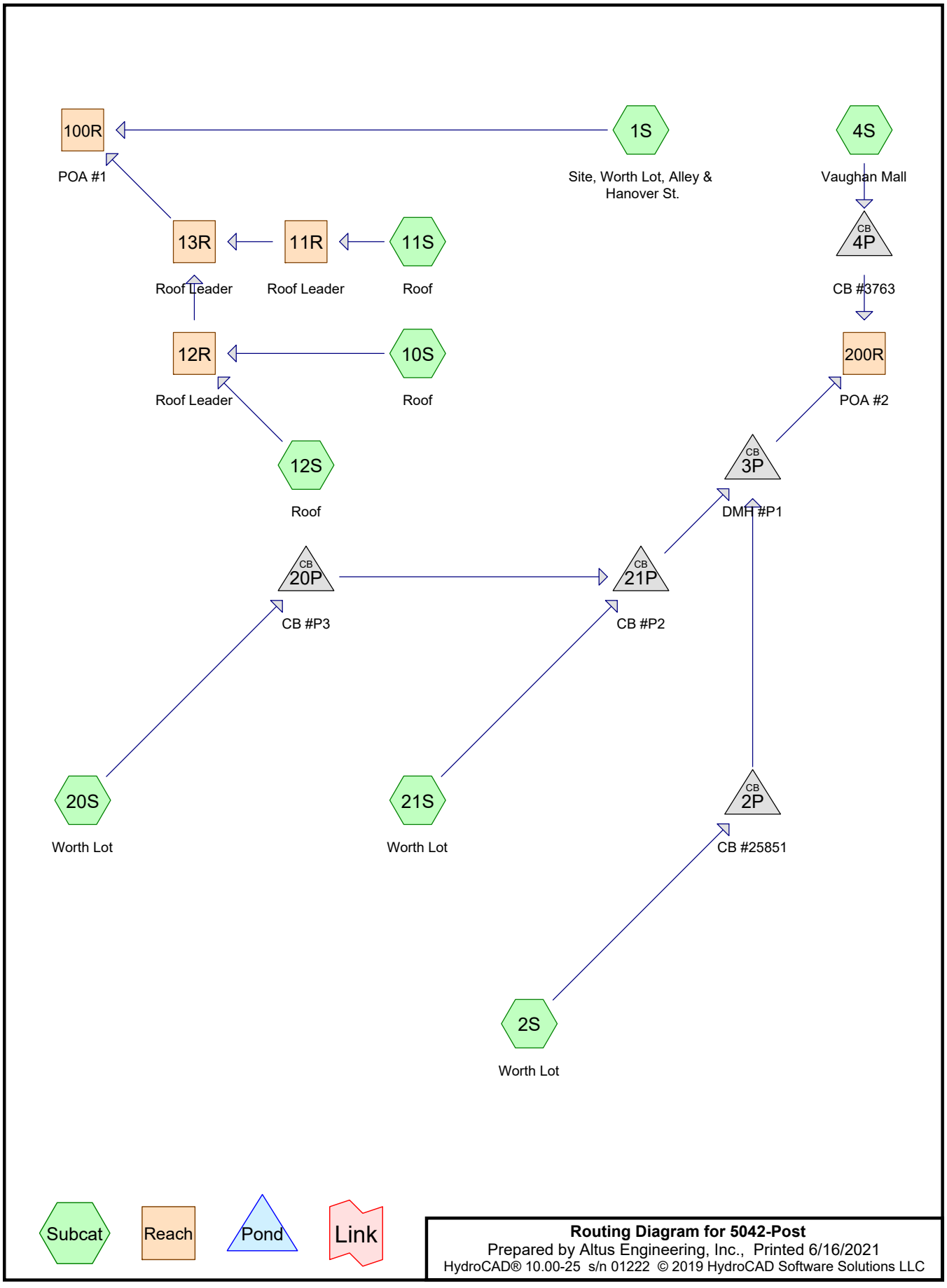
Pond 3P: DMH #P1 Peak Elev=12.09' Inflow=2.39 cfs 0.198 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0100 '/' Outflow=2.39 cfs 0.198 af

Pond 4P: CB #3763 Peak Elev=12.36' Inflow=0.45 cfs 0.037 af
12.0" Round Culvert n=0.012 L=40.0' S=0.0140 '/' Outflow=0.45 cfs 0.037 af

Pond 20P: CB #P3 Peak Elev=12.38' Inflow=0.74 cfs 0.062 af
12.0" Round Culvert n=0.012 L=86.0' S=0.0050 '/' Outflow=0.74 cfs 0.062 af

Pond 21P: CB #P2 Peak Elev=12.21' Inflow=1.65 cfs 0.138 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0050 '/' Outflow=1.65 cfs 0.138 af

Total Runoff Area = 1.158 ac Runoff Volume = 0.655 af Average Runoff Depth = 6.79"
2.97% Pervious = 0.034 ac 97.03% Impervious = 1.123 ac



Routing Diagram for 5042-Post
Prepared by Altus Engineering, Inc., Printed 6/16/2021
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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Site, Worth Lot, Alley & Runoff Area=19,157 sf 98.39% Impervious Runoff Depth=8.26"
Flow Length=347' Tc=6.0 min CN=98 Runoff=3.58 cfs 0.303 af

Subcatchment 2S: Worth Lot Runoff Area=4,739 sf 91.90% Impervious Runoff Depth=8.02"
Flow Length=124' Tc=6.0 min CN=96 Runoff=0.88 cfs 0.073 af

Subcatchment 4S: Vaughan Mall Runoff Area=2,908 sf 92.61% Impervious Runoff Depth=8.02"
Flow Length=61' Tc=6.0 min CN=96 Runoff=0.54 cfs 0.045 af

Subcatchment 10S: Roof Runoff Area=8,053 sf 100.00% Impervious Runoff Depth=8.26"
Tc=6.0 min CN=98 Runoff=1.51 cfs 0.127 af

Subcatchment 11S: Roof Runoff Area=2,409 sf 88.71% Impervious Runoff Depth=7.90"
Tc=6.0 min CN=95 Runoff=0.45 cfs 0.036 af

Subcatchment 12S: Roof Runoff Area=2,555 sf 100.00% Impervious Runoff Depth=8.26"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.040 af

Subcatchment 20S: Worth Lot Runoff Area=4,709 sf 99.17% Impervious Runoff Depth=8.26"
Flow Length=100' Tc=6.0 min CN=98 Runoff=0.88 cfs 0.074 af

Subcatchment 21S: Worth Lot Runoff Area=5,891 sf 95.25% Impervious Runoff Depth=8.14"
Flow Length=105' Tc=6.0 min CN=97 Runoff=1.10 cfs 0.092 af

Reach 11R: Roof Leader Avg. Flow Depth=0.32' Max Vel=3.38 fps Inflow=0.45 cfs 0.036 af
6.0" Round Pipe n=0.012 L=94.0' S=0.0100 '/' Capacity=0.61 cfs Outflow=0.44 cfs 0.036 af

Reach 12R: Roof Leader Avg. Flow Depth=0.48' Max Vel=7.32 fps Inflow=1.98 cfs 0.168 af
8.0" Round Pipe n=0.012 L=113.0' S=0.0300 '/' Capacity=2.27 cfs Outflow=1.97 cfs 0.168 af

Reach 13R: Roof Leader Avg. Flow Depth=0.59' Max Vel=7.38 fps Inflow=2.41 cfs 0.204 af
8.0" Round Pipe n=0.012 L=21.0' S=0.0300 '/' Capacity=2.27 cfs Outflow=2.40 cfs 0.204 af

Reach 100R: POA #1 Inflow=5.98 cfs 0.507 af
Outflow=5.98 cfs 0.507 af

Reach 200R: POA #2 Inflow=3.40 cfs 0.283 af
Outflow=3.40 cfs 0.283 af

Pond 2P: CB #25851 Peak Elev=12.49' Inflow=0.88 cfs 0.073 af
12.0" Round Culvert n=0.012 L=64.0' S=0.0127 '/' Outflow=0.88 cfs 0.073 af

Pond 3P: DMH #P1 Peak Elev=12.24' Inflow=2.86 cfs 0.239 af
12.0" Round Culvert n=0.012 L=18.0' S=0.0100 '/' Outflow=2.86 cfs 0.239 af

Pond 4P: CB #3763 Peak Elev=12.40' Inflow=0.54 cfs 0.045 af
12.0" Round Culvert n=0.012 L=40.0' S=0.0140 '/' Outflow=0.54 cfs 0.045 af

Pond 20P: CB #P3 Peak Elev=12.43' Inflow=0.88 cfs 0.074 af
12.0" Round Culvert n=0.012 L=86.0' S=0.0050 '/' Outflow=0.88 cfs 0.074 af

Pond 21P: CB #P2 Peak Elev=12.31' Inflow=1.98 cfs 0.166 af
12.0" Round Culvert n=0.012 L=12.0' S=0.0050 '/' Outflow=1.98 cfs 0.166 af

Total Runoff Area = 1.158 ac Runoff Volume = 0.790 af Average Runoff Depth = 8.19"
2.97% Pervious = 0.034 ac 97.03% Impervious = 1.123 ac

Section 5

NRCC Extreme Precipitation Table

ALTUS
ENGINEERING, INC.

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.763 degrees West
Latitude	43.072 degrees North
Elevation	0 feet
Date/Time	Wed, 23 Dec 2020 12:00:25 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.66	2.92	**1yr**	2.35	2.81	3.22	3.94	4.55	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.49	3.21	3.57	**2yr**	2.84	3.43	3.94	4.68	5.33	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.43	3.14	4.07	4.58	**5yr**	3.60	4.40	5.04	5.94	6.70	**5yr**
10yr	0.41	0.65	0.82	1.12	1.45	1.89	**10yr**	1.25	1.73	2.23	2.89	3.75	4.87	5.53	**10yr**	4.31	5.32	6.09	7.11	7.98	**10yr**
25yr	0.48	0.76	0.97	1.34	1.77	2.34	**25yr**	1.53	2.14	2.78	3.63	4.74	6.17	7.10	**25yr**	5.46	6.83	7.80	9.03	10.05	**25yr**
50yr	0.54	0.86	1.10	1.54	2.07	2.76	**50yr**	1.79	2.53	3.29	4.32	5.66	7.39	8.58	**50yr**	6.54	8.25	9.42	10.81	11.98	**50yr**
100yr	0.60	0.97	1.25	1.77	2.42	3.26	**100yr**	2.09	2.98	3.90	5.16	6.77	8.85	10.38	**100yr**	7.83	9.98	11.38	12.96	14.27	**100yr**
200yr	0.67	1.10	1.43	2.05	2.82	3.83	**200yr**	2.44	3.52	4.62	6.13	8.08	10.61	12.55	**200yr**	9.39	12.07	13.76	15.55	17.02	**200yr**
500yr	0.80	1.31	1.71	2.48	3.48	4.76	**500yr**	3.00	4.38	5.76	7.70	10.22	13.48	16.14	**500yr**	11.93	15.52	17.67	19.78	21.49	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.63	0.86	0.92	1.33	1.68	2.24	2.49	**1yr**	1.98	2.40	2.87	3.18	3.90	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.06	3.45	**2yr**	2.71	3.32	3.82	4.55	5.08	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.79	4.19	**5yr**	3.35	4.03	4.72	5.53	6.24	**5yr**
10yr	0.39	0.59	0.73	1.03	1.33	1.60	**10yr**	1.14	1.56	1.80	2.39	3.06	4.37	4.86	**10yr**	3.87	4.67	5.44	6.41	7.20	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.75	3.53	4.72	5.89	**25yr**	4.18	5.66	6.65	7.79	8.68	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.17	**50yr**	1.52	2.12	2.35	3.07	3.93	5.33	6.80	**50yr**	4.72	6.54	7.72	9.04	10.02	**50yr**
100yr	0.54	0.81	1.01	1.47	2.01	2.47	**100yr**	1.73	2.41	2.63	3.41	4.35	6.00	7.85	**100yr**	5.31	7.55	8.98	10.51	11.56	**100yr**
200yr	0.59	0.89	1.13	1.63	2.28	2.81	**200yr**	1.96	2.75	2.93	3.78	4.79	6.72	9.06	**200yr**	5.95	8.71	10.42	12.22	13.37	**200yr**
500yr	0.68	1.02	1.31	1.90	2.71	3.36	**500yr**	2.34	3.29	3.41	4.31	5.45	7.82	10.94	**500yr**	6.92	10.52	12.69	14.96	16.19	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	2.98	3.16	**1yr**	2.64	3.04	3.58	4.37	5.04	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.42	3.70	**2yr**	3.03	3.56	4.09	4.84	5.63	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.62	**5yr**	1.15	1.58	1.88	2.53	3.25	4.34	4.96	**5yr**	3.84	4.77	5.38	6.37	7.16	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.98	**10yr**	1.39	1.93	2.28	3.11	3.95	5.34	6.20	**10yr**	4.72	5.96	6.82	7.84	8.75	**10yr**
25yr	0.58	0.88	1.09	1.56	2.05	2.57	**25yr**	1.77	2.51	2.95	4.07	5.15	7.78	8.34	**25yr**	6.88	8.02	9.15	10.34	11.41	**25yr**
50yr	0.67	1.02	1.27	1.83	2.46	3.13	**50yr**	2.12	3.06	3.60	5.00	6.32	9.74	10.46	**50yr**	8.62	10.06	11.44	12.72	13.96	**50yr**
100yr	0.79	1.19	1.49	2.16	2.96	3.81	**100yr**	2.55	3.72	4.37	6.16	7.76	12.18	13.10	**100yr**	10.78	12.60	14.31	15.69	17.09	**100yr**
200yr	0.92	1.39	1.76	2.55	3.56	4.65	**200yr**	3.07	4.55	5.34	7.58	9.54	15.28	16.44	**200yr**	13.53	15.81	17.92	19.35	20.92	**200yr**
500yr	1.15	1.71	2.19	3.19	4.53	6.04	**500yr**	3.91	5.90	6.93	10.02	12.56	20.65	22.20	**500yr**	18.27	21.34	24.13	25.51	27.34	**500yr**

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Section 6

NRCS Soils Report

ALTUS
ENGINEERING, INC.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire

June 11, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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699—Urban land..... 10

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,100 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 22, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
699	Urban land	6.0	100.0%
Totals for Area of Interest		**6.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

Section 7

Stormwater Operations & Maintenance Plan

ALTUS
ENGINEERING, INC.

STORMWATER INSPECTION AND MAINTENANCE MANUAL

64 Vaughan Mall
Assessor's Map 126, Lot 1

OWNER AT TIME OF SITE PLAN APPROVAL:
64 Vaughan Mall, LLC
41 Industrial Drive
Exeter, NH 03833

Proper inspection, maintenance, and repair are key elements in maintaining a successful stormwater management program on a developed property. Routine inspections ensure permit compliance and reduce the potential for deterioration of infrastructure or reduced water quality. The following responsible parties shall be in charge of managing the stormwater facilities:

RESPONSIBLE PARTIES:

Owner:	*64 Vaughan Mall, LLC or Assigns*		*(603) 778-9999*
	Name	*Company*	*Phone*
Inspection:	*64 Vaughan Mall, LLC or Assigns*		*(603) 778-9999*
	Name	*Company*	*Phone*
Maintenance:	*64 Vaughan Mall, LLC or Assigns*		*(603) 778-9999*
	Name	*Company*	*Phone*

NOTES:

Inspection and maintenance responsibilities shall transfer to any future property owner(s) and any related homeowner's association (HOA).

This manual shall become part of any HOA documents.

This manual shall be updated as needed to reflect any changes related to any transfer of ownership and/or any delegation of inspection and maintenance responsibilities to an HOA.

ALTUS ENGINEERING, INC.

CULVERTS AND DRAINAGE PIPES

Function – Culverts and drainage pipes convey stormwater away from buildings, walkways, and parking areas to surface waters or closed drainage systems.

Maintenance

- Culverts and drainage pipes shall be inspected semi-annually, or more often as needed, for accumulation of debris and structural integrity. Leaves and other debris shall be removed from inlets and outlets to insure the functionality of drainage structures. Debris shall be disposed of on site where it will not concentrate back at the drainage structures or at a solid waste disposal facility.
- Downspouts connected to a drainage system should be inspected annually to ensure that the connections are directing runoff as intended. Any loose or displaced downspout connections should be reconnected as necessary.

TRENCH DRAINS

Function – Trench Drains collect stormwater, primarily from paved surfaces. Stormwater from paved areas often contains sediment and contaminants. Trench drains may trap sediment and debris.

Maintenance

- Remove leaves, sediment and debris from structure grates on an as-needed basis.
- Sumps shall be inspected and cleaned annually and any removed sediment and debris shall be disposed of at a solid waste disposal facility.
- Trench drains located in an enclosed areas such as basements and parking garages may be equipped with evaporators. In the event that an evaporator fails, a qualified professional should be retained for assessment and repair.

LANDSCAPED AREAS – ORGANIC FERTILIZER MANAGEMENT

Function – All fertilizer used on site shall be certified organic. Organic fertilizer management involves controlling the rate, timing and method of organic fertilizer application so that the nutrients are taken up by the plants thereby reducing the chance of polluting surface and ground waters. Organic fertilizer management can be effective in reducing the amounts of phosphorus and nitrogen in runoff from landscaped areas, particularly lawns.

Maintenance

- Have the soil tested by your landscaper or local Soil Conservation Service for nutrient requirements and follow the recommendations.
- Do not apply organic fertilizer to frozen ground.
- Clean up any organic fertilizer spills.
- Do not allow organic fertilizer to be broadcast into water bodies.
- When organically fertilizing an area, water thoroughly, but do not create a situation where water runs off the surface towards a water body or drainage structure.

LANDSCAPED AREAS - LITTER CONTROL

Function – Landscaped areas tend to filter debris and contaminates that may block drainage systems and pollute the surface and ground waters.

Maintenance

- Litter Control and landscape maintenance involves removing litter such as trash, leaves, lawn clippings, pet wastes, oil and chemicals from streets, parking lots and lawns before materials can be transported into surface waters.
- Litter control shall be implemented as part of the grounds maintenance program.

DE-ICING CHEMICAL USE AND STORAGE

Function – Sand and salt are used for de-icing of drives.

Maintenance

- Salt is highly water-soluble. Contamination of freshwater wetlands and other sensitive areas can occur when salt is stored in open areas. Salt piles shall be covered at all times if not stored in a shed. Runoff from stockpiles shall be contained to keep the runoff from entering the drainage system.
- When shared driveways and walks are free of snow and ice, they should be swept clean. Disposal shall be in a solid waste disposal facility.
- **Salt use shall be minimized.** Sand shall be used for de-icing activities when possible. Salt is highly water-soluble. Contamination of freshwater wetlands and other sensitive areas can occur when salt is stored in open areas. Owner shall not store salt piles on site.

GENERAL CLEAN UP

- Upon completion of the project, the contractor shall remove all temporary stormwater structures (i.e., temporary stone check dams, silt fence, temporary diversion swales, catch basin inlet filter, etc.). Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded. Remove any sediment in catch basins and clean drain pipes that may have accumulated during construction.
- Once in operation, all paved areas of the site should be swept free of sediment at least once annually at the end of winter/early spring prior to significant spring rains.

APPPENDIX

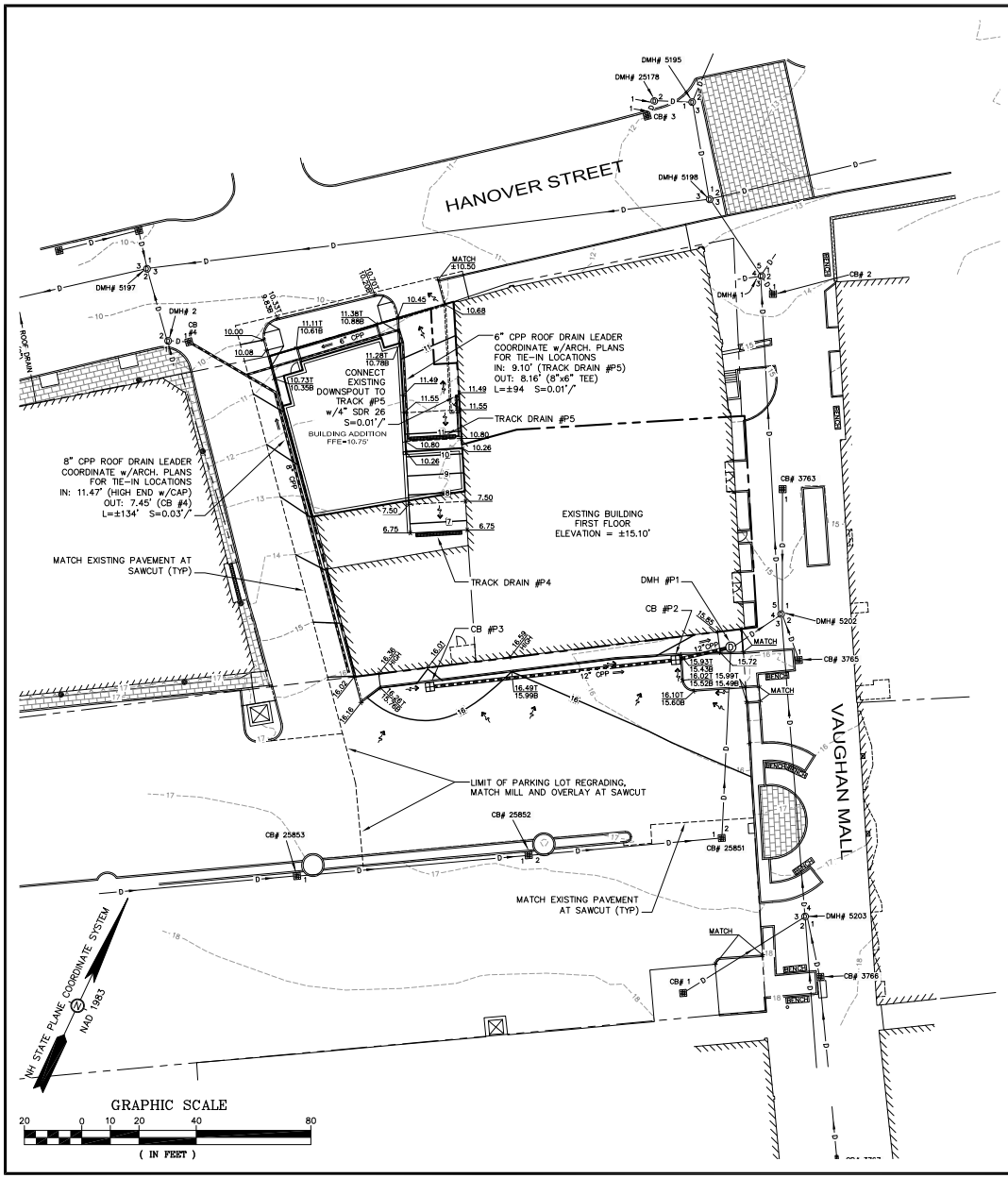
A. Stormwater System Operations and Maintenance Report
B. Site Grading and Drainage Plan

STORM WATER SYSTEM OPERATION AND MAINTENANCE REPORT

General Information			
Project Name			
Owner			
Inspector's Name(s)			
Inspector's Contact Information			
Date of Inspection		**Start Time:**	**End Time:**
Type of Inspection: ☐ Annual Report ☐ Post-storm event ☐ Due to a discharge of significant amounts of sediment			
Notes:			

General Site Questions and Discharges of Significant Amounts of Sediment			
Subject		**Status**	**Notes**
A discharge of significant amounts of sediment may be indicated by (but is not limited to) observations of the following. Note whether any are observed during this inspection:			*Notes/ Action taken:*
1	Do the current site conditions reflect the attached site plan?	❑Yes ❑No	
2	Is the site permanently stabilized, temporary erosion and sediment controls are removed, and stormwater discharges from construction activity are eliminated?	❑Yes ❑No	
3	Is there evidence of the discharge of significant amounts of sediment to surface waters, or conveyance systems leading to surface waters?	❑Yes ❑No	

Permit Coverage and Plans				
#	**BMP/Facility**	**Inspected**	**Corrective Action Needed and Notes**	**Date Corrected**
	Drainage Pipes	❑Yes ❑No		
	Downspout Connections	❑Yes ❑No		
	Trench Drains	❑Yes ❑No		
	Landscape Areas	❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		



DRAINAGE SCHEDULE

CB #4 (EXISTING)
RIM=9.57'
IN: 7.45' (NEW 8" ROOF LEADER)
OUT: ±7.32' (EXISTING TO DMH #2)
12" PVC (EXISTING)

DMH #P1
(FORMER CB #3764)
RIM=±15.45'(ADJUST RIM TO MATCH RAMP SLOPE)
IN: 11.30' (NEW 12" CB #P2)
IN: ±11.20' (EXIST. 12" CB #25851)
OUT: ±11.10' (TO DMH #5202)
12" RCP (EXISTING)

CB #P2
RIM=15.30'
IN: 11.46' (12" CB #P3)
OUT: 11.36' (TO DMH #P1)
12" CPP
L=±12' S=0.005'/'

CB #P3
RIM=15.35'
OUT: 11.89' (TO CB #P2)
12" CPP
L=±86' S=0.005'/'

TRACK DRAIN #P4
RIM=6.75'
16' LONG x 1.17' WIDE
w/EVAPORATOR (COORDINATE w/ARCH. PLANS FOR MODEL, CONDUIT, WIRING AND CIRCUITRY)

TRACK DRAIN #P5
RIM=10.82'
16' LONG x 1.17' WIDE
IN: 9.57' (4" ROOF LEADER)
OUT: 9.57'
w/EXTERNAL DROP TO 9.10'
6" CPP (TO 8" ROOF LEADER)
L=±94' S=0.01'/'

GRADING AND DRAINAGE NOTES

1. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE AND LOCAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
2. CONTRACTOR SHALL OBTAIN A "DIGSAFE" NUMBER AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION.
3. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
4. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION.
5. UNLESS OTHERWISE AGREED IN WRITING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING TEMPORARY BENCHMARKS (TBMS) AND PERFORMING ALL CONSTRUCTION SURVEY LAYOUT.
6. PRIOR TO CONSTRUCTION, FIELD VERIFY JUNCTIONS, LOCATIONS AND ELEVATIONS/INVERTS OF ALL EXISTING STORMWATER AND UTILITY LINES. PRESERVE AND PROTECT LINES TO BE RETAINED.
7. TEMPORARY INLET PROTECTION MEASURES SHALL BE INSTALLED IN ALL CATCH BASINS WITHIN 100' OF THE PROJECT SITE WHEN SITE WORK WITHIN CONTRIBUTING AREAS IS ACTIVE OR SAID AREAS HAVE NOT BEEN STABILIZED.
8. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL. IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF A FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
9. IF SUITABLE, EXCAVATED MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS. PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.
10. ALL CATCH BASIN, MANHOLE AND OTHER DRAINAGE RIMS SHALL BE SET FLUSH WITH OR NO LESS THAN 0.1' BELOW FINISH GRADE. ANY RIM ABOVE SURROUNDING FINISH GRADE SHALL NOT BE ACCEPTED.
11. ALL SPOT GRADES ARE AT FINISH GRADE AND BOTTOM OF CURB WHERE APPLICABLE.
12. IN ORDER TO PROVIDE VISUAL CLARITY ON THE PLANS, DRAINAGE AND OTHER UTILITY STRUCTURES MAY NOT BE DRAWN TO SCALE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER SIZING AND LOCATION OF ALL STRUCTURES AND IS DIRECTED TO RESOLVE ANY POTENTIAL DISCREPANCY WITH THE ENGINEER PRIOR TO CONSTRUCTION.

LEGEND

- PROPERTY LINE
- EASEMENT LINE
- EXISTING PAVEMENT/CURB
- PROPOSED PAVEMENT/VERTICAL GRANITE CURB
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT GRADE/TOP & BOTTOM OR CURB/WALL
- EXISTING WATER/CURB STOP/VALVE/HYDRANT
- EXISTING SEWER/MANHOLE
- EXISTING GAS/VALVE
- EXIST. OVER/UNDERGROUND UTILITIES/POLE
- EXISTING DRAINAGE/CB/DMH
- PROPOSED THRUST BLOCK/WATER/CURB STOP/VALVE/HYDRANT
- PROPOSED DOMESTIC WATER SERVICE/FIRE WATER SERVICE
- PROPOSED SEWER/MANHOLE/CLEANOUT
- PROPOSED GAS SERVICE
- PROPOSED OVERHEAD UTILITIES/UTILITY POLE
- PROPOSED UNDERGROUND ELECTRIC/PHONE/TV
- PROPOSED DRAINAGE (HARD PIPE)/CB/DCB/DMH/FES
- CPP FES HDWL CORRUGATED PLASTIC PIPE/FLARED END SECTION/HEADWALL
- PROPOSED GROUND SLOPE/APPROX. GRADE/STONE CHECK DAM
- SILTFENCE/SEDIMENT BARRIER/CONST. FENCE
- STABILIZED CONSTRUCTION EXIT
- PROPOSED SAWCUT LINE

P5042

ALTUS ENGINEERING, INC.
133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: JUNE 21, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TAC WORK SESSION	EBS	05/05/20
1	TAC WORK SESSION	EBS	07/07/20
2	TAC	EBS	10/19/20
3	PB CONSULTATION	EBS	11/02/20
4	TAC	EBS	03/22/21
5	TAC	EBS	04/19/21
6	TAC	EBS	05/19/21
7	TAC	EBS	06/21/21

DRAWN BY: EBS
APPROVED BY: EDW
DRAWING FILE: 5042-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER:
64 VAUGHAN MALL, LLC
41 INDUSTRIAL DRIVE
EXETER, NH 03833

APPLICANT:
HAMPSHIRE DEVELOPMENT CORP.
41 INDUSTRIAL DRIVE
EXETER, NH 03833

PROJECT:
64 VAUGHAN MALL BUILDING RESTORATION
TAX MAP 126, LOT 1
64 VAUGHAN MALL PORTSMOUTH, NH 03801

TITLE:
GRADING AND DRAINAGE PLAN

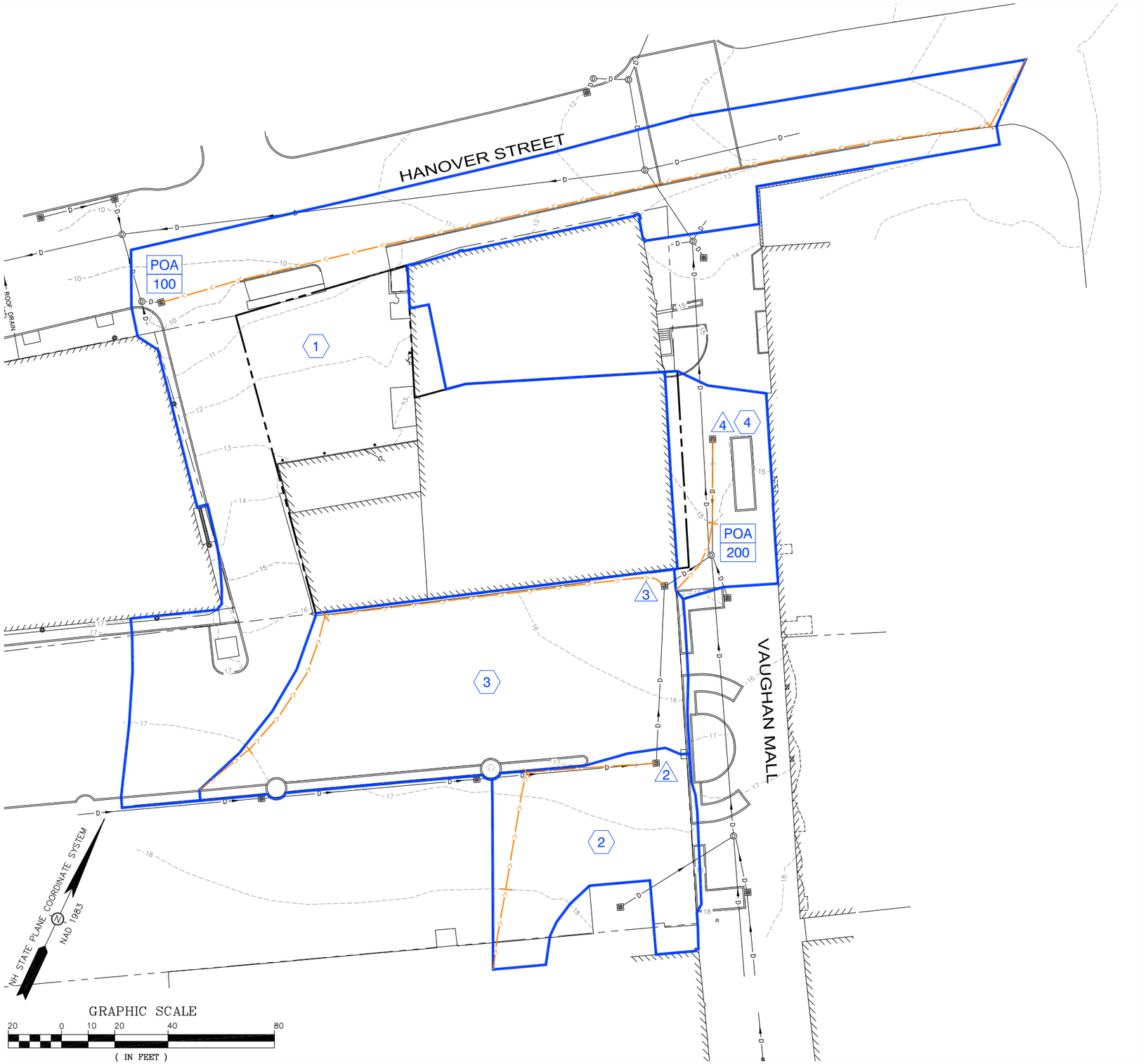
SHEET NUMBER:
C-3

Section 8

Watershed Plans

Pre-Development Drainage Area Plan
Post-Development Drainage Area Plan

ALTUS
ENGINEERING, INC.



LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- WATERSHED BOUNDARY
- Tc PATH
- PROPOSED GROUND SLOPE DIRECTION
- SUBCATCHMENT/POND/REACH
- POINT OF ANALYSIS

ALTUS ENGINEERING, INC.

133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: JUNE 21, 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TAC	EBS	06/21/21

DRAWN BY: EBS
APPROVED BY: EDW
DRAWING FILE: 5042-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER:

64 VAUGHAN MALL, LLC

41 INDUSTRIAL DRIVE
EXETER, NH 03833

APPLICANT:

HAMPSHIRE DEVELOPMENT CORP.

41 INDUSTRIAL DRIVE
EXETER, NH 03833

PROJECT:

64 VAUGHAN MALL BUILDING RESTORATION

TAX MAP 126, LOT 1

64 VAUGHAN MALL
PORTSMOUTH, NH 03801

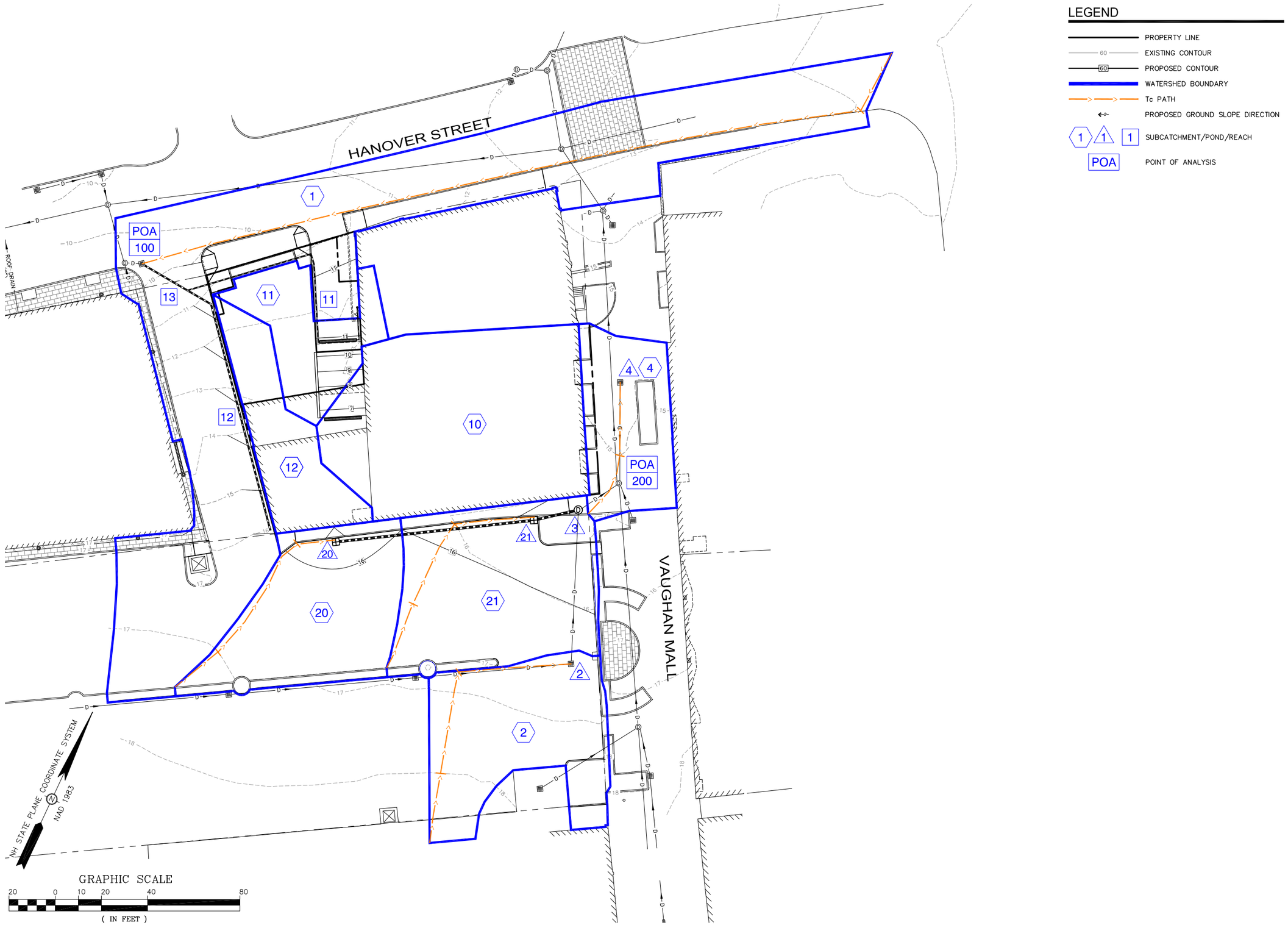
TITLE:

PRE-DEVELOPMENT WATERHSED PLAN

SHEET NUMBER:

WS-1

P5042



LEGEND

- PROPERTY LINE
- EXISTING CONTOUR (60)
- PROPOSED CONTOUR (60)
- WATERSHED BOUNDARY
- Tc PATH
- PROPOSED GROUND SLOPE DIRECTION
- 1 / 1 / 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS

ALTUS ENGINEERING, INC.

133 Court Street Portsmouth, NH 03801
(603) 433-2335 www.altus-eng.com

NOT FOR CONSTRUCTION

ISSUED FOR: TAC

ISSUE DATE: JUNE 21 2021

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TAC	EBS	06/21/21

DRAWN BY: EBS
APPROVED BY: EDW
DRAWING FILE: 5042-SITE.dwg

SCALE: 22"x34" 1" = 20'
11"x17" 1" = 40'

OWNER:
64 VAUGHAN MALL, LLC
41 INDUSTRIAL DRIVE
EXETER, NH 03833

APPLICANT:
HAMPSHIRE DEVELOPMENT CORP.
41 INDUSTRIAL DRIVE
EXETER, NH 03833

PROJECT:
64 VAUGHAN MALL BUILDING RESTORATION
TAX MAP 126, LOT 1
64 VAUGHAN MALL
PORTSMOUTH, NH 03801

TITLE:
POST-DEVELOPMENT WATERSHED PLAN

SHEET NUMBER:
WS-2

P5042

JONES&BEACH
ENGINEERS INC.
85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

June 23, 2021

Portsmouth Planning Board
Attn: Dexter Legg
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: Response Letter – TAC Comments
3400 Lafayette Road, Portsmouth, NH
Tax Map 297, Lot 11
JBE Project No. 20737

Dear Mr. Legg,

Jones & Beach Engineers, Inc., is in receipt of comments from the TAC members dated June 1, 2021. Original review comments are italicized, and we offer the following responses below:

1. *Please confirm compliance with the following Sections of the Zoning Ordinance – Section 10.5B22.40 Special Setback Requirements on Lafayette Road and Section 10.5B33.20 Front Lot Line Build Out.*
   RESPONSE: The Attorneys are currently reviewing the Zoning Ordinance to see if a varience is required.

2. *The development appears to be very dense for this site. The community space does not appear to be functional for so many units on the site. Please consider revising the layout to allow for an arrangement that creates more meaningful community space.*
   RESPONSE: We feel that the site is not dense and there is plenty of community space that is functional. The density using the G1 land is 240+ units and we based on documents from the City, we are allowed to use the NRP land for density as well that we haven't calculated as we are only proposing 50 units.

3. *If the mailbox area is meant to be drive-up, the area should be larger to allow vehicles to pull in and out easier. if it is meant to be walk up, it should have a sidewalk and crosswalk leading to it.*
   RESPONSE: The mail box area has been widened for vehicles to drive up.

4. *The driveway in front of unit 20 is very short due to the angle. It should be lengthened to allow for a vehicle to park in this space.*
   RESPONSE: The driveway has been modified to allow for a vehicle to park in the space.

5. *The walkway between units 2 and 3 should have a tip down ramp at its terminus.*
   RESPONSE: A tip down ramp has been added between units 2 and 3.

6. *The project will require a driveway permit from the NHDOT.*
   RESPONSE: NHDOT permit has been applied for in May.

7. *Applicant's Engineer must work with City Engineer to determine if there is sufficient capacity in the City's sewer system for this development. Any approvals for this project are contingent on the approval of allowing the flow to be added to the City's system.*
   RESPONSE: We are working with the City Engineers to determine if there is sufficient capacity in the City's sewer system for this development. We have already had a preliminary meeting with DPW to review the options and a solution should be coming together soon.

8. *Third party engineer will be required to review on-site utilities and drainage during construction.*
   RESPONSE: This is up to the City and can be a condition of approval.

9. *Third party engineer required to review drainage design.*
   RESPONSE: We don't feel that a third party review of the drainage design is needed since the drainage has to meet the Alteration of Terrain Permit standards, which is a more strict standard than the City. If this is still going to be required, than we would like to start the process as soon as possible.

10. *Water main detail calls out C900 pipe.*
    RESPONSE: The water main detail is now a Ductile Iron pipe.

11. *All water main parts to meet City standards.*
    RESPONSE: All water main parts meet the City standards.

12. *All sewer pipe and manholes to meet City and State Standards.*
    RESPONSE: Sewer pipe and manholes meet City and State standards.

13. *HDPE pipe must be surrounded by crushed stone.*
    RESPONSE: HDPE pipe is surrounded b crushed stone.

14. *Hydrant locations to be approved by Portsmouth Fire.*
    RESPONSE: Hydrant locations will be approved by Portsmouth Fire.

15. *Show water lines for fire service sprinklers.*
    RESPONSE: Water lines for fire service sprinklers are shown on the plans.

16. *Will there be parking allowed on the internal driveways?*
    RESPONSE: No parking will be allowed on the internal driveways.

17. *The width of the travel lane should not be less than 24' at any point.*
    RESPONSE: The travel lane width has been revised.

18. *The dead end section of the travel lane should be a minimum of 26' wide.*
    RESPONSE: The dead end section of the travel lane has been revised.

19. *The driveway and parking areas for the 12 townhouse units located near Lafayette Road should have at least 60 feet of pavement between the buildings to allow for parking and turning movements.*
RESPONSE: We already have over 60' of pavement from garage door to garage door from the closest units and more at the wider units. Dimension has been added to clarify.

20. *All buildings should allow for front decks over the garages in order to soften the visual impact of the large garage doors at the ground level. Where no decks are proposed I would suggest double doors be considered (or a facsimile thereof) to add visual interest and break up the monotony and expansiveness of the ground-floor garages.*
RESPONSE: There are a number of different unit styles with varying roof lines to provide visual interest.

21. *The neighborhood design would benefit from removal of units 19-23 and rotating the building containing units 24-26 along the cul-de-sac. At a minimum, due to the orientation and circulation constraints I would remove at least the last two units (19-20). This area could be used for active recreation (i.e. a playground, dog park, grilling area...) for the remaining units.*
RESPONSE: We have already removed 4 units from the design based on the previous feedback received. The site is more open between buildings, has additional buildings with less units per building, varying styles of buildings, sizes, deck locations and we do have more than required space for active and passive recreation and land conservation.

22. *The dog park should be located outside the buffer zone.*
RESPONSE: The dog park has been moved out of the buffer zone.

23. *4 visitor spaces seems low given the proposed density and the fact that many residents will be parking in front or their units.*
RESPONSE: Each unit has a 2 car garage and 2 parking spaces in front of the unit. We feel the 4 visitor spaces is adequate since every unit can fit 4 cars.

24. *The snow storage areas look inadequate for the proposed impervious surface.*
RESPONSE: The snow storage areas have been expanded.

25. *The proposed sidewalk should be concrete and efforts should be made to connect a pedestrian walkway to all the proposed units.*
RESPONSE: The sidewalks have been modified to concrete.

26. *The existing trail system around the wetland should be clearly identified and improved to be used as a passive recreational trail for the residents.*
RESPONSE: The existing trail system around the wetland has been clearly identified on the plans.

27. *Please describe your plan for solid waste/trash storage and collection.*
RESPONSE: A note has been added to the plans for solid waste/trash storage and collection.

28. *You will need to provide will-serve letters from relevant utilities.*
RESPONSE: We have requested the will-serve letter from relevant utilities.

29. *Please provide an update on the status of any state permits.*
RESPONSE: Note #20 on the Sheet C2 provides a list of required State Permits. Dates and permit numbers will be added upon receipt.

30. *Please provide a green building statement consistent with the requirements of Section 2.5.3.1A of the Site Review Regulations.*
RESPONSE: The architect will be providing the green building statement.

The following is provided in support of this letter:

1. One (1) Full Size Plan Set.
2. One (1) Half-Size Plan Set.
3. Color Rendering of Site Plan.
4. Mitigation Documents.

Thank you very much for your time. If you have any questions, or need further assistance, please contact our office.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Joseph Coronati
Vice President

cc: Michael Green, Green & Company (via email)
John Kuzinivich, Esq (via email)
John Bosen, Esq (via email)
Greg Mikolaities, consultant (via email)
Jamie Long, GZA (via email)
Lindsay White, GZA (via email)
Tom Severino (via email)

Portsmouth Water Works

City of Portsmouth

700 ISLINGTON STREET - - - PORTSMOUTH, NEW HAMPSHIRE 03801

APRIL 17, 1985

MR. ROBERT RICCI
% THE RICCI CONSTRUCTION CO.
BANFIELD RD.
PORTSMOUTH, N. H. 03801

DEAR MR. RICCI:

THIS IS TO INFORM YOU THAT YOU MAY CONNECT TO THE EXISTING EIGHT INCH WATER MAIN CROSSING LAFAYETTE ROAD TO PROVIDE SERVICE TO YOUR PROPERTY SHOWN AS LOT #11 OF THE CITY OF PORTSMOUTH TAX MAP #97.

YOU WILL, OF COURSE, BE REQUIRED TO HAVE PERMISSION FROM THE STATE HIGHWAY DEPARTMENT TO INSTALL THE SERVICE PIPE ON THEIR PROPERTY.

VERY TRULY YOURS,

Rance G. Collins

RANCE G. COLLINS, SUPERINTENDENT
PORTSMOUTH WATER DEPARTMENT

RGC/DR

AGREEMENT made this 17 day of April, 1985 by and between Hospital Corporation of America, of Nashville, Tennessee, hereinafter referred to as "Purchaser", and Ricci Corporation, having a principal place of business at Banfield Road, Portsmouth, County of Rockingham, State of New Hampshire, hereinafter referred to as "Seller", as follows:

1. SELLER agrees to convey to PURCHASER, or their successor in interest, an easement to enter onto and perform work upon a portion of a certain parcel of land, said parcel being located on the westerly side of Lafayette Road in said Portsmouth, containing forty-four (44.00) acres, more or less, more particularly bounded and described in attached Exhibit A.

2. SELLER further agrees to grant to the City of Portsmouth, concurrent with the easement referred to in the preceding paragraph, a perpetual conservation easement in a form acceptable to the City Attorney for the City of Portsmouth, said easement to cover the portion of the parcel of land more particularly described in Exhibit A.

3. It is agreed and understood by the parties that the purpose of the acquisition of the construction easement by Hospital Corporation of America or their successors in interest is to allow Hospital Corporation of America or their successors in interest to enter upon the property and to perform certain work pursuant to a "mitigation plan" approved by the Army Corps of Engineers, the Environmental Protection Agency, and U. S. Fish and Wildlife. Said mitigation plan will involve removal of construction debris and fill from a degraded wetland and upland

area. The aforesaid mitigation plan will also involve the placement upon the subject property quantities of wetland fill to enable Hospital Corporation of America or its successors in interest to create upon the site additional wetland areas pursuant to the afore-mentioned approved mitigation plan.

4. That the within agreement is contingent upon approval being obtained from the Army Corps of Engineers, United States Fish and Wildlife, and the Environmental Protection Agency, as well as all State Wetlands Boards and local Boards and Commissions for the "mitigation plan" and implementation thereof.

5. It is further understood by the parties hereto that the SELLER shall retain fee simple title to the property described in Exhibit A, subject to the easements described herein.

6. That should the PURCHASER fail to receive the necessary approvals set forth herein, this Agreement shall be null and void and the PURCHASER'S deposit shall be refunded. PURCHASER agrees that any and all construction activity for which the easement is being acquired shall be completed on or before December 31, 1987. The parties agree that the PURCHASER shall have 180 days from the execution hereof to obtain all the necessary approvals set forth herein. The closing is to occur within 60 days of PURCHASER'S obtaining all necessary approvals of the "mitigation plan" set forth herein, as well as all necessary approvals for the implementation thereof.

7. SELLER further agrees to convey to PURCHASER and its successors in interest a non-exclusive easement twenty-five (25') feet in width to pass and re-pass from Lafayette Road to the easement area described in Exhibit A.

8. SELLER agrees that it will allow PURCHASER, its agents and representatives, as well as agents and representatives of the U.S. Fish and Wildlife Department, Army Corps of Engineers, and the Environmental Protection Agency to enter upon the property contained in the proposed easement area for purposes of conducting necessary observation and testing.

9. In consideration of the foregoing, PURCHASER agrees to pay to the SELLER the sum of Sixty Thousand ($60,000.00) Dollars, as follows:

Deposit upon execution by the SELLER of the within Agreement	$ 1,000.00
At Closing	59,000.00

10. Purchaser agrees to survey at its expense the boundry of the proposed easement as shown on the attached Exhibit A, and to produce a recordable plan delineating said easement area.

11. With regard to said proposed easement area, Purchaser hereby agrees that the proposed easement will be no less than Four Hundred Ten (410') feet from the edge of the pavement of Lafayette Road, and Purchaser further covenants that the proposed easement area will be a minimum of One Hundred Twenty-five (125') feet from the northwesterly corner of land now or formerly of Louis Bowmar, Jr., said land being Lot #6 on Tax Map R-97 of the City of Portsmouth.

IN WITNESS WHEREOF, we have hereunto set our hand and seal this 16th day of April, 1985.

HOSPITAL CORPORATION OF AMERICA

By _____
Attorney for HCA
PURCHASER

Ricci Corporation Robert A. Ricci Sr.
SELLER

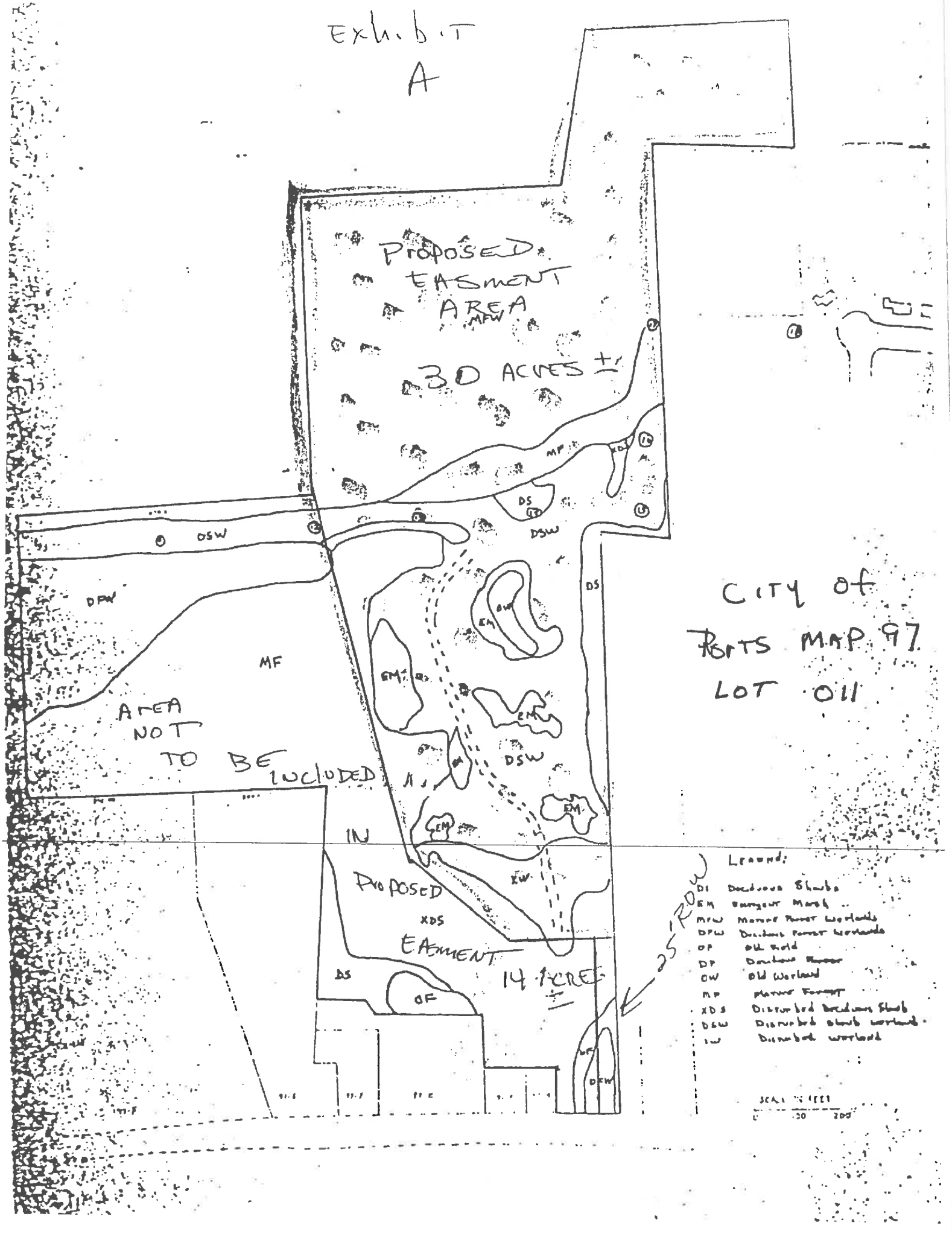


Exhibit A
PROPOSED EASEMENT AREA
MFW
30 ACRES ±
MF
DS
DSW
DFW
EM
OW
AREA NOT TO BE INCLUDED IN PROPOSED XDS EASEMENT
14 ACRES ±
OF
XW
25' ROW
CITY OF PORTS MAP 97 LOT 011
Legend:
DI Deciduous Shrubs
EM Emergent Marsh
MFW Mature Forest Wetlands
DFW Deciduous Forest Wetlands
OF Old Field
DF Deciduous Forest
OW Old Wetland
MF Mature Forest
XDS Disturbed Deciduous Shrub
DSW Disturbed shrub wetland
XW Disturbed wetland
SCALE IN FEET
0 100 200

Weeks, Whalen & Gamester

REAL ESTATE BROKERS

April 19, 1985

Mr. Robert Ricci, Sr.
Ricci Construction Co.
Banfield Road
Portsmouth, NH 03801

Dear Bud:

Enclosed is an executed copy between Hospital Corporation of America of Nashville, Tennessee, and Ricci Corporation of Portsmouth, New Hampshire for the easement for the 44 acres of land which is owned by the Ricci Corporation off of Lafayette Road.

This letter is also to confirm that at the time of the transfer of that easement by the Ricci Corporation to HCA, that the real estate firm of Weeks, Whalen and Gamester will be paid a $6,000.00 commission by Ricci Corporation from the $60,000.00 proceeds paid by Hospital Corporation of America.

I'm going to be on vacation next week but upon my return I will again get together with Mike Pagano now that the pressure is off on the inventory forms and he has a little more time to discuss the change in taxation on this land when the easement is taken by HCA.

Warm Personal Regards,

WEEKS, WHALEN & GAMESTER

Peter G. Weeks

PGW:brg

Noble's Island/P.O. Box 1249/Portsmouth, New Hampshire 03801
(603) 431-1338

CITY OF PORTSMOUTH

Legal Department

City Hall, 126 Daniel Street
Portsmouth, New Hampshire 03801
(603) 431-2000, ext 200

Robert P. Sullivan,
City Attorney

James J. Flynn,
Assistant City Attorney

April 12, 1985

Robert Ricci, Sr.
Ricci Construction Company
Banfield Road
Portsmouth, N.H. 03801

Re: Conservation Easements

Dear Mr. Ricci:

This is to advise that if the "proposed easement area" identified on the attached "Exhibit A" is conveyed to HCA for conservation purposes, it may still be considered in density calculation for planned unit development purposes on Lot 011, Map 97.

This, of course, does not imply or guarantee approval of any particular project, each of which must be reviewed on its own merits.

Very truly yours,

Robert P. Sullivan,
City Attorney

RPS:bh

cc: Bernard Pelech, Esquire
Peter G. Weeks

Oct 11 4 01 PM 49304
Rockingham County
Registry of Deeds

EASEMENT

KNOW ALL MEN BY THESE PRESENTS That Ricci Corporation, a New Hampshire corporation having a principal place of business at 220 Banfield Road, Portsmouth, County of Rockingham, State of New Hampshire, in consideration of One Dollar and other valuable consideration, grants to the City of Portsmouth, a municipal corporation in the State of New Hampshire, an easement in perpetuity for conservation purposes, a certain parcel of land located off Lafayette Road in said Portsmouth, said parcel being more particularly bounded and described as follows:

Beginning at a point Three Hundred Ninety-three and thirty-two hundredths (393.32) feet from the right-of-way limit of said Lafayette Road, said point being Four Hundred Ten (410) feet, more or less, from the edge of pavement of said Lafayette Road, at the eastern-most corner of the within described premises at land now or formerly of House-Goodman Limited Partnership; thence running

NORTH 67° 12' 29" West by said land of House-Goodman Two Hundred Forty-nine and Ninety-five hundredths (249.95) feet to a drill hole in a stone wall; thence turning and running

NORTH 67° 52' 24" West by said stone wall at land of House-Goodman One Hundred Ninety-four and Forty-two hundredths (194.42) feet to a drill hole in said stone wall; thence turning and running

NORTH 67° 20' 57" West by land of said House-Goodman Two Hundred Fifty-five and Fifty-six hundredths (255.56) feet to a drill hole in a stone wall; thence turning and running

NORTH 67° 10' 33" West by said stone wall a distance of One Hundred Eighty-two and Fifty-one hundredths (182.51) feet to a drill hole at an intersecting stone wall; thence turning and running

NORTH 30° 47' 10" East along a stone wall One Hundred Seventy-two and Eighty-seven hundredths (172.87) feet by land of said House-Goodman to a drill hole in said stone wall; thence turning and running

NORTH 67° 16' 08" West by land now or formerly of Pres[illegible]n and Shirley Garrett a distance of N[illegible]ne Hundred Three and Six[illegible] six hundredths (903.66) feet to a point; thence turning and running

NORTH 27° 47' 17" East by land of said Garrett a distance of Two Hundred One and Sixty hundredths (201.60) feet to an iron rod at land of said Garrett and land of Karen and Elizabeth Kapelos; thence running

LAW OFFICES OF
JOHN J. WHOLEY
224 STATE STREET
PORTSMOUTH, N. H.

NORTH 27° 47' 17" East by land of said Kapelos a distance of One Hundred Forty-one and Eighty-six hundredths (141.86) feet to an iron rod at land of Kapelos and land now or formerly of Lamothe Development Corporation; thence turning and running

NORTH 67° 16' 22" West by land of said Lamothe Development Corporation a distance of Two Hundred Eighty and Twenty-seven hundredths (280.27) feet to a point on a stone wall at land of said Lamothe Development Corporation at land now or formerly of the City of Portsmouth; thence turning and running

SOUTH 22° 49' 03" West by land of said Portsmouth a distance of Seventy-five and Fifty-seven hundredths (75.57) feet to a tree with barbed wire; thence running

SOUTH 22° 49' 03" West along said stone wall by land of said Portsmouth One Hundred Forty-one and Fifty-two hundredths (141.52) feet to a blazed pine; thence running

SOUTH 22° 41' 08" West by land of said Portsmouth a distance of Two Hundred Ninety-six and Five Hundredths (296.05) feet to an iron pin; thence turning and running

SOUTH 66° 47' 15" East by land of said Portsmouth a distance of Three Hundred Forty-two and Fifty-one hundredths (342.51) feet to an iron pin; thence turning and running

SOUTH 21° 20' 53" West a distance of Six Hundred Seventeen and Sixty-two hundredths (617.62) feet to an iron pin at land of said Portsmouth and land now or formerly of the City of Portsmouth Conservation Commission; thence turning and running

SOUTH 66° 24' 52" East by land now or formerly of the City of Portsmouth Conservation Commission to a fencepost with barbed wire; thence turning and running

SOUTH 66° 37' 22" East by land of said Conservation Commission a distance of Three Hundred Ninety-five and Twenty-eight Hundredths (395.28) feet to an iron pin at land of said Conservation Commission and land of the Grantor; thence turning and running

SOUTH 77° 10' 28" East a distance of Eight Hundred Thirty-two and Sixty-nine hundredths (832.69) feet by land of the within Grantor to a point; thence turning and running

NORTH 57° 48' 48" East a distance of Two Hundred Eighty-nine and Ninety-nine hundredths (289.99) feet by land of the within Grantor to a point; thence turning and running

NORTH 22° 47' 31" East by land of the within Grantor a distance of Two Hundred Fifty and zero hundredths (250.00) feet to the point of beginning.

LAW OFFICES OF
JOHN J. WHOLEY
224 STATE STREET
PORTSMOUTH, N. H.

Said easement is granted simultaneously with an easement granted to Hospital Corporation of America for the purposes of construction upon and maintenance of wetlands created on said premises. Said easement to Hospital Corporation of America will be recorded herewith.

For title reference, see decree of Rockingham County Superior Court dated September 13, 1968, recorded in the Rockingham County Registry of Deeds at Book 1930, Page 229. See also deed of Wayne Mullavey, Executor of the estate of William H. Sleeper, recorded in the Rockingham County Registry of Deeds in Book 1589, Page 412.

Signed this 11th day of October, 1985.

RICCI CORPORATION

By Robert A. Ricci

STATE OF NEW HAMPSHIRE
Rockingham, ss.

Personally appeared the above-named Robert A. Ricci duly authorized, and acknowledged that he executed the foregoing instrument as his free act and deed and in his said capacity.

Justice of the Peace/Notary Public

LAW OFFICES OF
JOHN J. WHOLEY
224 STATE STREET
PORTSMOUTH, N. H.

CORPORATE VOTE OF RICCI CORPORATION

At a special meeting of the directors of Ricci Corporation held on October 8, 1985, it was duly voted that Robert A. Ricci, Sr. be authorized to sign any and all documents relative to the conveyance of easement to Hospital Corporation of America and the City of Portsmouth, New Hampshire.

James E. Ritzo, Acting Secretary

A True Copy Attest

PROJECT CLASS	FEE
MINIMUM IMPACT	$ 10.00
MINOR	$ 25.00
MAJOR	$100.00

FILING FEE (CHECK OR MONEY ORDER MADE PAYABLE TO NH WETLANDS BOARD) IS REQUIRED TO ACCOMPANY THIS APPLICATION FORM TO THE WETLANDS BOARD OFFICE.

FOR WETLANDS BOARD OFFICE USE ONLY

FEE RECEIVED _____
CHECK NO. AMOUNT INIT.

FILE NUMBER _____

Application is hereby made for a permit to accomplish work described below relating to filling, dredging, or construction of structures under the provisions of RSA Chapters 483-A and 149:8a. One copy of your application will be acted upon by W.S.P.C.C. and such action will be incorporated in one distribution.

1. NAME OF OWNER Hospital Corp. fo America TELEPHONE NUMBER 1-800-251-2561
(Please Print Clearly or Type)

MAILING ADDRESS 1 Park Plaza, Nashville, TN 37203

2. LOCATION OF PROPOSED CONSTRUCTION Lafayette Road, Portsmouth, NH 03801
(street, road, highway) (Town, City)

3. Complete the location map on reverse side on all copies or attached a map to each copy.

4. Adjacent to, or in (~~xxkx~~)(fresh) water unnamed
(name of water body)

5. Type of project - (x)Fill (x)Dredge ( )Pier ( )Other _____
(specify)

6. Reason(s) for proposed construction See Attached plan for mitigation by Normandeau Associates, Inc. Dated September 4, 1985

7. Proposed starting date October 15, 1985 Completion Date November 15, 1985

8. Description of construction:

(a) Type of Material: Dredge ~~Construction Debris &~~ Gravel (In man-made Wetland) Fill Wetlands Soil from Hospital Site

(b) Estimated area to be dredged (square feet) 6.63 AC - 288,750 SF Total Exc. 1.03 AC - 45,250 SF in man-made Wetland

(c) Estimated area to be filled (square feet) 6.63 AC - 288,750 SF Total

Oct 11 4 03 PM '95 49302
Rockingham County
Registry of Deeds

EASEMENT

KNOW ALL MEN BY THESE PRESENTS That Ricci Corporation, a New Hampshire corporation having a principal place of business at 220 Banfield Road, Portsmouth, County of Rockingham, State of New Hampshire, in consideration of One Dollar and other valuable consideration, grants to the City of Portsmouth, a municipal corporation in the State of New Hampshire, an easement in perpetuity for conservation purposes, a certain parcel of land located off Lafayette Road in said Portsmouth, said parcel being more particularly bounded and described as follows:

Beginning at a point Three Hundred Ninety-three and thirty-two hundredths (393.32) feet from the right-of-way limit of said Lafayette Road, said point being Four Hundred Ten (410) feet, more or less, from the edge of pavement of said Lafayette Road, at the eastern-most corner of the within described premises at land now or formerly of House-Goodman Limited Partnership; thence running

NORTH 67° 12' 29" West by said land of House-Goodman Two Hundred Forty-nine and Ninety-five hundredths (249.95) feet to a drill hole in a stone wall; thence turning and running

NORTH 67° 52' 24" West by said stone wall at land of House-Goodman One Hundred Ninety-four and Forty-two hundredths (194.42) feet to a drill hole in said stone wall; thence turning and running

NORTH 67° 20' 57" West by land of said House-Goodman Two Hundred Fifty-five and Fifty-six hundredths (255.56) feet to a drill hole in a stone wall; thence turning and running

NORTH 67° 10' 33" West by said stone wall a distance of One Hundred Eighty-two and Fifty-one hundredths (182.51) feet to a drill hole at an intersecting stone wall; thence turning and running

NORTH 30' 47' 10" East along a stone wall One Hundred Seventy-two and Eighty-seven hundredths (172.87) feet by land of said House-Goodman to a drill hole in said stone wall; thence turning and running

NORTH 67° 16' 08" West by land now or formerly of Preston and Shirley Garrett a distance of Nine Hundred Three and Sixty-six hundredths (903.66) feet to a point; thence turning and running

NORTH 27° 47' 17" East by land of said Garrett a distance of Two Hundred One and Sixty hundredths (201.60) feet to an iron rod at land of said Garrett and land of Karen and Elizabeth Kapelos; thence running

LAW OFFICES OF
JOHN J. WHOLEY
224 STATE STREET
PORTSMOUTH, N. H.

NORTH 27° 47' 17" East by land of said Kapelos a distance of One Hundred Forty-one and Eighty-six hundredths (141.86) feet to an iron rod at land of Kapelos and land now or formerly of Lamothe Development Corporation; thence turning and running

NORTH 67° 16' 22" West by land of said Lamothe Development Corporation a distance of Two Hundred Eighty and Twenty-seven hundredths (280.27) feet to a point on a stone wall at land of said Lamothe Development Corporation at land now or formerly of the City of Portsmouth; thence turning and running

SOUTH 22° 49' 03" West by land of said Portsmouth a distance of Seventy-five and Fifty-seven hundredths (75.57) feet to a tree with barbed wire; thence running

SOUTH 22° 49' 03" West along said stone wall by land of said Portsmouth One Hundred Forty-one and Fifty-two hundredths (141.52) feet to a blazed pine; thence running

SOUTH 22° 41' 08" West by land of said Portsmouth a distance of Two Hundred Ninety-six and Five Hundredths (296.05) feet to an iron pin; thence turning and running

SOUTH 66° 47' 15" East by land of said Portsmouth a distance of Three Hundred Forty-two and Fifty-one hundredths (342.51) feet to an iron pin; thence turning and running

SOUTH 21° 20' 53" West a distance of Six Hundred Seventeen and Sixty-two hundredths (617.62) feet to an iron pin at land of said Portsmouth and land now or formerly of the City of Portsmouth Conservation Commission; thence turning and running

SOUTH 66° 24' 52" East by land now or formerly of the City of Portsmouth Conservation Commission to a fencepost with barbed wire; thence turning and running

SOUTH 66° 37' 22" East by land of said Conservation Commission a distance of Three Hundred Ninety-five and Twenty-eight Hundredths (395.28) feet to an iron pin at land of said Conservation Commission and land of the Grantor; thence turning and running

SOUTH 77° 10' 28" East a distance of Eight Hundred Thirty-two and Sixty-nine hundredths (832.69) feet by land of the within Grantor to a point; thence turning and running

NORTH 57° 48' 48" East a distance of Two Hundred Eighty-nine and Ninety-nine hundredths (289.99) feet by land of the within Grantor to a point; thence turning and running

NORTH 22° 47' 31" East by land of the within Grantor a distance of Two Hundred Fifty and zero hundredths (250.00) feet to the point of beginning.

LAW OFFICES OF
JOHN J. WHOLEY
224 STATE STREET
PORTSMOUTH, N.H.

Said easement is granted simultaneously with an easement granted to Hospital Corporation of America for the purposes of construction upon and maintenance of wetlands created on said premises. Said easement to Hospital Corporation of America will be recorded herewith.

For title reference, see decree of Rockingham County Superior Court dated September 13, 1968, recorded in the Rockingham County Registry of Deeds at Book 1930, Page 229. See also deed of Wayne Mullavey, Executor of the estate of William H. Sleeper, recorded in the Rockingham County Registry of Deeds in Book 1589, Page 412.

Signed this 11th day of October, 1985.

RICCI CORPORATION

By Robert A. Ricci Sr.

STATE OF NEW HAMPSHIRE
Rockingham, ss.

Personally appeared the above-named Robert A Ricci Sr duly authorized, and acknowledged that he executed the foregoing instrument as his free act and deed and in his said capacity.

James E Lott
Justice of the Peace/~~Notary Public~~

LAW OFFICES OF
JOHN J. WHOLLEY
224 STATE STREET
PORTSMOUTH, N.H.

CORPORATE VOTE OF RICCI CORPORATION

At a special meeting of the directors of Ricci Corporation held on October 8, 1985, it was duly voted that Robert A. Ricci, Sr. be authorized to sign any and all documents relative to the conveyance of easement to Hospital Corporation of America and the City of Portsmouth, New Hampshire.

James E. Ritzo, Acting Secretary

A True Copy Attest

CITY OF PORTSMOUTH

Legal Department

City Hall, 126 Daniel Street
Portsmouth, New Hampshire 03801
(603) 431-2000, ext 200

Robert P. Sullivan
City Attorney

James J. Flynn,
Assistant City Attorney

April 12, 1985

Robert Ricci, Sr.
Ricci Construction Company
Banfield Road
Portsmouth, N.H. 03801

Re: Conservation Easements

Dear Mr. Ricci:

This is to advise that if the "proposed easement area" identified on the attached "Exhibit A" is conveyed to HCA for conservation purposes, it may still be considered in density calculation for planned unit development purposes on Lot 011, Map 97.

This, of course, does not imply or guarantee approval of any particular project, each of which must be reviewed on its own merits.

Very truly yours,

Robert P. Sullivan,
City Attorney

RPS:bh

cc: Bernard Pelech, Esquire
Peter G. Weeks

49305
Rockingham County
Registry of Deeds
STATE OF NEW HAMPSHIRE
450.00
LAW OFFICES OF
JOHN J. WHOLEY
224 STATE STREET
PORTSMOUTH, N.H.

EASEMENT

KNOW ALL MEN BY THESE PRESENTS that Ricci Corporation, a New Hampshire corporation having a principal place of business at 220 Banfield Road, Portsmouth, County of Rockingham, State of New Hampshire, for consideration paid, grants to Hospital Corporation of America, a Tennessee corporation having an address at One Park Plaza, Nashville, Tennessee, an easement to use for construction and maintenance purposes a certain parcel of land located off Lafayette Road, said parcel being more particularly bounded and described as follows:

Beginning at a point Three Hundred Ninety-three and thirty-two hundredths (393.32) feet from the right-of-way limit of said Lafayette Road, said point being Four Hundred Ten (410) feet, more or less, from the edge of pavement of said Lafayette Road, at the eastern-most corner of the within described premises at land now or formerly of House-Goodman Limited Partnership; thence running

NORTH 67° 12' 29" West by said land of House-Goodman Two Hundred Forty-nine and Ninety-five hundredths (249.95) feet to a drill hole in a stone wall; thence turning and running

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NORTH 67° 20' 57" West by land of said House-Goodman Two Hundred Fifty-five and Fifty-six hundredths (255.56) feet to a drill hole in a stone wall; thence turning and running

NORTH 67° 10' 33" West by said stone wall a distance of One Hundred Eighty-two and Fifty-one hundredths (182.51) feet to a drill hole at an intersecting stone wall; thence turning and running

NORTH 30° 47' 10" East along a stone wall One Hundred Seventy-two and Eighty-seven hundredths (172.87) feet by land of said House-Goodman to a drill hole in said stone wall; thence turning and running

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NORTH 27° 47' 17" East by land of said Garrett a distance of Two Hundred One and Sixty hundredths (201.60) feet to an iron rod at land of said Garrett and land of Karen and Elizabeth Kapelos; thence running

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NORTH 67° 16' 22" West by land of said Lamothe Development Corporation a distance of Two Hundred Eighty and Twenty-seven hundredths (280.27) feet to a point on a stone wall at land of said Lamothe Development Corporation at land now or formerly of the City of Portsmouth; thence turning and running

SOUTH 22° 49' 03" West by land of said Portsmouth a distance of Seventy-five and Fifty-seven hundredths (75.57) feet to a tree with barbed wire; thence running

SOUTH 22° 49' 03" West along said stone wall by land of said Portsmouth One Hundred Forty-one and Fifty-two hundredths (141.52) feet to a blazed pine; thence running

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SOUTH 66° 24' 52" East by land now or formerly of the City of Portsmouth Conservation Commission to a fencepost with barbed wire; thence turning and running

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SOUTH 77° 10' 28" East a distance of Eight Hundred Thirty-two and Sixty-nine hundredths (832.69) feet by land of the within Grantor to a point; thence turning and running

NORTH 57° 48' 48" East a distance of Two Hundred Eighty-nine and Ninety-nine hundredths (289.99) feet by land of the within Grantor to a point; thence turning and running

NORTH 22° 47' 31" East by land of the within Grantor a distance of Two Hundred Fifty and zero hundredths (250.00) feet to the point of beginning.

LAW OFFICES OF
JOHN J. WHOLEY
224 STATE STREET
PORTSMOUTH, N.H.

Said easement is granted simultaneously with a perpetual conservation easement to the City of Portsmouth of even date to be recorded herewith.

Said easement is granted for the purpose of allowing the within Grantee to enter onto said property to perform certain dredging and filling on the premises. The Grantee or its assigns shall have the right to enter onto said premises in perpetuity for the sole purpose of maintenance of wetlands to be created on the premises.

The Grantor herein does further convey to the Grantee a right to pass and repass over other land of the Grantor from Lafayette Road, so-called, to the within demised premises, upon a right-of-way twenty-five (25') feet in width running from Lafayette Road along the traveled way as it presently exists to the within demised premises.

For title reference, see decree of Rockingham County Superior Court dated September 13, 1968, recorded in the Rockingham County Registry of Deeds at Book 1930, Page 229. See also deed of Wayne Mullavey, Executor of the estate of William H. Sleeper, recorded in the Rockingham County Registry of Deeds in Book 1589, Page 412.

Signed this 11th day of October, 1985.

RICCI CORPORATION

By Robert A. Ricci Sr.

STATE OF NEW HAMPSHIRE
Rockingham, ss.

Personally appeared the above-named Robert A. Ricci Sr. duly authorized, and acknowledged that he executed the foregoing instrument as his free act and deed in his said capacity.

Justice of the Peace/Notary Public

CITY OF PORTSMOUTH

Legal Department

City Hall, 126 Daniel Street
Portsmouth, New Hampshire 03801
(603) 431-2000, ext 200

Robert P. Sullivan
City Attorney

James J. Flynn,
Assistant City Attorney

April 12, 1985

Robert Ricci, Sr.
Ricci Construction Company
Banfield Road
Portsmouth, N.H. 03801

Re: Conservation Easements

Dear Mr. Ricci:

This is to advise that if the "propcsed easement area" identified on the attached "Exhibit A" is conveyed to HCA for conservation purposes, it may still be considered in density calculation for planned unit development purposes on Lot 011, Map 97.

This, of course, does not imply or guarantee approval of any particular project, each of which must be reviewed on its own merits.

Very truly yours,

Robert P. Sullivan,
City Attorney

RPS:bh

cc: Bernard Pelech, Esquire
Peter G. Weeks

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

Bruce A. Bennett, Principal
Manager Building Energy Services
bruce.bennett@gdsassociates.com
direct 603-391-.0052
cell 603-860-0968

Green & Co
Attn: Michael Green
11 Lafayette Road, P.O. Box 1297
North Hampton, NH 03862

RE: 3400 Lafayette Road, Portsmouth, New Hampshire

Hello Michael:
Thank you for your continued commitment to ENERGY STAR Homes. We look forward to working with you on the certification of the units being constructed at 3400 Lafayette Road. Our team here at GDS is happy to be working with Green and Company on another ENERGY STAR Home project.

For the benefit of others not familiar with the ENERGY STAR label and what it means for homes receiving the label, ENERGY STAR is more than just energy efficient construction. It also includes an element of building durability and healthy building environments. The process includes energy modeling and performance-based testing as well as on-site inspections to confirm the modeling inputs, to identify opportunities to improve insulation and air-sealing prior to drywall, duct leakage testing, and blower door testing.

ENERGY STAR Home are by design at least 30% more efficient than code built home (IECC 2009) and include high efficient HVAC and water heating equipment, insulation installed to attain an installation grading of grade, excellent window efficiencies (u-value ≤ 0.30) and high efficacy lighting and ENERGY STAR appliances.

Because ENERGY STAR encourages tight, well insulated buildings, the program does not want to create any issues with indoor air quality. Therefore, the program requires some means of whole-house ventilation (compliant with ASHRAE Standard 62.2) and includes a moisture management checklist. All of this adds a non-energy benefit to constructing a home that is energy efficiency, healthy and durable.

Our plan is to utilize the NHSaves program (sponsored by Eversource, Unitil, Liberty and NHEC) to provide support for modeling and inspections.

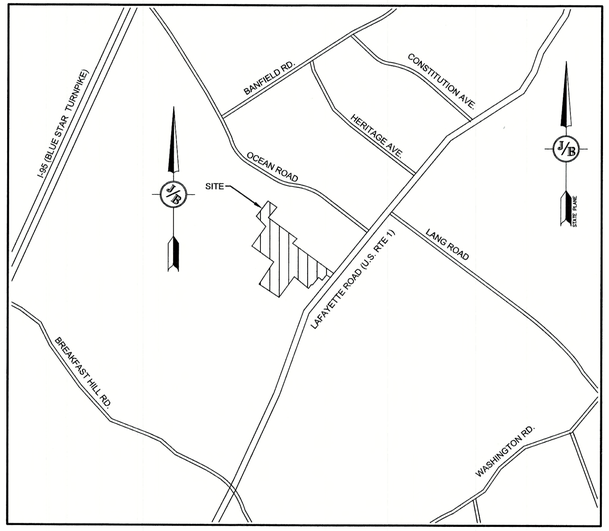
Once we receive a set of plans we can begin the take-off and energy modeling. In the meantime, as always, please contact me with any questions or design changes that may impact the ENERGY STAR Home certification.

Thank you,
Bruce Bennett, Principal

RESIDENTIAL CONDOMINIUMS
TAX MAP 297, LOT 11
3400 LAFAYETTE ROAD, PORTSMOUTH, NH

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		TIDAL WETLANDS LINE
		STREAM CHANNEL
		TREE LINE
		STONEWALL
		BARBED WIRE
		FENCE
		STOCKADE FENCE
		SOIL BOUNDARY
		AQUIFER PROTECTION LINE
		FLOOD PLAIN LINE
		ZONELINE
		EASEMENT
100	100	MAJOR CONTOUR
98	99.5	MINOR CONTOUR
VGC	VGC	EDGE OF PAVEMENT
SGC	SGC	VERTICAL GRANITE CURB
CCB	CCB	SLOPE GRANITE CURB
PCC	PCC	CAPE COD BERM
X	X	POURED CONCRETE CURB
D		SILT FENCE
		DRAINAGE LINE
FM	FM	SEWER LINE
G	G	SEWER FORCE MAIN
W	W	GAS LINE
WS	WS	WATER LINE
OHE	OHE	WATER SERVICE
UGE	UGE	OVERHEAD ELECTRIC
		UNDERGROUND ELECTRIC
UD	UD	GUARDRAIL
F	F	UNDERDRAIN
		FIRE PROTECTION LINE
		THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
100x0	100x0	STONE/GRANITE BOUND
100.00	100.00	SPOT GRADE
100.00 / 99.50	100.00 / 99.50	PAVEMENT SPOT GRADE
		CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
TP1		WELL
		TEST PIT
		FAILED TEST PIT
		MONITORING WELL
		PERC TEST
		PHOTO LOCATION
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
		DRAIN MANHOLE
		SEWER MANHOLE
		HYDRANT
		WATER GATE
		WATER SHUT OFF
		REDUCER
		SINGLE GRATE CATCH BASIN
		DOUBLE GRATE CATCH BASIN
		TRANSFORMER
		CULVERT W/WINGWALLS
		CULVERT W/FLARED END SECTION
		CULVERT W/STRAIGHT HEADWALL
		STONE CHECK DAM
		DRAINAGE FLOW DIRECTION
		4K SEPTIC AREA
		WETLAND IMPACT
		VEGETATED FILTER STRIP
		RIPRAP
		OPEN WATER
		FRESHWATER WETLANDS
		TIDAL WETLANDS
		STABILIZED CONSTRUCTION ENTRANCE
		CONCRETE
		GRAVEL
		SNOW STORAGE
		RETAINING WALL



LOCUS MAP
SCALE 1" = 2000'

SHEET INDEX

CS	COVER SHEET
A1	BOUNDARY PLAN
EXOVR	OVERVIEW EXISTING CONDITIONS PLAN
C1	EXISTING CONDTIONS PLAN
OVR	OVERVIEW SITE PLAN
C2	SITE PLAN
C3	GRADING AND DRAINAGE PLAN
C4-C5	UTILITY PLAN
L1	LIGHTING PLAN
P1-P3	ROAD PLAN AND PROFILE
P4-P6	SEWER PROFILES
D1-D6	DETAIL SHEETS
E1	EROSION AND SEDIMENT CONTROL DETAILS
T1	TRUCK TURNING PLAN
LS-1-4	LANDSCAPE PLANS

CIVIL ENGINEER / SURVEYOR
JONES & BEACH ENGINEERS, INC.
85 PORTSMOUTH AVENUE
PO BOX 219
STRATHAM, NH 03885
(603) 772-4746
CONTACT: JOSEPH CORONATI
EMAIL: JCORONATI@JONESANDBEACH.COM

WETLAND CONSULTANT
GZA ENVIRONMENTAL
5 COMMERCE PARK NORTH
SUITE 201
BEDFORD, NH 03110
603-623-3600
CONTACT: JAMES LONG

APPLICANT
GREEN & COMPANY
11 LAFAYETTE ROAD
PO BOX 1297
NORTH HAMPTON, NH 03862
603-964-7572
CONTACT: MICHAEL GREEN
MPG114@GMAIL.COM

LANDSCAPE ARCHITECT
TF MORAN, INC.
48 CONSTITUTION DRIVE
BEDFORD, NH 03110
603-472-4488
CONTACT: MIKE KRZEMINSKI
MKRZEMINSKI@TFMORAN.COM

ARCHITECT:
STONEARCH DEVELOPMENT
(603) 817-5758
CONTACT: MICHAEL MACNEIL

ELECTRIC
EVERSOURCE ENERGY
74 OLD DOVER ROAD
ROCHESTER, NH 03867
(603) 555-5334
CONTACT: NICHOLAI KOSKO

TELEPHONE
FAIRPOINT COMMUNICATIONS
1575 GREENLAND ROAD
GREENLAND, NH 03840
(603) 427-5525
CONTACT: JOE CONSIDINE

CABLE TV
COMCAST COMMUNICATION CORPORATION
334-B CALEF HIGHWAY
EPPING, NH 03042-2325
(603) 679-5695

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 297, LOT 11

TOTAL LOT AREA
1,931,721 SQ. FT. ±
44.35 ACRES ±

APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:

Design: JAC	Draft: LAZ
Checked: JAC	Scale: AS NOTED
Drawing Name: 20737-PLAN.dwg	Date: 3/3/21
	Project No.: 20737

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9646
LICENSED PROFESSIONAL ENGINEER
6/23/2021

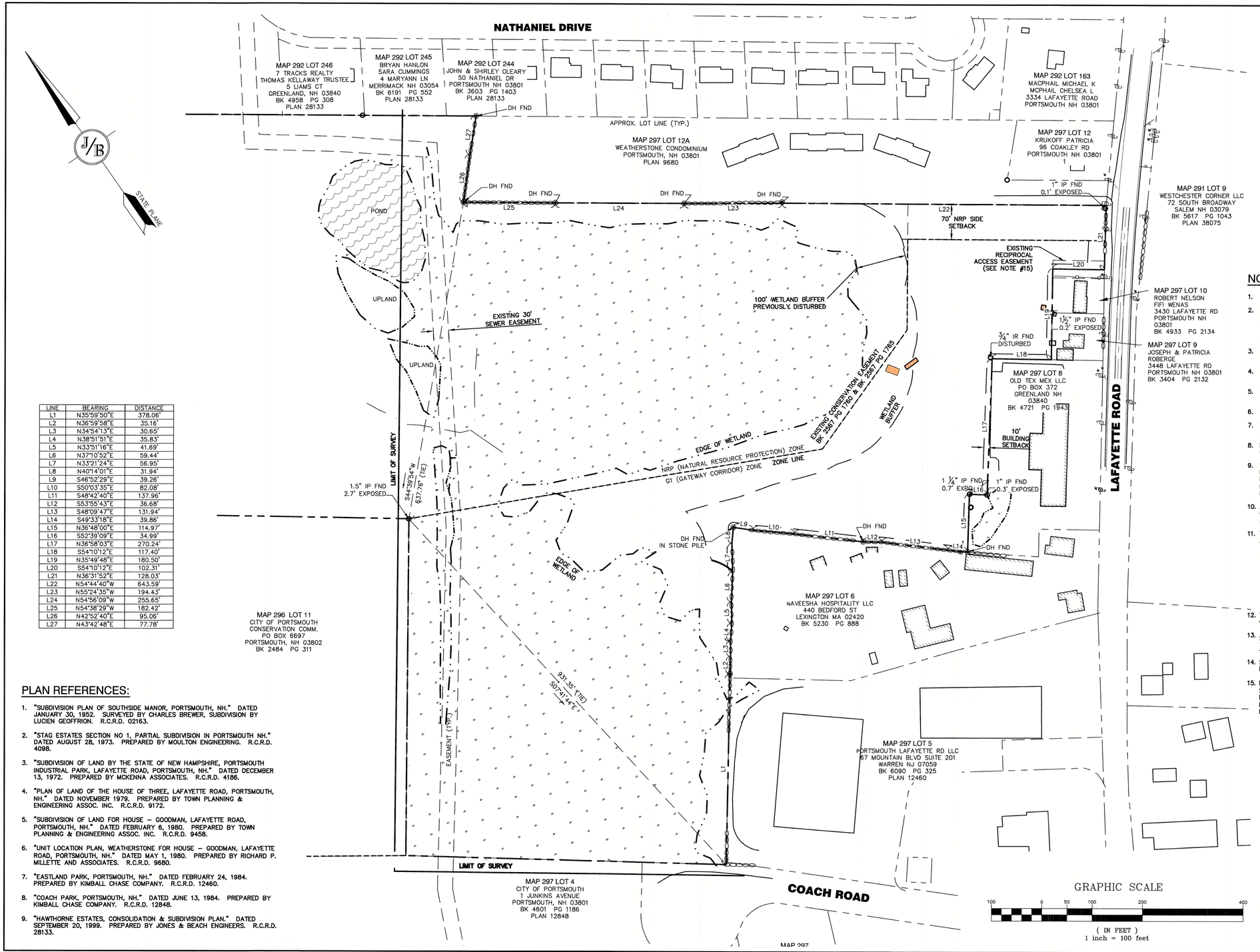
REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	COVER SHEET
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
CS
SHEET 1 OF 25
JBE PROJECT NO. 20737

PROJECT NAME AND LOCATION
JBE # 20737
REVISION 5/5/21



LINE	BEARING	DISTANCE
L1	N35°59'50"E	378.06'
L2	N36°59'58"E	35.16'
L3	N34°54'13"E	30.65'
L4	N38°51'51"E	35.83'
L5	N33°51'16"E	41.69'
L6	N37°10'52"E	59.44'
L7	N33°21'24"E	56.95'
L8	N40°14'01"E	31.94'
L9	S46°52'29"E	39.26'
L10	S50°03'35"E	82.08'
L11	S48°42'40"E	137.96'
L12	S53°55'43"E	36.68'
L13	S48°09'47"E	131.94'
L14	S49°33'18"E	39.86'
L15	N36°48'00"E	114.97'
L16	S52°39'09"E	34.99'
L17	N36°58'03"E	270.24'
L18	S54°10'12"E	117.40'
L19	N35°49'48"E	180.50'
L20	S54°10'12"E	102.31'
L21	N36°31'52"E	128.03'
L22	N54°44'40"W	643.59'
L23	N55°24'35"W	194.43'
L24	N54°56'09"W	255.65'
L25	N54°38'29"W	182.42'
L26	N42°52'40"E	95.06'
L27	N43°42'48"E	77.78'

PLAN REFERENCES:

1. "SUBDIVISION PLAN OF SOUTHSIDE MANOR, PORTSMOUTH, NH." DATED JANUARY 30, 1952. SURVEYED BY CHARLES BREWER, SUBDIVISION BY LUCIEN GEOFFRION. R.C.R.D. 02163.
2. "STAG ESTATES SECTION NO 1, PARTIAL SUBDIVISION IN PORTSMOUTH NH." DATED AUGUST 28, 1973. PREPARED BY MOULTON ENGINEERING. R.C.R.D. 4098.
3. "SUBDIVISION OF LAND BY THE STATE OF NEW HAMPSHIRE, PORTSMOUTH INDUSTRIAL PARK, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED DECEMBER 13, 1972. PREPARED BY MCKENNA ASSOCIATES. R.C.R.D. 4186.
4. "PLAN OF LAND OF THE HOUSE OF THREE, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED NOVEMBER 1979. PREPARED BY TOWN PLANNING & ENGINEERING ASSOC. INC. R.C.R.D. 9172.
5. "SUBDIVISION OF LAND FOR HOUSE – GOODMAN, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED FEBRUARY 6, 1980. PREPARED BY TOWN PLANNING & ENGINEERING ASSOC. INC. R.C.R.D. 9458.
6. "UNIT LOCATION PLAN, WEATHERSTONE FOR HOUSE – GOODMAN, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED MAY 1, 1980. PREPARED BY RICHARD P. MILLETTE AND ASSOCIATES. R.C.R.D. 9680.
7. "EASTLAND PARK, PORTSMOUTH, NH." DATED FEBRUARY 24, 1984. PREPARED BY KIMBALL CHASE COMPANY. R.C.R.D. 12460.
8. "COACH PARK, PORTSMOUTH, NH." DATED JUNE 13, 1984. PREPARED BY KIMBALL CHASE COMPANY. R.C.R.D. 12848.
9. "HAWTHORNE ESTATES, CONSOLIDATION & SUBDIVISION PLAN." DATED SEPTEMBER 20, 1999. PREPARED BY JONES & BEACH ENGINEERS. R.C.R.D. 28133.

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE A PORTION OF THE EXISTING BOUNDARY OF TAX MAP 297 LOT 11.
2. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG–SAFE AT 1–888–DIG–SAFE.
3. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
4. BASIS OF BEARING: HORIZONTAL – NAD83 NH STATE PLANE
   VERTICAL – NAVD88.
5. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
6. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
7. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
8. RESEARCH WAS PERFORMED THROUGH THE CITY OF PORTSMOUTH GIS DATABASE, AND AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
9. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
10. ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL, TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
11. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY JAMES LONG CWS #007 IN JANUARY, 2021 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
    A. THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
    B. THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
    C. THE CURRENT VERSION OF THE FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, AS PUBLISHED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION AND/OR THE CURRENT VERSION OF THE FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, AS PUBLISHED BY THE USDA, NRCS, AS APPROPRIATE.
    D. THE CURRENT NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS, AS PUBLISHED BY THE US FISH AND WILDLIFE SERVICE.
12. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
13. ALL BOUNDARY LINES PERTINENT TO THE DEVELOPMENT SHOWN IN THIS PLAN SET HAVE BEEN SURVEYED BY THIS OFFICE. ALL BOUNDARY LINES NOT ANNOTATED WITH BEARING AND DISTANCES ARE PER CITY TAX MAPS, AND SHALL BE CONSIDERED APPROXIMATE.
14. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.
15. MAP 297 LOT 10 FIRST CONVEYED IN 1955 (BOOK 1363 PAGE 229) AS LOT 28 ON "SUBDIVISION PLAT OF SOUTHSIDE MANOR." LOT 28 IS BOUNDED NORTHEASTERLY BY EDGEWOOD ROAD, PER DEED DESCRIPTION. THE DESCRIPTION OF THIS LOT DOES NOT CORRESPOND TO THE LOTS SHOWN ON PLAN REFERENCE 1. NO OTHER PLANS OF SOUTHSIDE MANOR HAVE BEEN FOUND RECORDED AT R.C.R.D. A WIDTH OF 35' WAS ASSUMED FOR EDGEWOOD ROAD, TO BE CONSISTENT WITH THE RECORDED PLAN.

CERTIFICATION:

PURSUANT TO RSA 676:18–III AND RSA 672:14

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE – LICENSED LAND SURVEYOR – NO. 1030 – MATTHEW J. SALVUCCI – SIGNATURE

6/23/21

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9846 – LICENSED PROFESSIONAL ENGINEER – 6/23/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	BOUNDARY PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
A1
SHEET 2 OF 25
JBE PROJECT NO. 20737

ADDITIONAL ABUTTERS

TAX MAP 292 LOT 222
FRENCH FAMILY REVOCABLE TRUST OF 1999
FRENCH JAMES H & HEIDI B TRUSTEES
9 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 236
HERNANDEZ EMMANUEL
HERNANDEZ KAREN
130 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 237
GORONSKI RICHARD C
GORONSKI ALICJA K
120 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 223
DIEMER FREDERICK C REVO TRUST
DIEMER FREDERICK C TRUSTEE
31 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 224
BARSTOW ERIK T
BARSTOW JENNAFER J
41 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 225
LE RYAN NGHIEM
NGO HELEN
53 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 234
GARDNER JR C WESLEY REVO TRUST
GARDNER JR C WESLEY TRUSTEE
150 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 235
YAEGER SUSAN
140 NATHANIEL DR
PORTSMTOUH NH 03801

TAX MAP 292 LOT 238
KARUNAKAREN FAM REV TST O 2021
KARUNAKAREN SUBRAMANIAN TRUSTEE
SHANMUHANANTHAN NAGHDEVI TRUSTTE
110 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 239
REDDY LAXMINARAYAN N
REDDY DHANALAXMI L
100 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 240
MCCARTHY KAREN A
BEAUVAIS AUDRA E
90 NATHANIEL DR
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TAX MAP 292 LOT 241
GALLAGHER PAUL J
80 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 242
WERRY WILLIAM A
DOWD-WERRY DIANA M
72 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 243
HASSAN KERRI
HASSAN COREY
60 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 293 LOT 1
RICHARDSON SCOTT A
35 MARIETTE DR
PORTSMOUTH NH 03801

TAX MAP 293 LOT 3
CAHILL JEROME J
CAHILL ERIN G
37 MARIETTE DR
PORTSMOUTH NH 03801

TAX MAP 293 LOT5- 1
DANFORTH FAMILY NOMINEE TRUST
DANFORTH RICHARD K TRUSTEE
377 OCEAN BLVD
PORTSMOUTH, NH 03801

TAX MAP 293 LOT 5-2
TRAN THEM T
VU MINH D
379 OCEAN BLVD
PORTSMOUTH, NH 03801

TAX MAP 293 LOT 5-3
COUTURIER FAM REV TST OF 2020
COUTURIER MICHAEL & KELLY TRUSTEES
381 OCEAN BLVD
PORTSMOUTH, NH 03801

TAX MAP 293 LOT 5-5
PHAM CUC
BUI TONY
385 OCEAN BLVD
PORTSMOUTH, NH 03801

TAX MAP 293 LOT 6
GRAVEL TYLER
409 OCEAN RD
PORTSMOUTH NH 03801

TAX MAP 297
LOT 12A-1
SEAWARD DANIEL O III
3370 LAFAYETTE RD #1
PORTSMOUTH NH 03801

TAX MAP 297
LOT 12A-2
LAROCHE NOAH
3370 LAFAYETTE RD UNIT 2
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-3
SALMON CAROLYN M REVO TRUST
SALMON CAROLYN M TRUSTEE
3370 LAFAYETTE RD #3
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-4
PERCHENSIS FAM REV TST
LEHOUX NEIL M & RAYMOND J ROY TTEES
3370 LAFAYETTE RD UNIT 4
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-5
SLATTERY & DUMONT LLC
66 OLD CONCORD TURNPIKE #10
BARRINGTON NH 03825

TAX MAP 297 LOT 12A-6
RAMSAY STEVEN J
RAMSAY SARAH B
2 INDIAN TR
EXETER NH 03833

TAX MAP 297 LOT 12A-7
GUTIERREZ NOEL E
GUTIERREZ MYRNA M
3370 LAFAYETTE RD #7
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-8
NEVEU CHRISTOPHER PAUL
3370 LAFAYETTE RD UNIT 9
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-9
CERAMI KRISTEN A REV TST OF 2020
CERAMI KRISTEN A TRUSTEE
3370 LAFAYETTE RD #9
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-10
BOGARDUS KIRK W
11 WINTER ST APT 6
FRANKLIN MA 02038

TAX MAP 297 LOT 12A-11
BOURQUE ALICIA K
TIPPING KYLE T
83 SANT MATTHEW'S DR
BARRINGTON NH 03825

TAX MAP 297 LOT 12A-12
HUBBARD CHARLOTTE
3370 LAFAYETTE RD UNIT 12
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-13
MCCOURT TREVOR
MCCOURT KELSEY A
3370 LAFAYETTE RD
UNIT #13
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-14
MORGAN ROBERT E
3370 LAFAYETTE RD #14
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-15
SHULTZ KEVIN J
3370 LAFAYETTE RD #15
PORTSMOUTH NH 03801

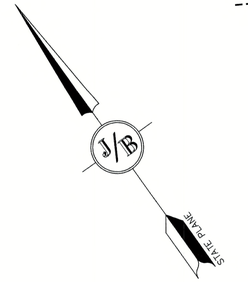
TAX MAP 297 LOT 12A-16
AIKENS PETER J SR
AIKENS JEAN P
3370 LAFAYETTE RD #16
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-17
FREIERMUTH CONSTANCE K REVO LIV
FREIERMUTH CONSTANCE K TRUSTEE
3370 LAFAYETTE RD UNIT 17
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-18
QUINONES CARLOS M JR ¾ INT
POMBO LOREN DAVILA REVO TRST 06 ¼ INT
75 HIGH ST APT E4
EXETER NH 03833-2928

TAX MAP 297 LOT 12A-19
KALIMUTHU MANIKANDAN
3370 LAFAYETTE RD #19
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A-20
MILLER GEORGE R JR REVO TRUST 09
MILLER PATRICIA I REVO TRUST 09
3370 LAFAYETTE RD #20
PORTSMOUTH NH 03801



MAP 293 LOT 6-1
IVILO & EDNA RENZULLO
2959 MUIR RD
YUBA CITY CA 95991
BK 2298 PG 941

TAX MAP 293 LOT 2
CITY OF PORTSMOUTH DPW
PO BOX 628
PORTSMOUTH NH 03801
BK 2660 PG 2419

MAP 292 LOT 221
CITY OF PORTSMOUTH
1 JUNKINS AVENUE
PORTSMOUTH, NH 03801
BK 3481 PG 288
PLAN 28133

NATHANIEL DRIVE

MAP 292 LOT 246
7 TRACKS REALTY
THOMAS KELLAWAY TRUSTEE
5 LIAMS CT
GREENLAND, NH 03840
BK 4958 PG 308
PLAN 28133

MAP 292 LOT 245
BRYAN HANLON
SARA CUMMINGS
4 MARYANN LN
MERRIMACK NH 03054
BK 6191 PG 552
PLAN 28133

MAP 292 LOT 244
JOHN & SHIRLEY OLEARY
50 NATHANIEL DR
PORTSMOUTH NH 03801
BK 3603 PG 1403
PLAN 28133

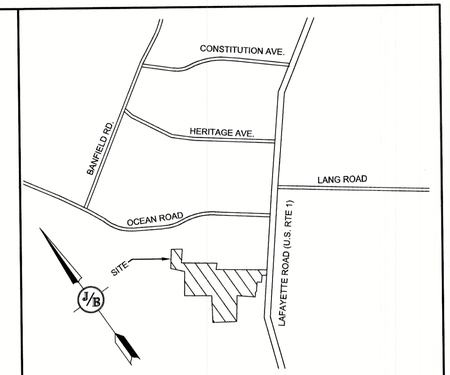
DH FND
L27
L26
DH FND
DH FND
L25
POND
UPLAND
EXISTING 30' SEWER EASEMENT
LIMIT OF SURVEY
S44°39'54"W
637.76' (TIE)
1.5" IP FND
2.7' EXPOSED
EDGE OF WETLAND
931.35' (TIE)
S07°41'44"E

MAP 293 LOT 10
CITY OF PORTSMOUTH DPW
PO BOX 628
PORTSMOUTH NH 03801
BK 2299 PG 424

MAP 296 LOT 12
CITY OF PORTSMOUTH
CONSV COMM
PO BOX 6697
PORTSMOUTH NH 03802
BK 2488 PG 311

MAP 296 LOT 11
CITY OF PORTSMOUTH
CONSERVATION COMM.
PO BOX 6697
PORTSMOUTH, NH 03802
BK 2484 PG 311

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 feet



LOCUS SCALE: 1"=2000'

CERTIFICATION:

PURSUANT TO RSA 676:18-III AND RSA 672:14

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

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THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE — No. 1030 — MATTHEW J. SALVUCCI — LICENSED LAND SURVEYOR — SIGNATURE

6/23/21

MATTHEW J. SALVUCCI, LLS 1030 — DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

Design: JAC	Draft: LAZ
Checked: JAC	Scale: AS SHOWN
Drawing Name: 20737-PLAN.dwg	Date: 3/3/21
	Project No.: 20737

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STATE OF NEW HAMPSHIRE — MICHAEL J. KERIVAN No. 9846 — LICENSED PROFESSIONAL ENGINEER — 6/23/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
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2	1/6/21	MINOR REVISIONS	DJM

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PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
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Plan Name:	BOUNDARY PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
A2
SHEET 3 OF 25
JBE PROJECT NO. 20737

ADDITIONAL ABUTTERS

TAX MAP 292 LOT 222
FRENCH FAMILY REVOCABLE TRUST OF 1999
FRENCH JAMES H & HEIDI B TRUSTEES
9 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 236
HERNANDEZ EMMANUEL
HERNANDEZ KAREN
130 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 237
GORONSKI RICHARD C
GORONSKI ALICJA K
120 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 223
DIEMER FREDERICK C REVO TRUST
DIEMER FREDERICK C TRUSTEE
31 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 224
BARSTOW ERIK T
BARSTOW JENNAFER J
41 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 292 LOT 225
LE RYAN NGHIEM
NGO HELEN
53 NATHANIEL DR
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TAX MAP 292 LOT 234
GARDNER JR C WESLEY REVO TRUST
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YAEGER SUSAN
140 NATHANIEL DR
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TAX MAP 292 LOT 238
KARUNAKAREN FAM REV TST O 2021
KARUNAKAREN SUBRAMANIAN TRUSTEE
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110 NATHANIEL DR
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TAX MAP 292 LOT 239
REDDY LAXMINARAYAN N
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TAX MAP 292 LOT 240
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90 NATHANIEL DR
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TAX MAP 292 LOT 242
WERRY WILLIAM A
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TAX MAP 292 LOT 243
HASSAN KERRI
HASSAN COREY
60 NATHANIEL DR
PORTSMOUTH NH 03801

TAX MAP 293 LOT 1
RICHARDSON SCOTT A
35 MARIETTE DR
PORTSMOUTH NH 03801

TAX MAP 293 LOT 3
CAHILL JEROME J
CAHILL ERIN G
37 MARIETTE DR
PORTSMOUTH NH 03801

TAX MAP 293 LOT5– 1
DANFORTH FAMILY NOMINEE TRUST
DANFORTH RICHARD K TRUSTEE
377 OCEAN BLVD
PORTSMOUTH, NH 03801

TAX MAP 293 LOT 5–2
TRAN THEM T
VU MINH D
379 OCEAN BLVD
PORTSMOUTH, NH 03801

TAX MAP 293 LOT 5–3
COUTURIER FAM REV TST OF 2020
COUTURIER MICHAEL & KELLY TRUSTEES
381 OCEAN BLVD
PORTSMOUTH, NH 03801

TAX MAP 293 LOT 5–5
PHAM CUC
BUI TONY
385 OCEAN BLVD
PORTSMOUTH, NH 03801

TAX MAP 293 LOT 6
GRAVEL TYLER
409 OCEAN RD
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–1
SEAWARD DANIEL O III
3370 LAFAYETTE RD #1
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–2
LAROCHE NOAH
3370 LAFAYETTE RD UNIT 2
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–3
SALMON CAROLYN M REVO TRUST
SALMON CAROLYN M TRUSTEE
3370 LAFAYETTE RD #3
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–4
PERCHENSIS FAM REV TST
LEHOUX NEIL M & RAYMOND J ROY TTEES
3370 LAFAYETTE RD UNIT 4
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–5
SLATTERY & DUMONT LLC
66 OLD CONCORD TURNPIKE #10
BARRINGTON NH 03825

TAX MAP 297 LOT 12A–6
RAMSAY STEVEN J
RAMSAY SARAH B
2 INDIAN TR
EXETER NH 03833

TAX MAP 297 LOT 12A–7
GUTIERREZ NOEL E
GUTIERREZ MYRNA M
3370 LAFAYETTE RD #7
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–8
NEVEU CHRISTOPHER PAUL
3370 LAFAYETTE RD UNIT 9
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–9
CERAMI KRISTEN A REV TST OF 2020
CERAMI KRISTEN A TRUSTEE
3370 LAFAYETTE RD #9
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–10
BOGARDUS KIRK W
11 WINTER ST APT 6
FRANKLIN MA 02038

TAX MAP 297 LOT 12A–11
BOURQUE ALICIA K
TIPPING KYLE T
83 SANT MATTHEW'S DR
BARRINGTON NH 03825

TAX MAP 297 LOT 12A–12
HUBBARD CHARLOTTE
3370 LAFAYETTE RD UNIT 12
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–13
MCCOURT TREVOR
MCCOURT KELSEY A
3370 LAFAYETTE RD UNIT #13
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–14
MORGAN ROBERT E
3370 LAFAYETTE RD #14
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–15
SHULTZ KEVIN J
3370 LAFAYETTE RD #15
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–16
AIKENS PETER J SR
AIKENS JEAN P
3370 LAFAYETTE RD #16
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–17
FREIERMUTH CONSTANCE K REVO LIV
FREIERMUTH CONSTANCE K TRUSTEE
3370 LAFAYETTE RD UNIT 17
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–18
QUINONES CARLOS M JR ¼ INT
POMBO LOREN DAVILA REVO TRST 06 ¼ INT
75 HIGH ST APT E4
EXETER NH 03833–2928

TAX MAP 297 LOT 12A–19
KALIMUTHU MANIKANDAN
3370 LAFAYETTE RD #19
PORTSMOUTH NH 03801

TAX MAP 297 LOT 12A–20
MILLER GEORGE R JR REVO TRUST 09
MILLER PATRICIA I REVO TRUST 09
3370 LAFAYETTE RD #20
PORTSMOUTH NH 03801

TAX MAP 293 LOT 2
CITY OF PORTSMOUTH DPW
PO BOX 628
PORTSMOUTH NH 03801
BK 2660 PG 2419

MAP 293 LOT 6-1
IVILO & EDNA RENZULLO
2959 MUIR RD
YUBA CITY CA 95991
BK 2298 PG 941

MAP 292 LOT 221
CITY OF PORTSMOUTH
1 JUNKINS AVENUE
PORTSMOUTH, NH 03801
BK 3481 PG 288
PLAN 28133

MAP 292 LOT 246
7 TRACKS REALTY
THOMAS KELLAWAY TRUSTEE
5 LIAMS CT
GREENLAND, NH 03840
BK 4958 PG 308
PLAN 28133

MAP 292 LOT 245
BRYAN HANLON
SARA CUMMINGS
4 MARYANN LN
MERRIMACK NH 03054
BK 6191 PG 552
PLAN 28133

MAP 292 LOT 244
JOHN & SHIRLEY OLEARY
50 NATHANIEL DR
PORTSMOUTH NH 03801
BK 3603 PG 1403
PLAN 28133

MAP 292 LOT 163
MACPHAIL MICHAEL K
MCPHAIL CHELSEA L
3334 LAFAYETTE ROAD
PORTSMOUTH NH 03801

MAP 297 LOT 12A
WEATHERSTONE CONDOMINIUM
PORTSMOUTH, NH 03801
PLAN 9680

MAP 297 LOT 12
KRUKOFF PATRICIA
96 COAKLEY RD
PORTSMOUTH NH 03801

MAP 291 LOT 9
WESTCHESTER CORNER LLC
72 SOUTH BROADWAY
SALEM NH 03079
BK 5617 PG 1043
PLAN 38075

MAP 297 LOT 10
ROBERT NELSON
FIFI WENAS
3430 LAFAYETTE RD
PORTSMOUTH NH 03801
BK 4933 PG 2134

MAP 297 LOT 9
JOSEPH & PATRICIA ROBERGE
3448 LAFAYETTE RD
PORTSMOUTH NH 03801
BK 3404 PG 2132

MAP 297 LOT 8
OLD TEX MEX LLC
PO BOX 372
GREENLAND NH 03840
BK 4721 PG 1943

MAP 297 LOT 6
NAVEESHA HOSPITALITY LLC
440 BEDFORD ST
LEXINGTON MA 02420
BK 5230 PG 888

MAP 297 LOT 5
PORTSMOUTH LAFAYETTE RD LLC
57 MOUNTAIN BLVD SUITE 201
WARREN NJ 07059
BK 6090 PG 325
PLAN 12460

MAP 293 LOT 10
CITY OF PORTSMOUTH DPW
PO BOX 628
PORTSMOUTH NH 03801
BK 2299 PG 424

MAP 296 LOT 12
CITY OF PORTSMOUTH
CONSV COMM
PO BOX 6697
PORTSMOUTH NH 03802
BK 2488 PG 311

MAP 296 LOT 11
CITY OF PORTSMOUTH
CONSERVATION COMM.
PO BOX 6697
PORTSMOUTH, NH 03802
BK 2484 PG 311

NATHANIEL DRIVE

LAFAYETTE ROAD

APPROX. LOT LINE (TYP.)

EXISTING 30' SEWER EASEMENT

EXISTING CONSERVATION EASEMENT 1,226,861 SF± 28.2 AC ±

EXISTING RECIPROCAL ACCESS EASEMENT (SEE NOTE #15)

100' WETLAND BUFFER PREVIOUSLY DISTURBED

EXISTING WETLAND BUFFER DISTURBANCE 40,185 SF

GRAVEL TO BE REMOVED

WOOD CHIP PILE TO BE REMOVED

WETLAND BUFFER

EDGE OF WETLAND

NHP (NATURAL RESOURCE PROTECTION) ZONE

ZONE LINE

G1 (GATEWAY CORRIDOR) ZONE

70' NRP SIDE SETBACK

10' BUILDING SETBACK

EXISTING WETLAND 1 4,522 SF

WETLAND 2 PFO1E/PF01Fg/PUBHx/PEMHx

WETLAND 2 PFO1E

POND

UPLAND

EXISTING TRAIL

DH FND IN STONE PILE

1.5" IP FND 2.1' EXPOSED

1" IP FND 0.1' EXPOSED

1½" IP FND 0.2' EXPOSED

¾" IR FND DISTURBED

1 ¼" IP FND 0.7' EXPOSED

1" IP FND 0.3' EXPOSED

S41°54'54"W 931.35' (TIE)

S07°41'14"E 931.35' (TIE)

EASEMENT

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 feet

Design: JAC	Draft: LAZ	Date: 3/3/21	
Checked: JAC	Scale: AS SHOWN	Project No.: 20737	
Drawing Name: 20737-PLAN.dwg			

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STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9646 LICENSED PROFESSIONAL ENGINEER — 6/23/21

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: OVERVIEW EXISTING CONDITIONS PLAN

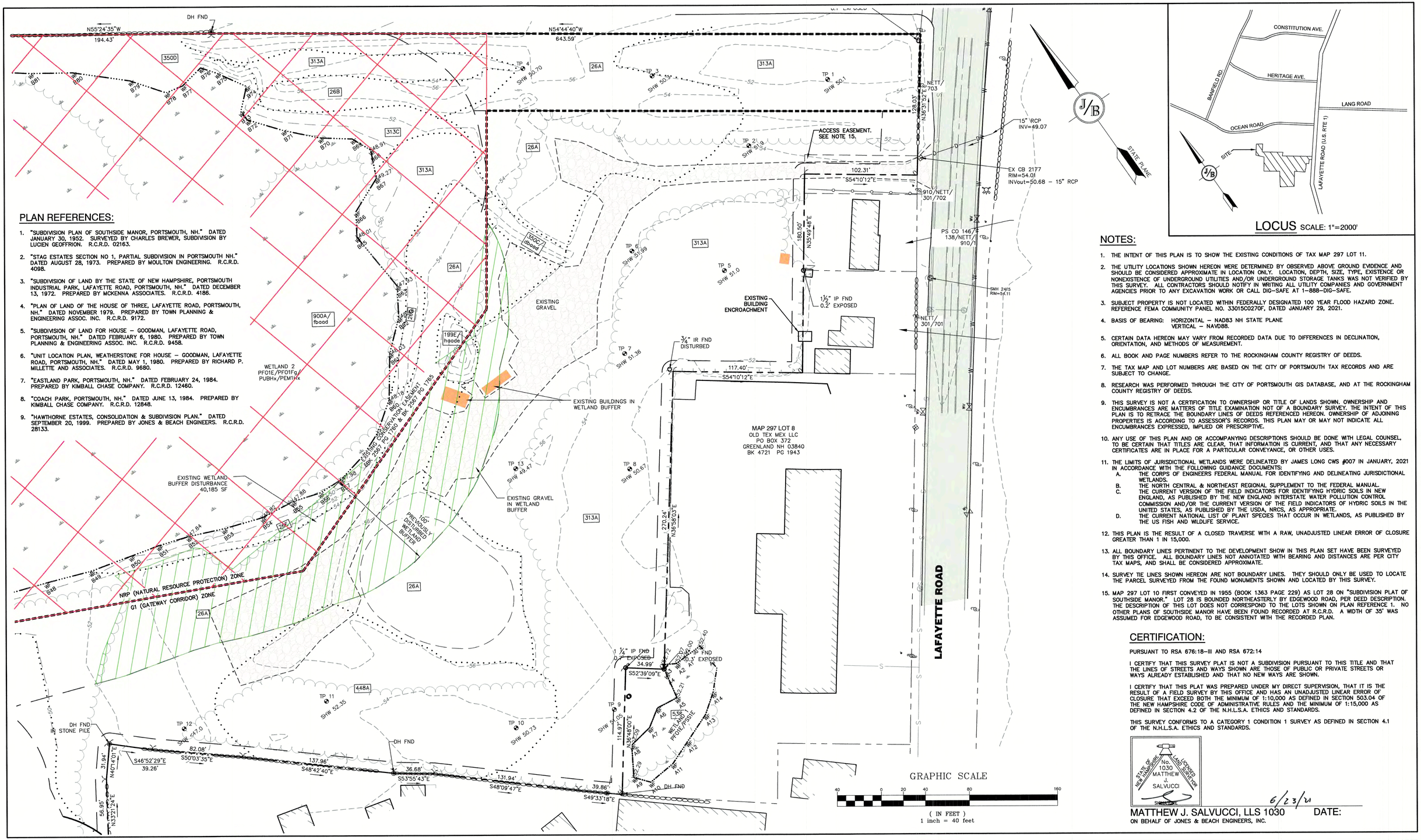
Project: 3400 LAFAYETTE ROAD
PORTSMOUTH, NH

Owner of Record: RICCI CONSTRUCTION CO., INC.
225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
EXOVR
SHEET 4 OF 25
JBE PROJECT NO. 20737

PLAN REFERENCES:

1. "SUBDIVISION PLAN OF SOUTHSIDE MANOR, PORTSMOUTH, NH." DATED JANUARY 30, 1952. SURVEYED BY CHARLES BREWER, SUBDIVISION BY LUCIEN GEOFFRION. R.C.R.D. 02163.
2. "STAG ESTATES SECTION NO 1, PARTIAL SUBDIVISION IN PORTSMOUTH NH." DATED AUGUST 28, 1973. PREPARED BY MOULTON ENGINEERING. R.C.R.D. 4098.
3. "SUBDIVISION OF LAND BY THE STATE OF NEW HAMPSHIRE, PORTSMOUTH INDUSTRIAL PARK, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED DECEMBER 13, 1972. PREPARED BY MCKENNA ASSOCIATES. R.C.R.D. 4186.
4. "PLAN OF LAND OF THE HOUSE OF THREE, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED NOVEMBER 1979. PREPARED BY TOWN PLANNING & ENGINEERING ASSOC. INC. R.C.R.D. 9172.
5. "SUBDIVISION OF LAND FOR HOUSE – GOODMAN, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED FEBRUARY 6, 1980. PREPARED BY TOWN PLANNING & ENGINEERING ASSOC. INC. R.C.R.D. 9458.
6. "UNIT LOCATION PLAN, WEATHERSTONE FOR HOUSE – GOODMAN, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED MAY 1, 1980. PREPARED BY RICHARD P. MILLETTE AND ASSOCIATES. R.C.R.D. 9680.
7. "EASTLAND PARK, PORTSMOUTH, NH." DATED FEBRUARY 24, 1984. PREPARED BY KIMBALL CHASE COMPANY. R.C.R.D. 12460.
8. "COACH PARK, PORTSMOUTH, NH." DATED JUNE 13, 1984. PREPARED BY KIMBALL CHASE COMPANY. R.C.R.D. 12848.
9. "HAWTHORNE ESTATES, CONSOLIDATION & SUBDIVISION PLAN." DATED SEPTEMBER 20, 1999. PREPARED BY JONES & BEACH ENGINEERS. R.C.R.D. 28133.



NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS OF TAX MAP 297 LOT 11.
2. THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG–SAFE AT 1–888–DIG–SAFE.
3. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
4. BASIS OF BEARING: HORIZONTAL – NAD83 NH STATE PLANE
   VERTICAL – NAVD88.
5. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
6. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
7. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
8. RESEARCH WAS PERFORMED THROUGH THE CITY OF PORTSMOUTH GIS DATABASE, AND AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
9. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
10. ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL, TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
11. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY JAMES LONG CWS #007 IN JANUARY, 2021 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
    A. THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
    B. THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
    C. THE CURRENT VERSION OF THE FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, AS PUBLISHED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION AND/OR THE CURRENT VERSION OF THE FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, AS PUBLISHED BY THE USDA, NRCS, AS APPROPRIATE.
    D. THE CURRENT NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS, AS PUBLISHED BY THE US FISH AND WILDLIFE SERVICE.
12. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
13. ALL BOUNDARY LINES PERTINENT TO THE DEVELOPMENT SHOW IN THIS PLAN SET HAVE BEEN SURVEYED BY THIS OFFICE. ALL BOUNDARY LINES NOT ANNOTATED WITH BEARING AND DISTANCES ARE PER CITY TAX MAPS, AND SHALL BE CONSIDERED APPROXIMATE.
14. SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.
15. MAP 297 LOT 10 FIRST CONVEYED IN 1955 (BOOK 1363 PAGE 229) AS LOT 28 ON "SUBDIVISION PLAT OF SOUTHSIDE MANOR." LOT 28 IS BOUNDED NORTHEASTERLY BY EDGEWOOD ROAD, PER DEED DESCRIPTION. THE DESCRIPTION OF THIS LOT DOES NOT CORRESPOND TO THE LOTS SHOWN ON PLAN REFERENCE 1. NO OTHER PLANS OF SOUTHSIDE MANOR HAVE BEEN FOUND RECORDED AT R.C.R.D. A WIDTH OF 35' WAS ASSUMED FOR EDGEWOOD ROAD, TO BE CONSISTENT WITH THE RECORDED PLAN.

CERTIFICATION:

PURSUANT TO RSA 676:18–III AND RSA 672:14

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

STATE OF NEW HAMPSHIRE – No. 1030 – MATTHEW J. SALVUCCI – LICENSED LAND SURVEYOR – SIGNATURE

6/23/21

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

Design: JAC	Draft: LAZ
Checked: JAC	Scale: AS SHOWN
Drawing Name: 20737-PLAN.dwg	Date: 3/3/21
	Project No.: 20737

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9648 – LICENSED PROFESSIONAL ENGINEER – 6/23/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

Designed and Produced in NH
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85 Portsmouth Ave.
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Civil Engineering Services
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Plan Name:	EXISTING CONDITIONS PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
C1
SHEET 5 OF 25
JBE PROJECT NO. 20737

MAP 293 LOT 6-1
IVILO & EDNA RENZULLO
2959 MUIR RD
YUBA CITY CA 95991
BK 2298 PG 941

MAP 292 LOT 221
CITY OF PORTSMOUTH
1 JUNKINS AVENUE
PORTSMOUTH, NH 03801
BK 3481 PG 288
PLAN 28133

NATHANIEL DRIVE

MAP 292 LOT 246
7 TRACKS REALTY
THOMAS KELLAWAY TRUSTEE
5 LIAMS CT
GREENLAND, NH 03840
BK 4958 PG 308
PLAN 28133

MAP 292 LOT 245
BRYAN HANLON
SARA CUMMINGS
4 MARYANN LN
MERRIMACK NH 03054
BK 6191 PG 552
PLAN 28133

MAP 292 LOT 244
JOHN & SHIRLEY OLEARY
50 NATHANIEL DR
PORTSMOUTH NH 03801
BK 3603 PG 1403
PLAN 28133

APPROX. LOT LINE (TYP.)

MAP 292 LOT 163
MACPHAIL MICHAEL K
MCPHAIL CHELSEA L
3334 LAFAYETTE ROAD
PORTSMOUTH NH 03801

MAP 297 LOT 12A
WEATHERSTONE CONDOMINIUM
PORTSMOUTH, NH 03801
PLAN 9680

MAP 297 LOT 12
KRUKOFF PATRICIA
96 OAKLEY RD
PORTSMOUTH NH 03801
1

MAP 291 LOT 9
WESTCHESTER CORNER LLC
72 SOUTH BROADWAY
SALEM NH 03079
BK 5617 PG 1043
PLAN 38075

MAP 297 LOT 10
ROBERT NELSON
FIFI WENAS
3430 LAFAYETTE RD
PORTSMOUTH NH
03801
BK 4933 PG 2134

MAP 297 LOT 9
JOSEPH & PATRICIA
ROBERGE
3448 LAFAYETTE RD
PORTSMOUTH NH 03801
BK 3404 PG 2132

MAP 297 LOT 8
OLD TEX MEX LLC
PO BOX 372
GREENLAND NH
03840
BK 4721 PG 1943

LAFAYETTE ROAD

70' NRP SIDE SETBACK

EXISTING RECIPROCAL ACCESS EASEMENT (SEE NOTE #15)

10' BUILDING SETBACK

100' WETLAND BUFFER PREVIOUSLY DISTURBED

EXISTING CONSERVATION EASEMENT 1,226,861 SF± 28.2 AC ±

EXISTING 30' SEWER EASEMENT

WETLAND BUFFER PLAQUES TO BE PLACED EVERY 50' ALONG BUFFER

EXISTING CONSERVATION EASEMENT BK 2697 PG 1760 & BK 2697 PG 1765

WETLAND BUFFER

EDGE OF WETLAND

PROPOSED WALKING TRAIL

NRP (NATURAL RESOURCE PROTECTION) ZONE ZONE LINE

GI (GATEWAY CORRIDOR) ZONE

POND

UPLAND

PROPOSED CONSERVATION EASEMENT 449,145 SF 10.31 AC

S44°29'34"W 834.76' (TIE)

S37°28'24"W 348.67'

S31°35'41"E 507.47'

MAP 296 LOT 12
CITY OF PORTSMOUTH
CONSV COMM
PO BOX 6697
PORTSMOUTH NH 03802
BK 2488 PG 311

MAP 296 LOT 11
CITY OF PORTSMOUTH
CONSERVATION COMM.
PO BOX 6697
PORTSMOUTH, NH 03802
BK 2484 PG 311

MAP 297 LOT 6
NAVEESHA HOSPITALITY LLC
440 BEDFORD ST
LEXINGTON MA 02420
BK 5230 PG 888

MAP 297 LOT 5
PORTSMOUTH LAFAYETTE RD LLC
67 MOUNTAIN BLVD SUITE 201
WARREN NJ 07059
BK 6090 PG 325
PLAN 12460

APPROX. LOT LINE (TYP.)

TEMPORARY WETLAND IMPACT	
A	2,100 SF
B	50 SF
TOTAL	2,150 SF

* TEMPORARY WETLAND IMPACT FOR SEWER CONSTRUCTION ONLY

TEMPORARY WETLAND BUFFER IMPACTS		
	EXISTING	PROPOSED
A	40,185 SF	2,000 SF
B		2,500 SF
C		650 SF
D		2,200 SF
E		12,900 SF**
TOTAL	40,185 SF	20,250 SF

** TEMPORARY BUFFER IMPACT E FOR SEWER CONSTRUCTION ONLY

ZONING AREAS						
	GATEWAY DISTRICT		NATURAL RESOURCE DISTRICT		TOTAL SITE	
TOTAL IMPERVIOUS AREA	99,370 SF	14.7%	0 SF		99,370 SF	5.2%
OPEN SPACE	577,990 SF	85.30%	1,226,861 SF	100%	1,804,851 SF	94.80%
TOTAL	677,360 SF		1,226,861 SF		1,904,221 SF	

LINE	BEARING	DISTANCE
L1	N35°59'50"E	378.06'
L2	N36°59'58"E	35.16'
L3	N34°54'13"E	30.65'
L4	N38°51'51"E	35.83'
L5	N33°51'16"E	41.69'
L6	N37°10'52"E	59.44'
L7	N33°21'24"E	56.95'
L8	N40°14'01"E	31.94'
L9	S46°52'29"E	39.26'
L10	S50°03'35"E	82.08'
L11	S48°42'40"E	137.96'
L12	S53°55'43"E	36.68'
L13	S48°09'47"E	131.94'
L14	S49°33'18"E	39.86'
L15	N36°48'00"E	114.97'
L16	S52°39'09"E	34.99'
L17	N36°58'03"E	270.24'
L18	S54°10'12"E	117.40'
L19	N35°49'48"E	180.50'
L20	S54°10'12"E	102.31'
L21	N36°31'52"E	128.03'
L22	N54°44'40"W	643.59'
L23	N55°24'35"W	194.43'
L24	N54°56'09"W	255.65'
L25	N54°38'29"W	182.42'
L26	N42°52'40"E	95.06'
L27	N43°42'48"E	77.78'

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 feet

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9646 – LICENSED PROFESSIONAL ENGINEER – 6/23/2021

REV.	DATE	REVISION	BY
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5	5/5/21	REVISIONS	LAZ
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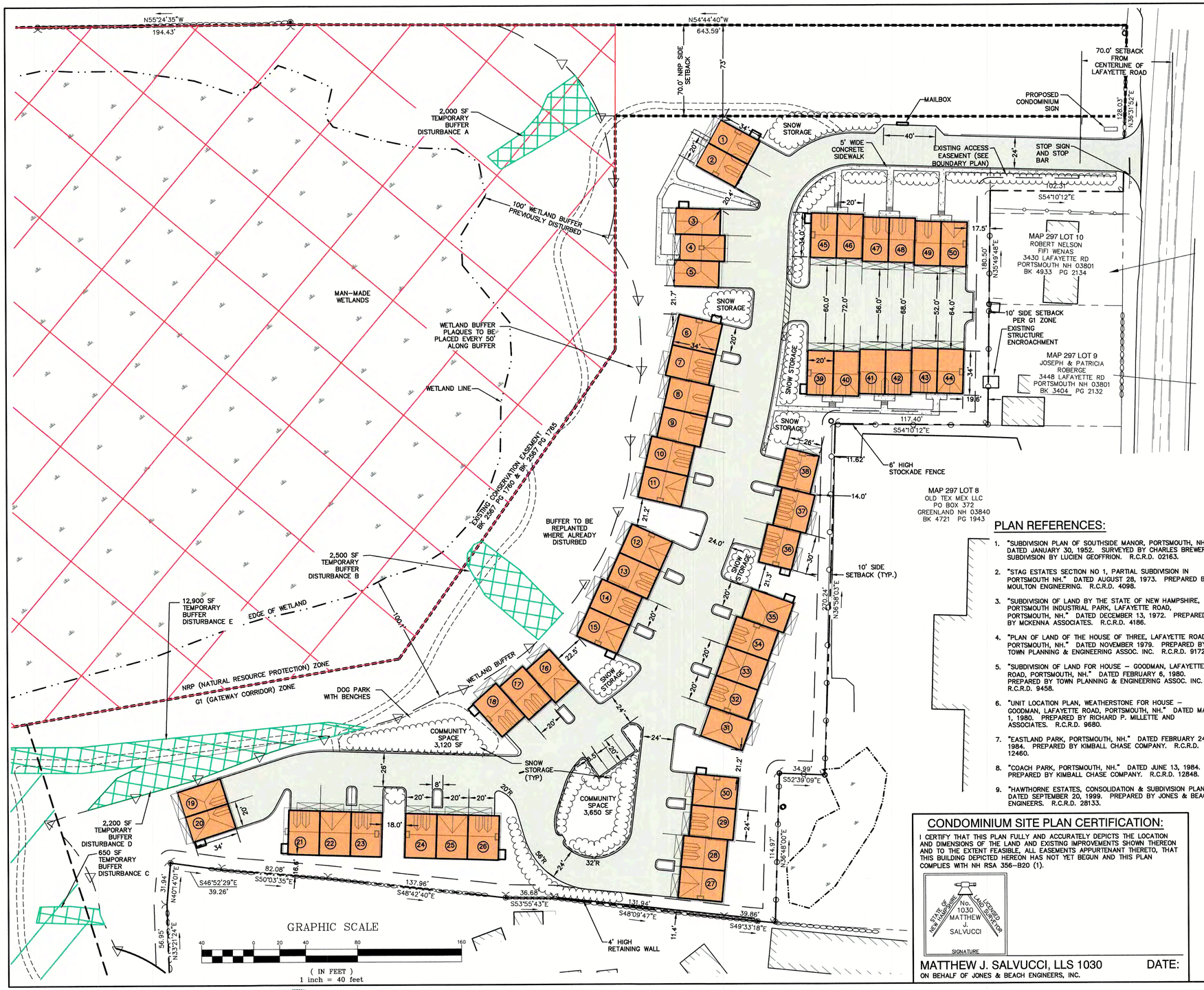
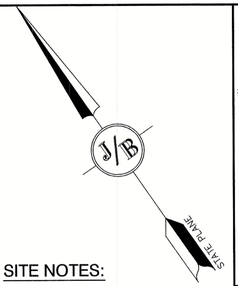
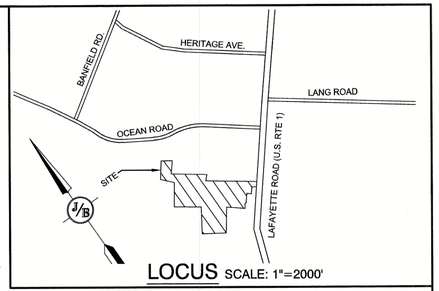
Plan Name:	OVERVIEW SITE PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
OVR
SHEET 6 OF 25
JBE PROJECT NO. 20737







LOCUS SCALE: 1"=2000'

SITE NOTES:

1. THE INTENT OF THIS PLAN IS SHOW THE SITE LAYOUT FOR A 50-UNIT MULTI-FAMILY RESIDENTIAL DEVELOPMENT ON TAX MAP 297 LOT 11.

2. ZONING DISTRICT: GATEWAY CORRIDOR (G1), USE: GATEWAY TOWNHOUSE
   LOT AREA MINIMUM = NO REQUIREMENT FOUND
   LOT FRONTAGE MINIMUM = 100'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 70' FROM CENTERLINE OF LAFAYETTE ROAD
   SIDE SETBACK = 10'
   REAR SETBACK = 15'
   WETLAND SETBACK = 100'
   MAX. BUILDING HEIGHT = 35'

   AREA OF LOT WITHIN G1 DISTRICT = 677,360 S.F.=15.55 AC
   MIN. OPEN SPACE = 20%
   OPEN SPACE PROPOSED WITHIN G1 DISTRICT = 577,990 S.F. = 85.3% ±
   MAX. BUILDING COVERAGE = 50%
   BUILDING COVERAGE PROPOSED WITHIN G1 DISTRICT = 38,108 S.F. = 5.6%
   DENSITY ALLOWED = 16 UNITS/ACRE = 16 X 15.55 AC =248 UNITS ALLOWED

   ZONING DISTRICT: NATURAL RESOURCE PROTECTION (NRP)
   LOT AREA MINIMUM = NO REQUIREMENT
   LOT FRONTAGE MINIMUM = NO REQUIREMENT
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 70'
   SIDE SETBACK = 70'
   REAR SETBACK = 70'
   MAX BUILDING HEIGHT = 35'
   MAX. BUILDING COVERAGE = NO REQUIREMENT
   AREA OF LOT WITHIN NRP DISTRICT = 1,226,861 S.F. ±
   MIN. OPEN SPACE = 95%
   OPEN SPACE PROPOSED = 1,226,861 S.F. = 100% WITHIN NRP DISTRICT

   EXISTING CONSERVATION EASEMENT = 28.16 AC = 64.4% OF SITE
   PROPOSED CONSERVATION EASEMENT = 10.3 AC = 23.6% OF SITE
   TOTAL CONSERVATION EASEMENT = 38.5 AC = 88.0% OF SITE

   TOTAL IMPERVIOUS AREA = 99,370 SF = 5.2% OF SITE
   TOTAL DISTURBED AREA = 211,700 SF= 4.8 AC = 11.1% OF SITE

4. PARKING CALCULATIONS:
   1.3 SPACES PER UNIT > 750 S.F.
   TOTAL NUMBER OF UNITS = 50. EACH UNIT HAS 2 SPACES IN GARAGE.
   4 OUTDOOR PARKING SPACES PROVIDED.
   TOTAL SPACES REQUIRED = 65, TOTAL SPACES PROVIDED = 104

5. THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED. CONTRACTOR TO ALWAYS CONTACT DIG SAFE PRIOR TO DIGGING ONSITE OR OFFSITE TO ENSURE SAFETY AND OBEY THE LAW.

6. ALL CONSTRUCTION SHALL CONFORM TO CITY STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.

7. SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270E, DATED MAY 17, 2005.

8. LANDOWNERS ARE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING PERMITTING REQUIRED UNDER THESE REGULATIONS.

9. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (S.W.P.P.P.). THIS DOCUMENT IS TO BE KEPT ONSITE AT ALL TIMES AND UPDATED AS REQUIRED.

10. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.

11. ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND NHDOT STANDARDS AND SPECIFICATIONS (NON-REFLECTORIZED PAVEMENT MARKINGS), UNLESS OTHERWISE NOTED. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE CITY ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.

12. ALL PARKING STALLS SHALL BE SEPARATED USING 4" WIDE SOLID STRIPES. STRIPING SHALL HAVE TWO COATS OF PAINT, ALKYD BASIN SYNTHETIC RESIN, FEDERAL SPECIFICATION TTP-115 TYPE 1, IN A COLOR OF WHITE. ALL STOP BARS SHALL BE 18" IN WIDTH; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.

13. THERE SHALL BE NO PARKING ALONG THE ACCESS ROAD.

14. ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PROVIDED BY THE OWNER. ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OWNER PRIOR TO THE START OF CONSTRUCTION. BUILDING DIMENSIONS AND AREAS TO BE TO OUTSIDE OF MASONRY, UNLESS OTHERWISE NOTED.

15. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.

16. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUREMENTS OF THE SITE PLAN REVIEW REGULATIONS.

17. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTY OF DEEDS.

18. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THE SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.

19. EACH UNIT TO HAVE TRASH CANS STPRED INSIDE THE UNITS AND TO BE PICKED UP BY A PRIVATE TRASH HAULER.

20. SNOW TO BE TRUCKED OFFSITE WHEN DESIGNATED SNOW STORAGE AREA ARE FULL. GREEN SNOW PRO TECHNIQUES TO BE UTILIZED ON THIS SITE.

21. THE FOLLOWING STATE PERMITS ARE REQUIRED FOR THIS PROJECT:
    NHDES ALTERNATION OF TERRAIN PERMIT
    NHDES WETLAND PERMIT
    NHDES SEWER CONNECTION PERMIT
    NHDOT DRIVEWAY PERMIT

PLAN REFERENCES:

1. "SUBDIVISION PLAN OF SOUTHSIDE MANOR, PORTSMOUTH, NH." DATED JANUARY 30, 1952. SURVEYED BY CHARLES BREWER, SUBDIVISION BY LUCIEN GEOFFRION. R.C.R.D. 02163.
2. "STAG ESTATES SECTION NO 1, PARTIAL SUBDIVISION IN PORTSMOUTH NH." DATED AUGUST 28, 1973. PREPARED BY MOULTON ENGINEERING. R.C.R.D. 4098.
3. "SUBDIVISION OF LAND BY THE STATE OF NEW HAMPSHIRE, PORTSMOUTH INDUSTRIAL PARK, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED DECEMBER 13, 1972. PREPARED BY MCKENNA ASSOCIATES. R.C.R.D. 4186.
4. "PLAN OF LAND OF THE HOUSE OF THREE, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED NOVEMBER 1979. PREPARED BY TOWN PLANNING & ENGINEERING ASSOC. INC. R.C.R.D. 9172.
5. "SUBDIVISION OF LAND FOR HOUSE – GOODMAN, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED FEBRUARY 6, 1980. PREPARED BY TOWN PLANNING & ENGINEERING ASSOC. INC. R.C.R.D. 9458.
6. "UNIT LOCATION PLAN, WEATHERSTONE FOR HOUSE – GOODMAN, LAFAYETTE ROAD, PORTSMOUTH, NH." DATED MAY 1, 1980. PREPARED BY RICHARD P. MILLETTE AND ASSOCIATES. R.C.R.D. 9680.
7. "EASTLAND PARK, PORTSMOUTH, NH." DATED FEBRUARY 24, 1984. PREPARED BY KIMBALL CHASE COMPANY. R.C.R.D. 12460.
8. "COACH PARK, PORTSMOUTH, NH." DATED JUNE 13, 1984. PREPARED BY KIMBALL CHASE COMPANY. R.C.R.D. 12848.
9. "HAWTHORNE ESTATES, CONSOLIDATION & SUBDIVISION PLAN." DATED SEPTEMBER 20, 1999. PREPARED BY JONES & BEACH ENGINEERS. R.C.R.D. 28133.

CONDOMINIUM SITE PLAN CERTIFICATION:

I CERTIFY THAT THIS PLAN FULLY AND ACCURATELY DEPICTS THE LOCATION AND DIMENSIONS OF THE LAND AND EXISTING IMPROVEMENTS SHOWN THEREON AND TO THE EXTENT FEASIBLE, ALL EASEMENTS APPURTENANT THERETO, THAT THIS BUILDING DEPICTED HEREON HAS NOT YET BEGUN AND THIS PLAN COMPLIES WITH NH RSA 356-B20 (1).

STATE OF NEW HAMPSHIRE No. 1030 MATTHEW J. SALVUCCI LICENSED LAND SURVEYOR SIGNATURE

MATTHEW J. SALVUCCI, LLS 1030 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 297, LOT 11

TOTAL LOT AREA
1,931,721 SQ. FT. ±
44.35 ACRES ±

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

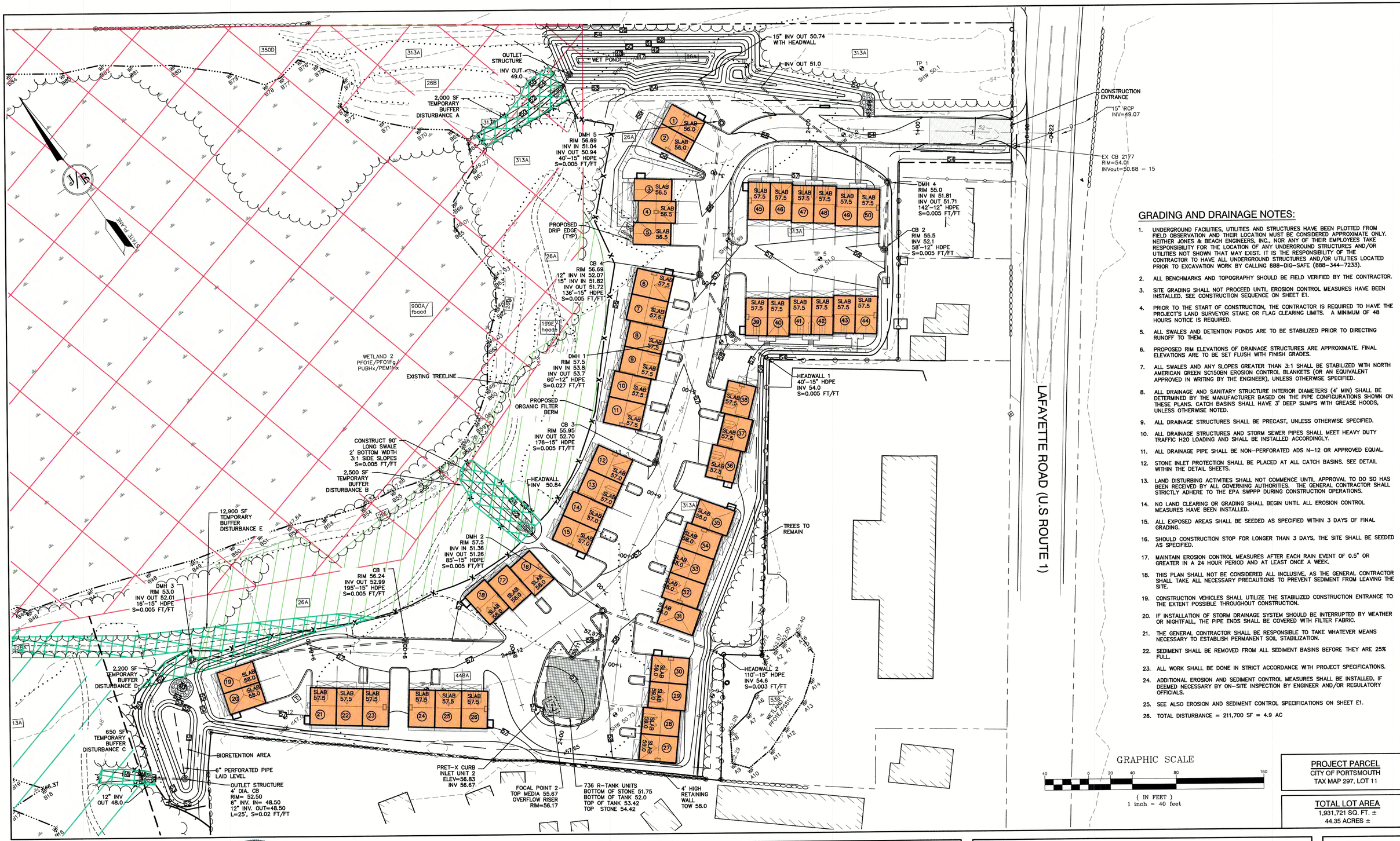
STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9946 LICENSED PROFESSIONAL ENGINEER 6/23/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM
REV.	DATE	REVISION	BY

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: CONDOMINIUM SITE PLAN
Project: 3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record: RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
C2
SHEET 7 OF 25
JBE PROJECT NO. 20737



GRADING AND DRAINAGE NOTES:

1. UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. NEITHER JONES & BEACH ENGINEERS, INC., NOR ANY OF THEIR EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES AND/OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 888–DIG–SAFE (888–344–7233).
2. ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR.
3. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
4. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT'S LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED.
5. ALL SWALES AND DETENTION PONDS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
6. PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
7. ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN SC150BN EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
8. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS. CATCH BASINS SHALL HAVE 3' DEEP SUMPS WITH GREASE HOODS, UNLESS OTHERWISE NOTED.
9. ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED.
10. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
11. ALL DRAINAGE PIPE SHALL BE NON–PERFORATED ADS N–12 OR APPROVED EQUAL.
12. STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
13. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION OPERATIONS.
14. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
15. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
16. SHOULD CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
17. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
18. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
19. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
20. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
21. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
22. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
23. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
24. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON–SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
25. SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET E1.
26. TOTAL DISTURBANCE = 211,700 SF = 4.9 AC

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 feet

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 297, LOT 11

TOTAL LOT AREA
1,931,721 SQ. FT. ±
44.35 ACRES ±

Design: JAC	Draft: LAZ	Date: 3/3/21	
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STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER
6/23/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

Designed and Produced in NH
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FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **GRADING AND DRAINAGE PLAN**
Project: 3400 LAFAYETTE ROAD
PORTSMOUTH, NH
Owner of Record: RICCI CONSTRUCTION CO., INC.
225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
C3
SHEET 8 OF 25
JBE PROJECT NO. 20737

UTILITY NOTES:

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, CONNECTION FEES AND BONDS.
2. THE CONTRACTOR SHALL PROVIDE A MINIMUM NOTICE OF FOURTEEN (14) DAYS TO ALL CORPORATIONS, COMPANIES AND/OR LOCAL AUTHORITIES OWNING OR HAVING A JURISDICTION OVER UTILITIES RUNNING TO, THROUGH OR ACROSS PROJECT AREAS PRIOR TO DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
3. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE TO THE STANDARDS AND REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY (ELECTRIC, TELEPHONE, CABLE TELEVISION, FIRE ALARM, GAS, WATER, AND SEWER).
4. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, ENGINEER, ARCHITECT, CONTRACTOR, LOCAL OFFICIALS, AND ALL PROJECT–RELATED UTILITY COMPANIES (PUBLIC AND PRIVATE) PRIOR TO START OF CONSTRUCTION.
5. ALL CONSTRUCTION SHALL CONFORM TO THE CITY STANDARDS AND REGULATIONS, AND NHDES STANDARDS AND SPECIFICATIONS, WHICHEVER ARE MORE STRINGENT, UNLESS OTHERWISE SPECIFIED.
6. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
7. BUILDING TO BE SERVICED BY UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED.
8. THE CONTRACTOR IS TO VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITY STUBS PRIOR TO CONSTRUCTION AND DISCONNECT ALL EXISTING SERVICE CONNECTIONS AT THEIR RESPECTIVE MAINS IN ACCORDANCE WITH THE RESPECTIVE UTILITY COMPANY'S STANDARDS AND SPECIFICATIONS. ENGINEER TO BE NOTIFIED.
9. AS–BUILT PLANS SHALL BE SUBMITTED TO DEPARTMENT OF PUBLIC WORKS.
10. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE THROUGH CHANNEL UNDERLAYMENT OF INVERT, AND SHELF SHALL CONSIST OF BRICK MASONRY.
11. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30 INCH DIA, CLEAR OPENING. THE WORD "SEWER" OR DRAIN" SHALL BE CAST INTO THE CENTER OF THE UPPER FACE OF EACH COVER WITH RAISED, 3" LETTERS.
12. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H20 LOADS.
13. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS, SERVICES, AND FORCE MAINS.
14. SANITARY SEWER FLOW CALCULATIONS:
    50 – THREE BEDROOM UNITS @ 150 GPD/BEDROOM =
    TOTAL FLOW = 22,500 GPD
15. ALL SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
16. PROPOSED RIM ELEVATIONS OF DRAINAGE AND SANITARY MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
17. ALL WATER MAINS AND SERVICE PIPES SHALL HAVE A MINIMUM 12" VERTICAL AND 24" HORIZONTAL SEPARATION TO MANHOLES, OR CONTRACTOR SHALL INSTALL BOARD INSULATION FOR FREEZING PROTECTION.
18. WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE. WATERMAINS SHALL BE TESTED AT 1.5 TIMES THE WORKING PRESSURE OR 150 PSI, WHICH EVER IS GREATER. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 4 OF AWWA STANDARD C 600. WATERMAINS SHALL BE DISINFECTED AFTER THE ACCEPTANCE OF THE PRESSURE AND LEAKAGE TESTS ACCORDING TO AWWA STANDARD C 651.
19. THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, MECHANICAL JOINTS AND FIRE HYDRANTS.
20. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
21. THE CONTRACTOR SHALL HAVE THE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER FIRE PROTECTION SYSTEM PRIOR TO INSTALLATION.
22. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHOULD BE SENT IN TRIPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
23. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
24. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
25. ALL GRAVITY SEWER PIPE, MANHOLES, AND FORCE MAINS SHALL BE TESTED ACCORDING TO NHDES STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWAGE AND WASTEWATER TREATMENT FACILITIES, CHAPTER ENV–WQ 700. ADOPTED ON 10–15–14.
26. ENV–WQ 704.06 GRAVITY SEWER PIPE TESTING: GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY USE OF LOW–PRESSURE AIR TESTS CONFORMING WITH ASTM F1417–92(2005) OR UNI–BELL PVC PIPE ASSOCIATION UNI–B–6. LINES SHALL BE CLEANED AND VISUALLY INSPECTED AND TRUE TO LINE AND GRADE. DEFLECTION TESTS SHALL TAKE PLACE AFTER 30 DAYS FOLLOWING INSTALLATION AND THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5% OF AVERAGE INSIDE DIAMETER. A RIGID BALL OR MANDREL WITH A DIAMETER OF AT LEAST 95% OF THE AVERAGE INSIDE PIPE DIAMETER SHALL BE USED FOR TESTING PIPE DEFLECTION. THE DEFLECTION TEST SHALL BE CONDUCTED WITHOUT MECHANICAL PULLING DEVICES.
27. ENV–WQ 704.17 SEWER MANHOLE TESTING: SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST PRIOR TO BACKFILLING AND PLACEMENT OF SHELVES AND INVERTS.
28. SANITARY SEWER LINES SHALL BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM AN EXISTING OR PROPOSED WATER LINE. WHEN A SEWER LINE CROSSES UNDER A WATER LINE, THE SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATERMAIN. THE SEWER LINE SHALL ALSO MAINTAIN A VERTICAL SEPARATION OF NOT LESS THAN 18 INCHES.
29. SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6 FEET BELOW GRADE IN ALL ROADWAY LOCATIONS, AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS–COUNTRY LOCATIONS. PROVIDE TWO–INCHES OF R–10 FOAM BOARD INSULATION 2–FOOT WIDE TO BE INSTALLED 6–INCHES OVER SEWER PIPE IN AREAS WHERE DEPTH IS NOT ACHIEVED. A WAIVER FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES WASTEWATER ENGINEERING BUREAU IS REQUIRED PRIOR TO INSTALLING SEWER AT LESS THAN MINIMUM COVER.
30. THE CONTRACTOR SHALL MINIMIZE THE DISRUPTIONS TO THE EXISTING SEWER FLOWS AND THOSE INTERRUPTIONS SHALL BE LIMITED TO FOUR (4) HOURS OR LESS AS DESIGNATED BY THE CITY SEWER DEPARTMENT.
31. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
32. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9846 – LICENSED PROFESSIONAL ENGINEER – 6/23/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	UTILITY PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
C4
SHEET 9 OF 25
JBE PROJECT NO. 20737

POND

SMH 2458
RIM=49.49

UPLAND

STATE PLANE

UPLAND

SMH 2455
RIM=46.95
INVin=40.25 – 10" VCP
INVout=40.21 – 10" VCP

2,000 SF
TEMPORARY
BUFFER
DISTURBANCE A

2,500 SF
TEMPORARY
BUFFER
DISTURBANCE B

12,900 SF
TEMPORARY
BUFFER
DISTURBANCE

EDGE OF WETLAND

100'

CONSERVATION EASEMENT

WETLAND BUFFER

50 SF TEMPORARY
WETLAND IMPACT

SMH 1

ORGANIC
FILTER
BERM

2,100 SF
TEMPORARY
WETLAND IMPACT

ORGANIC FILTER
BERM

EX SMH

SMH 2452
RIM=45.83
INVin=39.09 – 10" VCP
INVout=39.07 – 10" VCP

SMH 2

DMH 3

SMH 3

CB 1

PROPOSED
PARK AREA

SMH 4

2,200 SF
TEMPORARY
BUFFER
DISTURBANCE D

UPLAND

650 SF
TEMPORARY
BUFFER
DISTURBANCE C

PROPOSED
BIORETENTION
POND

PROPOSED
TRANSFORMER

x46.37

SMH 6

CB 3

SMH 5

DMH 2

R-TANK
SYSTEM

SMH
12

CURB INLET 3
WITH FOCAL
POINT

SMH 10

SMH 11

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 feet

Design: JAC	Draft: LAZ
Checked: JAC	Scale: AS SHOWN
Drawing Name: 20737-PLAN.dwg	Date: 3/3/21
	Project No.: 20737

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STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9646
LICENSED PROFESSIONAL ENGINEER
6/23/2021

REV.	DATE	REVISION	BY
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5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
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E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	UTILITY PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.

C5

SHEET 10 OF 25
JBE PROJECT NO. 20737

LIGHTING AND ELECTRICAL NOTES:

1. SITE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES AND DRAINAGE BEFORE DRILLING POLE BASES.
2. CONTRACTOR SHALL INSTALL PROPOSED LIGHT POLES ACCORDING TO CITY REGULATIONS.
3. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER CITY REGULATIONS.
4. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
5. ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDLES.
6. LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
7. ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
8. THE PROPOSED LIGHTING CALCULATIONS AND DESIGN WAS PERFORMED BY CHARRON, INC., P.O. BOX 4550, MANCHESTER, NH 03108, ATTENTION KEN SWEENEY. ALL LIGHTS SHOULD BE PURCHASED FROM THIS COMPANY, OR AN EQUAL LIGHTING DESIGN SHOULD BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.

Streetworks

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

DESCRIPTION

The Traditionaire LED outdoor luminaire displays the old-fashioned charm of traditional area lighting, enhancing any setting with distinctive styling. As a decorative luminaire, the Traditionaire LED tastefully complements the architectural and environmental design of parks and roadways. The high-lumen downlight configuration uses Cooper Lighting Solutions' patented LightBAR™ technology to deliver uniform and efficient illumination to pedestrian and roadway applications.

SPECIFICATION FEATURES

Construction
Hinged (stainless steel hinge pins) die-cast aluminum housing and cover with cupola. 3G vibration tested to ensure strength of construction and longevity in application.

Optics
Choice of six patented, high-efficiency AccuLED Optic™ technology manufactured from injection-molded acrylic. Optics are precisely designed to shape the light output, maximizing efficiency and application spacing. AccuLED Optic technology, creates consistent distributions with the scalability to meet customized application requirements. Offered Standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 3000K CCT, 5000K CCT and 5700K CCT. For the ultimate level of spill light control, an optional house-side shield accessory can be field or factory installed. The house-side shield is designed to seamlessly integrate with the SL2 or SL3 optics.

Electrical
LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation, greater than 0.9 power factor, less than 20% harmonic distortion, and is suitable for operation in -40°C to 40°C ambient environments. All fixtures are shipped standard with 10kV/10kA common – and differential – mode surge protection. LightBARs feature an IP66 enclosure rating and maintain greater than 95% lumen maintenance at 60,000 hours per IESNA TM-21.

Mounting
Self-aligning pole-top fitter for 3" O.D. pole tops or vertical tenons. Square headed 1-1/4" polymer coated mounting bolts with a lock nut.

Finish
Cast components finished in a super durable black TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Optional colors include: bronze, grey and white. RAL and custom color matches available.

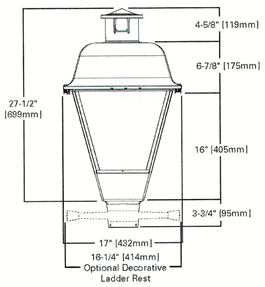
Warranty
Five-year warranty.

UTLD
TRADITIONAIRE LED DOWNLIGHT

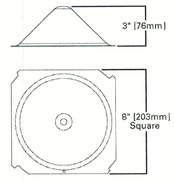
1 - 3 LightBARs
Solid State LED

DECORATIVE POST TOP LUMINAIRE

DIMENSIONS



OPTIONAL BIRD CONE



CERTIFICATION DATA
UL/cUL Listed
LM79 / LM80 Compliant
3G Vibration Rated
IP66 LightBARs
ISO 9001

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60Hz, 347V/60Hz, 480V/60Hz
-40°C Minimum Temperature
40°C Ambient Temperature Rating

EPA
Effective Projected Area: (Sq. Ft.)
2.3

SHIPPING DATA
Approximate Net Weight:
37 lbs. (17 kgs.)

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	1	P4	SINGLE	UTLD-F02-LED-E-U-SL4/ MTD ON 12' POLE TBD
	8	P3	SINGLE	UTLD-F02-LED-E-U-T3/ MTD ON A 12' POLE TBD

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 feet

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
MICHAEL J. KERWIN No. 9648 LICENSED PROFESSIONAL ENGINEER
6/23/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

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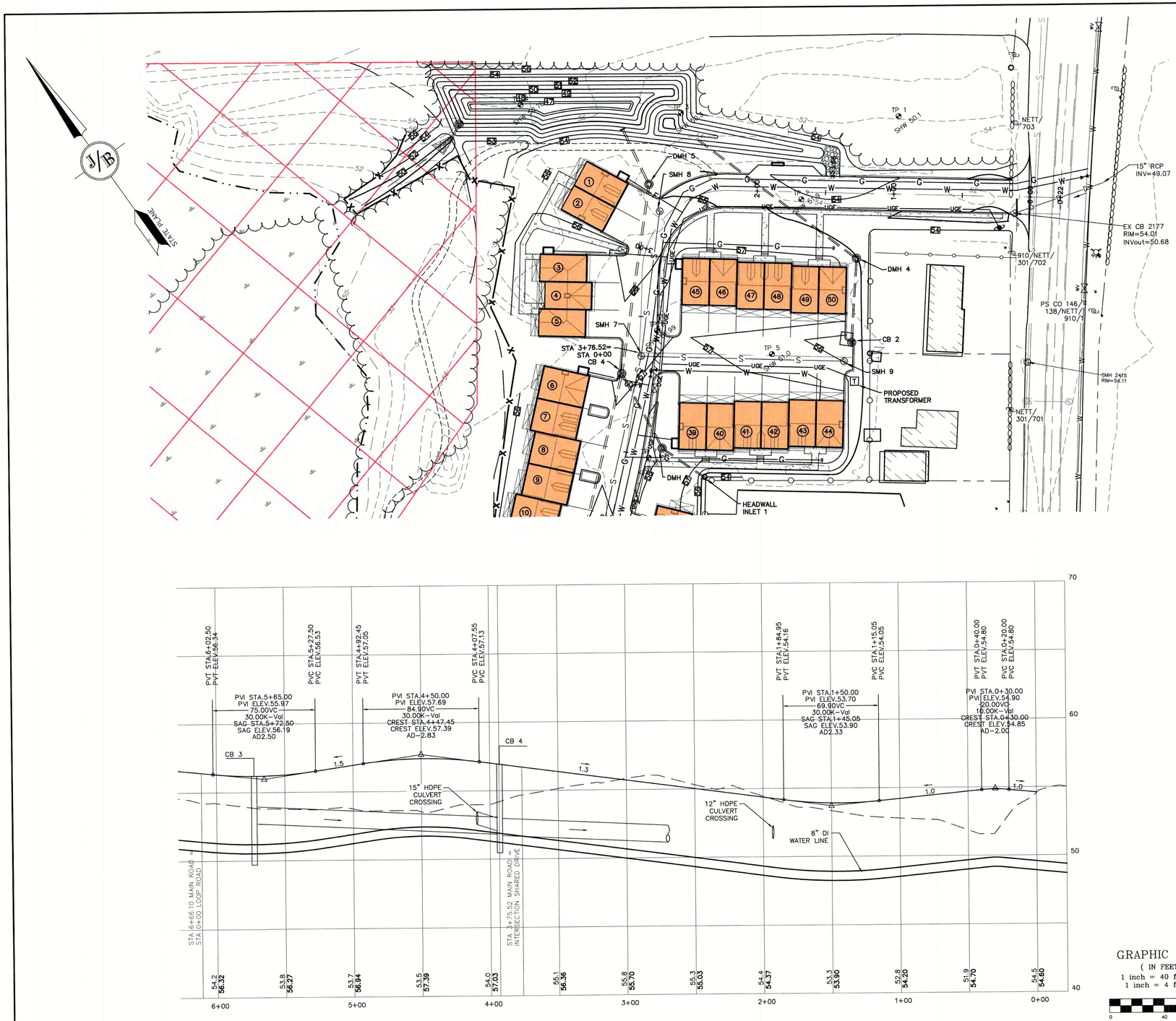
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	LIGHTING PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
L1
SHEET 11 OF 25
JBE PROJECT NO. 20737



NOTES:

1. THIS SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE CONSTRUCTION SITE. THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH SHALL REMAIN ON SITE AND BE MADE ACCESSIBLE TO THE PUBLIC. THE CONSTRUCTION SITE OPERATOR SHALL SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA REGIONAL OFFICE SEVEN DAYS PRIOR TO COMMENCEMENT OF ANY WORK ON SITE. EPA WILL POST THE NOI AT HTTP://CFPUB1.EPA.GOV/NPDES/STORMWATER/NOI/NOISEARCH.CFM. AUTHORIZATION IS GRANTED UNDER THE PERMIT ONCE THE NOI IS SHOWN IN "ACTIVE" STATUS ON THIS WEBSITE. A COMPLETED NOTICE OF TERMINATION SHALL BE SUBMITTED TO THE NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET:
   A. FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE; OR
   A. ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED. PROVIDE DPW WITH A COPY OF THE NOTICE OF TERMINATION (NOT).
2. ALL ROAD AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR THE CITY, AND NHDOT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
3. AS-BUILT PLANS TO BE SUBMITTED TO THE CITY PRIOR TO ACCEPTANCE OF THE ROADWAY.
4. DEVELOPER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING ANY PERMITTING AND SETBACK REQUIREMENTS REQUIRED UNDER THESE REGULATIONS.
5. CONTRACTOR TO COORDINATE AND COMPLETE ALL WORK REQUIRED FOR THE RELOCATION AND/OR INSTALLATION OF ELECTRIC, CATV, TELEPHONE, AND FIRE ALARM PER UTILITY DESIGN AND STANDARDS. LOCATIONS SHOWN ARE APPROXIMATE. LOW PROFILE STRUCTURES SHALL BE USED TO THE GREATEST EXTENT POSSIBLE.
6. THIS PLAN HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC. FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA SHOWN ON THE DESIGN PLANS. THIS INCLUDES ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS OF THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
7. SILTATION AND EROSION CONTROLS SHALL BE INSTALLED PRIOR TO CONSTRUCTION, SHALL BE MAINTAINED DURING CONSTRUCTION, AND SHALL REMAIN UNTIL SITE HAS BEEN STABILIZED WITH PERMANENT VEGETATION. SEE DETAIL SHEET E1 FOR ADDITIONAL NOTES ON EROSION CONTROL.
8. ALL DISTURBED AREAS NOT STABILIZED BY NOVEMBER 1st SHALL BE COVERED WITH AN EROSION CONTROL BLANKET. PRODUCT TO BE SPECIFIED BY THE ENGINEER.
9. FINAL DRAINAGE, GRADING AND EROSION PROTECTION MEASURES SHALL CONFORM TO REGULATIONS OF THE PUBLIC WORKS DEPARTMENT.
10. CONTRACTOR TO VERIFY EXISTING UTILITIES AND TO NOTIFY ENGINEER OF ANY DISCREPANCY IMMEDIATELY.
11. ROADWAY INTERSECTIONS WITH SLOPE GRANITE CURB SHALL EXTEND AROUND RADIUS WITH 6' STRAIGHT PIECE ALONG TANGENT.
12. 6" PERFORATED ADS UNDER DRAIN PLACEMENT TO BE DETERMINED BY THE ENGINEER DURING TIME OF SUBGRADE INSPECTION. CONTRACTOR TO ADJUST LOCATION IN THE FIELD ONLY WITH PRIOR APPROVAL OF PROJECT ENGINEER OR PUBLIC WORKS DEPARTMENT. CONTRACTOR TO INCLUDE 3000 LF IN BID PRICE.
13. ALL DRIVEWAYS TO BE CONSTRUCTED MAXIMUM 10% SLOPE. SEE DETAIL SHEET.
14. ENGINEER TO INSTALL PERMANENT BENCHMARK (REINFORCED GRANITE MARKER) AT LOCATIONS SHOWN ON PLANS. BENCH MARKS TO BE TIED TO STATE PLANE COORDINATE SYSTEM.
15. DRAINAGE INSPECTION AND MAINTENANCE SCHEDULE: ORGANIC FILTER BERM WILL BE INSPECTED DURING AND AFTER STORM EVENTS TO ENSURE THAT THE BERM STILL HAS INTEGRITY AND IS NOT ALLOWING SEDIMENT TO PASS. SEDIMENT BUILD UP IN SWALES WILL BE REMOVED IF IT IS DEEPER THAN SIX INCHES, AND IS TO BE REMOVED FROM SUMPS BELOW THE INLET OF CULVERTS SEMIANNUALLY, AS WELL AS FROM CATCH BASINS. FOLLOWING MAJOR STORM EVENTS, THE STAGE DISCHARGE OUTLET STRUCTURES ARE TO BE INSPECTED AND ANY DEBRIS REMOVED FROM THE ORIFICE, TRASH TRACK AND EMERGENCY SPILL WAY. INFREQUENTLY, SEDIMENT MAY ALSO HAVE TO BE REMOVED FROM THE SUMP OF THE STRUCTURE.
16. ALL DRAINAGE INFRASTRUCTURE SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING ANY RUNOFF TO IT.
17. DETENTION PONDS REQUIRE TIMELY MAINTENANCE AND SHOULD BE INSPECTED AFTER EVERY MAJOR STORM EVENT, AS WELL AS FREQUENTLY DURING THE FIRST YEAR OF OPERATION, AND ANNUALLY THEREAFTER. EVERY FIVE YEARS, THE SERVICES OF A PROFESSIONAL ENGINEER SHOULD BE RETAINED TO PERFORM A THOROUGH INSPECTION OF THE DETENTION POND AND ITS INFRASTRUCTURE. ANY DEBRIS AND SEDIMENT ACCUMULATIONS SHOULD BE REMOVED FROM THE OUTLET STRUCTURE(S) AND EMERGENCY SPILLWAY(S) AND DISPOSED OF PROPERLY. DETENTION POND BERMS SHOULD BE MOWED AT LEAST ONCE ANNUALLY SO AS TO PREVENT THE ESTABLISHMENT OF WOODY VEGETATION. TREES SHOULD NEVER BE ALLOWED TO GROW ON A DETENTION POND BERM, AS THEY MAY DESTABILIZE THE STRUCTURE AND INCREASE THE POTENTIAL FOR FAILURE. AREAS SHOWING SIGNS OF EROSION OR THIN OR DYING VEGETATION SHOULD BE REPAIRED IMMEDIATELY BY WHATEVER MEANS NECESSARY, WITH THE EXCEPTION OF FERTILIZER. RODENT BORROWS SHOULD BE REPAIRED IMMEDIATELY AND THE ANIMALS SHOULD BE TRAPPED AND RELOCATED IF THE PROBLEM PERSISTS.
18. THE DETENTION PONDS ARE TO BE CONSTRUCTED PRIMARILY THROUGH EXCAVATION. IN THOSE AREAS WHERE THE BERMS MUST BE CONSTRUCTED BY THE PLACEMENT OF FILL, THE ENTIRE EMBANKMENT AREA OF THE DETENTION PONDS SHALL BE EXCAVATED TO PROPOSED GRADE, STRIPPED OF ALL ORGANIC MATERIALS, COMPACTED TO AT LEAST 95% AND SCARIFIED PRIOR TO THE PLACEMENT OF THE EMBANKMENT MATERIAL. IN THE EVENT THE FOUNDATION MATERIAL EXPOSED DOES NOT ALLOW THE SPECIFIED COMPACTION, AN ADDITIONAL ONE FOOT (1') OF EXCAVATION AND THE PLACEMENT OF A ONE FOOT (1') THICK, TWELVE FOOT (12') WIDE PAD OF THE MATERIAL DESCRIBED IN THE NOTE BELOW, COMPACTED TO 95% OF ASTM D-1557 MAY BE NECESSARY. PLACEMENT AND COMPACTION SHOULD OCCUR AT A MOISTURE CONTENT OF OPTIMUM PLUS OR MINUS 3%, AND NO FROZEN OR ORGANIC MATERIAL SHOULD BE PLACED WITHIN FOR ANY REASON.
19. EMBANKMENT MATERIAL FOR THE BERMS SHALL BE CLEAN MINERAL SOIL WITH A CLAY COMPONENT FREE OF ROOTS, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES, AND SHALL CONTAIN NO ROCKS OR LUMPS OVER FOUR INCHES (4") IN DIAMETER. THIS MATERIAL SHOULD BE INSTALLED IN 6" LIFTS AND COMPACTED TO 95% OS ASTM D-1557, AND SHOULD MEET THE FOLLOWING SPECIFICATIONS: 4" PASSING 100%, #4 SIEVE 25-70%, #200 SIEVE 10-29% (IN TOTAL SAMPLE).
20. EMBANKMENT IS TO HAVE 3:1 SIDE SLOPES (MAX.) AND IS TO BE BROUGHT TO SPECIFIED GRADES PRIOR TO THE ADDITION OF LOAM (4" MINIMUM) SO AS TO ALLOW FOR THE COMPACTION OF THE STRUCTURE OVER TIME WHILE MAINTAINING THE PROPER BERM ELEVATION.
21. COMPACTION TESTING SERVICES (I.E. NUCLEAR DENSITY TESTS) ARE TO BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE CONTRACTOR FOR ROADWAY CONSTRUCTION, AND ON THE FOUNDATION OF THE BERM AND ON EVERY LIFT OF NEWLY PLACED MATERIAL.
22. ORNAMENTAL STREET LIGHTING SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE HOME OWNER'S ASSOCIATION. LIGHTING SHALL NOT TO BE OWNED OR MAINTAINED BY THE CITY.
23. SLOPED GRANITE CURB TO BE TIPPED DOWN AT ALL DRIVEWAY ENTRANCES BY THE CONTRACTOR. ALL DRIVEWAY LOCATIONS SHALL BE REVIEWED AND APPROVED BY PUBLIC WORKS PRIOR TO ISSUANCE OF BUILDING PERMIT.

Design: JAC	Draft: LAZ	Date: 3/3/21
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Drawing Name: 20737-PLAN.dwg		

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STATE OF NEW HAMPSHIRE - MICHAEL J. KERIVAN No. 9646 LICENSED PROFESSIONAL ENGINEER - 6/23/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
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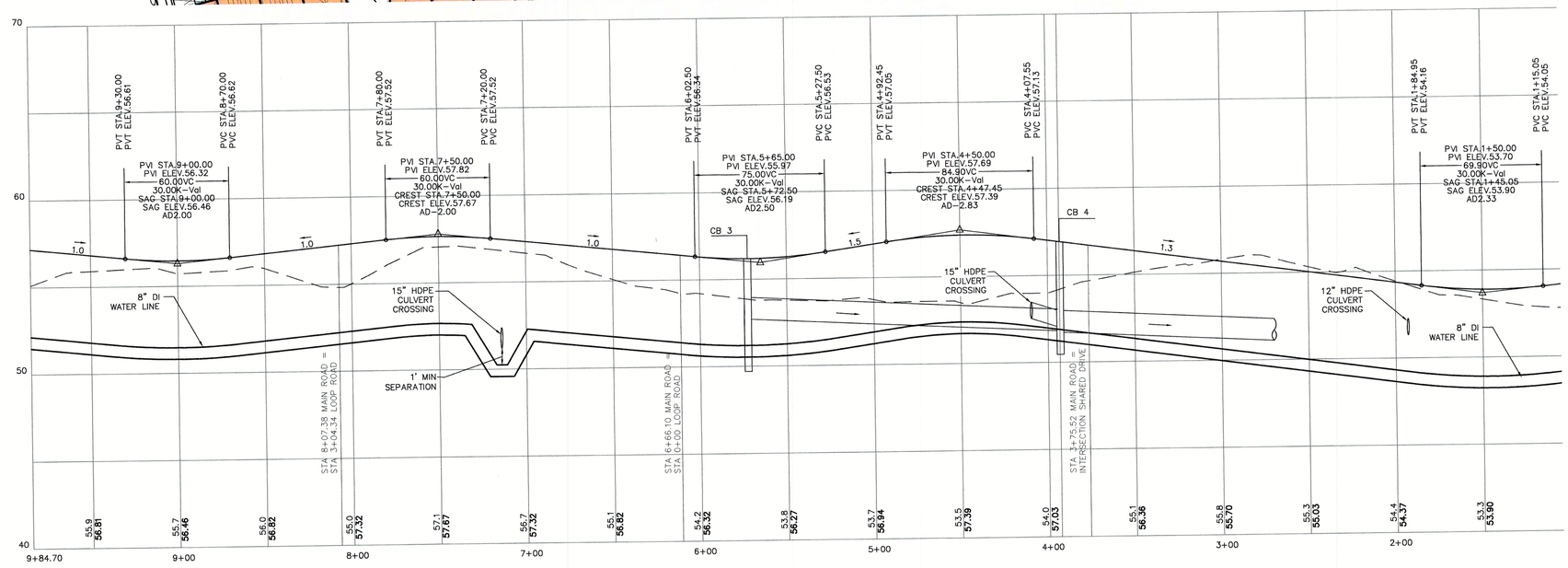
Plan Name:	PLAN AND PROFILE
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
P1
SHEET 12 OF 25
JBE PROJECT NO. 20737



GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft Horiz.
1 inch = 4 ft Vert.

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STATE OF NEW HAMPSHIRE
MICHAEL J. KERVAN
No. 9646
LICENSED PROFESSIONAL ENGINEER
3/23/21

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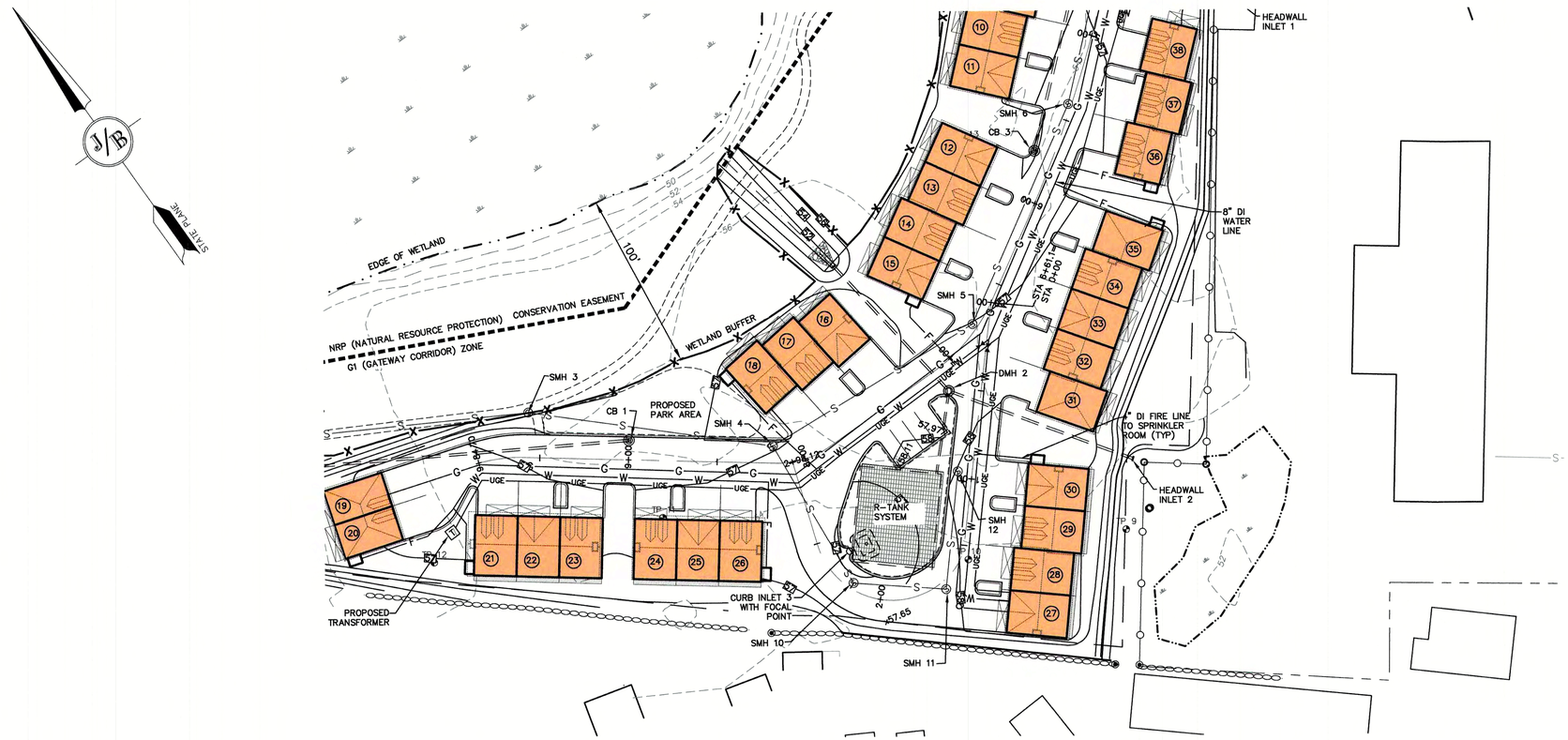
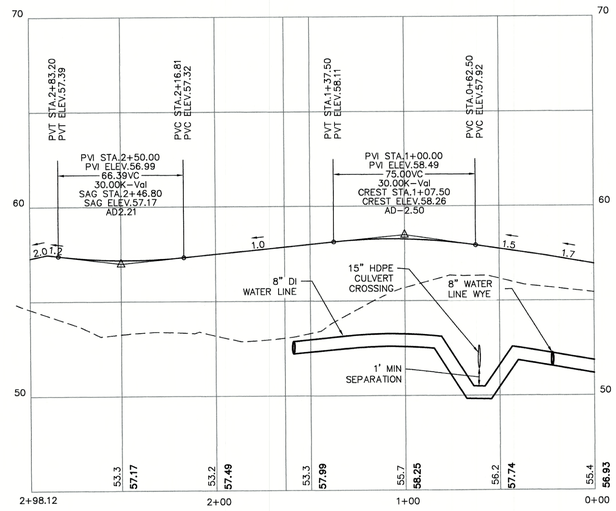
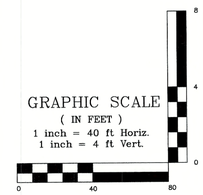
DRAWING No.
P2
SHEET 13 OF 25
JBE PROJECT NO. 20737







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STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN No. 9846
LICENSED PROFESSIONAL ENGINEER
12/22/21

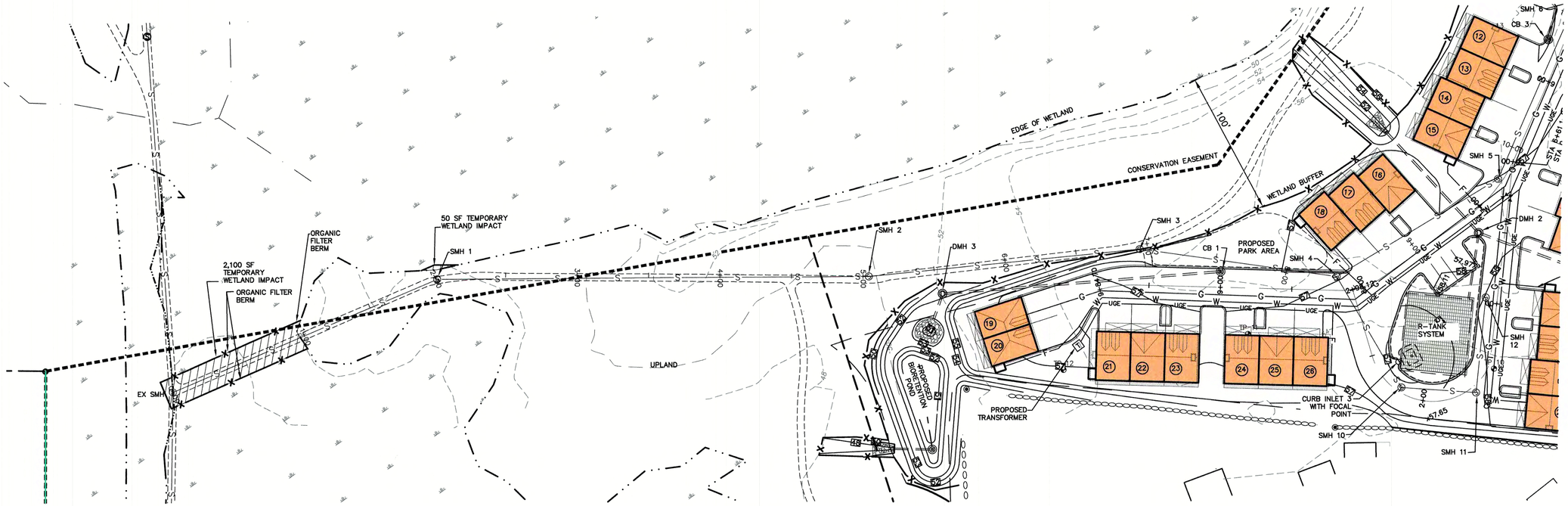
REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

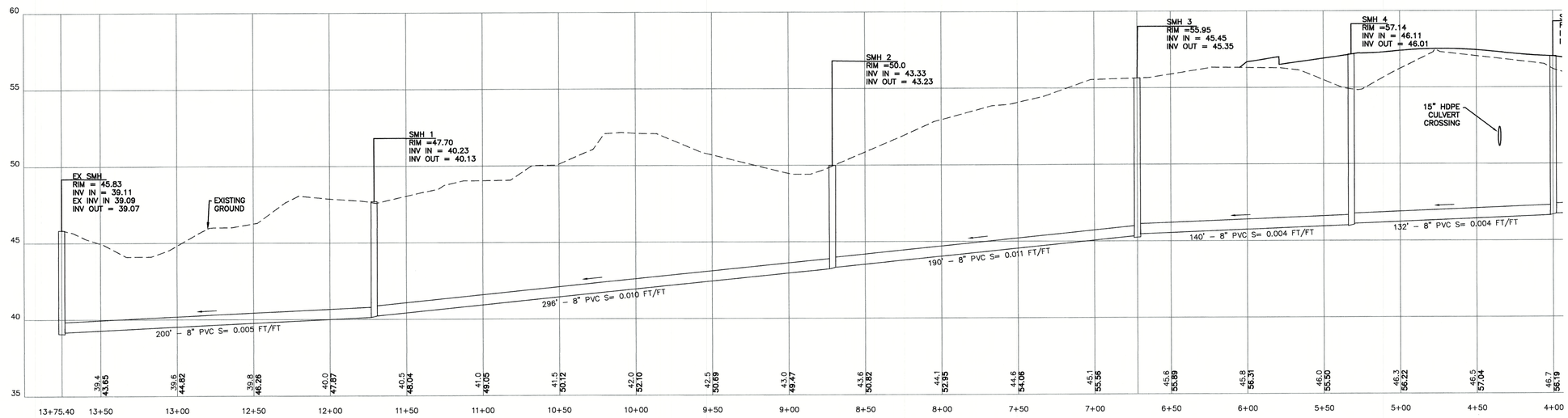
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	PLAN AND PROFILE
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
P3
SHEET 14 OF 25
JBE PROJECT NO. 20737

CONSERVATION EASEMENT
100'
WETLAND BUFFER
PROPOSED PARK AREA
SMH 3
SMH 4
SMH 5
SMH 6
SMH 7
SMH 8
SMH 10
SMH 11
SMH 12
CB 1
CB 2
CB 3
CB 4
CB 5
CB 6
CB 7
CB 8
CB 9
CB 10
CB 11
CB 12
CB 13
CB 14
CB 15
CB 16
CB 17
CB 18
CB 19
CB 20
CB





GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft Horiz.
1 inch = 4 ft Vert.

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

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STATE OF NEW HAMPSHIRE
MICHAEL J. KERWAN No. 9846 LICENSED PROFESSIONAL ENGINEER
6/23/2021

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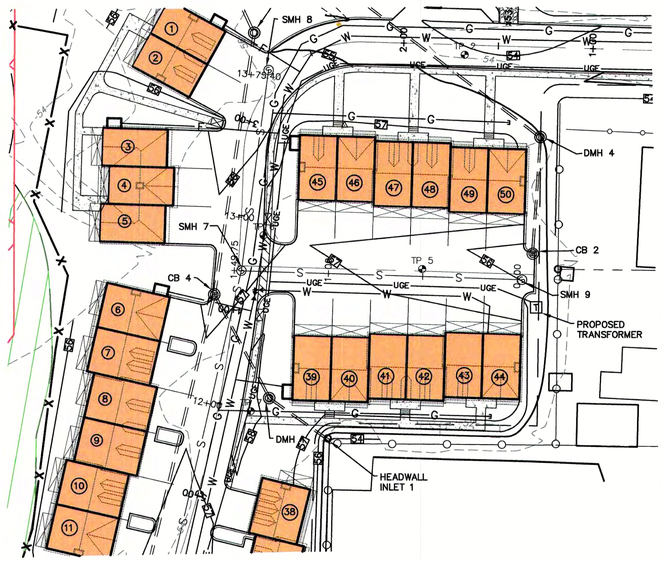
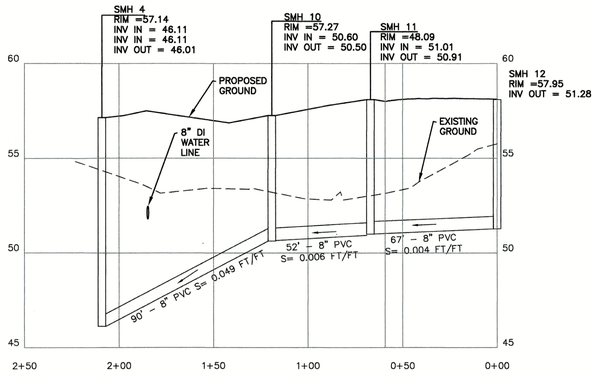
E-MAIL: JBE@JONESANDBEACH.COM

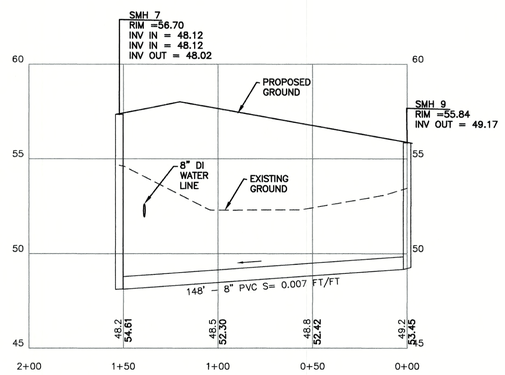
Plan Name:	SEWER PROFILE
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
P5
SHEET 16 OF 25
JBE PROJECT NO. 20737





LOOP ROAD



SHARED DRIVEWAY

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft Horiz.
1 inch = 4 ft Vert.

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERVAN No. 9846 LICENSED PROFESSIONAL ENGINEER – 6/23/21

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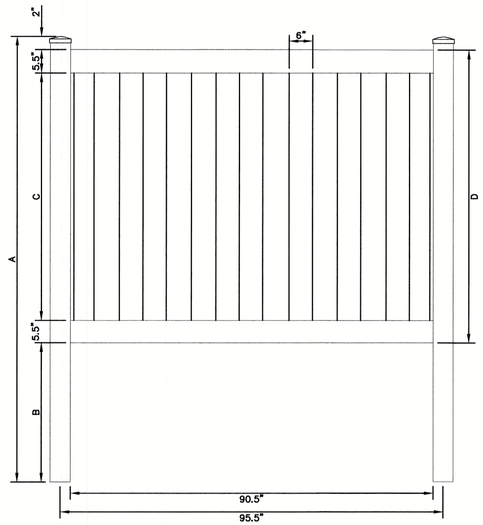
Plan Name:	SEWER PROFILE
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
P5
SHEET 17 OF 25
JBE PROJECT NO. 20737



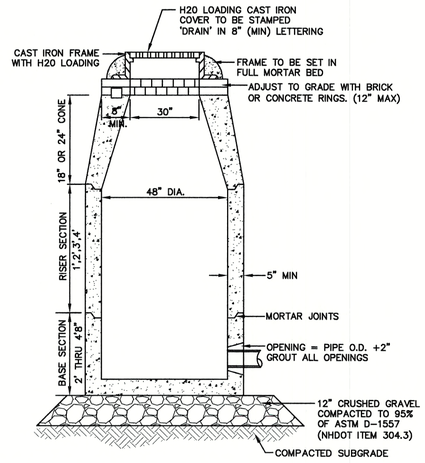
FRONT ELEVATION

A		B		C		D	
H(FT)	INCHES	H(FT)	INCHES	H(FT)	INCHES	H(FT)	INCHES
3	60	3	22	3	25	3	36
4	84	4	34	4	37	4	48
5	96	5	34	5	49	5	60
6	108	6	34	6	61	6	72

NOTES:
1. CONTRACTOR TO PROVIDE FENCE SPEC TO ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
2. VINYL FENCE SHALL MEET ASTM F964–09 STANDARDS.

6' VINYL STOCKADE FENCE

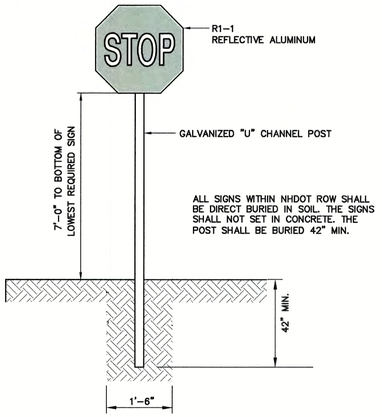
NOT TO SCALE



NOTES:
1. BASE SECTION SHALL BE MONOLITHIC WITH 48" INSIDE DIAMETER.
2. ALL SECTIONS SHALL BE DESIGNED FOR H20 LOADING.
3. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI, TYPE II CEMENT.
4. FRAMES AND GRATES SHALL BE HEAVY DUTY AND DESIGNED FOR H20 LOADING.
5. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT.
6. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
7. ALL DRAIN MANHOLE FRAMES AND GRATES SHALL BE NHDOT TYPE MH-1, OR NEENAH R-1798 OR APPROVED EQUAL (30" DIA. TYPICAL).
8. STANDARD FRAME(S) AND GRATE(S) SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM, BUT NO MORE THAN 12"), OR PRECAST CONCRETE 'DONUTS'.

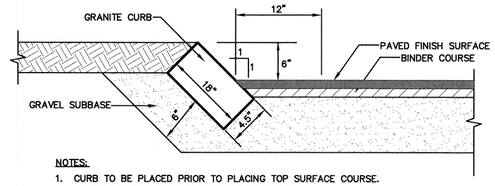
DRAIN MANHOLE

NOT TO SCALE



STOP SIGN (R1-1)

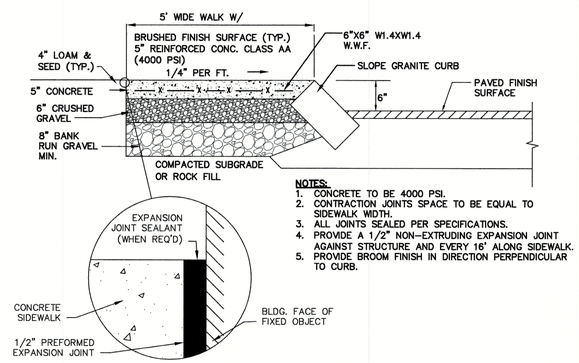
NOT TO SCALE



NOTES:
1. CURB TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.

SLOPE GRANITE CURB

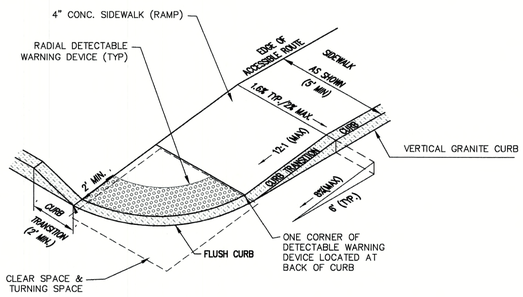
NOT TO SCALE



NOTES:
1. CONCRETE TO BE 4000 PSI.
2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
3. ALL JOINTS SEALED PER SPECIFICATIONS.
4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT AGAINST STRUCTURE AND EVERY 16' ALONG SIDEWALK.
5. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

CONCRETE SIDEWALK W/ SLOPE GRANITE CURB

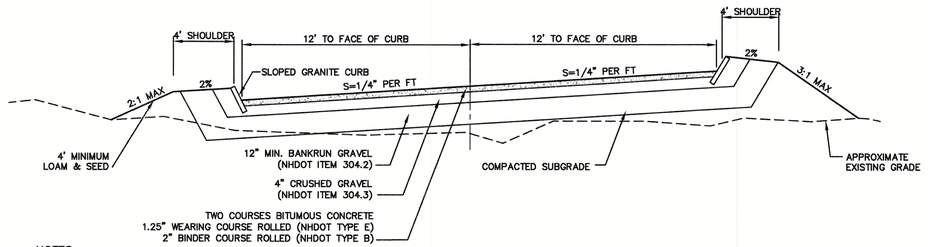
NOT TO SCALE



NOTES:
1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 1.5%.
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) CURB RAMPS SHALL BE 8.3%.
4. A MINIMUM OF 4 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (i.e., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SECTION FOR RAMP CONSTRUCTION.
8. WHERE A CHANGE IN DIRECTION IS REQUIRED TO UTILIZE A CURB RAMP, A TURNING SPACE SHALL BE PROVIDED AT THE BASE AND/OR THE TOP OF THE CURB RAMP. TURNING SPACES SHALL BE PERMITTED TO OVERLAP CLEAR SPACES.
9. TURNING SPACE MAXIMUM CROSS SLOPE IS 2% IN ANY DIRECTION.
10. BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4'X4' MINIMUM SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN CROSSWALK, AND OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE. THE CLEAR SPACE MAY OVERLAP TURNING SPACES, DETECTABLE WARNING SURFACES AND DROP CURBS.

ACCESSIBLE CURB RAMP (NHDOT OPTION 3)

NOT TO SCALE



NOTES:
1. REMOVE ALL ORGANICS, TOPSOIL AND MATERIAL YIELDING TO A 10 TON ROLLER. SUBBASE AREAS THAT CONTAIN UNSUITABLE MATERIALS MUST BE EXCAVATED TO A DEPTH NO LESS THAN 36" BELOW FINISH GRADE AND BE REPLACED WITH GRAVEL COMPACTED TO 95%.
2. ALL MATERIALS TO BE AS SPECIFIED PER TOWN STANDARDS AND NHDOT, WHICHEVER IS MOST STRINGENT. GRADATION AND COMPACTION TEST RESULTS (95% MIN.) SHALL BE SUBMITTED FOR REVIEW AND APPROVAL.
3. TOWN MAY REQUIRE UNDERDRAIN AND/OR ADDITIONAL DRAINAGE IF SOIL CONDITIONS WARRANT.

TYPICAL ROADWAY SECTION W/CURBING

NOT TO SCALE

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS NOTED	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL L. KERIVAN No. 9846 – LICENSED PROFESSIONAL ENGINEER – 6/23/2021

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2	1/6/21	MINOR REVISIONS	DJM

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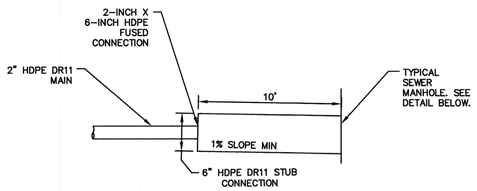
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

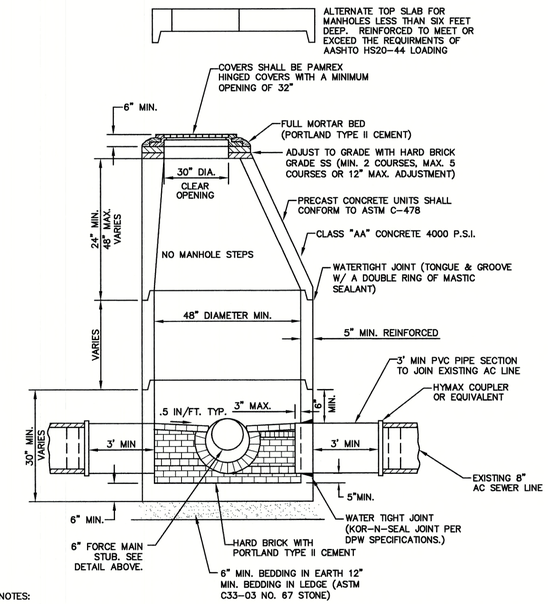
Plan Name:	DETAIL SHEET
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.

D1

SHEET 18 OF 25
JBE PROJECT NO. 20737



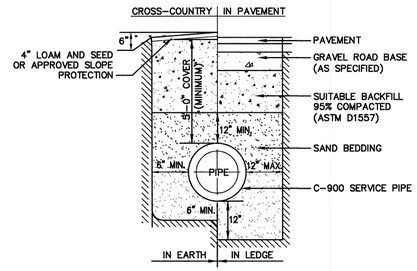


NOTES:

1. PER NHDES ENV-WQ 704.13(C), THE MORTAR SPECIFICATION SHALL BE AS FOLLOWS:
   1. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
   2. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
      A. 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
      B. 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PART HYDRATED LIME;
   3. CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05;
   4. HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207-06 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES";
   5. SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33-03 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES";
2. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL IN ACCORDANCE WITH ENV-WQ 704.12 (K).
3. ALL MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH ENV-WQ 704.17 (a) THROUGH (e).
4. SEWER MANHOLE COVERS SHALL CONFORM TO ASTM A48 WITH A CASTING EQUAL TO CLASS 30 IN ACCORDANCE WITH ENV-WQ 704.13 (a).
5. ALL ASBESTOS CONTAINING WASTE MATERIALS MUST BE PROPERLY IDENTIFIED, PACKAGED AND DELIVERED TO A LANDFILL LICENCED BY THE NHDES SOLID WASTE MANAGEMENT PROGRAM FOR DISPOSAL. CALL (603) 271-2925 FOR MORE INFORMATION.
6. PORTSMOUTH STANDARD SEWER MANHOLE SHALL BE USED.
7. CONTRACTOR TO PURCHASE SEWER MANHOLE COVERS FROM THE CITY OF PORTSMOUTH DIRECTLY.
8. MANHOLE BASE SECTIONS SHALL BE MONOLITHIC TO A POINT AT LEAST 6" ABOVE THE HIGHEST INCOMING SEWER PIPE PER ENV-WQ 704.12 (e).
9. MANHOLE CASTINGS SHALL CONFORM TO ASTM A48 PER ENV-WQ 704.13 (a) (8).

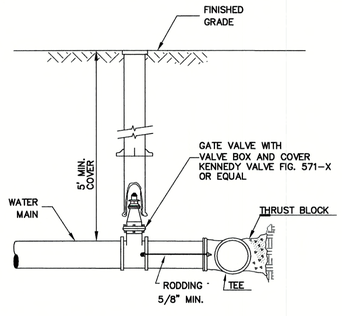
PORTSMOUTH SEWER MANHOLE

NOT TO SCALE



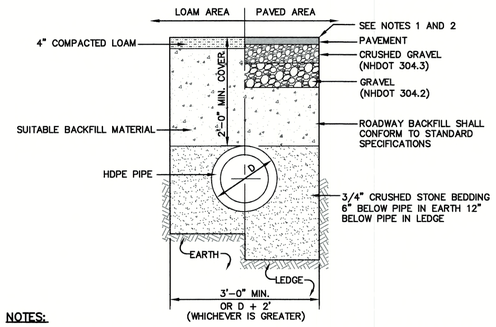
WATER SYSTEM TRENCH

NOT TO SCALE



BURIED GATE VALVE DETAIL

NOT TO SCALE

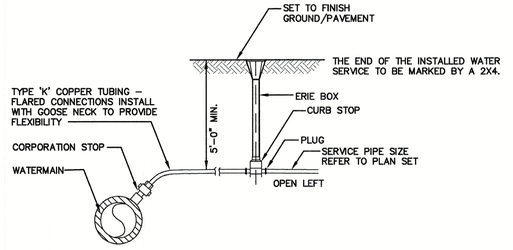


NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM WITH PROJECT AND TOWN SPECIFICATIONS.
3. ALL MATERIALS ARE TO BE COMPACTED TO 95% OF ASTM D-1557.

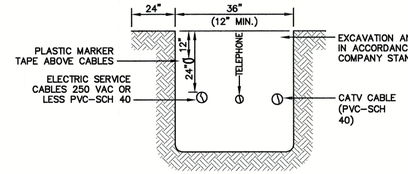
DRAINAGE TRENCH

NOT TO SCALE



WATER SERVICE CONNECTION-COPPER PIPE

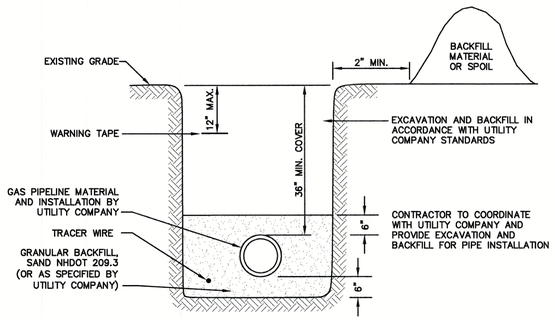
NOT TO SCALE



NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

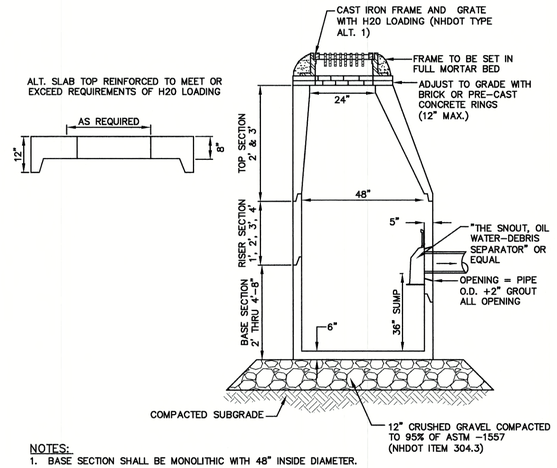
UTILITY TRENCH

NOT TO SCALE



GAS TRENCH

NOT TO SCALE

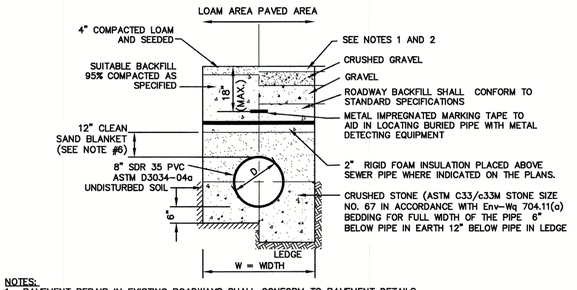


NOTES:

1. BASE SECTION SHALL BE MONOLITHIC WITH 48" INSIDE DIAMETER.
2. ALL SECTIONS SHALL BE DESIGNED FOR H20 LOADING.
3. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI, TYPE II CEMENT.
4. FRAMES AND GRATES SHALL BE HEAVY DUTY AND DESIGNED FOR H20 LOADING
5. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT.
6. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
7. ALL CATCH BASIN FRAMES AND GRATES SHALL BE NHDOT CATCH BASIN TYPE ALTERNATE 1 OR NEENAH R-3570 OR APPROVED EQUAL (24"x24" TYPICAL).
8. STANDARD CATCH BASIN FRAME AND GRATE(S) SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM, BUT NO MORE THAN 12"), OR PRECAST CONCRETE 'DONUTS'.
9. ALL CATCH BASINS ARE TO BE FITTED WITH GREASE HOODS.

CATCH BASIN WITH GREASE HOOD

NOT TO SCALE



NOTES:

1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO PAVEMENT DETAILS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPECIFICATIONS.
3. TRENCH BACKFILL SHALL CONFORM WITH ENV. Wq 704.11(h) AND BE FREE OF DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE OR ROCKS OVER SIX INCHES.
4. W= MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, WIDTH SHALL BE NO MORE THAN 36"; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, WIDTH SHALL BE 24 INCHES PLUS PIPE O.D. WIDTH SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
5. RIGID FOAM INSULATION TO BE PROVIDED WHERE COVER IN THE ROADWAY IS LESS THAN 6' AND CROSS COUNTRY IS LESS THAN 4' WHERE INDICATED ON THE DES APPROVED PLANS.
6. PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIALS, GRADED SUCH THAT 100% PASSES A 1/2 " SIEVE AND A MAXIMUM OF 15% PASSES A #200 SIEVE IN ACCORDANCE WITH Env-Wq 704.11(b).
7. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL AND CERTIFIED BY THE MANUFACTURER AS CONFORMING TO THE ASTM D3212 STANDARD IN EFFECT WHEN THE JOINT SEALS WERE MANUFACTURED, AND SHALL BE PUSH-ON, BELL-AND-SPIGOT TYPE PER Env-Wq 704.05 (e).

SEWER TRENCH

NOT TO SCALE

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS NOTED	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

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STATE OF NEW HAMPSHIRE — MICHAEL J. KERIVAN No. 9846 — LICENSED PROFESSIONAL ENGINEER — 6/23/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

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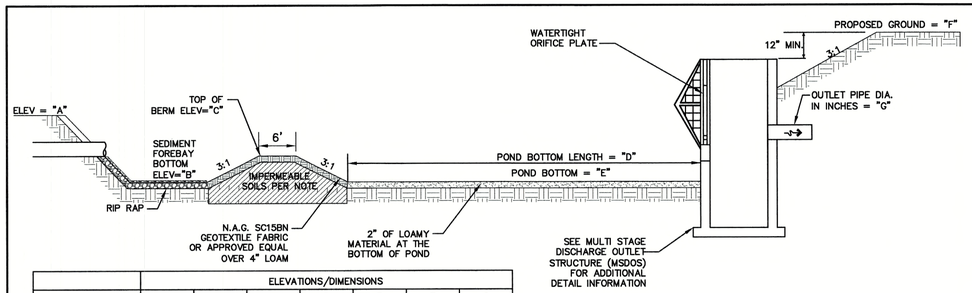
Plan Name:	DETAIL SHEET
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.

D2

SHEET 19 OF 25

JBE PROJECT NO. 20737



	ELEVATIONS/DIMENSIONS						
	A	B	C	D	E	F	G
WET POND	53.00	50.00	52.00	117.00	46.50	53.00	18"

WET POND SECTION

NOT TO SCALE

WET POND CONSTRUCTION CRITERIA

1. FOUNDATION PREPARATION –– THE FOUNDATION AREA SHALL BE CLEARED OF TREES LOGS, STUMPS, ROOTS, BRUSH, BOULDERS, SOD, AND RUBBISH. IF NEEDED TO ESTABLISH VEGETATION, THE TOPSOIL AND SOD SHALL BE STOCKPILED AND SPREAD ON THE COMPLETED DAM AND SPILLWAYS. FOUNDATION SURFACES SHALL BE SLOPED NO STEEPER THAN 1:1. THE FOUNDATION AREA SHALL BE THOROUGHLY SCARIFIED BEFORE PLACEMENT OF THE MATERIAL. THE SURFACE SHALL HAVE MOISTURE ADDED OR IT SHALL BE COMPACTED, IF NECESSARY, SO THAT THE FIRST LAYER OF FILL MATERIAL CAN BE COMPACTED AND BONDED TO THE FOUNDATIONS. THE CUTOFF TRENCH AND ANY OTHER REQUIRED EXCAVATIONS SHALL BE DUG TO THE LINES AND GRADES SHOWN ON THE PLANS OR AS STAKED IN THE FIELD. IF THEY ARE SUITABLE, EXCAVATED MATERIALS SHALL BE USED IN THE PERMANENT FILL. EXISTING STREAM CHANNELS IN THE FOUNDATION AREA SHALL BE SLOPED NO STEEPER THAN 1:1 AND DEEPENED AND WIDENED AS NECESSARY TO REMOVE ALL STONES, GRAVEL, SAND, STUMPS, ROOTS, AND OTHER OBJECTIONABLE MATERIAL AND TO ACCOMMODATE COMPACTION EQUIPMENT. FILL PLACEMENT –– THE MATERIAL PLACED IN THE FILL SHALL BE FREE OF DETRIMENTAL AMOUNTS OF SOD, ROOTS, FROZEN SOIL, STONES MORE THAN 6 INCHES IN DIAMETER (EXCEPT FOR ROCK FILLS), AND OTHER OBJECTIONABLE MATTER.
2. SELECTED BACK FILL MATERIAL SHALL BE PLACED AROUND STRUCTURES, PIPE CONDUITS AND ANTI SEEP COLLARS AT ABOUT THE SAME RATE ON ALL SIDES, TO PREVENT DAMAGE FROM UNEQUAL LOADING. THE PLACING AND SPREADING OF FILL MATERIAL SHALL BE STARTED AT THE LOWEST POINT OF THE FOUNDATION AND THE FILL BROUGHT UP IN HORIZONTAL LAYERS OF SUCH THICKNESS THAT THE REQUIRED COMPACTION CAN BE OBTAINED. THE FILL SHALL BE CONSTRUCTED IN CONTINUOUS HORIZONTAL LAYERS EXCEPT WHERE OPENINGS OR SECTIONALIZED FILLS ARE REQUIRED. IN THOSE CASES, THE SLOPE OF THE BONDING SURFACES BETWEEN THE EMBANKMENT IN PLACE AND THE EMBANKMENT TO BE PLACED SHALL NOT BE STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL. THE BONDING SURFACE SHALL BE TREATED THE SAME AS THAT SPECIFIED FOR THE FOUNDATION SO AS TO INSURE A GOOD BOND WITH THE NEW FILL. THE DISTRIBUTION AND GRADATION OF MATERIALS SHALL BE SUCH THAT NO LENSES, POCKETS, STREAKS, OR LAYERS OF MATERIAL DIFFER SUBSTANTIALLY IN TEXTURE OF GRADATION FROM THE SURROUNDING MATERIAL. IF IT IS NECESSARY TO USE MATERIALS OF VARYING TEXTURE AND GRADATION, THE MORE IMPERVIOUS MATERIAL SHALL BE PLACED IN THE CENTER AND UPSTREAM PARTS OF THE FILL. IF ZONED FILLS OF SUBSTANTIALLY DIFFERING MATERIALS ARE SPECIFIED, THE ZONES SHALL BE PLACED ACCORDING TO THE LINES AND GRADES SHOWN ON THE DRAWINGS. THE COMPLETE WORK SHALL CONFORM TO THE LINES, GRADES, AND ELEVATIONS SHOWN ON THE DRAWINGS OR AS STAKED IN THE FIELD.
3. MOISTURE CONTROL –– THE MOISTURE CONTENT OF THE FILL MATERIAL SHALL BE ADEQUATE FOR OBTAINING THE REQUIRED COMPACTION. MATERIAL THAT IS TOO WET SHALL BE DRIED TO MEET THIS REQUIREMENT, AND MATERIAL THAT IS TOO DRY SHALL HAVE WATER ADDED AND MIXED UNTIL THE REQUIREMENT IS MET.
4. COMPACTION –– CONSTRUCTION EQUIPMENT SHALL BE OPERATED OVER THE AREAS OR EACH LAYER OF FILL TO INSURE THAT THE REQUIRED COMPACTION IS OBTAINED. SPECIAL EQUIPMENT SHALL BE USED IF NEEDED TO OBTAIN THE REQUIRED COMPACTION. IF A MINIMUM REQUIRED DENSITY IS SPECIFIED, EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY. FILL ADJACENT TO STRUCTURES, PIPE CONDUITS, AND ANTI SEEP COLLARS SHALL BE COMPACTED TO A DENSITY EQUIVALENT TO THAT OF THE SURROUNDING FILL BY MEANS OF HAND TAMPING OR MANUALLY DIRECTED POWER TAMPER OR PLATE VIBRATORS. FILL ADJACENT TO CONCRETE STRUCTURES SHALL NOT BE COMPACTED UNTIL THE CONCRETE IS STRONG ENOUGH TO SUPPORT THE LOAD.
5. PROTECTION –– A PROTECTIVE COVER OF VEGETATION SHALL BE ESTABLISHED ON ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, AND BORROW AREA IF SOIL AND CLIMATIC CONDITIONS PERMIT. IF SOIL OR CLIMATIC CONDITIONS PRECLUDE THE USE OF VEGETATION AND PROTECTION IS NEEDED, NON–VEGETATIVE MEANS SUCH AS MULCHES OR GRAVEL MAY BE USED. IN SOME PLACES, TEMPORARY VEGETATION MAY BE USED UNTIL CONDITIONS PERMIT ESTABLISHMENT OF PERMANENT VEGETATION. THE EMBANKMENT AND SPILLWAY SHALL BE FENCED IF NECESSARY TO PROTECT THE VEGETATION.
6. SEEDBED PREPARATION, SEEDING, FERTILIZING, AND MULCHING SHALL COMPLY WITH THE APPROPRIATE VEGETATIVE BMP'S.
7. CONCRETE –– THE MIX DESIGN AND TESTING OF CONCRETE SHALL BE CONSISTENT WITH THE STRENGTH REQUIREMENTS OF THE JOB. MIX REQUIREMENTS OR NECESSARY STRENGTH SHALL BE SPECIFIED. THE TYPE OF CEMENT, AIR ENTRAPMENT, SLUMP, AGGREGATE, OR OTHER PROPERTIES SHALL BE SPECIFIED IF NECESSARY. ALL CONCRETE IS TO CONSIST OF A WORKABLE MIX THAT CAN BE PLACED AND FINISHED IN AN ACCEPTABLE MANNER. NECESSARY CURING SHALL BE SPECIFIED. REINFORCING STEEL SHALL BE PLACED AS INDICATED ON THE PLANS AND SHALL BE HELD SECURELY IN PLACE DURING CONCRETE PLACEMENT. SUB GRADES AND FORMS SHALL BE INSTALLED TO LINE AND GRADE, AND THE FORMS SHALL BE MORTAR TIGHT AND UNYIELDING AS THE CONCRETE IS PLACED.
8. THE CONTRACTOR WILL NOTIFY JONES AND BEACH ENGINEERS AFTER EACH OF THE GRAVEL WETLAND PONDS HAVE BEEN EXCAVATED TO THE BOTTOM OF THE SYSTEM FOR A MANDATORY INSPECTION PRIOR TO BUILDING BERMS, PLACING STONE OR INSTALLING PIPE SYSTEM.
9. BERMS AND WEIRS SEPARATING THE FOREBAY AND TREATMENT CELLS SHOULD BE CONSTRUCTED WITH CLAY, OR NON–CONDUCTIVE SOILS, AND/OR A FINE GEOTEXTILE, OR SOME COMBINATION THEREOF, TO AVOID WATER SEEPAGE AND SOIL PIPING THROUGH THESE EARTHEN DIVIDERS.

	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ
WET POND	6"	51.00	52.25	52.75	36"	48.00	51.00	47.50	18"

APPROXIMATE LIST OF MATERIALS

1. 3 C.Y. – 5000 PSI CONCRETE
2. 15 ANGLE IRONS @ 4' LENGTH
3. REQUIRED S.S. BOLTS AND FASTENERS
4. 1/4" STEEL PLATE WITH DRILLED ORIFICES
5. 1 C.Y. – CRUSHED STONE FOR BASE
6. 48 #5 REBARS @ 1', 2' AND 3' LENGTHS
7. 32 #4 REBARS @ 4.5' LENGTH

NOTES:

1. REINFORCING STEEL SHALL CONSIST OF A SINGLE LAYER OF HORIZONTAL AND VERTICAL PLACED #4 REBAR @ 12" O.C.
2. CONCRETE BOX TO BE CONSTRUCTED OR PRECAST OF EQUAL DIMENSIONS AND REINFORCING.
3. CONCRETE SLAB TO BE CONSTRUCTED ALONG WITH BASE. FOR PRECAST BOX, A SLOTTED CONCRETE SLAB TO BE USED.
4. SECTION JOINTS AND PIPE OPENING SHALL BE SEALED WATERTIGHT WITH MORTAR BY CONTRACTOR.
5. ALL EXPOSED REBAR TO BE PAINTED WITH RUST–RESISTANT PAINT, COLOR AT CONTRACTOR'S DISCRETION.
6. TO BE SUPPLIED BY CAPITAL CONCRETE PRODUCTS OF HENNIKER, N.H., (1–603–428–3218) OR EQUAL.
7. STRUCTURE TO HAVE TEMPORARY PLYWOOD INSTALLED IN THE ORIFICE PLATE SLOT UNTIL THE SITE IS STABILIZED.
8. STRUCTURE IS TO BE DESIGNED FOR H20 LOADING.
9. SOIL UNDERLYING THE STRUCTURE IS TO BE COMPACTED TO 95% MODIFIED PROCTOR.

MULTI–STAGE DISCHARGE OUTLET STRUCTURE (MSDOS)

NOT TO SCALE

SAND SPECIFICATION

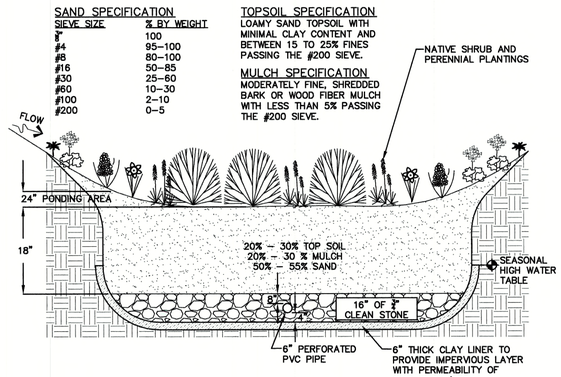
SIEVE SIZE	% BY WEIGHT
3"	100
#4	95–100
#8	80–100
#16	50–85
#30	25–60
#60	10–30
#100	2–10
#200	0–5

TOPSOIL SPECIFICATION

LOAMY SAND TOPSOIL WITH MINIMAL CLAY CONTENT AND BETWEEN 15 TO 25% FINES PASSING THE #200 SIEVE.

MULCH SPECIFICATION

MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE.

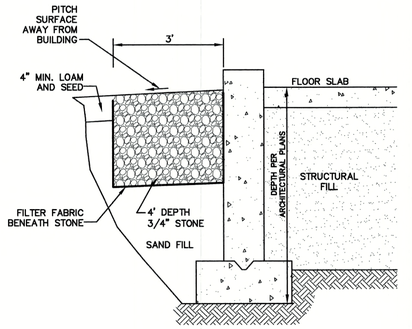


BIORETENTION SYSTEM (with clay bottom and pipe)

NOT TO SCALE

DESIGN CONSIDERATIONS

1. DO NOT PLACE BIORETENTION SYSTEMS INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN–OFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
4. CLAY LINER MATERIAL SHALL BE CLEAN SILTY–CLAY BORROW FREE OF ROOTS, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES, AND SHALL CONTAIN NO ROCKS OR LUMPS OVER THREE INCHES (3") IN DIAMETER. THIS MATERIAL SHALL BE INSTALLED IN 6" LIFTS COMPACTED TO 92% OF ASTM D–1557, AND SHALL MEET THE FOLLOWING SPECIFICATIONS: 6" PASSING 100%, #4 SIEVE 95–100%, #40 SIEVE 60–90%, #100 SIEVE 40–60%, #200 SIEVE 25–45% (OF THE FRACTION PASSING THE #4 SIEVE). THE CLAY COMPONENT SHALL HAVE A PLASTICITY INDEX OF AT LEAST 8 AND A HYDRAULIC CONDUCTIVITY OF 10 TO THE –6 CM/SEC.
5. COMPACTION AND MATERIALS TESTING SERVICES SHALL BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE OWNER.



DRIP EDGE DETAIL

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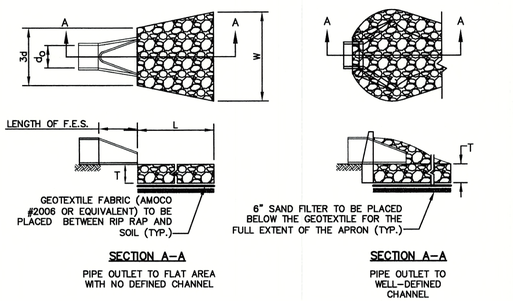


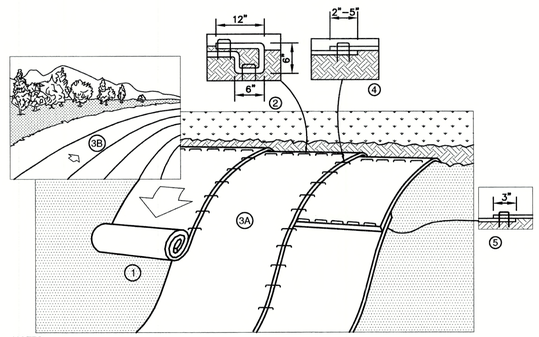
TABLE 7–24––RECOMMENDED RIP RAP GRADATION RANGES		
THICKNESS OF RIP RAP = 1.5 FEET		
d50 SIZE= 0.50 FEET	6 INCHES	
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM	TO
100%	9	12
85%	8	11
50%	6	9
15%	2	3

NOTES:

1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. OUTLETS TO A DEFINED CHANNEL SHALL HAVE 2:1 OR FLATTER SIDE SLOPES AND SHOULD BEGIN AT THE TOP OF THE CULVERT AND TAPER DOWN TO THE CHANNEL BOTTOM THROUGH THE LENGTH OF THE APRON.
6. MAINTENANCE: THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO OUTLET PROTECTION.

RIP RAP OUTLET PROTECTION APRON

NOT TO SCALE



NOTES:

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"–5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

NORTH AMERICAN GREEN
14649 HIGHWAY 41 NORTH
EVANSVILLE, INDIANA 47725
1–800–772–2040

EROSION CONTROL BLANKET SLOPE INSTALLATION
NORTH AMERICAN GREEN (800) 772–2040

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Design: JAC	Draft: LAZ	Date: 3/3/21
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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER – 6/23/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
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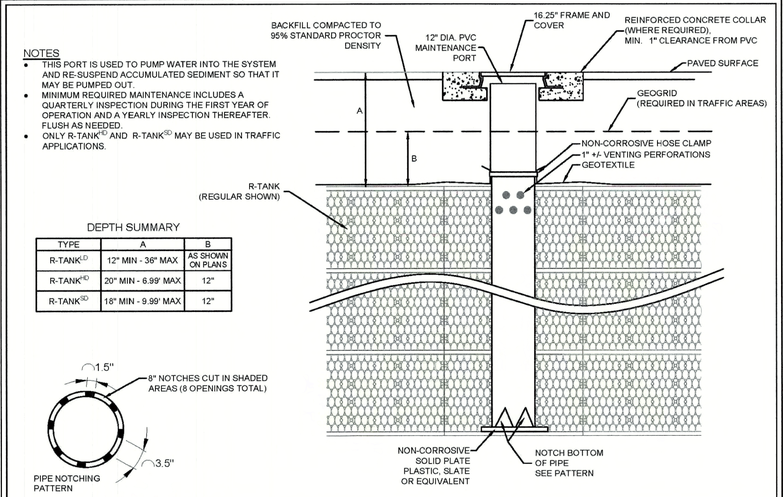
DRAWING No.

D3

SHEET 20 OF 25
JBE PROJECT NO. 20737

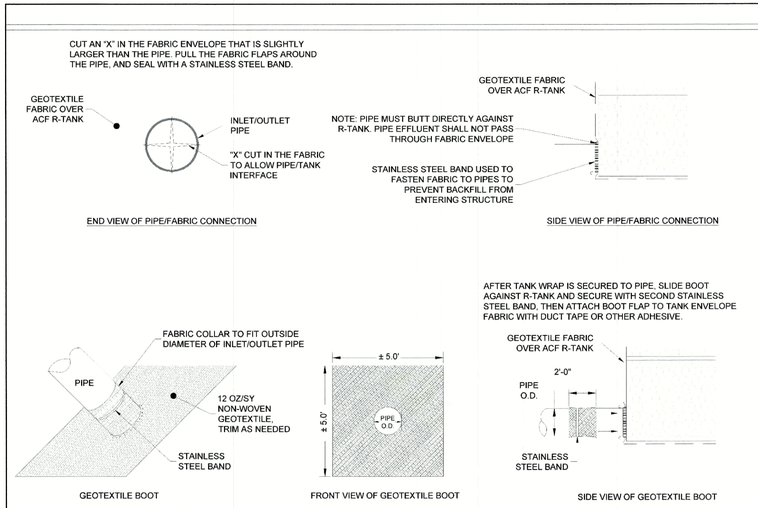


02/06/19

ENVIRONMENTAL
LET'S GET IT DONE

MAINTENANCE PORT
FOR R-TANK^LD, R-TANK^HD, AND R-TANK^SD

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com

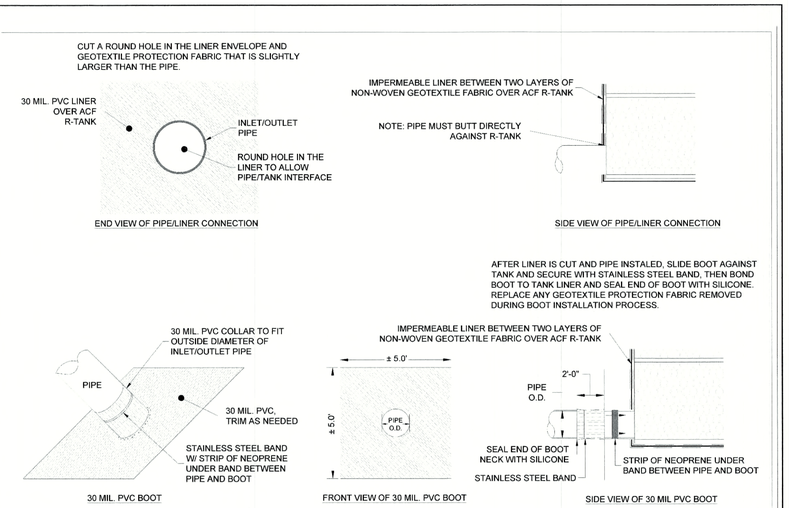


07/26/19

ENVIRONMENTAL
LET'S GET IT DONE

R-TANK TYPICAL INLET/OUTLET W/ GEOTEXTILE BOOT

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com



07/26/19

ENVIRONMENTAL
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R-TANK TYPICAL INLET/OUTLET W/ 30 MIL PVC BOOT

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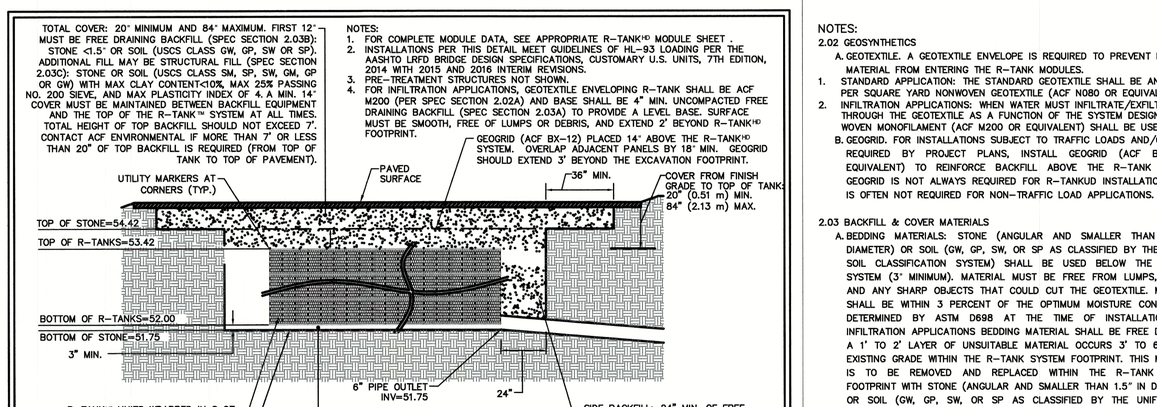


08/29/2018

ENVIRONMENTAL
LET'S GET IT DONE

R-TANK^HD & HS-20 LOADS - SECTION VIEW

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, WWW.ACFENVIRONMENTAL.COM

NOTES:

2.02 GEOSYNTHETICS

A. GEOTEXTILE. A GEOTEXTILE ENVELOPE IS REQUIRED TO PREVENT BACKFILL MATERIAL FROM ENTERING THE R-TANK MODULES.
1. STANDARD APPLICATION: THE STANDARD GEOTEXTILE SHALL BE AN 8 OZ PER SQUARE YARD NONWOVEN GEOTEXTILE (ACF N080 OR EQUIVALENT).
2. INFILTRATION APPLICATIONS: WHEN WATER MUST INFILTRATE/EXFILTRATE THROUGH THE GEOTEXTILE AS A FUNCTION OF THE SYSTEM DESIGN, A WOVEN MONOFILAMENT (ACF M200 OR EQUIVALENT) SHALL BE USED.

B. GEOGRID. FOR INSTALLATIONS SUBJECT TO TRAFFIC LOADS AND/OR WHEN REQUIRED BY PROJECT PLANS, INSTALL GEOGRID (ACF BX12 OR EQUIVALENT) TO REINFORCE BACKFILL ABOVE THE R-TANK SYSTEM. GEOGRID IS NOT ALWAYS REQUIRED FOR R-TANKUD INSTALLATIONS, AND IS OFTEN NOT REQUIRED FOR NON-TRAFFIC LOAD APPLICATIONS.

2.03 BACKFILL & COVER MATERIALS

A. BEDDING MATERIALS: STONE (ANGULAR AND SMALLER THAN 1.5" IN DIAMETER) OR SOIL (GW, GP, SW, OR SP AS CLASSIFIED BY THE UNIFIED SOIL CLASSIFICATION SYSTEM) SHALL BE USED BELOW THE R-TANK SYSTEM (3" MINIMUM). MATERIAL MUST BE FREE FROM LUMPS, DEBRIS, AND ANY SHARP OBJECTS THAT COULD CUT THE GEOTEXTILE. MATERIAL SHALL BE WITHIN 3 PERCENT OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698 AT THE TIME OF INSTALLATION. FOR INFILTRATION APPLICATIONS BEDDING MATERIAL SHALL BE FREE DRAINING. A 1' TO 2' LAYER OF UNSUITABLE MATERIAL OCCURS 3' TO 6' BELOW EXISTING GRADE WITHIN THE R-TANK SYSTEM FOOTPRINT. THIS MATERIAL IS TO BE REMOVED AND REPLACED WITHIN THE R-TANK SYSTEM FOOTPRINT WITH STONE (ANGULAR AND SMALLER THAN 1.5" IN DIAMETER) OR SOIL (GW, GP, SW, OR SP AS CLASSIFIED BY THE UNIFIED SOIL CLASSIFICATION SYSTEM). A BED BOTTOM INSPECTION SHALL BE PERFORMED BY TRUSLOW RESOURCE CONSULTING PRIOR TO CONSTRUCTION OF THE R-TANK SYSTEM.

B. SIDE AND TOP BACKFILL: MATERIAL MUST BE FREE FROM LUMPS, DEBRIS AND ANY SHARP OBJECTS THAT COULD CUT THE GEOTEXTILE. MATERIAL SHALL BE WITHIN 3 PERCENT OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698 AT THE TIME OF INSTALLATION.

TRAFFIC APPLICATIONS – FREE DRAINING MATERIAL SHALL BE USED ADJACENT TO (24" MINIMUM) AND ABOVE (FOR THE FIRST 12') THE R-TANK SYSTEM.

a. FOR HD, AND SD MODULES, BACKFILL MATERIALS SHALL BE FREE DRAINING STONE (ANGULAR AND SMALLER THAN 1.5" IN DIAMETER) OR SOIL (GW, GP, SW, OR SP AS CLASSIFIED BY THE UNIFIED SOIL CLASSIFICATION SYSTEM).

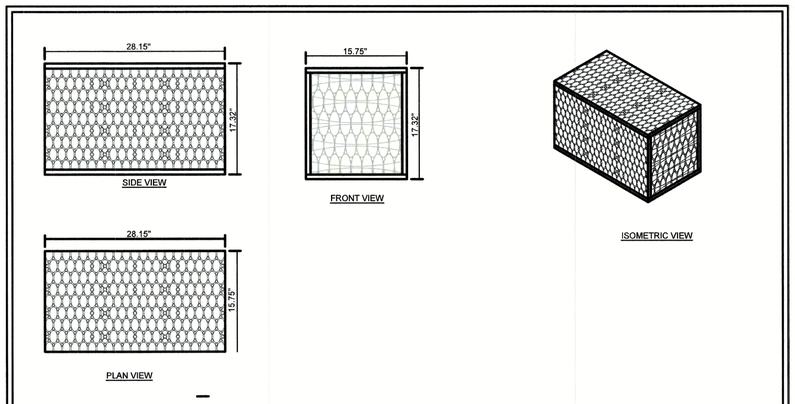
b. FOR UD MODULES WITH LESS THAN 14" OF TOP COVER, BACKFILL MATERIALS SHALL BE FREE DRAINING STONE (ANGULAR AND SMALLER THAN 1.5" IN DIAMETER). THE USE OF SOIL BACKFILL ON THE SIDES AND TOP OF THE UD MODULE IS NOT PERMITTED UNLESS THE MODULES ARE INSTALLED OUTSIDE OF TRAFFIC AREAS OR WITH COVER DEPTHS OF 14" OR MORE. TOP BACKFILL MATERIAL (FROM TOP OF MODULE TO BOTTOM OF PAVEMENT BASE OR 12" MAXIMUM) MUST BE CONSISTENT WITH SIDE BACKFILL.

NON-TRAFFIC / GREEN SPACE APPLICATIONS – FOR ALL R-TANK MODULES INSTALLED IN GREEN SPACES AND NOT SUBJECTED TO VEHICULAR LOADS, BACKFILL MATERIALS MAY EITHER FOLLOW THE GUIDELINES FOR TRAFFIC APPLICATIONS ABOVE, OR THE TOP BACKFILL LAYER (12" MINIMUM) MAY CONSIST OF AASHTO #57 STONE BLENDED WITH 30-40% (BY VOLUME) TOPSOIL TO AID IN ESTABLISHING VEGETATION.

C. ADDITIONAL COVER MATERIALS: STRUCTURAL FILL SHALL CONSIST OF GRANULAR MATERIALS MEETING THE GRADATIONAL REQUIREMENTS OF SM, SP, SW, GM, GP OR GW AS CLASSIFIED BY THE UNIFIED SOIL CLASSIFICATION SYSTEM. STRUCTURAL FILL SHALL HAVE A MAXIMUM OF 25 PERCENT PASSING THE NO. 200 SIEVE, SHALL HAVE A MAXIMUM CLAY CONTENT OF 10 PERCENT AND A MAXIMUM PLASTICITY INDEX OF 4. MATERIAL SHALL BE WITHIN 3 PERCENT OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698 AT THE TIME OF INSTALLATION.

2.04 OTHER MATERIALS

A. UTILITY MARKER: INSTALL METALLIC TAPE AT CORNERS OF R-TANK SYSTEM TO MARK THE AREA FOR FUTURE UTILITY DETECTION.



MODULE DATA

GEOMETRY: LENGTH = 28.15 IN. (715 MM)
WIDTH = 15.75 IN. (400 MM)
HEIGHT = 17.32 IN. (440 MM)
TANK VOLUME = 4.44 CF
STORAGE VOLUME = 4.22 CF
VOID INTERNAL VOLUME: 95%
VOID SURFACE AREA: 90%

LOAD RATING: 33.4 PSI, (MODULE ONLY) HS25, (WITH ACF COVER SYSTEM)
MATERIAL: 100% RECYCLED POLYPROPYLENE
SMALL PLATES PER SEGMENT/TOTAL: 5/5

R-TANK^HD - SINGLE MODULE

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com 5/16

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS NOTED	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER – 6/23/21

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
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PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
D4
SHEET 21 OF 25
JBE PROJECT NO. 20737

PRETX SPECIFICATIONS

A. GENERAL

1. PRETX SYSTEMS ARE A PRE-FILTER AND CRITICAL MAINTENANCE DEVICE THAT EXTENDS THE OPERATING LIFE AND REDUCES THE MAINTENANCE BURDEN OF BIORETENTION SYSTEMS, RAIN GARDENS, BIOSWALES AND OTHER TYPES OF SURFACE BEST MANAGEMENT PRACTICES BY FILTERING OUT SEDIMENT, TRASH AND DEBRIS AT THE INLET.

B. PRODUCTS

1. PRETX IS AVAILABLE IN 3 MODELS THAT MANAGE MOST BIORETENTIOIN INLET CONFIGURATIONS: CURB, DROP, AND INLINE.
2. PRETX-CURB IS FOR EDGE OF PAVEMENT RUNOFF AT A CURB CUT IN LIEU OF A STONE SPREADER.
3. PRETX-DROP IS FOR USE AS A DROP INLET CONFIGURATION ALONG A CURB LINE AND WOULD BE INSTALLED WITH A STANDARD DROP INLET GRATE.
4. PRETX-INLINE IS FOR USE WITH SUBSURFACE INLET AND OUTLET PIPE.
5. PRETX IS SIZED TO PRETREAT WATER QUALITY FLOWS AND BYPASS LARGER FLOWS THAT HAVE MINIMAL TRASH AND DEBRIS. PRETX CAN BE USED BOTH IN RETROFIT OR NEW INSTALLATIONS.
6. ACCEPTABLE SYSTEM SUPPLIER:
   CONVERGENT WATER TECHNOLOGIES, INC. OR ITS AUTHORIZED VALUE-ADDED RESELLER
   (800) 711-5428
   WWW.CONVERGENTWATER.COM

C. SUBMITTALS

1. SUBMIT PROPOSED LAYOUT DRAWINGS. DRAWINGS SHALL INCLUDE TYPICAL SECTION DETAILS ANNOTED WITH SYSTEM ELEVATIONS (E.G., RIM, PIPE INVERTS, OUTSIDE BOTTOM OF STRUCTURE, ETC.).
2. SUBMIT MATERIAL CERTIFICATES FOR FRAMES AND COVERS
3. ANY PROPOSED EQUAL ALTERNATE PRODUCT SUBSTITUION TO THIS SPECIFICATON MUST BE SUBMITTED FOR REVIEW AND APPROVED PRIOR TO BID OPENING.

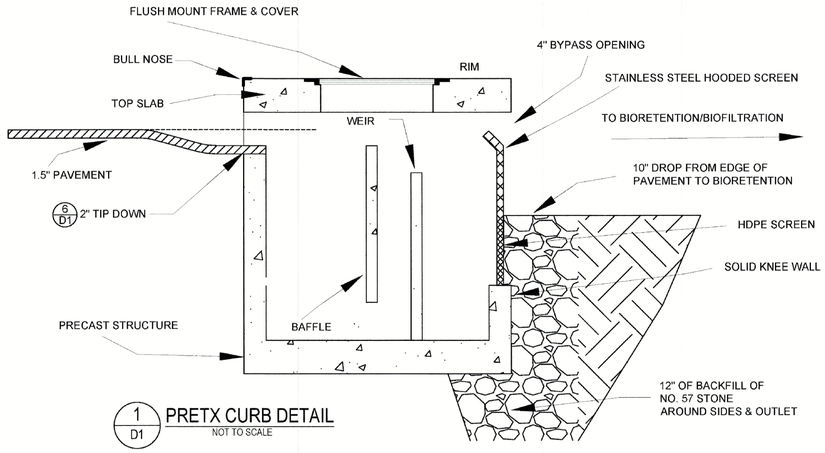
D. EXECUTION

1. All PUBLIC STORM DRAINAGE SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS AND ACCORDING TO LOCAL MUNICIPAL REQ UIREME NTS.
2. All STORM DRAINAGE SYSTEM CONSTRUCTION IS SUBJECT TO INSPECTION AND APPROVAL BY THE PROJECT ENGINEER.
3. THE CONTRACTOR SHALL NOTIFYTHE PROJECT ENGINEER A MINIMUM OF TWO FULL BUSINESS DAYS PRIOR TO THE START OF CONSTRUCTIO N.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND OBTAINING APPROVAL FROM DIG-SAFE AND DETERMINING THE LOCATION OF All UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION/ EXCAVATI ON AND SHALL NOTIFY THE PROJECT ENGINEER OF ANY POTENTIAL CONFLICTS.
5. TO PROTECT STORMWATER FLOW CONTROL AND QUALITY TREATMENT FACILITIES FROM SEDIMENTATION, THEY SHALL BE CONNECTED TO THE STORM CONVEYANCE SYSTEM ONLY AFTER ALL SITE WORK, ROAD CONSTRUCTION, UTILITY WORK AND LANDSCAPING ARE IN PLACE IN ALL AREAS ABOVE AND UPSTREAM OF THE FACILITY.
6. THE EXISTING STORM SEWER SYSTEM SHALL STAY ISOLATED FROM THE NEW SYSTEM UNTIL THE NEW SYSTEM IS CLEANED, AND APPROVED FOR USE. THERE SHALL BE NO DEBRIS IN THE LINES OR FURTHER CLEANING Will BE REQUIRED PRIOR TO ACCEPTANCE.
7. PROVIDE A 1.5" MINIMUM GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR
8. THE OPENING SHALL BE MEASURED AT THE TOP OF THE PRECAST BASE SECTION.
9. All PICKUP HOLES SHALL BE GROUTED FULL AFTER THE BASIN HAS BEEN PLACED.
10. STANDARD CURB INLETS AND TIPDOWNS SHALL BE PRECAST CONCRETE OR ASPHALT.
11. PIPE ENDS SHALL BE FLUSH WITH THE INNER WALL OR 1" MAXIMUM INTRUSION. MASONRY, CINDER BLOCKS, OR SIMILIAR MATERIALS MA Y BE USED TO ADJUST THE RISERS TO GRADE PRIOR TO GROUTING.
12. GROUTING SHALL BE SUFFICIENTTO PREVENT LEAKS BETWEEN THE PRECAST COMPONENTS OF THE COMPLETED STRUCTURE & SHALL BE PERFORMED INSIDE, BETWEEN & OUTSIDE OF All RISERS, JOINTS & PIPE PENETRATIONS.
13. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M-199 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE STANDARD SPECIFICATIONS.
14. All REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. All PRECAST CONCRETE SHALL BE CLASS 4000.
15. RECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
16. MATING SURFACES OF MANHOLE RINGS AND COVERSSHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITIONS.

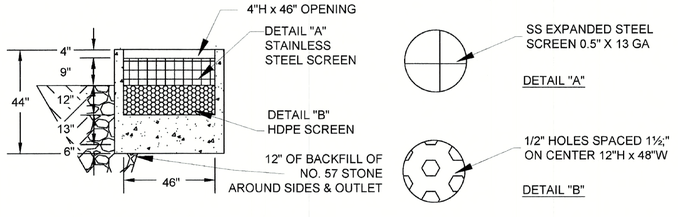
E. CONSTRUCTION AND SEQUENCING

1. EXAMINATION
   A. VERIFY LAYOUT AND ORIENTATION OF PRE-TX SYSTEM AREA INCLUDING EDGE OF PAVEMENT, TIP DOWN, CURBS AND SIDEWALK, BIOFILTRATION SYSTEM, AND CONNECTIONS.
   B. VERIFY EXCAVATION BASE IS READY TO RECEIVE WORK AND EXCAVATIONS, DIMENSIONS, AND ELEVATIONS ARE AS INDICATED ON DRAWINGS.
2. PREPARATION
   A. CALL DIG SAFE AND RECEIVE APPROVAL BEFORE PERFORMING WORK.
   B. REQUEST UNDERGROUND UTILITIES TO BE LOCATED AND MARKED WITHIN AND SURROUNDING CONSTRUCTION AREAS.
   C. IDENTIFY REQUIRED LINES, LEVELS, CONTOURS, AND DATUM.
   D. CLEAR AND GRUB THE PROPOSED PRE-TX SYSTEM AREA.
3. EXCAVATION AND INSTALLATION
   A. THE FOLLOWING CONSTRUCTION SEQUENCE IS TO BE USED AS A GENERAL GUIDELINE. COORDINATE WITH THE OWNER, AND ENGINEERS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
   B. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS TO DIVERT STORM WATER AWAY FROM THE PRE-TX SYSTEM AREA.
   C. EXCAVATE TO THE BOTTOM INVERT OF THE SYSTEM.
   D. TO MINIMIZE COMPACTION OF ADJACENT BIOFILTRATION SYSTEMS, WORK EXCAVATORS OR BACKHOES FROM THE SIDES TO EXCAVATE THE PRE-TX SYSTEM AREA TO ITS APPROPRIATE DESIGN DEPTH AND DIMENSIONS.
   E. ROUGH GRADE THE PRE-TX SYSTEM AREA DURING GENERAL CONSTRUCTION. EXCAVATE THE PRE-TX SYSTEM FACILITIES TO WITHIN 1 FOOT OF STRUCTURE BOTTOM .
   F. PLACE 1 FOOT BED OF COARSE STONE TO ELEVATION OF BASE OF STRUCTURE.
   G. ESTABLISH ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT AND TIP DOWN, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS AS INDICATED ON DRAWINGS.
4. INSTALLATION
   A. PLACE THE PRECAST SYSTEM TO NECESSARY ELEVATION.
   B. VERIFY ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT, PAVEMENT GRADING FOR INLET GRATE FOR PRETX-DROP, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS, OUTLET INVERT FOR KNEE WALL.
   C. FOR PRETX-SURFACE:
      a. VERIFY ELEVATIONS FOR ADJACENT CURBS.
      b. VERIFY EDGE OF PAVEMENT TIP DOWN PAVEMENT GRADING FOR INLET GRATE.
      c. VERIFY CURB ELEVATION IN RELATION TO PAVEMENT AND TIP DOWN.
      d. VERIFY OUTLET INVERT FOR KNEE WALL IN RELATION TO FILTER MEDIA.
   D. FOR PRETX-DROP:
      a. VERIFY ALL INLET PIPES ENTER THE STRUCTURE UPSTREAM OF BAFFLE.
      b. VERIFY FRAME AND GRATE OFFSET ON INLET SIDE AND UPSTREAM OF BAFFLE.
      c. VERIFY CURB LOCATION WITH RESPECT TO FRAME AND GRATE ORIENTATION.
   E. INSTALL BAFFLES, WEIR, AND SCREENS AS INDICATED ON DRAWINGS.
   F. VERIFY MAINTENANCE ACCESS THROUGH GRATE OR COVER AND CLEARANCE FOR VACTOR.
   G. INSTALL TOP OF STRUCTURE LEVEL WITH ADJACENT CURB OR SIDEWALK AS PER MANUFACTURERS SPECIFICATIONS. ENGINEER FIELD VISIT REQUIRED PRIOR TO BACKFILLING.
5. BACKFILLING
   A. BACKFILL WITH APPROVED SOIL AND STONE TO THE DESIGN GRADE AS SPECIFIED IN THE DRAWINGS.
   B. BACKFILL WITH 12" OF NO. 57 STONE AROUND REAR, LEFT, AND RIGHT SIDES TO LEVEL WITH TOP OF HDPE SCREEN.
   C. BACKFILL WITH BIORETENTION SOIL MIX BEYOND STONE BACKFILL TO EQUAL ELEVATION OF THE TOP OF HDPE SCREEN.
   D. DO NOT BACKFILL SOIL OR STONE AGAINST STAINLESS SCREEN.
   E. DO NOT COMPACT ADJACENT FILTRATION SYSTEM SOIL WITH MECHANICAL EQUIPMENT.
   F. STABILIZE All REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/ ORE ROSION CONTROL BLANKETS AS INDICATED ON DRAWINGS.
6. CLEAN UP
   A. AFTER COMPLETION OF THE WORK, REMOVE AND PROPERLY DISPOSE ALL DEBRIS, CONSTRUCTION MATERIA LS, RUBBISH, EXCESS SOIL, ETC., FROM THE PROJECT SITE. REPAIR PROMPTL Y ANY IDENTIFIED DEFICIENCIES AND LEAVE THE PROJECT SITE IN A CLEAN AND SATISFACTORY CONDITION.

PRETX-CURB ELEVATION GUIDE		
POINT	DESCRIPTION	HEIGHT IN REFERENCE TO PT. A
A	EDGE OF PAVEMENT	0 INCHES
B	OUTSIDE TOP SLAB	8 INCHES
C	TOP OF BIORETENTION	12 INCHES
D	SUMP INVERT	36 INCHES
E	OUTSIDE BOTTOM	42 INCHES

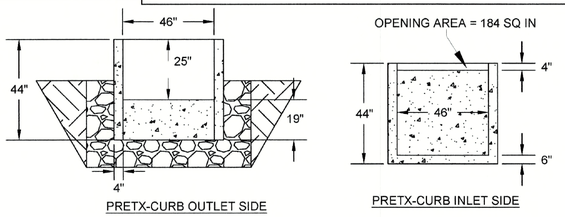


1/D1 PRETX CURB DETAIL
NOT TO SCALE

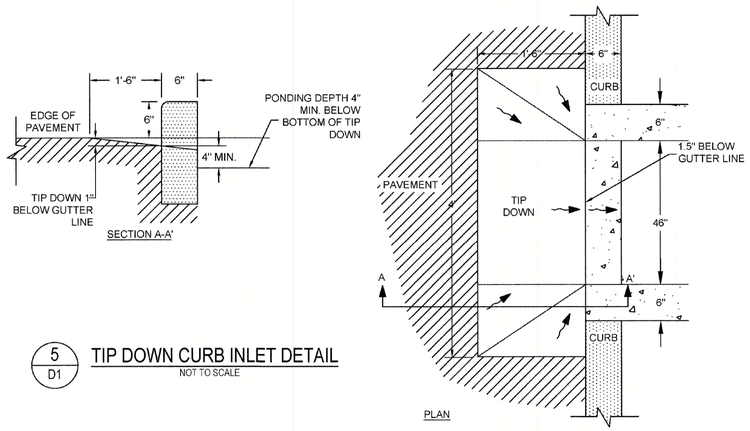


3/D1 PRETX CURB OUTLET SIDE
NOT TO SCALE

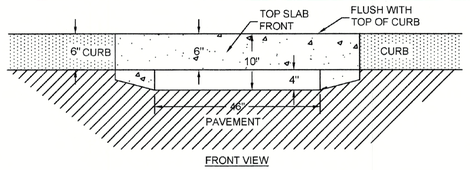
OUTLET SIDE INSTALLED W/ SCREENS



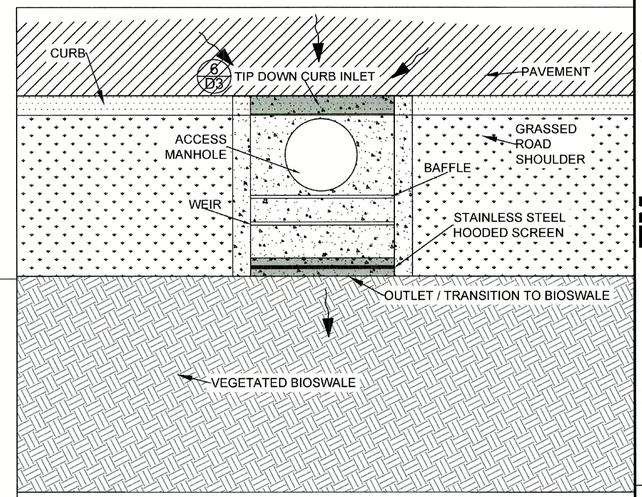
4/D1 PRETX CURB SIDE DETAIL
NOT TO SCALE



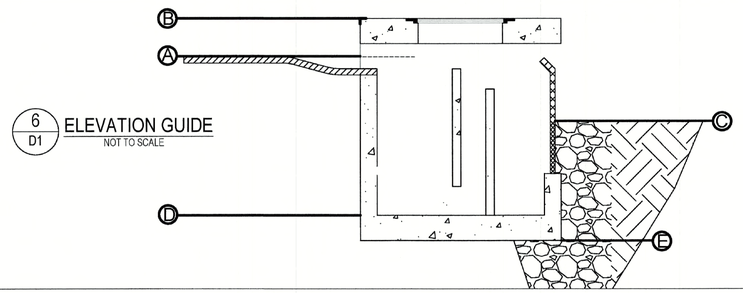
5/D1 TIP DOWN CURB INLET DETAIL
NOT TO SCALE



FRONT VIEW



7/D1 PRETX CURB OUTLET TO BIORETENTION CONFIGURATION
NOT TO SCALE



6/D1 ELEVATION GUIDE
NOT TO SCALE

STATE OF NEW HAMPSHIRE – LICENSED PROFESSIONAL ENGINEER – MICHAEL KERVAN No. 9646 – 12/23/21

PRETX™ CURB INLET PRETREATMENT DETAIL

D-1

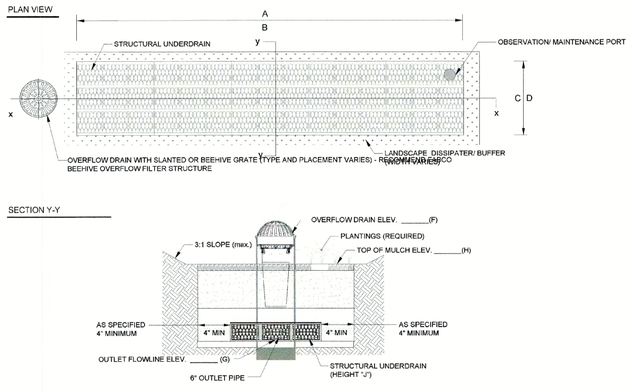
ACF ENVIRONMENTAL – LET'S GET IT DONE

PRETX BIOFILTER PRETREATMENT

TO FIND A VALUE ADDED RESELLER IN YOUR AREA VISIT
WWW.CONVERGENTWATER.COM/STORMWATER-PRODUCTS
OR CONTACT CONVERGENT WATER TECHNOLOGIES AT
1.800.711.5428

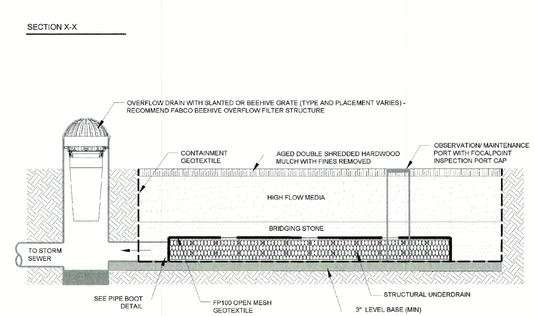
REVISED 11/20/18; ELEVATION DETAILS ADDED; CHECKED BY RR

CONVERGENT WATER TECHNOLOGIES



1

TYPICAL LAYOUT AND SECTION Y-Y



2

SECTION X-X

FOCALPOINT HP PERFORMANCE SPECIFICATION:

HIGH PERFORMANCE MEDIA
HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100" PER HOUR INFILTRATION RATE.
FIELD HYDRAULIC CONDUCTIVITY TESTING MUST BE CONDUCTED WITHIN 30 DAYS OF INSTALLATION.
FIELD TEST MUST BE CONDUCTED WITH PROSCRIBED INFILTROMETER AND SOP (SEE SPECIFICATION)
FAILURE TO MEET FIELD TESTING WILL RESULT IN THE REMOVAL OF MEDIA ND REPLACEMNT FROM ALTERNATE BATCH.

HIGH PERFORMANCE STRUCTURAL UNDERDRAIN

MUST HAVE A MINIMUM OF 19 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT.
MUST MEET H20 LOADING REQUIREMENTS
MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE.
MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

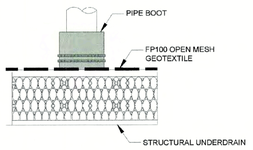
PLANT COMPONENT

SUPPLIER SHALL PROVIDE LIST OF ACCEPTABLE PLANTS
IF PLANTS ARE NOT INCLUDED IN THE LANDSCAPE CONTRACT/PLANS. SITE CONTRACTOR SHALL PROVIDE PLANTS.
PLANTS SHALL BE INSTALLED AT THE TIME OF THE SYSTEM IS COMMISSIONED FOR USE. PLANTING OUTSIDE THIS TIME REQUIRES APPROVAL BY THE ENGINEER OF RECORD.
SEE FOCALPOINT INSTALLATION GUIDE FOR PLANT SPACING, PLANTING PROCEDURES, ETC.

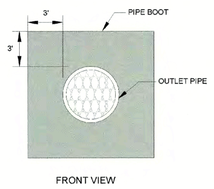
FOR ADDITIONAL INFORMATION PLEASE CONTACT
ACF ENVIRONMENTAL 1-800-448-3636
www.acfenvironmental.com

ACF ENVIRONMENTAL
LET'S GET IT DONE

OBSERVATION/ MAINTENANCE PORT CONNECTION

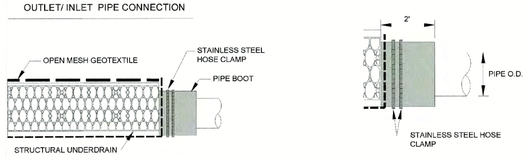


PIPE BOOT DETAIL



FRONT VIEW

OUTLET/ INLET PIPE CONNECTION



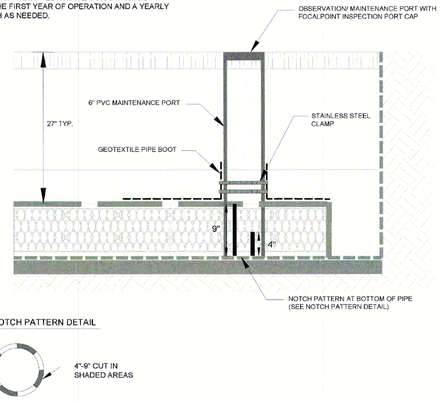
SIDE VIEW

4

PIPE CONNECTION DETAIL

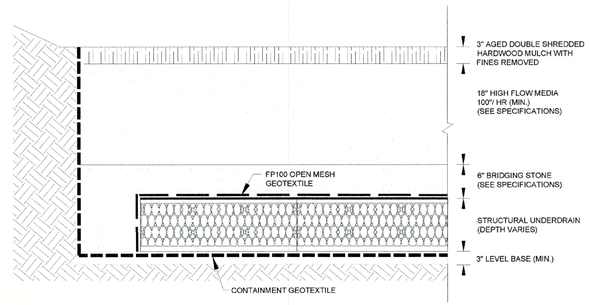
OBSERVATION/ MAINTENANCE PORT

PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPEND ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER FLUSH AS NEEDED.



5

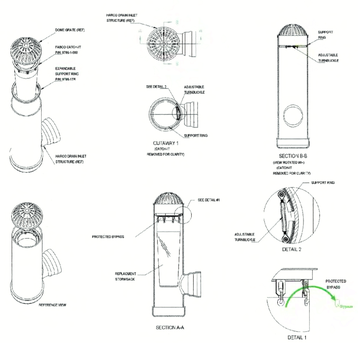
INSPECTION PORT DETAIL



6

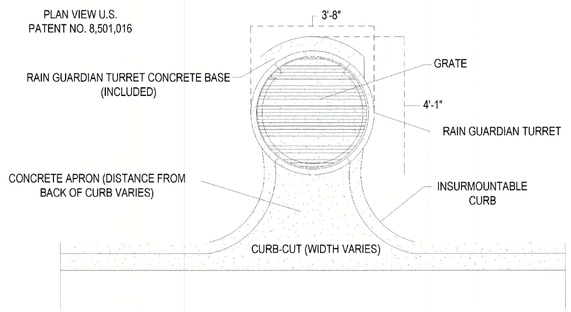
DETAILED CROSS SECTION

STRUCTURE DIAMETER (INCHES)	DEBRIS CAPACITY (CF)	FILTERED FLOWRATE (CFS)	BYPASS FLOWRATE (CFS)	TOTAL SYSTEM FLOWRATE (CFS)
12	0.77	2.2	1.2	3.4
18	1.65	2.5	1.0	3.5
24	3.60	4.9	2.4	7.3
30	6.20	4.9	2.4	7.3



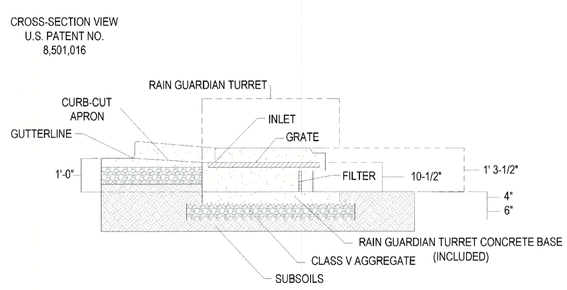
7

R-TANK^{HD} TYPICAL TANK INLET/OUTLET DETAIL



8

RAIN GUARDIAN TURRET (PLAN)



9

RAIN GUARDIAN TURRET (SECTION)

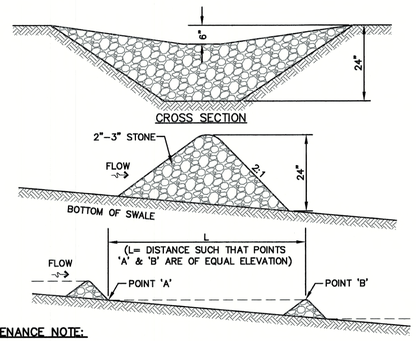
NOTE: ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

FOCALPOINT DETAILS

PROJECT NO.
35.336

DATE
AUG 15, 2019

SHEET NO.
FP-1

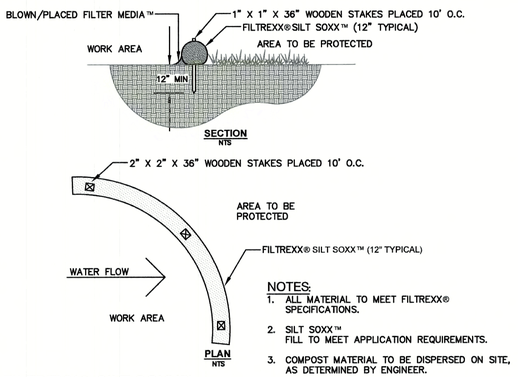


MAINTENANCE NOTE:

1. STONE CHECK DAMS SHOULD BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY NECESSARY REPAIRS SHOULD BE MADE IMMEDIATELY. PARTICULAR ATTENTION SHOULD BE GIVEN TO END RUN AND EROSION AT THE DOWNSTREAM TOE OF THE STRUCTURE. WHEN THE STRUCTURES ARE REMOVED, THE DISTURBED PORTION SHOULD BE BROUGHT TO THE EXISTING CHANNEL GRADE AND THE AREAS PREPARED, SEEDED AND MULCHED. WHILE THIS PRACTICE IS NOT INTENDED TO BE USED PRIMARILY FOR SEDIMENT TRAPPING, SOME SEDIMENT WILL ACCUMULATE BEHIND THE STRUCTURES. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF OF THE ORIGINAL HEIGHT OF THE STRUCTURE.

STONE CHECK DAM

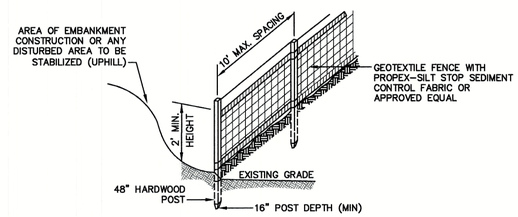
NOT TO SCALE



NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. SILT SOXX™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

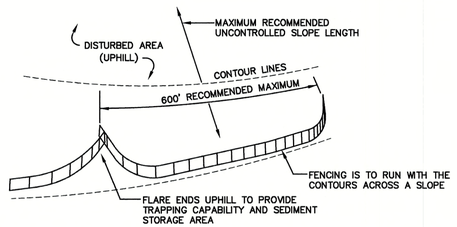
FILTREXX® SILT SOXX™

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS:

1. WOVEN FABRIC FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP, MID AND BOTTOM AND EMBEDDED IN THE GROUND A MINIMUM OF 8" AND THEN COVERED WITH SOIL.
2. THE FENCE POSTS SHALL BE A MINIMUM OF 48" LONG, SPACED A MAXIMUM 10' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED 6", FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY–PASSING.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED AND PROPERLY DISPOSED OF WHEN IT IS 6" DEEP OR VISIBLE 'BULGES' DEVELOP IN THE SILT FENCE.
5. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
6. SILT FENCE SHALL REMAIN IN PLACE FOR 24 MONTHS.



7. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND REVEGETATED.

MAINTENANCE:

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE DONE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED, OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED, SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE

NOT TO SCALE

TEMPORARY EROSION CONTROL NOTES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF 5 ACRES BE EXPOSED AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. SILT FENCES AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE–VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
7. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER) ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
8. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
9. AFTER OCTOBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
10. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
    b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    c. A MINIMUM OF 3" OF NON–EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED; OR
    d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. FUGITIVE DUST CONTROL IS REQUIRED TO BE CONTROLLED IN ACCORDANCE WITH ENV–A 1000, AND THE PROJECT IS TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.
12. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR'S NAME, ADDRESS, AND PHONE NUMBER SHALL BE SUBMITTED TO DES VIA EMAIL (SEE BELOW).
13. PRIOR TO CONSTRUCTION, A PHASING PLAN THAT DELINEATES EACH PHASE OF THE PROJECT SHALL BE SUBMITTED. ALL TEMPORARY SEDIMENT BASINS THAT WILL BE NEEDED FOR DEWATERING WORK AREAS SHALL BE LOCATED AND IDENTIFIED ON THIS PLAN.
14. IN ORDER TO ENSURE THE STABILITY OF THE SITE AND EFFECTIVE IMPLEMENTATION OF THE SEDIMENT AND EROSION CONTROL MEASURES SPECIFIED IN THE PLANS FOR THE DURATION OF CONSTRUCTION, THE CONTRACTOR SHALL BE IN STRICT COMPLIANCE WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS IN ADDITION TO THOSE CALLED FOR IN THE SWPPP:
    a. A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL OR A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE ("MONITOR") SHALL BE EMPLOYED TO INSPECT THE SITE FROM THE START OF ALTERATION OF TERRAIN ACTIVITIES UNTIL THE SITE IS IN FULL COMPLIANCE WITH THE SITE SPECIFIC PERMIT ("PERMIT").
    b. DURING THIS PERIOD, THE MONITOR SHALL INSPECT THE SUBJECT SITE AT LEAST ONCE A WEEK, AND IF POSSIBLE, DURING ANY ½ INCH OR GREATER RAIN EVENT (I.E. ½ INCH OF PRECIPITATION OR MORE WITHIN A 24 HOUR PERIOD). IF UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THIS EVENT.
    c. THE MONITOR SHALL PROVIDE TECHNICAL ASSISTANCE AND RECOMMENDATIONS TO THE CONTRACTOR ON THE APPROPRIATE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROLS REQUIRED TO MEET THE REQUIREMENTS OF RSA 485 A:17 AND ALL APPLICABLE DES PERMIT CONDITIONS.
    d. WITHIN 24 HOURS OF EACH INSPECTION, THE MONITOR SHALL SUBMIT A REPORT TO DES VIA EMAIL (RIDGELY MAUCK AT: RIDGELY.MAUCK@DES.NH.GOV).
    e. THE MONITOR SHALL MEET WITH DES TO DECIDE UPON A REPORT FORMAT. THE REPORT FORMAT SHALL BE REVIEWED AND APPROVED BY DES PRIOR TO THE START OF CONSTRUCTION.

SEEDING SPECIFICATIONS

1. GRADING AND SHAPING
   A. SLOPES SHALL NOT BE STEEPER THAN 2:1 WITHOUT APPROPRIATE EROSION CONTROL MEASURES AS SPECIFIED ON THE PLANS (3:1 SLOPES OR FLATTER ARE PREFERRED).
   B. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. SEEDBED PREPARATION
   A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND FERTILIZER AND LIME MIXED INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. ESTABLISHING A STAND
   A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. TYPES AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
      AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ.FT.
      NITROGEN(N), 50 LBS. PER ACRE OR 1.1 LBS. PER 1,000 SQ.FT.
      PHOSPHATE(P2O5), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      POTASH(K2O), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
      (NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10–20–20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5–10–10.)
   B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
   C. REFER TO THE 'SEEDING GUIDE' AND 'SEEDING RATES' TABLES ON THIS SHEET FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT, TREFOIL AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT PRIOR TO THEIR INTRODUCTION TO THE SITE.
   D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20th OR FROM AUGUST 10th TO SEPTEMBER 1st.
4. MULCH
   A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
   B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 S.F.
5. MAINTENANCE TO ESTABLISH A STAND
   A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
   B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME FULLY ESTABLISHED.
   C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, ANNUAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT	2/
	F	FAIR	EXCELLENT	EXCELLENT	2/

GRAVEL PIT, SEE NH–PM–24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.

1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.

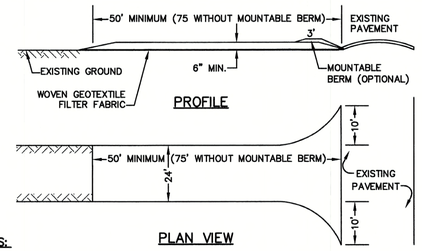
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING GUIDE

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
* C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDS FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60

1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.

SEEDING RATES



NOTES:

1. STONE FOR STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, 75' WITHOUT A MOUNTABLE BERM, AND EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS, OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER FABRIC IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENTIAL LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A STONE BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC RIGHT–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO THE PUBLIC RIGHT–OF–WAY MUST BE REMOVED PROMPTLY.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

CONSTRUCTION SEQUENCE

1. PRIOR TO THE START OF ANY ACTIVITY, IT IS THE RESPONSIBILITY OF THE SITE'S SITE DEVELOPER (OR OWNER) TO FILE A NOTICE OF INTENT (NOI) FORM WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) IN ORDER TO GAIN COVERAGE UNDER THE NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. A PRE CONSTRUCTION MEETING IS TO BE HELD WITH ALL DEPARTMENT HEADS PRIOR TO THE START OF CONSTRUCTION.
2. WETLAND BOUNDARIES ARE TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION.
3. CUT AND REMOVE TREES IN CONSTRUCTION AREA AS REQUIRED OR DIRECTED.
4. INSTALL SILT FENCING, HAY BALES AND CONSTRUCTION ENTRANCES PRIOR TO THE START OF CONSTRUCTION. THESE ARE TO BE MAINTAINED UNTIL THE FINAL PAVEMENT SURFACING AND LANDSCAPING AREAS ARE ESTABLISHED.
5. CLEAR, CUT, GRUB AND DISPOSE OF DEBRIS IN APPROVED FACILITIES. THIS INCLUDES ANY REQUIRED DEMOLITION OF EXISTING STRUCTURES, UTILITIES, ETC.
6. CONSTRUCT AND/OR INSTALL TEMPORARY OR PERMANENT SEDIMENT AND/OR DETENTION BASIN(S) AS REQUIRED. THESE FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING RUN–OFF TO THEM.
7. STRIP LOAM AND PAVEMENT, OR RECLAIM EXISTING PAVEMENT WITHIN LIMITS OF WORK PER THE RECOMMENDATIONS OF THE PROJECT ENGINEER AND STOCKPILE EXCESS MATERIAL. STABILIZE STOCKPILE AS NECESSARY.
8. PERFORM PRELIMINARY SITE GRADING IN ACCORDANCE WITH THE PLANS, INCLUDING THE CONSTRUCTION OF ANY RETAINING WALLS AND SOUND WALLS.
9. INSTALL THE SEWER AND DRAINAGE SYSTEMS FIRST, THEN ANY OTHER UTILITIES IN ACCORDANCE WITH THE PLAN AND DETAILS. ANY CONFLICTS BETWEEN UTILITIES ARE TO BE RESOLVED WITH THE INVOLVEMENT AND APPROVAL OF THE ENGINEER.
10. INSTALL INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED IN ACCORDANCE WITH DETAILS.
11. ALL SWALES AND DRAINAGE STRUCTURES ARE TO BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUN–OFF DIRECTED TO THEM.
12. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINAGE DITCHES, CHECK DAMS, SEDIMENT TRAPS, ETC., TO PREVENT EROSION ON THE SITE AND PREVENT ANY SILTATION OF ABUTTING WATERS AND/OR PROPERTY.
13. PERFORM FINAL FINE GRADING, INCLUDING PLACEMENT OF 'SELECT' SUBGRADE MATERIALS.
14. PAVE ALL ROADWAYS WITH INITIAL 'BASE COURSE'.
15. PERFORM ALL REMAINING SITE CONSTRUCTION (i.e. BUILDING, CURBING, UTILITY CONNECTIONS, ETC.).
16. LOAM AND SEED ALL DISTURBED AREAS AND INSTALL ANY REQUIRED SEDIMENT AND EROSION CONTROL FACILITIES (i.e. RIP RAP, EROSION CONTROL BLANKETS, ETC.).
17. FINISH PAVING ALL ROADWAYS AND PARKING AREAS WITH 'FINISH' COURSE.
18. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
19. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
20. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
21. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE BEEN 75%–85% ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE. SMOOTH AND RE–VEGETATE ALL DISTURBED AREAS.
22. CLEAN SITE AND ALL DRAINAGE STRUCTURES, PIPES AND SUMPS OF ALL SILT AND DEBRIS.
23. INSTALL ALL PAINTED PAVEMENT MARKINGS AND SIGNAGE PER THE PLANS AND DETAILS.
24. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF–INCH OF RAINFALL.
25. UPON COMPLETION OF CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ANY RELEVANT PERMITTING AGENCIES THAT THE CONSTRUCTION HAS BEEN FINISHED IN A SATISFACTORY MANNER.

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS NOTED	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		

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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9848 – LICENSED PROFESSIONAL ENGINEER – 6/23/21

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

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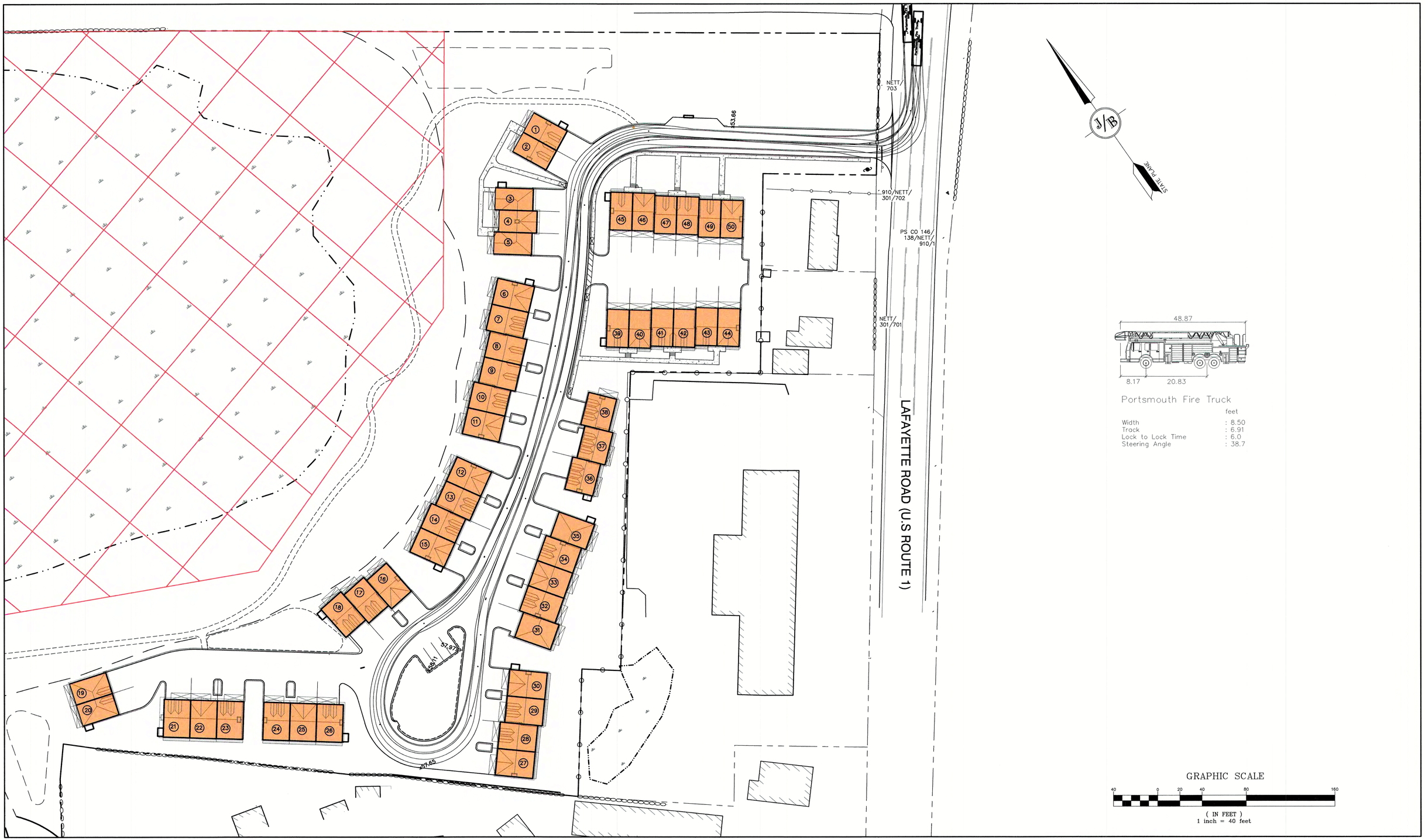
Plan Name: EROSION AND SEDIMENT CONTROL DETAILS
Project: 3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record: RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
E1
SHEET 24 OF 25
JBE PROJECT NO. 20737



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STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9946 – LICENSED PROFESSIONAL ENGINEER – 6/22/2021

REV.	DATE	REVISION	BY
6	6/22/21	REVISIONS PER TOWN REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
3	3/3/21	ADDED SURVEY INFO	LAZ
2	1/6/21	MINOR REVISIONS	DJM

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PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	TRUCK TURNING PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

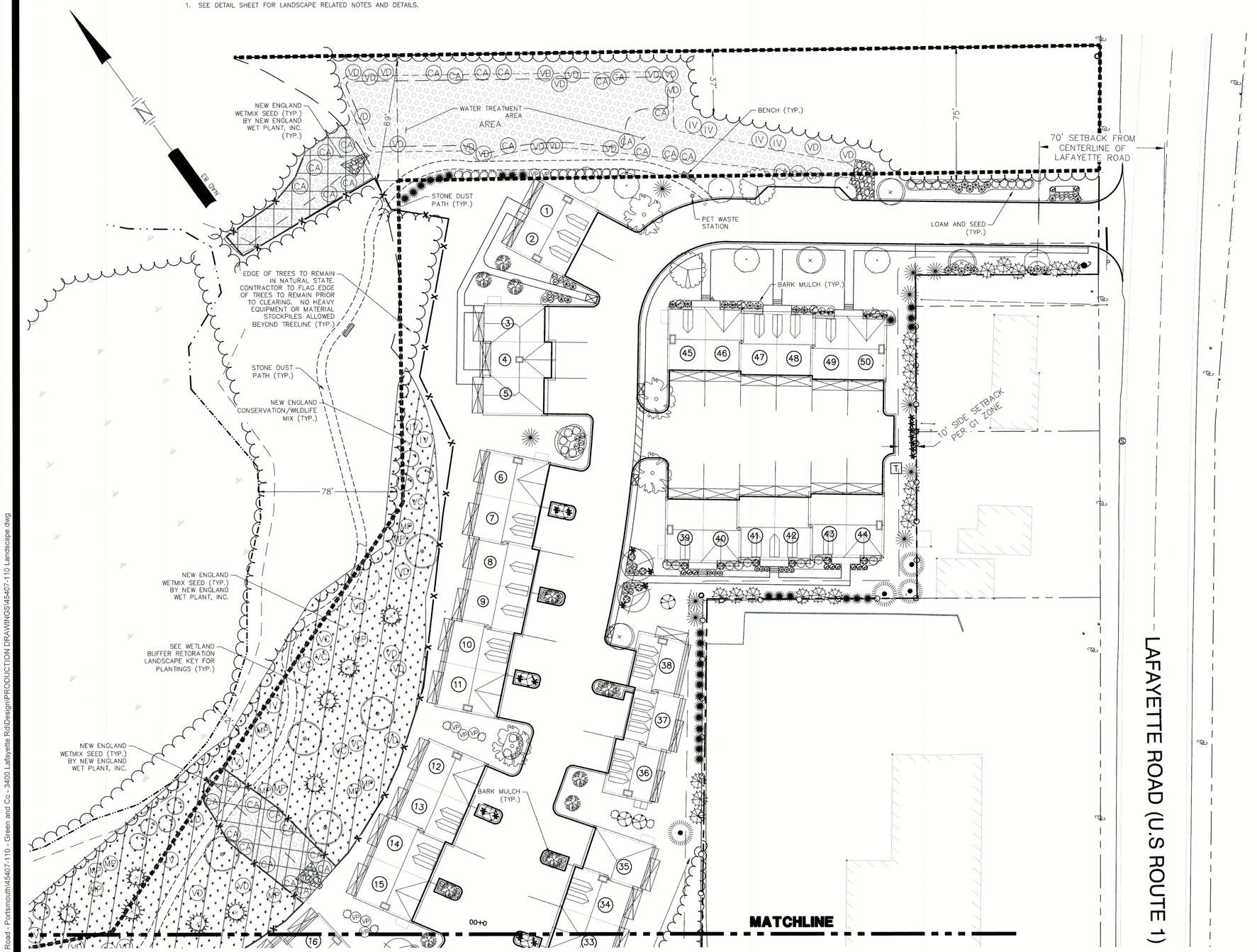
DRAWING No.

T1

SHEET 25 OF 25
JBE PROJECT NO. 20737

NOTE

1. SEE DETAIL SHEET FOR LANDSCAPE RELATED NOTES AND DETAILS.



LANDSCAPE LEGEND

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS	GROWTH HABIT
SHADE TREES					
	9	ACER RUBRUM 'REDPOINTE' **REDPOINTE RED MAPLE	2 1/2" TO 3" CAL.	B&B	PYRAMIDAL
	5	ACER SACCHARUM 'COMMEMORATION' **COMMEMORATION SUGAR MAPLE	3" TO 3 1/2" CAL.	B&B	ROUNDED
	10	MAACKIA AMURENSIS AMUR MAACKIA	2 1/2" TO 3" CAL.	B&B	ROUNDED
	5	NYSSA SYLVATICA *BLACK GUM	2 1/2 TO 3" CAL.	B&B	PYRAMIDAL
	X	QUERCUS P. 'GREEN PILLAR' **GREEN PILLAR GREEN OAK	2 1/2" TO 3" CAL.	B&B	COLUMNAR
	6	ULMUS AMERICANA 'VALLEY FORGE' **VALLEY FORGE AMERICAN ELM	2 1/2" TO 3" CAL.	B&B	SPREADING-VASE
EVERGREEN TREES					
	17	ABIES BALSAMAE *BALSAM FIR	6' TO 7'	B&B	PYRAMIDAL
	24	JUNIPERUS VIRGINIANA *EASTERN RED CEDAR	6' TO 7'	B&B	UPRIGHT-PYRAMIDAL
	21	PICEA GLAUCA *WHITE SPRUCE	7' TO 8'	B&B	PYRAMIDAL
	3	PINUS STROBUS *WHITE PINE	6' TO 7'	B&B	PYRAMIDAL
DECIDUOUS SHRUB					
	13	AMELANCHEIR ALNIFOLIA 'REGENT' *REGENT SERVICEBERRY	5 GAL.	CONT.	ROUNDED
	4	CLETHRA ALNIFOLIA 'COMPACTA' **COMPACT SUMMERSWEET	7 GAL.	CONT.	ROUNDED
	17	CORNUS SERICEA 'ARCTIC FIRE' **ARCTIC FIRE RED-OSIER DOGWOOD	7 GAL.	CONT.	ROUNDED
	25	FORSYTHIA 'GOLD TIDE' GOLD TIDE FORSYTHIA	3 GAL.	CONT.	LOW-SPREADING
	23	HYDRANGEA ARBORESCENS 'INCREDIBALL' INCREDIBALL SMOOTH HYDRANGEA	5 GAL.	CONT.	ROUNDED
	9	PHYSOCARPUS O. 'BURGUNDY CANDY' **BURGUNDY CANDY NINEBARK	2 GAL.	CONT.	ROUNDED
VP	6	VIBURNUM P.T. 'SUMMER SNOWFLAKE' SUMMER SNOWFLAKE VIBURNUM	3' TO 4'	B&B	ROUNDED
EVERGREEN SHRUB					
	45	AZALEA 'GIRARD'S CRIMSON' GIRARD'S CRIMSON AZALEA	3 GAL.	CONT.	ROUNDED
	4	RHODODENDRON 'ROSEUM PINK' **ROSEUM PINK RHODODENDRON	7 GAL.	CONT.	ROUNDED
	9	ILEX GLABRA 'COMPACTA' **COMPACT INKBERRY	3 GAL.	CONT.	ROUNDED
	34	JUNIPERUS CHINENSIS 'SEAGREEN' SEAGREEN JUNIPER	3 GAL.	CONT.	ARCHING
	8	JUNIPERUS H. 'BAR HARBOR' *BAR HARBOR JUNIPER	3 GAL.	CONT.	LOW-SPREADING
	11	PINUS M. 'MOPS' MOPS MUGO PINE	3 GAL.	CONT.	ROUNDED
	54	THUJA O. NIGRA *DARK AMERICAN ARBORVITAE	5' TO 6'	B&B	UPRIGHT-PYRAMIDAL
GRASSES					
	66	PANICUM VIRGATUM 'CLOUD NINE' **CLOUD NINE SWITCH GRASS	3 GAL.	CONT.	UPRIGHT

*NATIVE, ** IMPROVED NATIVE
NOTE: ALL PLANTS CONTAINED IN LEGEND HAVE BEEN LOCATED ON SITE TO REFLECT A PROPER GROWING ENVIRONMENT AND MEET THE HARDINESS ZONE OF 6a AS DETERMINED BY THE U.S. DEPT. OF AGRICULTURE.

SITE DEVELOPMENT PLANS

TAX MAP 297 LOT 11

LANDSCAPE PLAN

3400 LAFAYETTE ROAD

PORTSMOUTH, NH

OWNED BY

RICCI CONSTRUCTION CO, INC.

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **MARCH 8, 2021**

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NOTES

1. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
2. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
3. PLANT TYPES MAY VARY BASED ON AVAILABILITY AND SUPPLY. THIS LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY AND REPRESENTS THE INTENT, BUT PLANT SIZES, SPECIES, AND AMOUNTS MAY VARY.

HORIZONTAL SCALE 1"=30'
30 15 0 30

REV	DATE	DESCRIPTION	DR	CK
2	6/18/2021	REVISE PER SITE LAYOUT REVISIONS	MSK	JCC
1	5/13/2021	REVISE PER GRADING & UTILITY LAYOUT	MSK	JCC

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE		DR	ARJ	FB		
	45407.110	CK	MSK	CADFILE	45407-110 LANDSCAPE	LS-1

Jun 18, 2021 - 2:06pm
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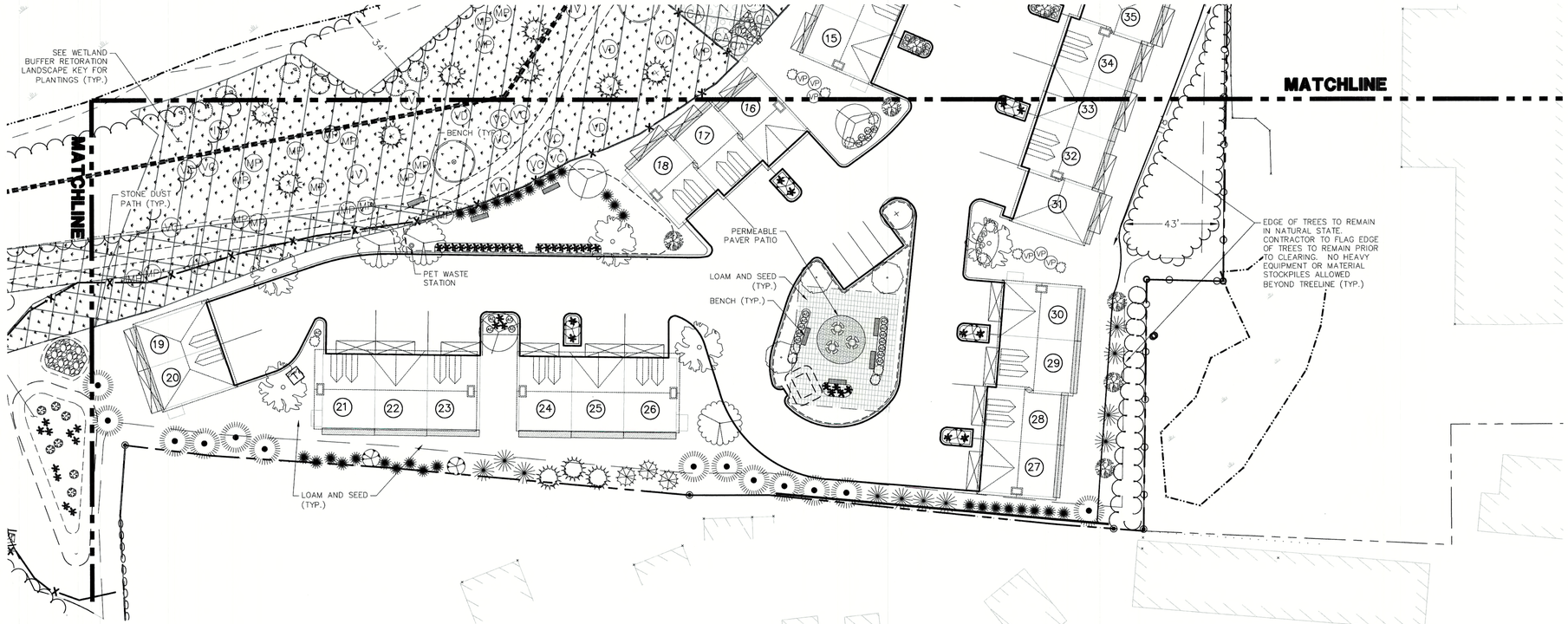
NOTE

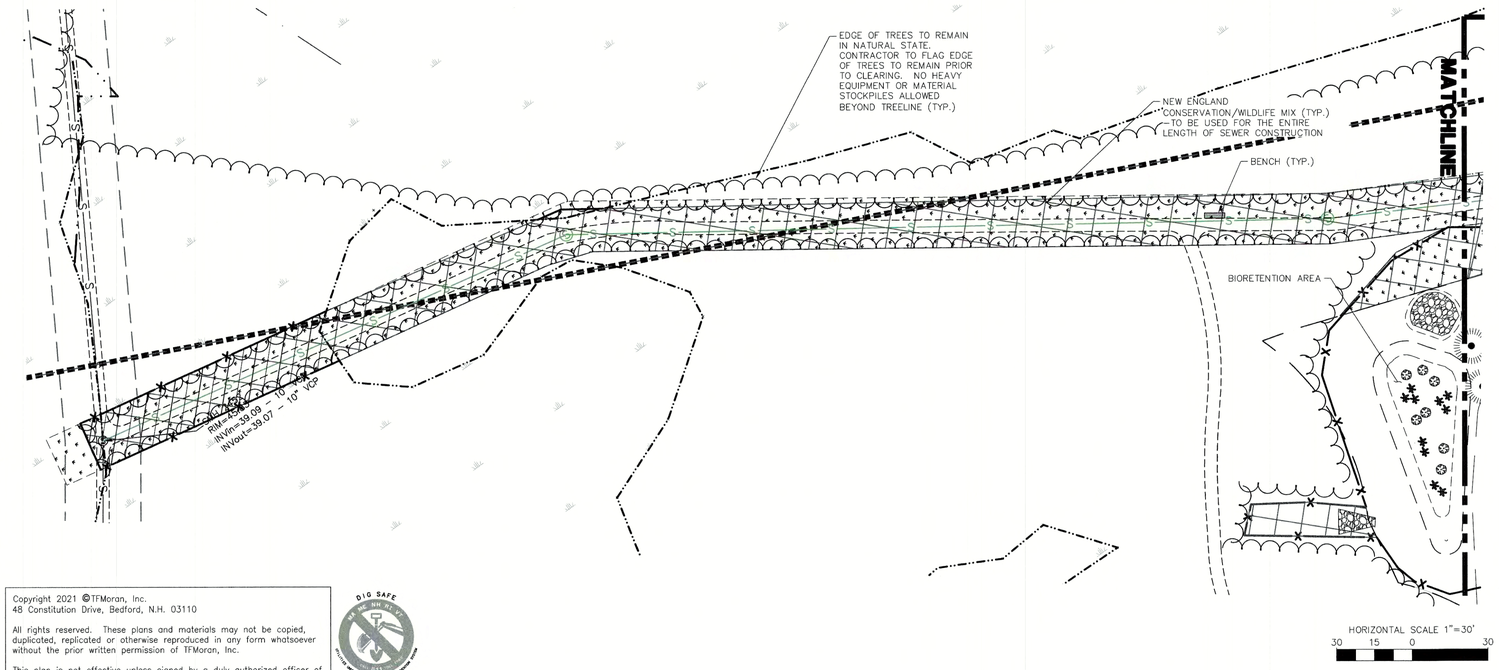
1. SEE DETAIL SHEET FOR LANDSCAPE RELATED NOTES AND DETAILS.

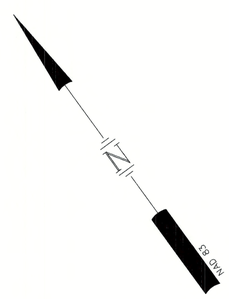


WETLAND BUFFER RESTORATION KEY

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS	GROWTH HABIT
QA	6	QUERCUS ALBA *WHITE OAK	2" TO 2 1/2" CAL.	B&B	UP-RIGHT BROAD
RT	14	RHUS TYPHINA *STAGHORN SUMAC	3 GAL.	CONT.	CLUMPING
CA	33	CORNUS AMOMUM *SILKY DOGWOOD	3 GAL.	CONT.	ROUNDED
MP	27	MYRICA PENSYLVANICA *NORTHERN BAYBERRY	3 GAL.	CONT.	ROUNDED
VD	29	VIBURNUM DENTATUM *ARROWWOOD VIBURNUM	3 GAL.	CONT.	ROUNDED
IV	10/3	ILEX VERTICILLATA *WINTERBERRY/**JIM DANDY WINTERBERRY	3 GAL.	CONT.	ROUNDED
VC	15	VACCINIUM CORYMBOSUM *HIGHBUSH BLUEBERRY	3 GAL.	CONT.	ROUNDED
PS	12	PINUS STROBUS *WHITE PINE	4' TO 5'	B&B	PYRAMIDAL
	55,980± SF	*NEW ENGLAND CONSERVATION/WILDLIFE MIX NEW ENGLAND WETLAND PLANT INC.	BAGS	BULK LBS	
	16,400± SF	*NEW ENGLAND WETMIX NEW ENGLAND WETLAND PLANT INC.	BAGS	BULK LBS	

*NATIVE, ** IMPROVED NATIVE





SITE DEVELOPMENT PLANS

TAX MAP 297 LOT 11

LANDSCAPE PLAN

3400 LAFAYETTE ROAD

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1"=60' (11"X17")

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Landscape Architects
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FILE	DR	ARJ	FB	-	LS-2
45407.110	CK	MSK	CADFILE	45407-110 LANDSCAPE	

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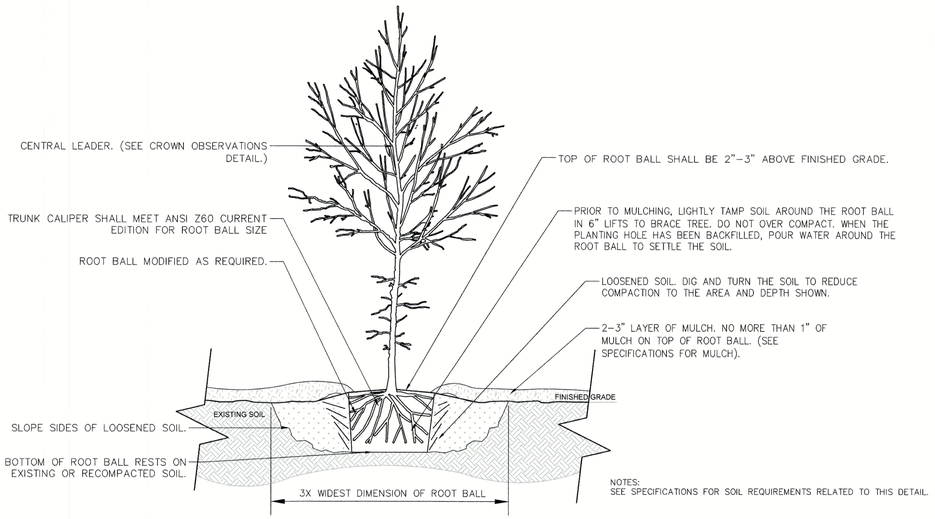
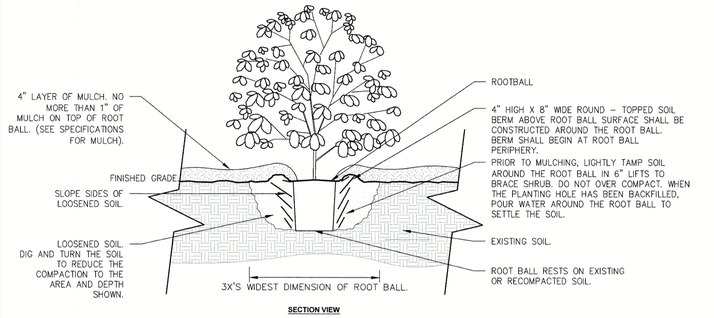


SECTION VIEW

TREE WITH BERM

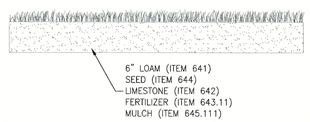
NOT TO SCALE



SECTION VIEW

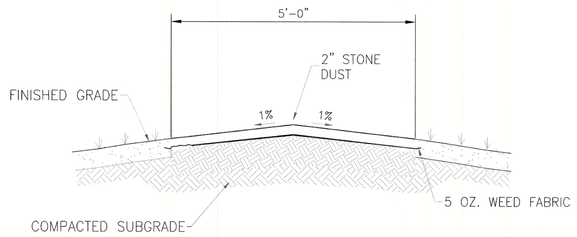
SHRUB PLANTING

NOT TO SCALE



LOAM & SEED (WHERE SPECIFIED)

NOT TO SCALE



STONE DUST PATH

NOT TO SCALE

LANDSCAPE NOTES

1. CONTRACTOR WILL LOCATE, VERIFY AND MARK ALL EXISTING AND NEWLY INSTALLED UNDERGROUND UTILITIES PRIOR TO ANY LAWNWORK OR PLANTING. ANY CONFLICTS WHICH MIGHT OCCUR BETWEEN PLANTING AND UTILITIES WILL IMMEDIATELY BE REPORTED TO THE LANDSCAPE ARCHITECT OR OWNERS' REPRESENTATIVE, SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
2. CONTRACTOR WILL FURNISH AND PLANT ALL PLANTS IN QUANTITIES AS SHOWN ON THIS PLAN. IN CASES OF DISCREPANCY BETWEEN PLAN AND LIST CLARIFY WITH LANDSCAPE ARCHITECT PRIOR TO PLACING PURCHASE ORDER AND AGAIN PRIOR TO PLANTING.
3. SEE PLANTING DETAILS AND IF INCLUDED, SPECIFICATIONS FOR ADDITIONAL INFORMATION.
4. NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE THE APPROPRIATE ARRANGEMENTS TO PROVIDE ALL PLANTS AND MATERIALS TO ACCOMMODATE PLANTING WITHIN THE TIME ALLOWED BY THE CONSTRUCTION SCHEDULE.
6. PLANTING SHALL BE COMPLETED FROM APRIL 15TH THROUGH OCTOBER 15TH UNLESS OTHERWISE NOTED IN SPECIFICATIONS. THERE WILL BE NO PLANTING DURING JULY AND AUGUST UNLESS SPECIAL PROVISIONS ARE MADE FOR DROUGHT BY PROVIDING ADDITIONAL WATERING.
7. ALL PLANTS WILL BE NURSERY GROWN.
8. PLANTS WILL BE IN ACCORDANCE, AT A MINIMUM, WITH CURRENT EDITION OF "AMERICAN STANDARDS FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN HORTICULTURE INDUSTRY ASSOCIATION.
9. TREES WILL BE PRUNED IN ACCORDANCE WITH THE LATEST EDITION OF ANSI A300 PART 1, "TREE, SHRUB AND OTHER WOODY PLANT MAINTENANCE STANDARD PRACTICES".
10. PLANTS MATERIAL IS SUBJECT TO APPROVAL / REJECTION BY THE LANDSCAPE ARCHITECT AT THE SITE AND AT THE NURSERY.
11. ALL PLANTS WILL BE MOVED WITH ROOT SYSTEMS AS SOLID UNITS AND WITH BALLS OF EARTH FIRMLY WRAPPED WITH BURLAP. NO PLANT WILL BE ACCEPTED WHEN BALL OF EARTH SURROUNDING ITS ROOTS HAS BEEN BADLY CRACKED OR BROKEN BEFORE PLANTING. ALL PLANTS THAT CANNOT BE PLANTED AT ONCE WILL BE HEELED–IN BY SETTING IN THE GROUND AND COVERING THE BALLS WITH SOIL AND THEN WATERING. DURING TRANSPORT, ALL PLANT MATERIALS WILL BE WRAPPED WITH WIND PROOF COVERING.
12. NEWLY PLANTED MATERIAL WILL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL GRADE OF THE PLANT PRIOR TO DIGGING.
13. MULCH FOR PLANTED AREAS (NOT INCLUDING RAIN GARDENS) WILL BE AGED SHREDDED PINE BARK, PARTIALLY DECOMPOSED, DARK BROWN IN COLOR AND FREE OF WOOD CHIPS UNLESS OTHERWISE SHOWN.
14. PLANT MATERIAL WILL BE LOCATED OUTSIDE BUILDING DRIPLINES AND ROOF VALLEY POINTS OF CONCENTRATION TO PREVENT DAMAGE TO PLANTS. CLARIFY DISCREPANCIES WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
15. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED, WILL RECEIVE SIX (6) INCH LOAM AND SEED AT THE DIRECTION OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
16. ALL PLANT GROUPINGS WILL BE IN MULCH BEDS UNLESS OTHERWISE SPECIFIED OR NOTED ON PLANS. WHERE MULCHED PLANT BED ABUTS LAWN, PROVIDE TURF CUT EDGE.
17. ALL PLANT BEDS WILL INTERSECT WITH PAVEMENT AT 90 DEGREES UNLESS OTHERWISE NOTED ON PLANS.
18. ALL PLANT BED EDGES WILL BE SMOOTH AND CONSISTENT IN LAYOUT OF RADII AND TANGENTS. IRREGULAR, WAVY EDGES WILL NOT BE ACCEPTED.

LANDSCAPE GUARANTEE AND MAINTENANCE NOTES

1. CONTRACTOR WILL BE RESPONSIBLE FOR ALL MEANS, METHODS AND TECHNIQUES OF WATERING.
2. CONTRACTOR WILL BEGIN WATERING IMMEDIATELY AFTER PLANTING. ALL PLANTS WILL BE THOROUGHLY WATERED TWICE DURING THE FIRST 24 HOUR PERIOD AFTER PLANTING. ALL PLANTS WILL BE WATERED WEEKLY, OR MORE OFTEN, IF NECESSARY DURING THE FIRST GROWING SEASON BUT NOT LESS THAN ONE YEAR FROM TIME OF INSTALLATION.
3. WATER ALL LAWNS AS REQUIRED. DO NOT LET NEWLY PLANTED LAWNS DRY OUT DURING THE FIRST FOUR WEEKS MINIMUM.
4. ALL NEW LAWNS WILL BE MAINTAINED AND MOWED A MINIMUM THREE (3) TIMES BEFORE REQUESTING REVIEW BY LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE FOR ACCEPTANCE. MAINTENANCE AND MOWING WILL CONTINUE UNTIL ACCEPTED BY LANDSCAPE ARCHITECT OR OWNERS' REPRESENTATIVE IS ISSUED IN WRITING.
5. THE CONTRACTOR WILL MAINTAIN AND GUARANTEE ALL PLANTINGS TO BE IN GOOD HEALTHY, FLOURISHING AND ACCEPTABLE CONDITION FOR A PERIOD OF ONE (1) YEAR BEGINNING AT THE DATE OF ACCEPTANCE BY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE. ALL GRASSES, TREES AND SHRUBS THAT, IN THE OPINION OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE SHOWING LESS THAN 80% HEALTHY GROWTH AT THE END OF ONE (1) YEAR PERIOD WILL BE IMMEDIATELY REPLACED BY THE CONTRACTOR.
6. DECIDUOUS PLANT MATERIAL INSTALLED AFTER SEPTEMBER 30 AND BEFORE APRIL 15 WILL NOT BE REVIEWED THAT SEASON FOR ACCEPTANCE DUE TO STAGE OF LEAF PHYSIOLOGY. THIS PLANT MATERIAL WILL NOT BE REVIEWED UNTIL THE FOLLOWING GROWING SEASON. GUARANTEE PERIOD WILL BEGIN ONLY AFTER ACCEPTANCE BY LANDSCAPE ARCHITECT OR OWNERS' REPRESENTATIVE.
7. EVERGREEN PLANT MATERIAL INSTALLED AFTER OCTOBER 30 AND BEFORE APRIL 15 WILL NOT BE REVIEWED THAT SEASON FOR ACCEPTANCE DUE TO END OF GROWTH SEASON. THIS PLANT MATERIAL WILL NOT BE REVIEWED UNTIL THE FOLLOWING GROWING SEASON. GUARANTEE PERIOD WILL BEGIN ONLY AFTER ACCEPTANCE BY LANDSCAPE ARCHITECT OR OWNERS' REPRESENTATIVE.

INVASIVE PLANT NOTES

1. EXISTING NON–NATIVE, INVASIVE PLANT SPECIES WILL BE IDENTIFIED, REMOVED, DESTROYED AND LEGALLY DISPOSED OF OFF–SITE IN ACCORDANCE WITH THE LATEST UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION METHODS OF DISPOSING NON–NATIVE INVASIVE PLANTS. SEE "MANAGE AND CONTROL INVASIVES" AND PROPERLY DISPOSE OF INVASIVE PLANTS".

PORTSMOUTH NOTES

1. THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNER'S WILL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS INDICATED ON THESE PLAN(S).
2. ALL REQUIRED PLANT MATERIAL WILL BE TENDED TO AND KEPT FREE OF REFUSE AND DEBRIS.
3. ALL REQUIRED FENCES AND WALLS WILL BE MAINTAINED IN GOOD REPAIR.
4. THE PROPERTY OWNER WILL BE RESPONSIBLE TO REMOVE AND REPLACE DEAD OR DISEASED PLANT MATERIALS IMMEDIATELY WITH THE SAME TYPE, SIZE AND QUANTITY OF PLANT MATERIALS AS ORIGINALLY INSTALLED, UNLESS ALTERNATIVE PLANTINGS ARE REQUESTED, JUSTIFIED AND APPROVED BY THE PLANNING BOARD OR PLANNING DIRECTOR.
5. ALL IMPROVEMENTS SHOWN ON THIS PLAN WILL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THIS PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES WILL BE MADE TO THIS PLAN WITHOUT THE WRITTEN APPROVAL OF THE PORTSMOUTH PLANNING BOARD OR PLANNING DIRECTOR.
6. THE LANDSCAPE PLAN WILL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

SEEDING NOTES

1. SLOPES UP TO AND INCLUDING 3:1 GRADE, SEED WILL BE NEW ENGLAND EROSION CONTROL & RESTORATION MIX PER NEW ENGLAND WETLANDS PLANTS INC., AMHERST, MA.
2. SLOPES STEEPER THAN 3:1 GRADE, SEED WILL BE NEW ENGLAND EROSION CONTROL & RESTORATION MIX PER NEW ENGLAND WETLANDS PLANTS INC., AMHERST, MA. SEE CIVIL FOR ADDITIONAL EROSION CONTROL MEASURES.
3. GENERAL SEED WILL BE NHDOT SPECIFICATION SECTION 644, TABLE 644–1–PARK SEED TYPE 15, INCLUDING NOTES TO TABLE 1, 2 & 3.

SITE DEVELOPMENT PLANS

TAX MAP 297 LOT 11

LANDSCAPE DETAIL SHEET

3400 LAFAYETTE ROAD

PORTSMOUTH, NH

OWNED BY

RICCI CONSTRUCTION CO, INC.

PREPARED FOR

GREEN & COMPANY REAL ESTATE

SCALE: NOT TO SCALE **MARCH 8, 2021**

REV	DATE	DESCRIPTION	DR	CK
1	5/13/2021	NO REVISIONS THIS SHEET	MSK	JCC

TFM Civil Engineers, Structural Engineers, Traffic Engineers, Land Surveyors, Landscape Architects, Scientists
48 Constitution Drive, Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
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FILE		DR	ARJ	FB	–	
	45407.110	CK	MSK	CADFILE	45407–110 LANDSCAPE	LS–3

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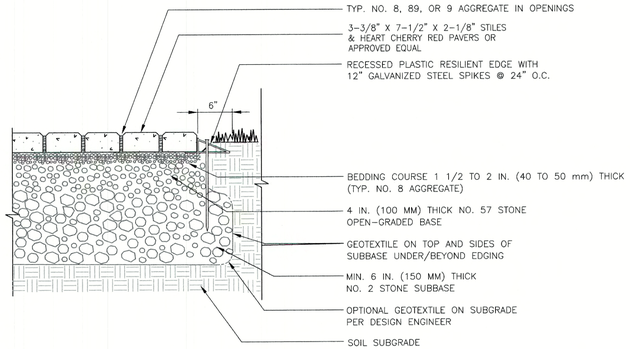

PERMEABLE PAVER DETAIL

NOT TO SCALE

KIRBYBUILT
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BATAVIA, IL 60510
TOLL FREE: 1-855-888-7461
PHONE: (855) 888-7461
FAX: (630) 879-8687
www.kirbybuilt.com

☑ SELECT DESIRED COLOR:

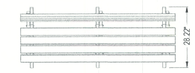
- ☐ CEDAR ☐ BLACK
- ☐ GREEN ☐ BROWN
- ☐ DESERT TAN ☐ GRAY

☑ SELECT DESIRED FRAME COLOR:

- ☐ CEDAR ☐ BLACK
- ☐ GREEN ☐ BROWN
- ☐ DESERT TAN ☐ GRAY

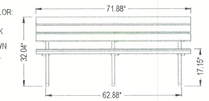
☑ SELECT DESIRED MOUNT:

- ☐ PORTABLE



TOP VIEW

ISOMETRIC VIEW



FRONT VIEW

SIDE VIEW

NOTES:
1. ALL MATERIAL RECYCLED HDPE.
2. ALL HARDWARE STAINLESS STEEL.
3. SHIPPED PARTIALLY ASSEMBLED.
4. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. DO NOT SCALE DRAWING.
6. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
7. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
8. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT WWW.CADDETAILS.COM/INFO AND ENTER REFERENCE NUMBER 1177-055

LEGEND A-FRAME BENCHES

ABC1020 – 6' LEGEND A-FRAME BENCH
OR APPROVED EQUAL

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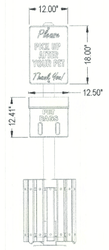
222 STATE ST.
BATAVIA, IL 60510
TOLL FREE: 1-855-888-7461
PHONE: (855) 888-7461
FAX: (630) 879-8687

☐ SELECT DESIRED COLOR:

- ☐ CEDAR ☐ BLACK
- ☐ GREEN ☐ BROWN
- ☐ DESERT TAN ☐ GRAY

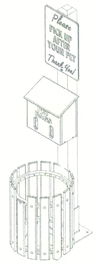
☑ SELECT DESIRED MOUNT:

- ☐ SURFACE
- ☐ IN-GROUND



FRONT VIEW

SIDE VIEW



ISOMETRIC VIEW

NOTES:
1. ALL MATERIAL RECYCLED HDPE.
2. ALL HARDWARE STAINLESS STEEL.
3. SHIPPED PARTIALLY ASSEMBLED.
4. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. DO NOT SCALE DRAWING.
6. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
7. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
8. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT WWW.CADDETAILS.COM/INFO AND ENTER REFERENCE NUMBER 1177-206.

STANDARD ROLL BAG PET WASTE STATIONS

APW1220/APW1215 – STANDARD ROLL BAG PET WASTE STATION AND SIGN (BAG DISPENSER, 5 GALLON RECEPTACLE, POST, SIGN) –SURFACE MOUNT OR IN-GROUND
OR APPROVED EQUAL

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DIG SAFE
811 or 1-888-DIG-SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

REV	DATE	DESCRIPTION	DR	CK
2	6/18/2021	REVISE PER SITE LAYOUT REVISIONS	MSK	JCC

SITE DEVELOPMENT PLANS

TAX MAP 297 LOT 11

LANDSCAPE DETAIL SHEET

3400 LAFAYETTE ROAD

PORTSMOUTH, NH

OWNED BY

RICCI CONSTRUCTION CO, INC.

PREPARED FOR

GREEN & COMPANY REAL ESTATE

SCALE: NOT TO SCALE **MARCH 8, 2021**

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	45407.110	DR	ARJ	FB	–	LS-4
		CK	MSK	CADFILE	45407-110 LANDSCAPE	

Jun 18, 2021 - 2:03pm
F:\MSC Projects\45407 - Lafayette Road - Portsmouth\45407-110 - Green and Co - 3400 Lafayette Rd\Design\PRODUCTION DRAWINGS\45407-110 Landscape.dwg

NEW ENGLAND WETMIX SEED MIX (TYP.)

75' NRP SIDE SETBACK

75' NRP ZONE

G1 ZONE

6' STOCKADE FENCE

MAN-MADE WETLANDS

100' WETLAND BUFFER

NEW ENGLAND CONSERVATION/WILDLIFE SEED MIX (TYP.)

NEW ENGLAND WETMIX SEED MIX (TYP.)

75' NRP ZONE

G1 ZONE

COMMUNITY SPACE -3,120 SF

COMMUNITY SPACE -3,650 SF

LAFAYETTE ROAD (U.S ROUTE 1)

SITE NOTES:

1. THE INTENT OF THIS PLAN IS SHOW THE SITE LAYOUT FOR A 50-UNIT MULTI-FAMILY RESIDENTIAL DEVELOPMENT ON TAX MAP 297 LOT 11.

2. ZONING DISTRICT: GATEWAY CORRIDOR (G1), USE: GATEWAY TOWNHOUSE
   LOT AREA MINIMUM = NO REQUIREMENT FOUND
   LOT FRONTAGE MINIMUM = 100'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 70' FROM CENTERLINE OF LAFAYETTE ROAD
   SIDE SETBACK = 10'
   REAR SETBACK = 15'
   WETLAND SETBACK = 100'
   MAX BUILDING HEIGHT = 35'
   MIN. OPEN SPACE = 20%
   MAX. BUILDING COVERAGE = 50%
   AREA OF LOT WITHIN G1 DISTRICT = 677,360 S.F.=15.55 AC
   OPEN SPACE PROPOSED = 573,846 S.F. = 84.7% ± WITHIN G1 DISTRICT
   BUILDING COVERAGE PROPOSED = 38,108 S.F. = 5.6% ± WITHIN G1 DISTRICT
   DENSITY ALLOWED = 16 UNITS/ACRE = 16 X 15.55 AC =248 UNITS ALLOWED

   ZONING DISTRICT: NATURAL RESOURCE PROTECTION (NRP)
   LOT AREA MINIMUM = NO REQUIREMENT
   LOT FRONTAGE MINIMUM = NO REQUIREMENT
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 70'
   SIDE SETBACK = 70'
   REAR SETBACK = 70'
   MAX BUILDING HEIGHT = 35'
   MIN. OPEN SPACE = 95%
   MAX. BUILDING COVERAGE = NO REQUIREMENT
   AREA OF LOT WITHIN NRP DISTRICT = 1,226,861 S.F. ±
   OPEN SPACE PROPOSED = 1,226,861 S.F. = 100% WITHIN NRP DISTRICT

   EXISTING CONSERVATION EASEMENT = 28.16 AC = 64.4% OF SITE
   PROPOSED CONSERVATION EASEMENT = 10.3 AC = 23.6% OF SITE
   TOTAL CONSERVATION EASEMENT = 38.5 AC = 88.0% OF SITE

3. PARKING CALCULATIONS:
   1.3 SPACES PER UNIT > 750 S.F.
   TOTAL NUMBER OF UNITS = 50. EACH UNIT HAS 2 SPACES IN GARAGE.
   4 OUTDOOR PARKING SPACES PROVIDED.
   TOTAL SPACES REQUIRED = 65, TOTAL SPACES PROVIDED = 104

4. PAVEMENT AREA 61,262 SF = 3% OF SITE

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DIG SAFE
CONTACT DIG SAFE 72 HOURS BEFORE YOU CONSTRUCT

REV	DATE	DESCRIPTION	DR	CK

SITE DEVELOPMENT PLANS

TAX MAP 297 LOT 11

PRESENTATION PLAN

3400 LAFAYETTE ROAD

PORTSMOUTH, NH

OWNED BY

RICCI CONSTRUCTION CO, INC.

PREPARED FOR

GREEN & COMPANY REAL ESTATE

SCALE: 1"=30' (30"X42") JUNE 18, 2021

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
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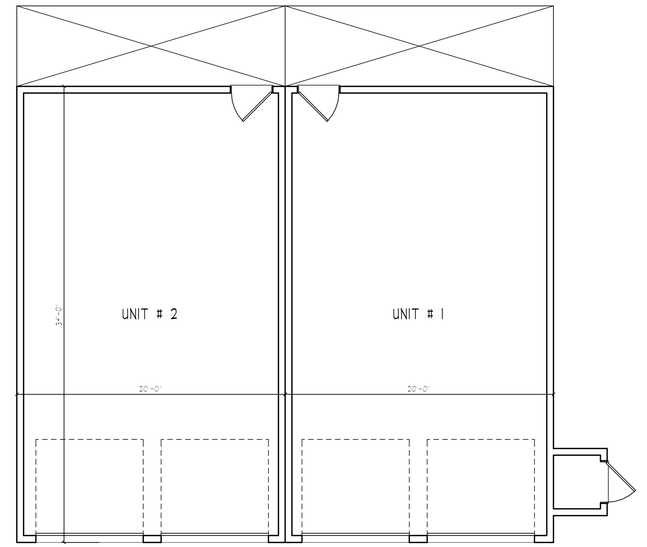
FILE	DR	ARJ	FB
45407.110	CK	MSK	CADFILE

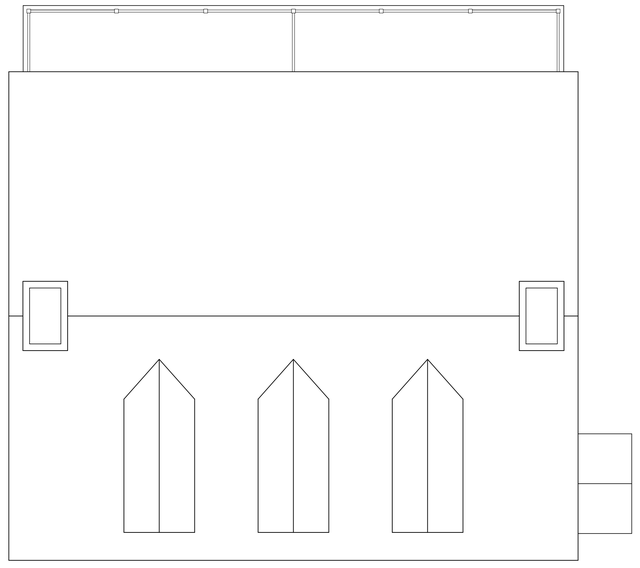
FRONT ELEVATION

SCALE: 1/4" = 1'-0"

GATEWAY TOWNHOUSE:
SMALL FOOTPRINT ATTACHED SINGLE FAMILY RESIDENTIAL BUILDINGS HAVE A NARROW MASSING AND MAY BE LOCATED ON INDIVIDUAL OR COMMON LOTS. EACH UNIT IS SEPARATED HORIZONTALLY BY A COMMON WALL.



BUILDING # 1



BUILDING # 1

FACADE MODULATION MET BY STEPPING UNITS, THE USE OF DECKS AND RECESSED / COVERED ENTRIES PER FIGURE 10.5B23.30.

FACADE MODULATION OCCURS LESS THAN EVERY FOURTH UNIT MEETING MAXIMUM ALLOWABLE LENGTH PER SECTION 10.5A43.20.

BUILDINGS DO NOT EXCEED MAXIMUM ALLOWANCE OF 8 UNITS

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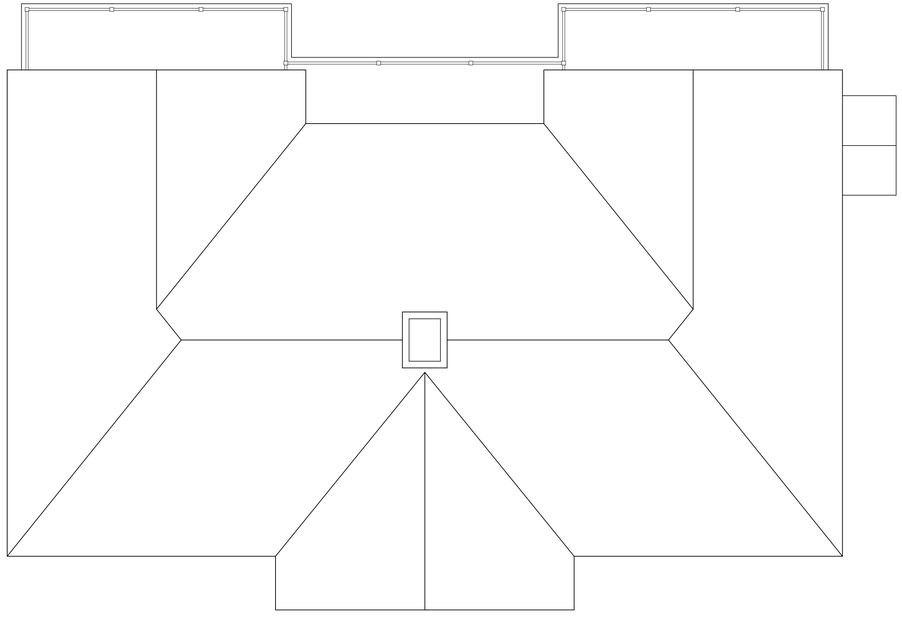
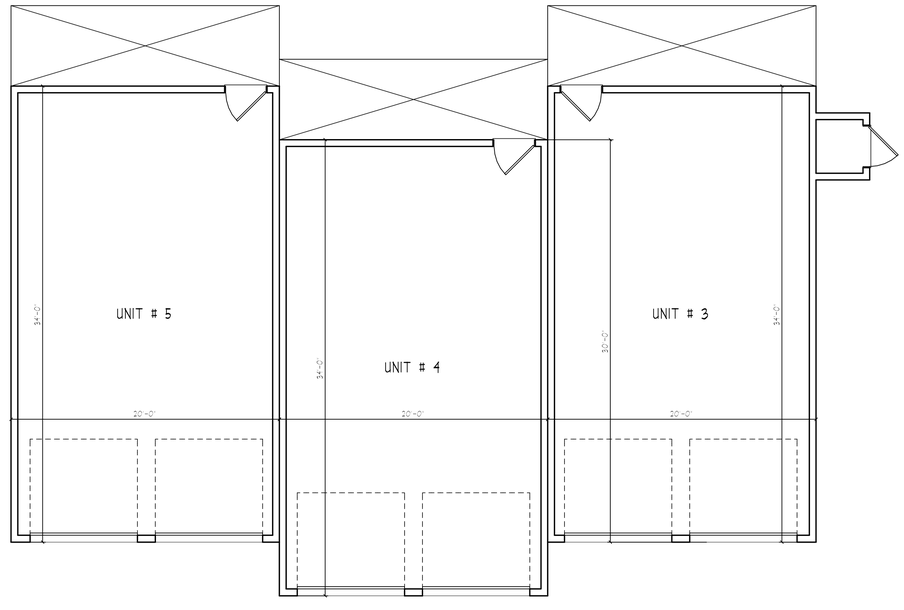


BUILDING # 2



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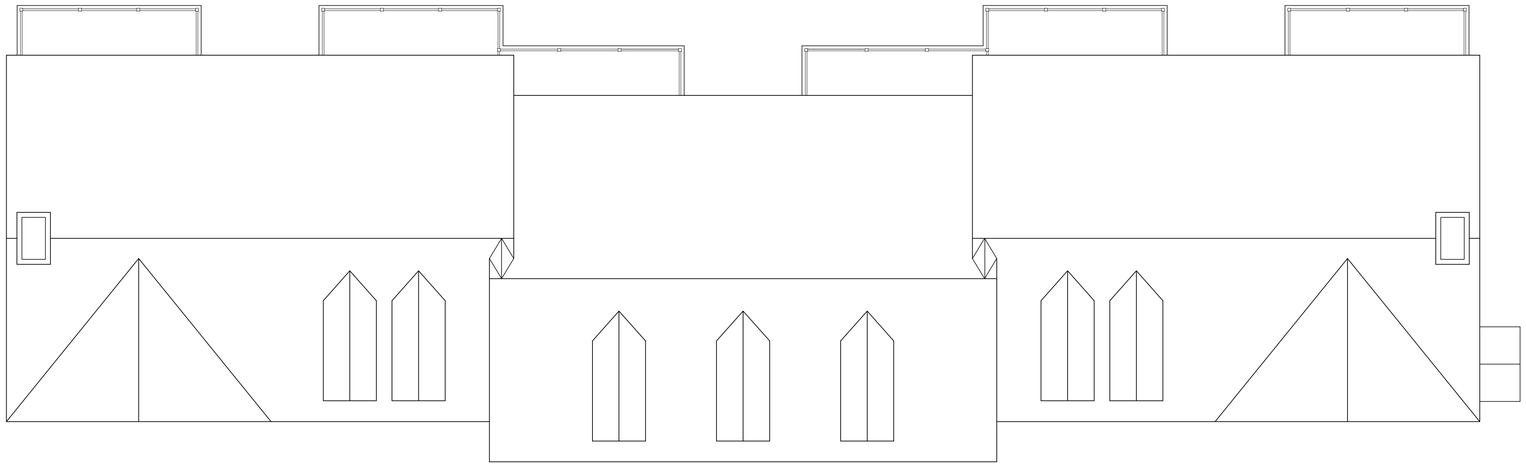
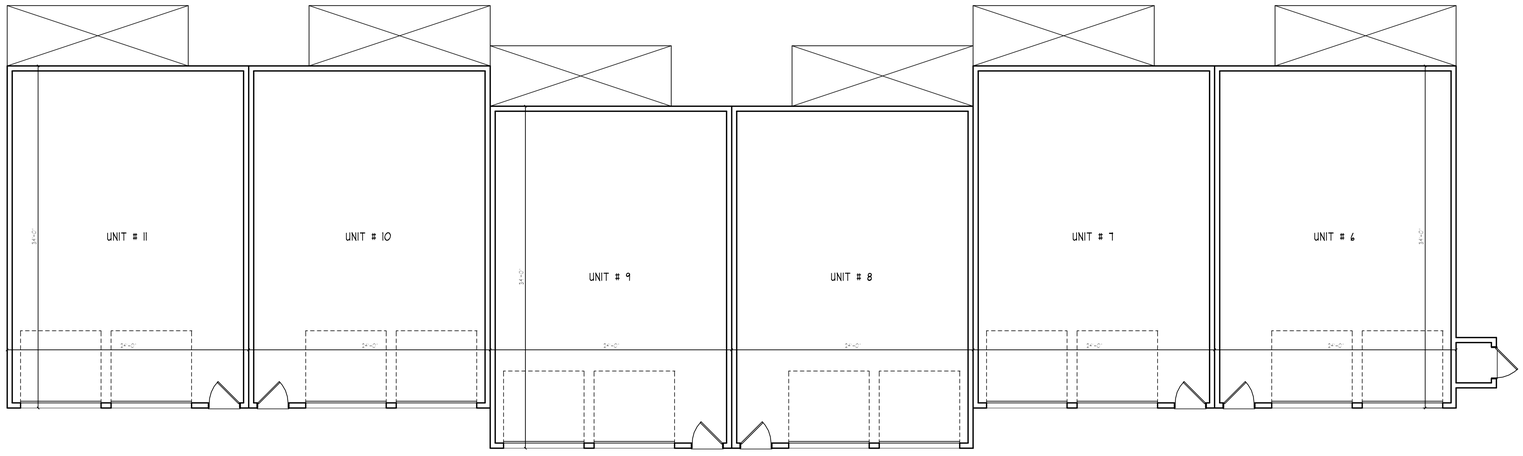


BUILDING # 3



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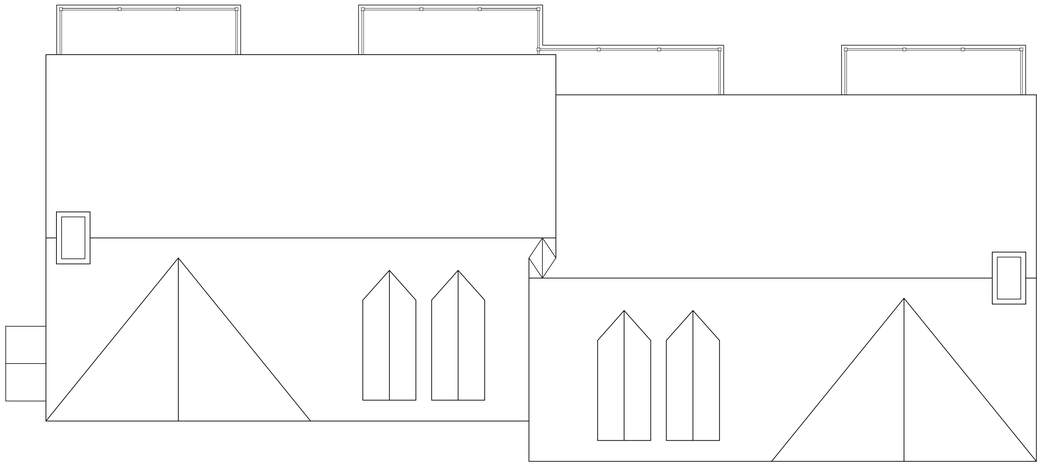
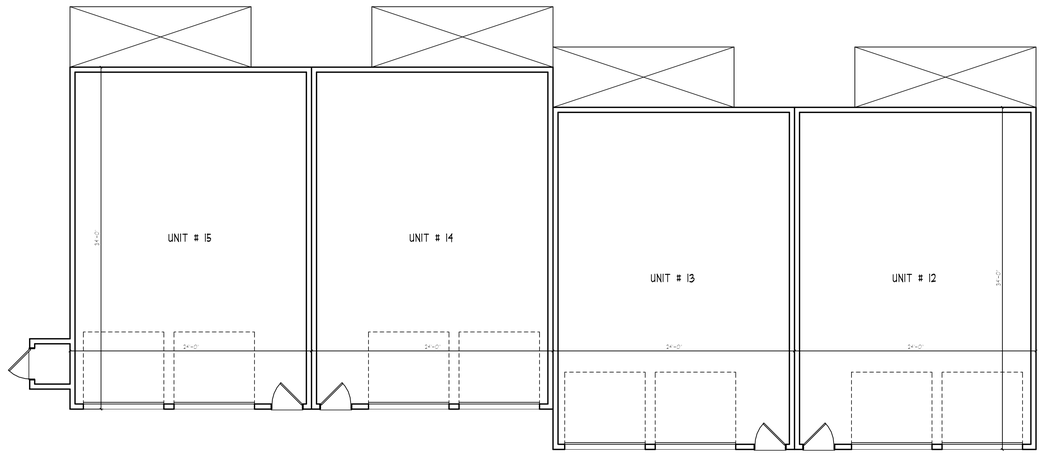


BUILDING # 4



BUILDING # 4

FRONT ELEVATION

SCALE: 1/4" = 1'-0"

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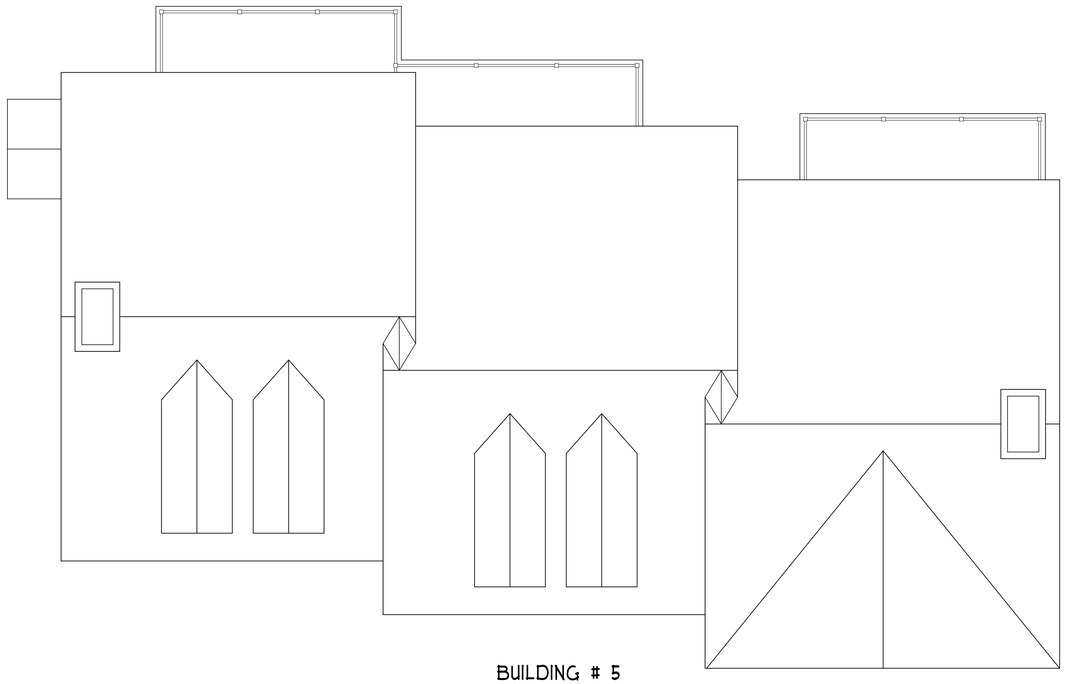
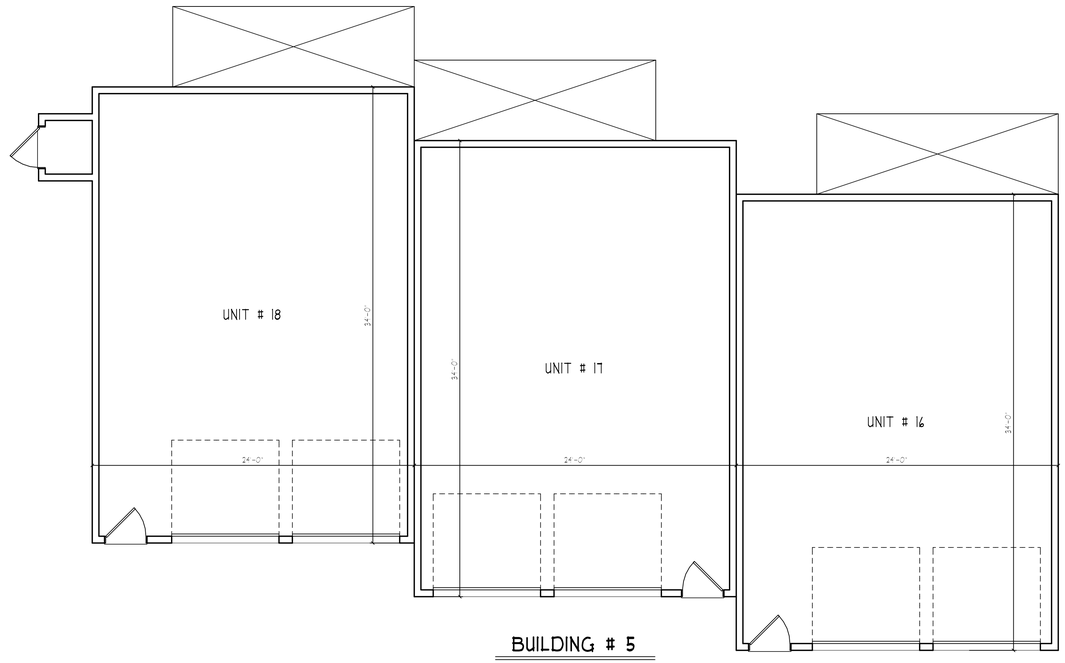
FACADE MODULATION OCCURS LESS THAN EVERY FOURTH UNIT MEETING MAXIMUM ALLOWABLE LENGTH PER SECTION 10.5A43.20.

BUILDINGS DO NOT EXCEED MAXIMUM ALLOWANCE OF 8 UNITS



BUILDING # 5



BUILDING # 5

BUILDINGS OVER 100'-0" ARE BROKEN UP TO LOOK LIKE A SERIES OF SMALLER BUILDINGS BY STEPPING UNITS BACK, CHANGING ROOF LINES, ADDING DORMERS, ETC.

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BUILDINGS DO NOT EXCEED MAXIMUM ALLOWANCE OF 8 UNITS

FRONT ELEVATION

SCALE: 1/4" = 1'-0"

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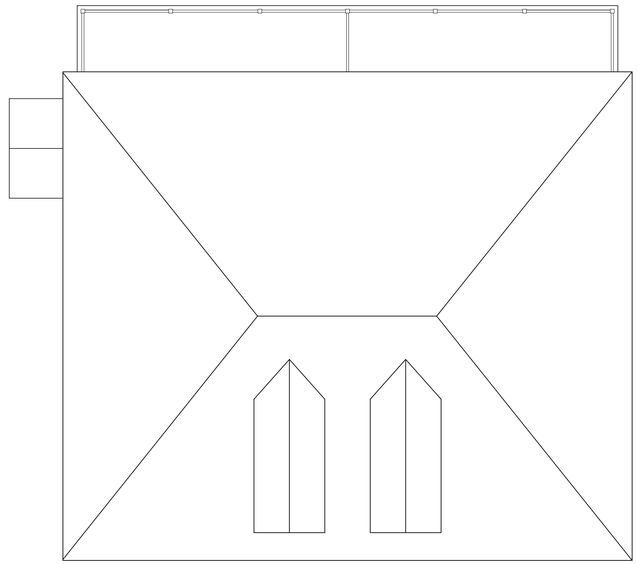
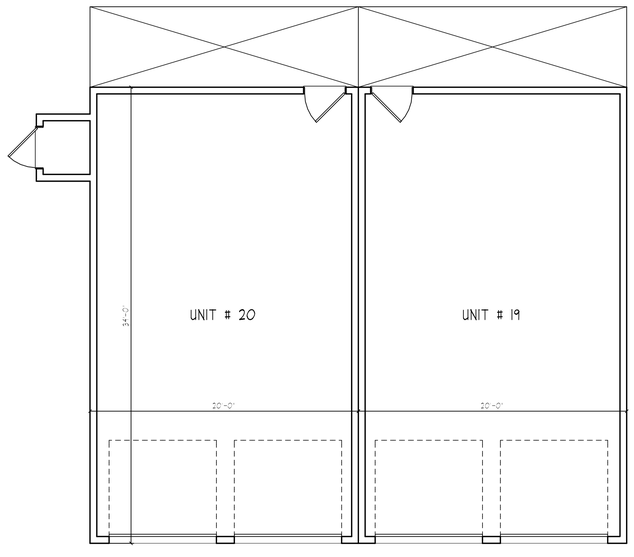


BUILDING # 6



BUILDING # 6

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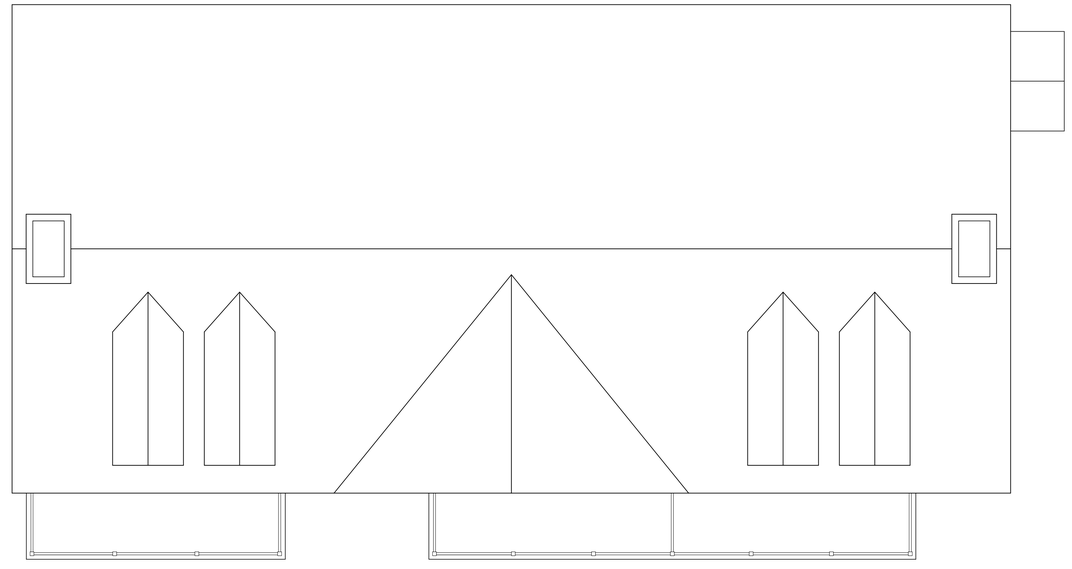
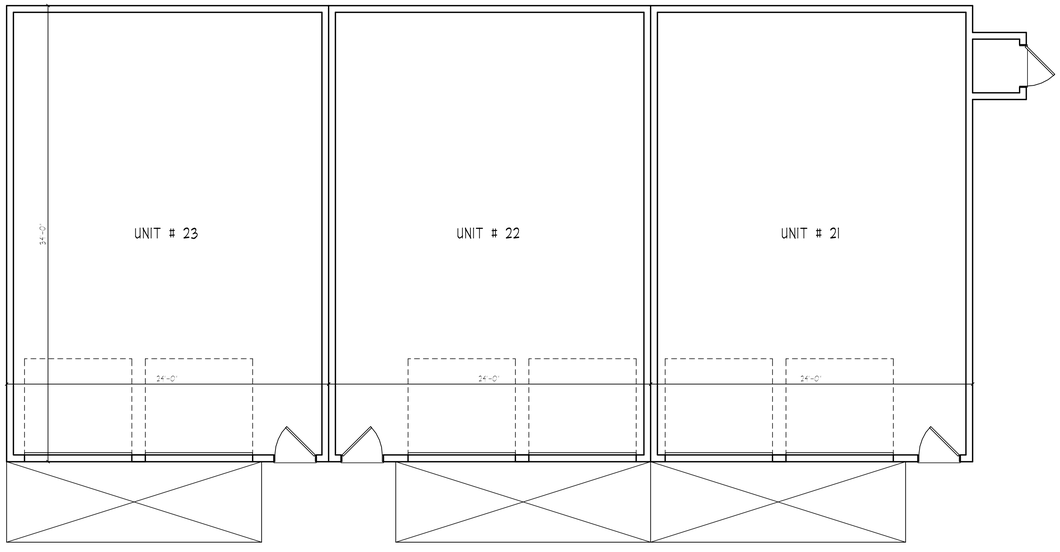


BUILDING # 7

BUILDINGS DO NOT EXCEED MAXIMUM ALLOWANCE OF 8 UNITS



BUILDING # 7

FRONT ELEVATION

SCALE: 1/4" = 1'-0"

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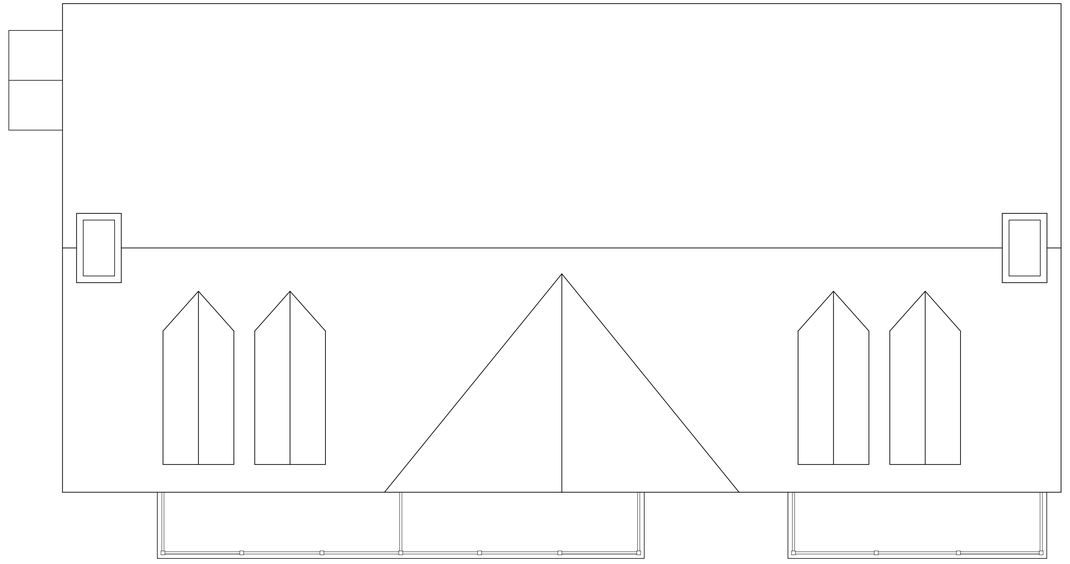
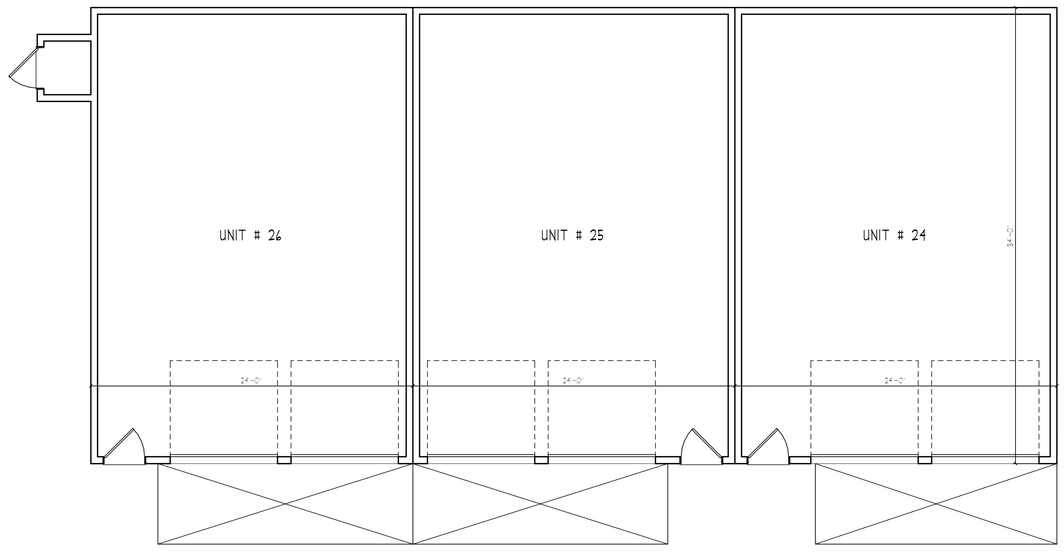


BUILDING # 8

BUILDINGS DO NOT EXCEED MAXIMUM ALLOWANCE OF 8 UNITS



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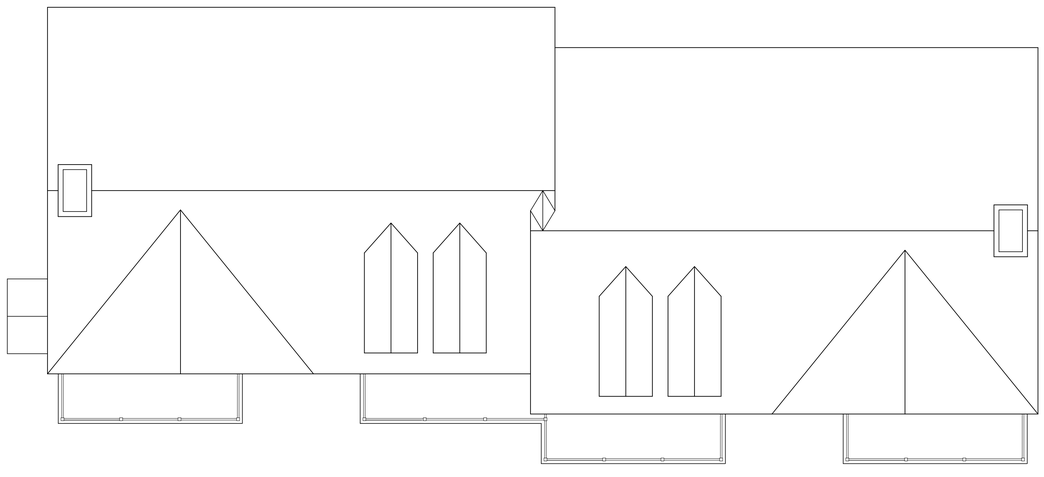
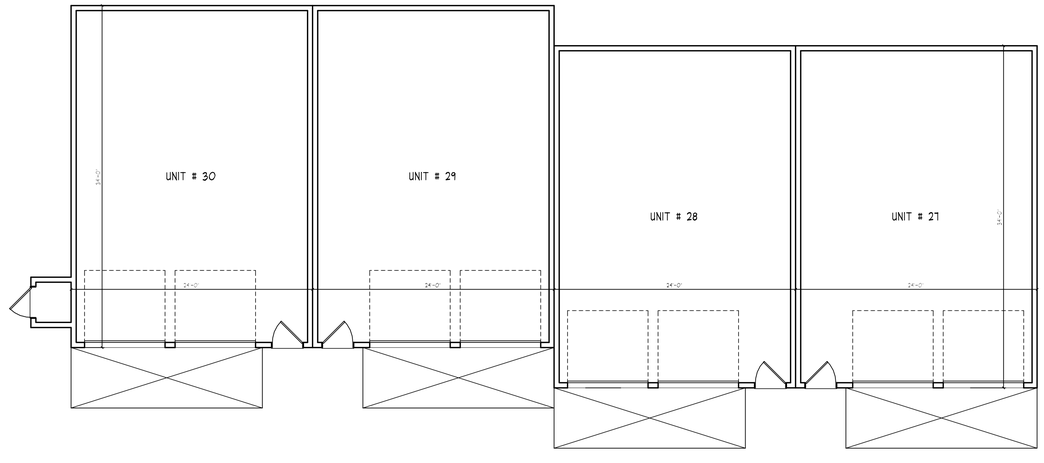


BUILDING # 9



BUILDING # 9

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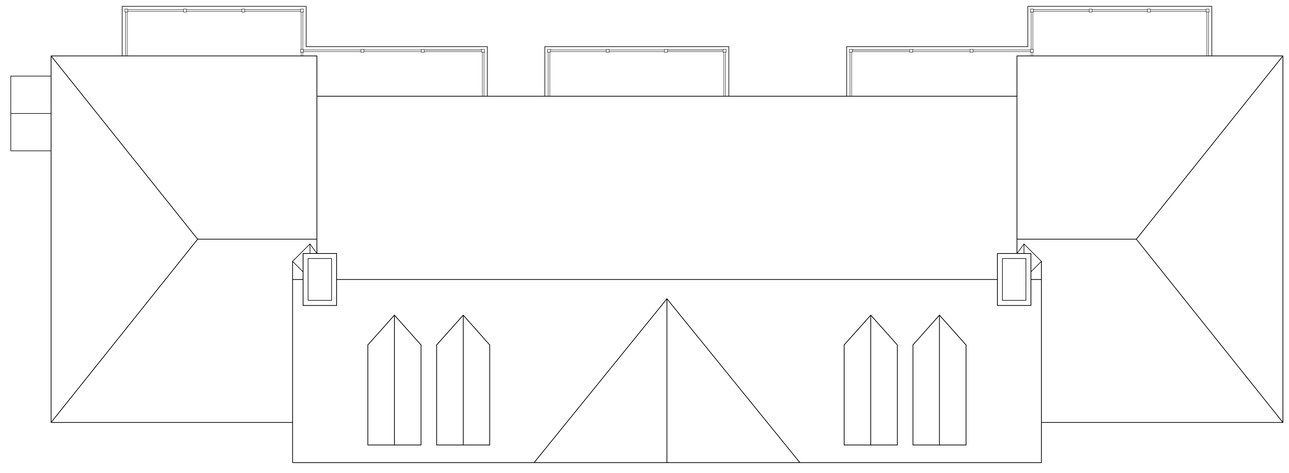
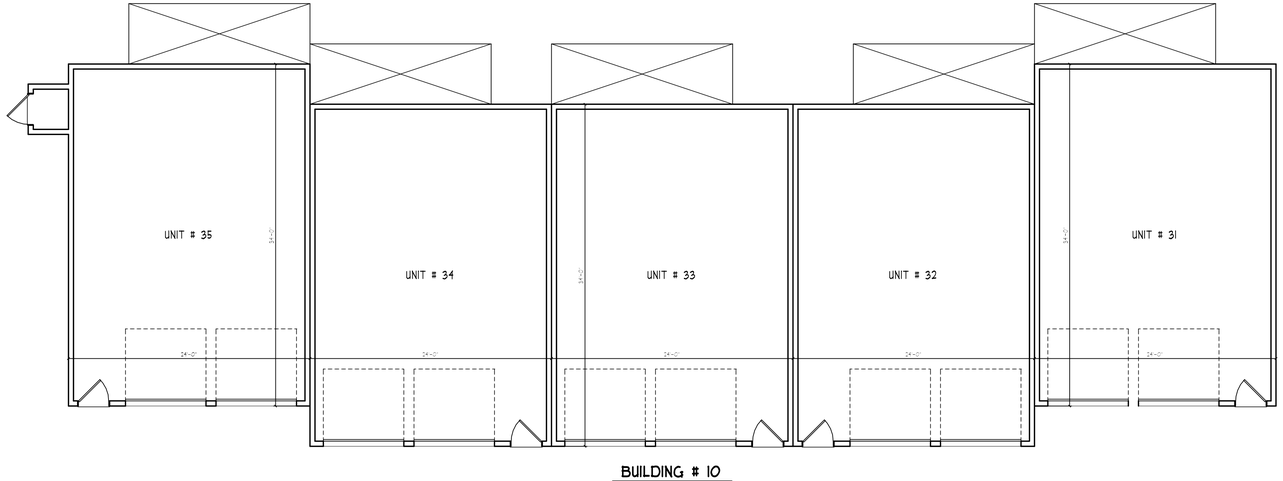


BUILDING # 10



BUILDING # 10

BUILDINGS OVER 100'-0" ARE BROKEN UP TO LOOK LIKE A SERIES OF SMALLER BUILDINGS BY STEPPING UNITS BACK, CHANGING ROOF LINES, ADDING DORMERS, ETC.

AVERAGE BUILDING HEIGHT LESS THAN MAXIMUM ALLOWABLE HEIGHT OF 35'-0"

CEILING HGT. 27'-5 1/8" A.F.F.

THIRD FLR. 19'-4" A.F.F.

SECOND FLR. 9'-8" A.F.F.

GROUND FLR. 0'-0" A.F.F.

MINIMUM ROOF SLOPE GUIDELINES MET BY USING 8:12 ROOF SLOPE ON MAIN ROOF AND 10:12 ROOF SLOPE ON GABLES

FACADE MODULATION MET BY STEPPING UNITS, THE USE OF DECKS AND RECESSED / COVERED ENTRIES PER FIGURE 10.5B23.30.

FACADE MODULATION OCCURS LESS THAN EVERY FOURTH UNIT MEETING MAXIMUM ALLOWABLE LENGTH PER SECTION 10.5A43.20.

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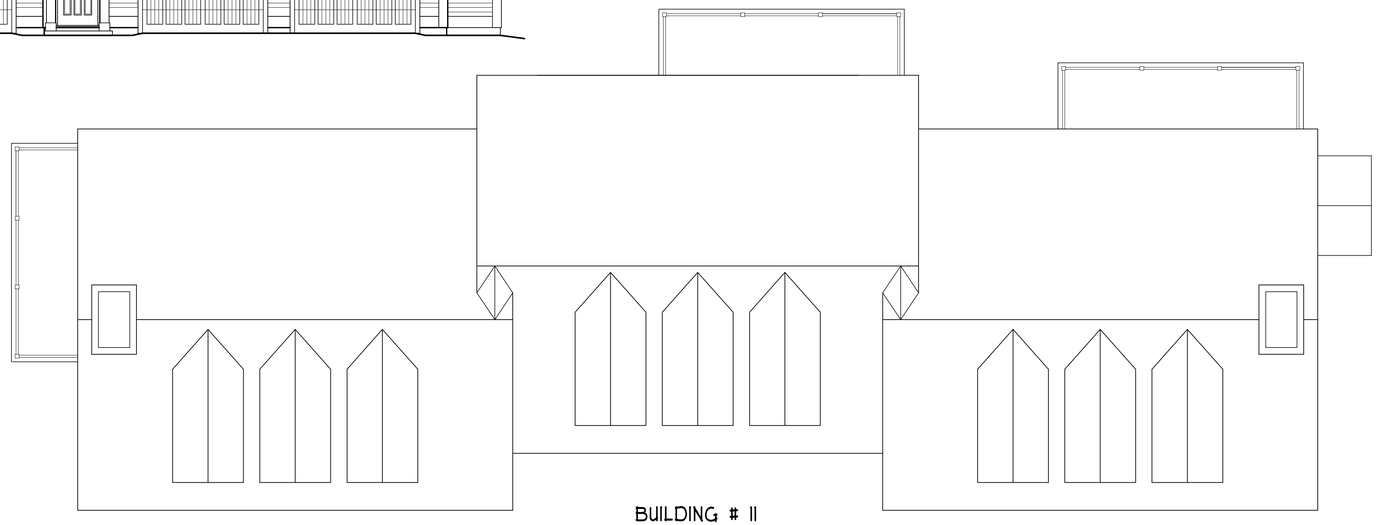
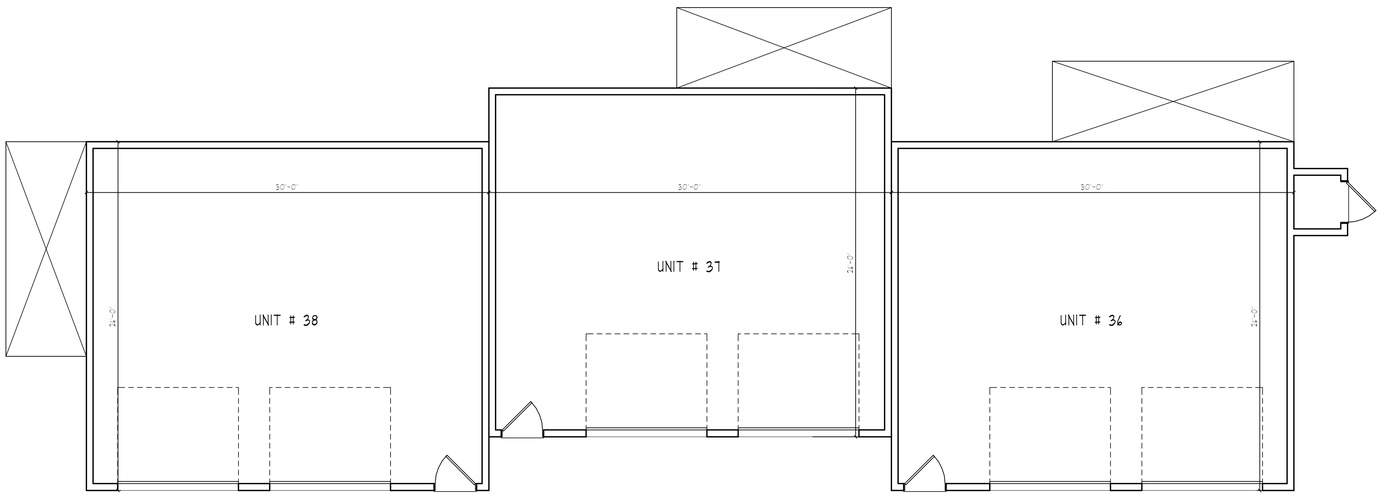


BUILDING # 11



BUILDING # 11

MINIMUM ROOF SLOPE GUIDELINES MET BY USING 8:12 ROOF SLOPE ON MAIN ROOF AND 10:12 ROOF SLOPE ON GABLES

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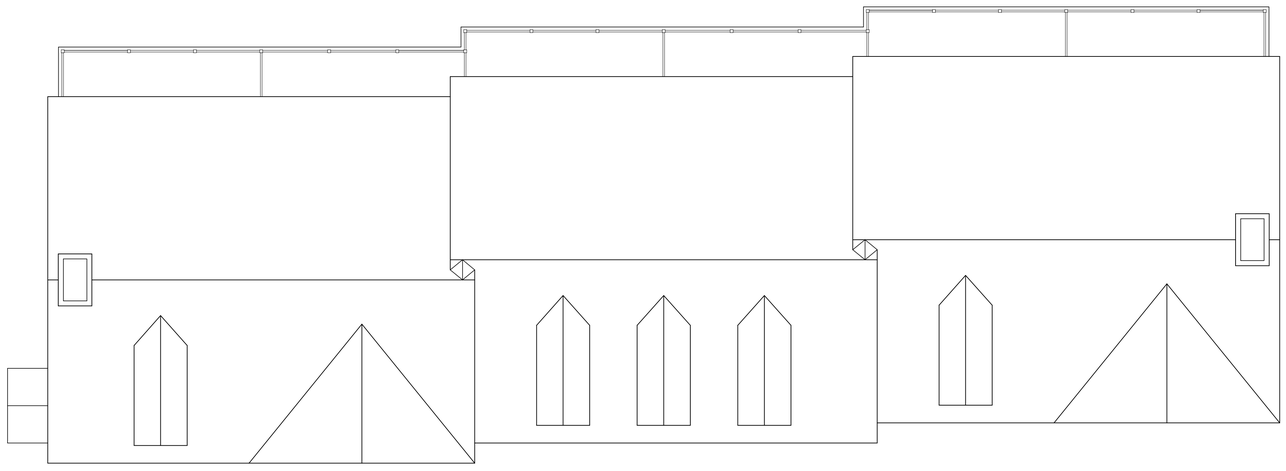
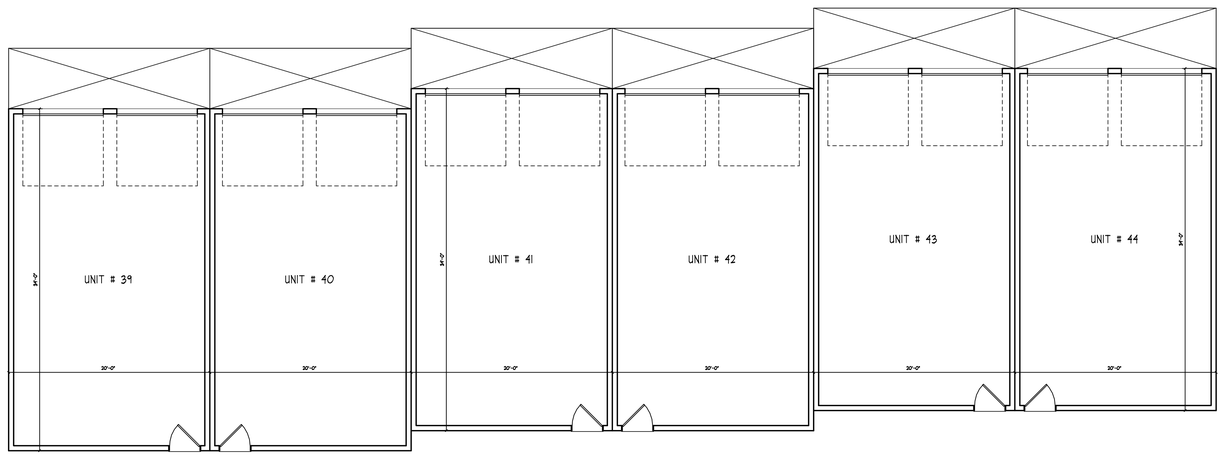
FRONT ELEVATION

SCALE: 1/4" = 1'-0"



BUILDING # 12

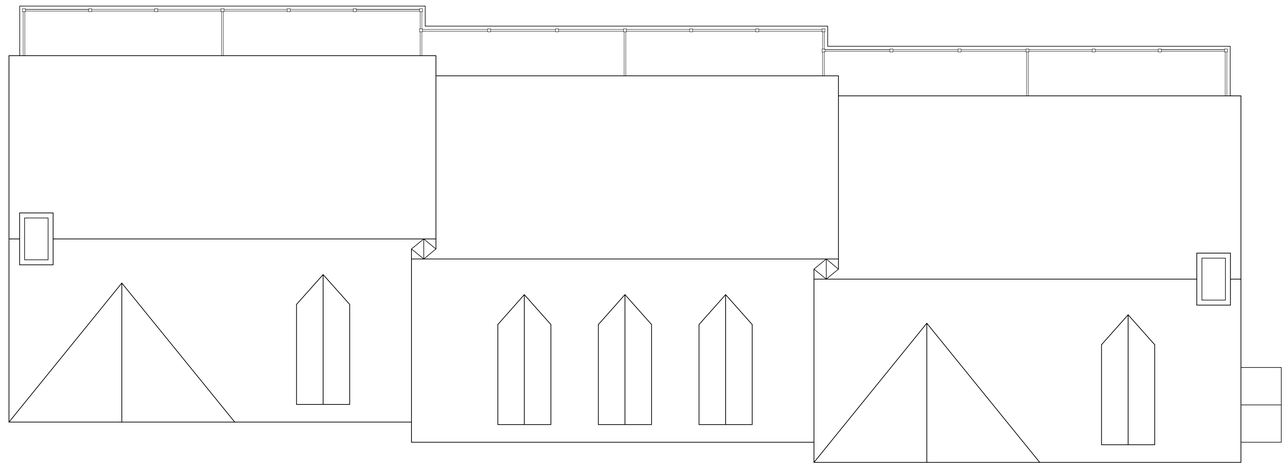


BUILDING # 12

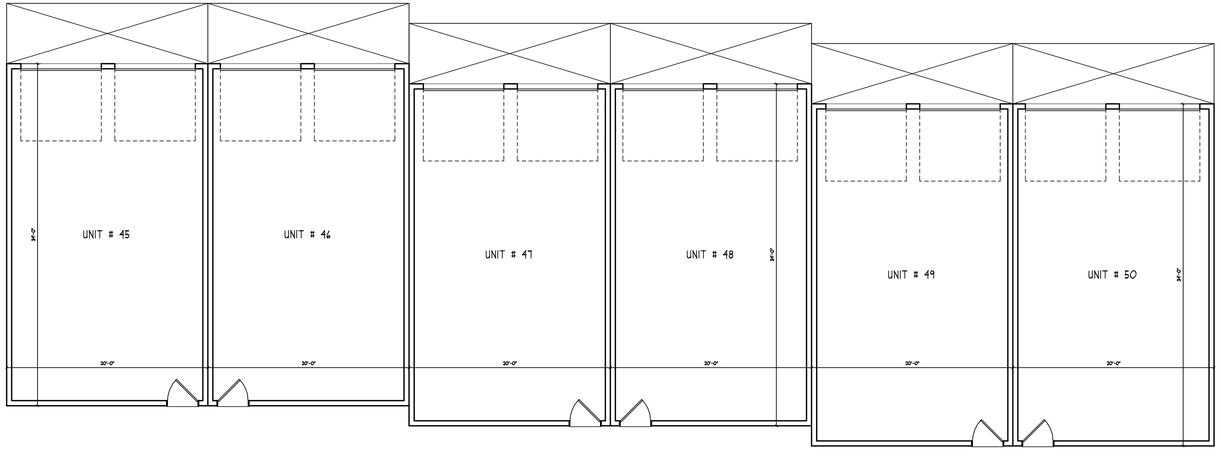
GATEWAY TOWNHOUSE:
SMALL FOOTPRINT ATTACHED SINGLE FAMILY RESIDENTIAL BUILDINGS HAVE A NARROW MASSING AND MAY BE LOCATED ON INDIVIDUAL OR COMMON LOTS. EACH UNIT IS SEPARATED HORIZONTALLY BY A COMMON WALL.

FRONT ELEVATION

SCALE: 1/4" = 1'-0"



BUILDING # 13



BUILDING # 13

L-0700-021
June 21, 2021

Ms. Juliet Walker, Planning Director
City of Portsmouth Planning Department
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Site Review Permit & Lot Line Revision Applications**
Lonza Biologics, Lynx Project– Proposed Parking Expansion & Generator

Dear Juliet:

On behalf of Lonza Biologics, we are pleased to submit the following information to support a request to the Planning Board for a recommendation for approval to the Pease Development Authority (PDA) for Site Plan Review for a proposed parking expansion, generator pad, and lot line revision at Lonza's existing facility that is located at 101 International Drive:

- One (1) copy of the PDA Application for Site Review, dated June 21, 2021;
- One (1) copy of the PDA Application for Subdivision, dated June 21, 2021;
- One (1) copy of the Owner Authorization, dated June 17, 2021;
- One (1) full size & one (1) half size copy of the Site Plan Set, dated June 21, 2021;
- One (1) copy of the Drainage Analysis, dated June 21, 2021;
- One (1) copy of the Operations and Maintenance Plan, dated June 21, 2021;
- One (1) copy of the Light Fixture & Pole Cut Sheets;
- One (1) application fee calculation form for the Site Review & Lot Line Revision;
- One (1) Site Review Application Fee check in the amount of $4,420.00;
- One (1) Lot Line Revision Application Fee check in the amount of $250.00

The proposed project is located at 55 and 101 International Drive which is identified as Map 305 Lots 6 and 7 on the City of Portsmouth Tax Maps. The proposed project is to expand Lonza Biologics parking to support its growing product development services to the pharmaceutical and biologic industries. The project will include a Lot Line Revision between 55 International Drive, which includes the Pease Development Authority Offices, and 101 International Drive, Lonza's existing facilities, adding 2.66 acres to Map 305 Lot 6 to create a 46-acre parcel for Lonza's campus.

The proposed project includes the construction of a new 200 space parking lot adjacent to the existing parking garage. This additional parking is necessary to support Lonza's continued fit up of their existing 101C facility. The proposed parking lot would be accessed via the 22-space parking lot that has been previously approved by the PDA and the Portsmouth Planning Board. The proposed parking lot will have a single exit point onto Goose Bay Drive. The project will consist of associated site improvements such as lighting, landscaping, retaining wall and stormwater management that will include underground detention, and stormwater treatment via a proprietary filtration unit. The proposed project is providing stormwater treatment for all of the proposed paved surfaces plus an equivalent area of existing paved surfaces as required by the PDA.

During the approval process for the proposed Iron Parcel development, a traffic study was prepared concluding that the existing road networks has sufficient capacity to support an

additional 1,020 employees. The proposed Lynx project fit up that is driving the need for this additional parking will add an additional 200 employees to the facility. The approval for the Iron Parcel development stipulated that Lonza will need to conduct an additional traffic study after the Phase 1 of the Iron Parcel development is completed. As the additional 200 employees is less than the 1,020 contemplated under the Iron Parcel study, for now, those 200 employees will be subtracted from the Iron Parcel project study with the results being taken into account during the forthcoming additional traffic study after the completion of Phase 1.

Proposed electrical improvements along the southern end of the 101C building include a new generator with 3,312-gallon diesel fuel above ground storage tank (AST), a transformer pad, and associated site improvements which include a fence and relocated drain line. The proposed generator will be located within an existing paved area.

On May 20, 2021 and June 17, 2021, the PDA Board granted conceptual approval for these improvements. We respectfully request to be placed on the Technical Advisory Committee (TAC) meeting agenda for July 6, 2021. If you have any questions or need any additional information, please contact Patrick Crimmins by phone at (603) 433-8818 or by email at pmcrimmins@tighebond.com.

Sincerely,
TIGHE & BOND, INC.

Patrick M. Crimmins, PE
Senior Project Manager

Neil A. Hansen, PE
Project Engineer

Copy: Lonza Biologics (via email)
Pease Development Authority

J:\L\L0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Report_Evaluation\Applications\City of Portsmouth\20210621 TAC Submission\L-0700-021 TAC Cover Letter.docx

Owner's/Agent Letter of Authorization

This letter is to authorize Tighe & Bond, Inc. (Civil Engineer), to represent and submit on behalf of Lonza Biologics, Inc. (Applicant), applications and materials in all site design and permitting matters for the proposed project at 101 International Drive in Portsmouth, New Hampshire. This project includes the construction of a parking expansion area at the corner of Goose Bay and Corporate Drives, and associated site and stormwater improvements. This authorization shall relate to those activities that are required for local, state and federal permitting for the above project and include any required signatures for those applications.

_____	_____	_____
Signature	Print Name	Date
_____	_____	_____
Witness	Print Name	Date

Pease Development Authority
55 International Drive, Portsmouth, NH 03801, (603) 433-6088

Application for Site Review

For PDA Use Only			
Date Submitted:_____	Municipal Review:_____	Fee:_____	
Application Complete:_____	Date Forwarded:_____	Paid:_____	Check #:_____

Applicant Information

Applicant: Lonza Biologics, Inc.	Agent: Tighe & Bond, Inc.
Address: 101 International Drive Portsmouth, NH 03801	Address: 177 Corporate Drive Portsmouth, NH 03801
Business Phone: 603-570-3625	Business Phone: 603-433-8818
Mobile Phone:	Mobile Phone:
Fax:	Fax:

Site Information

Portsmouth Tax Map: 305	Lot #: 006 & 007	Zone: Airport, Business, Commercial
Site Address / Location : 55 & 101 International Drive, Portsmouth, NH 03801		
Site Address / Location :		Area of On-site Wetlands: 4,087 SF

Activity Information

Change of Use: Yes [ ] No [X]

Existing Use: Office/Research/Manufacturing

Proposed Use: Office/Research/Manufacturing

Description of Project:

The proposed project consists of the construction of 200 additional parking spaces to support the existing facilities operations. The spaces are proposed to be located at the corner of Goose Bay Drive and Corporate Drive next to Lonza's existing parking garage. There will also be associated site improvements to support the proposed project including stormwater treatment, site lighting and landscaping.

All above information shall be shown on a site plan submitted with this application. Provide 3 full size hard copies and one PDF copy of all application materials as well as one half-size set of drawings to PDA. Applicant shall supply additional copies as may be required by applicable municipality. Refer to Chapter 400 of PDA land Use Controls for additional information.

Certification

I hereby certify under the penalties of perjury that the foregoing information and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I hereby apply for Site Review and acknowledge I will comply with all regulations and any conditions established by the Review Committee(s) and PDA Board in the development and construction of this project.

Signature of Applicant

6/21/21
Date

Patrick Crimmins
Printed Name

N:\Engineer\ ApplicationforSiteReview.xlsx

Pease Development Authority
55 International Drive, Portsmouth, NH 03801, (603) 433-6088

Subdivision Application

For PDA Use Only			
Date Submitted:_____	Municipal Review:_____	Fee:_____	
Application Complete:_____	Date Forwarded:_____	Paid:_____	Check #:_____

Applicant Information

Applicant: Lonza Biologics, Inc.	Agent: Tighe & Bond, Inc.
Address: 101 International Drive Portsmouth, NH 03801	Address: 177 Corporate Drive Portsmouth, NH 03801
Business Phone: 603-570-3625	Business Phone: 603-433-8818
Mobile Phone:	Mobile Phone:
Fax:	Fax:

Site Information

Address / Location of Original Lot: 55 & 101 International Drive, Portsmouth, NH 03801

Portsmouth Tax Map: 305 **Lot #:** 006 & 007 **Zone:** Airport, Business, Commercial

Proposed Activity (check one) **Subdivision** _____ **Lot Line Adjustment** X

Existing Lot

Total # of Existing Lot(s) _____

Existing Lot Area 43.37 acres

Created Lot

Total # of Proposed Lot(s) _____

Area of Proposed Lot(s) 46.02 acres

All above information shall be shown on a site plan submitted with this application. Provide 3 Full size hard copies and 1 PDF copy of all application materials as well as 1 half size set of drawings to PDA. Applicant shall supply additional copies as may be required by applicable municipality. Refer to Chapter 500 of PDA Land Use Controls for additional information

Checklist: Application fee (as required) ( ) Abbutters List ( ) Drawings ( )
Copies of approvals for any Required State/Federal permits (See Ch 500 of PDA LUC) ( )

Certification

I hereby certify under the penalties of perjury that the foregoing information and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I hereby apply for Subdivision and acknowledge I will comply with all regulations and any conditions established by the Review Committee(s) and the PDA Board of Directors in the development and construction of this

_____ 6/21/21

Signature of Applicant — Date

Patrick Crimmins

Printed Name

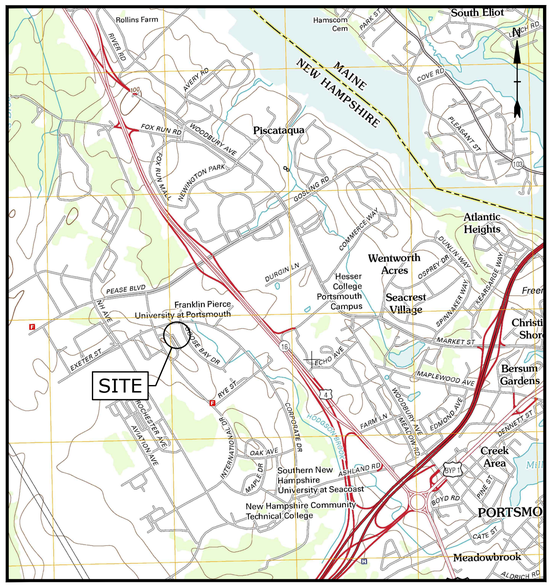
N:\Engineer\Subdivision Application.xlsx

LYNX PARKING EXPANSION

LONZA BIOLOGICS
101 INTERNATIONAL DRIVE
PORTSMOUTH, NEW HAMPSHIRE
JUNE 21, 2021

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	06/21/2021
1 of 2	SUBDIVISION PLAN	06/21/2021
2 of 2	SUBDIVISION PLAN	6/21/2021
C-101	OVERALL EXISTING CONDITIONS PLAN	06/21/2021
C-101.1	DEMOLITION PLAN	06/21/2021
C-102	OVERALL SITE PLAN	06/21/2021
C-102.1	SITE PLAN	06/21/2021
C-103	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	06/21/2021
C-104	UTILITIES PLAN	06/21/2021
C-105	LANDSCAPE PLAN	06/21/2021
C-106	PHOTOMETRIC PLAN	06/21/2021
C-201	GENERATOR PAD PLAN	06/21/2021
C-501	EROSION CONTROL NOTES AND DETAILS SHEET	06/21/2021
C-502	DETAILS SHEET	06/21/2021
C-503	DETAILS SHEET	06/21/2021
C-504	DETAILS SHEET	06/21/2021
C-505	DETAILS SHEET	06/21/2021
C-506	DETAILS SHEET	06/21/2021
C-507	DETAILS SHEET	06/21/2021

LIST OF PERMITS		
LOCAL	STATUS	DATE
SITE PLAN REVIEW PERMIT	PENDING	
STATE		
NHDES - ALTERATION OF TERRAIN PERMIT	PENDING	
NHDES - WETLAND MINOR IMPACT PERMIT		



LOCATION MAP
SCALE: 1" = 2,000'

LESSOR: PEASE DEVELOPMENT AUTHORITY
55 INTERNATIONAL DRIVE
PORTSMOUTH, NEW HAMPSHIRE 03801

APPLICANT: LONZA BIOLOGICS
101 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801

CIVIL ENGINEER: Tighe&Bond
177 CORPORATE DRIVE
PORTSMOUTH, NEW HAMPSHIRE 03801

SURVEYOR: DOUCET SURVEY, INC.
102 KENT PLACE
NEWMARKET, NEW HAMPSHIRE 03857

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
6-21-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
6-21-21

T&B PROJECT NO: L-0700-021

TAC SUBMISSION
COMPLETE SET 19 SHEETS

Last Save Date: June 21, 2021 3:50 PM By: JWINSTON
Plot Date: Monday, June 21, 2021 Plotted By: Jessica Winston
T&B File Location: J:\L\0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings, Figures\AutoCAD\L-0700-021-C-COVR.dwg Layout Tab: DSGN-CS

TAX MAP 303, LOT 4
WENTWORTH-DOUGLASS HOSPITAL
399 REVOLUTION DR SUITE 1345
SOMERVILLE, MA 02145
R.C.R.D. BOOK 6042, PAGE 140

TAX MAP 303, LOT 7
PEASE REHAB LLC
C/O NORTHEAST REHAB
70 BUTLER ST.
SALEM, NH 03079

TAX MAP 303, LOT 8
WENTWORTH-DOUGLASS HOSPITAL
399 REVOLUTION DR SUITE 1345
SOMERVILLE, MA 02145
R.C.R.D. BOOK 6042, PAGE 140

5/8" REBAR DOWN 1"
W/CAP BURD ENGINEERING

5/8" REBAR DOWN 1"
W/CAP BURD ENGINEERING

5/8" REBAR DOWN 2"
W/CAP DSI LLS 937

5/8" REBAR FLUSH
W/CAP BURD ENGINEERING

TAX MAP 303, LOT 3
RED HOOK BREWERY INC
C/O WIDMER BROTHERS BREWING CO
929 NORTH RUSSELL ST.
PORTLAND, OR 97227

DOUCET SURVEY
SEE NOTE 8

TAX MAP 303, LOT 2
OPROCK PORTSMOUTH INTL FEE
1 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 4831, PAGE 2674

TAX MAP 303, LOT 2-1
HAPPY DREAMS LLC
1 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 5733, PAGE 1090

6" X 6" CONC. BND. FND.
W/DISK DOWN 1"

CORPORATE DRIVE
(100' R.O.W. PER REF. PLANS 1 & 21)

C8 C24 C9 C10 C25 C11 C26 C14 C12 C13

L7 L6 L12 L11 L4 L5 L1 L8 L9 L10

S56°46'51"E 176.00'

498.69'
N58°30'04"W

RELOCATED LICENSE
FOR DRAINAGE
52,145 Sq. Ft.
1.20 Acres

N67°48'03"W
193.91'

N83°06'54"W
75.74'

N19°46'25"W
35.55'

N21°31'34"E 164.25'

50' ACCESS EASEMENT
TO BE RELEASED

S18°17'48"E
222.83'

190.26'
N18°17'48"W

433.19'
S42°06'02"W

4" X 4" GRAN. BND. FND.
W/ D.H. UP 8"

N33°35'17"E
99.79'

~20' LICENSE FOR DRAINAGE TO BE RELOCATED~

S42°06'02"W
100.00'

GOOSE BAY DRIVE
(60' R.O.W. PER REF. PLAN 21)

194.65'
S38°27'58"W

TAX MAP 305, LOT 3-1
PIONEER NEW HAMPSHIRE LLC
340 CENTRAL AVE STE 202
DOVER, NH 03820
R.C.R.D. BOOK 3571, PAGE 1559

TAX MAP 305, LOT 3-2
PIONEER NEW HAMPSHIRE LLC
340 CENTRAL AVE STE 202
DOVER, NH 03820
R.C.R.D. BOOK 3571, PAGE 1559

TAX MAP 305, LOT 3-3
PIONEER NEW HAMPSHIRE LLC
340 CENTRAL AVE STE 202
DOVER, NH 03820
R.C.R.D. BOOK 3571, PAGE 1559

TAX MAP 305, LOT 3-4
NEXTERA ENERGY SEABROOK LLC
700 UNIVERSE BOULEVARD PSX/JB
JUNO BEACH, FL 33408
R.C.R.D. BOOK 5454, PAGE 2321

EXISTING LEASE AREA
TAX MAP 305 LOT 2
443,578 Sq. Ft.
10.18 Acres

EXISTING LEASE AREA
TAX MAP 305 LOT 1
604,273 Sq. Ft.
13.87 Acres

PROPOSED OVERALL LEASE AREA
TAX MAP 305 LOT 6
2,005,102 Sq. Ft.
46.03 Acres

TO BECOME PART OF
GOOSE BAY DRIVE
5,521 Sq. Ft.
0.13 Acres

5/8" REBAR FND. FLUSH

5/8" REBAR DOWN 1"

5/8" REBAR FLUSH
W/ID CAP 826 HASKELL

TAX MAP 303, LOT 1
BARNPORT LLC
C/O PATRICK WALSH
1000 MARKET STREET
PORTSMOUTH, NH 03801

NO EASEMENT FOUND
OR PROVIDED FOR
BURIED GAS LINE

6" X 6" CONC. BND. FND.
W/ D.H. DOWN 20"

C1 C2 C3 C4 C5 C6 C16 C17 C18 C19 C20 C21 C22 C23 C27

L13 L14 L15 L16 L17 L18 L19 L20 L21 L22 L23 L24 L25 L26 L27 L28 L29 L30 L31 L32 L33 L34

N22°11'31"W 200.00'

N22°11'31"W 200.00'

GOOSE BAY DRIVE
(60' R.O.W. PER REF. PLAN 21)

PROPOSED ADDITION TO
TAX MAP 305, LOTS 5 & 6
(PORTION OF TAX MAP 305 LOT 7)
115,795 Sq. Ft.
2.66 Acres

EXISTING PORTION OF
GOOSE BAY DRIVE
TO BE DISCONTINUED
(SEE NOTE 14)
102,266 Sq. Ft.
2.35 Acres

APRX. WATER LINE LOCATION
(PER REF. PLAN 19)

PROPOSED WATER
LINE EASEMENT
17,042 Sq. Ft.
0.39 Acres

CB=N35°06'29"E
L=27'09.32"
L=99.06'
R=625.00'

N49°41'15"E
239.83'

N57°39'24"E
238.08'

N61°01'56"W 229.15'

S61°01'56"E 229.15'

6" X 6" CONC. BND. FND.
W/ D.H. DOWN 12"

460.24'
N30°49'24"W

229.41'
N30°49'24"W

178.14'
N20°08'42"E

N34°29'44"E
238.53'

BUILDING

CONC.
RET WALL

DRAINAGE EASEMENT
(PER REF. PLAN 10)

CENTERLINE 15' WIDE DRAINAGE EASEMENT
(PER REF. PLAN 10)

BUILDING

EXISTING LEASE AREA
TAX MAP 305 LOTS 5 & 6
744,710 Sq. Ft.
17.10 Acres

TAX MAP 305, LOT 7
PEASE DEVELOPMENT AUTHORITY
71 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801

6" X 6" CONC. BND. FND.
W/ D.H. FLUSH

6" X 6" CONC. BND. FND.
W/DISK FLUSH

TAX MAP 302, LOT 2
30 INTERNATIONAL DR LLC
39 FREETOWN RD UNIT 1
RAYMOND, NH 03077

6" X 6" CONC. BND. FND.
(NO D.H.) DOWN 12"

784.47'
S47°09'03"W

1-3/4" I.P.F. UP 12"

REBAR UP 12" W/ID CAP
KNIGHTHILL SURVEYING

5/8" REBAR DOWN 1"
W/ID CAP KNIGHT HILL

L=676.51'
R=3963.47'
CB=N40°58'34"W
Δ=9°46'47"

INTERNATIONAL DRIVE
(100' R.O.W. PER REF. PLAN 21)

362.34'
N45°51'57"W

REBAR FLUSH W/ID CAP
KNIGHTHILL SURVEYING

5/8" REBAR DOWN 4"
W/CAP 824

RRSF

TAX MAP 306, LOT 3
75 NEW HAMPSHIRE AVENUE LLC
C/O CP MANAGEMENT
11 COURT STREET SUITE 100,
EXETER, NH 03833

TAX MAP 306, LOT 3-1A
PM 75 NH LLC
75 NEW HAMPSHIRE AVE SUITE 100
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 5035, PAGE 1832

TAX MAP 306, LOT 3-1B
75 NEW HAMPSHIRE AVENUE LLC
C/O CP MANAGEMENT
11 COURT STREET SUITE 100
EXETER, NH 03833
R.C.R.D. BOOK 5649, PAGE 1

TAX MAP 306, LOT 3-2A
75 NEW HAMPSHIRE AVENUE LLC
C/O CP MANAGEMENT
11 COURT STREET SUITE 100
EXETER, NH 03833
R.C.R.D. BOOK 5679, PAGE 1

TAX MAP 306, LOT 3-3
75 NEW HAMPSHIRE AVENUE LLC
C/O CP MANAGEMENT
11 COURT STREET SUITE 100,
EXETER, NH 03833

TAX MAP 306, LOT 3-4
HORNE 101 LLC
11 COURT STREET SUITE 100
EXETER, NH 03833
R.C.R.D. BOOK 5065, PAGE 82

TAX MAP 306, LOT 3-5
85 NH AVE LLC
1 NEW HAMPSHIRE AVE
PORTSMOUTH, NH 03801
R.C.R.D. BOOK 5862, PAGE 1498

TAX MAP 306, LOT 3-6
75 NEW HAMPSHIRE AVENUE LLC
C/O CP MANAGEMENT
11 COURT STREET SUITE 100,
EXETER, NH 03833

TAX MAP 306, LOT 2-1
100 INTERNATIONAL DRIVE LLC
C/O CP MANAGEMENT INC
11 COURT STREET SUITE 100,
EXETER, NH 03833

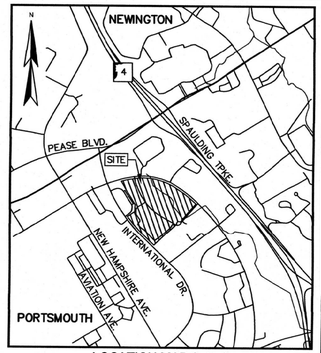
TAX MAP 306, LOT 2-2
TWO INTERNATIONAL GROUP LLC
C/O CP MANAGEMENT INC
11 COURT STREET SUITE 100,
EXETER, NH 03833

TAX MAP 306, LOT 6
CASTLEROCK LLC
C/O KANE MANAGEMENT GROUP
210 COMMERCE WAY SUITE 300
PORTSMOUTH, NH 03801

TAX MAP 305, LOT 4-1
119 INTERNATIONAL DRIVE LLC
C/O CP MANAGEMENT INC.
11 COURT STREET
EXETER, NH 03833

TAX MAP 305, LOT 4-2
119 INTERNATIONAL DRIVE LLC
C/O CP MANAGEMENT INC.
11 COURT STREET
EXETER, NH 03833

TAX MAP 305, LOT 4-3
PORTSMOUTH NH I SGF LLC
1 NORTH WACKER SUITE 4025
CHICAGO, IL 60606
R.C.R.D. BOOK 6259, PAGE 2828



LOCATION MAP (n.t.s.)

LEGEND

———	LEASE LINE
— — —	PROPOSED LEASE LINE
— — —	PROPOSED EASEMENT/LICENSE
———	LEASE/ROW/EASEMENT/LICENSE LINE TO BE ABANDONED
— — —	APPROXIMATE ABUTTERS LOT LINE
— — —	EASEMENT LINE
⊡	BOUND FOUND
◉	DRILL HOLE FOUND
○	IRON PIPE/ROD FOUND
TYP.	TYPICAL
GRAN.	GRANITE
CONC.	CONCRETE
BND. FND.	BOUND FOUND
D.H.F.	DRILL HOLE FOUND
I.P.F.	IRON PIPE FOUND
■	4"X4" GRANITE BOUND TO BE SET
●	5/8" REBAR W/ ID CAP TO BE SET

100 0 100 200
SCALE: 1 INCH = 100 FT.

SUBDIVISION PLAN
FOR
LONZA BIOLOGICS, INC.
AND
THE PEASE DEVELOPMENT AUTHORITY
OF
TAX MAP 305 LOTS 1, 2, 5, 6, & 7
AND
GOOSE BAY DRIVE
INTERNATIONAL DRIVE - CORPORATE DRIVE
GOOSE BAY DRIVE
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	W.D.C.	DATE:	JUNE 21, 2021
CHECKED BY:	J.A.G.	DRAWING NO.:	6228B
JOB NO.:	6228	SHEET	1 OF 2

STATE OF NEW HAMPSHIRE — NO. 964 — JEFFREY A. GOLDKNOPF — LICENSED LAND SURVEYOR — SIGNATURE

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

L.L.S. #964

6/21/2021 DATE

THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEED REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

DOUCET SURVEY LLC
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FILE NAME: C:\Civil 3D FILES\proj\APWRK...\6415\6228 LLA (2019).dwg LAYOUT NAME: SS18 SUBDIVISION PLAN (SHEET 1) PLOTTED: Monday, June 21, 2021 - 3:07pm

NOTES:

1. REFERENCE: TAX MAP 305, LOTS 5 & 6
PHYSICAL ADDRESS: 101 INTERNATIONAL DRIVE
TAX MAP 305, LOTS 1 & 2
PHYSICAL ADDRESS: 70 CORPORATE DRIVE
TAX MAP 305, LOT 7
PHYSICAL ADDRESS: 71 INTERNATIONAL DRIVE

2. PROPOSED LEASE AREA: TAX MAP 305, LOT 6: 1,889,305 SQ. FT. OR 43.37 AC.

3. OWNER OF RECORD: PEASE DEVELOPMENT AUTHORITY
55 INTERNATIONAL DRIVE
PORTSMOUTH, NEW HAMPSHIRE 03801
R.C.R.D. BOOK 4227, PAGE 001

4. LESSEE OF RECORD: TAX MAP 305. LOTS 5 & 6
LONZA BIOLOGICS, INC.
101 INTERNATIONAL DRIVE
PORTSMOUTH, NEW HAMPSHIRE 03801
R.C.R.D. BOOK 3015, PAGE 2559
(LEASE EXTENSIONS AND MODIFICATIONS
HAVE NOT BEEN RECORDED, BUT HAVE
BEEN PROVIDED BY THE LESSEE)
SEE REFERENCE PLAN 10

5. ZONE: AIRPORT, BUSINESS, AND COMMERCIAL (ABC)
DIMENSIONAL REQUIREMENTS:

MINIMUM LOT AREA	217,800 sq.ft. OR 5.0 AC.
MINIMUM STREET FRONTAGE	200 ft.
FRONT YARD SETBACK	70 ft.
SIDE SETBACK	30 ft.
REAR SETBACK	50 ft.
MINIMUM OPEN SPACE	25 %

MAXIMUM STRUCTURE HEIGHT SHALL NOT EXCEED FAA CRITERIA

WETLAND BUFFER 25 ft. (PER PDA REGULATIONS: WETLANDS LESS THAN 1/4 ACRE DO NOT HAVE A BUFFER)

ZONING INFORMATION LISTED HEREON WAS PROVIDED BY TIGHE & BOND. ADDITIONAL REGULATIONS APPLY, AND REFERENCE IS HEREBY MADE TO THE EFFECTIVE ZONING ORDINANCE. THE LAND OWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE MUNICIPAL, STATE, AND FEDERAL REGULATIONS.

6. FIELD SURVEY PERFORMED BY B.T. & J.C.M. DURING MARCH 2018 USING A TRIMBLE S6 ROBOTIC TOTAL STATION WITH A TRIMBLE TSC3 DATA COLLECTOR. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.

7. FLOOD HAZARD ZONE:"X", PER FIRM MAP #33015C0260F, MAP REVISED JANUARY 29, 2021.

8. HORIZONTAL DATUM BASED ON NH STATE PLANE 2800(NAD83/86) PER REFERENCE PLANS 10, 11, & 12.

9. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH AND IN RELATION TO THE CURRENT LEGAL DESCRIPTION, AND IS NOT AN ATTEMPT TO DEFINE UNWRITTEN RIGHTS, DETERMINE THE EXTENT OF OWNERSHIP, OR DEFINE THE LIMITS OF TITLE.

10. TAX MAP 305, LOTS 1 & 2 ARE EITHER SUBJECT TO OR IN BENEFIT OF, BUT NOT LIMITED TO, THE FOLLOWING EASEMENTS/RIGHTS OF RECORD:
10.A. 50' WIDE ACCESS EASEMENT FOR THE BENEFIT OF LOT 305–2. (SHOWN PER REFERENCE PLAN 9)
10.B. APPROXIMATE LOCATION OF 20' WIDE LICENSE TO THE CITY OF PORTSMOUTH FOR THE PURPOSES OF MAINTAINING A DRAINAGE LINE. (SHOWN PER REFERENCE PLAN 9)

11. TAX MAP 305, LOTS 5 & 6 ARE EITHER SUBJECT TO OR IN BENEFIT OF, BUT NOT LIMITED TO, THE FOLLOWING EASEMENTS/RIGHTS OF RECORD:
11.A. 15' WIDE DRAINAGE EASEMENT. (SHOWN PER REFERENCE PLAN 10)
11.B. DRAINAGE EASEMENT. (SHOWN PER REFERENCE PLAN 10)

12. FINAL MONUMENTATION MAY BE DIFFERENT THAN THE PROPOSED MONUMENTATION SHOWN HEREON, DUE TO THE FACT THAT SITE CONDITIONS WILL DICTATE THE ACTUAL LOCATION AND TYPE OF MONUMENTS INSTALLED IN THE FIELD. PLEASE REFER TO EITHER THE "MONUMENTATION LOCATION PLAN" TO BE RECORDED OR CONTACT DOUCET SURVEY, INC. FOR CLARIFICATION OF MONUMENTS SET. (A RECORDED PLAN WILL BE PRODUCED AT THE DISCRETION OF DOUCET SURVEY, INC.).

13. IMPROVEMENTS SHOWN HEREON ARE APPROXIMATE.

14. REGARDING THE PORTION GOOSE BAY DRIVE TO BECOME PART OF THE PROPOSED LEASE AREA:
14.A. THE PEASE DEVELOPMENT AUTHORITY REPORTS THAT THE OWNERSHIP UNDERLYING ROADWAYS WITHIN THE TRADEPORT REMAINS VESTED IN THE PEASE DEVELOPMENT AUTHORITY.
14.B. THE PEASE DEVELOPMENT AUTHORITY REPORTS THAT THERE ARE UNDERLYING BLANKET UTILITY EASEMENTS ON LANDS IN THEIR OWNERSHIP. THIS MAY INCLUDE, BUT NOT BE LIMITED TO BURIED OR OVERHEAD ELECTRIC, TELECOMMUNICATIONS, GAS, WATER, AND SEWER.

15. THE APPLICANT WILL BE REQUESTING THE FOLLOWING WAIVER FROM THE CITY OF PORTSMOUTH PLANNING BOARD REGARDING SECTION IV;3;I. CUL–DE–SACS:
15.A. MAXIMUM LENGTH OF CUL–DE–SAC OF 500'
15.B. MINIMUM RADIUS OF CUL–DE–SAC PAVEMENT OF 50'

REFERENCE PLANS:

1. "R.O.W. WORKSHEET, CORPORATE DRIVE PREPARED FOR PEASE DEVELOPMENT AUTHORITY" DATED DEC. 21, 1992 BY RICHARD D. BARTLETT & ASSOCIATES, INC. SHEETS 1 AND 2. (NOT RECORDED)
2. "PEASE A.F.B. / PORTSMOUTH, N.H. REPAVE BASE STREETS, PORTSMOUTH AVE, ROCKINGHAM AVE." DATED 7 DEC 82 BY STRATETIC AIR COMMAND CIVIL ENGINEERING. SHEET 4 OF 5. (NOT RECORDED)
3. "PORTSMOUTH AIR FORCE BASE, PORTSMOUTH, N.H. ROADS AND STORAGE AREA FY–56" DATED DEC 1955 BY WHITMAN & HOWARD ENGINEERS. INDEX PAGE AND SHEETS 2 – 5 OF 11. (NOT RECORDED)
4. "PEASE INTERNATIONAL TRADEPORT SUBDIVISION PLAT, INTERNATIONAL DRIVE LOTS BC11–001 & BC11–002, PORTSMOUTH, N.H." DATED FEBRUARY 5, 1993 BY RICHARD D. BARTLETT & ASSOCIATES INC. R.C.R.D. PLAN D–22536.
5. "SUBDIVISION PLAN OF LAND FOR REDHOOK ALE BREWERY, INC. CORPORATE DRIVE, COUNTY OF ROCKINGHAM, PORTSMOUTH, N.H." DATED DECEMBER 10, 1994 BY RICHARD P. MILLETTE AND ASSOCIATES. R.C.R.D. PLAN D–23978.
6. "ALTA/ACSM LAND TITLE SURVEY FOR RESPORT, LLC, ONE INTERNATIONAL DRIVE, COUNTY OF ROCKINGHAM, PORTSMOUTH, N.H." DATED FEBRUARY 27, 1998 BY MILLETTE, SPRAGUE & COLWELL, INC. R.C.R.D. PLAN D–26125.
7. "FRANKLIN PIERCE COLLEGE, PEASE INTERNATIONAL TRADEPORT, 73 CORPORATE DRIVE, PORTSMOUTH, NH" DATED JANUARY 15, 1998 BY RONALD R. BURD. R.C.R.D. PLAN D–26427.
8. "SUBDIVISION PLAN FOR LAND LEASED BY PEASE DEVELOPMENT AUTHORITY & KNOWN AS 119 INTERNATIONAL DRIVE LOCATED AT PEASE INTERNATIONAL TRADEPORT, PORTSMOUTH, N.H." DATED MARCH 1, 2000 BY KNIGHT HILL LAND SURVEYING SERVICES, INC. R.C.R.D. PLAN D–28059.
9. "SUBDIVISION PLAT PREPARED FOR 80 CORPORATE DRIVE LLC C/O BOULOS PROPERTY MANAGEMENT, LOCATION CORPORATE & GOOSE BAY DRIVES, PEASE INTERNATIONAL TRADEPORT – PORTSMOUTH, NH" DATED APRIL 11, 2000 BY FWS LAND SURVEYING P.L.L.C. R.C.R.D. PLAN D–28447.
10. "LEASE LINE REVISION PLAN FOR LONZA BIOLOGICS, INC. 101 INTERNATIONAL DRIVE, PORTSMOUTH, NEW HAMPSHIRE" DATED SEPT. 17, 2001 BY DOUCET SURVEY, INC. R.C.R.D. PLAN D–29538.
11. "SUBDIVISION PLAN OF LAND OF PEASE DEVELOPMENT AUTHORITY TO BE LEASED TO NORTHEAST REHABILITATION (A PORTION OF TAX MAP 303, LOT 6) 105 & 121 CORPORATE DRIVE, PEASE TRADEPORT, PORTSMOUTH, NEW HAMPSHIRE" DATED NOV. 5, 2008 BY DOUCET SURVEY, INC. R.C.R.D. PLAN D–35869.
12. "CONDOMINIUM SITE & FLOOR PLAN PREPARED FOR PIONEER NEW HAMPSHIRE, LLC, LAND OF PEASE DEVELOPMENT AUTHORITY, TAX MAP PARCEL 305–3 (108, 110, 112 & 114 CORPORATE DRIVE) PORTSMOUTH, NEW HAMPSHIRE" DATED APRIL 12, 2013 BY FIELDSTONE LAND CONSULTANTS, PLLC. SHEET 1 OF 5. R.C.R.D. PLAN D–37765.
13. "SUBDIVISION PLAN FOR PEASE DEVELOPMENT AUTHORITY, (TAX MAP 303, LOT 4) 67 CORPORATE DRIVE, PEASE TRADEPORT, PORTSMOUTH NEW HAMPSHIRE" DATED MAY 29, 2009 BY DOUCET SURVEY, INC. (NOT RECORDED)
14. "EXISTING CONDITIONS, BUILDING A, 80 CORPORATE DRIVE AND BUILDING B, 70 CORPORATE DRIVE, PORTSMOUTH, NH" DATED 4/14/2000 AND REVISED 6/05/2000 BY OPECHEE CONSTRUCTION CORPORATION. (NOT RECORDED)
15. "EXISTING CONDITIONS PLAN FOR TIGHE & BOND AND LONZA, LAND OF PEASE DEVELOPMENT AUTHORITY, (TAX MAP 305, LOTS 1 & 2), GOOSE BAY DRIVE & CORPORATE DRIVE, PORTSMOUTH, NEW HAMPSHIRE" DATED DECEMBER 23, 2015 BY DOUCET SURVEY, INC. (NOT RECORDED)
16. "119 INTERNATIONAL DRIVE CONDOMINIUM, CONDOMINIUM SITE PLAN, FOR PROPERTY OWNED BY PEASE DEVELOPMENT AUTHORITY, LEASED TO 119 INTERNATIONAL DRIVE, LLC, KNOWN AS PORTSMOUTH TAX MAP 305, LOT 4, PORTSMOUTH, NH" DATED OCT. 10, 2017 BY KNIGHT HILL LAND SURVEYING SERVICES, INC. R.C.R.D. PLAN 40449
17. "ALTA/NSPS LAND TITLE SURVEY FOR 130 INTERNATIONAL DRIVE, LLC AND PEASE DEVELOPMENT AUTHORITY, 130 INTERNATIONAL DRIVE, PORTSMOUTH, NH" DATED JULY 2017 AND REVISED THROUGH 8/9/17 BY DOUCET SURVEY, INC. (NOT RECORDED)
18. "ALTA/ACSM LAND TITLE SURVEY FOR 100 INTERNATIONAL DRIVE, LLC, 100 INTERNATIONAL DRIVE, PEASE INTERNATIONAL TRADEPORT, PORTSMOUTH, NH" DATED MARCH 30, 2006 BY DOUCET SURVEY, INC. (NOT RECORDED)
19. "CITY OF PORTSMOUTH, NEW HAMPSHIRE, FOR CONSTRUCTION, CORPORATE DRIVE AND GOOSE BAY DRIVE SEWER IMPROVEMENTS" DATED JULY 28, 2017 BY UNDERWOOD ENGINEERS, INC. (NOT RECORDED)
20. "SUBDIVISION PLAN FOR LONZA BIOLOGICS, INC. AND THE PEASE DEVELOPMENT AUTHORITY OF TAX MAP 305, LOTS 1, 2, 5 & 6 AND GOOSE BAY DRIVE, INTERNATIONAL DRIVE – CORPORATE DRIVE – GOOSE BAY DRIVE, PORTSMOUTH, NEW HAMPSHIRE" DATED APRIL 16, 2018 BY DOUCET SURVEY, INC (NOT RECORDED)
21. "APPENDIX VI, MUNICIPAL SERVICES AGREEMENT BETWEEN CITY OF PORTSMOUTH, TOWN OF NEWINGTON AND PEASE DEVELOPMENT AUTHORITY" EFFECTIVE AS OF JULY 1, 1998 (ROADWAY WIDTHS) (NOT RECORDED)
22. "THIRD AMENDED SITE/FLOOR PLAN ADDENDUM FOR 75 NEW HAMPSHIRE CONDOMINIUM SHOWING BUILDING 5 – UNIT 6 – LIMITED COMMON AREA" DATED JULY 2019 BY KNIGHT HILL LAND SURVEYING SERVICES, INC. R.C.R.D. PLAN D–41611
23. "LEASE LINE DISCONTINUANCE & EXISTING BUILDING UPDATE PLAN, 25, 29 RETAIL CONDOMINIUM" DATED DECEMBER 2018 AND REVISED JULY 20, 2017 BY KNIGHT HILL LAND SURVEYING SERVICES. R.C.R.D. PLAN D–40388
24. "SUBDIVISION PLAN AT 30 INTERNATIONAL DRIVE AT PEASE INTERNATIONAL TRADEPORT, PORTSMOUTH, NEW HAMPSHIRE" DATED JANUARY 1997 BY CLD CONSULTING ENGINEERS & SURVEYORS R.C.R.D. PLAN D–25370
25. "LEASE LINE REVISION FOR BARNPORT, LLC AND PEASE DEVELOPMENT AUTHORITY, 27 INTERNATIONAL DRIVE, PORTSMOUTH, NEW HAMPSHIRE" DATED APRIL 11, 2000 BY DOUCET SURVEY, INC. R.C.R.D. PLAN D–28254

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S45°42'46"E	50.48'
L2	S34°54'07"W	60.00'
L3	S38°27'58"W	58.32'
L4	N19°46'25"W	11.01'
L5	N83°06'54"W	66.09'
L6	N67°48'03"W	196.60'
L7	S22°03'02"W	14.87'
L8	S33°35'17"W	57.08'
L9	S42°06'02"W	43.59'
L10	N55°44'33"W	33.55'
L11	N67°48'03"W	122.22'
L12	N22°11'57"E	10.00'
L13	N19°52'39"W	313.89'
L14	N27°09'05"W	222.06'
L15	N33°51'22"W	175.26'
L16	N40°07'36"W	107.83'
L17	N43°37'13"W	99.98'

LINE TABLE		
LINE	BEARING	DISTANCE
L18	N49°42'47"W	102.16'
L19	N54°07'45"W	195.64'
L20	N59°11'41"W	116.15'
L21	N61°40'21"W	179.46'
L22	N58°20'21"W	187.76'
L23	S34°54'07"W	10.02'
L24	N58°20'21"W	186.91'
L25	N61°40'21"W	179.39'
L26	N59°11'41"W	116.81'
L27	N54°07'45"W	196.47'
L28	N49°42'47"W	103.08'
L29	N43°37'13"W	100.81'
L30	N40°07'36"W	108.68'
L31	N33°51'22"W	176.39'
L32	N27°09'05"W	223.29'
L33	N19°52'39"W	316.47'
L34	S34°54'07"W	32.65'

CURVE TABLE						
CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH	
C1	152.83'	63.00'	138°59'47"	S61°54'24"W	118.02'	
C2	75.52'	50.06'	86°26'09"	S81°41'02"W	68.56'	
C3	181.41'	1752.84'	5°55'47"	N58°03'47"W	181.33'	
C4	338.74'	1420.00'	13°40'04"	S54°11'54"E	337.94'	
C5	623.87'	1420.00'	25°10'21"	S34°46'41"E	618.86'	
C6	60.72'	500.00'	6°57'30"	S18°42'46"E	60.69'	
C7	60.50'	35.00'	99°01'56"	S34°16'57"W	53.24'	
C8	466.96'	1540.26'	17°22'14"	N87°30'58"W	465.18'	
C9	23.43'	1540.26'	0°52'17"	N78°23'43"W	23.43'	
C10	300.24'	1540.26'	11°10'07"	N62°21'55"W	299.77'	
C11	237.27'	2450.00'	5°32'56"	N54°00'23"W	237.18'	
C12	153.95'	170.00'	51°53'06"	N7°38'44"E	148.74'	
C13	117.72'	130.00'	51°53'06"	N7°38'44"E	113.74'	
C14	91.22'	130.00'	40°12'15"	N38°23'56"W	89.36'	
C15	175.20'	1692.80'	5°55'47"	N58°03'47"W	175.12'	
C16	942.18'	1480.00'	36°28'30"	S42°47'41"E	926.35'	
C17	61.10'	1480.00'	2°21'56"	N23°22'29"W	61.10'	
C18	115.23'	560.00'	11°47'23"	N16°17'50"W	115.03'	
C19	18.12'	3710.06'	0°16'48"	S80°54'45"W	18.12'	
C20	10.19'	3710.06'	0°09'26"	N81°07'52"E	10.19'	
C21	298.54'	3710.06'	4°36'38"	N78°05'40"E	298.46'	
C22	54.86'	3710.06'	0°50'50"	N80°49'24"E	54.86'	
C23	68.59'	1540.26'	2°33'06"	N82°31'22"E	68.59'	
C24	910.09'	1540.26'	33°51'16"	S79°16'27"E	896.91'	
C25	149.63'	1540.26'	5°33'58"	S59°33'50"E	149.57'	
C26	473.28'	2450.00'	11°04'05"	S51°14'49"E	472.54'	
C27	24.14'	3710.06'	0°22'22"	N80°35'10"E	24.14'	

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR
No. 964
JEFFREY A. GOLDKNOPF
SIGNATURE

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.

Jeffrey A. Goldknopf L.L.S. #964

6/21/2021 DATE

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SUBDIVISION PLAN
FOR
LONZA BIOLOGICS, INC.
AND
THE PEASE DEVELOPMENT AUTHORITY
OF
TAX MAP 305 LOTS 1, 2, 5, 6, & 7
AND
GOOSE BAY DRIVE
INTERNATIONAL DRIVE - CORPORATE DRIVE
GOOSE BAY DRIVE
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	W.D.C.	DATE:	JUNE 21, 2021
CHECKED BY:	J.A.G.	DRAWING NO.:	6228B
JOB NO.:	6228	SHEET	2 OF 2

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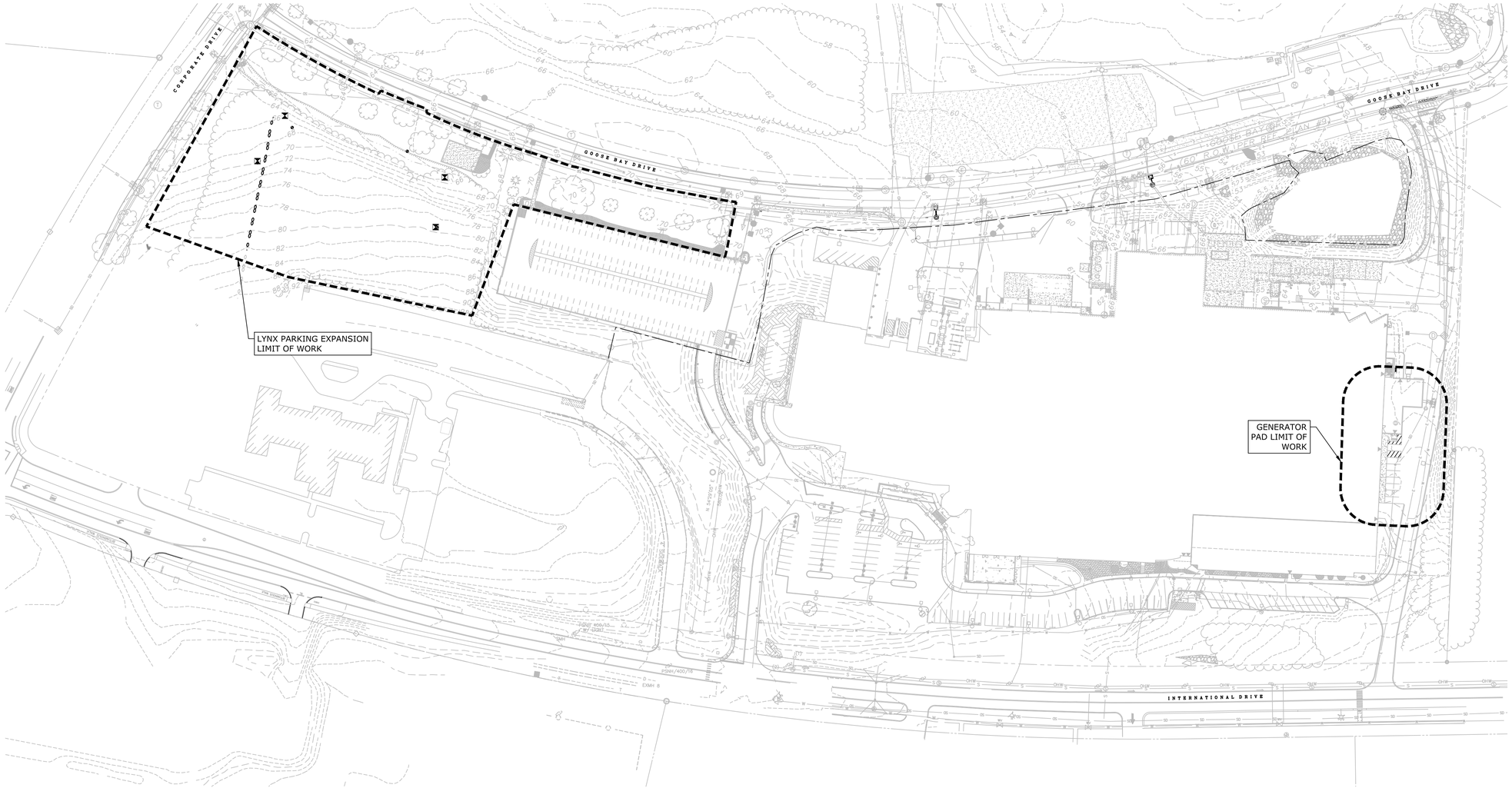
FILE NAME: G:\DWG\ 30 FILES\dwnj\AutoPath...\6615.6B228 LLA (SHEET 2) LAYOUT NAME: 6615 SUBDIVISION PLAN (SHEET 2) PLOTTED: Monday, June 21, 2021 - 3:07pm

DEMOLITION NOTES:

1. THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK.
2. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES. CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.
3. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES EXCEPT AS SPECIFIED IN NOTE #22.
4. COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
5. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
6. SAW CUT AND REMOVE PAVEMENT ONE (1) FOOT OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN ALL AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
8. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS AND AS SPECIFIED IN NOTE #22.
10. UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK.
11. CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY IS ACTIVE, AND SERVICES ANY ON OR OFF-SITE STRUCTURE TO REMAIN. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.
12. PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
13. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE PADS, UTILITIES AND PAVEMENT WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ITEMS TO BE REMOVED INCLUDE BUT ARE NOT LIMITED TO: CONCRETE, PAVEMENT, CURBS, UNDER GROUND PIPING, AND POLES.
14. COORDINATE ALL WORK WITHIN THE PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
15. CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR TO REPLACE DISTURBED MONUMENTS.
16. PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS/CURB INLETS WITHIN CONSTRUCTION LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. INLET PROTECTION BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE "HIGH FLOW SILT SACK" BY ACF ENVIRONMENTAL OR EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN EVENT OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED OR SEDIMENT HAS ACCUMULATED TO 1/3 THE DESIGN DEPTH OF THE BARRIER.
17. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
18. THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.
19. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
20. THE CONTRACTOR SHALL ACQUIRE A PDA DIG PERMIT BEFORE ANY DISTURBANCE CAN TAKE PLACE. ALLOW 7 CALENDAR DAYS FOR PROCESSING.
21. BEFORE ANY DEWATERING IS PERFORMED, COORDINATION BETWEEN THE APPLICANT, PDA, NHDES AND THE AIR FORCE IS REQUIRED TO DETERMINE PROPER PROCEDURES AND PERMITTING REQUIRED.
22. ALL EXCESS SOIL RESULTING FROM THE CONSTRUCTION SHALL REMAIN ON SITE.
23. REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
24. THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO THE EXISTING BUSINESS THROUGHOUT THE CONSTRUCTION PERIOD. EXISTING BUSINESS SERVICES INCLUDE, BUT ARE NOT LIMITED TO ELECTRICAL, COMMUNICATION, FIRE PROTECTION, DOMESTIC WATER AND SEWER SERVICES. TEMPORARY SERVICES, IF REQUIRED, SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. CONTRACTOR SHALL PROVIDE DETAILED CONSTRUCTION SCHEDULE TO OWNER PRIOR TO ANY DEMOLITION/CONSTRUCTION ACTIVITIES AND SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED. ABUTTER.
25. CONSTRUCTION LAYDOWN AREA TO BE LOCATED ON THE IRON PARCEL SITE.

LEGEND

- LIMIT OF WORK
- PROPERTY LINE
- CHAIN-LINK FENCE
- GUARDRAIL
- STORM DRAIN
- SANITARY SEWER
- WATER
- APPROXIMATE IRRIGATION
- TELEPHONE LINE
- GAS
- UNDERGROUND ELECTRIC
- OVERHEAD UTILITY
- MAJOR CONTOUR
- MINOR CONTOUR
- CONCRETE
- RIP RAP
- LANDSCAPING
- CATCHBASIN
- DRAIN MANHOLE
- SEWER MANHOLE
- HYDRANT
- WATER VALVE
- IRRIGATION CONTROL VALVE
- ELECTRIC MANHOLE
- UTILITY POLE
- MONUMENT



Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 06830
LICENSED
PROFESSIONAL ENGINEER
6-21-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
6-21-21

0 80' 160'
GRAPHIC SCALE

Lynx Parking Expansion

Lonza Biologics

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

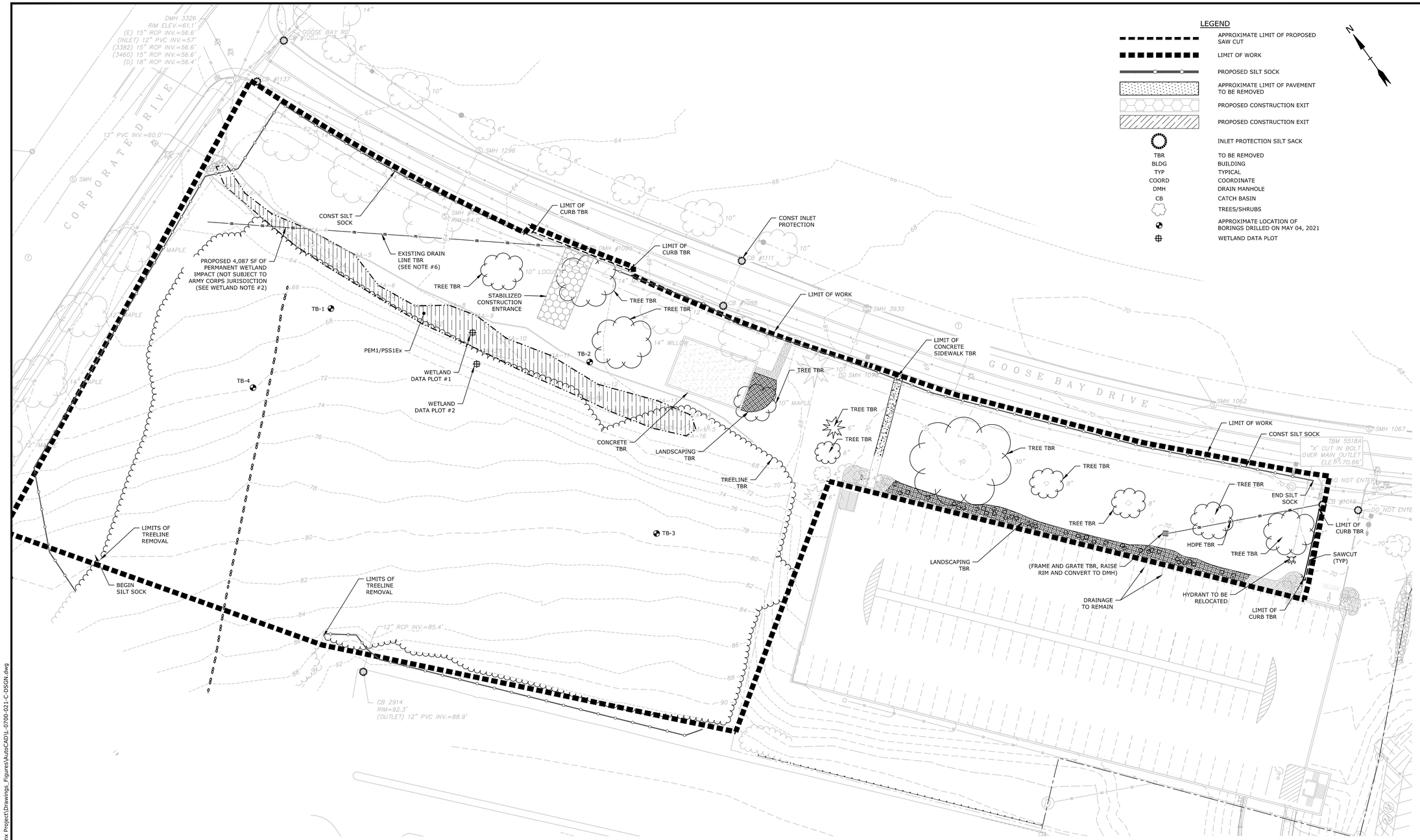
PROJECT NO:	L-0700-021
DATE:	June 21, 2021
FILE:	L-0700-021-C-DSGN.DWG
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

OVERALL EXISTING CONDITIONS

SCALE: AS SHOWN

C-101

Last Saved: 6/15/2021
Plotted On: Jun 15, 2021-1:38pm By: JWinston
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings_Figures\AutoCAD\L-0700-021-C-DSGN.dwg



WETLAND NOTES:

1. JURISDICTIONAL WETLANDS WERE DELINEATED AT THE PROJECT SITE ON APRIL 9, 2021 BY LEONARD A. LORD, PHD, NHCWS #14, NHCSS #19 OF TIGHE & BOND. WETLAND CRITERIA USED INCLUDED THE FOLLOWING:
   - CORPS OF ENGINEERING WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y-87-1 (JANUARY 1987)
   - REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION (JANUARY 2012)
   - FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4 (2018)
   - US ARMY CORPS OF ENGINEERS NORTHCENTRAL AND NORTHEAST 2016 REGIONAL WETLAND PLANT LIST (LICHVAR ET AL., 2016)
   - NHDES WETLAND BUREAU ADMINISTRATIVE RULES (2020)
2. THIS WETLAND IS A DITCH/SWALE THAT WAS CREATED IN AN UPLAND AREA. IT DOES NO MEET THE NAVIGABLE WATERS PROTECTION RULE DEFINITION OF WATERS OF THE UNITED STATES AND, THEREFORE, IS NOt SUBJECT TO ARMY CORPS OF ENGINEERS JURISDICTION.

STATE OF NEW HAMPSHIRE — LEONARD A. LORD — No. 14 — CERTIFIED WETLAND SCIENTIST — 6/21/2021

NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN IS BASED ON SURVEY DRAWINGS PROVIDED BY DOUCET SURVEY TITLED "FOR TIGHE & BOND", DATED APRIL 23, 2021.
2. THE DRAWINGS ARE BASED ON THE FOLLOWING DATUMS: HORIZONTAL NAD83; VERTICAL NAVD88.
3. CONTOUR LINES INDICATE ELEVATION CHANGE IN TWO FOOT INTERVALS.
4. BORING LOCATIONS BASED ON TAPING AND LINE OF SIGHT FROM EXISTING FEATURES. LOCATIONS SHOULD BE CONSIDERED APPROXIMATE.
5. TIGHE & BOND BORINGS DRILLED BY NEW ENGLAND BORING CONTRACTORS OF DERRY, NH. ON MAY O4, 2021. BORINGS WERE OBSERVED BY A TIGHE & BOND REPRESENTATIVE ON A FULL TIME BASIS. REFER TO BORING LOGS IN APPENDIX B FOR MORE DETAILED INFORMATION.
6. PRIOR TO REMOVING THE EXISTING DRAIN LINE, CONTRACTOR SHALL VERIFY DRAIN LINE IS NOT CURRENTLY IN USE AND HAS BEEN DISCONNECTED FROM ANY STRUCTURES.

SEE SHEET C-101 FOR DEMOLITION NOTES

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 06830 LICENSED PROFESSIONAL ENGINEER — 6-21-21

STATE OF NEW HAMPSHIRE — PATRICK M. CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 6-21-21

0 30' 60'
GRAPHIC SCALE

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

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DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

EXISTING CONDITIONS AND DEMOLITION PLAN

SCALE: AS SHOWN

C-101.1

Last Saved: 6/18/2021
Plotted On: Jun 21, 2021 - 10:06am By: NAHansen
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576R\021_Lynx Project\Drawings_Figures\AutoCAD\L-0700-021-C-DSGN.dwg

SITE DATA BLOCK

LESSOR: PEASE DEVELOPMENT AUTHORITY
55 INTERNATIONAL DRIVE
PORTSMOUTH NH, 03801

APPLICANT: LONZA BIOLOGICS, INC.
101 INTERNATIONAL DRIVE
PORTSMOUTH NH, 03801

LOCATION: 101 INTERNATIONAL DRIVE PORTSMOUTH NH, 03801 MAP 305 LOT 6; 55 INTERNATIONAL DRIVE PORTSMOUTH NH, 03801 MAP 305 LOT 7; 70 & 80 CORPORATE DRIVE PORTSMOUTH NH, 03801 MAP 305 LOTS 1&2

ZONING DISTRICT: AIRPORT BUSINESS AND COMMERCIAL ZONE (ABC)

PROPOSED USES: OFFICE/MANUFACTURING/RESEARCH AND DEVELOPMENT

DEVELOPMENT STANDARDS

AREA, YARD, AND HEIGHT REQUIREMENTS

	REQUIRED/ALLOWED	PROPOSED/PROVIDED
MINIMUM LOT AREA	5 ACRES	46.02 ACRES
MINIMUM LOT FRONTAGE	200 FEET	1038 FEET
MINIMUM FRONT YARD	70 FEET	118± FEET
MINIMUM SIDE YARD	30 FEET	30± FEET (EXISTING)
MINIMUM REAR YARD	50 FEET	50± FEET (EXISTING)
MAXIMUM BUILDING HEIGHT	FAA CRITERIA	86 FEET
MINIMUM OPEN SPACE	25% OF LOT AREA	44.3%

OFF-STREET PARKING REQUIREMENTS:

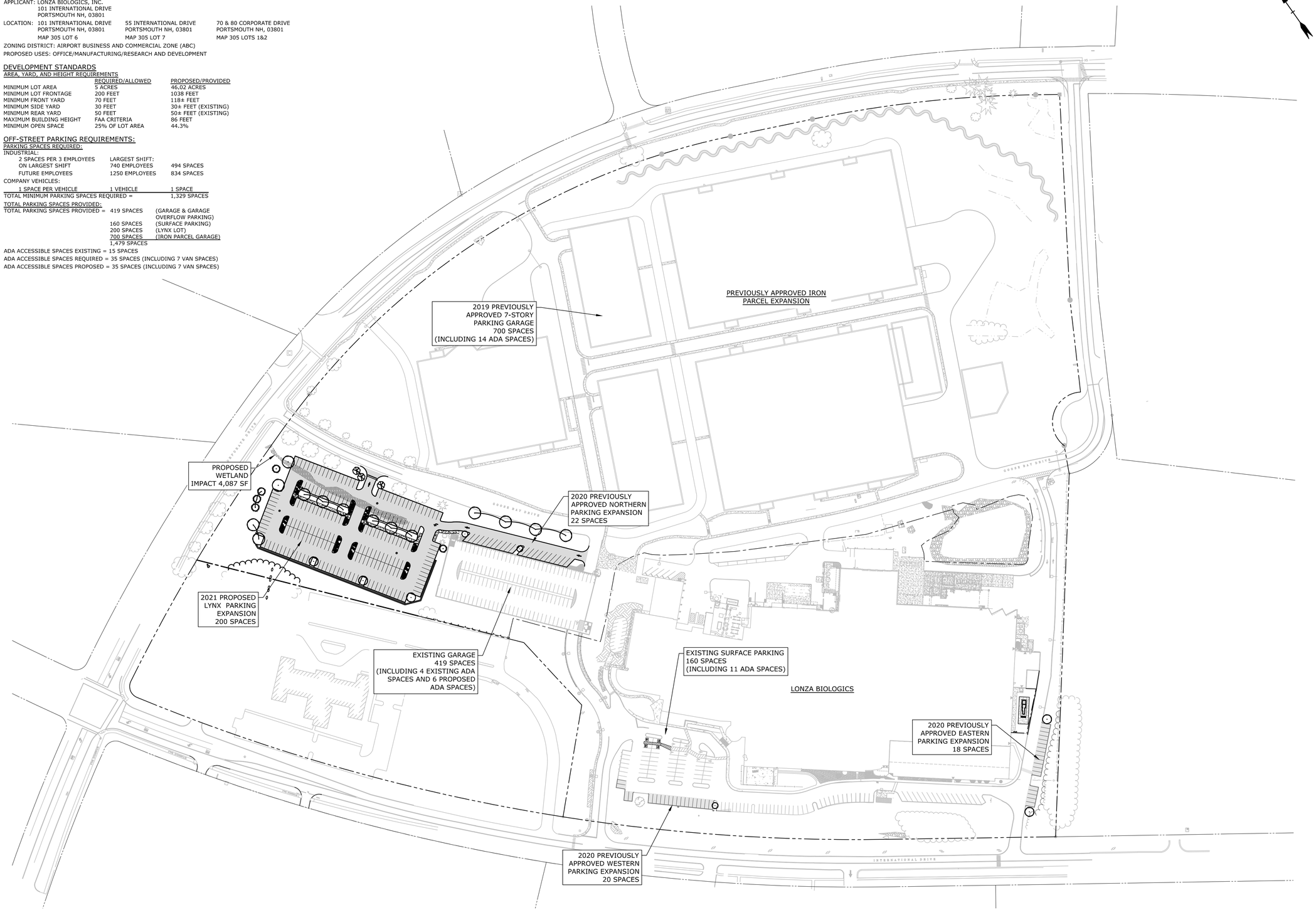
PARKING SPACES REQUIRED:

INDUSTRIAL:		
2 SPACES PER 3 EMPLOYEES ON LARGEST SHIFT	LARGEST SHIFT: 740 EMPLOYEES	494 SPACES
FUTURE EMPLOYEES	1250 EMPLOYEES	834 SPACES
COMPANY VEHICLES:		
1 SPACE PER VEHICLE	1 VEHICLE	1 SPACE
TOTAL MINIMUM PARKING SPACES REQUIRED =		1,329 SPACES

TOTAL PARKING SPACES PROVIDED:

TOTAL PARKING SPACES PROVIDED =	419 SPACES	(GARAGE & GARAGE OVERFLOW PARKING)
	160 SPACES	(SURFACE PARKING)
	200 SPACES	(LYNX LOT)
	700 SPACES	(IRON PARCEL GARAGE)
	1,479 SPACES	

ADA ACCESSIBLE SPACES EXISTING = 15 SPACES
ADA ACCESSIBLE SPACES REQUIRED = 35 SPACES (INCLUDING 7 VAN SPACES)
ADA ACCESSIBLE SPACES PROPOSED = 35 SPACES (INCLUDING 7 VAN SPACES)



Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 6-21-21

STATE OF NEW HAMPSHIRE — PATRICK M. CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 6-21-21

0 100' 200'
GRAPHIC SCALE

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

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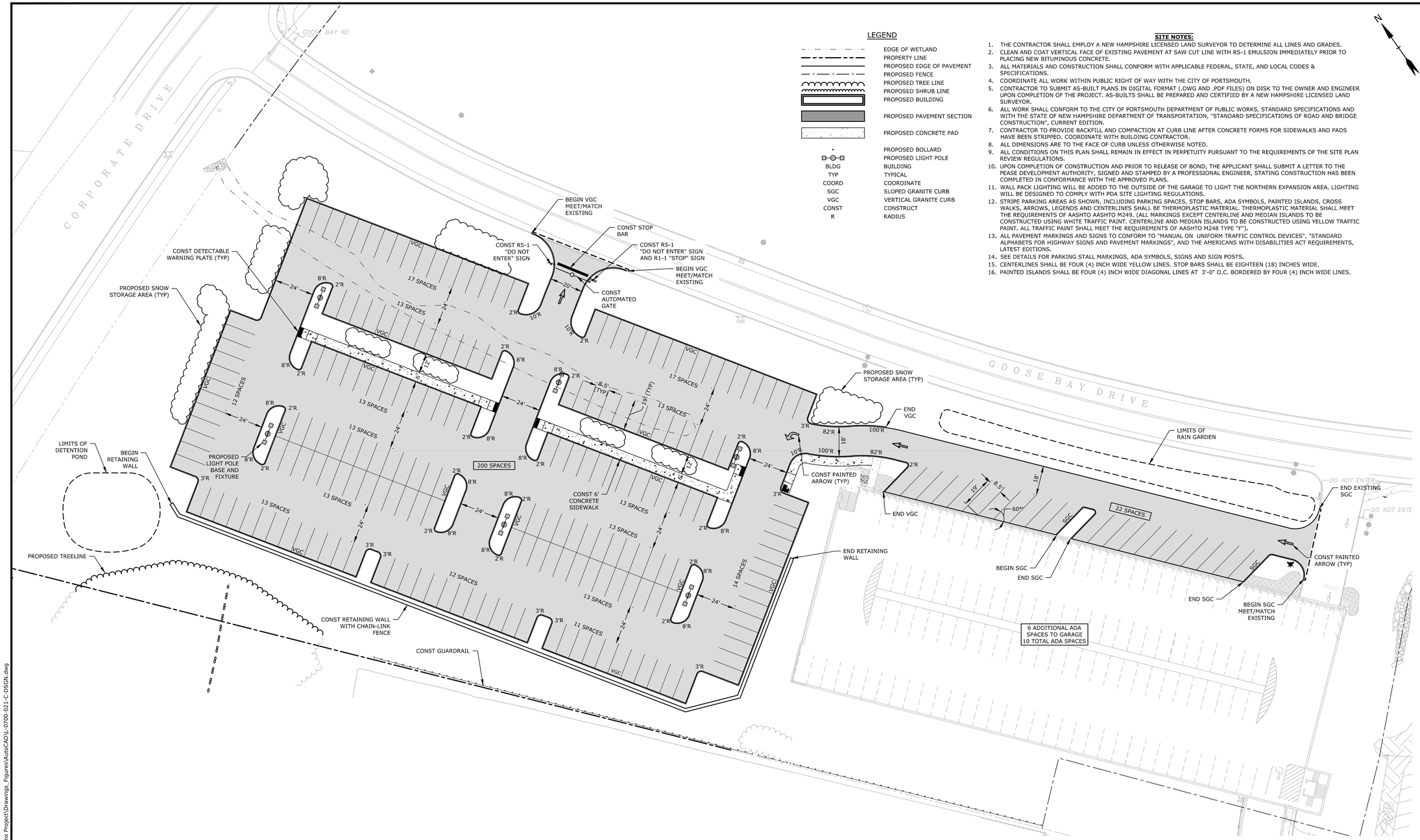
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

OVERALL SITE PLAN

SCALE: AS SHOWN

C-102

Last Saved: 6/16/2021
Plotted: Wed, Jun 16, 2021 2:15pm By: JWinston
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings_Figures\AutoCAD\L-0700-021-C-DSGN.dwg



LEGEND

	EDGE OF WETLAND
	PROPERTY LINE
	PROPOSED EDGE OF PAVEMENT
— x — x — x —	PROPOSED FENCE
	PROPOSED TREE LINE
	PROPOSED SHRUB LINE
	PROPOSED BUILDING
	PROPOSED PAVEMENT SECTION
	PROPOSED CONCRETE PAD
	PROPOSED BOLLARD
	PROPOSED LIGHT POLE
BLDG	BUILDING
TYP	TYPICAL
COORD	COORDINATE
SGC	SLOPED GRANITE CURB
VGC	VERTICAL GRANITE CURB
CONST	CONSTRUCT
R	RADIUS

SITE NOTES:

1. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
2. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
3. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES & SPECIFICATIONS.
4. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAY WITH THE CITY OF PORTSMOUTH.
5. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
6. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
7. CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING CONTRACTOR.
8. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
9. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
10. UPON COMPLETION OF CONSTRUCTION AND PRIOR TO RELEASE OF BOND, THE APPLICANT SHALL SUBMIT A LETTER TO THE PEASE DEVELOPMENT AUTHORITY, SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER, STATING CONSTRUCTION HAS BEEN COMPLETED IN CONFORMANCE WITH THE APPROVED PLANS.
11. WALL PACK LIGHTING WILL BE ADDED TO THE OUTSIDE OF THE GARAGE TO LIGHT THE NORTHERN EXPANSION AREA. LIGHTING WILL BE DESIGNED TO COMPLY WITH PDA SITE LIGHTING REGULATIONS.
12. STRIPE PARKING AREAS AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, CROSS WALKS, ARROWS, LEGENDS AND CENTERLINES SHALL BE THERMOPLASTIC MATERIAL. THERMOPLASTIC MATERIAL SHALL MEET THE REQUIREMENTS OF AASHTO AASHTO M249. (ALL MARKINGS EXCEPT CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING WHITE TRAFFIC PAINT. CENTERLINE AND MEDIAN ISLANDS TO BE CONSTRUCTED USING YELLOW TRAFFIC PAINT. ALL TRAFFIC PAINT SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F").
13. ALL PAVEMENT MARKINGS AND SIGNS TO CONFORM TO "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS, LATEST EDITIONS.
14. SEE DETAILS FOR PARKING STALL MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
15. CENTERLINES SHALL BE FOUR (4) INCH WIDE YELLOW LINES. STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE.
16. PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 6-21-21

STATE OF NEW HAMPSHIRE — PATRICK M. CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 6-21-21

0 30' 60'
GRAPHIC SCALE

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
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PROJECT NO:	L-0700-021
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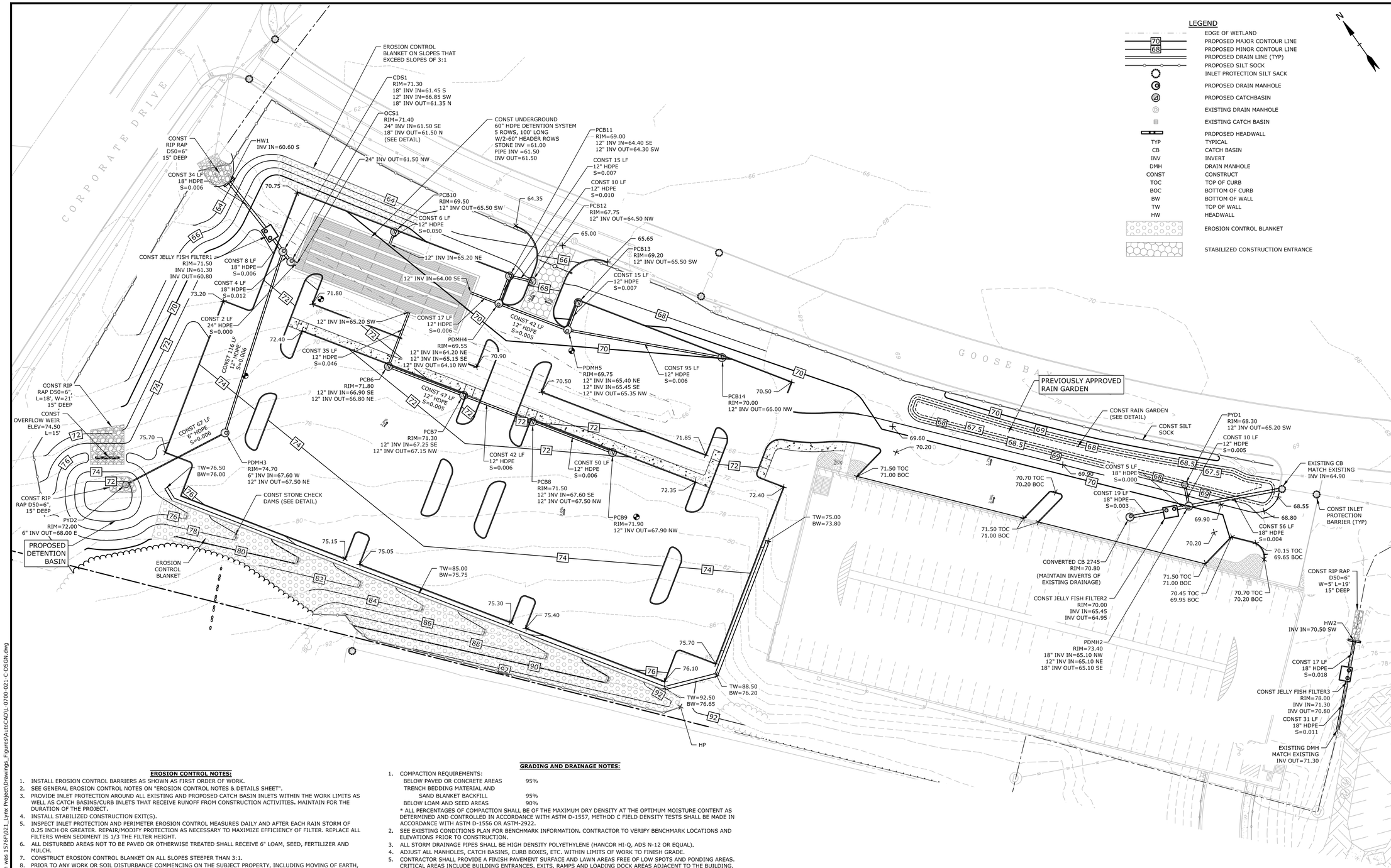
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

SITE PLAN

SCALE: AS SHOWN

C-102.1

Last Saved: 6/18/2021
Printed: Jun 21, 2021-9:56am By: NAHansen
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings, Figures\AutoCAD\L-0700-021-C-DSGN.dwg



EROSION CONTROL NOTES:

1. INSTALL EROSION CONTROL BARRIERS AS SHOWN AS FIRST ORDER OF WORK.
2. SEE GENERAL EROSION CONTROL NOTES ON "EROSION CONTROL NOTES & DETAILS SHEET".
3. PROVIDE INLET PROTECTION AROUND ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AS WELL AS CATCH BASINS/CURB INLETS THAT RECEIVE RUNOFF FROM CONSTRUCTION ACTIVITIES. MAINTAIN FOR THE DURATION OF THE PROJECT.
4. INSTALL STABILIZED CONSTRUCTION EXIT(S).
5. INSPECT INLET PROTECTION AND PERIMETER EROSION CONTROL MEASURES DAILY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
6. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER AND MULCH.
7. CONSTRUCT EROSION CONTROL BLANKET ON ALL SLOPES STEEPER THAN 3:1.
8. PRIOR TO ANY WORK OR SOIL DISTURBANCE COMMENCING ON THE SUBJECT PROPERTY, INCLUDING MOVING OF EARTH, THE APPLICANT SHALL INSTALL ALL EROSION AND SILTATION MITIGATION AND CONTROL MEASURES AS REQUIRED BY STATE AND LOCAL PERMITS AND APPROVALS.
9. CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST AND WIND EROSION THROUGHOUT THE CONSTRUCTION PERIOD. DUST CONTROL MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO, SPRINKLING WATER ON UNSTABLE SOILS SUBJECT TO ARID CONDITIONS.
10. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
11. ALL CATCH BASIN SUMPS AND PIPING SHALL BE THOROUGHLY CLEANED TO REMOVE ALL SEDIMENT AND DEBRIS AFTER THE PROJECT HAS BEEN FULLY PAVED. PROVIDE COPIES OF REPORT TO PEASE DEVELOPMENT AUTHORITY.
12. TEMPORARY SOIL STOCKPILE SHALL BE SURROUNDED WITH PERIMETER CONTROLS AND SHALL BE STABILIZED BY TEMPORARY EROSION CONTROL SEEDING. STOCKPILE AREAS TO BE LOCATED AS FAR AS POSSIBLE FROM THE DELINEATED EDGE OF WETLANDS.
13. SAFETY FENCING SHALL BE PROVIDED AROUND STOCKPILES OVER 10 FT.
14. CONCRETE TRUCKS WILL BE REQUIRED TO WASH OUT (IF NECESSARY) SHOOTS ONLY WITHIN AREAS WHERE CONCRETE HAS BEEN PLACED. NO OTHER WASH OUT WILL BE ALLOWED.

GRADING AND DRAINAGE NOTES:

1. COMPACTION REQUIREMENTS:

BELOW PAVED OR CONCRETE AREAS	95%
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL	95%
BELOW LOAM AND SEED AREAS	90%

* ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.

2. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION. CONTRACTOR TO VERIFY BENCHMARK LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
3. ALL STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS N-12 OR EQUAL).
4. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
5. CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCES, EXITS, RAMPS AND LOADING DOCK AREAS ADJACENT TO THE BUILDING.
6. CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION. PROVIDE COPIES OF REPORT TO PEASE DEVELOPMENT AUTHORITY.
7. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
8. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
9. ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
10. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS OF ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
11. SEE EXISTING CONDITIONS PLAN FOR BENCH MARK INFORMATION.
12. SEE UTILITY PLAN FOR ALL SITE UTILITY INFORMATION.
13. ALL STORM DRAIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.
14. ALL PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.
15. CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 6-21-21

STATE OF NEW HAMPSHIRE — PATRICK M. CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 6-21-21

0 30' 60'
GRAPHIC SCALE

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

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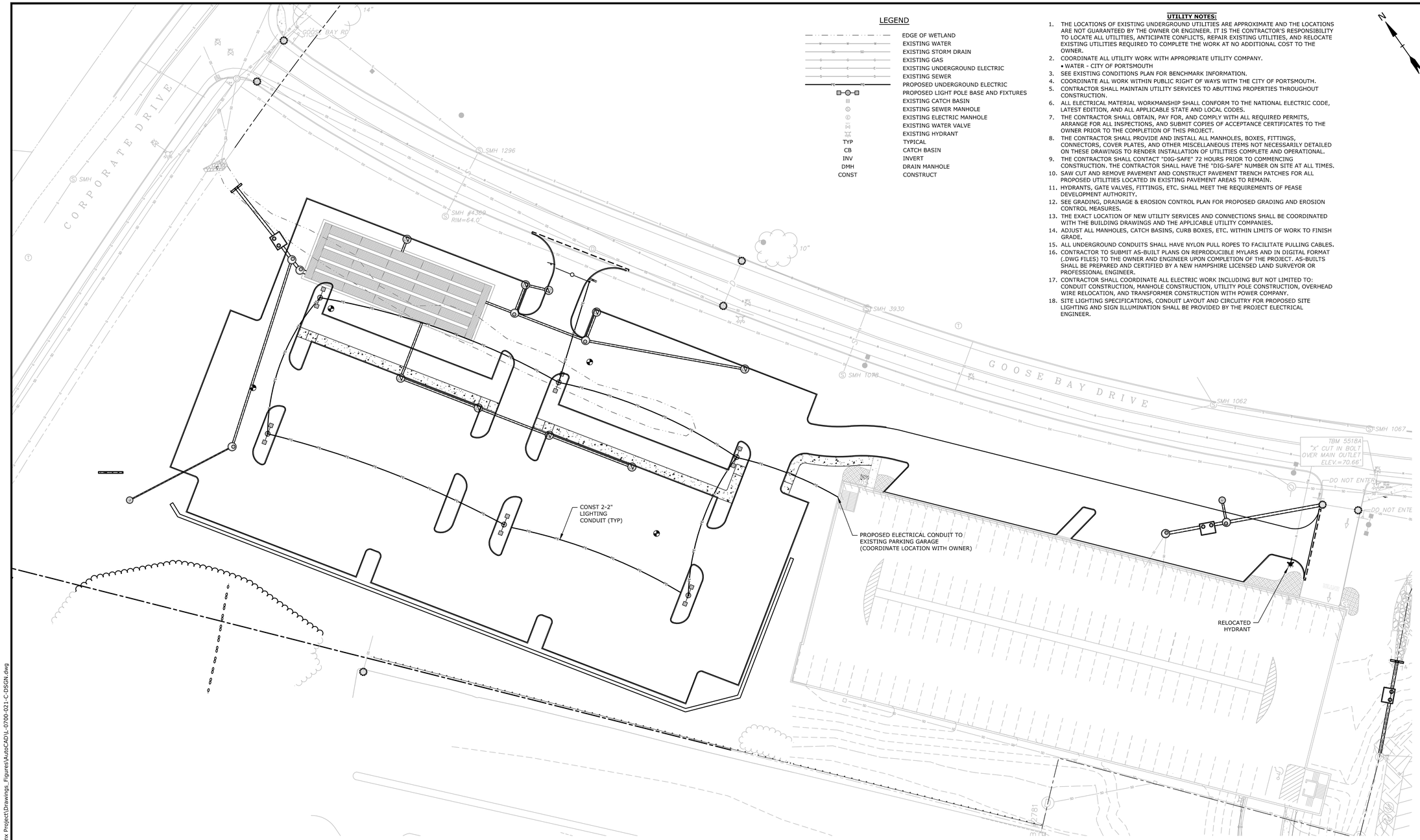
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

GRADING, DRAINAGE, AND EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103

Last Saved: 6/16/2021
Plotted On: Jun 16, 2021 - 3:40pm By: JWinston
Tighe & Bond: J:\LL\0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings_Figures\AutoCAD\L-0700-021-C-DSGN.dwg



LEGEND

	EDGE OF WETLAND
W	EXISTING WATER
SD	EXISTING STORM DRAIN
G	EXISTING GAS
UGE	EXISTING UNDERGROUND ELECTRIC
S	EXISTING SEWER
UGE	PROPOSED UNDERGROUND ELECTRIC
	PROPOSED LIGHT POLE BASE AND FIXTURES
	EXISTING CATCH BASIN
S	EXISTING SEWER MANHOLE
E	EXISTING ELECTRIC MANHOLE
W	EXISTING WATER VALVE
	EXISTING HYDRANT
TYP	TYPICAL
CB	CATCH BASIN
INV	INVERT
DMH	DRAIN MANHOLE
CONST	CONSTRUCT

UTILITY NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
2. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
   - WATER - CITY OF PORTSMOUTH
3. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
4. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
5. CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
6. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
7. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
8. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
9. THE CONTRACTOR SHALL CONTACT "DIG-SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON SITE AT ALL TIMES.
10. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCHES FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
11. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF PEASE DEVELOPMENT AUTHORITY.
12. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
13. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
14. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
15. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
16. CONTRACTOR TO SUBMIT AS-BUILT PLANS ON REPRODUCIBLE MYLARS AND IN DIGITAL FORMAT (.DWG FILES) TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER.
17. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
18. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08330
LICENSED
PROFESSIONAL ENGINEER
6-21-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
6-21-21

0 30' 60'
GRAPHIC SCALE

Lynx Parking Expansion

Lonza Biologics

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

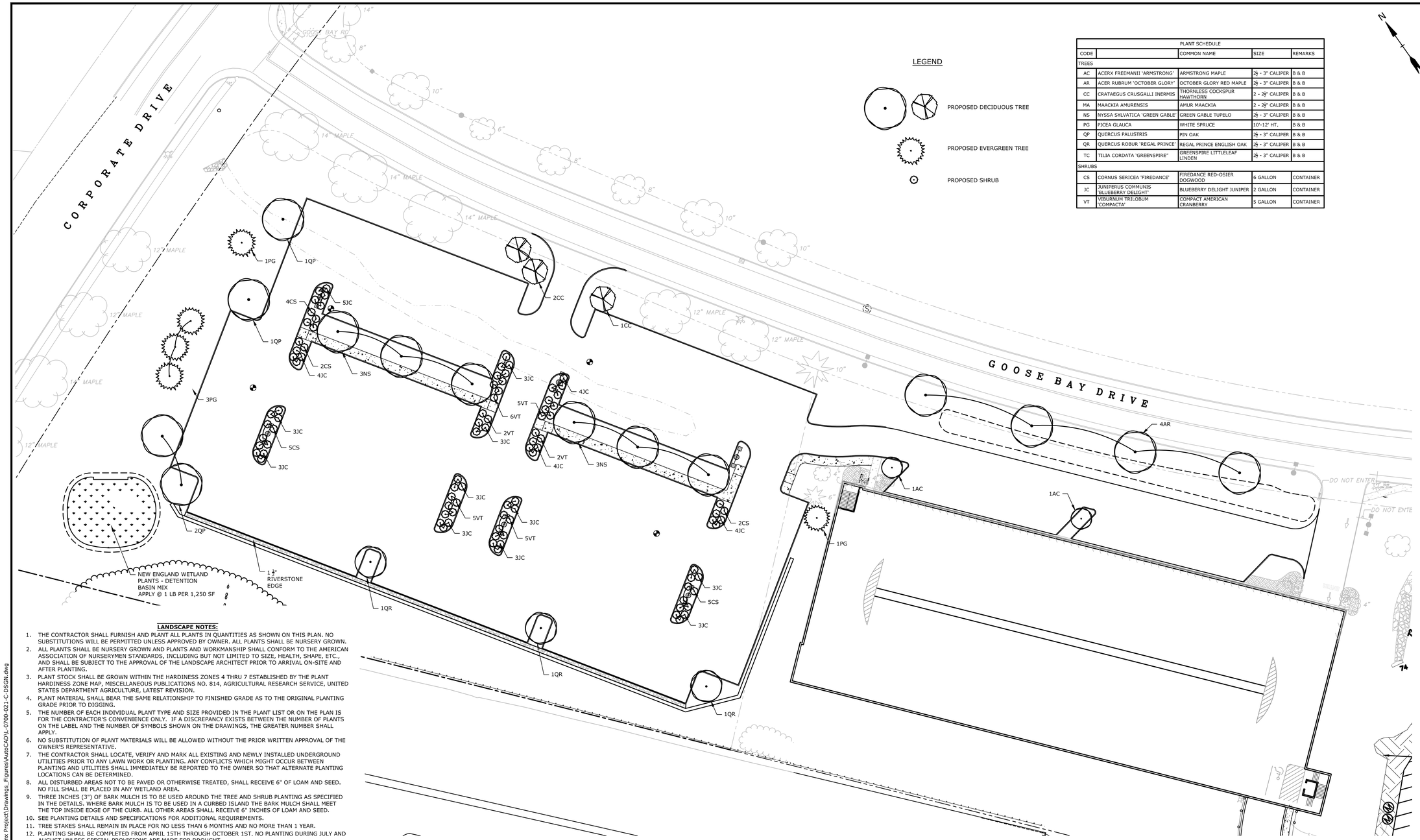
PROJECT NO:	L-0700-021
DATE:	June 21, 2021
FILE:	L-0700-021-C-DSGN.DWG
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

UTILITY PLAN

SCALE: AS SHOWN

C-104

Last Saved: 6/16/2021
Plotted On: Jun 16, 2021 - 2:18pm By: JWinston
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576\V021_Lynx Project\Drawings_Figures\AutoCAD\L-0700-021-C-DSGN.dwg



LEGEND

PROPOSED DECIDUOUS TREE

PROPOSED EVERGREEN TREE

PROPOSED SHRUB

PLANT SCHEDULE

CODE		COMMON NAME	SIZE	REMARKS
TREES				
AC	ACERX FREEMANII 'ARMSTRONG'	ARMSTRONG MAPLE	2½ - 3" CALIPER	B & B
AR	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2½ - 3" CALIPER	B & B
CC	CRATAEGUS CRUSGALLI INERMIS	THORNLESS COCKSPUR HAWTHORN	2 - 2½" CALIPER	B & B
MA	MAACKIA AMURENSIS	AMUR MAACKIA	2 - 2½" CALIPER	B & B
NS	NYSSA SYLVATICA 'GREEN GABLE'	GREEN GABLE TUPELO	2½ - 3" CALIPER	B & B
PG	PICEA GLAUCA	WHITE SPRUCE	10'-12' HT.	B & B
QP	QUERCUS PALUSTRIS	PIN OAK	2½ - 3" CALIPER	B & B
QR	QUERCUS ROBUR 'REGAL PRINCE'	REGAL PRINCE ENGLISH OAK	2½ - 3" CALIPER	B & B
TC	TILIA CORDATA 'GREENSPIRE"	GREENSPIRE LITTLELEAF LINDEN	2½ - 3" CALIPER	B & B
SHRUBS				
CS	CORNUS SERICEA 'FIREDANCE'	FIREDANCE RED-OSIER DOGWOOD	6 GALLON	CONTAINER
JC	JUNIPERUS COMMUNIS 'BLUEBERRY DELIGHT'	BLUEBERRY DELIGHT JUNIPER	2 GALLON	CONTAINER
VT	VIBURNUM TRILOBUM 'COMPACTA'	COMPACT AMERICAN CRANBERRY	5 GALLON	CONTAINER

LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL FURNISH AND PLANT ALL PLANTS IN QUANTITIES AS SHOWN ON THIS PLAN. NO SUBSTITUTIONS WILL BE PERMITTED UNLESS APPROVED BY OWNER. ALL PLANTS SHALL BE NURSERY GROWN.
2. ALL PLANTS SHALL BE NURSERY GROWN AND PLANTS AND WORKMANSHIP SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS, INCLUDING BUT NOT LIMITED TO SIZE, HEALTH, SHAPE, ETC., AND SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO ARRIVAL ON-SITE AND AFTER PLANTING.
3. PLANT STOCK SHALL BE GROWN WITHIN THE HARDINESS ZONES 4 THRU 7 ESTABLISHED BY THE PLANT HARDINESS ZONE MAP, MISCELLANEOUS PUBLICATIONS NO. 814, AGRICULTURAL RESEARCH SERVICE, UNITED STATES DEPARTMENT AGRICULTURE, LATEST REVISION.
4. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE PRIOR TO DIGGING.
5. THE NUMBER OF EACH INDIVIDUAL PLANT TYPE AND SIZE PROVIDED IN THE PLANT LIST OR ON THE PLAN IS FOR THE CONTRACTOR'S CONVENIENCE ONLY. IF A DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LABEL AND THE NUMBER OF SYMBOLS SHOWN ON THE DRAWINGS, THE GREATER NUMBER SHALL APPLY.
6. NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
7. THE CONTRACTOR SHALL LOCATE, VERIFY AND MARK ALL EXISTING AND NEWLY INSTALLED UNDERGROUND UTILITIES PRIOR TO ANY LAWN WORK OR PLANTING. ANY CONFLICTS WHICH MIGHT OCCUR BETWEEN PLANTING AND UTILITIES SHALL IMMEDIATELY BE REPORTED TO THE OWNER SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
8. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED, SHALL RECEIVE 6" OF LOAM AND SEED. NO FILL SHALL BE PLACED IN ANY WETLAND AREA.
9. THREE INCHES (3") OF BARK MULCH IS TO BE USED AROUND THE TREE AND SHRUB PLANTING AS SPECIFIED IN THE DETAILS. WHERE BARK MULCH IS TO BE USED IN A CURBED ISLAND THE BARK MULCH SHALL MEET THE TOP INSIDE EDGE OF THE CURB. ALL OTHER AREAS SHALL RECEIVE 6" INCHES OF LOAM AND SEED.
10. SEE PLANTING DETAILS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
11. TREE STAKES SHALL REMAIN IN PLACE FOR NO LESS THAN 6 MONTHS AND NO MORE THAN 1 YEAR.
12. PLANTING SHALL BE COMPLETED FROM APRIL 15TH THROUGH OCTOBER 1ST. NO PLANTING DURING JULY AND AUGUST UNLESS SPECIAL PROVISIONS ARE MADE FOR DROUGHT.
13. PARKING AREA PLANTED ISLANDS TO HAVE MINIMUM OF 1'-0" TOPSOIL PLACED TO WITHIN 3 INCHES OF THE TOP OF CURB ELEVATION. REMOVE ALL CONSTRUCTION DEBRIS BEFORE PLACING TOPSOIL.
14. TREES SHALL BE PRUNED IN ACCORDANCE WITH THE LATEST EDITION OF ANSI A300 'TREES, SHRUBS AND OTHER WOOD PLANT MAINTENANCE STANDARD PRACTICES.
15. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24 HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN, IF NECESSARY DURING THE FIRST GROWING SEASON. LANDSCAPE CONTRACTOR SHALL COORDINATE WATERING SCHEDULE WITH OWNER DURING THE ONE (1) YEAR GUARANTEE PERIOD.
16. EXISTING TREES AND SHRUBS SHOWN ON THE PLAN ARE TO REMAIN UNDISTURBED. ALL EXISTING TREES AND SHRUBS SHOWN TO REMAIN ARE TO BE PROTECTED WITH A 4-FOOT SNOW FENCE PLACED AT THE DRIP LINE OF THE BRANCHES OR AT 8 FEET MINIMUM FROM THE TREE TRUNK. ANY EXISTING TREE OR SHRUB SHOWN TO REMAIN, WHICH IS REMOVED DURING CONSTRUCTION, SHALL BE REPLACED BY A TREE OF COMPARABLE SIZE AND SPECIES TREE OR SHRUB.
17. THE CONTRACTOR SHALL GUARANTEE ALL PLANTINGS TO BE IN GOOD HEALTHY, FLOURISHING AND ACCEPTABLE CONDITION FOR A PERIOD OF ONE (1) YEAR BEGINNING AT THE DATE OF ACCEPTANCE OF SUBSTANTIAL COMPLETION. ALL GRASSES, TREES AND SHRUBS THAT, IN THE OPINION OF THE LANDSCAPE ARCHITECT, SHOW LESS THAN 80% HEALTHY GROWTH AT THE END OF ONE YEAR PERIOD SHALL BE REPLACED BY THE CONTRACTOR.
18. UPON EXPIRATION OF THE CONTRACTOR'S ONE YEAR GUARANTEE PERIOD, THE OWNER SHALL BE RESPONSIBLE FOR LANDSCAPE MAINTENANCE INCLUDING WATERING DURING PERIODS OF DROUGHT
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTING AND LAWNS AGAINST DAMAGE FROM ONGOING CONSTRUCTION. THIS PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL THE FORMAL ACCEPTANCE OF ALL THE PLANTINGS.
20. PRE-PURCHASE PLANT MATERIAL AND ARRANGE FOR DELIVERY TO MEET PROJECT SCHEDULE AS REQUIRED IT MAY BE NECESSARY TO PRE-DIG CERTAIN SPECIES WELL IN ADVANCE OF ACTUAL PLANTING DATES.

Tighe&Bond

0 30' 60'
GRAPHIC SCALE

Lynx Parking Expansion

Lonza Biologics

Portsmouth,
New Hampshire

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A	6/21/2021	TAC SUBMISSION

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LANDSCAPE PLAN

SCALE: AS SHOWN

C-105

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Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	6	S5-2	BACK-BACK	GLEON-SA2C-740-U-5WQ/ SSS4A25ASFN2 (25' AFG)
	4	W4	SINGLE	GWC-SA1C-740-U-SL4/WALL MTD 15' AFG

PARKING LOT
Illuminance (Fc)
Average = 2.02
Maximum = 4.2
Minimum = 0.5
Avg/Min Ratio = 4.04
Max/Min Ratio = 8.40

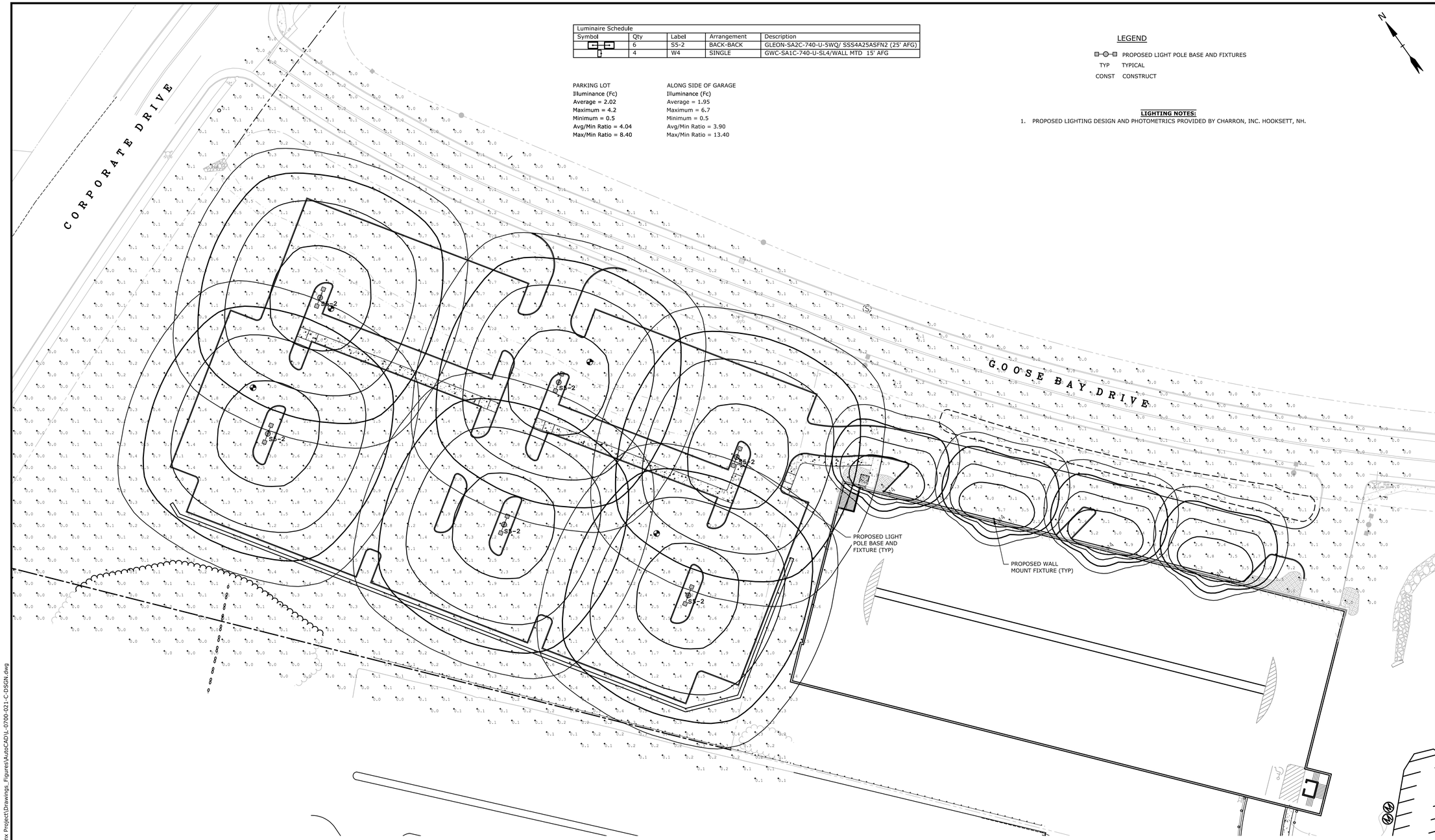
ALONG SIDE OF GARAGE
Illuminance (Fc)
Average = 1.95
Maximum = 6.7
Minimum = 0.5
Avg/Min Ratio = 3.90
Max/Min Ratio = 13.40

LEGEND

PROPOSED LIGHT POLE BASE AND FIXTURES
TYP TYPICAL
CONST CONSTRUCT

LIGHTING NOTES:

1. PROPOSED LIGHTING DESIGN AND PHOTOMETRICS PROVIDED BY CHARRON, INC. HOOKSETT, NH.



Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 06830
LICENSED
PROFESSIONAL ENGINEER
6-21-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
6-21-21

0 30' 60'
GRAPHIC SCALE

Lynx Parking Expansion

Lonza Biologics

Portsmouth,
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PHOTOMETRIC
LIGHTING PLAN

SCALE: AS SHOWN

C-106

Last Saved: 6/15/2021
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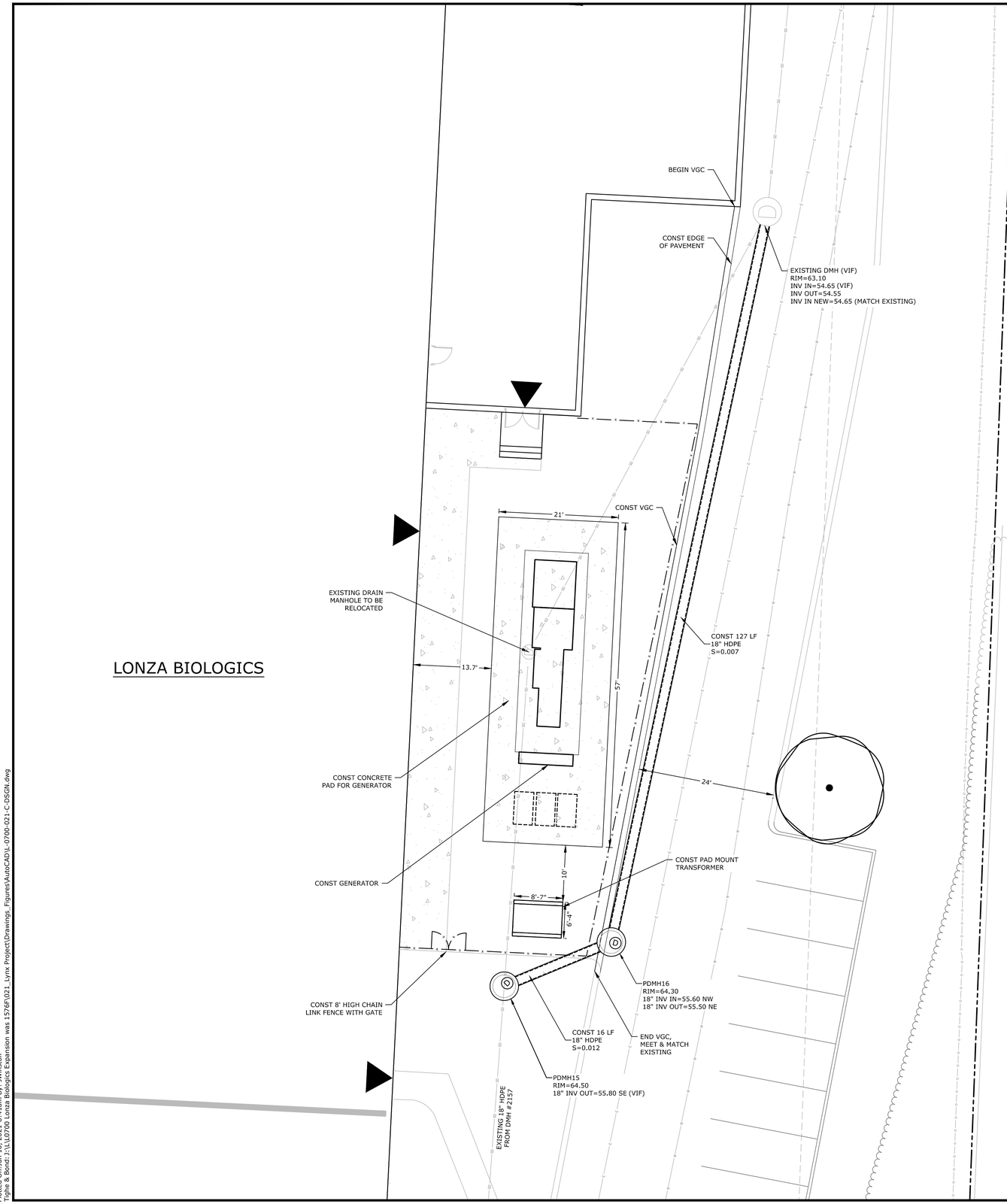

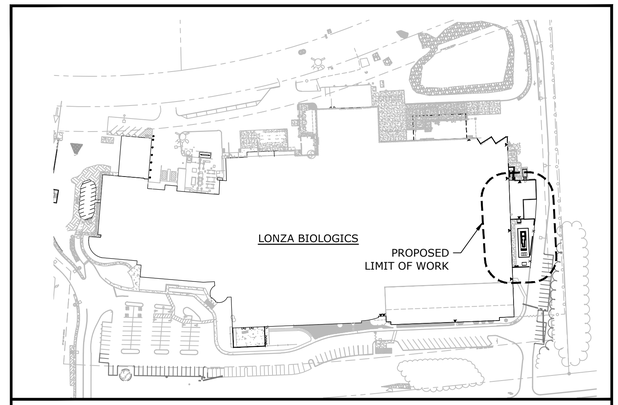

OVERALL SITE PLAN, SCALE 1" = 150'

LEGEND

	PROPERTY LINE
	PROPOSED EDGE OF PAVEMENT
	PROPOSED VERTICAL GRANITE CURB
x x x	PROPOSED FENCE
	PROPOSED PAVEMENT SECTION
	PROPOSED CONCRETE PAD
•	PROPOSED BOLLARD
	PROPOSED LIGHT POLE
BLDG	BUILDING
TYP	TYPICAL
COORD	COORDINATE
VIF	VERIFY IN FIELD
VGC	VERTICAL GRANITE CURB
CONST	CONSTRUCT
R	RADIUS
	EXISTING CHAIN LINK FENCE
	SETBACK
	EXISTING TREE LINE
	PROPOSED TREE LINE
	EXISTING ELECTRIC LINE
	EXISTING WATER LINE
	EXISTING STORM DRAIN LINE

SEE SHEETS C-101, C-102.1, C-103 & C-104 FOR DEMOLITION, SITE, GRADING, DRAINAGE AND EROSION CONTROL, AND UTILITY NOTES

Tighe&Bond

STATE OF NEW HAMPSHIRE
BRADLEE MEZQUITA
No. 08830
LICENSED
PROFESSIONAL ENGINEER
6-21-21

STATE OF NEW HAMPSHIRE
PATRICK M. CRIMMINS
No. 12378
LICENSED
PROFESSIONAL ENGINEER
6-21-21

0 10' 20'
GRAPHIC SCALE

Proposed Generator

Lonza Biologics

Portsmouth,
New Hampshire

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GENERATOR PAD PLAN

SCALE: AS SHOWN

C-201

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GENERAL PROJECT INFORMATION

PROJECT LESSOR: PEASE DEVELOPMENT AUTHORITY
55 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801
PROJECT APPLICANT: LONZA BIOLOGICS
101 INTERNATIONAL DRIVE
PORTSMOUTH, NH 03801
PROJECT ADDRESS: 70 & 80 CORPORATE DRIVE
PORTSMOUTH, NH 03801
PROJECT LATITUDE: 43°-04'-59.0"N
PROJECT LONGITUDE: 71°-48'-09.7"W

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF THE EXPANSION OF LONZA BIOLOGICS PARKING FACILITIES, WHICH INCLUDES THE CONSTRUCTION OF 200 SPACE PARKING LOT AND ASSOCIATED SITE IMPROVEMENTS.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 3.25 ACRES.

SOIL CHARACTERISTICS

BASED ON THE SITE SPECIFIC SOIL MAP REPORT PREPARED BY TIGHE & BOND IN MAY 2021, THE SITE SOILS VARY FROM MODERATELY WELL DRAINED POORLY DRAINED AND PRIMARILY CONSIST OF MODERATELY WELL DRAINED SOILS.

NAME OF RECEIVING WATERS

THE STORM WATER RUNOFF WILL ULTIMATELY DISCHARGE INTO HODGSON BROOK

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:

1. CUT AND CLEAR TREES.
2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS:
   - NEW CONSTRUCTION
   - CONTROL OF DUST
   - NEARNESS OF CONSTRUCTION SITE TO RECEIVING WATERS
   - CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
3. ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS TO BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR AND DISPOSE OF DEBRIS.
5. CONSTRUCT TEMPORARY CULVERTS AND DIVERSION CHANNELS AS REQUIRED.
6. GRADE AND GRAVEL ROADWAYS AND PARKING AREAS - ALL ROADS AND PARKING AREA SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
7. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
9. SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.
10. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
11. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
12. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
13. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS APPROPRIATE AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:

1. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.
2. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" PREPARED BY THE NHDES.
2. PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL.
3. CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL BARRIERS, INCLUDING HAY BALES, SILT FENCES, MULCH BERMS, SILT SACKS AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
4. SILT SACK INLET PROTECTION SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AND BE MAINTAINED FOR THE DURATION OF THE PROJECT.
5. PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL NON-PAVED AREAS HAVE BEEN STABILIZED.
6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
7. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
8. INSPECT ALL INLET PROTECTION AND PERIMETER CONTROLS WEEKLY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
9. CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

STABILIZATION:

1. AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.;
   E. IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.
2. WINTER STABILIZATION PRACTICES:
   A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
   B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
   C. AFTER NOVEMBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;
3. STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
   A. TEMPORARY SEEDING;
   B. MULCHING.
4. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
5. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN THESE AREAS, SILT FENCES, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
6. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT FENCES, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY NOVEMBER 15.

DUST CONTROL:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD.
2. DUST CONTROL METHODS SHALL INCLUDE, BUT BE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
3. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

STOCKPILES:

1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
4. PROTECT ALL STOCKPILES FROM STORMWATER RUN-OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

OFF SITE VEHICLE TRACKING:

1. THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES.

VEGETATION:

1. TEMPORARY GRASS COVER:
   A. SEEDBED PREPARATION:
      a. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF THREE (3) TONS PER ACRE;
   B. SEEDING:
      a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
      b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
      c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING;
   C. MAINTENANCE:
      a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.).
2. VEGETATIVE PRACTICE:
   A. FOR PERMANENT MEASURES AND PLANTINGS:
      a. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5;
      b. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF 10-20-20 FERTILIZER;
      c. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2 POUNDS PER INCH OF WIDTH;
      d. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
      e. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
      f. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED;
      g. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
      h. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
REDTOP	2 LBS/ACRE

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW.

3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
   A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

CONCRETE WASHOUT AREA:

1. THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
   A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
   B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
   C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
   D. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES:

1. FIRE-FIGHTING ACTIVITIES;
2. FIRE HYDRANT FLUSHING;
3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
4. WATER USED TO CONTROL DUST;
5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
11. UNCONTAMINATED EXCAVATION DEWATERING;
12. LANDSCAPE IRRIGATION.

WASTE DISPOSAL:

1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE:
   A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE:
   A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION:

1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
      a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
      b. ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE;
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
      d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
      e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
      f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
   B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      g. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
      h. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
      i. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
   C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
      a. PETROLEUM PRODUCTS:
         - ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
         - PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

      b. FERTILIZERS:
         - FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
         - ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
         - STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

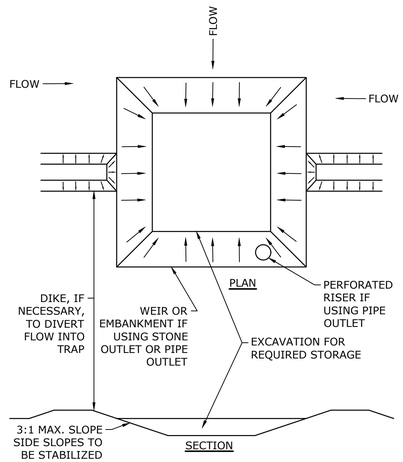
      c. PAINTS:
         - ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
         - EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
         - EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   D. SPILL CONTROL PRACTICES - IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
      a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
      b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
      c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY AND REPORTED TO PEASE DEVELOPMENT AUTHORITY;
      d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
      e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
      f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
   E. VEHICLE FUELING AND MAINTENANCE PRACTICE:
      a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICLE FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
      b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
      c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
      d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
      e. CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
      f. CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES

THIS PROJECT EXCEEDS ONE (1) ACRE OF DISTURBANCE AND THUS REQUIRES A SWPPP. THE SWPPP SHALL BE PREPARED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE FAMILIAR WITH THE SWPPP AND KEEP AN UPDATED COPY OF THE SWPPP ONSITE AT ALL TIMES.

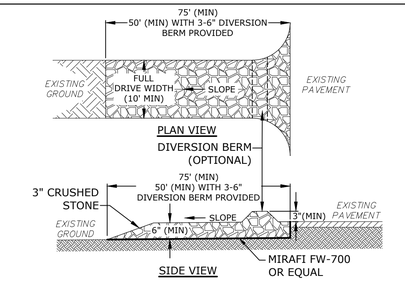
THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:

1. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY THE CONTRACTOR AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
2. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
3. A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
4. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT;
5. AN NPDES NOTICE OF INTENT SHALL BE SUBMITTED.



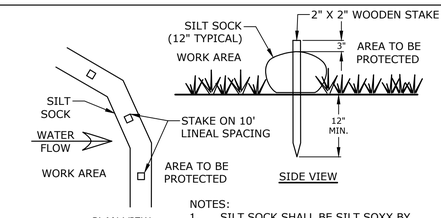
NOTES:
1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING AREA TO A SINGLE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. TRAP OUTLET SHALL BE MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP.
5. TRAP SHALL DISCHARGE TO A STABILIZED AREA.
6. TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

SEDIMENT TRAP
NO SCALE



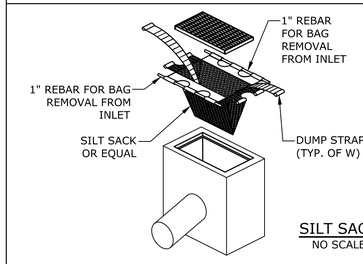
NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

STABILIZED CONSTRUCTION ENTRANCE
NO SCALE



NOTES:
1. SILT SOCK SHALL BE SILT SOXX BY FILTREXX OR APPROVED EQUAL
2. INSTALL SILT SOCK IN ACCORDANCE WITH...

SILT SOCK
NO SCALE



SILT SACK
NO SCALE

Tighe&Bond

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

PROJECT NO:	L-0700-021
DATE:	June 21, 2021
FILE:	L-0700-021-C-DTLS.DWG
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

EROSION CONTROL NOTES & DETAILS

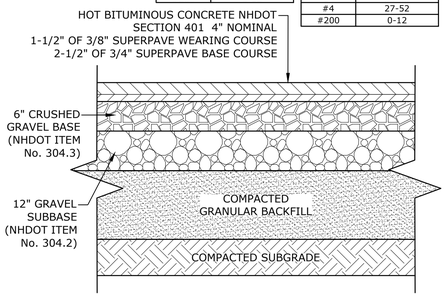
SCALE: AS SHOWN

C-501

Last Saved: 6/17/2021
Plotted On: Jun 18, 2021-9:50am By: JWinston
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576\f\021. Lynx Project\Drawings. Figures\AutoCAD\L-0700-021-C-DTLS.dwg

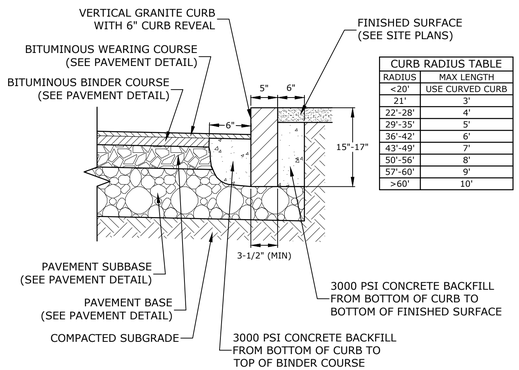
NHDOT ITEM No. 304.2 (GRAVEL)	
SIEVE SIZE	% PASSING
6"	100
#4	25-70
#200	0-12

NHDOT ITEM No. 304.3 (CRUSHED GRAVEL)	
SIEVE SIZE	% PASSING
3"	100
2"	95-100
1"	55-85
#4	27-52
#200	0-12



NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
4. FINAL PAVEMENT DESIGN TO BE DETERMINED BY GEOTECHNICAL ENGINEER

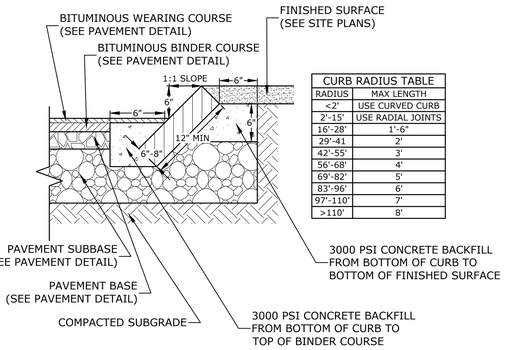
TYPICAL PAVEMENT SECTION
NO SCALE



CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

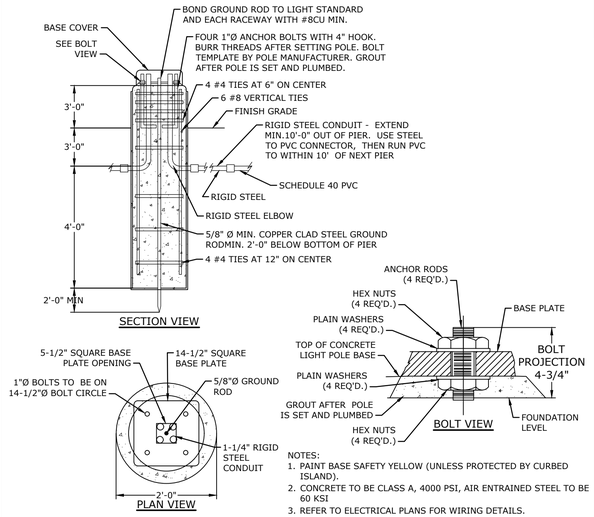
VERTICAL GRANITE CURB
NO SCALE



CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-6"
29'-41	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
>110'	8'

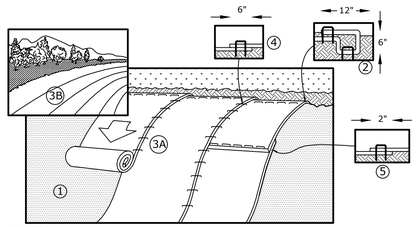
NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

SLOPED GRANITE CURB
NO SCALE



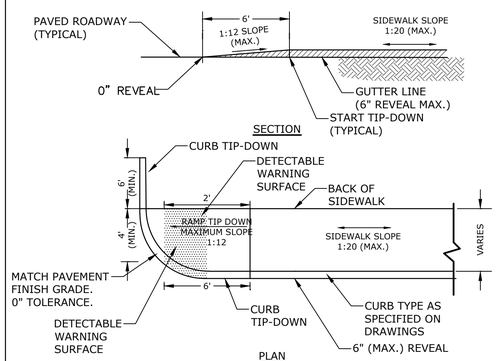
NOTES:
1. PAINT BASE SAFETY YELLOW (UNLESS PROTECTED BY CURBED ISLAND).
2. CONCRETE TO BE CLASS A, 4000 PSI, AIR ENTRAINED STEEL TO BE 60 KSI
3. REFER TO ELECTRICAL PLANS FOR WIRING DETAILS.
4. LIGHT POLE BASE DETAIL FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL, TO INCLUDE PERFORMANCE SPECIFICATIONS, CALCULATIONS AND NH LICENSED STRUCTURAL ENGINEER'S STAMP FOR LIGHT POLE FOUNDATION.

TYPICAL LIGHT POLE BASE
NO SCALE



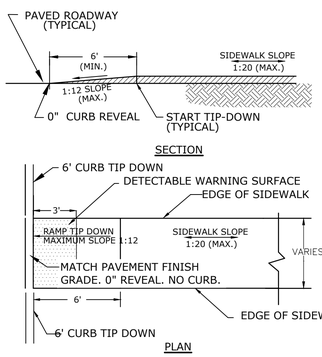
NOTES:
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE, 36" OVER THE GRADE BREAK, BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES SPACED 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SOIL SURFACE BY PLACING STAPLES IN APPROPRIATE LOCATIONS AS SHOWN ON THE STAPLE PATTERN GUIDE.
4. STAPLE LENGTHS SHALL BE A MINIMUM OF 8 INCHES.
5. EROSION CONTROL BLANKET SHALL BE INSTALLED WHERE SHOWN ON PLANS AND WHERE SLOPES EXCEED 3:1.

EROSION CONTROL BLANKET FOR SLOPE PROTECTION
NO SCALE



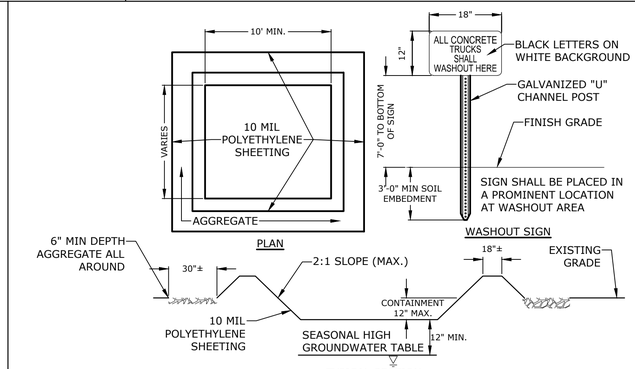
NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS
2. PROVIDE 6" COMPACTED CRUSHED GRAVEL BASE BENEATH RAMPS.
3. DETECTABLE WARNING STRIP SHALL BE ADA SOLUTIONS, INC. CAST IN PLACE RAMP. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

CORNER TIP DOWN RAMP
NO SCALE



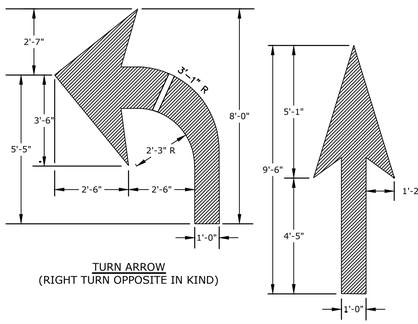
NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS
2. PROVIDE 6" COMPACTED CRUSHED GRAVEL BASE BENEATH RAMPS.
3. DETECTABLE WARNING STRIP SHALL BE ADA SOLUTIONS, INC. CAST IN PLACE RAMP. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

SIDEWALK TIP-DOWN RAMP
NO SCALE



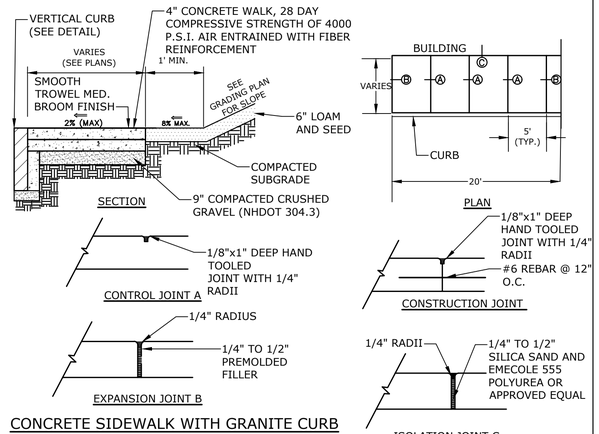
NOTES:
1. CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
4. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
6. AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

CONCRETE WASHOUT AREA
NO SCALE

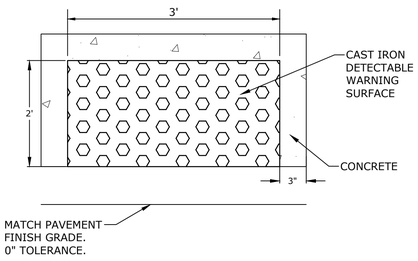


PAVEMENT MARKING NOTES:

1. ALL WORDS AND SYMBOLS SHALL BE RETROREFLECTIVE WHITE AND SHALL CONFORM TO THE LATEST VERSION OF THE MUTCD.
2. COMBINATION ARROWS MAY BE COMPRISED OF 2 SINGLE ARROWS (e.g. TURN AND THROUGH ARROWS). HOWEVER, THE SHAFTS OF THE ARROWS SHALL COINCIDE AS SHOWN.
3. PREFORMED SYMBOLS SHALL BE PRE-CUT BY THE MANUFACTURER.
4. WRONG-WAY ARROWS SHALL NOT BE SUBSTITUTED FOR THROUGH ARROWS.
7. ALL SYMBOLS SHALL BE CONSTRUCTED USING FAST DRYING TRAFFIC PAINT MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY THE MANUFACTURER.



CONCRETE SIDEWALK WITH GRANITE CURB
NO SCALE



NOTES:
1. DETECTABLE WARNING SURFACE SHALL BE 2' X 3' CAST IRON PANEL SET IN CONCRETE.
2. DETECTABLE WARNING SURFACE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

CAST IRON DETECTABLE WARNING SURFACE
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 06830 LICENSED PROFESSIONAL ENGINEER — 6-21-21

STATE OF NEW HAMPSHIRE — PATRICK M. CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 6-21-21

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

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A	6/21/2021	TAC SUBMISSION

PROJECT NO:	L-0700-021
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DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS

SCALE: AS SHOWN

C-502

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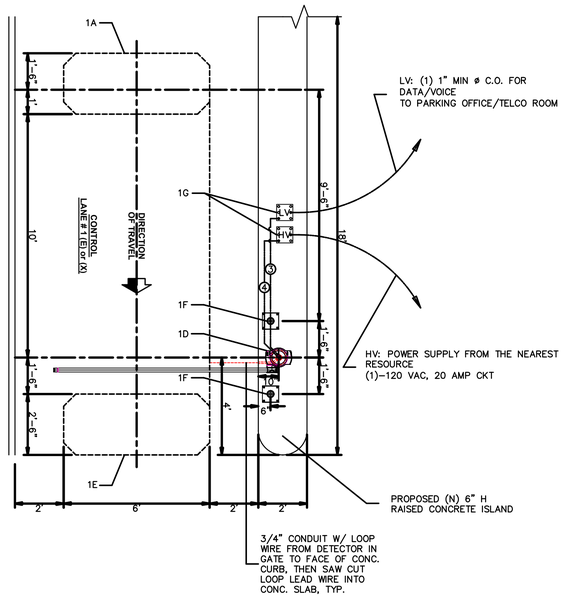
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576R\021_Lynx Project\Drawings, Figures\AutoCAD\L-0700-021-C-DTLS.dwg

LEGEND

① 1" ø C.O., ARCNET CABLE (DATA)
② 22/4 CAT3, PVC (VOICE)
③ 3/4" ø C.O., 22/8 CABLE O.S., PVC (DATA)
④ ONE (1) 115VAC, 20AMP CIRCUIT (POWER)

CONTROL LANE GENERAL NOTES:

1. THIS DRAWING IS NOT TO BE USED FOR ELECTRICAL CIRCUITRY, REFER TO ELECTRICAL DRAWINGS.
2. ——————— DENOTES CONDUIT AND WIRE FOR POWER OR PULL WIRE FOR CONTROLS BY ELECTRICAL CONTRACTOR.
3. ——————— DENOTES CONDUIT AND WIRE BY ELECTRICAL CONTRACTOR.
4. C.O. (CONDUIT ONLY) DENOTES CONDUIT AND PULL WIRE.
5. STUB-UP CONDUIT 8" ABOVE TOP OF CONCRETE ISLAND PLUS 3'-0" OF WIRE FOR PARKING EQUIPMENT SUPPLIER.
6. ELECTRICAL CONTRACTOR SHALL VERIFY WITH PARKING EQUIPMENT SUPPLIER AS TO THE ACTUAL POWER REQUIREMENTS TO EACH LOCATION BEFORE START OF WORK.
7. ELECTRICAL CONTRACTOR SHALL VERIFY WITH INTERCOM SYSTEM SUPPLIER AS TO THE ACTUAL CONDUIT SIZE REQUIRED BEFORE START OF WORK.
8. CONCRETE CURBS SHALL BE 6" HIGH UNO.
9. FOR ADDITIONAL PARKING EQUIPMENT REQUIREMENTS, REFER TO SPECS.
10. COORDINATE WITH ELECTRICAL DRAWINGS.

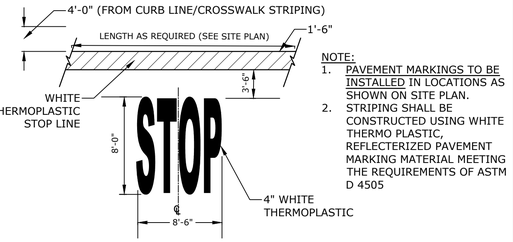


PARKING CONTROL EQUIPMENT LIST:

CONTROL LANE # 1 (E) or (X)

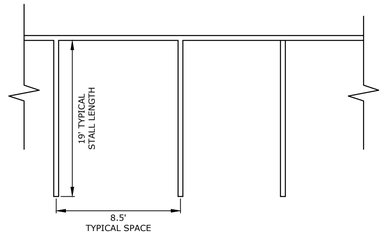
1A – ARMING LOOP DETECTOR ASSEMBLY
1B – SKIDATA ENTRY/EXIT COLUMN UNLIMITED (See Detail)
1C – TWO–WAY INTERCOM UNIT
1D – SKIDATA BARRIER GATE (See Detail)
1E – CLOSING LOOP DETECTOR ASSEMBLY
1F – PROTECTION POST
1G – INGROUND JUNCTION BOXES (8"x8"x4") FOR POWER & DATA

TYPICAL PARKING EQUIPMENT DETAILS
NO SCALE



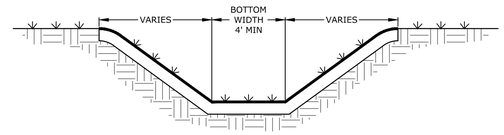
NOTE:
1. PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS AS SHOWN ON SITE PLAN.
2. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

STOP BAR AND LEGEND
NO SCALE



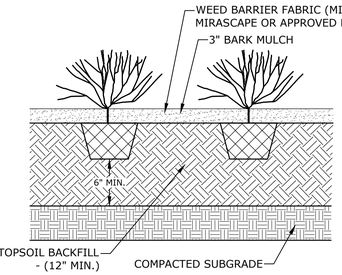
NOTE:
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
3. FINISH PAVEMENT GRADES AT ALL HANDICAP ACCESSIBLE STALLS AND PAINTED ACCESS AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION.

STALL STRIPING-SINGLE STRIPE
NO SCALE

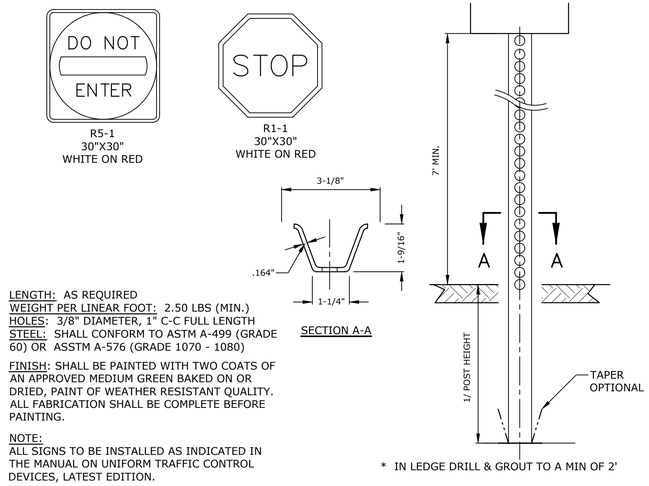


NOTES:
1. THE FOUNDATION AREA OF THE WATERWAY SHALL BE CLEARED AND GRUBBED OF ALL OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE WATERWAY.
2. THE WATERWAY SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS-SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA. THE WATERWAY SHALL BE FREE OF IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
3. EARTH FILLS REQUIRED TO MEET SUBGRADE REQUIREMENTS BECAUSE OF OVER EXCAVATION OR TOPOGRAPHY SHALL BE COMPACTED TO THE SAME DENSITY AS THE SURROUNDING SOIL TO PREVENT UNEQUAL SETTLEMENT THAT COULD CAUSE DAMAGE TO THE COMPLETED WATERWAY. EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE WATERWAY.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER AS TO MINIMIZE EROSION AND AIR AND WATER POLLUTION. ALL APPROPRIATE STATE AND LOCAL LAWS AND REGULATIONS SHALL BE COMPLIED WITH FOR INSTALLATION.
5. INSTALL EROSION CONTROL MATTING WITHIN THE WATERWAY FOR ADDITIONAL STABILIZATION.
6. VEGETATION SHALL BE ESTABLISHED IN THE SWALE PRIOR TO ALLOWING STORMWATER RUNOFF TO FLOW THROUGH THE SWALE.
7. MAINTENANCE OF THE VEGETATION IN THE GRASSED WATERWAY IS EXTREMELY IMPORTANT IN ORDER TO PREVENT RILLING, EROSION, AND FAILURE OF THE WATERWAY. MOWING SHOULD BE DONE FREQUENTLY ENOUGH TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION AND TO KEEP THE GRASSES IN A VIGOROUS CONDITION. THE VEGETATION SHOULD NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE EROSION RESISTANCE IN THE WATERWAY.
8. THE WATERWAY SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE WATERWAY. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND REVEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.
9. PERIODIC APPLICATIONS OF LIME AND FERTILIZER MAY BE NEEDED TO MAINTAIN VIGOROUS GROWTH.

GRASS-LINED SWALE
NO SCALE



PERENNIAL PLANTING
NO SCALE

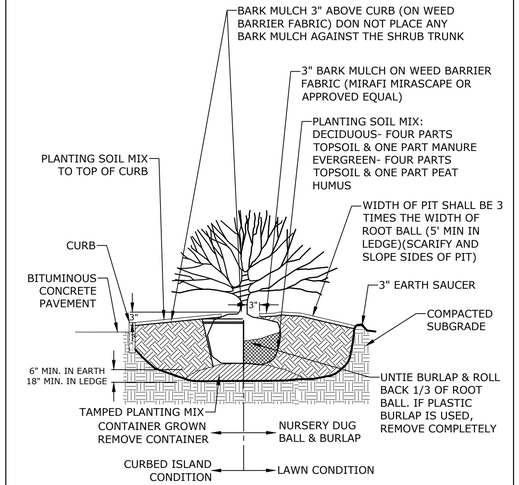


LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASSTM A-576 (GRADE 1070 - 1080)

FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN BAKED ON OR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

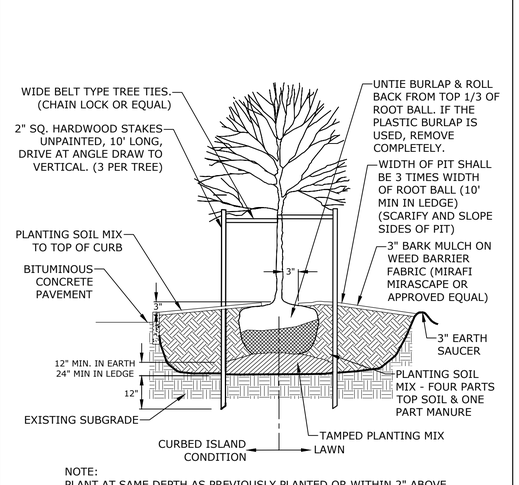
NOTE:
ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

SIGN LEGEND & SIGN POST
NO SCALE



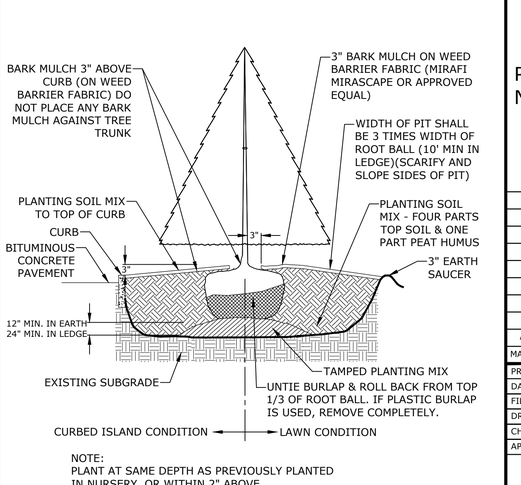
NOTE:
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.

SHRUB PLANTING
NO SCALE



NOTE:
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED OR WITHIN 2" ABOVE.

DECIDUOUS TREE PLANTING
NO SCALE



NOTE:
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED IN NURSERY, OR WITHIN 2" ABOVE.

EVERGREEN TREE PLANTING
NO SCALE

Tighe&Bond

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Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

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DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS

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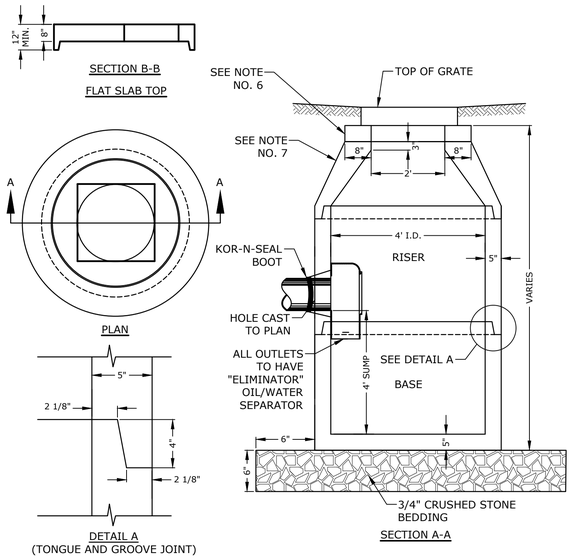
Tighe & Bond: J:\LL\0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings_Figures\AutoCAD\L-0700-021-C-DTLS.dwg

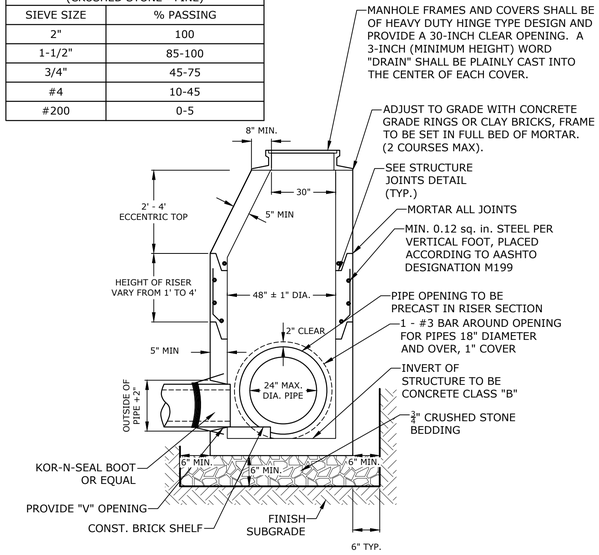


NOTES:

1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
7. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
8. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
9. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
10. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
11. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
12. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASIN.

4' DIAMETER CATCHBASIN
NO SCALE

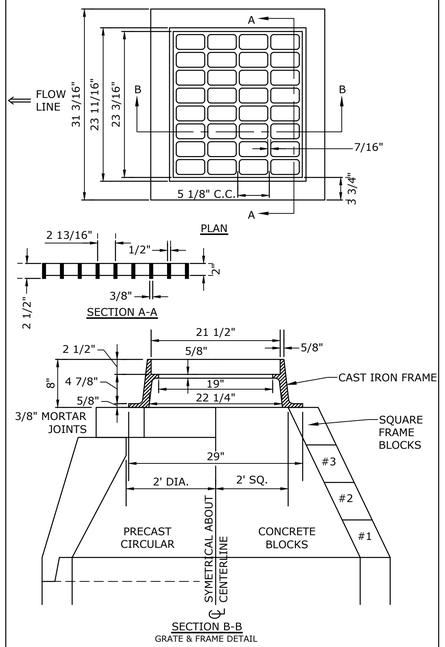
NHDOT ITEM No. 304.4 (CRUSHED STONE - FINE)	
SIEVE SIZE	% PASSING
2"	100
1-1/2"	85-100
3/4"	45-75
#4	10-45
#200	0-5



NOTES:

1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZONTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

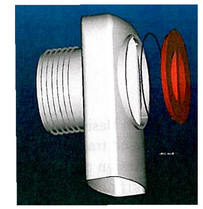
4' DIAMETER DRAIN MANHOLE
NO SCALE



NOTE:

1. GRATE TO BE CAST IRON (NHDOT TYPE B ALTERNATE 1)
2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

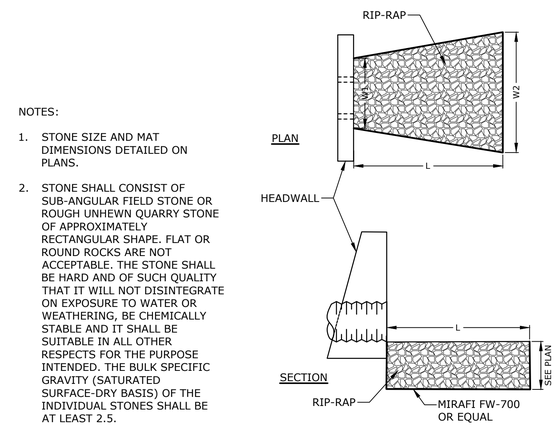
CATCH BASIN FRAME & GRATE
NO SCALE



NOTES:

1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)
2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.
3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP

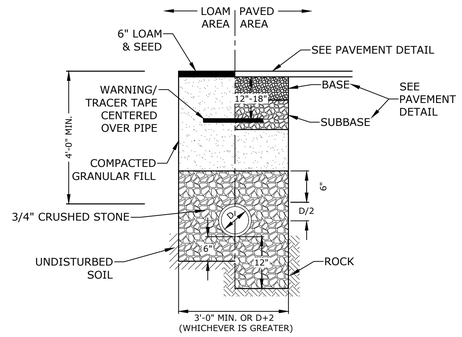
"ELIMINATOR" OIL FLOATING DEBRIS TRAP
NO SCALE



NOTES:

1. STONE SIZE AND MAT DIMENSIONS DETAILED ON PLANS.
2. STONE SHALL CONSIST OF SUB-ANGULAR FIELD STONE OR ROUGH UNHEWN QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. FLAT OR ROUND ROCKS ARE NOT ACCEPTABLE. THE STONE SHALL BE HARD AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING, BE CHEMICALLY STABLE AND IT SHALL BE SUITABLE IN ALL OTHER RESPECTS FOR THE PURPOSE INTENDED. THE BULK SPECIFIC GRAVITY (SATURATED SURFACE-DRY BASIS) OF THE INDIVIDUAL STONES SHALL BE AT LEAST 2.5.
3. THE STONE SHALL BE COMPOSED OF A WELL-GRADED MIXTURE DOWN TO THE ONE-INCH SIZE PARTICLE SUCH THAT 50 PERCENT OF THE MIXTURE BY WEIGHT SHALL BE LARGER THAN THE D50 SIZE SPECIFIED. A WELL-GRADED MIXTURE IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF THE LARGER STONE SIZE BUT WITH A SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE PROGRESSIVELY SMALLER VOIDS BETWEEN THE STONES. THE DIAMETER OF THE LARGEST STONE SIZE IN SUCH A MIXTURE SHALL BE 1.5 TIMES THE D50 SIZE.

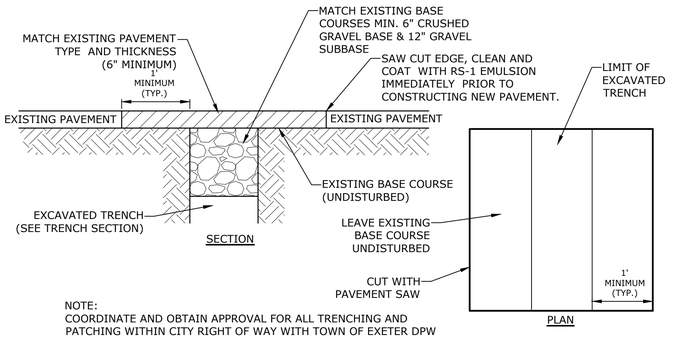
RIP-RAP APRON DETAIL
NO SCALE



NOTE:

1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.

STORM DRAIN TRENCH
NO SCALE



NOTE:
COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT OF WAY WITH TOWN OF EXETER DPW PRIOR TO COMMENCING WORK.

ROADWAY TRENCH PATCH
NO SCALE

Tighe&Bond

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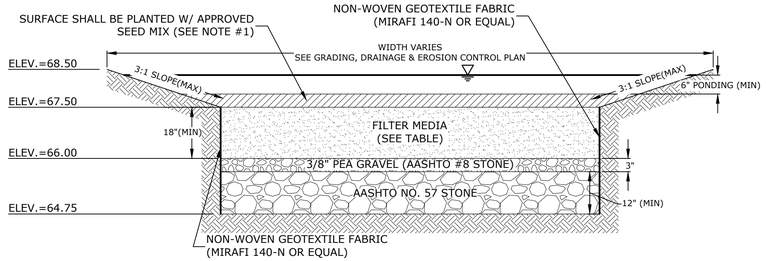


SECTION VIEW

FILTER MEDIA COMPOSITION:

COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	GRADATION OF MATERIAL SIEVE NO.	PERCENT PASSING
ASTM C-33 CONCRETE SAND	50-55	SEE NOTE #5	
LOAMY SAND TOPSOIL	20-30	200	15-25
MODERATELY FINE SHREDDED BARK OR WOOD FIBER MULCH	20-30	200	5 MAX

NOTES:
1. SEED MIX SHALL CONSIST OF:
   1.1. 50% NEW ENGLAND PLANTS -- NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS & MOIST SITES
   1.2. 50% NEW ENGLAND PLANTS -- NEW ENGLAND CONSERVATION WILDLIFE MIX
2. RAIN GARDENS SHALL NOT BE PLACED INTO SERVICE UNTIL THE PRACTICE HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. CONTRACTOR SHALL KEEP ALL EXCAVATION EQUIPMENT OUTSIDE OF THE LIMIT OF THE RAIN GARDEN.
4. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR LOCATIONS, LAYOUTS, AND ELEVATIONS.
5. THE SAND PORTION OF THE FILTER MEDIA SHALL MEET THE FOLLOWING GRADATION (ASTM C-33):

SIEVE SIZE	PERCENT PASSING
3/8"	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	5-30
#100	0-10

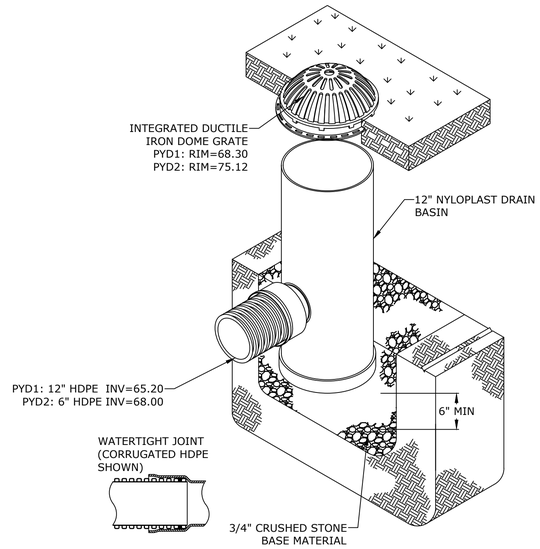
AASHTO #8 STONE (#8 to 3/8")

SIEVE SIZE	% PASSING
1/2"	100
3/8"	85-100
#4	10-30
#8	0-10
#16	0-5

AASHTO #57 STONE (#4 to 1")

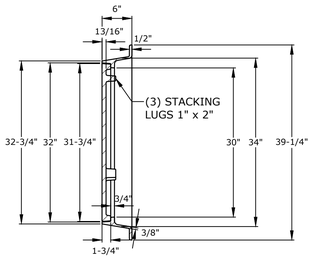
SIEVE SIZE	% PASSING
1-1/2"	100
1"	95-100
1/2"	25-60
#4	0-10
#8	0-5

RAIN GARDEN #1
NO SCALE

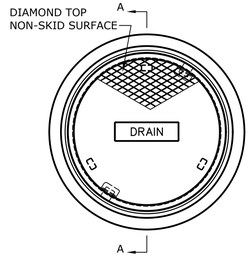


NOTES:
1. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR LOCATION.

PROPOSED YARD DRAIN (PYD1 & 2)
NO SCALE



SECTION A-A

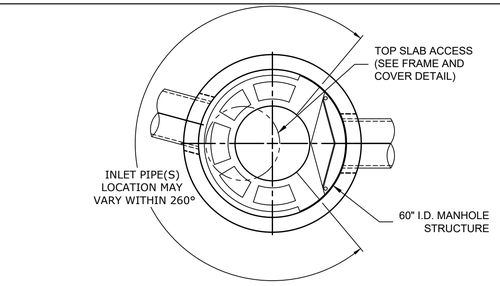


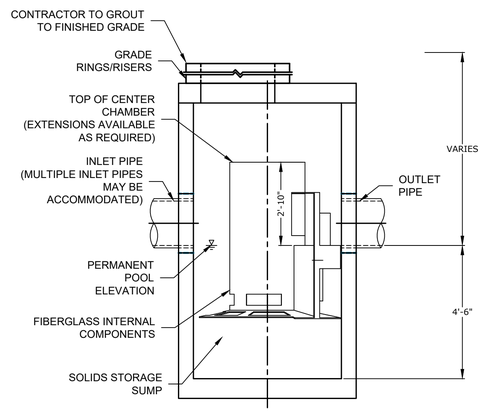
PLAN

NOTES:
1. ALL DIMENSIONS ARE NOMINAL.
2. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
3. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN HE CENTER OF THE COVER.

DRAIN MANHOLE FRAME & COVER
NO SCALE

Tighe&Bond





CASCADE SEPARATOR DESIGN NOTES
THE STANDARD CS-5 CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.
CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES

CONTECH

FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	#1
MODEL SIZE	CS-5
WATER QUALITY FLOW RATE (cfs)	2.304
PEAK FLOW RATE (cfs)	7.96
RETURN PERIOD OF PEAK FLOW (yrs)	25
INLET PIPE 1, 18" HDPE, L=4'	61.45
INLET PIPE 2, 12" HDPE, L=116'	66.85
OUTLET PIPE, 18" HDPE, L=8'	61.35

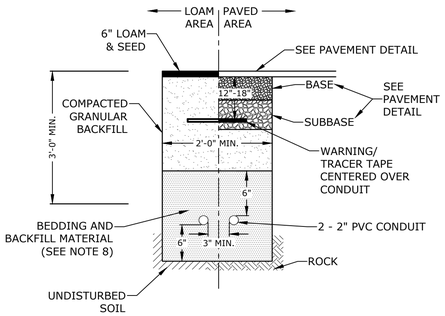
GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CASCADE SEPARATOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. CASCADE SEPARATOR STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' [610], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. CASCADE SEPARATOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CASCADE SEPARATOR MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CASCADE separator™

CASCADE SEPARATOR® (CS-5)
NO SCALE



GRANULAR FILL (GRAVEL)	
SIEVE SIZE	% PASSING
3"	95-100
#4	25-70

SAND BEDDING	
SIEVE SIZE	% PASSING
1/2"	100
#200	15 MAX

NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
2. DIMENSIONS SHOWN REPRESENT MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
3. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
8. SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE SHOWN ON THE UTILITIES PLAN.
9. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW CONDUIT UP TO 6" ABOVE TOP OF CONDUIT.

LIGHTING CONDUIT TRENCH
NO SCALE

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

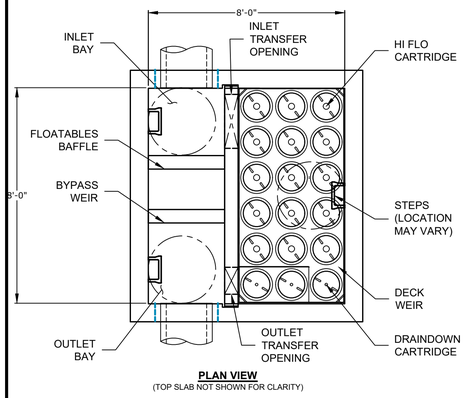
PROJECT NO:	L-0700-021
DATE:	June 21, 2021
FILE:	L-0700-021-C-DTLS.DWG
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS

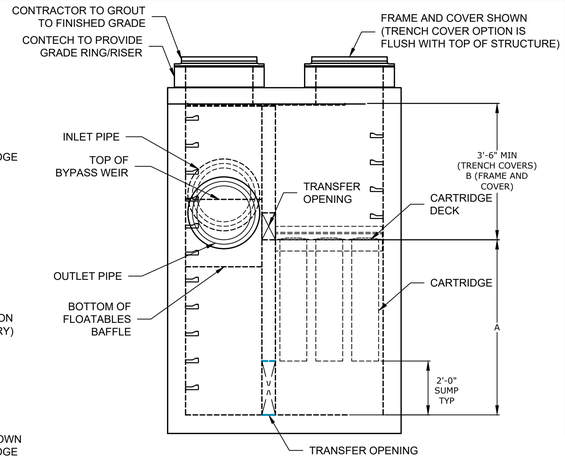
SCALE: AS SHOWN

C-505

Last Saved: 6/17/2021
Plotted On: Jun 17, 2021 - 8:34am By: JWinston
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576ft\021_Lynx Project\Drawings, Figures\AutoCAD\L-0700-021-C-DTLS.dwg

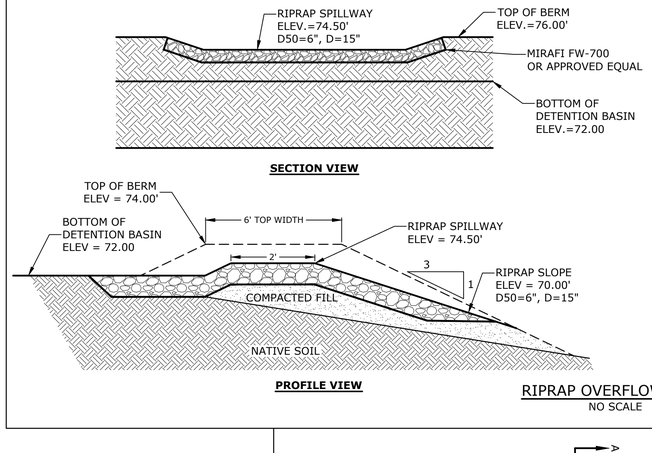


PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

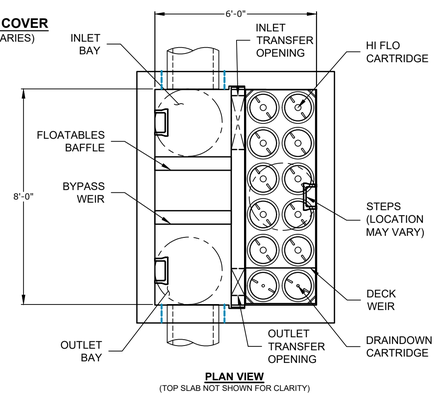
JELLYFISH JFPD0808



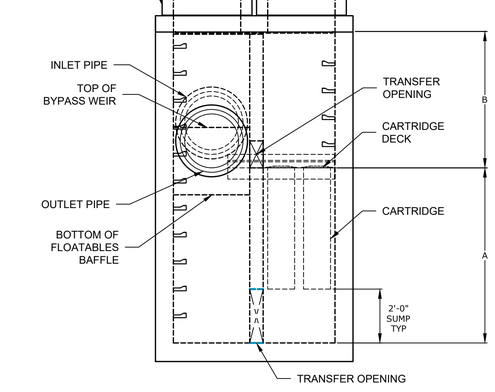
RIPRAP OVERFLOW WEIR
NO SCALE

NOTES:
1. SEE GRADING, DRAINAGE & EROSION CONTROL PLANS, SHEET C-103, FOR LOCATIONS AND ELEVATIONS.
2. THE FOUNDATION AREA OF THE SPILLWAY SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE SPILLWAY.
3. EARTH FILLS REQUIRED TO MEET SUBGRADE REQUIREMENTS BECAUSE OF OVER EXCAVATION OR TOPOGRAPHY SHALL BE COMPACTED TO THE SAME DENSITY AS THE SURROUNDING SOIL TO PREVENT UNEQUAL SETTLEMENT THAT COULD CAUSE DAMAGE TO THE COMPLETED SPILLWAY.
4. RIP-RAP SHALL BE PLACED IN THE SPILLWAY PRIOR TO ALLOWING STORMWATER RUNOFF TO FLOW OVER THE WEIR.
5. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING PLACEMENT OF THE ROCK RIPRAP BY PLACING A CUSHION OF SAND OVER THE FABRIC. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
6. A WELL GRADED MIXTURE OF ROCK SIZES SHALL BE USED FOR THE STONE. FIFTY PERCENT BY WEIGHT OF THE STONE MIXTURE SHALL BE SMALLER THAN THE MEDIAN SIZE STONE (d50). THE LARGEST STONE SIZE IN THE MIXTURE SHALL BE 1.5 TIMES THE d50 SIZE.
7. STONES FOR RIPRAP SHALL BE ANGULAR OR SUBANGULAR. THE STONES SHALL BE SHAPED SO THAT THE LEAST DIMENSION OF THE STONE FRAGMENT SHALL BE NOT LESS THAN ONE-THIRD OF THE GREATEST DIMENSION OF THE FRAGMENT. FLAT ROCKS SHALL NOT BE USED FOR RIPRAP.
8. STONE FOR THE RIPRAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT DISPLACEMENT OF THE UNDERLYING MATERIALS. HAND PLACEMENT MAY BE REQUIRED TO PREVENT DAMAGE TO ANY PERMANENT STRUCTURES.
9. VOIDS IN THE ROCK RIPRAP SHOULD BE FILLED WITH SPALLS AND SMALLER ROCKS.
10. RIPRAP CHANNELS SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO SEE THAT ROCK IS STILL IN PLACE. IF ROCK HAS BEEN DISPLACED OR UNDERMINED, THE DAMAGED AREAS SHALL BE REPAIRED IMMEDIATELY.
11. WOODY VEGETATION SHALL NOT BE ALLOWED TO BECOME ESTABLISHED IN THE ROCK RIPRAP, AND DEBRIS SHALL NOT BE ALLOWED TO ACCUMULATE IN THE CHANNEL.

FRAME AND COVER
(DIAMETER VARIES)
N.T.S.



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

JELLYFISH JFPD0806

JELLYFISH JFPD0806 - DESIGN NOTES				
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD				
CARTRIDGE SELECTION				
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	1.96	1.47	0.98	0.54
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00

JELLYFISH JFPD0808 - DESIGN NOTES				
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD				
CARTRIDGE SELECTION				
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	2.94	2.21	1.47	0.81
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00

SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID	JF-1	JF-2	JF-3
MODEL SIZE	JFPD0806	JFPD0806	JFPD0806
WATER QUALITY FLOW RATE (cfs)	2.304	0.904	0.585
PEAK FLOW RATE (cfs)	7.96	6.51	9.04
RETURN PERIOD OF PEAK FLOW (yrs)	25	25	25
# OF CARTRIDGES REQUIRED (HF / DD)	5/1	5/1	5/1
CARTRIDGE SIZE	54"	40"	54"

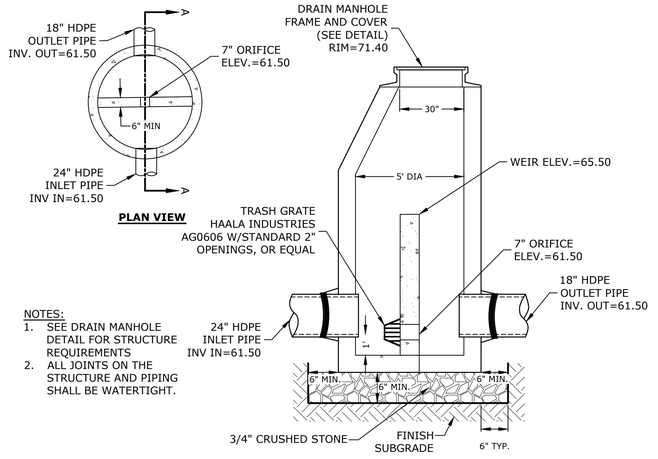
GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 3', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION AT (866) 740-3318.

Jellyfish® Filter
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING: U.S. PATENT NO. 8,287,726, 8,221,618 & US 8,123,930. OTHER INTERNATIONAL PATENTS PENDING

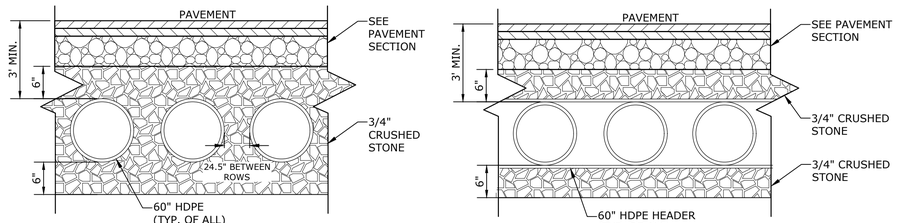
CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

JELLYFISH® FILTER DETAIL
NO SCALE



NOTES:
1. SEE DRAIN MANHOLE DETAIL FOR STRUCTURE REQUIREMENTS
2. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.

OUTLET CONTROL STRUCTURE (OCS1)
NO SCALE



FIELD ELEVATIONS				
	TOP OF STONE ELEV	TOP OF PIPE ELEV	BOTTOM OF PIPE ELEV	BOTTOM OF STONE ELEV
UDB	67.00'	66.50'	61.50'	61.00'

NOTES:
1. UNDERGROUND DETENTION SYSTEM TO BE 60" HDPE PIPE DESIGNED FOR H-20 LOADING. CONTRACTOR TO SUBMIT PIPE SPECIFICATIONS AND FINAL MANUFACTURES DESIGN TO ENGINEER FOR APPROVAL.
2. MANUFACTURER TO SUBMIT PLANS STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.
3. THE DESIGN ENGINEER SHALL PROVIDE SUFFICIENT INSPECTION TO CERTIFY THAT THE SYSTEM HAS BEEN INSTALLED PER THE APPROVED DESIGN PLAN.
4. REFER TO STANDARD DUTY PAVEMENT SECTION DETAIL FOR PAVEMENT SECTION.

UNDERGROUND DETENTION SYSTEM DETAIL
NO SCALE

Tighe&Bond

STATE OF NEW HAMPSHIRE — BRADLEE MEZQUITA No. 08830 LICENSED PROFESSIONAL ENGINEER — 6-21-21

STATE OF NEW HAMPSHIRE — PATRICK M. CRIMMINS No. 12378 LICENSED PROFESSIONAL ENGINEER — 6-21-21

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

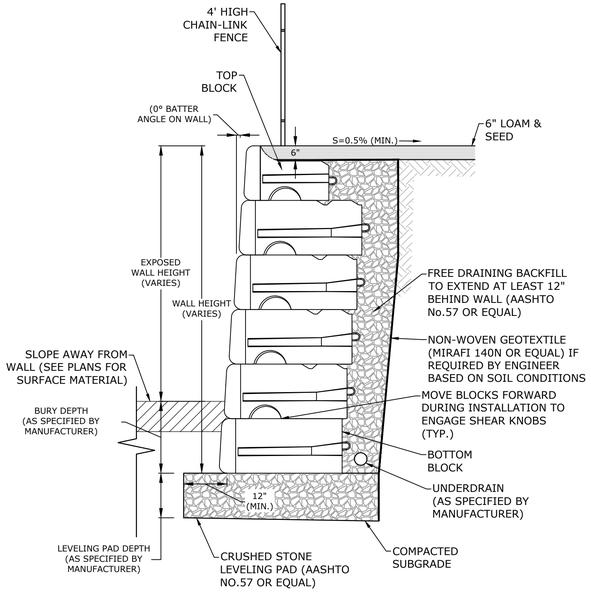
PROJECT NO:	L-0700-021
DATE:	June 21, 2021
FILE:	L-0700-021-C-DTLS.DWG
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS

SCALE: AS SHOWN

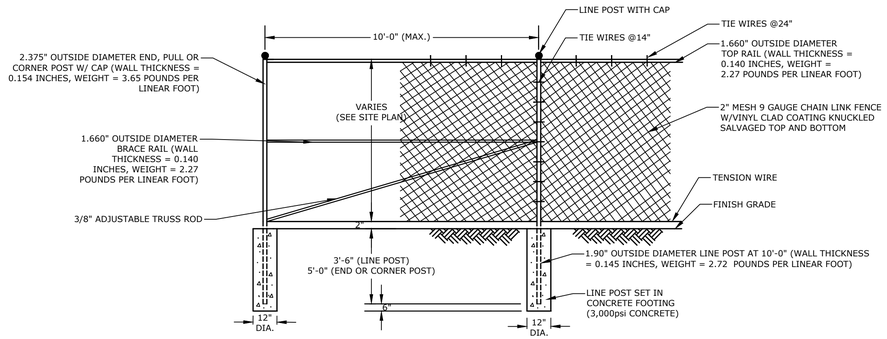
C-506

Last Saved: 6/17/2021
Plotted On: Jun 17, 2021 - 8:34am By: JWinston
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings_ Figures\AutoCAD\L-0700-021-C-DTLS.dwg



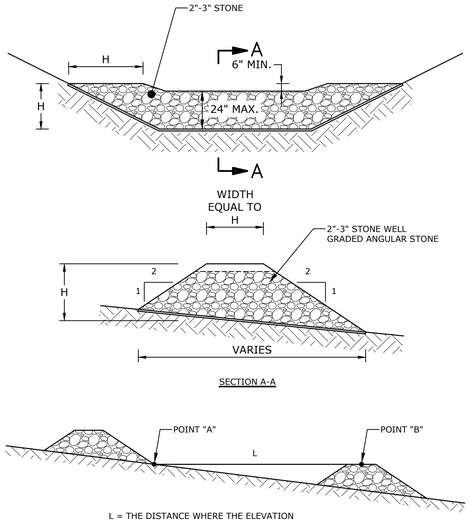
NOTES:
1. RETAINING WALL SHALL BE BY REDI ROCK LEDGESTONE OR APPROVED EQUAL.
2. THE CONTRACTOR SHALL SUBMIT DESIGN AND CALCULATIONS FOR THE RETAINING WALL THAT SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE. CALCULATIONS SHALL INCLUDE A GLOBAL STABILITY ANALYSIS.
3. MINIMUM DESIGN PARAMETERS:
   - GLOBAL STABILITY FACTOR OF SAFETY = 1.3
   - OVERTURNING FACTOR OF SAFETY = 1.5
   - SLIDING FACTOR OF SAFETY = 1.5
   - GEOGRID PULLOUT FACTOR OF SAFETY = 1.5
   - SEISMIC FACTOR OF SAFETY = 1.1
4. WALL DESIGNS SHALL CONSIDER EFFECTS OF SLOPE, TRAFFIC LOADS, BUILDING LOADS, GUARDRAIL AND/OR FENCING AS REQUIRED.
5. WALL DESIGN ENGINEER SHALL CONSIDER HEIGHT AND SPECIFY FENCE WHERE REQUIRED
6. ALL INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION MANUAL AND THE WALL DESIGN ENGINEER'S DESIGN PLANS AND SPECIFICATIONS.
7. THE WALL DESIGN ENGINEER SHALL COMPLETE SUFFICIENT INSPECTIONS DURING CONSTRUCTION TO CERTIFY WORK IS COMPLETED IN ACCORDANCE WITH DESIGN.
8. CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS OF WALL WITH WALL DESIGNER'S CERTIFICATION TO OWNER.
9. CONTRACTOR SHALL DIRECT SURFACE RUNOFF AWAY FROM THE WALL DURING CONSTRUCTION.
10. ANY SURFACE DRAINAGE FEATURES, FINISH GRADING, PAVEMENT OR OTHER SURFACE TREATMENT SHALL BE INSTALLED IN THE AREA OF THE WALL IMMEDIATELY AFTER THE WALL IS COMPLETE OR OTHER MEASURES SHALL BE TAKEN TO PROTECT THE WALL FROM RUNOFF.
11. CONTRACTOR SHALL SUPPLY SAMPLE TO THE OWNER FOR APPROVAL PRIOR TO WALL CONSTRUCTION.

TYPICAL BLOCK RETAINING WALL SECTION
NO SCALE



NOTES:
1. CORNER POSTS SHALL BE USED AT SHARP BREAKS IN GRADE AND CHANGES IN HORIZONTAL ALIGNMENT OF 15' OR MORE.
2. POSTS, RAILS & BRACES SHALL BE TYPE I, SCHEDULE 40 BLACK VINYL COATED PIPE.
3. FABRIC TO BE BLACK VINYL COATED.
4. TIE WIRES SHALL BE 9 GAUGE GALVANIZED STEEL WIRE FOR ATTACHMENT OF FABRIC TO LINE POSTS.
5. TIE WIRES SHALL BE 13 GAUGE GALVANIZED STEEL WIRE FOR ATTACHMENT OF FABRIC TO RAILS AND BRACES.
6. HOG RING TIES SHALL BE 12- 1/2 GAUGE GALVANIZED STEEL WIRE FOR ATTACHMENT OF FABRIC TO TENSION WIRE.

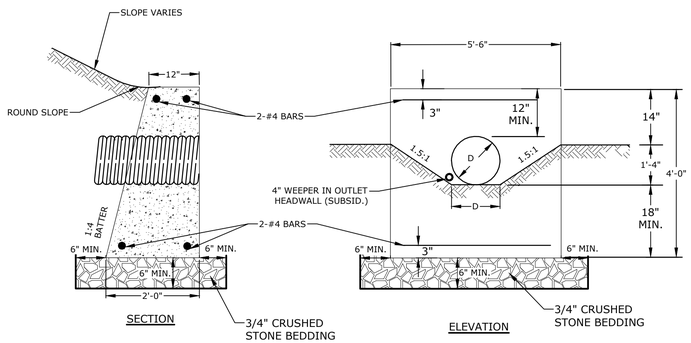
CHAIN LINK FENCE
NO SCALE



BERM STONE SIZE	
SIEVE DESIGNATION (US CUSTOMARY)	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
12 IN	100
6 IN	84-100
3 IN	68-83
1 IN	42-55
NO. 4	8-12

NOTES:
1. CHECK DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE OR DRAINAGE DITCH.
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE DAM SHOULD BE LESS THAN ONE ACRE.
3. THE CHECK DAM SHOULD NOT BE USED IN A FLOWING STREAM.
4. CHECK DAMS SHOWN ON THE DRAWINGS SHALL BE LEFT IN PLACE PERMANENTLY.
5. CHECK DAMS INSTALLED AS PART OF TEMPORARY EROSION CONTROL MEASURE SHALL BE REMOVED ONCE THE SWALE OR DITCH HAS BEEN STABILIZED:
   a. IN TEMPORARY DITCHES AND SWALES, CHECK DAMS SHOULD BE REMOVED AND THE DITCH FILLED IN WHEN IT IS NO LONGER NEEDED
   b. IN PERMANENT STRUCTURES, CHECK DAMS SHOULD BE REMOVED WHEN PERMANENT LINING HAS BEEN ESTABLISHED. IF THE PERMANENT LINING IS VEGETATION, THEN THE CHECK DAM SHOULD BE RETAINED UNTIL THE GRASS HAS MATURED TO PROTECT THE DITCH OR SWALE. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL.

STONE CHECK DAM
NO SCALE



PRECAST CONCRETE HEADWALL
NO SCALE

Tighe&Bond

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

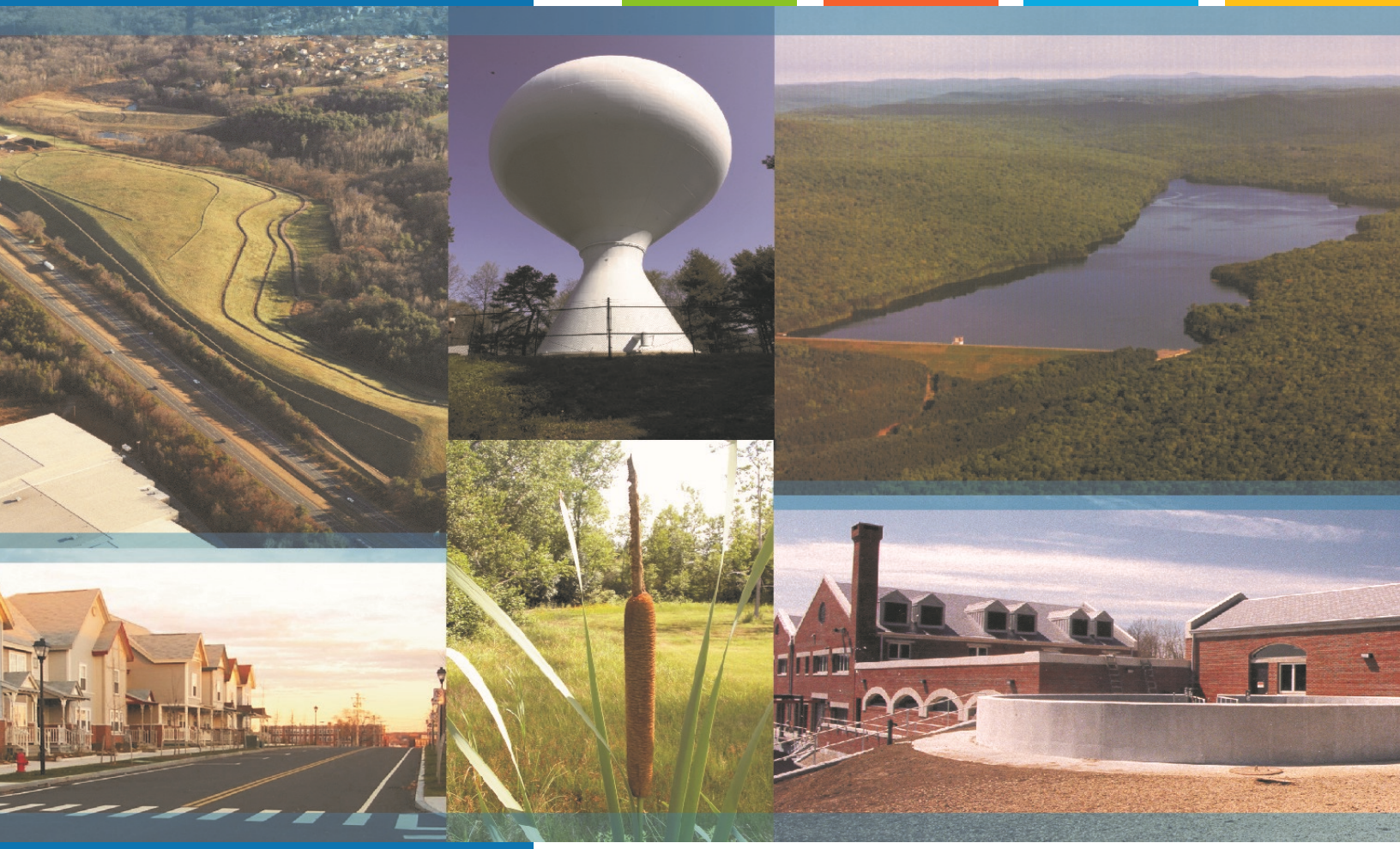
PROJECT NO:	L-0700-021
DATE:	June 21, 2021
FILE:	L-0700-021-C-DTLS.DWG
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

DETAILS

SCALE: AS SHOWN

C-507

Last Saved: 6/18/2021
Plotted On: Jun 21, 2021-8:09am By: NAHansen
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings_Figures\AutoCAD\L-0700-021-C-DTLS.dwg

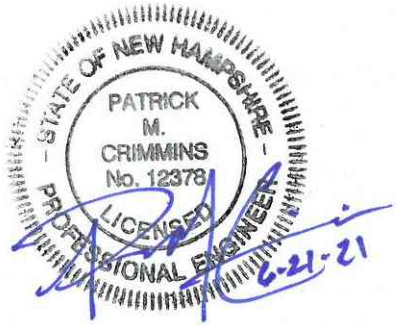


Lynx Parking Expansion at Lonza Biologics, Inc.

City of Portsmouth, NH

Drainage Analysis

Prepared For:



Lonza Biologics, Inc.

101 International Drive

Portsmouth, New Hampshire 03801

June 21, 2021

100% Recyclable

Section 1 Narrative

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1.2 Pre- & Post-Development Flow Comparison 1-1
1.3 Best Management Practices 1-2

Section 2 BMP Worksheets

Section 3 Drainage Analysis

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Section 4 Rip Rap Apron Calculations

Section 1
Narrative

The proposed project is to expand Lonza Biologics parking to support its growing product development services to the pharmaceutical and biologic industries. Lonza's existing facilities are located at 101 International Drive. The project will merge 2.66 acres of 55 International Drive with 101 International Drive to create a 46-acre parcel for Lonza's campus. The proposed project includes the construction of a new 200 space parking lot adjacent to the existing parking garage. The project will consist of associated site improvements such as lighting, landscaping and stormwater management that will include underground detention, one (1) hydrodynamic separator, three (3) proprietary flow through treatment filtration devices and a small detention basin.

1.1 On-Site Soil Description

The site consists of terrain that is generally sloping from the southeast to the north of the site towards a culvert/closed drainage system at the corner of Corporate and Goose Bay Drives. The existing property has an approximate high point of elevation 92 near the Pease Development Authority parking lot.

A site-specific soils survey was conducted by Leonard Lord, PhD, CSS, CWS of Tighe & Bond, Inc on April 9, 2021 and can be found in Section 9 of this Report. Based on the soil survey, the runoff analyzed within these studies has been modeled using Hydrologic Soil Group C soils, as much of the site is comprised of Woodbridge, Udorthents, Endoaquents, and Ridgebury soils with three drainage classifications, poorly drained, somewhat poorly drained and mostly moderately well drained soils.

1.2 Pre- & Post-Development Flow Comparison

For the purposes of this analysis, runoff generated by the site has been analyzed at two (2) distinct points of analysis (PA-1 and PA-2). These points of analysis were chosen to be able to compare the Pre-Development and Post-Development flows. PA-1 is located at the existing 12" PVC culvert at the corner of Corporate and Goose Bay Drives. PA-2 is located at the existing Catch Basin near the existing parking garage entrance off Goose Bay Drive.

The peak discharge rates at these points of analysis were determined by analyzing Type III 24-hour storm events. The rainfall data for these storm events was obtained from the data published by the Northeast Regional Climate Center at Cornell University which can be found in Appendix A.

Additionally, the site is located within a Coastal and Great Bay Community, therefore an added factor of safety of 15% was included as required by Env-Wq 1503.08(l).

Table 1.2

Comparison of Pre- and Post-Development Flows (CFS)

	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm
Pre-Development Watershed				
PA-1	6.98	14.26	20.20	25.90
PA-2	7.38	12.91	17.32	21.50
Post-Development Watershed				
PA-1	4.40	13.25	15.28	24.85
PA-2	7.00	12.14	17.25	21.31

The Peak Runoff Control Requirements of Env-Wq 1507.06 are required to be met for all points of analysis. As shown in Table 1.2 the Post-development flows are decreased from the Pre-development flows for all points of analysis.

1.3 Best Management Practices

All soil erosion and sediment control measures have been designed in accordance with the *NH Stormwater Manual, Volume 3: Erosion and Sediment Controls During Construction*. The intent of the outlined measures is to minimize erosion and sedimentation during construction, stabilize and protect the site from erosion after construction is complete and improve stormwater quality from the site. Best Management Practices for this project include:

- Temporary erosion and sediment control practices to be implemented during construction;
- Permanent stabilization practices to be implemented prior to the completion of construction;
- Stormwater treatment practices including three (3) Jellyfish Filters;
- Stormwater pre-treatment practices include a hydrodynamic separator (Cascade Separator® for pre-treatment; and
- Stormwater detention practices including an Underground Detention System and a Detention Pond.

Section 2
BMP Worksheets

GENERAL CALCULATIONS - WQV and WQF (optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

3.44	ac	A = Area draining to the practice
2.31	ac	A_I = Impervious area draining to the practice
0.67	decimal	I = Percent impervious area draining to the practice, in decimal form
0.65	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
2.25	ac-in	WQV= 1" x Rv x A
8,172	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.65	inches	Q = Water quality depth. Q = WQV/A
96	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.4	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.076	inches	Ia = Initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
655.0	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
2.304	cfs	WQF = q_u x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac.

Designer's Notes:

Jelly Fish #1

Peak flow=7.35 cfs

CONTECH Stormwater Solutions Inc. Engineer: JBS
Date Prepared: **6/3/2021**

Site Information

Project Name	**Lynx Parking Expansion - JF1**
Project State	**NH**
Project City	**Portsmouth**

Total Drainage Area, Ad	**3.44**	ac
Post Development Impervious Area, Ai	**2.31**	ac
Pervious Area, Ap	**1.13**	ac
% Impervious	**67%**	
Runoff Coefficient, Rc	**0.65**	

Mass Loading Calculations

Mean Annual Rainfall, P	**50**	in
Agency Required % Removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, Vt	**367701**	ft^3
Event Mean Concentration of Pollutant, EMC	**70**	mg/l
Annual Mass Load, M total	**1605.88**	lbs

Filter System

Filtration Brand	**Jelly Fish**	
Cartridge Length	**54**	in

Jelly Fish Sizing

Mass to be Captured by System	**1284.71**	lbs
Water Quality Flow	**2.30**	cfs

Method to Use **FLOW BASED**

Summary			
Flow	Treatment Flow Rate	2.41	cfs
	Required Size	**JFPD0808-12-3**	

GENERAL CALCULATIONS - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.93	ac	A = Area draining to the practice
0.93	ac	A_I = Impervious area draining to the practice
1.00	decimal	I = Percent impervious area draining to the practice, in decimal form
0.95	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.88	ac-in	WQV= 1" x Rv x A
3,207	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.95	inches	Q = Water quality depth. Q = WQV/A
100	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
0.0	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.009	inches	Ia = Initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
655.0	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.904	cfs	WQF = q_u x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac.

Designer's Notes:

Jelly Fish #2

Peak Flow = 6.52 cfs

CONTECH Stormwater Solutions Inc. Engineer: JBS
Date Prepared: **6/3/2021**

Site Information

Project Name	**Lynx Parking Expansion - JF2**
Project State	**NH**
Project City	**Portsmouth**

Total Drainage Area, Ad	**0.93**	ac
Post Development Impervious Area, Ai	**0.93**	ac
Pervious Area, Ap	**0.00**	ac
% Impervious	**100%**	
Runoff Coefficient, Rc	**0.95**	

Mass Loading Calculations

Mean Annual Rainfall, P	**50**	in
Agency Required % Removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, Vt	**144320**	ft^3
Event Mean Concentration of Pollutant, EMC	**70**	mg/l
Annual Mass Load, M total	**630.30**	lbs

Filter System

Filtration Brand	**Jelly Fish**	
Cartridge Length	**40**	in

Jelly Fish Sizing

Mass to be Captured by System	**504.24**	lbs
Water Quality Flow	**0.90**	cfs

Method to Use **FLOW BASED**

Summary			
Flow	Treatment Flow Rate	0.94	cfs
	Required Size	**JFPD0806-6-2**	

GENERAL CALCULATIONS - WQV and WQF
(optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

1.54	ac	A = Area draining to the practice
0.55	ac	A_I = Impervious area draining to the practice
0.36	decimal	I = Percent impervious area draining to the practice, in decimal form
0.37	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.57	ac-in	WQV= 1" x Rv x A
2,076	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.37	inches	Q = Water quality depth. Q = WQV/A
91	unitless	CN = Unit peak discharge curve number. CN =1000/(10+5P+10Q–10*[Q^2 + 1.25*Q*P] $^{0.5}$)
1.0	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.191	inches	Ia = Initial abstraction. Ia = 0.2S
5.0	minutes	T_c = Time of Concentration
655.0	cfs/mi^2/in	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.585	cfs	WQF = q_u x WQV. Conversion: to convert "cfs/mi^2/in * ac-in" to "cfs" multiply by 1mi^2/640ac.

Designer's Notes:
Jelly Fish #3
Peak Flow = 9.06 cfs

CONTECH Stormwater Solutions Inc. Engineer: JBS
Date Prepared: **6/3/2021**

Site Information

Project Name	**Lynx Parking Expansion - JF3**
Project State	**NH**
Project City	**Portsmouth**

Total Drainage Area, Ad	**1.54**	ac
Post Development Impervious Area, Ai	**0.55**	ac
Pervious Area, Ap	**0.99**	ac
% Impervious	**36%**	
Runoff Coefficient, Rc	**0.37**	

Mass Loading Calculations

Mean Annual Rainfall, P	**50**	in
Agency Required % Removal	**80%**	
Percent Runoff Capture	**90%**	
Mean Annual Runoff, Vt	**93436**	ft^3
Event Mean Concentration of Pollutant, EMC	**70**	mg/l
Annual Mass Load, M total	**408.07**	lbs

Filter System

Filtration Brand	**Jelly Fish**
Cartridge Length	**54** in

Jelly Fish Sizing

Mass to be Captured by System	**326.46**	lbs
Water Quality Flow	**0.59**	cfs

Method to Use **FLOW BASED**

Summary			
Flow	Treatment Flow Rate	0.62	cfs
	Required Size	**JFPD0806-3-1**	

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Rain Garden (Previously Approved)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.51	ac	A = Area draining to the practice	
0.25	ac	A_I = Impervious area draining to the practice	
0.49	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.49	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.25	ac-in	WQV= 1" x Rv x A	
909	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
227	cf	25% x WQV (check calc for sediment forebay volume)	
682	cf	75% x WQV (check calc for surface sand filter volume)	
		Method of Pretreatment? (not required for clean or roof runoff)	
	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
-	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
-	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
68.67	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
69.00	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
3,587	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet C-505		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

Previously approved AoT Permit: AoT-1498A

GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION (Env-Wq 1507.04)

	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
1.60	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.10	inches	Rd = Weighted groundwater recharge depth	
0.16	ac-in	GRV = AI * Rd	
581	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12”)	

Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

A waiver is being requested for this requirement.

Section 3
Drainage Analysis

3.1 Calculation Methods

The design storms analyzed in this study are the 2-year, 10-year, 25-year and 50-year 24-hour duration storm events. The stormwater modeling system, HydroCAD 10.0 was utilized to predict the peak runoff rates from these storm events. A Type III storm pattern was used in the model.

The time of concentration was computed using the TR-55 Method, which provides a means of determining the time for an entire watershed to contribute runoff to a specific location via sheet flows, shallow concentrated flow and channel flow. Runoff curve numbers were calculated by estimating the coverage areas and then summing the curve number for the coverage area as a percent of the entire watershed.

References:

1. HydroCAD Stormwater Modeling System, by HydroCAD Software Solutions LLC, Chocorua, New Hampshire.

2. New Hampshire Stormwater Management Manual, Volume 2, Post-Construction Best Management Practices Selection and Design, December 2008.

3. "Extreme Precipitation in New York & New England." Extreme Precipitation in New York & New England by Northeast Regional Climate Center (NRCC), 26 June 2012.

3.2 Pre-Development Conditions

To analyze the Pre-Development conditions, the site has been modeled utilizing two (2) distinct points of analysis (PA-1 and PA-2). These points of analysis and watersheds are depicted on the plan entitled "Pre-Development Watershed Plan", Sheet C-801.

The points of analysis and their contributing watershed areas are described below:

Point of Analysis One (PA-1)

Point of Analysis 1 is comprised of one (1) subcatchment area (PRE-1.0). This area includes a portion of the paved area behind the existing Pease Development Authority building, a wooded area, a wetland area, and the grassed area along the edge of Corporate and Goose Bay Drives. Runoff from this area travels north via overland flow to a closed drainage system to Point of Analysis 1.

Point of Analysis Two (PA-2)

Point of Analysis 2 is comprised of two (2) subcatchment areas (PRE-2.0 & 2.1). This area includes the existing parking garage, grass area along Goose Bay Drive, and a portion of the parking and open area behind the existing Pease Development Authority building.

Runoff from Pre-2.0 is from the existing parking garage. Runoff from this area

enters a closed drainage system and is combined with runoff from Pre-2.1 downstream of the existing rip rap swale at PA-2.

Runoff from Pre-2.1 begins in the paved parking/driveway area of the Pease Development Authority building and travels northwest via overland flow to an existing closed drainage system and eventually to Point of Analysis 2. Runoff from PA-2 ultimately discharges to an existing on-site detention basin.

3.2.1 Pre-Development Watershed Plan

3.2.2 Pre-Development Soil Plan

3.2.3 Pre-Development Calculation

SITE SPECIFIC SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

MAP NUMBER*/ DISTURBED SOIL NUMERATOR**	SOIL TYPE	HSG
29C	WOODBRIDGE	C
299A/dcccc	UDORTHENTS, SMOOTHED	C
500E/dcccc	UDORTHENTS, LOAMY	C
600*/fcccc	ENDOAQUENTS, LOAMY	C
926*	RIDGEBURY	C

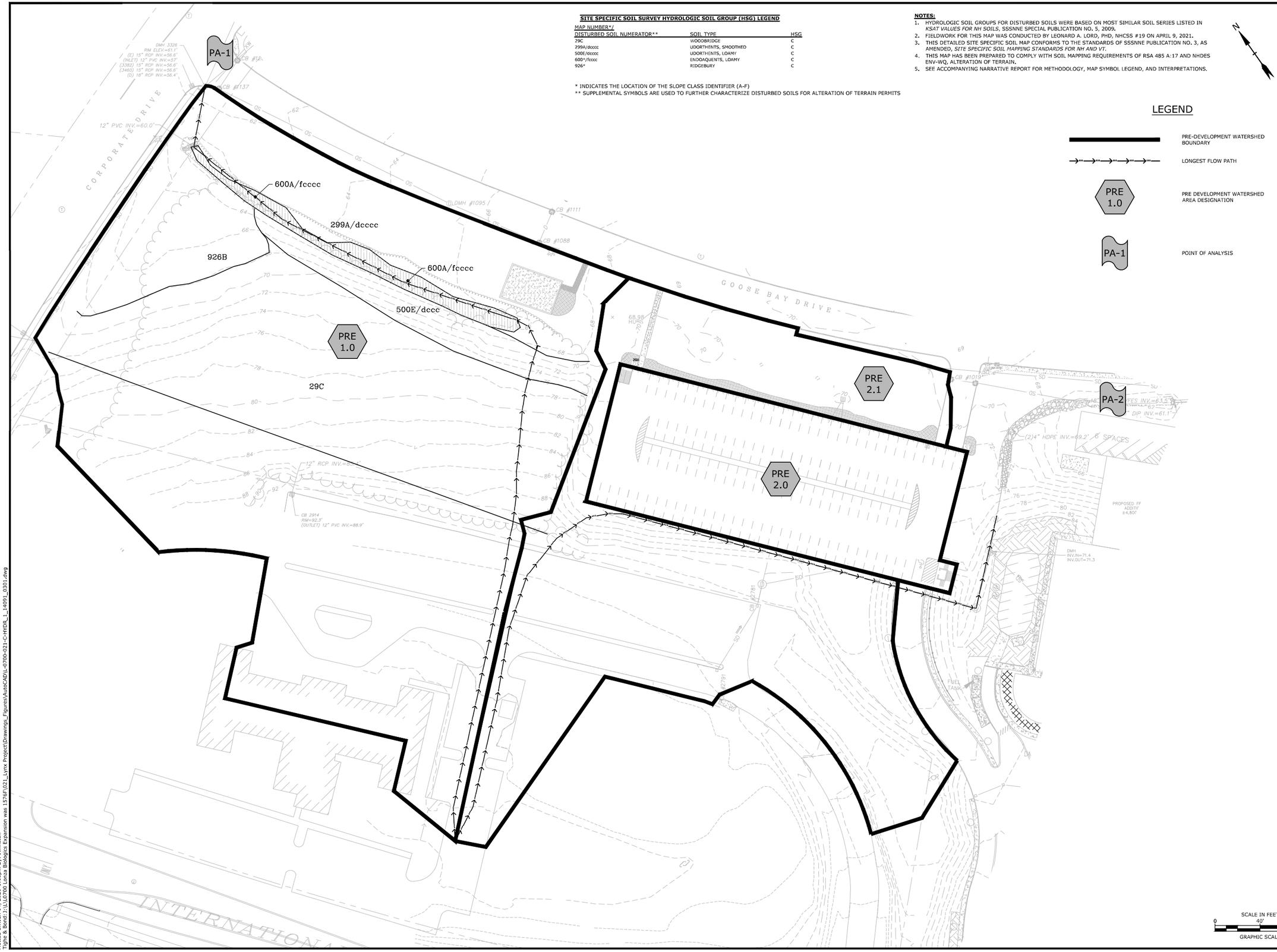
* INDICATES THE LOCATION OF THE SLOPE CLASS IDENTIFIER (A-F)
** SUPPLEMENTAL SYMBOLS ARE USED TO FURTHER CHARACTERIZE DISTURBED SOILS FOR ALTERATION OF TERRAIN PERMITS

NOTES:
1. HYDROLOGIC SOIL GROUPS FOR DISTURBED SOILS WERE BASED ON MOST SIMILAR SOIL SERIES LISTED IN *KSAT VALUES FOR NH SOILS*, SSSNNE SPECIAL PUBLICATION NO. 5, 2009.
2. FIELDWORK FOR THIS MAP WAS CONDUCTED BY LEONARD A. LORD, PHD, NHCSS #19 ON APRIL 9, 2021.
3. THIS DETAILED SITE SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, *SITE SPECIFIC SOIL MAPPING STANDARDS FOR NH AND VT*.
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

N

LEGEND

- PRE-DEVELOPMENT WATERSHED BOUNDARY
- LONGEST FLOW PATH
- PRE 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- PA-1 — POINT OF ANALYSIS



Tighe&Bond

Lynx Parking Expansion

Lonza Biologics

Portsmouth,
New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

PROJECT NO:	L-0700-021
DATE:	June 21, 2021
FILE:	L-0700-021-C-HYDR_1_14091_0301.DWG
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

PRE-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-801

Last Saved: 6/14/2021
Plotted On: Jun 14, 2021-1:16pm By: JWinston
Tighe & Bond: J:\LL\0700 Lonza Biologics Expansion was 1576\021_Lynx Project\Drawings_Figures\AutoCADs\L-0700-021-C-HYDR_1_14091_0301.dwg

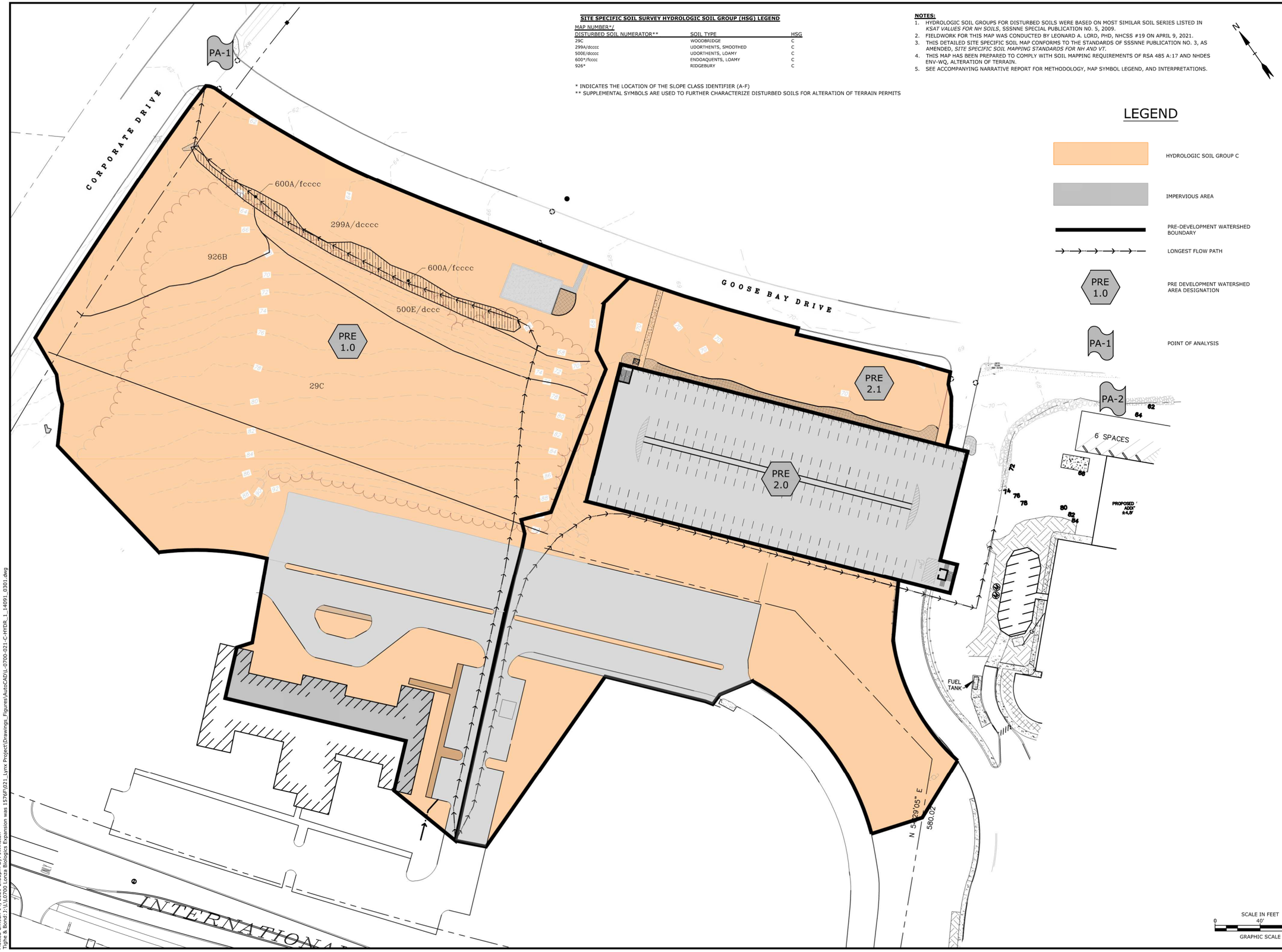
SITE SPECIFIC SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

MAP NUMBER*/ DISTURBED SOIL NUMERATOR**	SOIL TYPE	HSG
29C	WOODBRIDGE	C
299A/dcccc	UDORTHENTS, SMOOTHED	C
500E/dcccc	UDORTHENTS, LOAMY	C
600*/fcccc	ENDOAQUENTS, LOAMY	C
926*	RIDGEBURY	C

* INDICATES THE LOCATION OF THE SLOPE CLASS IDENTIFIER (A-F)
** SUPPLEMENTAL SYMBOLS ARE USED TO FURTHER CHARACTERIZE DISTURBED SOILS FOR ALTERATION OF TERRAIN PERMITS

NOTES:

1. HYDROLOGIC SOIL GROUPS FOR DISTURBED SOILS WERE BASED ON MOST SIMILAR SOIL SERIES LISTED IN *KSAT VALUES FOR NH SOILS*, SSSNNE SPECIAL PUBLICATION NO. 5, 2009.
2. FIELDWORK FOR THIS MAP WAS CONDUCTED BY LEONARD A. LORD, PHD, NHCSS #19 ON APRIL 9, 2021.
3. THIS DETAILED SITE SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, *SITE SPECIFIC SOIL MAPPING STANDARDS FOR NH AND VT*.
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.



Tighe&Bond

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

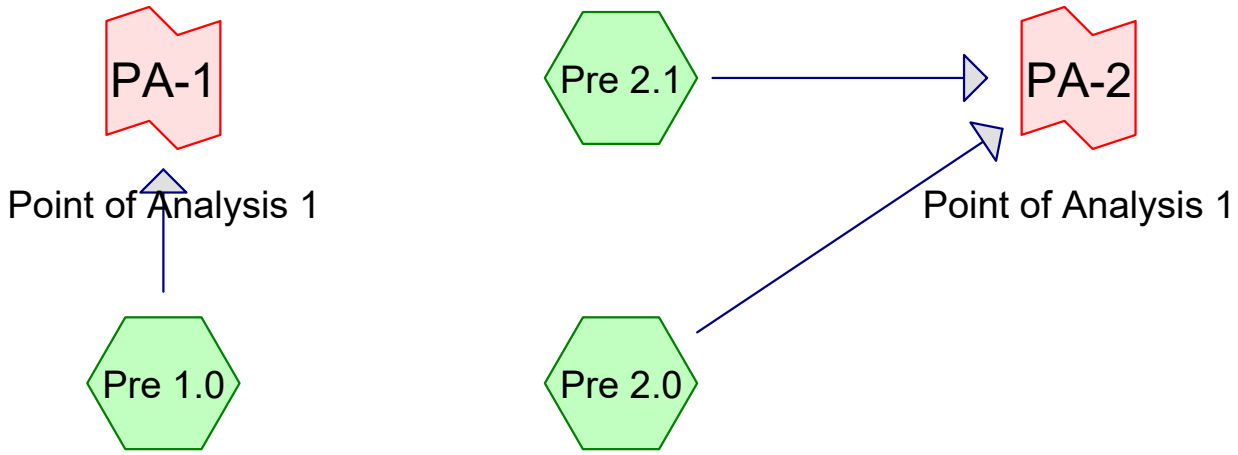
PROJECT NO:	L-0700-021
DATE:	June 21, 2021
FILE:	L-0700-021-C-HYDR_1_14091_0301.DWG
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

PRE-DEVELOPMENT SOIL PLAN

SCALE: AS SHOWN

C-803

Last Saved: 6/14/2021
Plotted: Jun 14, 2021 - 2:35pm By: JWinston
Tighe & Bond:J:\L\L0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings_Figures\AutoCAD\L-0700-021-C-HYDR_1_14091_0301.dwg



Subcat Reach Pond Link

Routing Diagram for L-0700-021-PRE
Prepared by Tighe & Bond, Printed 6/11/2021
HydroCAD® 10.00-20 s/n 03436 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.015	74	>75% Grass cover, Good, HSG C (Pre 1.0, Pre 2.1)
0.039	89	Gravel roads, HSG C (Pre 1.0)
1.180	98	Paved parking, HSG C (Pre 1.0, Pre 2.1)
1.087	98	Roofs, HSG C (Pre 1.0, Pre 2.0)
1.996	70	Woods, Good, HSG C (Pre 1.0)
7.317	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
7.317	HSG C	Pre 1.0, Pre 2.0, Pre 2.1
0.000	HSG D	
0.000	Other	
7.317		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPre 1.0: Runoff Area=187,430 sf 17.98% Impervious Runoff Depth>1.56"
Flow Length=862' Tc=8.5 min CN=77 Runoff=6.98 cfs 0.560 af

SubcatchmentPre 2.0: Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>3.44"
Tc=5.0 min CN=98 Runoff=3.36 cfs 0.267 af

SubcatchmentPre 2.1: Runoff Area=90,717 sf 26.94% Impervious Runoff Depth>1.78"
Flow Length=762' Tc=6.8 min CN=80 Runoff=4.16 cfs 0.309 af

Link PA-1: Point of Analysis1 Inflow=6.98 cfs 0.560 af
Primary=6.98 cfs 0.560 af

Link PA-2: Point of Analysis1 Inflow=7.38 cfs 0.576 af
Primary=7.38 cfs 0.576 af

Total Runoff Area = 7.317 ac Runoff Volume = 1.137 af Average Runoff Depth = 1.86"
69.02% Pervious = 5.051 ac 30.98% Impervious = 2.267 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPre 1.0: Runoff Area=187,430 sf 17.98% Impervious Runoff Depth>3.12"
Flow Length=862' Tc=8.5 min CN=77 Runoff=14.26 cfs 1.118 af

SubcatchmentPre 2.0: Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>5.35"
Tc=5.0 min CN=98 Runoff=5.14 cfs 0.415 af

SubcatchmentPre 2.1: Runoff Area=90,717 sf 26.94% Impervious Runoff Depth>3.41"
Flow Length=762' Tc=6.8 min CN=80 Runoff=7.98 cfs 0.592 af

Link PA-1: Point of Analysis1 Inflow=14.26 cfs 1.118 af
Primary=14.26 cfs 1.118 af

Link PA-2: Point of Analysis1 Inflow=12.91 cfs 1.007 af
Primary=12.91 cfs 1.007 af

Total Runoff Area = 7.317 ac Runoff Volume = 2.126 af Average Runoff Depth = 3.49"
69.02% Pervious = 5.051 ac 30.98% Impervious = 2.267 ac

Summary for Subcatchment Pre 1.0:

Runoff = 14.26 cfs @ 12.12 hrs, Volume= 1.118 af, Depth> 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

	Area (sf)	CN	Description
	86,963	70	Woods, Good, HSG C
	65,062	74	>75% Grass cover, Good, HSG C
*	1,703	89	Gravel roads, HSG C
	26,959	98	Paved parking, HSG C
	6,743	98	Roofs, HSG C
	187,430	77	Weighted Average
	153,728		82.02% Pervious Area
	33,702		17.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0225	1.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.7	168	0.0357	3.84		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	18	0.0417	3.29		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.9	208	0.1260	0.89		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
2.6	313	0.0184	2.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	55	0.0545	10.59	8.32	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
8.5	862	Total			

Summary for Subcatchment Pre 2.0:

[49] Hint: Tc<2dt may require smaller dt

Runoff = 5.14 cfs @ 12.07 hrs, Volume= 0.415 af, Depth> 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
40,595	98	Roofs, HSG C
40,595		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment Pre 2.1:

Runoff = 7.98 cfs @ 12.10 hrs, Volume= 0.592 af, Depth> 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
66,279	74	>75% Grass cover, Good, HSG C
24,438	98	Paved parking, HSG C
90,717	80	Weighted Average
66,279		73.06% Pervious Area
24,438		26.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0225	1.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.7	170	0.0353	3.81		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	82	0.1620	6.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.8	410	0.0010	1.43	1.13	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.8	762	Total			

Summary for Link PA-1: Point of Analysis 1

Inflow Area = 4.303 ac, 17.98% Impervious, Inflow Depth > 3.12" for 10 Year Storm event
Inflow = 14.26 cfs @ 12.12 hrs, Volume= 1.118 af
Primary = 14.26 cfs @ 12.12 hrs, Volume= 1.118 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis 1

Inflow Area = 3.015 ac, 49.53% Impervious, Inflow Depth > 4.01" for 10 Year Storm event
Inflow = 12.91 cfs @ 12.09 hrs, Volume= 1.007 af
Primary = 12.91 cfs @ 12.09 hrs, Volume= 1.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPre 1.0: Runoff Area=187,430 sf 17.98% Impervious Runoff Depth>4.43"
Flow Length=862' Tc=8.5 min CN=77 Runoff=20.20 cfs 1.589 af

SubcatchmentPre 2.0: Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>6.84"
Tc=5.0 min CN=98 Runoff=6.52 cfs 0.531 af

SubcatchmentPre 2.1: Runoff Area=90,717 sf 26.94% Impervious Runoff Depth>4.76"
Flow Length=762' Tc=6.8 min CN=80 Runoff=11.05 cfs 0.827 af

Link PA-1: Point of Analysis1 Inflow=20.20 cfs 1.589 af
Primary=20.20 cfs 1.589 af

Link PA-2: Point of Analysis1 Inflow=17.32 cfs 1.358 af
Primary=17.32 cfs 1.358 af

Total Runoff Area = 7.317 ac Runoff Volume = 2.947 af Average Runoff Depth = 4.83"
69.02% Pervious = 5.051 ac 30.98% Impervious = 2.267 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPre 1.0: Runoff Area=187,430 sf 17.98% Impervious Runoff Depth>5.72"
Flow Length=862' Tc=8.5 min CN=77 Runoff=25.90 cfs 2.050 af

SubcatchmentPre 2.0: Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>8.25"
Tc=5.0 min CN=98 Runoff=7.82 cfs 0.640 af

SubcatchmentPre 2.1: Runoff Area=90,717 sf 26.94% Impervious Runoff Depth>6.08"
Flow Length=762' Tc=6.8 min CN=80 Runoff=13.98 cfs 1.055 af

Link PA-1: Point of Analysis1 Inflow=25.90 cfs 2.050 af
Primary=25.90 cfs 2.050 af

Link PA-2: Point of Analysis1 Inflow=21.50 cfs 1.696 af
Primary=21.50 cfs 1.696 af

Total Runoff Area = 7.317 ac Runoff Volume = 3.746 af Average Runoff Depth = 6.14"
69.02% Pervious = 5.051 ac 30.98% Impervious = 2.267 ac

3.3 Post-Development Conditions

The post-development drainage condition is characterized by six (6) watershed areas modeled at the same points of analysis as the pre-development condition. These points of analysis and watersheds are depicted on the plan entitled "Post Development Watershed Plan", Sheets C-802.

The points of analysis and their contributing watershed areas are described below:

Point of Analysis One (PA-1)

Point of Analysis 1 is comprised of three (3) subcatchment areas (Post 1.0, Post 1.1 & Post 1.2). PA-1 is located at the entrance of the closed drainage system at the corner of Corporate and Goose Bay Drives.

Runoff from Post 1.0 starts at the southern corner of the proposed paved parking and flows overland and then proposed to a closed drainage system where stormwater detention is utilized. Eventually the flow outlets thru hydrodynamic separator (Contech Cascade Separator®) and then flows through Jellyfish filter. Following the outlet of the treatment systems the flow meets the original point of the existing closed drainage system at Point of Analysis 1.

Runoff from Post 1.1 starts at the same origin as in the Pre-Development conditions, travels northeast via overland flow and to a conveyance swale where it enters a detention pond. The detention pond has been sized for the water quality volume which will flow to the downstream treatment train, which includes a hydrodynamic separator (Contech Cascade Separator®) as pre-treatment and a Jellyfish filter completing the treatment process. During higher flow storms, flows bypass the treatment and enter the proposed closed drainage system downstream. Runoff will ultimately outlet into the existing closed drainage system at the corner of Corporate and Goose Bay Drives.

Runoff from Post 1.2 starts at to the west of the proposed detention pond and runs along the edge of Corporate drive overland to the existing closed drainage system as mentioned in Post 1.0 & Post 1.1.

Point of Analysis Two (PA-2)

Point of Analysis 2 is comprised of three (3) subcatchment areas (Post 2.0, Post 2.1 & Post 2.2). PA-2 is located at the end of the existing rip rap swale and the flared end section downstream of the catchbasins located at the entrance of the existing parking garage.

Runoff from Post 2.0 starts at the same origin as in the Pre-Development conditions, travels northwest via overland flow and to an existing closed drainage system. The last segment of existing drainage pipe is proposed to be replaced and a Jellyfish filter added for additional treatment to the stormwater runoff. Downstream of the Jellyfish filter the stormwater will continue to the existing rip rap swale to PA-2.

Runoff from Post 2.1 is contained to the existing parking garage where the stormwater is captured via a closed drainage system and combined into Post 2.2 for treatment. The stormwater flow continues in an existing closed drainage

system to PA-2.

Runoff from Post 2.2 starts within the parking area adjacent to the existing parking garage and flows into a Rain Garden along Goose Bay Drive. A Yard Drain captures the runoff and enters a closed drainage system. The Rain Garden was a previously approved design.

3.3.1 Post-Development Watershed Plan

3.3.2 Post-Development Soil Plan

3.3.3 Post-Development Calculation

SITE SPECIFIC SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

MAP NUMBER*/ DISTURBED SOIL NUMERATOR**	SOIL TYPE	HSG
29C	WOODBRIDGE	C
299A/dcccc	UDORTHENTS, SMOOTHED	C
500E/dcccc	UDORTHENTS, LOAMY	C
600*/fcccc	ENDOAQUENTS, LOAMY	C
926*	RIDGEBURY	C

* INDICATES THE LOCATION OF THE SLOPE CLASS IDENTIFIER (A-F)
** SUPPLEMENTAL SYMBOLS ARE USED TO FURTHER CHARACTERIZE DISTURBED SOILS FOR ALTERATION OF TERRAIN PERMITS

NOTES:

1. HYDROLOGIC SOIL GROUPS FOR DISTURBED SOILS WERE BASED ON MOST SIMILAR SOIL SERIES LISTED IN *KSAT VALUES FOR NH SOILS*, SSSNNE SPECIAL PUBLICATION NO. 5, 2009.
2. FIELDWORK FOR THIS MAP WAS CONDUCTED BY LEONARD A. LORD, PHD, NHCSS #19 ON APRIL 9, 2021.
3. THIS DETAILED SITE SPECIFIC SOIL MAP CONFORMS TO THE STANDARDS OF SSSNNE PUBLICATION NO. 3, AS AMENDED, *SITE SPECIFIC SOIL MAPPING STANDARDS FOR NH AND VT*.
4. THIS MAP HAS BEEN PREPARED TO COMPLY WITH SOIL MAPPING REQUIREMENTS OF RSA 485 A:17 AND NHDES ENV-WQ, ALTERATION OF TERRAIN.
5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

N

LEGEND

- POST-DEVELOPMENT WATERSHED BOUNDARY
- LONGEST FLOW PATH
- POST 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- POST POND 1 — POST-DEVELOPMENT POND DESIGNATION
- PA-1 — POINT OF ANALYSIS

PA-1
POST 1.2
POST POND JF #1
POST POND UGD
600*/fcccc
299A/dcccc
926B
600*/fcccc
500E/dccc
POST 1.0
29C
POST POND DPond
POST 1.1
POST 2.0
POST POND RG-1
POST 2.2
POST POND JF #2
POST 2.1
POST POND JF #3
PA-2
CORPORATE DRIVE
GOOSE BAY DRIVE
INTERNATIONAL DRIVE
6 SPACES
PROPOSED FREEZER ADDITION 34,800 SF
DMH INV.IN=71.4 INV.OUT=71.3

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Tighe&Bond

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

PROJECT NO:	L-0700-021
DATE:	June 21, 2021
FILE:	L-0700-021-C-HYDR_1_14091_0301.DWG
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

POST-DEVELOPMENT WATERSHED PLAN

SCALE: AS SHOWN

C-802

Last Saved: 6/14/2021
Plotted On: Jun 14, 2021-1:115pm By: JWinston
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings_Figures\AutoCAD\L-0700-021-C-HYDR_1_14091_0301.dwg

SITE SPECIFIC SOIL SURVEY HYDROLOGIC SOIL GROUP (HSG) LEGEND

MAP NUMBER*/ DISTURBED SOIL NUMERATOR**	SOIL TYPE	HSG
29C	WOODBRIDGE	C
299A/dcccc	UDORTHENTS, SMOOTHED	C
500E/dcccc	UDORTHENTS, LOAMY	C
600*/fcccc	ENDOAQUENTS, LOAMY	C
926*	RIDGEBURY	C

* INDICATES THE LOCATION OF THE SLOPE CLASS IDENTIFIER (A-F)
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5. SEE ACCOMPANYING NARRATIVE REPORT FOR METHODOLOGY, MAP SYMBOL LEGEND, AND INTERPRETATIONS.

N

LEGEND

- HYDROLOGIC SOIL GROUP C
- IMPERVIOUS AREA
- POST-DEVELOPMENT WATERSHED BOUNDARY
- LONGEST FLOW PATH
- POST 1.0 — PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- POST POND 1 — POST-DEVELOPMENT POND DESIGNATION
- PA-1 — POINT OF ANALYSIS

CORPORATE DRIVE
GOOSE BAY DRIVE
INTERNATIONAL
4' SIDEWALK
6 SPACES

SCALE IN FEET
0 40' 80'
GRAPHIC SCALE

Tighe&Bond

Lynx Parking Expansion

Lonza Biologics

Portsmouth, New Hampshire

MARK	DATE	DESCRIPTION
A	6/21/2021	TAC SUBMISSION

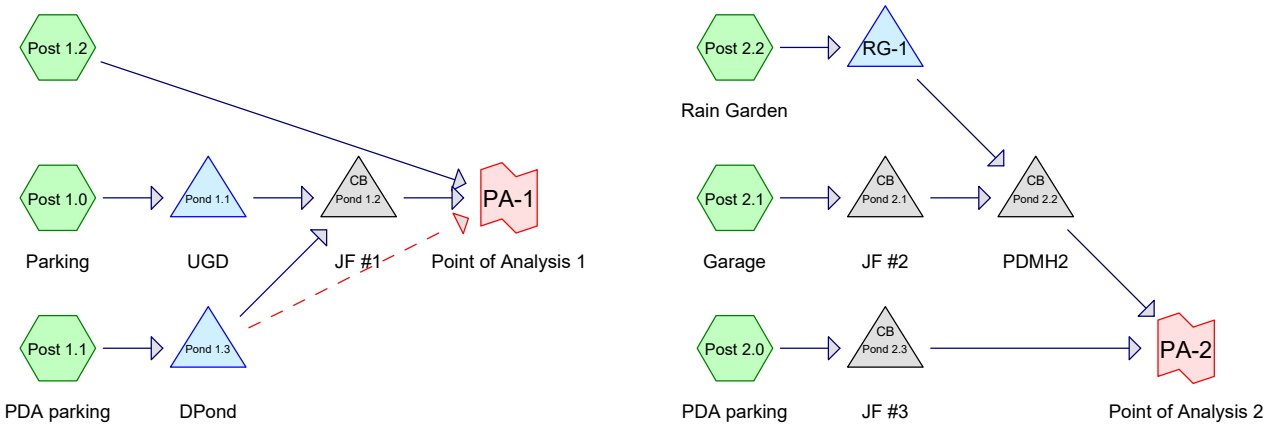
PROJECT NO:	L-0700-021
DATE:	June 21, 2021
FILE:	L-0700-021-C-HYDR_1_14091_0301.DWG
DRAWN BY:	JW/CJK
CHECKED BY:	NAH/PMC
APPROVED BY:	BLM

POST-DEVELOPMENT SOIL PLAN

SCALE: AS SHOWN

C-804

Last Saved: 6/14/2021
Plotted: Jun 14, 2021 - 3:29pm By: JWinston
Tighe & Bond: J:\L\L0700 Lonza Biologics Expansion was 1576F\021_Lynx Project\Drawings_Figures\AutoCAD\L-0700-021-C-HYDR_1_14091_0301.dwg



Subcat Reach Pond Link

Routing Diagram for L-0700-021-POST
Prepared by Tighe & Bond, Printed 6/14/2021
HydroCAD® 10.00-20 s/n 03436 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.967	74	>75% Grass cover, Good, HSG C (Post 1.0, Post 1.1, Post 1.2, Post 2.0, Post 2.2)
4.065	98	Paved parking, HSG C (Post 1.0, Post 1.1, Post 1.2, Post 2.0, Post 2.1, Post 2.2)
0.285	70	Woods, Good, HSG C (Post 1.1, Post 1.2)
7.317	**87**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
7.317	HSG C	Post 1.0, Post 1.1, Post 1.2, Post 2.0, Post 2.1, Post 2.2
0.000	HSG D	
0.000	Other	
7.317		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPost 1.0: Parking Runoff Area=76,655 sf 87.15% Impervious Runoff Depth>3.11"
Flow Length=337' Tc=6.0 min CN=95 Runoff=5.88 cfs 0.457 af

SubcatchmentPost 1.1: PDA parking Runoff Area=73,330 sf 46.11% Impervious Runoff Depth>2.17"
Flow Length=625' Tc=5.0 min CN=85 Runoff=4.29 cfs 0.305 af

SubcatchmentPost 1.2: Runoff Area=39,267 sf 2.61% Impervious Runoff Depth>1.36"
Flow Length=469' Tc=11.4 min CN=74 Runoff=1.16 cfs 0.102 af

SubcatchmentPost 2.0: PDA parking Runoff Area=66,913 sf 36.11% Impervious Runoff Depth>2.01"
Flow Length=352' Tc=5.0 min CN=83 Runoff=3.63 cfs 0.257 af

SubcatchmentPost 2.1: Garage Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>3.44"
Tc=5.0 min CN=98 Runoff=3.36 cfs 0.267 af

SubcatchmentPost 2.2: Rain Garden Runoff Area=21,982 sf 48.49% Impervious Runoff Depth>2.26"
Flow Length=235' Tc=5.0 min CN=86 Runoff=1.33 cfs 0.095 af

Pond Pond 1.1: UGD Peak Elev=63.88' Storage=0.100 af Inflow=5.88 cfs 0.457 af
Outflow=1.86 cfs 0.457 af

Pond Pond 1.2: JF #1 Peak Elev=61.43' Inflow=3.37 cfs 0.761 af
18.0" Round Culvert n=0.013 L=44.0' S=0.0091 '/' Outflow=3.37 cfs 0.761 af

Pond Pond 1.3: DPond Peak Elev=74.38' Storage=2,158 cf Inflow=4.29 cfs 0.305 af
Primary=1.51 cfs 0.304 af Secondary=0.00 cfs 0.000 af Outflow=1.51 cfs 0.304 af

Pond Pond 2.1: JF #2 Peak Elev=66.34' Inflow=3.36 cfs 0.267 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=3.36 cfs 0.267 af

Pond Pond 2.2: PDMH2 Peak Elev=66.15' Inflow=3.36 cfs 0.283 af
18.0" Round Culvert n=0.013 L=56.0' S=0.0018 '/' Outflow=3.36 cfs 0.283 af

Pond Pond 2.3: JF #3 Peak Elev=71.78' Inflow=3.63 cfs 0.257 af
18.0" Round Culvert n=0.013 L=17.0' S=0.0206 '/' Outflow=3.63 cfs 0.257 af

Pond RG-1: Peak Elev=68.30' Storage=2,563 cf Inflow=1.33 cfs 0.095 af
Discarded=0.02 cfs 0.021 af Primary=0.10 cfs 0.015 af Outflow=0.12 cfs 0.036 af

Link PA-1: Point of Analysis 1 Inflow=4.40 cfs 0.863 af
Primary=4.40 cfs 0.863 af

Link PA-2: Point of Analysis 2 Inflow=7.00 cfs 0.540 af
Primary=7.00 cfs 0.540 af

Total Runoff Area = 7.317 ac Runoff Volume = 1.483 af Average Runoff Depth = 2.43"
44.45% Pervious = 3.253 ac 55.55% Impervious = 4.065 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPost 1.0: Parking Runoff Area=76,655 sf 87.15% Impervious Runoff Depth>5.00"
Flow Length=337' Tc=6.0 min CN=95 Runoff=9.20 cfs 0.733 af

SubcatchmentPost 1.1: PDA parking Runoff Area=73,330 sf 46.11% Impervious Runoff Depth>3.91"
Flow Length=625' Tc=5.0 min CN=85 Runoff=7.66 cfs 0.549 af

SubcatchmentPost 1.2: Runoff Area=39,267 sf 2.61% Impervious Runoff Depth>2.84"
Flow Length=469' Tc=11.4 min CN=74 Runoff=2.49 cfs 0.213 af

SubcatchmentPost 2.0: PDA parking Runoff Area=66,913 sf 36.11% Impervious Runoff Depth>3.71"
Flow Length=352' Tc=5.0 min CN=83 Runoff=6.66 cfs 0.475 af

SubcatchmentPost 2.1: Garage Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>5.35"
Tc=5.0 min CN=98 Runoff=5.14 cfs 0.415 af

SubcatchmentPost 2.2: Rain Garden Runoff Area=21,982 sf 48.49% Impervious Runoff Depth>4.02"
Flow Length=235' Tc=5.0 min CN=86 Runoff=2.35 cfs 0.169 af

Pond Pond 1.1: UGD Peak Elev=65.26' Storage=0.188 af Inflow=9.20 cfs 0.733 af
Outflow=2.40 cfs 0.733 af

Pond Pond 1.2: JF #1 Peak Elev=61.53' Inflow=3.93 cfs 1.193 af
18.0" Round Culvert n=0.013 L=44.0' S=0.0091 '/' Outflow=3.93 cfs 1.193 af

Pond Pond 1.3: DPond Peak Elev=74.79' Storage=2,728 cf Inflow=7.66 cfs 0.549 af
Primary=1.56 cfs 0.459 af Secondary=7.44 cfs 0.089 af Outflow=9.00 cfs 0.549 af

Pond Pond 2.1: JF #2 Peak Elev=66.81' Inflow=5.14 cfs 0.415 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=5.14 cfs 0.415 af

Pond Pond 2.2: PDMH2 Peak Elev=66.58' Inflow=5.58 cfs 0.502 af
18.0" Round Culvert n=0.013 L=56.0' S=0.0018 '/' Outflow=5.58 cfs 0.502 af

Pond Pond 2.3: JF #3 Peak Elev=72.24' Inflow=6.66 cfs 0.475 af
18.0" Round Culvert n=0.013 L=17.0' S=0.0206 '/' Outflow=6.66 cfs 0.475 af

Pond RG-1: Peak Elev=68.40' Storage=2,840 cf Inflow=2.35 cfs 0.169 af
Discarded=0.02 cfs 0.023 af Primary=1.31 cfs 0.087 af Outflow=1.33 cfs 0.110 af

Link PA-1: Point of Analysis 1 Inflow=13.25 cfs 1.495 af
Primary=13.25 cfs 1.495 af

Link PA-2: Point of Analysis 2 Inflow=12.14 cfs 0.977 af
Primary=12.14 cfs 0.977 af

Total Runoff Area = 7.317 ac Runoff Volume = 2.555 af Average Runoff Depth = 4.19"
44.45% Pervious = 3.253 ac 55.55% Impervious = 4.065 ac

Summary for Subcatchment Post 1.0: Parking

Runoff = 9.20 cfs @ 12.09 hrs, Volume= 0.733 af, Depth> 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
9,847	74	>75% Grass cover, Good, HSG C
66,808	98	Paved parking, HSG C
76,655	95	Weighted Average
9,847		12.85% Pervious Area
66,808		87.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	22	0.0680	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.68"
0.7	141	0.0255	3.24		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.4	50	0.0060	0.35	0.28	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.130
0.2	42	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.2	47	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
0.1	35	0.0460	9.73	7.64	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.0	337	Total			

Summary for Subcatchment Post 1.1: PDA parking

[49] Hint: Tc<2dt may require smaller dt

Runoff = 7.66 cfs @ 12.07 hrs, Volume= 0.549 af, Depth> 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
9,811	70	Woods, Good, HSG C
29,707	74	>75% Grass cover, Good, HSG C
33,812	98	Paved parking, HSG C
73,330	85	Weighted Average
39,518		53.89% Pervious Area
33,812		46.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0225	1.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.7	168	0.0357	3.84		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.8	357	0.0500	3.35		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.6	625	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment Post 1.2:

Runoff = 2.49 cfs @ 12.16 hrs, Volume= 0.213 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
2,614	70	Woods, Good, HSG C
35,630	74	>75% Grass cover, Good, HSG C
1,023	98	Paved parking, HSG C
39,267	74	Weighted Average
38,244		97.39% Pervious Area
1,023		2.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	85	0.0900	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.68"
1.7	329	0.0480	3.29		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	55	0.0548	13.80	10.84	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.4	469	Total			

Summary for Subcatchment Post 2.0: PDA parking

[49] Hint: Tc<2dt may require smaller dt

Runoff = 6.66 cfs @ 12.07 hrs, Volume= 0.475 af, Depth> 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
42,752	74	>75% Grass cover, Good, HSG C
24,161	98	Paved parking, HSG C
66,913	83	Weighted Average
42,752		63.89% Pervious Area
24,161		36.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0225	1.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
0.7	170	0.0353	3.81		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	82	0.1620	6.04		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	352	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment Post 2.1: Garage

[49] Hint: Tc<2dt may require smaller dt

Runoff = 5.14 cfs @ 12.07 hrs, Volume= 0.415 af, Depth> 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
40,595	98	Paved parking, HSG C
40,595		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment Post 2.2: Rain Garden

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.35 cfs @ 12.07 hrs, Volume= 0.169 af, Depth> 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.59"

Area (sf)	CN	Description
11,323	74	>75% Grass cover, Good, HSG C
10,659	98	Paved parking, HSG C
21,982	86	Weighted Average
11,323		51.51% Pervious Area
10,659		48.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	34	0.0440	1.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.68"
1.6	135	0.0090	1.42		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	10	0.0050	3.21	2.52	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4	56	0.0020	2.66	4.70	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
2.4	235	Total, Increased to minimum Tc = 5.0 min			

Summary for Pond Pond 1.1: UGD

Inflow Area = 1.760 ac, 87.15% Impervious, Inflow Depth > 5.00" for 10 Year Storm event
Inflow = 9.20 cfs @ 12.09 hrs, Volume= 0.733 af
Outflow = 2.40 cfs @ 12.45 hrs, Volume= 0.733 af, Atten= 74%, Lag= 21.7 min
Primary = 2.40 cfs @ 12.45 hrs, Volume= 0.733 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 65.26' @ 12.45 hrs Surf.Area= 0.101 ac Storage= 0.188 af
Flood Elev= 66.50' Surf.Area= 0.101 ac Storage= 0.248 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 23.4 min (788.3 - 764.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	61.00'	0.000 af	**38.59'W x 114.17'L x 6.58'H Field A** 0.666 af Overall - 0.301 af Embedded = 0.365 af x 0.0% Voids
#2A	61.50'	0.253 af	**ADS N-12 60"** x 25 Inside #1 Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf Outside= 67.0"W x 67.0"H => 22.91 sf x 20.00'L = 458.2 cf 5 Rows of 5 Chambers 35.59' Header x 19.30 sf x 2 = 1,373.6 cf Inside
		0.253 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	61.50'	**18.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 61.50' / 61.00' S= 0.0114 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	61.50'	**7.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	65.50'	**5.0' long x 5.90' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=2.40 cfs @ 12.45 hrs HW=65.26' TW=61.53' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.40 cfs of 14.77 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 2.40 cfs @ 8.97 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond Pond 1.2: JF #1

Inflow Area = 3.443 ac, 67.09% Impervious, Inflow Depth > 4.16" for 10 Year Storm event
Inflow = 3.93 cfs @ 12.44 hrs, Volume= 1.193 af
Outflow = 3.93 cfs @ 12.44 hrs, Volume= 1.193 af, Atten= 0%, Lag= 0.0 min
Primary = 3.93 cfs @ 12.44 hrs, Volume= 1.193 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 61.53' @ 12.44 hrs
Flood Elev= 65.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	60.50'	**18.0" Round Culvert** L= 44.0' Ke= 0.500 Inlet / Outlet Invert= 60.50' / 60.10' S= 0.0091 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.93 cfs @ 12.44 hrs HW=61.53' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 3.93 cfs @ 4.30 fps)

Summary for Pond Pond 1.3: DPond

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 1.683 ac, 46.11% Impervious, Inflow Depth > 3.91" for 10 Year Storm event
Inflow = 7.66 cfs @ 12.07 hrs, Volume= 0.549 af
Outflow = 9.00 cfs @ 12.11 hrs, Volume= 0.549 af, Atten= 0%, Lag= 2.0 min
Primary = 1.56 cfs @ 12.11 hrs, Volume= 0.459 af
Secondary = 7.44 cfs @ 12.11 hrs, Volume= 0.089 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 74.79' @ 12.11 hrs Surf.Area= 1,497 sf Storage= 2,728 cf
Flood Elev= 76.00' Surf.Area= 2,018 sf Storage= 4,859 cf

Plug-Flow detention time= 8.0 min calculated for 0.549 af (100% of inflow)
Center-of-Mass det. time= 7.5 min (809.5 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	72.00'	4,859 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	525	0	0
74.00	1,158	1,683	1,683
76.00	2,018	3,176	4,859

Device	Routing	Invert	Outlet Devices
#1	Primary	68.00'	**6.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 68.00' / 67.60' S= 0.0060 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf
#2	Device 1	72.00'	**11.1" x 11.1" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	74.50'	**15.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.56 cfs @ 12.11 hrs HW=74.76' TW=61.47' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.56 cfs @ 7.94 fps)
↑—**2=Orifice/Grate** (Passes 1.56 cfs of 6.85 cfs potential flow)

Secondary OutFlow Max=6.75 cfs @ 12.11 hrs HW=74.77' TW=0.00' (Dynamic Tailwater)
↑—**3=Sharp-Crested Rectangular Weir** (Weir Controls 6.75 cfs @ 1.69 fps)

Summary for Pond Pond 2.1: JF #2

Inflow Area = 0.932 ac,100.00% Impervious, Inflow Depth > 5.35" for 10 Year Storm event
Inflow = 5.14 cfs @ 12.07 hrs, Volume= 0.415 af
Outflow = 5.14 cfs @ 12.07 hrs, Volume= 0.415 af, Atten= 0%, Lag= 0.0 min
Primary = 5.14 cfs @ 12.07 hrs, Volume= 0.415 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 66.81' @ 12.12 hrs
Flood Elev= 70.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.15'	**18.0" Round Culvert** L= 5.0' Ke= 0.500 Inlet / Outlet Invert= 65.15' / 65.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.20 cfs @ 12.07 hrs HW=66.65' TW=66.51' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.20 cfs @ 1.81 fps)

Summary for Pond Pond 2.2: PDMH2

Inflow Area = 1.437 ac, 81.91% Impervious, Inflow Depth > 4.20" for 10 Year Storm event
Inflow = 5.58 cfs @ 12.10 hrs, Volume= 0.502 af
Outflow = 5.58 cfs @ 12.10 hrs, Volume= 0.502 af, Atten= 0%, Lag= 0.0 min
Primary = 5.58 cfs @ 12.10 hrs, Volume= 0.502 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 66.58' @ 12.10 hrs
Flood Elev= 73.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	65.00'	**18.0" Round Culvert** L= 56.0' Ke= 0.500 Inlet / Outlet Invert= 65.00' / 64.90' S= 0.0018 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.53 cfs @ 12.10 hrs HW=66.57' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.53 cfs @ 3.72 fps)

Summary for Pond Pond 2.3: JF #3

Inflow Area = 1.536 ac, 36.11% Impervious, Inflow Depth > 3.71" for 10 Year Storm event
Inflow = 6.66 cfs @ 12.07 hrs, Volume= 0.475 af
Outflow = 6.66 cfs @ 12.07 hrs, Volume= 0.475 af, Atten= 0%, Lag= 0.0 min
Primary = 6.66 cfs @ 12.07 hrs, Volume= 0.475 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 72.24' @ 12.07 hrs
Flood Elev= 78.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	70.85'	**18.0" Round Culvert** L= 17.0' Ke= 0.500 Inlet / Outlet Invert= 70.85' / 70.50' S= 0.0206 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=6.42 cfs @ 12.07 hrs HW=72.21' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 6.42 cfs @ 5.03 fps)

Summary for Pond RG-1:

Inflow Area = 0.505 ac, 48.49% Impervious, Inflow Depth > 4.02" for 10 Year Storm event
Inflow = 2.35 cfs @ 12.07 hrs, Volume= 0.169 af
Outflow = 1.33 cfs @ 12.20 hrs, Volume= 0.110 af, Atten= 43%, Lag= 7.5 min
Discarded = 0.02 cfs @ 12.20 hrs, Volume= 0.023 af
Primary = 1.31 cfs @ 12.20 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 68.40' @ 12.20 hrs Surf.Area= 2,815 sf Storage= 2,840 cf
Flood Elev= 69.00' Surf.Area= 3,813 sf Storage= 4,817 cf

Plug-Flow detention time= 160.0 min calculated for 0.110 af (65% of inflow)
Center-of-Mass det. time= 62.9 min (861.9 - 799.0)

Volume	Invert	Avail.Storage	Storage Description
#1	64.75'	4,817 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
64.75	1,411	0.0	0	0
66.00	1,411	40.0	706	706
67.50	1,411	10.0	212	917
68.00	2,230	100.0	910	1,827
68.50	2,958	100.0	1,297	3,124
69.00	3,813	100.0	1,693	4,817

Device	Routing	Invert	Outlet Devices
#1	Discarded	64.75'	**0.300 in/hr Exfiltration over Surface area**
#2	Primary	65.35'	**12.0" Round Culvert**
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 65.35' / 65.30' S= 0.0050 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	68.30'	**11.1" x 11.1" Horiz. Orifice/Grate** C= 0.600

Discarded OutFlow Max=0.02 cfs @ 12.20 hrs HW=68.40' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=1.31 cfs @ 12.20 hrs HW=68.40' TW=66.26' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 1.31 cfs of 5.54 cfs potential flow)
↑—**3=Orifice/Grate** (Orifice Controls 1.31 cfs @ 1.53 fps)

Summary for Link PA-1: Point of Analysis 1

Inflow Area = 4.345 ac, 53.71% Impervious, Inflow Depth > 4.13" for 10 Year Storm event
Inflow = 13.25 cfs @ 12.11 hrs, Volume= 1.495 af
Primary = 13.25 cfs @ 12.11 hrs, Volume= 1.495 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Summary for Link PA-2: Point of Analysis 2

Inflow Area = 2.973 ac, 58.24% Impervious, Inflow Depth > 3.95" for 10 Year Storm event
Inflow = 12.14 cfs @ 12.08 hrs, Volume= 0.977 af
Primary = 12.14 cfs @ 12.08 hrs, Volume= 0.977 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPost 1.0: Parking Runoff Area=76,655 sf 87.15% Impervious Runoff Depth>6.48"
Flow Length=337' Tc=6.0 min CN=95 Runoff=11.76 cfs 0.950 af

SubcatchmentPost 1.1: PDA parking Runoff Area=73,330 sf 46.11% Impervious Runoff Depth>5.33"
Flow Length=625' Tc=5.0 min CN=85 Runoff=10.28 cfs 0.747 af

SubcatchmentPost 1.2: Runoff Area=39,267 sf 2.61% Impervious Runoff Depth>4.10"
Flow Length=469' Tc=11.4 min CN=74 Runoff=3.61 cfs 0.308 af

SubcatchmentPost 2.0: PDA parking Runoff Area=66,913 sf 36.11% Impervious Runoff Depth>5.10"
Flow Length=352' Tc=5.0 min CN=83 Runoff=9.06 cfs 0.653 af

SubcatchmentPost 2.1: Garage Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>6.84"
Tc=5.0 min CN=98 Runoff=6.52 cfs 0.531 af

SubcatchmentPost 2.2: Rain Garden Runoff Area=21,982 sf 48.49% Impervious Runoff Depth>5.44"
Flow Length=235' Tc=5.0 min CN=86 Runoff=3.13 cfs 0.229 af

Pond Pond 1.1: UGD Peak Elev=65.84' Storage=0.220 af Inflow=11.76 cfs 0.950 af
Outflow=5.80 cfs 0.950 af

Pond Pond 1.2: JF #1 Peak Elev=62.08' Inflow=7.35 cfs 1.524 af
18.0" Round Culvert n=0.013 L=44.0' S=0.0091 '/' Outflow=7.35 cfs 1.524 af

Pond Pond 1.3: DPond Peak Elev=74.83' Storage=2,790 cf Inflow=10.28 cfs 0.747 af
Primary=1.57 cfs 0.574 af Secondary=9.06 cfs 0.173 af Outflow=10.63 cfs 0.747 af

Pond Pond 2.1: JF #2 Peak Elev=67.74' Inflow=6.52 cfs 0.531 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=6.52 cfs 0.531 af

Pond Pond 2.2: PDMH2 Peak Elev=67.27' Inflow=8.26 cfs 0.677 af
18.0" Round Culvert n=0.013 L=56.0' S=0.0018 '/' Outflow=8.26 cfs 0.677 af

Pond Pond 2.3: JF #3 Peak Elev=72.72' Inflow=9.06 cfs 0.653 af
18.0" Round Culvert n=0.013 L=17.0' S=0.0206 '/' Outflow=9.06 cfs 0.653 af

Pond RG-1: Peak Elev=68.56' Storage=3,304 cf Inflow=3.13 cfs 0.229 af
Discarded=0.02 cfs 0.024 af Primary=2.10 cfs 0.146 af Outflow=2.12 cfs 0.170 af

Link PA-1: Point of Analysis 1 Inflow=15.28 cfs 2.005 af
Primary=15.28 cfs 2.005 af

Link PA-2: Point of Analysis 2 Inflow=17.25 cfs 1.329 af
Primary=17.25 cfs 1.329 af

Total Runoff Area = 7.317 ac Runoff Volume = 3.419 af Average Runoff Depth = 5.61"
44.45% Pervious = 3.253 ac 55.55% Impervious = 4.065 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentPost 1.0: Parking Runoff Area=76,655 sf 87.15% Impervious Runoff Depth>7.88"
Flow Length=337' Tc=6.0 min CN=95 Runoff=14.17 cfs 1.156 af

SubcatchmentPost 1.1: PDA parking Runoff Area=73,330 sf 46.11% Impervious Runoff Depth>6.68"
Flow Length=625' Tc=5.0 min CN=85 Runoff=12.75 cfs 0.938 af

SubcatchmentPost 1.2: Runoff Area=39,267 sf 2.61% Impervious Runoff Depth>5.36"
Flow Length=469' Tc=11.4 min CN=74 Runoff=4.70 cfs 0.402 af

SubcatchmentPost 2.0: PDA parking Runoff Area=66,913 sf 36.11% Impervious Runoff Depth>6.44"
Flow Length=352' Tc=5.0 min CN=83 Runoff=11.32 cfs 0.825 af

SubcatchmentPost 2.1: Garage Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>8.25"
Tc=5.0 min CN=98 Runoff=7.82 cfs 0.640 af

SubcatchmentPost 2.2: Rain Garden Runoff Area=21,982 sf 48.49% Impervious Runoff Depth>6.80"
Flow Length=235' Tc=5.0 min CN=86 Runoff=3.87 cfs 0.286 af

Pond Pond 1.1: UGD Peak Elev=66.17' Storage=0.236 af Inflow=14.17 cfs 1.156 af
Outflow=11.01 cfs 1.156 af

Pond Pond 1.2: JF #1 Peak Elev=63.37' Inflow=12.57 cfs 1.837 af
18.0" Round Culvert n=0.013 L=44.0' S=0.0091 '/' Outflow=12.57 cfs 1.837 af

Pond Pond 1.3: DPond Peak Elev=74.87' Storage=2,858 cf Inflow=12.75 cfs 0.938 af
Primary=1.57 cfs 0.680 af Secondary=11.10 cfs 0.257 af Outflow=12.67 cfs 0.937 af

Pond Pond 2.1: JF #2 Peak Elev=68.32' Inflow=7.82 cfs 0.640 af
18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=7.82 cfs 0.640 af

Pond Pond 2.2: PDMH2 Peak Elev=67.63' Inflow=9.94 cfs 0.842 af
18.0" Round Culvert n=0.013 L=56.0' S=0.0018 '/' Outflow=9.94 cfs 0.842 af

Pond Pond 2.3: JF #3 Peak Elev=73.35' Inflow=11.32 cfs 0.825 af
18.0" Round Culvert n=0.013 L=17.0' S=0.0206 '/' Outflow=11.32 cfs 0.825 af

Pond RG-1: Peak Elev=68.67' Storage=3,650 cf Inflow=3.87 cfs 0.286 af
Discarded=0.02 cfs 0.025 af Primary=2.50 cfs 0.202 af Outflow=2.53 cfs 0.227 af

Link PA-1: Point of Analysis 1 Inflow=24.85 cfs 2.496 af
Primary=24.85 cfs 2.496 af

Link PA-2: Point of Analysis 2 Inflow=21.31 cfs 1.667 af
Primary=21.31 cfs 1.667 af

Total Runoff Area = 7.317 ac Runoff Volume = 4.247 af Average Runoff Depth = 6.97"
44.45% Pervious = 3.253 ac 55.55% Impervious = 4.065 ac

3.4 Peak Rate Comparisons

The following table summarizes and compares the pre- and post-development peak runoff rates from the 2-year, 10-year, 25-year and 50-year storm events at each point of analysis.

Table 3.4

Comparison of Pre- and Post-Development Flows (CFS)

	2-Year Storm	10-Year Storm	25-Year Storm	50-Year Storm
Pre-Development Watershed				
PA-1	6.98	14.26	20.20	25.90
PA-2	7.38	12.91	17.32	21.50
Post-Development Watershed				
PA-1	4.40	13.25	15.28	24.85
PA-2	7.00	12.14	17.25	21.31

3.5 Mitigation Description

3.5.1 Mitigation Calculations

The proposed project area has been evaluated to treat the required water quality flow (WQF) per the requirements of Env-Wq 1500. These calculations have been provided in Section 6 of this report (BMP Worksheets).

3.5.2 Pre-Treatment Methods for Protecting Water Quality

Pre-Treatment methods for protecting water quality on this site includes a hydrodynamic separator (Contech Cascade Separator®).

3.5.3 Treatment Methods for Protecting Water Quality

Treatment for the site is included by means of Contech Jellyfish stormwater filtration systems. The Jellyfish filters were sized to treat the Water Quality Flow for their respective subcatchment areas.

The BMP Worksheets for this treatment practice have been included in Section 2 of this report.

Section 4
Rip Rap Apron Calculations

Tighe&Bond

Engineers | Environmental Specialists

Project: Lynx Parking Expansion
Location: Lonza Biologics, Portsmouth, NH
T&B #: L0700-021
Calculations By: JRW
Checked By: NAH
Date: 6/9/2021

APRON DESIGN

Terms:	Rip-Rap Apron 1	
length of apron (ft.)	L_a	
discharge from pipe (cfs)	Q	(25 YR STORM EVENT)
pipe dia. or channel width (ft.)	Do	
tailwater depth (ft.)	T_w	
width of apron (at outlet)(ft)	W1	
width of apron (downstream)(ft)	W2	
median stone diameter (ft.)	d_{50}	

Equations Used:

Length of Apron (L_a)

when Tw < .5*Do L_a= $\frac{1.8(Q)}{Do^{(3/2)}}$ + 7Do

when Tw >= .5*Do L_a= $\frac{3(Q)}{Do^{(3/2)}}$ + 7Do

Width of Apron (W1)

W1= 3Do

Width of Apron (W2)

when Tw < .5*Do W2= 3Do + La

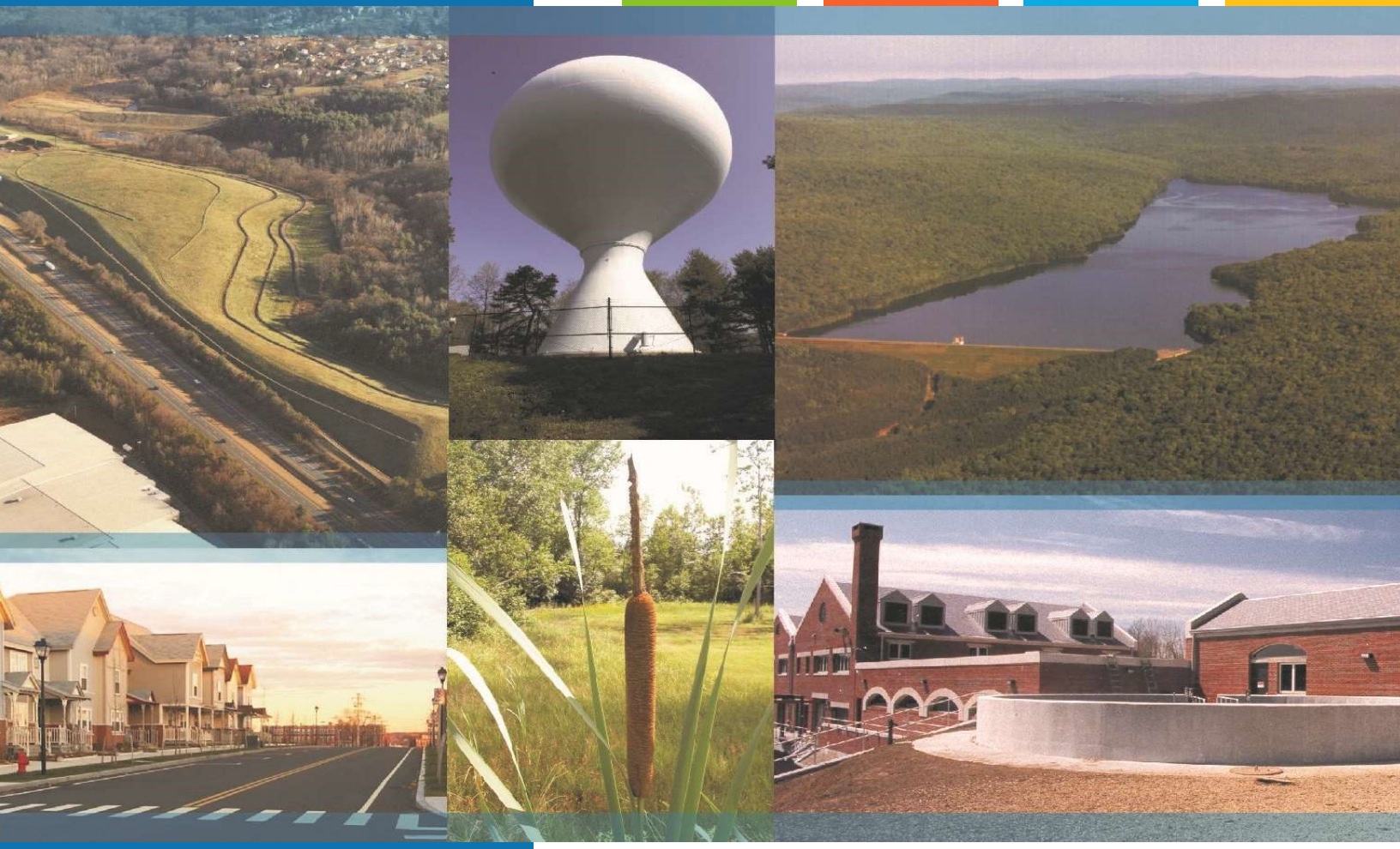
when Tw >= .5*Do W2= 3Do + 0.4La

Median Diameter d_{50}= $\frac{0.02 * Q^{(1.3)}}{(Tw * Do)}$

Input:		
Q (cfs)	9.06	cfs
Do (ft.)	1.50	ft
T_w (ft.)	0.60	ft

Output:		
Width of Apron (W1)	5	ft.
Width of Apron (W2)*	24	ft.
Length of Apron (L_a)	19	ft.
Median Diameter	0.50	ft.
Riprap min. depth	1.13	ft.

*When there is a well defined channel downstream of the apron, W2 shall be greater than the bottom width of the channel.



Lynx Parking Expansion at Lonza Biologics, Inc.

City of Portsmouth, NH

Operation and Maintenance Manual

Prepared For:

Lonza Biologics, Inc.

101 International Drive

Portsmouth, New Hampshire 03801

June 21, 2021

100% Recyclable

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Section 1
Long-Term Operation & Maintenance Plan

It is the intent of this Operation and Maintenance Plan to identify the areas of this site that need special attention and consideration, as well as implementing a plan to assure routine maintenance. By identifying the areas of concern as well as implementing a frequent and routine maintenance schedule the site will maintain a high-quality stormwater runoff.

1.1 Contact/Responsible Party

Lonza Biologics
101 International Drive
Portsmouth, NH 03801

(Note: The contact information for the Contact/Responsible Party shall be kept current. If ownership changes, the Operation and Maintenance Plan must be transferred to the new party.)

1.2 Maintenance Items

Maintenance of the following items shall be recorded:

- Litter/Debris Removal
- Landscaping
- Catchbasin Cleaning
- Pavement Sweeping
- Underground Detention System
- Detention Basin
- Rain Garden
- Contech Jellyfish Filtration System
- Contech Cascade Separator
- Rip Rap Outlets

The following maintenance items and schedule represent the minimum action required. Periodic site inspections shall be conducted, and all measures must be maintained in effective operating condition. The following items shall be observed during site inspection and maintenance:

- Inspect vegetated areas, particularly slopes and embankments for areas of erosion. Replant and restore as necessary
- Inspect catch basins for sediment buildup
- Inspect site for trash and debris

1.3 Overall Site Operation & Maintenance Schedule

Maintenance Item	Frequency of Maintenance
Litter/Debris Removal	Weekly
Pavement Sweeping - Sweep impervious areas to remove sand and litter.	Annually
Landscaping - Landscaped islands to be maintained and mulched.	Maintained as required and mulched each Spring
Catch Basin (CB) Cleaning - CB to be cleaned of solids and oils.	Annually
Rain Garden - Trash and debris to be removed. - Any required maintenance shall be addressed.	Two (2) times annually After any rainfall event exceeding 2.5" in a 24-hr period
Contech Jelly Fish Units	In accordance with Manufacturer's Recommendations
Contech Cascade Separator®	In accordance with Manufacturer's Recommendations
Underground Detention Basin - Visual observation of sediment levels within system	Annually
Porous Pavement - Clean using a vacuum sweeper	Bi-Annually

1.3.1 Disposal Requirements

Disposal of debris, trash, sediment and other waste material should be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.

1.4 Underground Detention System Maintenance Requirements

Underground Detention System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor inlet and outlet structures for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed
Deep Sump Catchbasins	Two (2) times annually	- Removal of sediment as warranted by inspection - No less than once annually
Monitor detention system for sediment accumulation	Two (2) times annually	- Trash, debris and sediment to be removed - Any required maintenance shall be addressed

1.5 Detention Basin Maintenance Requirements

Detention Basin Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor Sediment Accumulation	Annually	- Install and maintain a staff gage or other measuring devise, to indicate depth of sediment accumulation and level at which clean-out is required
Visual inspection	Annually	- Remove trash and debris as needed - Remove any woody vegetation - Inspect and repair embankments - Inspect check dam
Mowing	Periodically (At least two (2) times annually)	- Embankments shall be mowed

1.6 Rain Garden Maintenance Requirements

Rain Garden Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Monitor to ensure that Rain Gardens function effectively after storms	Two (2) times annually and after any rainfall event exceeding 2.5" in a 24-hr period	- Trash and debris to be removed - Any required maintenance shall be addressed
Inspect Vegetation	Annually	- Inspect the condition of all Rain Garden vegetation - Prune back overgrowth - Replace dead vegetation - Remove any invasive species
Inspect Drawdown Time - The system shall drawdown within 48-hours following a rainfall event.	Annually	- Assess the condition of the facility to determine measures required to restore the filtration function, including but not limited to removal of accumulated sediments or reconstruction of the filter.

1.7 Contech Jellyfish Filter System Maintenance Requirements

Contech Jellyfish Filter System Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Inspect vault for sediment build up, static water, plugged media and bypass condition	One (1) time annually and after any rainfall event exceeding 2.5" in a 24-hr period	Maintenance required for any of the following: - >4" of sediment on the vault floor - >1/4" of sediment on top of the cartridge - .4" of static water above the cartridge bottom more than 24 hours after a rain event - If pore space between media is absent. - If vault is in bypass condition during an average rainfall event.
Replace Cartridges	As required by inspection, 1–5 years.	- Remove filter cartridges per manufacturer methods. - Vacuum sediment from vault. - Install new cartridges per manufacturer methods

CONTECH®
ENGINEERED SOLUTIONS

Jellyfish® Filter
Owner's Manual

Jellyfish® Filter

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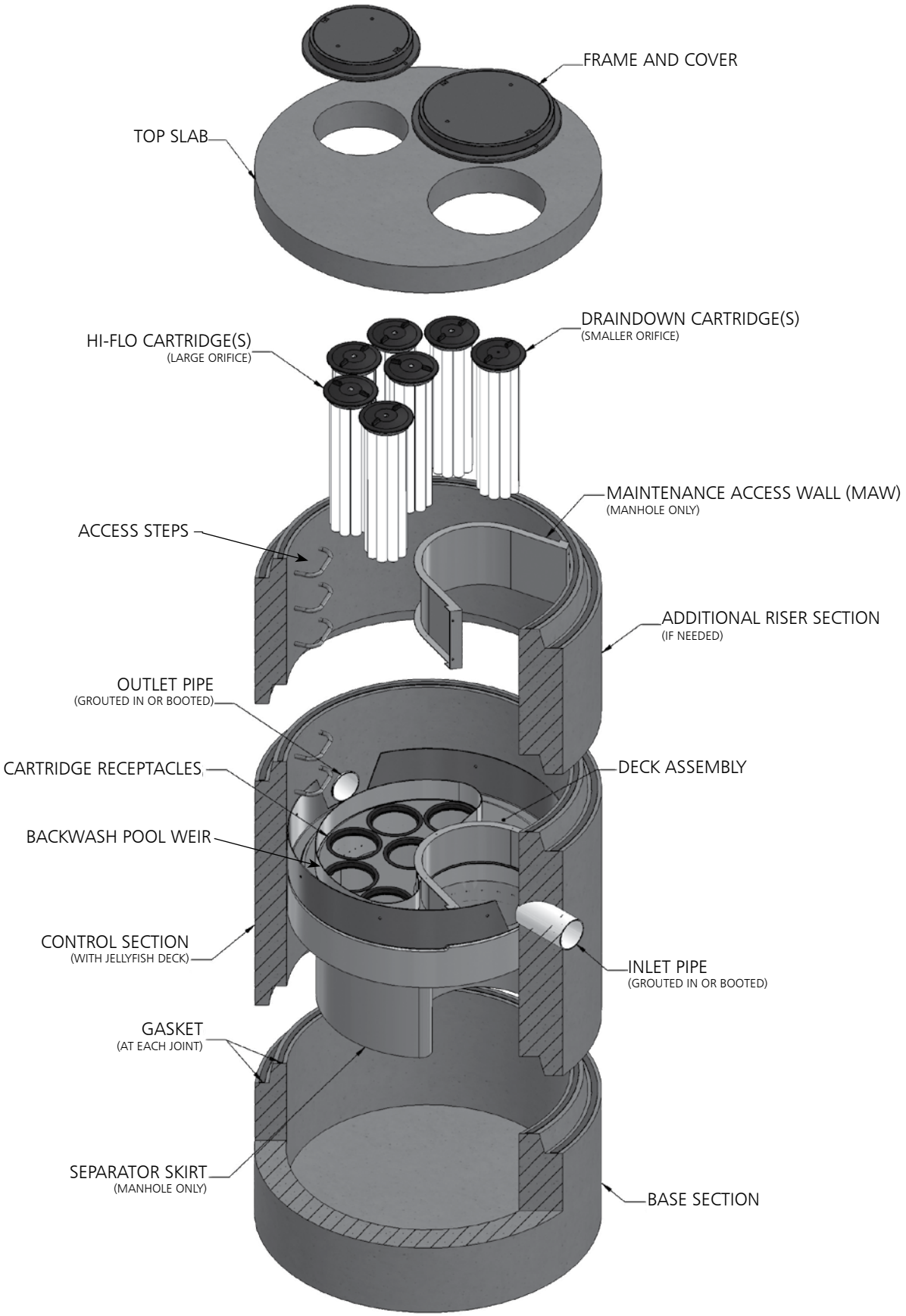
THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

Contech Engineered Solutions would like to thank you for selecting the Jellyfish Filter to meet your project's stormwater treatment needs. With proper inspection and maintenance, the Jellyfish Filter is designed to deliver ongoing, high levels of stormwater pollutant removal.

If you have any questions, please feel free to call us or e-mail us:

Contech Engineered Solutions
9025 Centre Pointe Drive, Suite 400 | West Chester, OH 45069
513-645-7000 | 800-338-1122
www.ContechES.com
info@conteches.com


FRAME AND COVER
TOP SLAB
DRAINDOWN CARTRIDGE(S)
(SMALLER ORIFICE)
HI-FLO CARTRIDGE(S)
(LARGE ORIFICE)
MAINTENANCE ACCESS WALL (MAW)
(MANHOLE ONLY)
ACCESS STEPS
ADDITIONAL RISER SECTION
(IF NEEDED)
OUTLET PIPE
(GROUTED IN OR BOOTED)
CARTRIDGE RECEPTACLES
DECK ASSEMBLY
BACKWASH POOL WEIR
CONTROL SECTION
(WITH JELLYFISH DECK)
INLET PIPE
(GROUTED IN OR BOOTED)
GASKET
(AT EACH JOINT)
SEPARATOR SKIRT
(MANHOLE ONLY)
BASE SECTION

WARNINGS / CAUTION

1. FALL PROTECTION may be required.
2. WATCH YOUR STEP if standing on the Jellyfish Filter Deck at any time; Great care and safety must be taken while walking or maneuvering on the Jellyfish Filter Deck. Attentive care must be taken while standing on the Jellyfish Filter Deck at all times to prevent stepping onto a lid, into or through a cartridge hole or slipping on the deck.
3. The Jellyfish Filter Deck can be SLIPPERY WHEN WET.
4. If the Top Slab, Covers or Hatches have not yet been installed, or are removed for any reason, great care must be taken to NOT DROP ANYTHING ONTO THE JELLYFISH FILTER DECK. The Jellyfish Filter Deck and Cartridge Receptacle Rings can be damaged under high impact loads. This type of activity voids all warranties. All damaged items to be replaced at owner's expense.
5. Maximum deck load 2 persons, total weight 450 lbs.

Safety Notice

Jobsite safety is a topic and practice addressed comprehensively by others. The inclusions here are intended to be reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s) and Contractor(s). OSHA and Canadian OSH, and Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Contractor's responsibility and outside the scope of Contech Engineered Solutions.

Confined Space Entry

Secure all equipment and perform all training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to proceed safely at all times.

Personal Safety Equipment

Contractor is responsible to provide and wear appropriate personal protection equipment as needed including, but not limited to safety boots, hard hat, reflective vest, protective eyewear, gloves and fall protection equipment as necessary. Make sure all equipment is staffed with trained and/or certified personnel, and all equipment is checked for proper operation and safety features prior to use.

- Fall protection equipment
- Eye protection
- Safety boots
- Ear protection
- Gloves
- Ventilation and respiratory protection
- Hard hat
- Maintenance and protection of traffic plan

Chapter 1

1.0 – Owner Specific Jellyfish Filter Product Information

Below you will find a reference page that can be filled out according to your Jellyfish Filter specification to help you easily inspect, maintain and order parts for your system.

Owner Name:	
Phone Number:	
Site Address:	
Site GPS Coordinates/unit location:	
Unit Location Description:	
Jellyfish Filter Model No.:	
Contech Project & Sequence Number	
No. of Hi-Flo Cartridges	
No. of Cartridges:	
Length of Draindown Cartridges:	
No. of Blank Cartridge Lids:	
Bypass Configuration (Online/Offline):	

Notes:

_____

_____

_____

_____

Chapter 2

2.0 – Jellyfish Filter System Operations and Functions

The Jellyfish Filter is an engineered stormwater quality treatment technology that removes a high level and wide variety of stormwater pollutants. Each Jellyfish Filter cartridge consists of eleven membrane - encased filter elements ("filtration tentacles") attached to a cartridge head plate. The filtration tentacles provide a large filtration surface area, resulting in high flow and high pollutant removal capacity.

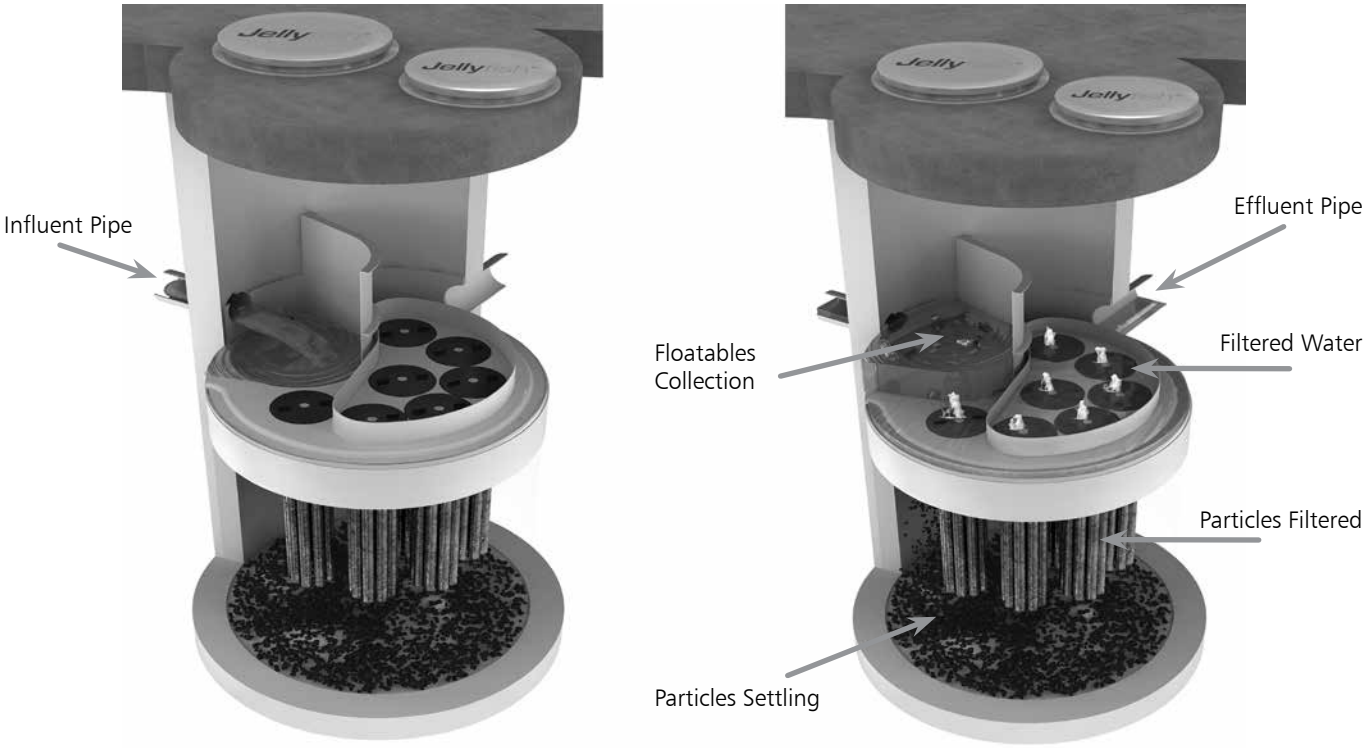
The Jellyfish Filter functions are depicted in Figure 1 below.

FIGURE 1

Jellyfish Filter Treatment Functions

Membrane Filtration

Section View with Maintenance Access Wall (MAW) Cutaway



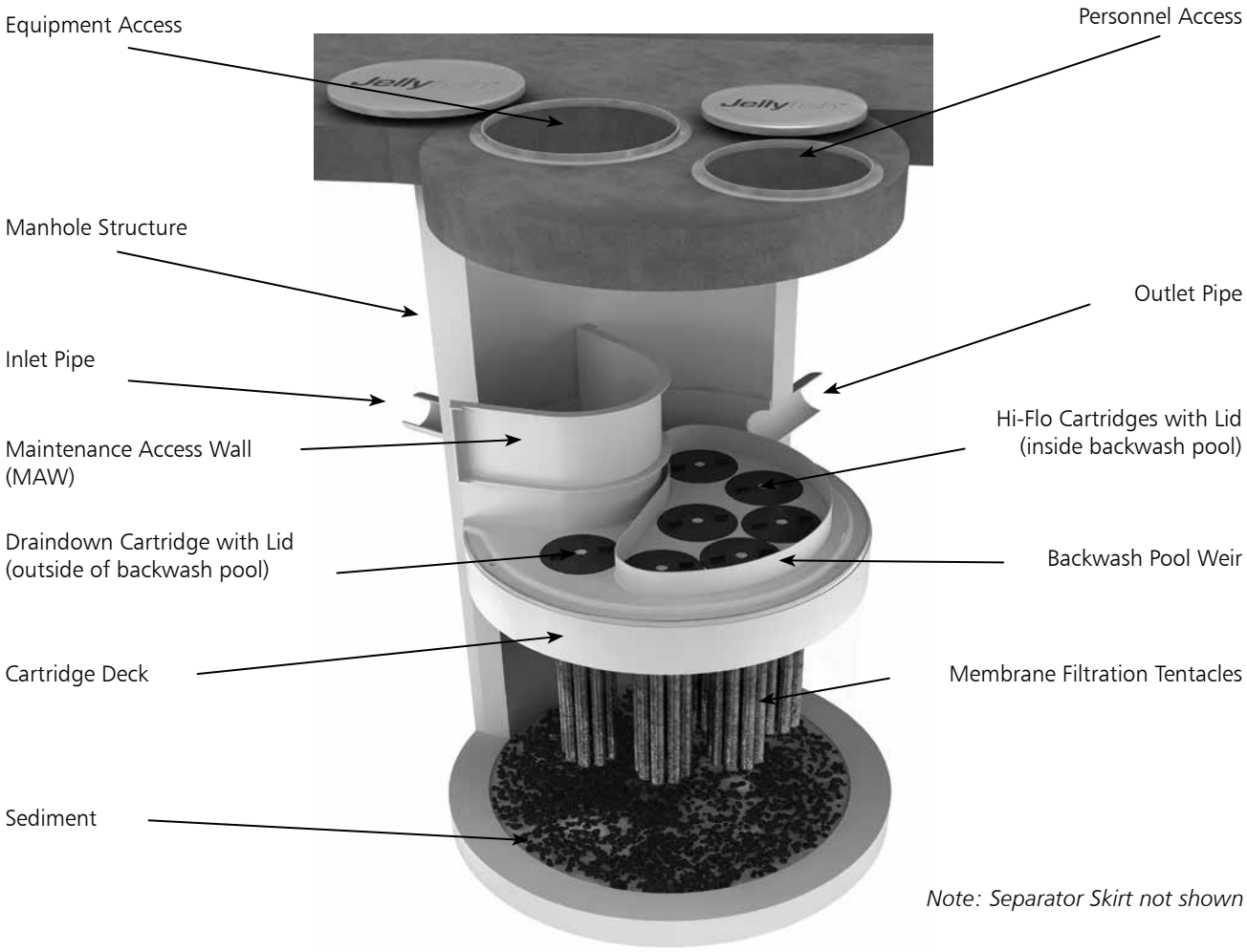
Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at www.ContechES.com.

2.1 – Components and Cartridges

The Jellyfish Filter and components are depicted in Figure 2 below.

FIGURE 2 **Jellyfish Filter Components**



Tentacles are available in various lengths as depicted in Table 1 below.

Table 1 – Cartridge Lengths / Weights and Cartridge Lid Orifice Diameters

Cartridge Lengths	Dry Weight	Hi-Flo Orifice Diameter	Draindown Orifice Diameter
15 inches (381 mm)	10 lbs (4.5 kg)	35 mm	20 mm
27 inches (686 mm)	14.5 lbs (6.6 kg)	45 mm	25 mm
40 inches (1,016 mm)	19.5 lbs (8.9 kg)	55 mm	30 mm
54 inches (1,372 mm)	25 lbs (11.4 kg)	70 mm	35 mm

2.2 – Jellyfish Membrane Filtration Cartridge Assembly

The Jellyfish Filter utilizes multiple membrane filtration cartridges. Each cartridge consists of removable cylindrical filtration "tentacles" attached to a cartridge head plate. Each filtration tentacle has a threaded pipe nipple and o-ring. To attach, insert the top pipe nipples with the o-ring through the head plate holes and secure with locking nuts. Hex nuts to be hand tightened and checked with a wrench as shown below.

2.3 – Jellyfish Membrane Filtration Cartridge Installation

- Cartridge installation will be performed by trained individuals and coordinated with the installing site Contractor. Flow diversion devices are required to be in place until the site is stabilized (final paving and landscaping in place). Failure to address this step completely will reduce the time between required maintenance.
- Descend to the cartridge deck (see Safety Notice and page 3).
- Refer to Contech's submittal drawings to determine proper quantity and placement of Hi-Flo, Draindown and Blank cartridges with appropriate lids. Lower the Jellyfish membrane filtration cartridges into the cartridge receptacles within the cartridge deck. It is possible that not all cartridge receptacles will be filled with a filter cartridge. In that case, a blank headplate and blank cartridge lid (no orifice) would be installed.

Cartridge Assembly

Do not force the tentacles down into the cartridge receptacle, as this may damage the membranes. Apply downward pressure on the cartridge head plate to seat the lubricated rim gasket (thick circular gasket surrounding the circumference of the head plate) into the cartridge receptacle. (See Figure 3 for details on approved lubricants for use with rim gasket.)

- Examine the cartridge lids to differentiate lids with a small orifice, a large orifice, and no orifice.
  - Lids with a small orifice are to be inserted into the Draindown cartridge receptacles, outside of the backwash pool weir.
  - Lids with a large orifice are to be inserted into the Hi-Flo cartridge receptacles within the backwash pool weir.
  - Lids with no orifice (blank cartridge lids) and a blank headplate are to be inserted into unoccupied cartridge receptacles.
- To install a cartridge lid, align both cartridge lid male threads with the cartridge receptacle female threads before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation.

3.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.
Inspection activities are typically conducted from surface observations and include:

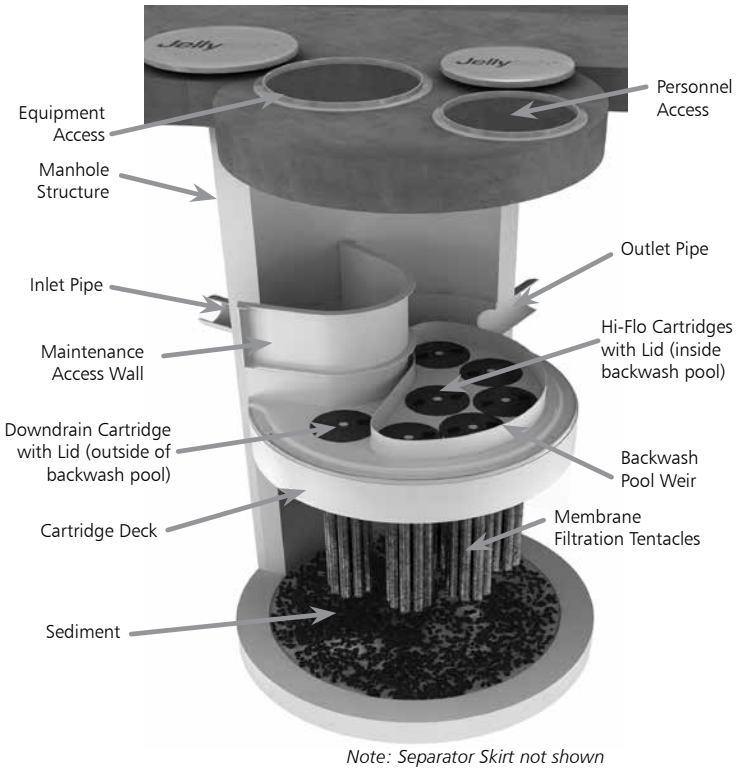
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed

4.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent*.



Note: Separator Skirt not shown

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

5.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

5.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.

Inspection Utilizing Sediment Probe

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

5.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

6.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

7.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

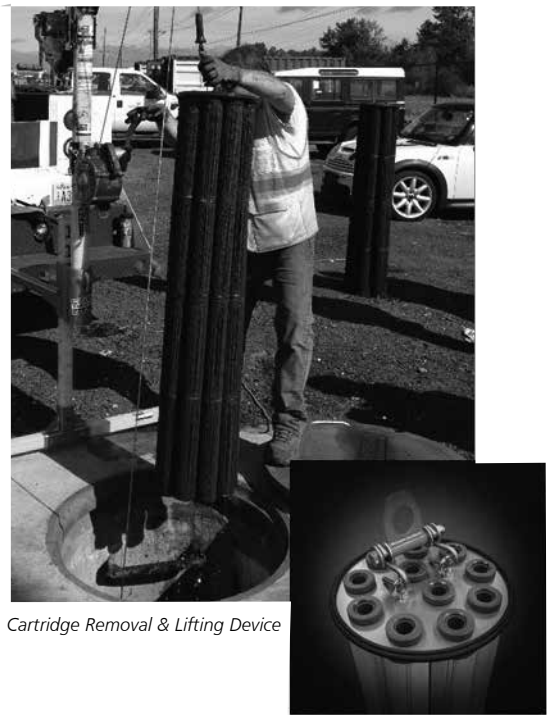
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

7.1 Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. *Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs*.
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

7.2 Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.
2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.



Cartridge Removal & Lifting Device

3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. *Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane*.
4. Collected rinse water is typically removed by vacuum hose.

5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

7.3 Sediment and Flotables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.
3. Pressure wash cartridge deck and receptacles to remove all

Rinsing Cartridge with Contech Rinse Tool

sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.

4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.
6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some

Vacuuming Sump Through MAW

vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

7.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. *Caution: Do not force the cartridge downward; damage may occur.*
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

7.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

7.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Jellyfish Filter Components & Filter Cartridge Assembly and Installation

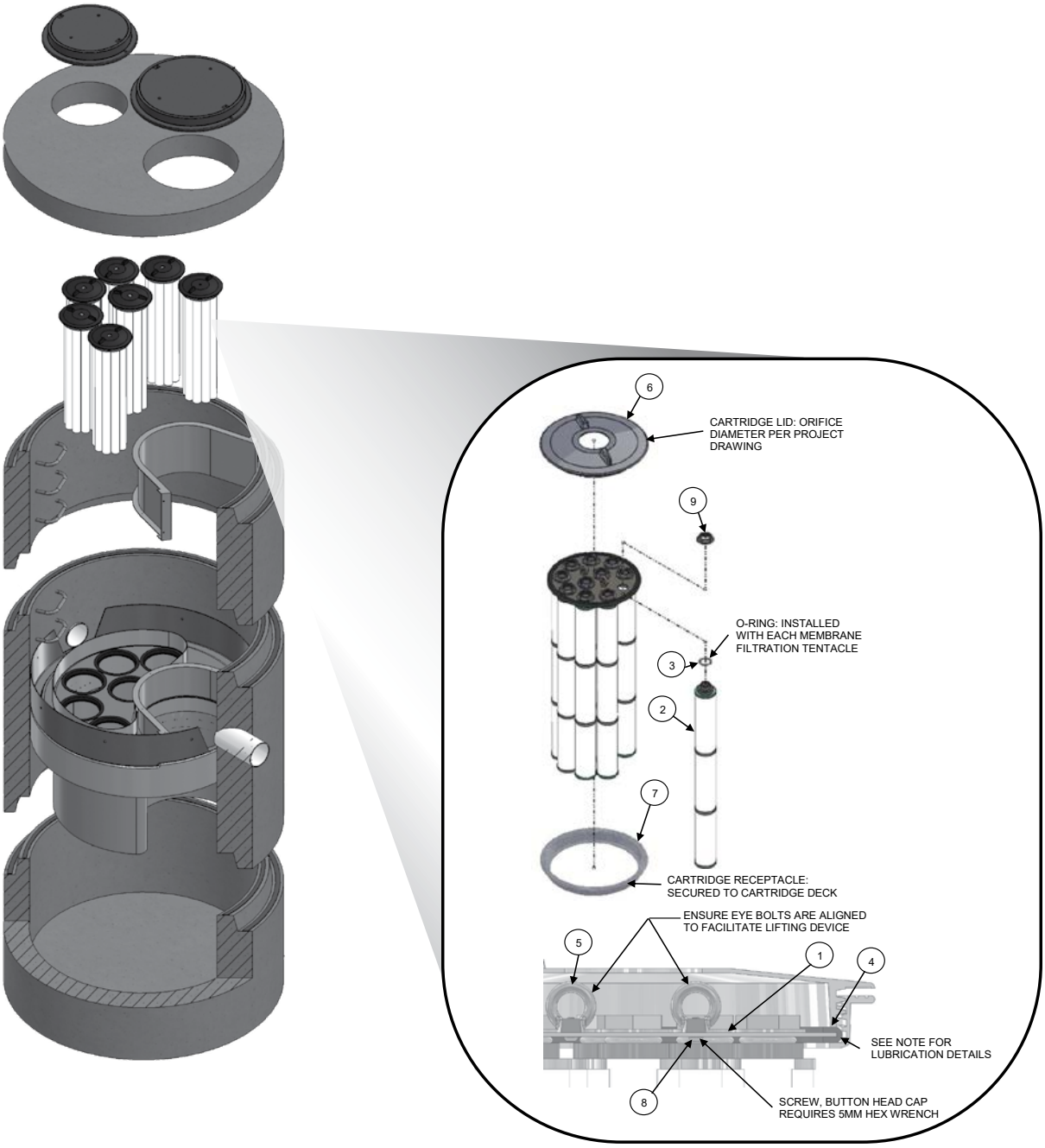


TABLE 1: BOM

ITEM NO.	DESCRIPTION
1	JF HEAD PLATE
2	JF TENTACLE
3	JF O-RING
4	JF HEAD PLATE GASKET
5	JF CARTRIDGE EYELET
6	JF 14IN COVER
7	JF RECEPTACLE
8	BUTTON HEAD CAP SCREW M6X14MM SS
9	JF CARTRIDGE NUT

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	MFR	DESCRIPTION
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:
Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lid (Item 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:
Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

Jellyfish Filter Inspection and Maintenance Log

Owner: _____ Jellyfish Model No.:_____

Location: _____ GPS Coordinates: _____

Land Use: Commercial:_____ Industrial: _____ Service Station:_____

Road/Highway:____ Airport: _____ Residential: _____ Parking Lot:_____

Date/Time:					
Inspector:					
Maintenance Contractor:					
Visible Oil Present: (Y/N)					
Oil Quantity Removed					
Floatable Debris Present: (Y/N)					
Floatable Debris removed: (Y/N)					
Water Depth in Backwash Pool					
Cartridges externally rinsed/re-commissioned: (Y/N)					
New tentacles put on Cartridges: (Y/N)					
Sediment Depth Measured: (Y/N)					
Sediment Depth (inches or mm):					
Sediment Removed: (Y/N)					
Cartridge Lids intact: (Y/N)					
Observed Damage:					
Comments:					

1.8 Contech Cascade Separator Maintenance Requirements

Contech Cascade Separator® Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Visual Inspection	Twice per year at a minimum (spring and fall)	-Visually inspect for blockages or obstruction in the inlet chamber, flumes or outlet channel - Sediment removal once 50% of maximum storage has been reached

CONTECH®
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Cascade Separator® Inspection and Maintenance Guide

CASCADE
separator®

Maintenance

The Cascade Separator® system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects sediment and debris will depend upon on-site activities and site pollutant characteristics. For example, unstable soils or heavy winter sanding will cause the sediment storage sump to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (i.e. spring and fall). However, more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment wash-down areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

A visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet chamber, flumes or outlet channel. The inspection should also quantify the accumulation of hydrocarbons, trash and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided in this Inspection and Maintenance Guide.

Access to the Cascade Separator unit is typically achieved through one manhole access cover. The opening allows for inspection and cleanout of the center chamber (cylinder) and sediment storage sump, as well as inspection of the inlet chamber and slanted skirt. For large units, multiple manhole covers allow access to the chambers and sump.

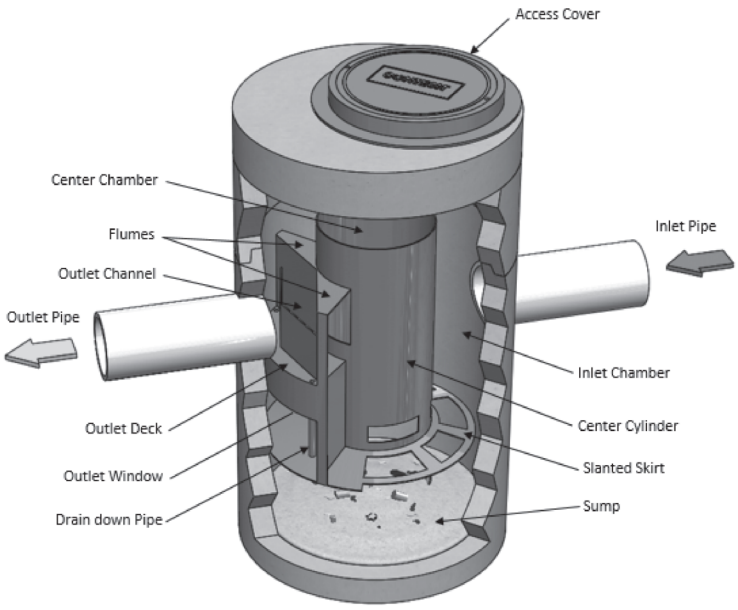
The Cascade Separator system should be cleaned before the level of sediment in the sump reaches the maximum sediment depth and/or when an appreciable level of hydrocarbons and trash has accumulated. If sorbent material is used, it must be replaced when significant discoloration has occurred. Performance may be impacted when maximum sediment storage capacity is exceeded. Contech recommends maintaining the system when sediment level reaches 50% of maximum storage volume. The level of sediment is easily determined by measuring the distance from the system outlet invert (standing water level) to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Finer, silty particles at the top of the pile typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the chart in this document to determine if the height of the sediment pile off the bottom of the sump floor exceeds 50% of the maximum sediment storage.

Cleaning

Cleaning of a Cascade Separator system should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole cover and insert the vacuum tube down through the center chamber and into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The areas outside the center chamber and the slanted skirt should also be washed off if pollutant build-up exists in these areas.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. Then the system should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and to ensure proper safety precautions. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the Cascade Separator system must be done in accordance with local regulations. In many locations, disposal of evacuated sediments may be handled in the same manner as disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal. If any components are damaged, replacement parts can be ordered from the manufacturer.



Cascade Separator® Maintenance Indicators and Sediment Storage Capacities

Model Number	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CS-3	3	0.9	1.5	0.5	0.4	0.3
CS-4	4	1.2	1.5	0.5	0.7	0.5
CS-5	5	1.3	1.5	0.5	1.1	0.8
CS-6	6	1.8	1.5	0.5	1.6	1.2
CS-8	8	2.4	1.5	0.5	2.8	2.1
CS-10	10	3.0	1.5	0.5	4.4	3.3
CS-12	12	3.6	1.5	0.5	6.3	4.8

Note: The information in the chart is for standard units. Units may have been designed with non-standard sediment storage depth.

A Cascade Separator unit can be easily cleaned in less than 30 minutes.

A vacuum truck excavates pollutants from the systems.

Cascade Separator® Inspection & Maintenance Log

Cascade Model:			Location:		
Date	Depth Below Invert to Top of Sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The depth to sediment is determined by taking a measurement from the manhole outlet invert (standing water level) to the top of the sediment pile. Once this measurement is recorded, it should be compared to the chart in the maintenance guide to determine if the height of the sediment pile off the bottom of the sump floor exceeds 50% of the maximum sediment storage. Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.
2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

SUPPORT

- Drawings and specifications are available at www.ContechES.com.
- Site-specific design support is available from our engineers.

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1.9 Rip Rap Maintenance Requirements

Rip Rap Inspection/Maintenance Requirements		
Inspection/ Maintenance	**Frequency**	**Action**
Visual Inspection	Annually	- Visually inspect for damage and deterioration - Repair damages immediately

1.10 Snow & Ice Management for Standard Asphalt and Walkways

Snow storage areas shall be located such that no direct untreated discharges are possible to receiving waters from the storage site (snow storage areas have been shown on the Site Plan). Salt storage areas shall be covered or located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt and sand shall be used to the minimum extent practical (refer to the attached for de-icing application rate guideline from the New Hampshire Stormwater Management Manual, Volume 2,).

Deicing Application Rate Guidelines

24' of pavement (typcial two-lane road)

These rates are not fixed values, but rather the middle of a range to be selected and adjusted by an agency according to its local conditions and experience.

			Pounds per two-lane mile			
Pavement Temp. (°F) and Trend (↑↓)	Weather Condition	Maintenance Actions	Salt Prewetted / Pretreated with Salt Brine	Salt Prewetted / Pretreated with Other Blends	Dry Salt*	Winter Sand (abrasives)
> 30° ↑	Snow	Plow, treat intersections only	80	70	100*	Not recommended
	Freezing Rain	Apply Chemical	80 - 160	70 - 140	100 - 200*	Not recommended
30° ↓	Snow	Plow and apply chemical	80 - 160	70 - 140	100 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↑	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	150 - 200	130 - 180	180 - 240*	Not recommended
25° - 30° ↓	Snow	Plow and apply chemical	120 - 160	100 - 140	150 - 200*	Not recommended
	Freezing Rain	Apply Chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↑	Snow or Freezing Rain	Plow and apply chemical	160 - 240	140 - 210	200 - 300*	400
20° - 25° ↓	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↑	Snow	Plow and apply chemical	200 - 280	175 - 250	250 - 350*	Not recommended
	Freezing Rain	Apply Chemical	240 - 320	210 - 280	300 - 400*	400
15° - 20° ↓	Snow or Freezing Rain	Plow and apply chemical	240 - 320	210 - 280	300 - 400*	500 for freezing rain
0° - 15° ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	300 - 400	Not recommended	500 - 750 spot treatment as needed
< 0°	Snow	Plow, treat with blends, sand hazardous areas	Not recommended	400 - 600**	Not recommended	500 - 750 spot treatment as needed

* Dry salt is not recommended. It is likely to blow off the road before it melts ice.

** A blend of 6 - 8 gal/ton $MgCl_2$ or $CaCl_2$ added to NaCl can melt ice as low as -10°.

Anti-icing Route Data Form				
Truck Station:				
Date:				
Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky
Reason for applying:				
Route:				
Chemical:				
Application Time:				
Application Amount:				
Observation (first day):				
Observation (after event):				
Observation (before next application):				
Name:				

Section 2
Chloride Management Plan

Winter Operational Guidelines

The following Chloride Management Plan is for the Lonza Biologics – Lynx Parking Expansion in Portsmouth, New Hampshire. The Plan includes operational guidelines including: winter operator certification requirements, weather monitoring, equipment calibration requirements, mechanical removal, and salt usage evaluation and monitoring. Due to the evolving nature of chloride management efforts, the Chlorides Management Plan will be reviewed annually, in advance of the winter season, to reflect the current management standards.

2.1 Background Information

The Lonza Biologics – Lynx Parking Expansion located within the Upper Hodgson Brook Watershed in Newington and Portsmouth, New Hampshire. The Upper Hodgson Brook is identified as a chloride-impaired waterbody.

2.2 Operational Guidelines – Chloride Management

All Lonza Biologics private contractors engaged at the Lonza Biologics premises for the purposes of winter operational snow removal and surface maintenance, are responsible for assisting in meeting compliance for the following protocols. Lonza Biologics private contractors are expected to minimize the effects of the use of de-icing, anti-icing and pretreatment materials by adhering to the strict guidelines outlined below.

The Lonza Biologics winter operational de-icing, anti-icing and pretreatment materials will adhere to the following protocols:

2.2.1 Winter Operator Certification Requirements

All private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance must be current UNHT2 Green SnowPro Certified operators or equivalent and will use only pre-approved methods for spreading abrasives on private roadways and parking lots. All private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance shall provide to Lonza Biologics management two copies of the annual UNHT2 Green SnowPro certificate or equivalent for each operator utilized on the Lonza Biologics premises. The annual UNHT2 Green SnowPro certificate or equivalent for each operator will be available on file in the Lonza Biologics Facilities Management office and be present in the vehicle/carrier at all times.

2.2.2 Improved Weather Monitoring

Lonza Biologics will coordinate weather information for use by winter maintenance contractors. This information in conjunction with site specific air/ground surface temperature monitoring will ensure that private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance will make more informed decisions as to when and to what extent de-icing, anti-icing and pretreatment materials are applied to private roadways, sidewalks, and parking lots.

2.2.3 Equipment Calibration Requirements

All equipment utilized on the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance will conform to the following calibration requirements.

2.2.3.1 Annual Calibration Requirements

All private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance shall provide two copies of the annual calibration report for each piece of equipment utilized on the Lonza Biologics premises. Each calibration report shall include the vehicle/carrier VIN number and the serial numbers for each component including, but not limited to, spreader control units, salt aggregate spreader equipment, brining/pre-wetting equipment, ground speed orientation unit, and air/ground surface temperature monitor. Annual calibration reports will be available on file in the Lonza Biologics Facilities Management office and be present in the vehicle/carrier at all times.

Prior to each use, each vehicle/carrier operator will perform a systems check to verify that unit settings remain within the guidelines established by the Lonza Biologics Management Team in order to accurately dispense material. All private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance will be subject to spot inspections by members of the Lonza Biologics Management Team to ensure that each vehicle/carrier is operating in a manner consistent with the guidelines set herein or State and Municipal regulations. All units will be recalibrated, and the updated calibration reports will be provided each time repairs or maintenance procedures affect the hydraulic system of the vehicle/carrier.

2.2.4 Increased Mechanical Removal Capabilities

All private contractors engaged at the Lonza Biologics premises will endeavor to use mechanical removal means on a more frequent basis for roadways, parking lots and sidewalks. Dedicating more manpower and equipment to increase snow removal frequencies prevents the buildup of snow and the corresponding need for de-icing, anti-icing and pretreatment materials. Shortened maintenance

routes, with shorter service intervals, will be used to stay ahead of snowfall. Minimized snow and ice packing will reduce the need for abrasives, salt aggregates, and/or brining solution to restore surfaces back to bare surface states after winter precipitation events.

After storm events the Lonza Biologics management team will be responsible for having the streets swept to recapture un-melted de-icing materials, when practical.

2.3 Salt Usage Evaluation and Monitoring

All private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance shall provide two copies of a storm report, which includes detailed information regarding treatment areas and the use of de-icing, anti- icing and pretreatment materials applied for the removal of snow and surface maintenance on the Lonza Biologics premises. Lonza Biologics will maintain copies of Summary Documents, including copies of the Storm Reports, operator certifications, equipment used for roadway and sidewalk winter maintenance, calibration reports and amount of de-icing materials used.

2.4 Summary

The above-described methodologies are incorporated into the Lonza Biologics Operational Manual and are to be used to qualify and retain all private contractors engaged at the Lonza Biologics premises for the purpose of winter operational snow removal and surface maintenance. This section of the Manual, is intended to be an adaptive management document that is modified as required based on experience gained from past practices and technological advancements that reflect chloride BMP standards. All Lonza Biologics employees directly involved with winter operational activities are required to review this document and the current standard Best Management Practices published by the UNH Technology Transfer (T2) program annually. All Lonza Biologics employees directly involved with winter operational activities, and all private contractors engaged at the Lonza Biologics premises for the purposes of winter operational snow removal and surface maintenance, must be current UNHT2 Green SnowPro Certified operators or equivalent and undergo the necessary requirements to maintain this certification annually.

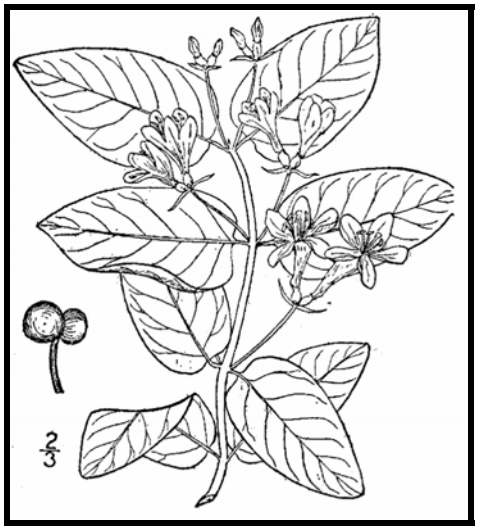
Section 3
Invasive Species

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

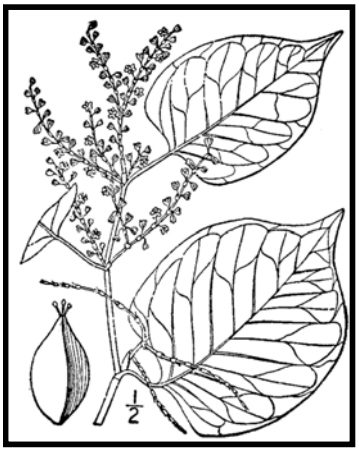
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
 </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds** 	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

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Managing Invasive Plants
Methods of Control

by Christopher Mattrick

They're out there. The problem of invasive plants is as close as your own backyard.

Maybe a favorite dogwood tree is struggling in the clutches of an Oriental bittersweet vine. Clawlike canes of multiflora rose are scratching at the side of your house. That handsome burning bush you planted few years ago has become a whole clump in practically no time … but what happened to the azalea that used to grow right next to it?

If you think controlling or managing invasive plants on your property is a daunting task, you're not alone. Though this topic is getting lots of attention from federal, state, and local government agencies, as well as the media, the basic question for most homeowners is simply, "How do I get rid of the invasive plants in my own landscape?" Fortunately, the best place to begin to tackle this complex issue is in our own backyards and on local conservation lands. We hope the information provided here will help you take back your yard. We won't kid you—there's some work involved, but the payoff in beauty, wildlife habitat, and peace of mind makes it all worthwhile.

PLAN OF ATTACK

Three broad categories cover most invasive plant control: mechanical, chemical, and biological. Mechanical control means physically removing plants from the environment through cutting or pulling. Chemical control uses herbicides to kill plants and inhibit regrowth. Techniques and chemicals used will vary depending on the species. Biological controls use plant diseases or insect predators, typically from the targeted species' home range. Several techniques may be effective in controlling a single species, but there is usually one preferred method—the one that is most resource efficient with minimal impact on non-target species and the environment.

Spraying chemicals to control invasive plants.

MECHANICAL CONTROL METHODS

Mechanical treatments are usually the first ones to look at when evaluating an invasive plant removal project. These procedures do not require special licensing or introduce chemicals into the environment. They do require permits in some situations, such as wetland zones. [See sidebar on page 23.] Mechanical removal is highly labor intensive and creates a significant amount of site disturbance, which can lead to rapid reinvasion if not handled properly.

Pulling and digging

Many herbaceous plants and some woody species (up to about one inch in diameter), if present in limited quantities, can be pulled out or dug up. It's important to remove as much of the root system as possible; even a small portion can restart the infestation. Pull plants by hand or use a digging fork, as shovels can shear off portions of the root system, allowing for regrowth. To remove larger woody stems (up to about three inches in diameter), use a Weed Wrench™, Root Jack, or Root Talon. These tools, available from several manufacturers, are designed to remove the aboveground portion of the plant as well as the entire root system. It's easiest to undertake this type of control in the spring or early summer when soils are moist and plants come out more easily.

Using tools to remove woody stems.

Volunteers hand pulling invasive plants.

Suffocation

Try suffocating small seedlings and herbaceous plants. Place double or triple layers of thick UV-stabilized plastic sheeting, either clear or black (personally I like clear), over the infestation and secure the plastic with stakes or weights. Make sure the plastic extends at least five feet past the edge of infestation on all sides. Leave the plastic in place for at least two years. This technique will kill everything beneath the plastic—invasive and non-invasive plants alike. Once the plastic is removed, sow a cover crop such as annual rye to prevent new invasions.

Cutting or mowing

This technique is best suited for locations you can visit and treat often. To be effective, you will need to mow or cut infested areas three or four times a year for up to five years. The goal is to interrupt the plant's ability to photosynthesize by removing as much leafy material as possible. Cut the plants at ground level and remove all resulting debris from the site. With this treatment, the infestation may actually appear to get worse at first, so you will need to be as persistent as the invasive plants themselves. Each time you cut the plants back, the root system gets slightly larger, but must also rely on its energy reserves to push up new growth. Eventually, you will exhaust these reserves and the plants will die. This may take many years, so you have to remain committed to this process once you start; otherwise the treatment can backfire, making the problem worse.

CHEMICAL CONTROL METHODS

Herbicides are among the most effective and resource-efficient tools to treat invasive species. Most of the commonly known invasive plants can be treated using only two herbicides—glyphosate (the active ingredient in Roundup™ and Rodeo™) and triclopyr (the active ingredient in Brush-B-Gone™ and Garlon™). Glyphosate is non-selective, meaning it kills everything it contacts. Triclopyr is selective and does not injure monocots (grasses, orchids, lilies, etc.). Please read labels and follow directions precisely for both environmental and personal safety. These are relatively benign herbicides, but improperly used they can still cause both short- and long-term health and environmental problems. Special aquatic formulations are required when working in wetland zones. You are required to have a state-issued pesticide applicator license when applying these chemicals on land you do not own. To learn more about the pesticide regulations in your state, visit or call your state's pesticide control division, usually part of the state's Department of Agriculture. In wetland areas, additional permits are usually required by the Wetlands Protection Act. [See sidebar on page 23.]

Foliar applications

When problems are on a small scale, this type of treatment is usually applied with a backpack sprayer or even a small handheld spray bottle. It is an excellent way to treat large monocultures of herbaceous plants, or to spot-treat individual plants that are difficult to remove mechanically, such as goutweed, swallowwort, or purple loosestrife. It is also an effective treatment for some woody species, such as Japanese barberry, multiflora rose, Japanese honeysuckle, and Oriental bittersweet that grow in dense masses or large numbers over many acres. The herbicide mixture should contain no more than five percent of the active ingredient, but it is important to follow the instructions on the product label. This treatment is most effective when the plants are actively growing, ideally when they are flowering or beginning to form fruit. It has been shown that plants are often more susceptible to this type of treatment if the existing stems are cut off and the regrowth is treated. This is especially true for Japanese knotweed. The target plants should be thoroughly wetted with the herbicide on a day when there is no rain in the forecast for the next 24 to 48 hours.

Cut stem treatments

There are several different types of cut stem treatments, but here we will review only the one most commonly used. All treatments of this type require a higher concentration of the active ingredient than is used in foliar applications. A 25 to 35 percent solution of the active ingredient should be used for cut stem treatments, but read and follow all label instructions. In most cases, the appropriate herbicide is glyphosate, except for Oriental bittersweet, on which triclopyr should be used. This treatment can be used on all woody stems, as well as phragmites and Japanese knotweed.

For woody stems, treatments are most effective when applied in the late summer and autumn—between late August and November. Stems should be cut close to the ground, but not so close that you will lose track of them. Apply herbicide directly to the cut surface as soon as possible after cutting. Delaying the application will reduce the effectiveness of the treatment. The herbicide can be applied with a sponge, paintbrush, or spray bottle.

Cut stem treatment tools.

For phragmites and Japanese knotweed, treatment is the same, but the timing and equipment are different. Plants should be treated anytime from mid-July through September, but the hottest, most humid days of the summer are best for this method. Cut the stems halfway between two leaf nodes at a comfortable height. Inject (or squirt) herbicide into the exposed hollow stem. All stems in an infestation should be treated. A wash bottle is the most effective application tool, but you can also use an eyedropper, spray bottle, or one of the recently developed high-tech injection systems.

It is helpful to mix a dye in with the herbicide solution. The dye will stain the treated surface and mark the areas that have been treated, preventing unnecessary reapplication. You can buy a specially formulated herbicide dye, or use food coloring or laundry dye.

There is not enough space in this article to describe all the possible ways to control invasive plants. You can find other treatments, along with more details on the above-described methods, and species-specific recommendations on The Nature Conservancy Web site (tncweeds.ucdavis.edu). An upcoming posting on the Invasive Plant Atlas of New England (www.ipane.org) and the New England Wild Flower Society (www.newfs.org) Web sites will also provide further details.

Hollow stem injection tools.

Biological controls—still on the horizon

Biological controls are moving into the forefront of control methodology, but currently the only widely available and applied biocontrol relates to purple loosestrife. More information on purple loosestrife and other biological control projects can be found at www.invasiveplants.net.

DISPOSAL OF INVASIVE PLANTS

Proper disposal of removed invasive plant material is critical to the control process. Leftover plant material can cause new infestations or reinfest the existing project area. There are many appropriate ways to dispose of invasive plant debris. I've listed them here in order of preference.

1. **Burn it**—Make a brush pile and burn the material following local safety regulations and restrictions, or haul it to your town's landfill and place it in their burn pile.

2. **Pile it**—Make a pile of the woody debris. This technique will provide shelter for wildlife as well.

3. **Compost it**—Place all your herbaceous invasive plant debris in a pile and process as compost. Watch the pile closely for resprouts and remove as necessary. Do not use the resulting compost in your garden. The pile is for invasive plants only.

Injecting herbicide into the hollow stem of phragmites.

4. **Dry it/cook it**—Place woody debris out on your driveway or any asphalt surface and let it dry out for a month. Place herbaceous material in a doubled-up black trash bag and let it cook in the sun for one month. At the end of the month, the material should be non-viable and you can dump it or dispose of it with the trash. The method assumes there is no viable seed mixed in with the removed material.

Care should be taken in the disposal of all invasive plants, but several species need extra attention. These are the ones that have the ability to sprout vigorously from plant fragments and should ideally be burned or dried prior to disposal: Oriental bittersweet, multiflora rose, Japanese honeysuckle, phragmites, and Japanese knotweed.

Christopher Mattrick is the former Senior Conservation Programs Manager for New England Wild Flower Society, where he managed conservation volunteer and invasive and rare plant management programs. Today, Chris and his family work and play in the White Mountains of New Hampshire, where he is the Forest Botanist and Invasive Species Coordinator for the White Mountain National Forest.

Controlling Invasive Plants in Wetlands

Special concerns; special precautions

Control of invasive plants in or around wetlands or bodies of water requires a unique set of considerations. Removal projects in wetland zones can be legal and effective if handled appropriately. In many cases, herbicides may be the least disruptive tools with which to remove invasive plants. You will need a state-issued pesticide license to apply herbicide on someone else's property, but all projects in wetland or aquatic systems fall under the jurisdiction of the Wetlands Protection Act and therefore require a permit. ***Yes, even hand-pulling that colony of glossy buckthorn plants from your own swampland requires a permit.*** Getting a permit for legal removal is fairly painless if you plan your project carefully.

1. Investigate and understand the required permits and learn how to obtain them. The entity charged with the enforcement of the Wetlands Protection Act varies from state to state. For more information in your state, contact:

   ME: Department of Environmental Protection
   www.state.me.us/dep/blwq/docstand/nrpapage.htm

   NH: Department of Environmental Services
   www.des.state.nh.us/wetlands/

   VT: Department of Environmental Conservation
   www.anr.state.vt.us/dec/waterq/permits/htm/pm_cud.htm

   MA: Consult your local town conservation commission

   RI: Department of Environmental Management
   www.dem.ri.gov/programs/benviron/water/permits/fresh/index.htm

   CT: Consult your local town Inland Wetland and Conservation Commission

2. Consult an individual or organization with experience in this area. Firsthand experience in conducting projects in wetland zones and navigating the permitting process is priceless. Most states have wetland scientist societies whose members are experienced in working in wetlands and navigating the regulations affecting them. A simple Web search will reveal the contact point for these societies. Additionally, most environmental consulting firms and some nonprofit organizations have skills in this area.

3. Develop a well-written and thorough project plan. You are more likely to be successful in obtaining a permit for your project if you submit a project plan along with your permit application. The plan should include the reasons for the project, your objectives in completing the project, how you plan to reach those objectives, and how you will monitor the outcome.

4. Ensure that the herbicides you plan to use are approved for aquatic use. Experts consider most herbicides harmful to water quality or aquatic organisms, but rate some formulations as safe for aquatic use. Do the research and select an approved herbicide, and then closely follow the instructions on the label.

5. If you are unsure—research, study, and most of all, ask for help. Follow the rules. The damage caused to aquatic systems by the use of an inappropriate herbicide or the misapplication of an appropriate herbicide not only damages the environment, but also may reduce public support for safe, well-planned projects.

Section 4
Annual Updates and Log Requirements

The Owner and/or Contact/Responsible Party shall review this Operation and Maintenance Plan once per year for its effectiveness and adjust the plan and deed as necessary.

A log of all preventative and corrective measures for the stormwater system shall be kept on-site and be made available upon request by any public entity with administrative, health environmental or safety authority over the site including NHDES.

Copies of the Stormwater Maintenance report shall be submitted to the Pease Development Authority on an annual basis.

Stormwater Management Report						
Lynx Parking Expansion		**101 International Drive**				
BMP Description	**Date of Inspection**	**Inspector**	**BMP Installed and Operating Properly?**	**Cleaning / Corrective Action Needed**	**Date of Cleaning / Repair**	**Performed By**
Deep Sump CB's			❑Yes ❑No			
Underground Detention			❑Yes ❑No			
Jellyfish Filter 1			❑Yes ❑No			
Jellyfish Filter 2			❑Yes ❑No			
Jellyfish Filter 3			❑Yes ❑No			
Rain Garden			❑Yes ❑No			

Steel Poles

SSS SQUARE STRAIGHT STEEL

Catalog #		**Type**
Project		
Comments		**Date**
Prepared by		

FEATURES

- ASTM Grade steel base plate with ASTM A366 base cover
- Hand hole assembly 3" x 5" on 5" and 6" pole; and 2" x 4" on 4" pole
- 10'-39' mounting heights
- Drilled or tenon (specify)

DESIGN CONSIDERATIONS

Wind induced vibrations resulting from steady, unidirectional winds and other aerodynamic forces, as well as vibration and coefficient of height factors for non-grounded mounted installations (e.g., installations on bridges or buildings) are not included in this document. The information contained herein is for general guidance only and is not a replacement for professional judgement. Consult with a professional, and local and federal standards, before ordering to ensure product is appropriate for the intended purpose and installation location. Also, please review Eaton's Light Pole White Paper for risk factors and design considerations. Learn more.

Specifications and dimensions subject to change without notice. Consult your lighting representative at Eaton or visit www.eaton.com/lighting for available options, accessories and ordering information.

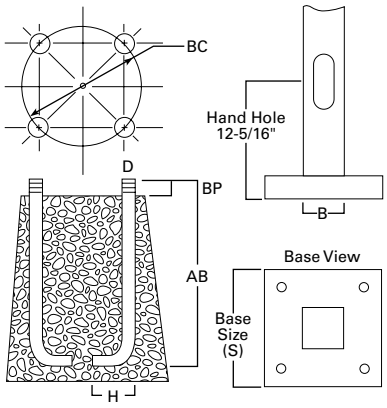
ORDERING INFORMATION

SAMPLE NUMBER: SSA5A20SFM1XG

Product Family	Shaft Size (Inches)[1]	Wall Thickness (Inches)	Mounting Height (Feet)	Base Type	Finish	Mounting Type	Number and Location of Arms	Arm Lengths (Feet)	Options (Add as Suffix)
SSS=Square Straight Steel	**4**=4" **5**=5" **6**=6"	**A**=0.120" **M**=0.188" **X**=0.250"	**10**=10' **15**=15' **20**=20' **25**=25' **30**=30' **35**=35' **39**=39'	**S**=Square Steel Base	**F**=Dark Bronze **G**=Galvanized Steel **J**=Summit White **K**=Carbon Bronze **L**=Dark Platinum **R**=Hartford Green **S**=Silver **T**=Graphite Metallic **V**=Grey **W**=White **X**=Custom Color **Y**=Black	**2**=2-3/8" O.D. Tenon (4" Long) **3**=3-1/2" O.D. Tenon (5" Long) **4**=4" O.D. Tenon (6" Long) **9**=3" O.D. Tenon (4" Long) **6**=2-3/8" O.D. Tenon (6" Long) **7**=4" O.D. Tenon (10" Long) **A**=Type A Drilling **C**=Type C Drilling **E**=Type E Drilling **F**=Type F Drilling **G**=Type G Drilling **J**=Type J Drilling **K**=Type K Drilling **M**=Type M Drilling **N**=Type N Drilling **R**=Type R Drilling **S**=Standard Upsweep Arm **Z**=Type Z Drilling	**1**=Single **2**=2 at 180° **3**=Triple[2] **4**=4 at 90° **5**=2 at 90° **X**=None	**X**=None **2**=2' **3**=2.5' **4**=4' **6**=6' **8**=8'	**A**=1/2" Tapped Hub[3] **B**=3/4" Tapped Hub[3] **C**=Convenience Outlet[4] **E**=GFCI Convenience Outlet[4] **G**=Ground Lug **H**=Additional Hand Hole[5] **V**=Vibration Dampener

NOTES: 1. All shaft sizes nominal. **2.** Square poles are 3 at 90°, round poles are 3 at 120°. **3.** Tapped Hub is located 5' below the pole top and on the same side of pole as hand hole, unless specified otherwise. **4.** Outlet is located 4' above base and on same side of pole as hand hole, unless specified otherwise. Receptacle not included, provision only. **5.** Additional hand hole is located 12" below pole top and 90° from standard hand hole location, unless otherwise specified.

DIMENSIONS



See technical information.

Effective Projected Area (At Pole Top)

Mounting Height (Feet)	Catalog Number [1, 2]	Wall Thickness (Inches)	Base Square [3] (Inches)	Bolt Circle Diameter (Inches)	Anchor Bolt Projection [3] (Inches)	Shaft Size [3] (Inches)	Anchor Bolt Diameter x Length x Hook (Inches)	Net Weight (Pounds)	Maximum Effective Projected Area (Square Feet) [4]				Max. Fixture Load - Includes Bracket (Pounds)
MH			**S**	**BC**	**BP**	**B**	**D x AB x H**		**80 mph**	**90 mph**	**100 mph**	**110 mph**	
10	SSS4A10S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	85	30.0	22.0	17.0	13.0	100
15	SSS4A15S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	118	15.0	11.5	8.7	6.5	100
20	SSS4A20S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	150	8.7	5.9	3.9	2.5	150
20	SSS5A20S	0.120	10-1/2	11	4-1/2	5	3/4 x 25 x 3	183	15.4	11.1	7.9	5.5	150
25	SSS4A25S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	181	3.7	1.7	0.3	--	200
25	SSS5A25S	0.120	10-1/2	11	5	5	3/4 x 25 x 3	222	9.3	6.0	3.5	1.6	200
25	SSS6A25S	0.120	12-1/2	12-1/2	5	6	1 x 36 x 4	284	9.9	6.1	3.5	1.2	200
30	SSS5A30S	0.120	10-1/2	11	4-1/2	5	3/4 x 25 x 3	260	4.7	2.1	--	--	200
30	SSS5M30S	0.188	10-1/2	11	4-1/2	5	3/4 x 25 x 3	392	10.4	6.4	3.5	1.5	200
30	SSS6A30S	0.120	12-1/2	12-1/2	5	6	1 x 36 x 4	330	4.3	1.4	--	--	200
30	SSS6M30S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	489	19.0	13.0	8.7	5.6	200
35	SSS5M35S	0.188	10-1/2	11	4-1/2	5	3/4 x 25 x 3	453	5.8	2.8	--	--	200
35	SSS6M35S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	564	12.8	7.2	3.7	1.0	200
35	SSS6X35S	0.250	12-1/2	12-1/2	5	6	1 x 36 x 4	738	16.5	11.0	6.8	3.5	200
39	SSS6M39S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	618	7.3	3.0	--	--	300
39	SSS6X39S	0.250	12-1/2	12-1/2	5	6	1 x 36 x 4	816	13.0	7.0	3.7	0.8	300

Effective Projected Area (Two Feet Above Pole Top)

Mounting Height (Feet)	Catalog Number [1, 2]	Wall Thickness (Inches)	Base Square [3] (Inches)	Bolt Circle Diameter (Inches)	Anchor Bolt Projection [3] (Inches)	Shaft Size [3] (Inches)	Anchor Bolt Diameter x Length x Hook (Inches)	Net Weight (Pounds)	Maximum Effective Projected Area (Square Feet) [4]				Max. Fixture Load - Includes Bracket (Pounds)
MH			**S**	**BC**	**BP**	**B**	**D x AB x H**		**80 mph**	**90 mph**	**100 mph**	**110 mph**	
10	SSS4A10S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	85	23.0	17.5	14.0	11.0	100
15	SSS4A15S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	118	13.4	10.0	7.5	5.7	100
20	SSS4A20S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	150	7.6	5.2	3.4	2.1	150
20	SSS5A20S	0.120	10-1/2	11	4-1/2	5	3/4 x 25 x 3	183	13.8	9.9	7.1	4.9	150
25	SSS4A25S	0.120	10-1/2	11	4-1/2	4	3/4 x 25 x 3	181	3.4	1.6	0.3	--	200
25	SSS5A25S	0.120	10-1/2	11	5	5	3/4 x 25 x 3	222	8.5	5.5	3.2	1.5	200
25	SSS6A25S	0.120	12-1/2	12-1/2	5	6	1 x 36 x 4	284	9.1	5.6	3.0	1.2	200
30	SSS5A30S	0.120	10-1/2	11	4-1/2	5	3/4 x 25 x 3	260	1.8	--	--	--	200
30	SSS5M30S	0.188	10-1/2	11	4-1/2	5	3/4 x 25 x 3	392	9.6	5.9	1.9	0.2	200
30	SSS6A30S	0.120	12-1/2	12-1/2	5	6	1 x 36 x 4	330	4.1	1.3	--	--	200
30	SSS6M30S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	489	18.5	12.5	8.4	5.3	200
35	SSS5M35S	0.188	10-1/2	11	4-1/2	5	3/4 x 25 x 3	453	5.5	2.4	--	--	200
35	SSS6M35S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	564	11.8	7.0	3.5	1.0	200
35	SSS6X35S	0.250	12-1/2	12-1/2	5	6	1 x 36 x 4	738	16.0	10.5	6.4	3.4	200
39	SSS6M39S	0.188	12-1/2	12-1/2	5	6	1 x 36 x 4	618	7.0	2.4	--	--	300
39	SSS6X39S	0.250	12-1/2	12-1/2	5	6	1 x 36 x 4	816	12.0	6.7	3.0	0.5	300

NOTES:

1. Catalog number includes pole with hardware kit. Anchor bolts not included. Before installing, make sure proper anchor bolts and templates are obtained.

2. Tenon size or machining for rectangular arms must be specified. Hand hole position relative to drill location.

3. Shaft size, base square, anchor bolts and projections may vary slightly. All dimensions nominal.

4. EPAs based on shaft properties with wind normal to flat. EPAs calculated using base wind velocity as indicated plus 30% gust factor.

Eaton
1121 Highway 74 South
Peachtree City, GA 30269
P: 770-486-4800
www.eaton.com/lighting

Specifications and dimensions subject to change without notice.

Project		Catalog #		Type	
Prepared by		Notes		Date	

McGraw-Edison

GLEON Galleon

Area / Site Luminaire

Typical Applications

Outdoor • Parking Lots • Walkways • Roadways • Building Areas

Interactive Menu

- Ordering Information page 2
- Mounting Details page 3
- Optical Distributions page 4
- Product Specifications page 4
- Energy and Performance Data page 4
- Control Options page 9

Product Certifications

Product Features

LumenSafe Technology · Enlighted · WaveLinx · Light ARchitect™

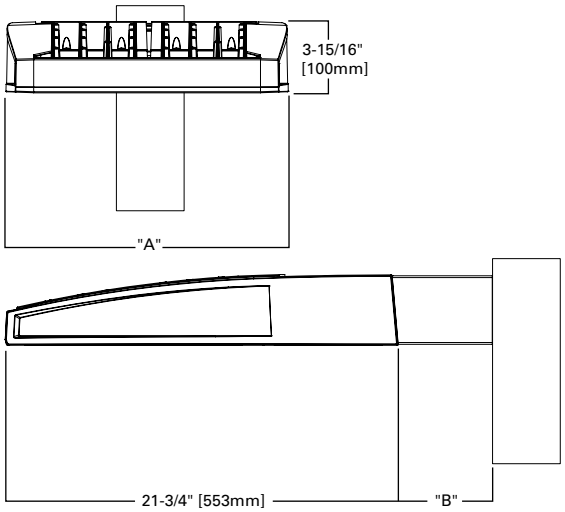
Quick Facts

- Lumen packages range from 4,200 - 80,800 (34W - 640W)
- Efficacy up to 156 lumens per watt

Connected Systems

- WaveLinx
- Enlighted

Dimensional Details



Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Extended Arm Length [1]	"B" Quick Mount Arm Length	"B" Quick Mount Extended Arm Length
1-4	15-1/2"	7"	10"	10-5/8"	16-9/16"
5-6	21-5/8"	7"	10"	10-5/8"	16-9/16"
7-8	27-5/8"	7"	13"	10-5/8"	--
9-10	33-3/4"	7"	16"	--	--

NOTES:
For arm selection requirements and additional line art, see Mounting Details section.

Ordering Information

SAMPLE NUMBER: **GLEON-SA4C-740-U-T4FT-GM**

Product Family [1, 2]	Light Engine		Color Temperature	Voltage	Distribution	Mounting	Finish
	Configuration	Drive Current					
GLEON=Galleon	**SA1**=1 Square **SA2**=2 Squares **SA3**=3 Squares **SA4**=4 Squares **SA5**=5 Squares [4] **SA6**=6 Squares **SA7**=7 Squares [5] **SA8**=8 Squares [5] **SA9**=9 Squares [6] **SA0**=10 Squares [6]	**A**=600mA **B**=800mA **C**=1000mA **D**=1200mA [16]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **AMB**=Amber, 590nm [14, 16]	**U**=120-277V **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [7, 8] **9**=347V [7]	**T2**=Type II **T2R**=Type II Roadway **T3**=Type III **T3R**=Type III Roadway **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **5NQ**=Type V Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **AFL**=Automotive Frontline	**[Blank]**=Arm for Round or Square Pole **EA**=Extended Arm [9] **MA**=Mast Arm Adapter [10] **WM**=Wall Mount **QM**=Quick Mount Arm (Standard Length) [11] **QMEA**=Quick Mount Arm (Extended Length) [12]	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White

Options (Add as Suffix)	Controls and Systems Options (Add as Suffix)	Accessories (Order Separately)
DIM=External 0-10V Dimming Leads [19, 20] **F**=Single Fuse (120, 277 or 347V Specify Voltage) **FF**=Double Fuse (208, 240 or 480V Specify Voltage) **20K**=Series 20kV UL 1449 Surge Protective Device **2L**=Two Circuits [17, 18] **HA**=50°C High Ambient **HSS**=Installed House Side Shield [28] **GRSBK**=Glare Reducing Shield, Black [23] **GRSWH**=Glare Reducing Shield, White [23] **LCF**=Light Square Trim Painted to Match Housing [27] **MT**=Installed Mesh Top **TH**=Tool-less Door Hardware **CC**=Coastal Construction finish [3] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **CE**=CE Marking [29] **AHD145**=After Hours Dim, 5 Hours [22] **AHD245**=After Hours Dim, 6 Hours [22] **AHD255**=After Hours Dim, 7 Hours [22] **AHD355**=After Hours Dim, 8 Hours [22] **DALI**=DALI Drivers	**BPC**=Button Type Photocontrol **PR**=NEMA 3-PIN Photocontrol Receptacle **PR7**=NEMA 7-PIN Photocontrol Receptacle [21] **SPB2**=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting [34] **SPB4**=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting [34] **MS-L20**=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height [24] **MS-L40W**=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height [24] **MS/X-L20**=Bi-Level Motion Sensor, 9' - 20' Mounting Height [24, 25] **MS/X-L40W**=Bi-Level Motion Sensor, 21' - 40' Mounting Height [24, 25] **MS/DIM-L20**=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height [24] **MS/DIM-L40W**=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height [24] **ZW**=WaveLinx Module and 4-PIN Receptacle **ZD**=WaveLinx Module with DALI driver and 4-PIN Receptacle **SWPD4XX**=WaveLinx Sensor Only, 7'-15' [13, 32, 33] **SWPD5XX**=WaveLinx Sensor Only, 15'-40' [13, 32, 33] **WOBXX**=WaveLinx Sensor with Bluetooth, 7'-15' [13, 32] **WOFXX**=WaveLinx Sensor with Bluetooth, 15'-40' [13, 32] **LWR-LW**=Enlighted Sensor, 8'–16' Mounting Height [26] **LWR-LN**=Enlighted Sensor, 16'–40' Mounting Height [26] **DIM10-MS/DIM-L08**=Synapse Occupancy Sensor (<8' Mounting) [19] **DIM10-MS/DIM-L20**=Synapse Occupancy Sensor (9'-20' Mounting) [19] **DIM10-MS/DIM-L40**=Synapse Occupancy Sensor (21'-40' Mounting) [19]	**OA/RA1016**=NEMA Photocontrol Multi-Tap - 105-285V **OA/RA1027**=NEMA Photocontrol - 480V **OA/RA1201**=NEMA Photocontrol - 347V **OA/RA1013**=Photocontrol Shorting Cap **OA/RA1014**=120V Photocontrol **MA1252**=10kV Surge Module Replacement **MA1036-XX**=Single Tenon Adapter for 2-3/8" O.D. Tenon **MA1037-XX**=2@180° Tenon Adapter for 2-3/8" O.D. Tenon **MA1197-XX**=3@120° Tenon Adapter for 2-3/8" O.D. Tenon **MA1188-XX**=4@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1189-XX**=2@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1190-XX**=3@90° Tenon Adapter for 2-3/8" O.D. Tenon **MA1191-XX**=2@120° Tenon Adapter for 2-3/8" O.D. Tenon **MA1038-XX**=Single Tenon Adapter for 3-1/2" O.D. Tenon **MA1039-XX**=2@180° Tenon Adapter for 3-1/2" O.D. Tenon **MA1192-XX**=3@120° Tenon Adapter for 3-1/2" O.D. Tenon **MA1193-XX**=4@90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1194-XX**=2@90° Tenon Adapter for 3-1/2" O.D. Tenon **MA1195-XX**=3@90° Tenon Adapter for 3-1/2" O.D. Tenon **FSIR-100**=Wireless Configuration Tool for Occupancy Sensor [24] **GLEON-MT1**=Field Installed Mesh Top for 1-4 Light Squares **GLEON-MT2**=Field Installed Mesh Top for 5-6 Light Squares **GLEON-MT3**=Field Installed Mesh Top for 7-8 Light Squares **GLEON-MT4**=Field Installed Mesh Top for 9-10 Light Squares **GLEON-QM**=Quick Mount Arm Kit [11] **GLEON-QMEA**=Quick Mount Extended Arm Kit [12] **LS/HSS**=Field Installed House Side Shield [28, 30] **LS/GRSBK**=Glare Reducing Shield, Black [23, 30] **LS/GRSWH**=Glare Reducing Shield, White [23, 30] **LS/PFS**=Perimeter Shield, Black [15] **WOLC-7P-10A**=WaveLinx Outdoor Control Module [19, 31] **SWPD4-XX**=Wavelinx Wireless Sensor, 7'–15' Mounting Height [13, 19, 32, 33] **SWPD5-XX**=Wavelinx Wireless Sensor, 15'–40' Mounting Height [13, 19, 32, 33]

NOTES:

1. Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to our white paper WP513001EN for additional support information.
2. DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
3. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. Not available with TH option.
4. Not compatible with MS/4-LXX or MS/1-LXX sensors.
5. Not compatible with extended quick mount arm (QMEA).
6. Not compatible with standard quick mount arm (QM) or extended quick mount arm (QMEA).
7. Requires the use of an internal step down transformer when combined with sensor options. Not available with sensor at 1200mA. Not available in combination with the HA high ambient and sensor options at 1A.
8. 480V must utilize Wye system only. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems.)
9. May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table.
10. Factory installed.
11. Maximum 8 light squares.
12. Maximum 6 light squares.
13. Requires ZW or ZD receptacle.
14. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
15. Set of 4 pcs. One set required per Light Square.
16. Not available with HA option.
17. 2L is not available with MS, MS/X or MS/DIM at 347V or 480V. 2L in SA2 through SA4 requires a larger housing, normally used for SA5 or SA6. Extended arm option may be required when mounting two or more fixtures per pole at 90° or 120°. Refer to arm mounting requirement table.
18. Not available with Enlighted wireless sensors.
19. Cannot be used with other control options.
20. Low voltage control lead brought out 18" outside fixture.
21. Not available if any "MS" sensor is selected. Motion sensor has an integral photocell.
22. Requires the use of BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
23. Not for use with T4FT, T4W or SL4 optics. See IES files for details.
24. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Cooper Lighting Solutions for more information.
25. Replace X with number of Light Squares operating in low output mode.
26. Enlighted wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities.
27. Not available with house side shield (HSS).
28. Not for use with 5NQ, 5MQ, 5WQ or RW optics. A black trim plate is used when HSS is selected.
29. CE is not available with the LWR, MS, MS/X, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.
30. One required for each Light Square.
31. Requires PR7.
32. Replace XX with sensor color (WH, BZ or BK.)
33. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
34. Smart device with mobile application required to change system defaults. See controls section for details.

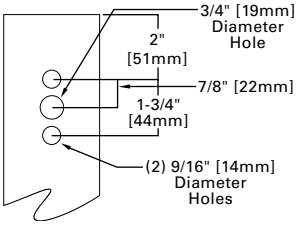
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

Product Family	Camera Type	Data Backhaul	
L=LumenSafe Technology	**D**=Standard Dome Camera **H**=Hi-Res Dome Camera **Z**=Remote PTZ Camera	**C**=Cellular, No SIM **A**=Cellular, AT&T **V**=Cellular, Verizon **S**=Cellular, Sprint	**R**=Cellular, Rogers **W**=Wi-Fi Networking w/ Omni-Directional Antenna **E**=Ethernet Networking

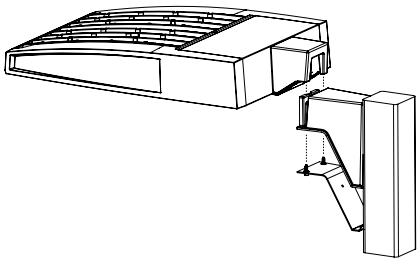
Mounting Details

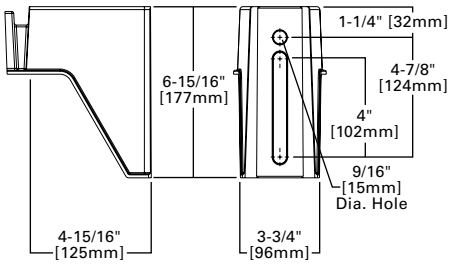
Standard Arm (Drilling Pattern)

TYPE "N"

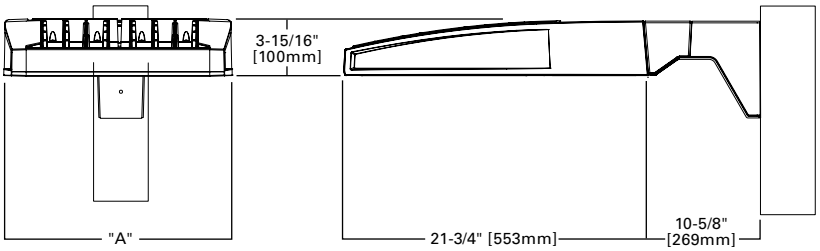


Quick Mount Arm (Includes fixture adapter)

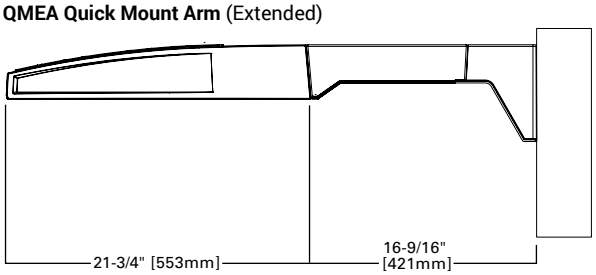




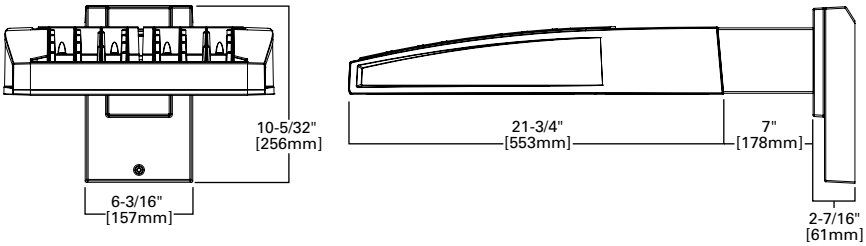
QM Quick Mount Arm (Standard)



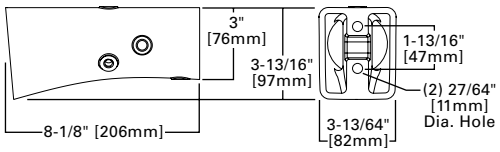
QMEA Quick Mount Arm (Extended)



Standard Wall Mount

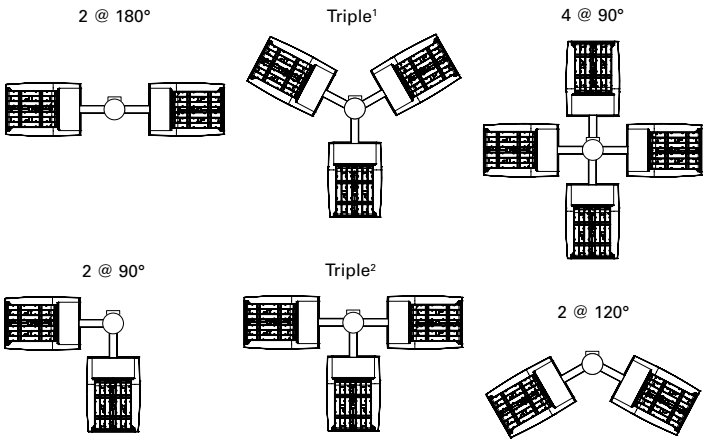


Mast Arm Mount



Arm Mounting Requirements

Number of Light Squares	Standard Arm @ 90° Apart	Standard Arm @ 120° Apart	Quick Mount Arm @ 90° Apart	Quick Mount Arm @ 120° Apart
1	Standard	Standard	QM Extended	Quick Mount
2	Standard	Standard	QM Extended	Quick Mount
3	Standard	Standard	QM Extended	Quick Mount
4	Standard	Standard	QM Extended	Quick Mount
5	Extended	Standard	QM Extended	Quick Mount
6	Extended	Standard	QM Extended	Quick Mount
7	Extended	Extended	--	Quick Mount
8	Extended	Extended	--	Quick Mount
9	Extended	Extended	--	--
10	Extended	Extended	--	--



NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. **2** Round poles are 3 @ 90°.

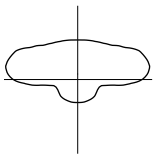
Fixture Weights and EPAs

Number of Light Squares	Weight with Standard and Extended Arm (lbs.)	EPA with Standard and Extended Arm (Sq. Ft.)	Weight with Quick Mount Arm (lbs.)	EPA with Quick Mount Arm (Sq. Ft.)	Weight with Quick Mount Extended Arm (lbs.)	EPA with Quick Mount Extended Arm (Sq. Ft.)
1-4	33	0.96	35	1.11	38	1.11
5-6	44	1.00	46	1.11	49	1.11
7-8	54	1.07	56	1.11	--	--
9-10	63	1.12	--	--	--	--

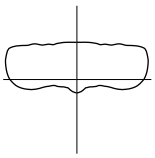
Optical Distributions

Asymmetric Area Distributions

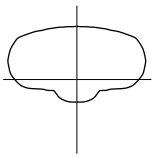
T2 (Type II)



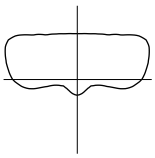
SL2 (Type II with Spill Control)



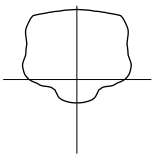
T3 (Type III)



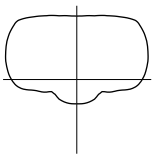
SL3 (Type III with Spill Control)



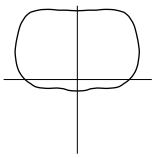
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

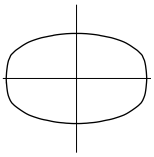


SL4 (Type IV with Spill Control)

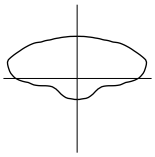


Asymmetric Roadway Distributions

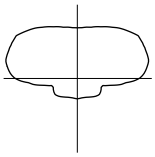
RW (Rectangular Wide Type I)



T2R (Type II Roadway)

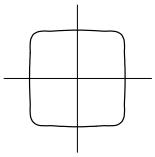


T3R (Type III Roadway)

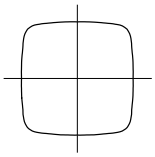


Symmetric Distributions

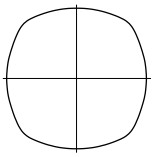
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

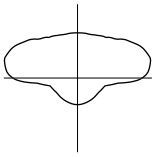


5WQ (Type V Square Wide)

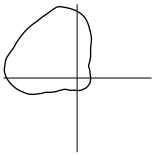


Specialized Distributions

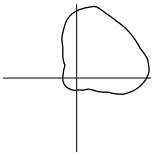
AFL (Automotive Frontline)



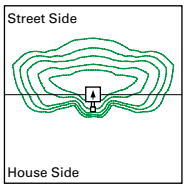
SLL (90° Spill Light Eliminator Left)



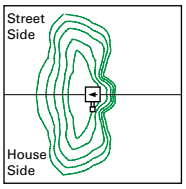
SLR (90° Spill Light Eliminator Right)



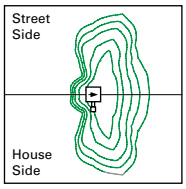
Rotated Optics



Standard



Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

Product Specifications

Construction

- Extruded aluminum driver enclosure
- Heavy-wall, die-cast aluminum end caps
- Die-cast aluminum heat sinks
- Patent pending interlocking housing and heat sink

Optics

- Patented, high-efficiency injection-molded AccuLED Optics technology
- 16 optical distributions
- 3 shielding options including HSS, GRS and PFS
- IDA Certified (3000K CCT and warmer only)

Electrical

- LED drivers are mounted to removable tray assembly for ease of maintenance
- Standard with 0-10V dimming
- Standard with Cooper Lighting Solutions proprietary circuit module designed to withstand 10kV of transient line surge
- Suitable for operation in -40°C to 40°C ambient environments. Optional 50°C high ambient (HA) configuration.

Mounting

- Standard extruded arm includes internal bolt guides and round pole adapter
- Extended arms (EA and QMEA) may be required in 90° or 120° pole mount configurations, see arm mounting requirements table
- Mast arm (MA) factory installed
- Wall mount (WM) option available
- Quick mount arm (QM and QMEA) includes pole adapter and factory installed fixture mount for fast installation to square or round poles

Finish

- Super housing durable TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Heat sink is powder coated black
- RAL and custom color matches available
- Coastal Construction (CC) option available

Warranty

- Five year warranty

Energy and Performance Data

Lumen Maintenance (TM-21)

Drive Current	Ambient Temperature	25,000 hours*	50,000 hours*	60,000 hours*	100,000 hours**	Theoretical L70 hours**
Up to 1A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.7%	98.3%	98.1%	97.4%	> 1.9M
	50°C	98.2%	97.2%	96.8%	95.2%	> 851,000
1.2A	25°C	99.4%	99.0%	98.9%	98.3%	> 2.4M
	40°C	98.5%	97.9%	97.7%	96.7%	> 1.3M

* Supported by IES TM-21 standards
** Theoretical values represent estimations commonly used; however, refer to the IES position on LED Product Lifetime Prediction, IES PS-10-18, explaining proper use of IES TM-21 and LM-80.

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

View GLEON IES files

Nominal Power Lumens (1.2A)

Supplemental Performance Guide**

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		67	129	191	258	320	382	448	511	575	640
Input Current @ 120V (A)		0.58	1.16	1.78	2.31	2.94	3.56	4.09	4.71	5.34	5.87
Input Current @ 208V (A)		0.33	0.63	0.93	1.27	1.57	1.87	2.22	2.52	2.8	3.14
Input Current @ 240V (A)		0.29	0.55	0.80	1.10	1.35	1.61	1.93	2.18	2.41	2.71
Input Current @ 277V (A)		0.25	0.48	0.70	0.96	1.18	1.39	1.69	1.90	2.09	2.36
Input Current @ 347V (A)		0.20	0.39	0.57	0.78	0.96	1.15	1.36	1.54	1.72	1.92
Input Current @ 480V (A)		0.15	0.30	0.43	0.60	0.73	0.85	1.03	1.16	1.28	1.45
Optics											
T2	4000K Lumens	7,972	15,580	23,245	30,714	38,056	45,541	53,857	61,024	68,072	75,366
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	121	122	119	119	119	120	119	118	118
T2R	4000K Lumens	8,462	16,539	24,680	32,609	40,401	48,348	57,176	64,783	72,266	80,010
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	129	126	126	127	128	127	126	125
T3	4000K Lumens	8,125	15,879	23,693	31,307	38,787	46,417	54,893	62,197	69,381	76,818
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	122	123	122	121	120
T3R	4000K Lumens	8,306	16,232	24,220	32,001	39,651	47,447	56,114	63,580	70,924	78,523
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
T4FT	4000K Lumens	8,173	15,970	23,831	31,488	39,014	46,686	55,212	62,558	69,783	77,261
	BUG Rating	B1-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	122	124	125	122	122	122	123	122	121	121
T4W	4000K Lumens	8,067	15,764	23,522	31,080	38,510	46,082	54,499	61,751	68,881	76,263
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5
	Lumens per Watt	120	122	123	120	120	121	122	121	120	119
SL2	4000K Lumens	7,958	15,552	23,206	30,662	37,989	45,462	53,763	60,920	67,952	75,235
	BUG Rating	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	119	121	121	119	119	119	120	119	118	118
SL3	4000K Lumens	8,124	15,877	23,690	31,302	38,784	46,410	54,885	62,189	69,372	76,805
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	121	123	124	121	121	121	123	122	121	120
SL4	4000K Lumens	7,719	15,085	22,510	29,741	36,850	44,097	52,148	59,089	65,913	72,977
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	115	117	118	115	115	115	116	116	115	114
5NQ	4000K Lumens	8,380	16,375	24,436	32,287	40,003	47,870	56,610	64,144	71,552	79,221
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	125	127	128	125	125	125	126	126	124	124
5MQ	4000K Lumens	8,534	16,676	24,885	32,881	40,739	48,752	57,653	65,326	72,868	80,679
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	127	129	130	127	127	128	129	128	127	126
5WQ	4000K Lumens	8,556	16,723	24,951	32,968	40,847	48,881	57,808	65,499	73,063	80,894
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	128	130	131	128	128	128	129	128	127	126
SLL/ SLR	4000K Lumens	7,140	13,951	20,817	27,506	34,081	40,783	48,231	54,649	60,959	67,492
	BUG Rating	B1-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	107	108	109	107	107	107	108	107	106	105
RW	4000K Lumens	8,304	16,228	24,215	31,994	39,641	47,437	56,100	63,566	70,907	78,504
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
	Lumens per Watt	124	126	127	124	124	124	125	124	123	123
AFL	4000K Lumens	8,335	16,287	24,302	32,110	39,784	47,610	56,303	63,796	71,163	78,790
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G5
	Lumens per Watt	124	126	127	124	124	125	126	125	124	123

*** Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.**

Nominal Power Lumens (1A)

Supplemental Performance Guide**

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		59	113	166	225	279	333	391	445	501	558
Input Current @ 120V (A)		0.51	1.02	1.53	2.03	2.55	3.06	3.56	4.08	4.60	5.07
Input Current @ 208V (A)		0.29	0.56	0.82	1.11	1.37	1.64	1.93	2.19	2.46	2.75
Input Current @ 240V (A)		0.26	0.48	0.71	0.96	1.19	0.41	1.67	1.89	2.12	2.39
Input Current @ 277V (A)		0.23	0.42	0.61	0.83	1.03	1.23	1.45	1.65	1.84	2.09
Input Current @ 347V (A)		0.17	0.32	0.50	0.64	0.82	1.00	1.14	1.32	1.50	1.68
Input Current @ 480V (A)		0.14	0.24	0.37	0.48	0.61	0.75	0.91	0.99	1.12	1.28
Optics											
T2	4000K Lumens	7,267	14,201	21,190	28,000	34,692	41,515	49,096	55,627	62,053	68,703
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	126	128	124	124	125	126	125	124	123
T2R	4000K Lumens	7,715	15,077	22,497	29,725	36,829	44,073	52,122	59,056	65,876	72,937
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	131	133	136	132	132	132	133	133	131	131
T3	4000K Lumens	7,408	14,475	21,598	28,539	35,358	42,313	50,039	56,698	63,246	70,024
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
T3R	4000K Lumens	7,571	14,798	22,078	29,172	36,145	43,253	51,153	57,959	64,653	71,581
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
T4FT	4000K Lumens	7,451	14,559	21,725	28,703	35,564	42,558	50,330	57,027	63,613	70,430
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	129	131	128	127	128	129	128	127	126
T4W	4000K Lumens	7,354	14,371	21,442	28,333	35,105	42,007	49,681	56,291	62,792	69,521
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	125	127	129	126	126	126	127	126	125	125
SL2	4000K Lumens	7,254	14,178	21,155	27,951	34,631	41,443	49,011	55,533	61,944	68,584
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	123	125	127	124	124	124	125	125	124	123
SL3	4000K Lumens	7,406	14,474	21,596	28,534	35,355	42,307	50,033	56,690	63,237	70,014
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	126	128	130	127	127	127	128	127	126	125
SL4	4000K Lumens	7,037	13,751	20,519	27,112	33,592	40,198	47,538	53,864	60,087	66,524
	BUG Rating	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	119	122	124	120	120	121	122	121	120	119
5NQ	4000K Lumens	7,640	14,928	22,275	29,431	36,465	43,637	51,606	58,472	65,226	72,218
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	129	132	134	131	131	131	132	131	130	129
5MQ	4000K Lumens	7,779	15,203	22,684	29,973	37,137	44,441	52,555	59,549	66,427	73,545
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	132	135	137	133	133	133	134	134	133	132
5WQ	4000K Lumens	7,800	15,243	22,744	30,052	37,236	44,560	52,697	59,708	66,603	73,742
	BUG Rating	B3-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	132	135	137	134	133	134	135	134	133	132
SLL/ SLR	4000K Lumens	6,510	12,719	18,977	25,075	31,067	37,176	43,967	49,817	55,569	61,525
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	110	113	114	111	111	112	112	112	111	110
RW	4000K Lumens	7,570	14,793	22,073	29,165	36,137	43,243	51,140	57,945	64,637	71,564
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5
	Lumens per Watt	128	131	133	130	130	130	131	130	129	128
AFL	4000K Lumens	7,598	14,847	22,154	29,272	36,267	43,400	51,326	58,156	64,872	71,824
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G4
	Lumens per Watt	129	131	133	130	130	130	131	131	129	129

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Nominal Power Lumens (800mA)

Supplemental Performance Guide**

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		44	85	124	171	210	249	295	334	374	419
Input Current @ 120V (A)		0.39	0.77	1.13	1.54	1.90	2.26	2.67	3.03	3.39	3.80
Input Current @ 208V (A)		0.22	0.44	0.62	0.88	1.06	1.24	1.50	1.68	1.87	2.12
Input Current @ 240V (A)		0.19	0.38	0.54	0.76	0.92	1.08	1.30	1.46	1.62	1.84
Input Current @ 277V (A)		0.17	0.36	0.47	0.72	0.83	0.95	1.19	1.31	1.42	1.67
Input Current @ 347V (A)		0.15	0.24	0.38	0.49	0.63	0.77	0.87	1.01	1.15	1.52
Input Current @ 480V (A)		0.11	0.18	0.29	0.37	0.48	0.59	0.66	0.77	0.88	0.96
Optics											
T2	4000K Lumens	5,871	11,474	17,121	22,622	28,029	33,542	39,667	44,944	50,134	55,508
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	133	135	138	132	133	135	134	135	134	132
T2R	4000K Lumens	6,233	12,181	18,176	24,016	29,756	35,608	42,111	47,714	53,224	58,929
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5
	Lumens per Watt	142	143	147	140	142	143	143	143	142	141
T3	4000K Lumens	5,986	11,695	17,450	23,057	28,568	34,186	40,430	45,809	51,099	56,576
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
T3R	4000K Lumens	6,117	11,955	17,838	23,569	29,203	34,946	41,328	46,827	52,235	57,832
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
T4FT	4000K Lumens	6,019	11,763	17,551	23,190	28,734	34,384	40,663	46,074	51,396	56,904
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	137	138	142	136	137	138	138	138	137	136
T4W	4000K Lumens	5,942	11,610	17,324	22,891	28,363	33,940	40,138	45,480	50,732	56,169
	BUG Rating	B1-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	135	137	140	134	135	136	136	136	136	134
SL2	4000K Lumens	5,862	11,454	17,091	22,583	27,980	33,484	39,598	44,867	50,048	55,411
	BUG Rating	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	133	135	138	132	133	134	134	134	134	132
SL3	4000K Lumens	5,985	11,694	17,447	23,053	28,565	34,182	40,424	45,804	51,092	56,568
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	136	138	141	135	136	137	137	137	137	135
SL4	4000K Lumens	5,685	11,111	16,577	21,905	27,140	32,478	38,409	43,520	48,546	53,748
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	129	131	134	128	129	130	130	130	130	128
5NQ	4000K Lumens	6,172	12,061	17,997	23,778	29,462	35,256	41,694	47,242	52,699	58,347
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	140	142	145	139	140	142	141	141	141	139
5MQ	4000K Lumens	6,285	12,283	18,328	24,217	30,004	35,907	42,462	48,112	53,669	59,421
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
	Lumens per Watt	143	145	148	142	143	144	144	144	144	142
5WQ	4000K Lumens	6,303	12,317	18,377	24,281	30,085	36,001	42,575	48,241	53,812	59,579
	BUG Rating	B3-U0-G1	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	143	145	148	142	143	145	144	144	144	142
SLL/ SLR	4000K Lumens	5,260	10,276	15,332	20,259	25,101	30,037	35,522	40,249	44,898	49,708
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	120	121	124	118	120	121	120	121	120	119
RW	4000K Lumens	6,116	11,952	17,834	23,563	29,196	34,938	41,317	46,817	52,224	57,819
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	139	141	144	138	139	140	140	140	140	138
AFL	4000K Lumens	6,139	11,996	17,899	23,650	29,302	35,064	41,468	46,987	52,412	58,030
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4
	Lumens per Watt	140	141	144	138	140	141	141	141	140	138

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Nominal Power Lumens (600mA)

Supplemental Performance Guide**

Number of Light Squares		1	2	3	4	5	6	7	8	9	10
Nominal Power (Watts)		34	66	96	129	162	193	226	257	290	323
Input Current @ 120V (A)		0.30	0.58	0.86	1.16	1.44	1.73	2.03	2.33	2.59	2.89
Input Current @ 208V (A)		0.17	0.34	0.49	0.65	0.84	0.99	1.14	1.30	1.48	1.63
Input Current @ 240V (A)		0.15	0.30	0.43	0.56	0.74	0.87	1.00	1.13	1.30	1.43
Input Current @ 277V (A)		0.14	0.28	0.41	0.52	0.69	0.81	0.93	1.04	1.22	1.33
Input Current @ 347V (A)		0.11	0.19	0.30	0.39	0.49	0.60	0.69	0.77	0.90	0.99
Input Current @ 480V (A)		0.08	0.15	0.24	0.30	0.38	0.48	0.53	0.59	0.71	0.77
Optics											
T2	4000K Lumens	4,787	9,357	13,961	18,448	22,856	27,353	32,347	36,651	40,884	45,265
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	141	142	145	143	141	142	143	143	141	140
T2R	4000K Lumens	5,083	9,934	14,822	19,585	24,266	29,038	34,341	38,911	43,404	48,055
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
	Lumens per Watt	150	151	154	152	150	150	152	151	150	149
T3	4000K Lumens	4,880	9,537	14,231	18,803	23,296	27,878	32,970	37,358	41,671	46,137
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	144	145	148	146	144	144	146	145	144	143
T3R	4000K Lumens	4,988	9,749	14,547	19,220	23,814	28,497	33,703	38,188	42,598	47,162
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	147	148	152	149	147	148	149	149	147	146
T4FT	4000K Lumens	4,909	9,591	14,312	18,911	23,432	28,040	33,161	37,574	41,913	46,404
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5
	Lumens per Watt	144	145	149	147	145	145	147	146	145	144
T4W	4000K Lumens	4,845	9,468	14,128	18,668	23,130	27,678	32,732	37,088	41,371	45,805
	BUG Rating	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	143	143	147	145	143	143	145	144	143	142
SL2	4000K Lumens	4,779	9,341	13,937	18,416	22,818	27,305	32,292	36,589	40,813	45,188
	BUG Rating	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5
	Lumens per Watt	141	142	145	143	141	141	143	142	141	140
SL3	4000K Lumens	4,879	9,536	14,229	18,800	23,294	27,874	32,965	37,351	41,666	46,130
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	144	144	148	146	144	144	146	145	144	143
SL4	4000K Lumens	4,637	9,059	13,519	17,863	22,132	26,486	31,322	35,490	39,589	43,831
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	136	137	141	138	137	137	139	138	137	136
5NQ	4000K Lumens	5,033	9,835	14,676	19,392	24,026	28,751	34,002	38,526	42,975	47,581
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
	Lumens per Watt	148	149	153	150	148	149	150	150	148	147
5MQ	4000K Lumens	5,126	10,015	14,946	19,747	24,468	29,281	34,628	39,236	43,766	48,457
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G4
	Lumens per Watt	151	152	156	153	151	152	153	153	151	150
5WQ	4000K Lumens	5,139	10,043	14,985	19,801	24,533	29,359	34,721	39,339	43,883	48,586
	BUG Rating	B3-U0-G1	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5
	Lumens per Watt	151	152	156	153	151	152	154	153	151	150
SLL/ SLR	4000K Lumens	4,289	8,380	12,502	16,520	20,469	24,494	28,967	32,823	36,613	40,537
	BUG Rating	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5
	Lumens per Watt	126	127	130	128	126	127	128	128	126	126
RW	4000K Lumens	4,987	9,746	14,543	19,215	23,808	28,491	33,695	38,178	42,587	47,151
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4
	Lumens per Watt	147	148	151	149	147	148	149	149	147	146
AFL	4000K Lumens	5,007	9,782	14,597	19,285	23,896	28,594	33,817	38,317	42,742	47,322
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3
	Lumens per Watt	147	148	152	149	148	148	150	149	147	147

* Nominal data for 70 CRI. ** For additional performance data, please reference the Galleon Supplemental Performance Guide.

Control Options

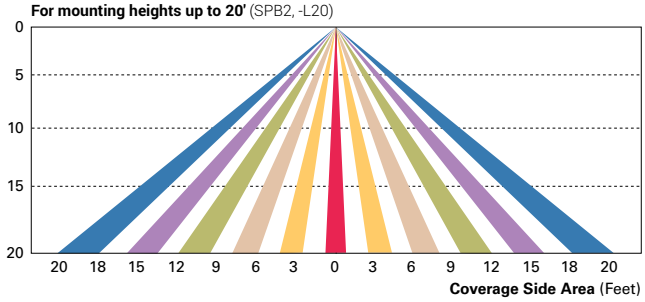
0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR and PR7)
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PR7 receptacle.

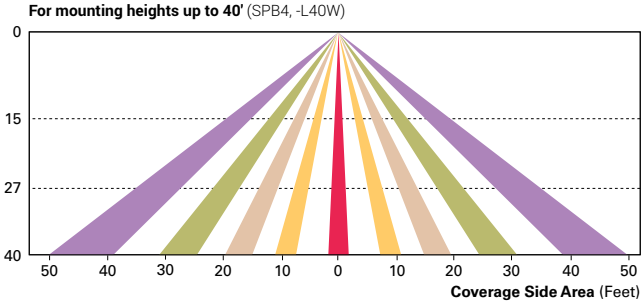
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (SPB, MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. The MS/X-LXX is also preset for five minutes and only controls the specified number of light engines to maintain steady output from the remaining light engines. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.

For mounting heights up to 20' (SPB2, -L20)

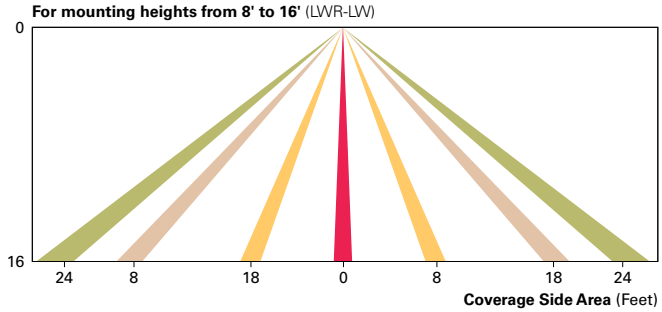


For mounting heights up to 40' (SPB4, -L40W)

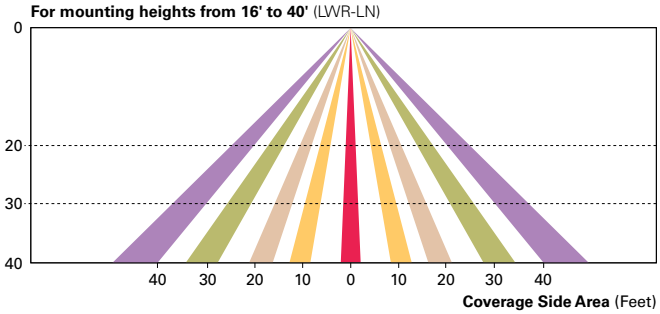


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN)
Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes and collects valuable data about building performance and use. Software applications turn the granular data into information through energy dashboards and specialized apps that make it simple and help optimize the use of building resources, beyond lighting.

For mounting heights from 8' to 16' (LWR-LW)



For mounting heights from 16' to 40' (LWR-LN)



WaveLinx Wireless Outdoor Lighting Control Module (WOLC-7P-10A)
The 7-pin wireless outdoor lighting control module enables WaveLinx to control outdoor area, site and flood lighting. WaveLinx controls outdoor lighting using schedules to provide ON, OFF and dimming controls based on astronomic or time schedules based on a 7 day week.

LumenSafe Integrated Network Security Camera (LD)
Cooper Lighting Solutions brings ease of camera deployment to a whole new level. No additional wiring is needed beyond providing line power to the luminaire. A variety of networking options allows security integrators to design the optimal solution for active surveillance. As the ideal solution to meet the needs for active surveillance, the LumenSafe integrated network camera is a streamlined, outdoor-ready fixed dome that provides HDTV 1080p video. This IP camera is optimally designed for deployment in the video management system or security software platform of choice.

Synapse (DIM10)
SimplySNAP integrated wireless controls system by Synapse. Includes factory installed DIM10 Synapse control module and MS/DC motion sensor; requires additional Synapse system components for operation. Contact Synapse at www.synapsewireless.com for product support, warranty and terms and conditions.

Cooper Lighting Solutions
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Specifications and dimensions
subject to change without notice.

Project		Catalog #		Type	
Prepared by		Notes		Date	

McGraw-Edison

GWC Galleon Wall

Wall Mount Luminaire

Typical Applications

Exterior Wall • Walkway

Interactive Menu

- Ordering Information page 2
- Product Specifications page 2
- Optical Configurations page 3
- Energy and Performance Data page 4
- Control Options page 6

Product Certifications

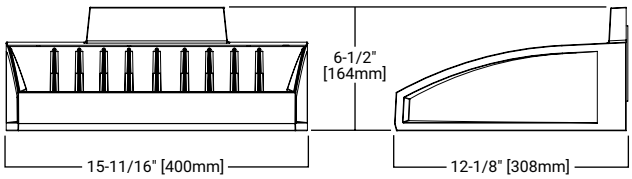
Quick Facts

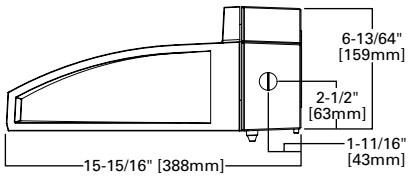
- Choice of thirteen high-efficiency, patented AccuLED Optics™
- Downward and inverted wall mounting configurations
- Eight lumen packages from 3,215 up to 17,056
- Efficacies up to 154 lumens per watt

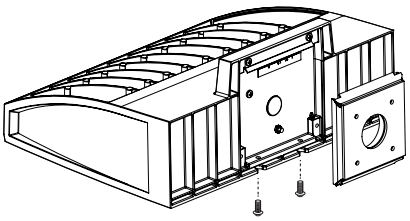
Connected Systems

- WaveLinx
- Enlighted

Dimensional Details







Ordering Information

SAMPLE NUMBER: **GWC-SA2C-740-U-T4FT-GM**

Product Family [1]	Light Engine		Color Temperature	Voltage	Distribution	Finish
	Configuration	Drive Current				
GWC=Galleon Wall	**SA1**=1 Square **SA2**=2 Squares [2]	**A**=615mA **B**=800mA **C**=1000mA **D**=1200mA [4]	**722**=70CRI, 2200K **727**=70CRI, 2700K **730**=70CRI, 3000K **735**=70CRI, 3500K **740**=70CRI, 4000K **750**=70CRI, 5000K **760**=70CRI, 6000K **827**=80CRI, 2700K **830**=80CRI, 3000K **AMB**=Amber, 590nm [3, 4]	**U**=120-277V **1**=120V **2**=208V **3**=240V **4**=277V **8**=480V [6,7] **9**=347V [6]	**T2**=Type II **T3**=Type III **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **5NQ**=Type V Square Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White

Options (Add as Suffix)	**Controls and Systems Options** (Add as Suffix)	**Accessories** (Order Separately)
F=Single Fused (120, 277 or 347V. Must Specify Voltage) **FF**=Double Fused (208, 240 or 480V. Must Specify Voltage) **10K**=10kV Surge Module **20K**=Series 20kV UL 1449 Surge Protective Device **DIM**=External 0-10V Dimming Leads [9, 10] **CBP**=Battery Pack with Back Box, Cold Weather Rated [2, 4, 14, 33] **CBP-CEC**=Battery Pack with Back Box, Cold Weather Rated, CEC compliant [2, 4, 14] **L90**=Optics Rotated 90° Left **R90**=Optics Rotated 90° Right **HSS**=Factory Installed House Side Shield [23] **GRSBK**=Factory Installed Glare Shield, BK [4, 27] **GRSWH**=Factory Installed Glare Shield, WH [4, 27] **UPL**=Uplight Housing [13] **HA**=50°C High Ambient [12] **LCF**=Light Square Trim Plate Painted to Match Housing [22] **MT**=Factory Installed Mesh Top **CC**=Coastal Construction finish [5] **CE**=CE Marking and Small Terminal Block [24] **AHD145**=After Hours Dim, 5 Hours [16] **AHD245**=After Hours Dim, 6 Hours [16] **AHD255**=After Hours Dim, 7 Hours [16] **AHD355**=After Hours Dim, 8 Hours [16] **DALI**=DALI Driver [11]	**BPC**=Button Type Photocontrol (120, 208, 240 or 277V. Must Specify Voltage) **PR**=NEMA 3-PIN Twistlock Photocontrol Receptacle **PR7**=NEMA 7-PIN Twistlock Photocontrol Receptacle [15] **SPB1**=Dimming Occupancy Sensor with Bluetooth Interface, <8' Mounting [19,34] **SPB2**=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting [19,34] **SPB4**=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting [19,34] **MS-LXX**=Motion Sensor for On/Off Operation [17, 18, 19] **MS/DIM-LXX**=Motion Sensor for Dimming Operation [17, 18, 19] **ZW**=WaveLinx-enabled 4-PIN Twistlock Receptacle [29, 30] **ZD**=WaveLinx Module with DALI driver and 4-PIN Receptacle [29, 30] **SWPD4XX**=WaveLinx Sensor Only, 7'-15' [31, 32] **SWPD5XX**=WaveLinx Sensor Only, 15'-40' [31, 32] **WOBXX**=WaveLinx Sensor with Bluetooth, 7'-15' [31, 32] **WOFXX**=WaveLinx Sensor with Bluetooth, 15'-40' [31, 32] **LWR-LW**=Enlighted Wireless Sensor, Wide Lens for 8'-16' Mounting Height [19, 20, 21] **LWR-LN**=Enlighted Wireless Sensor, Narrow Lens for 16'-40' Mounting Height [19, 20, 21]	**OA/RA1013**=Photocontrol Shorting Cap [28] **OA/RA1016**=NEMA Photocontrol - Multi-Tap 105-285V [28] **OA/RA1201**=NEMA Photocontrol - 347V [28] **OA/RA1027**=NEMA Photocontrol - 480V [28] **MA1252**=10kV Circuit Module Replacement **MA1059XX**=Thru-branch Back Box (Must Specify Color) **LS/HSS**=Field Installed House Side Shield [23, 25] **LS/GRSBK**=Glare Shield, Black [8, 25, 27] **LS/GRSWH**=Glare Shield, White [8, 25, 27] **LS/PFS**=Perimeter Shield, Black **FSIR-100**=Wireless Configuration Tool for Occupancy Sensor [17] **WOLC-7P-10A**=WaveLinx Outdoor Control Module (7-pin) [26, 29] **SWPD4-XX**=Wavelinx Wireless Sensor, 7' – 15' Mounting Height [29, 30, 31, 32] **SWPD5-XX**=Wavelinx Wireless Sensor, 15' – 40' Mounting Height [29, 30, 31, 32]

NOTES:

1. DesignLight Consortium® Qualified. Refer to www.designlights.org, Qualified Products List under Family Models for details.
2. Two light squares with CBP options limited to 25°C. Not available in combination with sensor options at 1200mA.
3. Narrow-band 590nm +/- 5nm for wildlife and observatory use. Choose drive current A; supplied at 500mA drive current only. Available with 5WQ, 5MQ, SL2, SL3 and SL4 distributions. Can be used with HSS option.
4. Not available with HA option.
5. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654.
6. Require the use of a step down transformer. Not available in combination with sensor options at 1200mA.
7. 480V must use Wye system only. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
8. Reserved.
9. Cannot be used with other control options.
10. Low voltage control leads extended 18" from fixture.
11. Not available in 1200mA. When used with CBP or HA options, only available with single light square.
12. Not available in 1200mA, UPL or CBP options. Available with single light square.
13. Not available with SL2, SL3, SL4, HA, CBP, PR or PR7 options.
14. Operates a single light square only. Operates at -20°C to +40°C. Backbox is non-IP rated. Control option limited to BPC.
15. Compatible with standard 3-PIN photocontrols, 5-PIN or 7-PIN ANSI controls.
16. Requires the use of BPC photocontrol or the PR7 or PR photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
17. The FSIR-100 configuration tool is required to adjust parameters such as high and low modes, sensitivity, time delay and cutoff. Consult your lighting representative at Cooper Lighting Solutions for more information.
18. Replace LXX with L08 (<8' mounting), L20 (8'-20' mounting) or L40W (21'-40' mounting.)
19. Includes integral photosensor.
20. Enlighted wireless sensors are factory installed requiring network components in appropriate quantities.
21. White sensor shipped on all housing color options.
22. Not available with HSS or GRS options.
23. Not for use with 5NQ, 5MQ, 5WQ or RW optics. The light square trim plate is painted black when the HSS option is selected.
24. CE is not available with the 1200, DALI, LWR, MS, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.
25. One required for each light square.
26. Requires PR7.
27. Not for use with T4FT, T4W or SL4 optics.
29. Cannot be used in conjunction with additional photocontrol or other controls systems (BPC, PR, PR7, MS, LWR).
30. WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
31. Requires ZW or ZD receptacle.
32. Replace XX with sensor color (WH, BZ, or BK).
33. Specify 120V or 277V.
34. Smart device with mobile application required to change system defaults. See controls section for details.

Product Specifications

Construction

- Driver enclosure thermally isolated from optics for optimal thermal performance
- Die-cast aluminum heat sinks
- IP66 rated housing
- 1.5G vibration rated

Optics

- Patented, high-efficiency injection-molded AccuLED Optics technology
- 13 optical distributions
- IDA Certified (3000K CCT and warmer only)

Electrical

- LED driver assembly mounted for ease of maintenance
- Standard with 0-10V dimming
- Optional 10kV or 20kV surge module
- Suitable for operation in -40C to 40C ambient environments. Optional 50C high ambient (HA) configuration.

Mounting

- Gasketed and zinc plated rigid steel mounting attachment
- "Hook-N-Lock" mechanism for easy installation

Finish

- Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Heat sink is powder coated black
- RAL and custom color matches available
- Coastal Construction (CC) option available

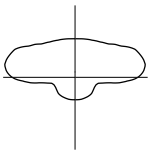
Warranty

- Five-year warranty

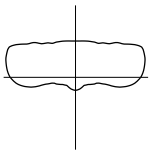
Optical Distributions

Asymmetric Area Distributions

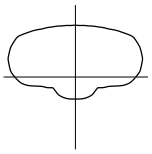
T2 (Type II)



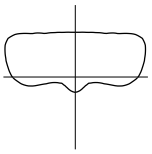
SL2 (Type II with Spill Control)



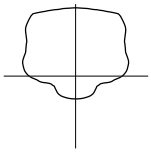
T3 (Type III)



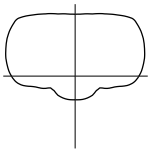
SL3 (Type III with Spill Control)



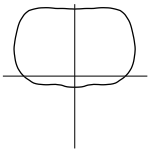
T4FT (Type IV Forward Throw)



T4W (Type IV Wide)

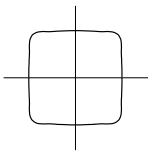


SL4 (Type IV with Spill Control)

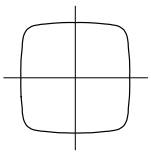


Symmetric Distributions

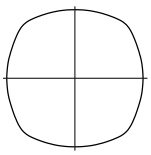
5NQ (Type V Square Narrow)



5MQ (Type V Square Medium)

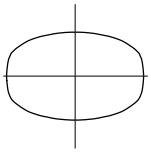


5WQ (Type V Square Wide)

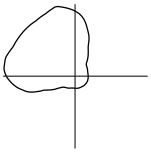


Specialized Distributions

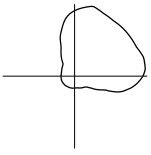
RW (Rectangular Wide Type I)



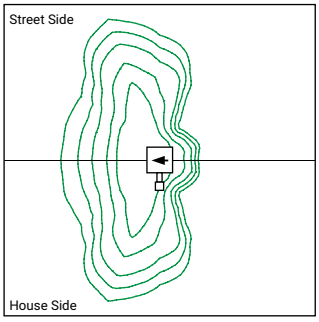
SLL (90° Spill Light Eliminator Left)



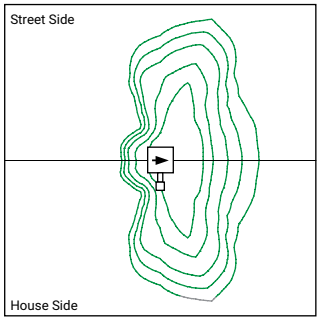
SLR (90° Spill Light Eliminator Right)



Optic Orientation



Optics Rotated Left @ 90° [L90]



Optics Rotated Right @ 90° [R90]

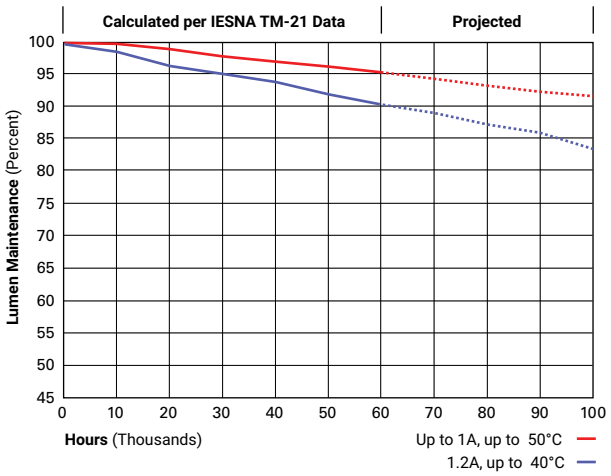
Energy and Performance Data

Lumen Multiplier

Ambient Temperature	Lumen Multiplier
0ºC	1.02
10ºC	1.01
25ºC	1.00
40ºC	0.99
50ºC	0.97

Lumen Maintenance

Drive Current	Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Projected L70 (Hours)
Up to 1A	Up to 50°C	> 95%	> 416,000
1.2A	Up to 40°C	> 90%	> 205,000



Energy and Performance Data

View GWC Galleon Wall IES files

4000K/5000K/6000K CCT, 70 CRI

Number of Light Squares		1				2			
Drive Current		615mA	800mA	1050mA	1.2A	615mA	800mA	1050mA	1.2A
Nominal Power (Watts)		34	44	59	67	66	86	113	129
Input Current @ 120V (A)		0.30	0.39	0.51	0.58	0.58	0.77	1.02	1.16
Input Current @ 208V (A)		0.17	0.22	0.29	0.33	0.34	0.44	0.56	0.63
Input Current @ 240V (A)		0.15	0.19	0.26	0.29	0.30	0.38	0.48	0.55
Input Current @ 277V (A)		0.14	0.17	0.23	0.25	0.28	0.36	0.42	0.48
Input Current @ 347V (A)		0.11	0.15	0.17	0.20	0.19	0.24	0.32	0.39
Input Current @ 480V (A)		0.08	0.11	0.14	0.15	0.15	0.18	0.24	0.30
Optics									
T2	Lumens	4,883	5,989	7,412	8,131	9,543	11,703	14,485	15,891
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3
	Lumens per Watt	144	136	126	121	145	136	128	123
T3	Lumens	4,978	6,105	7,556	8,288	9,729	11,929	14,764	16,196
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3
	Lumens per Watt	146	139	128	124	147	139	131	126
T4FT	Lumens	5,008	6,140	7,599	8,337	9,783	11,998	14,850	16,290
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3
	Lumens per Watt	147	140	129	124	148	140	131	126
T4W	Lumens	4,942	6,060	7,502	8,229	9,658	11,843	14,658	16,080
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3
	Lumens per Watt	145	138	127	123	146	138	130	125
SL2	Lumens	4,874	5,979	7,399	8,117	9,528	11,684	14,461	15,863
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B3-U0-G3
	Lumens per Watt	143	136	125	121	144	136	128	123
SL3	Lumens	4,976	6,104	7,555	8,287	9,727	11,927	14,763	16,194
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3
	Lumens per Watt	146	139	128	124	147	139	131	126
SL4	Lumens	4,729	5,799	7,178	7,873	9,239	11,333	14,025	15,387
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4
	Lumens per Watt	139	132	122	118	140	132	124	119
5NQ	Lumens	5,134	6,296	7,793	8,547	10,033	12,303	15,226	16,704
	BUG Rating	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2
	Lumens per Watt	151	143	132	128	152	143	135	129
5MQ	Lumens	5,228	6,412	7,935	8,705	10,216	12,529	15,508	17,011
	BUG Rating	B3-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2
	Lumens per Watt	154	146	134	130	155	146	137	132
5WQ	Lumens	5,242	6,428	7,956	8,728	10,244	12,563	15,548	17,056
	BUG Rating	B3-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2
	Lumens per Watt	154	146	135	130	155	146	138	132
SLL/SLR	Lumens	4,373	5,365	6,640	7,283	8,547	10,481	12,973	14,231
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3
	Lumens per Watt	129	122	113	109	130	122	115	110
RW	Lumens	5,087	6,238	7,721	8,472	9,941	12,190	15,088	16,553
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2
	Lumens per Watt	150	142	131	126	151	142	134	128

*** Nominal lumen data for 70 CRI. BUG rating for 4000K/5000K. Refer to IES files for 3000K BUG ratings.**

3000K CCT, 80 CRI

Number of Light Squares		1				2			
Drive Current		615mA	800mA	1050mA	1.2A	615mA	800mA	1050mA	1.2A
Nominal Power (Watts)		34	44	59	67	66	86	113	129
Input Current @ 120V (A)		0.30	0.39	0.51	0.58	0.58	0.77	1.02	1.16
Input Current @ 208V (A)		0.17	0.22	0.29	0.33	0.34	0.44	0.56	0.63
Input Current @ 240V (A)		0.15	0.19	0.26	0.29	0.30	0.38	0.48	0.55
Input Current @ 277V (A)		0.14	0.17	0.23	0.25	0.28	0.36	0.42	0.48
Input Current @ 347V (A)		0.11	0.15	0.17	0.20	0.19	0.24	0.32	0.39
Input Current @ 480V (A)		0.08	0.11	0.14	0.15	0.15	0.18	0.24	0.30
Optics									
T2	**Lumens**	3,880	4,759	5,890	6,461	7,583	9,300	11,510	12,628
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G3
	Lumens per Watt	114	108	100	96	115	108	102	98
T3	**Lumens**	3,956	4,851	6,004	6,586	7,731	9,479	11,732	12,870
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2
	Lumens per Watt	116	110	102	98	117	110	104	100
T4FT	**Lumens**	3,980	4,879	6,038	6,625	7,774	9,534	11,800	12,945
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3
	Lumens per Watt	117	111	102	99	118	111	104	100
T4W	**Lumens**	3,927	4,816	5,961	6,539	7,675	9,411	11,648	12,778
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3
	Lumens per Watt	116	109	101	98	116	109	103	99
SL2	**Lumens**	3,873	4,751	5,880	6,450	7,571	9,285	11,491	12,605
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3
	Lumens per Watt	114	108	100	96	115	108	102	98
SL3	**Lumens**	3,954	4,851	6,004	6,585	7,729	9,478	11,731	12,868
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3
	Lumens per Watt	116	110	102	98	117	110	104	100
SL4	**Lumens**	3,758	4,608	5,704	6,256	7,342	9,006	11,145	12,227
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B1-U0-G3	B1-U0-G3	B1-U0-G3
	Lumens per Watt	111	105	97	93	111	105	99	95
5NQ	**Lumens**	4,080	5,003	6,193	6,792	7,973	9,776	12,099	13,274
	BUG Rating	B2-U0-G0	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2
	Lumens per Watt	120	114	105	101	121	114	107	103
5MQ	**Lumens**	4,154	5,095	6,305	6,917	8,118	9,956	12,323	13,518
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2
	Lumens per Watt	122	116	107	103	123	116	109	105
5WQ	**Lumens**	4,166	5,108	6,322	6,936	8,140	9,983	12,355	13,553
	BUG Rating	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2
	Lumens per Watt	123	116	107	104	123	116	109	105
SLL/SLR	**Lumens**	3,475	4,263	5,276	5,787	6,792	8,329	10,309	11,309
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G3	B2-U0-G3
	Lumens per Watt	102	97	89	86	103	97	91	88
RW	**Lumens**	4,042	4,957	6,135	6,732	7,900	9,687	11,990	13,154
	BUG Rating	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2
	Lumens per Watt	119	113	104	100	120	113	106	102

*** Nominal lumen data for 70 CRI. BUG rating for 4000K/5000K. Refer to IES files for 3000K BUG ratings.**

Control Options

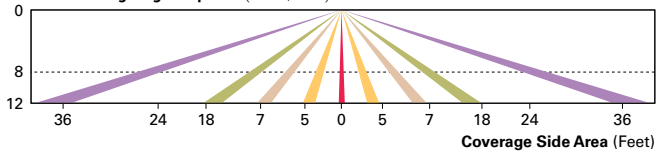
0-10V This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (BPC, PR, and PR7) Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PR7 receptacle.

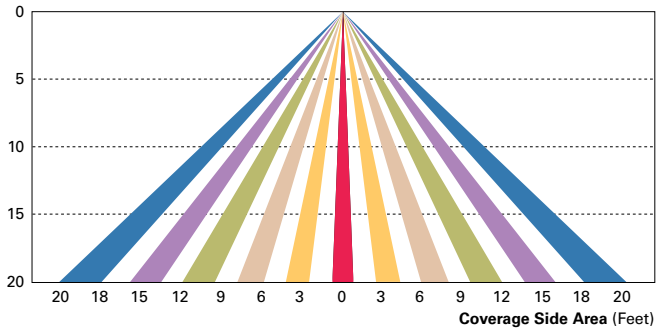
After Hours Dim (AHD) This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (SPB, MS/DIM-LXX and MS-LXX) These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes. The MS/DIM occupancy sensors require the FSIR-100 programming tool to adjust factory defaults.

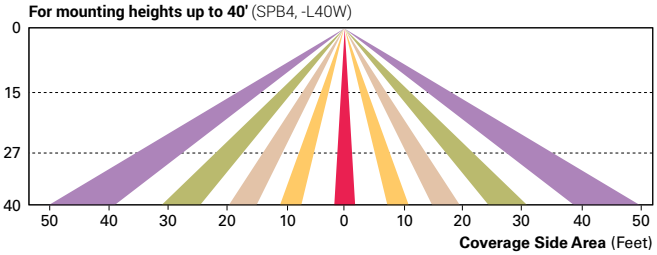
For mounting heights up to 8' (SPB1, -L08)



For mounting heights up to 20' (SPB2, -L20)

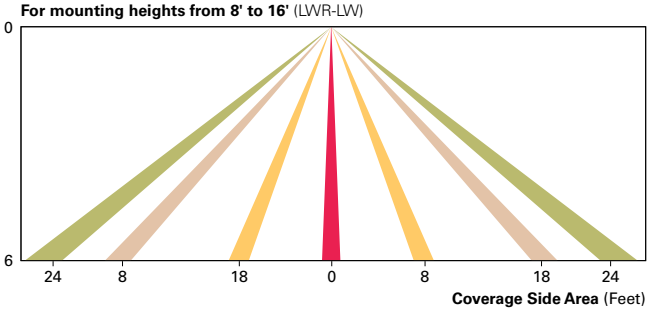


For mounting heights up to 40' (SPB4, -L40W)

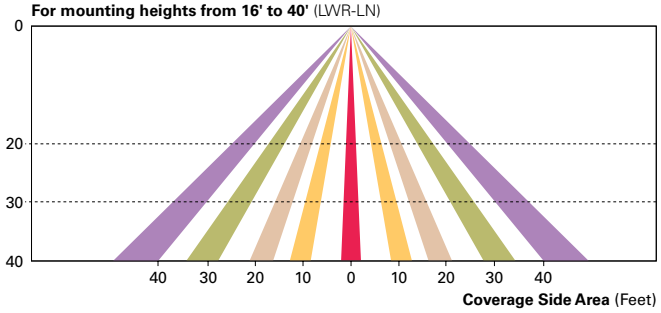


Enlighted Wireless Control and Monitoring System (LWR-LW and LWR-LN) The Enlighted control system is a connected lighting solution, combining LED luminaires with an integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes while collecting valuable data about building performance and use. Software applications utilizing energy dashboards maximize data inputs to help optimize the use of other resources beyond lighting.

For mounting heights from 8' to 16' (LWR-LW)



For mounting heights from 16' to 40' (LWR-LN)



WaveLinx Wireless Outdoor Lighting Control Module (WOLC-7P-10A) The 7-pin wireless outdoor lighting control module enables WaveLinx to control outdoor area, site and flood lighting. WaveLinx controls outdoor lighting using schedules to provide ON, OFF and dimming controls based on astronomic or time schedules based on a 7 day week.

Cooper Lighting Solutions
1121 Highway 74 South
Peachtree City, GA 30269
P. 770-486-4800
www.cooperlighting.com

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Specifications and dimensions
subject to change without notice.

City of Portsmouth Planning Department

Site Plan Review Application Fee

Project: 55 & 101 International Drive **Map/Lot:** 305/6 & 305/7

Applicant: Lonza Biologics, Inc.

All development

Base fee $500			$500.00
Plus $5.00 per $1,000 of site costs			
Site costs	$500,000	+	$2,500.00
Plus $10.00 per 1,000 S.F. of site development area			
Site development area	142,000 S.F.	+	$1,420.00
		Fee	**$4,420.00**

Maximum fee: $15,000.00

Fee received by: _____ Date: _____

Note: Initial application fee may be based on the applicant's estimates of site costs and site development area. Following site plan approval, the application fee will be recalculated based on the approved site plan and site engineer's corresponding site cost estimate as approved by the Department of Public Works, and any additional fee shall be paid prior to the issuance of a building permit.

City of Portsmouth Planning Department

Subdivision Application Fee

Project: 55 & 101 International Drive **Map/Lot:** 305/6 & 305/7

Applicant: Lonza Biologics, Inc.

☐ Residential subdivision *$500 plus $200 per lot*	Number of lots	Fee	$0.00
☐ Non-residential subdivision *$700 plus $300 per lot*	Number of lots	Fee	$0.00
☒ Lot line revision/verification *$250*		Fee	$250.00
☐ Filing of condominium site *$100*		Fee	$0.00
☐ Lot consolidation *$175*		Fee	$0.00
		Total fee	**$250.00**

Fee received by: _____ Date: _____

HOEFLE, PHOENIX, GORMLEY & ROBERTS, PLLC
ATTORNEYS AT LAW

127 Parrott Avenue, P.O. Box 4480 | Portsmouth, NH, 03802-4480
Telephone: 603.436.0666 | Facsimile: 603.431.0879 | www.hpgrlaw.com

June 23, 2021

HAND DELIVERED
Juliet T.H. Walker, Planning Director
City of Portsmouth
One Junkins Ave.
Portsmouth, New Hampshire 03801

Re: Bow St. Brew, LLC, Applicant
Property: 121 Bow Street, Unit C-1
Tax Map 105, Lot 1
Character District and Downtown Overlay District

Dear Ms. Walker:

On behalf of Applicant Bow St. Brew, we are pleased to submit the following in support of a request for a Change in Use and Parking Conditional Use Permit to allow conversion of an office condominium to a residential condominium with less than the minimum number of parking spaces:

- Portsmouth Land Use Applications (submitted via Viewpoint on 6/23/2021).
- Owner's Authorization.
- 6/23/2021 Memorandum in Support of Parking Conditional Use Permit.

We will pay the fee via Viewpoint. We ask that this application be referred to the Technical Advisory Committee for comment pursuant to PZO §10.1112.141, hopefully to be considered at the July 13, 2021 TAC work session and if not, at the August 3, 3031 TAC meeting. Assuming the former, we would like to be considered by the Planning Board at its July 15, 2021 meeting.

Very truly yours,

R. Timothy Phoenix
Monica F. Kieser

cc: Eric J. MacDonald
Ambit Engineering

DANIEL C. HOEFLE
R. TIMOTHY PHOENIX
LAWRENCE B. GORMLEY
STEPHEN H. ROBERTS
R. PETER TAYLOR
JOHN AHLGREN
KIMBERLY J.H. MEMMESHEIMER
KEVIN M. BAUM
GREGORY D. ROBBINS
MONICA F. KIESER
SAMUEL HARKINSON
JACOB J.B. MARVELLEY
DUNCAN A. EDGAR
OF COUNSEL:
SAMUEL R. REID

Monica Kieser

From: Eric MacDonald <ejmacdonald603@gmail.com>
Sent: Wednesday, June 23, 2021 10:32 AM
To: Monica Kieser
Subject: 121 Bow St conversion

Monica,

I authorize Hoefle, Phoenix, Gormley & Roberts, PLLC to execute all applications before Portsmouth Land Use Boards and to take any and all actions necessary throughout the application and permitting process related to my property at 121 Bow Street Unit C-1 (Tax Map 105, Lot 1) including but not limited to attendance and presentation at public hearings.

Bow St. Brew, LLC

Eric J. MacDonald, Manager

MEMORANDUM

TO: Portsmouth Planning Board
FROM: R. Timothy Phoenix, Esquire
Monica F. Kieser, Esquire
DATE: June 23, 2021
RE: Conditional Use Permit Application
Bow St. Brew, LLC, Applicant
Property Location: 121 Bow Street, Unit C-1
Tax Map 105/Lot 1
Character District 4 and Downtown Overlay District

On behalf of Bow St. Brew, LLC ("Bow St."), we are pleased to present the following in support of Applicant's request for a parking Conditional Use Permit ("CUP") to be considered by the Planning Board at its July 15, 2021 meeting.

I. EXHIBITS

A. Elevation Study by Ambit Engineering, Inc.
B. Site Photographs
   - Satellite
   - Street view
C. Tax Map 103.

II. PROPERTY/ PARKING ANALYSIS

121 Bow Street, Unit C-1 is a Brewery Condominium containing a 1,736.4 s.f. commercial condominium most recently used as an office (the "Property"). The Office has been available for lease since September 2020 and vacant since February 2021. Interest in the space for commercial use is minimal with only three showings in nine months. Accordingly, Bow St. intends to convert to a two-bedroom residential condominium and will be submitting a Change of Use request Currently the Brewery Condominium Building contains the following other uses: Four upper level residential condominiums, the Seacoast Repertory Theatre ("Theatre") seating approximately 200, the Ale House Inn containing 10 hotel rooms, and a 254 s.f. entrance area that physically connects to the Riveredge Condominiums at 117 Bow Street (Map 106, Lot 57).

In the Downtown Overlay District ("DOD"), the residential parking requirements are the same as provided in PZO §10.1112.30 while hotels require 0.75 spaces for each guest room; other non-residential uses have no requirement. PZO §10.1115.21. Under this analysis, the 10-room Ale House Inn requires 8 (rounded from 7.5) on-site parking spaces, but no on-site spaces are provided. Each of the four upper level condominiums exceeds 750 s.f. and requires 1.3

spaces for a total of six spaces (rounded from 5.2). Those units share three dedicated on-site tandem spaces accommodating six cars. (Exhibit B). The Theatre, the Ale House Inn, and instant office condominium occupied until February 2021, have no on-site parking and have historically utilized a combination of on-street parking, municipal and private facilities, discussed in greater detail below.

Despite the absence of a parking requirement for the former commercial office condominium in the DOD, the actual parking demand of an office supporting 15-20 employees and customer traffic is greater than the demand for a residential use of the same space. For those reasons, the proposed residential use close to various municipal and private parking facilities is appropriate, even if no further on-site parking is available.

III. RELIEF REQUIRED

PZO §§10.1112.14.141-144 and §10.1112.321, Table of Uses, §10.112.311 & §10.1112.312 – to allow 0 on-site parking spaces where 3 (2 off street parking spaces and 1 guest space for every five dwelling units) are required.

IV. CUP REQUIREMENTS

PZO §10.1112.14: The Planning Board may grant a Conditional Use Permit to allow a building or use to provide less than a minimum number of off-street parking spaces required by Section 10.1112.30, as applicable, or to exceed the number of parking spaces allowed by Section 10.1112.51.

PZO §10.1112.141: An application for a Conditional Use Permit under this section shall include a parking demand analysis, which shall be reviewed by the City's Technical Advisory Committee prior to submission to the Planning Board, demonstrating that the proposed number of off street parking spaces is sufficient for the proposed use.

Response:

The existing office condominium as well as the 10-room hotel and 200-seat theatre have no on-site parking available, though the office and Theatre have no parking requirement in the DOD. The Ale House Inn with 10 rooms must provide 8 on-site spaces. Its website offers access to 5 dedicated parking spots across the street at St. John's Church on Chapel Street, but also directs customers to nearby public parking options such as metered on-street parking, High-Hanover Garage, the Memorial Bridge Lot, the Parrott Avenue Lot, and other small private parking lots. The Theatre's website directs patrons to the existing street and public parking facilities and offers validated parking at High-Hanover Garage for its sustaining members. We

note that demand for theatre parking is episodic in nature and, when required, is limited to the duration of a scheduled production. Hotel parking demand is similarly required for the duration of a short stay, and well met by the spaces at St. John's and at High-Hanover Garage as guests enjoy all the amenities within walking distance of the Inn. The existing four residential units are served by three on-site tandem spaces accommodating six cars dedicated to their use. Their guests are accommodated by street and municipal parking areas. Nearby municipal and private facilities also afford opportunities for leasing of spot(s) to serve the proposed residential unit. The previous use of the condominium as an office with 15-20 employees and customer traffic placed greater parking demand on the area than the proposed single family condominium unit proposed. For these reasons, sufficient off-street parking opportunities exist which would support an additional single family residential unit in a vibrant, thickly settled area of the City.

PZO §10.1112.142: An application for a Conditional Use Permit under this section shall identify permanent evidence-based measures to reduce parking demand, including but not limited to, provision of ride share/micro transit services or bike share station(s) servicing the property, proximity to public transit, car/van pool incentives, alternative transit subsidies, provisions for tele-working and shared parking on a separate lot subject to the requirements of 10.1112.62.

Response:

While no other parking is available on-site, only three spaces are required. Accordingly, we question whether evidence-based measures supporting the reduction of parking demand akin to that required by an intensive commercial use or multi-unit residential property is necessary for three spaces. In any event, the surrounding area offers on-street parking as well as numerous options for covered or uncovered off-street parking. The episodic demand presented by the Inn and Theatre is accommodated by these facilities, as was the Monday-Friday parking demand related to the previous office use. The proposed single family condominium use will require less parking than the previous office use. Several off-street parking facilities can serve future residents and guests of the unit and include opportunities for a future owner to procure parking via a lease arrangement. Accordingly, the intent for parking, including the shared parking provision of this section, is met.

PZO §10.1112.143: The Planning Board may grant a Conditional Use Permit only if it finds that the number of off street parking spaces required or allowed by the permit will be adequate and appropriate for the proposed use of the property. In making this determination, the Board may accept, modify or reject the findings of the Applicant's parking demand analysis.

A residential use of this condominium requiring three parking spots is less intensive than the previous office use accommodating 15-20 employees and customer traffic. The addition of a fifth single residential condominium unit without on-site parking where three parking spaces are required will still be served by adequate and appropriate parking where: dedicated parking serves the other four residences; other compatible commercial uses on the parcel result in episodic demand of limited duration; and ample access to on-street parking, municipal parking and private parking facilities exist.

PZO §10.1112.144: At its discretion, the Planning Board may require more off street parking spaces than the minimum number requested by the Applicant, or may allow fewer spaces than the maximum number requested by the Applicant.

The Property has been available for office lease for the past nine months with little interest and has therefore remained vacant. Meanwhile demand for residences in the City continues to rise and this Property offers a beautiful spot for a residence in the City's thickly settled Urban Core. While no parking requirement exists for an office use in the Downtown Overlay District and the previous office condominium did not provide on-site parking, it is likely that the parking demand associated with Applicant's proposal is less than the demand associated with the previous use of this condominium unit and additional spaces need not be required.

V. CONCLUSION

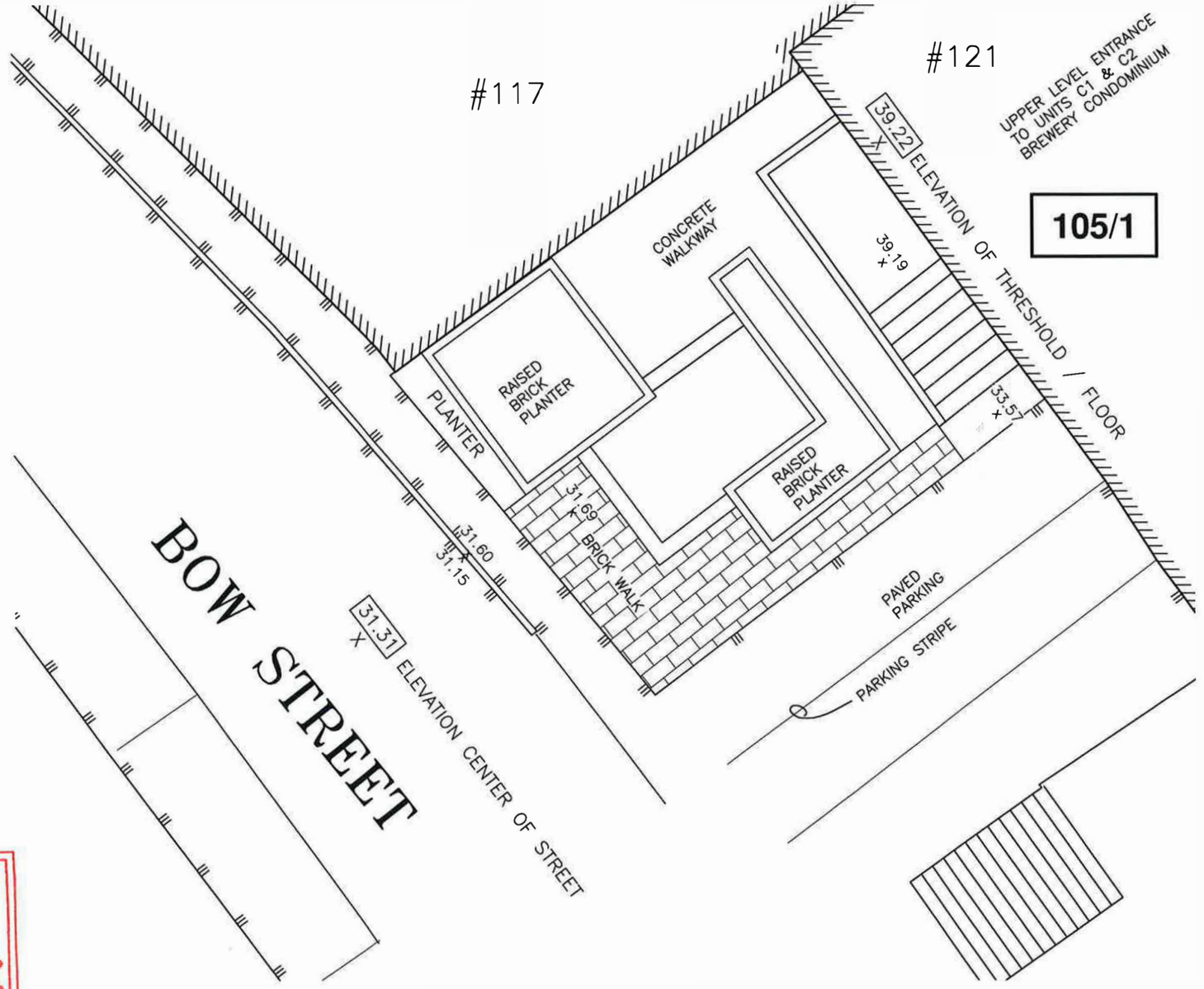
For all of the foregoing reasons, Bow St. Brew respectfully requests that the Planning Board grant the requested Parking Conditional Use Permit authorizing a residential single-family condominium unit with no on-site parking.

Respectfully submitted,
BOW STREET BREW

By: _____
R. Timothy Phoenix
Monica F. Kieser

ELEVATION STUDY

PROPERTY LOCATION: 121 BOW STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE



GRAPHIC SCALE

10 5 0 10 20 FEET
3 0 5 METERS

EXHIBIT A

SCALE: 1" = 10' 5 MARCH 2021

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

FB 225 PG 77 3309

STATE OF NEW HAMPSHIRE No. 738 JOHN R. CHAGNON LICENSED LAND SURVEYOR SIGNATURE

J:\JOBS\JN 3300's\3300's\3309\Project Year - Extension\Plans & Specs\Site\3309 Survey 2021.dwg, SKETCH w DYN TITLE

EXHIBIT B

121 Bow St

Imagery ©2021 Google, Imagery ©2021 Maine GeoLibrary, Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 50 ft

Google Maps 121 Bow St

Image capture: Sep 2019 © 2021 Google

Portsmouth, New Hampshire

Google

Street View

Partial Legend

See the cover sheet for the complete legend.

- **7-5A** — Lot or lot-unit number
- *2.56 ac* — Parcel area in acres (ac) or square feet (sf)
- 25 — Address number
- 233-137 — Parcel number from a neighboring map
- 68' — Parcel line dimension
- SIMS AVE — Street name
- Parcel/Parcel boundary
- Parcel/ROW boundary
- Water boundary
- Structure (1994 data)
- Parcel covered by this map
- Parcel from a neighboring map (see other map for current status)

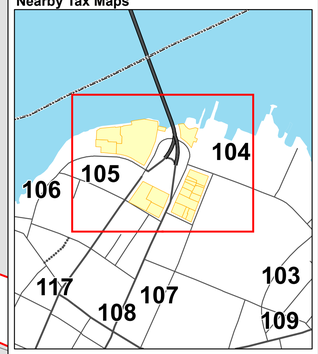
EXHIBIT C

0 50 100 Feet

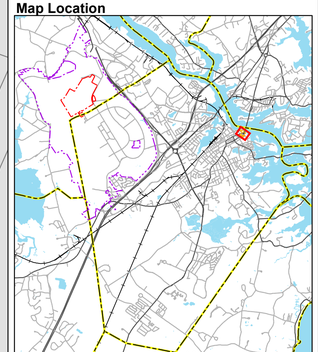
0 20 40 Meters

This map is for assessment purposes only. It is not intended for legal description or conveyance.
Parcels are mapped as of April 1.
Building footprints are 2006 data and may not represent current structures.
Streets appearing on this map may be paper (unbuilt) streets.
Lot numbers take precedence over address numbers. Address numbers shown on this map may not represent posted or legal addresses.

Nearby Tax Maps



Map Location



Portsmouth, New Hampshire
2020

Tax Map 105