

**REGULAR MEETING  
PLANNING BOARD  
PORTSMOUTH, NEW HAMPSHIRE**

**EILEEN DONDERO FOLEY COUNCIL CHAMBERS  
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)\**

**7:00 PM**

**July 15, 2021**

**AGENDA**

**I. APPROVAL OF MINUTES**

A. Approval of the Planning Board minutes from June 17, 2021 meeting

**II. PUBLIC HEARINGS – OLD BUSINESS**

*The Board's action in these matters has been deemed to be quasi-judicial in nature. If any person believes any member of the Board has a conflict of interest, that issue should be raised at this point or it will be deemed waived.*

A. Application of **Stone Creek Realty, LLC, (Owner), and CPI Management, LLC, (Applicant)**, for property located **53 Green Street** for a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance for the demolition of an existing building, construction of a 5-story mixed-use building and renovation of an existing parking area that will result in 98 square feet of impervious surface in the 25' to 50' tidal wetland buffer zone and 8,425 square feet of impervious surface in the 50' to 100' tidal wetland buffer zone representing an overall net reduction of 3,058 square feet of impervious surface in the tidal wetland buffer areas from the existing condition. Said property is shown on Assessor Map 119 Lot 02 and lies within the Character District 5 (CD5) District, the Historic District, and the North End Incentive Overlay District.

**B. REQUEST TO POSTPONE** Application of **Brora, LLC, Owner, and 210 Commerce Way LLC, Applicant**, for property located at **Shearwater Drive (at intersection of Portsmouth Boulevard and Market Street)** for a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance for an after the fact approval for cutting of vegetation on 88,700 square feet in the wetland and vegetated buffer areas. Said property is shown on Assessor Map 217 Lot 2-1975 and lies within the Office Research (OR) District. **REQUEST TO POSTPONE**

C. Application of **The Fritz Family Revocable Living Trust, Owner**, for property located at **0 Patricia Drive** for amended subdivision approval to revise the roadway



design and stormwater treatment for a previously approved subdivision that proposes to subdivide a lot with an area of 137,549 s.f. and 414.15 of continuous street frontage on a private road into two (2) lots as follows: Proposed lot 1 with an area of 92,908 s.f. and 150 ft. of continuous street frontage on a private road; and Proposed Lot 2 with an area of 44,641 s.f. and 264.15 ft. of continuous street frontage on a private road. Said property is shown on Assessor Map 283 Lot 11 and lies within the Single Residence A (SRA) District.

- D.** Application of **The Fritz Family Revocable Living Trust, Owner**, for property located at **0 Patricia Drive** for amended wetland conditional use permit approval under Section 10.1017 of the Zoning Ordinance to revise the roadway design and stormwater treatment for a previously approved subdivision which will result in 5,718 square feet of temporary wetland buffer impact. Said property is shown on Assessor Map 283 Lot 11 and lies within the Single Residence A (SRA) District.

### **III. PUBLIC HEARINGS – CITY COUNCIL REFERRALS (OLD BUSINESS)**

- A. REQUEST TO POSTPONE** Request of **David Higgins and Julia Higgins, Owners**, for the restoration of involuntarily merged lots at **344 Aldrich Road** to their pre-merger status pursuant to NH RSA 674:39-aa. Said property is shown on Assessor Map 166 Lot 50 and lies within the Single Residence B (SRB) District.

#### **REQUEST TO POSTPONE**

- B.** Request of **Vincent Zingariello and Monica Abruzzese, Owners**, for the restoration of involuntarily merged lots at **135 Thaxter Road** to their pre-merger status pursuant to NH RSA 674:39-aa. Said property is shown on Assessor Map 166 Lot 15 and lies within the Single Residence B District.

### **IV. PUBLIC HEARINGS – NEW BUSINESS**

- A.** Application 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.

- B.** Application 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.
- C.** Application of **City of Portsmouth, NH (Owner and Applicant)** for property located on **Marjorie Street** for a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance to construct a municipal wastewater pump station with associated pavement apron which will result in 1,540 square feet of impact in the 100' wetland buffer. Said property is shown on Assessor Map 232, Lot 25 and lies within the Single Residence B (SRB).
- D. REQUEST TO POSTPONE** Application of **Banfield Realty, LLC, Owner**, for property located at **375 Banfield Road** requesting a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance for work related to the construction of an industrial building that will require the removal of pavement in the 100' wetland buffer to create a vegetated area which will receive some of the stormwater runoff from the property. Said property is shown on Assessor Map 266, Lot 7 and lies within the Industrial (I) District. **REQUEST TO POSTPONE**
- E. REQUEST TO POSTPONE** The application of **Banfield Realty, LLC, Owner**, for property located at **375 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.  
**REQUEST TO POSTPONE**
- F.** Application of **Chase Bailey (Owner and Applicant)** for property located at **3 Curriers Cove** requesting a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance to install a pool and patio area with a permanent impact of 360 square feet and a temporary impact of 320 square feet in the inland wetland buffer. Said property is shown on Assessor Map 204, Lot 12 and lies within the Single Residence A (SRA) District.

- G.** 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.
- H.** 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.
- I.** 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 of 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).
- J.** Application of **Kaarin Milne, Owner and Applicant**, for property located at **315 Wibird Street** requesting Conditional Use Permit approval in accordance with Section 10.815 of the Zoning Ordinance to change the use of a studio space above a detached garage to a garden cottage with 610 square feet gross floor area. Said property is shown on Assessor Map 132 Lot 13 and lies within the General Residence A (GRA) District.
- K.** The application of **Susan Alex, Owner and Applicant**, for property located at **50 Mount Vernon Street** requesting Conditional Use Permit approval in accordance with Section 10.815 of the Zoning Ordinance to construct a garden cottage with 425 square feet gross floor area of living space above an existing detached garage. Said property is shown on Assessor Map 111 Lot 29 and lies within the General Residence B (GRB) and Historic Districts.

**V. PRELIMINARY CONCEPTUAL CONSULTATION**

- A.** Application of **The Sagamore Group, LLC** for property located at **1169 & 1171 Sagamore Avenue** for Preliminary Conceptual Consultation to construct a 10-unit condominium complex.

**VI. OTHER BUSINESS**

- A.** Review of Zoning Ordinance Amendment Priorities

**VII. INFORMATIONAL ITEMS**

- A. Request from City Council to review June 15, 2021 memo from Rick Chellman re: waterfront and building siting

**VIII. 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\\_dyIfbcDlReyfprzsFkNJzw](https://zoom.us/webinar/register/WN_dyIfbcDlReyfprzsFkNJzw)

**REGULAR MEETING  
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**EILEEN DONDERO FOLEY COUNCIL CHAMBERS  
CITY HALL, MUNICIPAL COMPLEX, 1 JUNKINS AVENUE**

**7:00 PM**

**June 17, 2021**

**MINUTES**

**MEMBERS PRESENT:** Dexter Legg, Chair; Elizabeth Moreau, Vice Chair Karen Conard, City Manager; Ray Pezzullo, Assistant City Engineer; Colby Gamester; Corey Clark; Peter Harris; Rick Chellman; and Polly Henkel, Alternate

**ALSO PRESENT:** Juliet Walker, Planner Director

**MEMBERS ABSENT:** None.

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**I. APPROVAL OF MINUTES**

A. Approval of the Planning Board minutes from May 20, 2021 meeting

The May 20, 2021 meeting minutes were **approved** as presented by unanimous vote.

**II. PUBLIC HEARINGS – OLD BUSINESS**

**A. REQUEST TO POSTPONE** Request of **Stone Creek Realty, LLC, (Owner), and CPI Management, LLC, (Applicant)**, for property located **53 Green Street** for a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance for the demolition of an existing building, construction of a 5-story mixed-use building and renovation of an existing parking area that will result in 98 square feet of impervious surface in the 25' to 50' tidal wetland buffer zone and 8,425 square feet of impervious surface in the 50' to 100' tidal wetland buffer zone representing an overall net reduction of 3,058 square feet of impervious surface in the tidal wetland buffer areas from the existing condition. Said property is shown on Assessor Map 119 Lot 02 and lies within the Character District 5 (CD5) District, the Historic District, and the North End Incentive Overlay District. **REQUEST TO POSTPONE**

**DECISION OF THE BOARD**

It was moved, seconded, and passed unanimously to **postpone** the public hearing to the July Planning Board meeting.

**B. REQUEST TO POSTPONE** Request of **Brora, LLC, Owner**, and **210 Commerce Way LLC, Applicant**, for property located at Shearwater Drive (at intersection of Portsmouth Boulevard and Market Street) for a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance for an after the fact approval for cutting of vegetation on 88,700 square feet in the wetland and vegetated buffer areas. Said property is shown on Assessor Map 217 Lot 2-1975 and lies within the Office Research (OR) District. **REQUEST TO POSTPONE**

### **DECISION OF THE BOARD**

It was moved, seconded, and passed to **postpone** the public hearing to the July Planning Board meeting.

### **III. PUBLIC HEARINGS – NEW BUSINESS**

**A.** Request of **City of Portsmouth, NH, Owner**, for property located at **99 Peirce Island Road**, for Site Plan Review approval for demolition of the existing bath house and pump house buildings and construction of a new bath house and a new chemical storage building. Said property is shown on Assessor Map 208 Lot 1 and lies within the Municipal District.

### **SPEAKING TO THE APPLICATION**

City Facilities Manager Joseph Almeida, Director of Public Works Peter Rice, Director of the Recreation Department Todd Henley, and Ken Weston and Wade Lippert of Oak Point Associates were present to speak to the application.

Mr. Almeida said the Peirce Island pool and pool house would be renovated and repaired and that the project was also presented to the Recreation Board and the Peirce Island committee and that the pool would remain open throughout the construction duration.

Project Manager Ken Weston said they wanted to demolish the existing bath house and pump house and build a new bath house of 3,340 square feet, with a portion of it being the new 7,075-s.f. pump house. He said the bath house would have a changing room, a filter room with aquatics to operate the pool, and a pump well for the pumps, and the new 280-s.f. chemical storage building would be adjacent to it. He said they would do repairs to the pool by fixing the gutter and main drains, replacing the liner and pool deck, and improving accessibility.

Mr. Chellman asked what the proposed schedule for construction was, and Mr. Weston said it was targeted for September.

Mr. Clark noted that the site plan called out the use of top soil seed and fertilizer. He asked, given the presence of children and others laying on the grass around the pool, if an organic fertilizer was considered or not using a fertilizer at all. Mr. Weston said they did not consider it but it was a good suggestion. Mr. Clark said the sidewalk shown on the plan looked generic. He said the area got a lot of bike travel and asked if the sidewalk could be widened to allow bike access. Mr. Weston said they discussed bicycles but didn't consider widening the sidewalk in

that area for bicyclists or pedestrians. He said it was a good suggestion. Mr. Lippert said they would want the bike lane to be separate from the walkway, like a striped lane coming onto the island as in the same direction as vehicle travel. He said they were just looking at improvements in the pool vicinity and the existing walkway for now. He noted that pedestrian traffic was dumped into the road currently, so they were providing a sidewalk going to the new pool and further down. He said the other challenge was trying to minimize the disturbance on the site and not to create additional impervious surfaces. He said they were reducing them on the tidal buffer zone by 3,800 square feet, and by widening the road, they would be increasing the impervious surfaces in that area, which would require stormwater and permitting ramifications. Mr. Rice said the removal of the building will help with the site distance or visibility of bicycles. They planned to put sharrows in the area as well as additional signage.

Mr. Chellman asked if the chain and pillar to narrow the sidewalk over the bridge would be changed. Mr. Rice said the plan was to leave the chain along that section, noting that it significantly improved pedestrian safety because it kept pedestrians in the sidewalk. He said it was narrow but would be made wider when the new bridge was built.

Vice-Chair Moreau noted that several parking spots were being removed. Mr. Lippert said 10 spots would be removed, but the Tree Island parking lot was expanded by 30 parking spaces, so it would result in a net increase of 20 spaces.

Ms. Henkel asked what material the concrete apron around the pool would be. Mr. Lippert said they were still evaluating it but wanted something more attractive than the current one and would probably do another type of surface, depending on the budget.

## **PUBLIC HEARING**

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

## **DECISION OF THE BOARD**

Vice Chairman Moreau moved to **grant** the site plan approval as amended, seconded by Mr. Gamester with the following **stipulation**:

- 1) The applicant shall use the organic fertilizer in place of conventional fertilizer applications.

Vice-Chair Moreau commented that it was a great project. She said she looked at all the details of the set-up inside and thought it made a lot of sense. She said many people used the facility and the new pool house would be a great addition and make it much more comfortable.

The motion passed unanimously.

- B.** Request of **Andrew M. Harvey, Owner**, for property located at **710 Middle Road**, for Conditional Use Permit approval in accordance with Section 10.814 of the Zoning Ordinance for the construction of a Detached Accessory Dwelling Unit of 749 square feet gross floor

area to be located above a newly constructed detached garage and utility room. Said property is shown on Assessor Map 232 Lot 46 and lies within the Single Residence B (SRB) District.

### **SPEAKING TO THE APPLICATION**

Attorney Bernie Pelech was present on behalf of the applicant. He said the applicant Andrew Harvey was also present, along with project engineer Erik Poulin. Attorney Pelech said the home was a 120-year-old, 20,409-s.f. single-family residence with 2-1/2 stories. The proposal was to construct a 4-car garage behind the home with an ADU above it. He said the first floor would have a utility and laundry room, and the second floor would have a workshop. He said the ADU would have a kitchen, bath, bedroom, and living room and would be 749 square feet. He said the structure was designed to be in compliance with the provisions of the zoning ordinance as a detached ADU, or DADU and met all the requirements of the zoning ordinance, including lot coverage, open space, and parking. He addressed the criteria and said the project complied with only having a DADU on a lot that has a single-family dwelling. The project complied with lot area setbacks, off-street parking, and building height. He said it was owned by the same person and one of the units would be occupied by the owner. He said the structure would not be used for any business purposes. He said the DADU complied with the minimum lot area for the SRB zone and had only one bedroom, and the façade was less than 40 percent of the combined façade of the ADU and the single-family residence. He said the height was less than the single-family residence and that the two structures would be architecturally consistent, with more than 20 feet between the single-family residence and the proposed ADU. He said the ADU would be hardly noticeable from the street, and no part of it would be within the front yard setback. He said the structure was designed to comply with all the requirements and there was no question that it did.

Regarding the June 3 response letter and the building coverage table, Mr. Clark said the table showed an existing condition main structure at 1,875 square feet and a proposed condition of 1,680 feet. He said he couldn't see on the plan where that 200 square feet was going. Mr. Poulin said the only structure that would be removed, as depicted on the boundary plan, would be the small shed on the property, which was located in close proximity to the bottom left corner of the proposed structure. He said the main structure on the plan showed the existing footprint of the existing building, the proposed footprint of the proposed building, and the attached decks and shed, and the one part of the building being removed was the shed, which was a building coverage percentage of 19.9 percent. Mr. Clark said the plan didn't take into account the shed as part of the main structure. Mr. Poulin said they were looking at the main existing structure, but an enclosed porch was added which made for 2,107 square feet. He further explained the various square footage and said the proposed condition was the new structure, not the total. Vice-Chair Moreau said the plan indicated that the barn is being removed on the adjacent property, and she asked if it had been removed yet. Mr. Harvey said it was currently standing, noting that Jim Vera, who surveyed the neighboring properties, had applied in the past to have it rebuilt but the permit was denied, so it was listed as being removed for that reason.

Mr. Pezzullo said the city would require a lateral sewer connection using at minimum a 6-inch diameter PVC pipe, but the applicant showed a 4-inch one. He said the city only allowed a one-metered water service that would have to come off the existing house. Mr. Poulin said they always had their contractors verify all existing utilities that they tied into and coordinate with all



municipals prior to construction. He said he did a preliminary layout of the utilities on the easterly side of the existing house to see if there was enough room. Mr. Pezzullo commented that the water service was a 1-inch diameter pipe right now and thought the existing house didn't have that pipe size, so it might have to be upgraded. He asked if the applicant considered doing any mitigation for additional runoff or stormwater for drainage for the structure because there was quite a bit of structure and impervious surface from the roof runoff, and even a simple foundation drain along the building's perimeter would be good. Mr. Poulin said they did consider it but didn't do it because of the lack of proximity to wetlands. He said Gove Environmental Services did a survey of the potential wetlands in the area but didn't find any. He said they could look into it, however, and see if it was something that could be quickly integrated. Mr. Pezzullo said the city had prior issues with runoff going into neighboring properties and it had to be contained. Mr. Poulin said they could do that. He noted that the small driveway was proposed to connect and was designed to tip back into itself and drain south. He said they didn't want sheet flow water across the existing driveway and was sure they could do a gravel drip edge.

Mr. Chellman said the plan Jim Vera stamped is called the monumentation sketch and he says it's not for submittal to regulatory agencies. Mr. Poulin said it is a boundary sketch and their survey department did some checks. He spoke with Mr. Vera and was comfortable with the boundary footprint he provided. Mr. Chellman said he was curious as to why Mr. Vera called it a sketch, and normally there was an engineering stamp on the final plan instead of a survey stamp. Ms. Walker said the Planning Department didn't require survey plans as part of the submission and that the monumentation sketch was something at a higher level than they typically received and they were thankful that the attempt was made.

## **PUBLIC HEARING**

Chairman Legg opened asked if anyone was present from the public to speak to, for, or against the petition.

## **SPEAKING AGAINST THE PETITION**

Lisa Hewitt of 726 Middle Road said she was the next-door neighbor. She submitted a letter to the Board and spoke to it. She said the applicant's request was for a detached ADU, but she argued that it was a request for a 4,000-sf, 2-1/2-story warehouse with a 750-sf one-bedroom apartment. She said it was too big, too offensive, too contrary to the spirit of the ADU ordinance and out of character with the neighborhood. She pointed out that the application did not meet the ADU criteria in many ways, including that the DADU was not subordinate to the principal home in scale, height, and appearance, was contrary to the spirit of the ADU ordinance because the applicant did the maximum size structure allowed that will be used primarily for storage, the ADU's height was five inches shorter than the home, and the ADU's 1,680-sf footprint was not subordinate to the main home's 1,875 square feet. She said the ADU was as big as most home in the neighborhood. She asked why an ADU needed 1,629 square feet of storage space. She said she saw a 5-car garage, not a 4-car garage. She challenged the Board to find a previous approved DADU of this size. She reminded the Board that in 2019, Mr. James McSherry applied for approval of a building that size at the back of his home, which was denied because it wasn't in keeping with the neighborhood. She said the proposed ADU had a 368-sf laundry room that

would have to be heated and is attached to the unit by a staircase, pointing out that heating space is living space and is counted in the home's square footage, so the total ADU square footage is 1,116 square feet and will affect her quality of life. She said the existing barn on their property did not exist but there was an old stone foundation below grade that couldn't be seen. She said there was nothing accessory about the project and the ADU request is a shell for an apparent warehouse, with its overwhelming size suggesting possible future expansion. She concluded that the building as proposed did not fit the neighborhood in size or architectural integrity and it was too big, too offensive, and too contrary to the spirit of the ordinance and should be denied.

Jim Hewitt of 726 Middle Road distributed some material to the Board. He said the DADU ordinance called for the proposed ADU's front wall to be entirely behind the single-family dwelling, but the plan showed that it wasn't, so the location was not in compliance with the DADU regulations. He referred to the right-of-way easement and whether the proposed use was allowed under the easement granted from Ellen Ham to Fred Ham in 1912.

*At this time, Chairman Legg called for second-time speakers, and Mr. Hewitt continued.*

### **Second-time Speakers**

Jim Hewitt said that Fred Ham, which was now himself, was responsible for keeping and maintaining the right-of-way 50 feet south of the area marked on the plan, so he was responsible for the pavement and maintenance on the driveway. He said he didn't authorize any new pavement in that area, nor the new wear and tear on the driveway. He referred to the photos he gave the Board showing how the project would impact his property from the backyard. He said the project was too big and too out of character and should be denied.

Attorney Pelech said Mr. Hewitt misconstrued the proposal and misquoted. He pointed out that the ordinance said the DADU or the front wall of it shall be set back at least ten feet further from the front lot line than the existing front wall of the single-family dwelling, meaning that the front wall of the detached ADU has to be ten feet further back from the front lot line than the front wall of the single-family dwelling. He said he had stated that the proposed ADU's front wall is set back behind the entire single-family dwelling, noting that it's not only ten feet further back but it's behind the entire ADU by more than 20 feet, so it complies. He said it complies with all the requirements of the zoning ordinance and is consistent with all of the requirements of the DADU portion of the zoning ordinance. He said the 4-car garage was allowed and met the zoning requirements and all the setbacks. Regarding the shared right-of-way, he said both the owner Mr. Harvey and the Hewitts have a right to use that, even though Mr. Hewitt has to maintain it because it went back to the 1912 deed, and it wasn't within the Board's purview as to whether it was a violation or an overuse of the shared right-of-way. He said the Hewitts may not like the way the DADU looks or think it's out of character, but it complies with the ordinance and the DADU criteria. He said the Board had to determine whether or not the DADU met the criteria, and he had not heard from any Board member that it did not meet it.

### **Third-time Speakers**

No one else spoke, and Chairman Legg closed the public hearing.

## DISCUSSION AND DECISION OF THE BOARD

Vice-Chair Moreau said the common space listed on the plan was common space for the laundry, and she didn't believe that the Board counted common space because it was common space for both units and both units could use it. Ms. Walker agreed but said it was unique in this case because it's common space that's not connected to another unit, and she recommended that the Board think hard about that.

Vice-Chair Moreau moved to find that the applicant meets the requirements of Section 10.814.60 and to grant the Conditional Use Permit as presented, with the following **stipulation**:

1. Gravel drip edge shall be installed for drainage along the driveway.

Mr. Gamester seconded.

There was further discussion. Vice-Chair Moreau said that technically, she agreed that the project met all the requirements but when the Board wrote the ordinance, they knew there would be items that pushed the limits of the ordinance. She said her biggest issue was the overall size of the ADU being subordinate to the main dwelling. She said it was just inches lower, but the ordinance didn't say how much lower it had to be. She was glad it was 749 square feet but was concerned that the Board didn't have the ability to stop the applicant from doing further expansion and making the ADU a full other residence taking over the whole second floor. She said it would be a concern in the future for her, where the ADUL was not put in place for that kind of structure, and she was torn.

Mr. Chellman said it was shoehorning things in. He said he looked at Mr. Vera's plan and it seemed that it was close to the 20 percent building coverage but he thought maybe a survey needed to be done because a slight shift could make a difference. He said the survey was called a monumentation sketch and that the engineers looked at it and accepted it, but it was really close and he didn't see an area related to stipulation it on Mr. Vera's plan. Chairman Legg said a stipulation could be made.

Chairman Legg said he was also having trouble with the common utility space because and it's 40 feet away from the main structure and there is nothing common to it. He said it was part of the ADU because it also has a direct stairway to it. He suggested a stipulation stating that it will remain vacant space and not a utility space if the application went forward. He said it was on the edge but below every specification in the ordinance and he couldn't point to anything in the ADU to deny it, but the Board could be clear that the proposed ADU is less than 750 square feet.

Mr. Chellman asked how the square footage of the ADU building itself was measured. Ms. Walker said it's the interior space and has to be living space. She said the ordinance as written didn't provide additional guidance for a situation like this, where you have an accessory building being constructed that has a small portion of it as the ADU. She said when they created the ordinance, they tried to limit the overall size of the ADU but not the overall size of the building that contained the ADU. Mr. Chellman said the ordinance said 'the gross floor area' but not 'the

ADU's gross floor area'. Ms. Walker agreed and said it didn't distinguish living area from gross floor area, meaning that the 750 square feet was actually the gross floor area.

Mr. Gamester said he thought the applicant met almost everything and that it's close but not subordinate enough. He said he could be swayed to approve it if it was based on the subordination but didn't like the common utility room. He said it was clever, but the separation to the main structure bothered him and the entrance to the utilities was the common laundry room. He said if it were separated, it might be different. He said if the applicant wanted to stick with the 749 square feet and eliminate the common area that's the laundry room, it might be an opportunity to shrink the building down a bit, in which case it would pass with flying colors, at least to him.

Mr. Chellman asked what would happen if a garage was proposed with no residential component to it. Ms. Walker said they didn't have maximum footprints on accessory buildings. She said the gross area was supposed to be the actual part that is the DADU. She said in the applicant's case, it was hard to distinguish where that boundary ends. Chairman Legg said the Board had several similar applications where a bigger building was created and some of it was for storage space, but it was clear that it was within the 750 square feet of what was interpreted as living space for the ADU. Mr. Chellman said he thought there was a 750-sf limitation for gross floor area, which is the size of a building if it had a residential component, so if it didn't, that criteria would not pertain because it could be like a garage. Ms. Walker said the Planning Department staff thought this is specific to the portion of the building that is the ADU and that's the gross floor area we're referencing, not the entire building. Chairman Legg said maybe the wordage had to be tightened in the ordinance, but out of the 33 ADUs the Board had reviewed in the past three years, 750 square feet was associated with the living area, not the building area. Mr. Chellman asked for an example. Ms. Walker said Orwell Avenue had a garage constructed, with an ADU a portion of it, and the Board restricted the ADU to 750 square feet and stated that it couldn't be expanded anywhere else in the building. Mr. Chellman asked if the footprint was a lot larger. Chairman Legg said it was a 3-bay garage. Mr. Chellman said it seemed like a lot for the property but thought it might just make it, depending on the actual size of the lot. Mr. Clark said he agreed with common space comments. He said the ADU was architecturally inconsistent with the beautiful New Englander, and if the ADU had more of a barn feel, it would have more architectural character. He said it looked like a modern bar but took away from the 1900 character of the main house. He said he was wrestling a bit with some of those requirements.

Vice-Chair Moreau said she could amend her motion to read that, in addition to adding the gravel drip edge, a full detailed survey would be required, with confirmation building coverage to the Planning Department, and the laundry room would be required to remain empty storage space and not actual heated space. Chairman Legg also noted that Mr. Pezzullo's recommendations about the 6-inch sewer pipe and the one-metered water service should be included as stipulations.

## **FINAL DECISION OF THE BOARD**

Vice-Chair Moreau moved to **amend** her motion, seconded by Mr. Gamester, to find that the applicant meets the requirements of Section 10.814.60 and to **grant** the Conditional Use Permit with the following **stipulations**:

1. In accordance with Section 10.814.90 of the Zoning Ordinance, the owner is required to obtain a certificate of use from the Planning Department verifying compliance with all relevant standards of the Ordinance and shall renew the certificate use annually.
2. Inclusion of gravel drip edge for drainage or as otherwise approved by Portsmouth DPW.
3. A full detailed survey plan that includes final building coverage calculation shall be provided to the Planning Department prior to building permits being issued.
4. The common laundry room shall remain as unheated storage space.
5. A six-inch PVC sewer line and one-inch water line from the main house will provide service to the accessory structure as articulated by Portsmouth DPW standards.

Vice-Chair Moreau said she would vote for it but was unhappy with the overall size. Mr. Gamester agreed, noting that the ordinance did not specify what the term ‘subordinate’ meant size-wise. Chairman Legg said he wished the applicant hadn’t pushed the edge, but there were within the ordinance. He said the saving grace was that the ADU was behind the property and separated, but if it read like a barn, it would be much easier to support. He wished the ordinance was a bit more strongly worded. Mr. Chellman said he would not support the project because it didn’t fit the ordinance and there were opportunities to make some modifications.

Chairman Legg asked for a roll call vote. The motion **passed** by a vote of 5-4, with Mr. Clark, Mr. Whelan, Mr. Chellman, and Mr. Harris voting in opposition.

**C. Request of The Fritz Family Revocable Living Trust, Owner**, for property located at **0 Patricia Drive** for amended subdivision approval to revise the roadway design and stormwater treatment for a previously approved subdivision that proposes to subdivide a lot with an area of 137,549 s.f. and 414.15 of continuous street frontage on a private road into two (2) lots as follows: Proposed lot 1 with an area of 92,908 s.f. and 150 ft. of continuous street frontage on a private road; and Proposed Lot 2 with an area of 44,641 s.f. and 264.15 ft. of continuous street frontage on a private road. Said property is shown on Assessor Map 283 Lot 11 and lies within the Single Residence A (SRA) District.

#### **DECISION OF THE BOARD**

It was moved, seconded, and passed unanimously to **postpone** the application to the July meeting.

**D. Request of The Fritz Family Revocable Living Trust, Owner**, for property located at **0 Patricia Drive** for amended wetland conditional use permit approval under Section 10.1017 of the Zoning Ordinance to revise the roadway design and stormwater treatment for a previously approved subdivision which will result in 5,718 square feet of temporary wetland buffer impact. Said property is shown on Assessor Map 283 Lot 11 and lies within the Single Residence A (SRA) District.

#### **DECISION OF THE BOARD**

It was moved, seconded, and passed unanimously to **postpone** the application to the July meeting.

#### **IV. PUBLIC HEARINGS – CITY COUNCIL REFERRAL**

- A.** Request of **David Higgins and Julia Higgins, Owners**, for the restoration of involuntarily merged lots at **344 Aldrich Road** to their pre-merger status pursuant to NH RSA 674:39-aa. Said property is shown on Assessor Map 166 Lot 50 and lies within the Single Residence B (SRB) District.

#### **DECISION OF THE BOARD**

It was moved, seconded, and passed unanimously to **postpone** the request to the July meeting.

- B.** Request of **Marcie Shearman, Owner**, for the restoration of involuntarily merged lots at **635 Lincoln Avenue** to their pre-merger status pursuant to NH RSA 674:39-aa. Said property is shown on Assessor Map 148 Lot 38 and lies within the General Residence A (GRA) District.

The application was **withdrawn** by the applicant.

Mr. Gamester recused himself from the following application.

- C.** Request of **Vincent Zingariello and Monica Abruzzese, Owners**, for the restoration of involuntarily merged lots at **135 Thaxter Road** to their pre-merger status pursuant to NH RSA 674:39-aa. Said property is shown on Assessor Map 166 Lot 15 and lies within the Single Residence B District.

Ms. Walker said she received a late email from the applicant requesting to postpone to the July meeting.

#### **DECISION OF THE BOARD**

It was moved, seconded, and passed unanimously to **postpone** the application to the July meeting.

#### **V. OTHER BUSINESS**

- A.** Notification of Separation of Contiguous Lots at 67 & 69 Porpoise Way

Ms. Walker said it was just an information item for the Board.

- B.** Report on Accessory Dwelling Unit Approvals

Ms. Walker said the report summarized the number of ADUs that were processed since adopting the ordinance. She said many had been approved and a few had not proceeded. She said some revisions were made to the zoning ordinance, including adding a limitation of how long the ADU would last. Overall, in terms of its original intent, which was to provide the ADU option for property owners and to make it reasonable for the neighborhood context, she thought they had

been fairly successful. Chairman Legg agreed and said it was important to update it annually. He said it told a mixed picture, and the Board had concerns when they originally looked at it in 2016 that there would be an overwhelming number of ADUs coming before them. He said it was a fairly robust ordinance with strict requirements and thought it had served its purpose well. Since it was intended by the State to increase the number of housing units, he said he was happy the Board has been consistent in how they interpreted the ordinance and how the Board and City Staff has dealt with it overall.

Vice-Chair Moreau commented that she was part of the group that drafted the ADU ordinance, and they knew there would be changes but kept the ordinance under their control so they could monitor changes and act quickly to make necessary adjustments. Chairman Legg said he was interested to see if the 2019 approvals got built out or not. Mr. Chellman said the idea of ADUs was a fabulous one, but one of the problems was when that concept was combined with a different one, and he suggested discussing how the ordinance could be fine-tuned so that the concept could be defined more explicitly.

**C. Request from **Chuck and Allison Dudas, Owners**, for property located at **32 Monteith Street** for a 1-year extension of the Wetland Conditional Use Permit granted on June 18, 2020.**

#### **SPEAKING TO THE APPLICATION**

The applicant Chuck Dudas said he wanted a one-year extension due to the cost increases and contractor availability issues.

#### **DECISION OF THE BOARD**

Vice-Chair Moreau moved to **grant** the request for extension, seconded by Mr. Gamester. The motion passed by unanimous vote.

#### **VI. ADJOURNMENT**

The meeting was adjourned at 8:25 p.m.

Respectfully submitted,

Joann Breault,  
Acting Secretary for the Planning Board



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**MEMORANDUM**

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**To:** Planning Board  
**From:** Juliet T.H. Walker, Planning Director *JTW*  
Stefanie Casella, Planner 1  
**Subject:** Staff Recommendations for the July 15, 2021 Planning Board Meeting  
**Date:** July 12, 2021 (revised July 13, 2021)

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**II. PUBLIC HEARINGS – OLD BUSINESS**

*It is recommended that items II(A), IV(A), and IV(B) be discussed together and voted on separately. A motion is required to consider these items together.*

**A.** The application of **Stone Creek Realty, LLC, (Owner), and CPI Management, LLC, (Applicant)**, for property located **53 Green Street** for a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance for the demolition of an existing building, construction of a 5-story mixed-use building and renovation of an existing parking area that will result in 98 square feet of impervious surface in the 25' to 50' tidal wetland buffer zone and 8,425 square feet of impervious surface in the 50' to 100' tidal wetland buffer zone representing an overall net reduction of 3,058 square feet of impervious surface in the tidal wetland buffer areas from the existing condition. Said property is shown on Assessor Map 119 Lot 02 and lies within the Character District 5 (CD5) District, the Historic District, and the North End Incentive Overlay District.

**IV.A.** Application 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.

**IV.B.** Application 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.



### **Description**

The applicant is requesting a wetland conditional use permit, a lot line adjustment, and site plan review approval to construct a 5-story mixed use building. The project will include demolition of the existing building, removal of impervious surfaces in the tidal wetland buffer zones and creation of a portion of the North Mill Pond Greenway multi-use trail along the waterfront, conveyance of land to increase frontage, and construction of a mixed-use residential building with commercial space on the first floor and a parking garage in the basement. Associated site improvements will consist of paving, lighting, landscaping, and creation of public community space.

The project as currently proposed complies with all zoning regulations applicable to the site. Previously, the proposed building and site did not comply with the required front lot line buildout. The applicant had applied to relief from the Zoning Board of Adjustment in June and the request was denied. Subsequently the applicant has modified the project to bring it into compliance with the zoning ordinance by widening the building along the frontage and increasing the size of the proposed community space along Green Street.

The application is still pending review and approval by the Historic District Commission and is currently scheduled to be heard on July 14<sup>th</sup>.

### **Wetland Conditional Use Permit**

#### Conservation Commission Review

According to Article 10 Section 10.1017.50 of the Zoning Ordinance, the applicant must satisfy the following criteria for approval of this project:

1. *The land is reasonably suited to the use activity or alteration.* The proposed project will redevelop an existing commercial site within the existing building and parking area footprint and will create a public linear park along the waterfront. The proposed development will result in a reduction in the overall impervious surface within the wetland buffer area and the public path will be porous pavement and will include enhancements and improvements to the shoreline. The land is reasonably suited for the proposed alterations and activities.
2. *There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.* The property is constrained by its proximity to the railroad and therefore an alternative location outside the wetland buffer would not be feasible or reasonable without substantially reducing the footprint of the building and the vehicular accessways and parking. The proposed public greenway park along the waterfront is an appropriate use and improvement for the location. The project has been sited in a way to reduce the net impervious surface, provide adequate parking and safety access to the building, and maintain the required separation from the railroad. The design of the project is feasible and reasonable for the proposed use working within the property's constraints

3. *There will be no adverse impact on the wetland functional values of the site or surrounding properties.* The proposed building is not closer to the edge of wetland than the existing and there is a reduction in impervious surface with this proposal. The proposal will improve the stormwater runoff on the site by adding a new treatment and detention system. The pedestrian trail that is proposed will be porous pavement. The project provides community space that will provide community benefit while managing access and preventing further degradation of the waterfront. The proposed landscaping is an improvement over the existing undeveloped area in the buffer which currently consists of lawn, scrub, and a mix of invasive species.
4. *Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.* The project proposes to have minimal impact to existing natural areas and replace previously disturbed areas along the shoreline with low-mow grass and native vegetation. The project will provide a landscaped and natural vegetated buffer between public and private use areas and the shoreline.
5. *The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section.* This application proposes to improve the conditions in the wetland buffer zone and reduce overall wetland area impact. The proposed development stays within the existing footprint of developed area and adds enhanced stormwater management.
6. *Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.* The only work in the vegetated buffer strip for this project is the construction of a stormwater outlet. After the outlet is constructed, any impacted areas will be restored with native trees and plantings. By enhancing and improving the vegetated buffer along the waterfront, public and private access to the shoreline will be managed and improved to prevent further degradation of the shoreline.

This Commission reviewed this application at the April 14, 2021 meeting and voted unanimously to recommend approval with the following stipulations (meeting details can be found here -- <https://www.cityofportsmouth.com/planportsmouth/events/conservation-commission-21>):

1. Move the greenway path closer to the building and align it over the fire access that as shown on the plan set.
2. The applicant shall agree to maintain all greenway according to NOFA standards.
3. The applicant shall add an update the porous paving maintenance plan to include: no sand spreading and increase sweeping from once to twice per year.
4. The applicant shall add more native understory plants to the pond side of the greenway path.

On July 7<sup>th</sup>, the applicant submitted updated plans addressing stipulations 1, 3, and 4 to the satisfaction of the Planning Department. Stipulation number 2 has been added to the recommendation below.

## Site Plan Review and Subdivision (Lot Line Revision) Approval

### Technical Advisory Committee Review

At the June 1, 2021 TAC meeting this application was review and reccomended for approval with the following stipulations (meeting details can be found here -- <https://www.cityofportsmouth.com/planportsmouth/events/site-review-technical-advisory-committee-4>):

1. The applicant shall evaluate the intersection of Vaughan Street and Green Street to confirm that larger trucks (including the City fire truck) can navigate to and from Vaughan Street onto Green Street.
2. The applicant shall update the landscaping plan to confirm the surface treatment for the pavement around the proposed loading zone.
3. The applicant shall update the landscaping plan to indicate that the landscape plants along the water are salt tolerant in case of inundation.
4. The community space easement shall reflect that the City shall not be responsible for maintenance of landscaping in the community space areas.
5. The applicant shall add signage and/or markings to delineate the fire lane area.
6. The applicant will reach out to the abutting property owner (AC Hotel) to discuss possible coordination related to allow for ongoing maintenance and access to the rain garden area on the abutting property.

On July 7<sup>th</sup>, the applicant submitted updated plans addressing the stipulations to the satisfaction of the Planning Department, DPW, and Fire Department.

### Planning Department Comments

As required by the Zoning Ordinance, in order to receive the incentives for increased building footprint and height, the project needs to provide community space that includes a continuous public greenway with a multi-use path that is parallel to and located within 50 feet of the waterfront. The greenway shall include legal and physical access to abutting lots or public ways. The City is currently in the process of designing and permitting the publically owned portions of the North Mill Pond Greenway on either side of this property, so this project will provide a key link in this important City project. In addition, the project applicant is working with the City to relocate a public access easement for a future connection to the trail across property owned by the applicant (Map 123-15-1) behind 1 Raynes Avenue. This adjustment was requested by the Conservation Commission and staff in order to adjust the alignment of the proposed greenway trail and move farther away from the shoreline. *If applicant is willing, the Planning Board should consider adding this as a condition of approval.*

### Planning Department Recommendation

#### **Wetland Conditional Use Permit**

1. *Vote to grant a Wetland Conditional Use Permit with the following stipulation:*
  - 1.1) *The property owners shall utilize NOFA (Northeast Organic Farming Association) approved practices (or comparable equivalent) for maintenance of landscaped areas within the wetland buffer.*

**Subdivision (Lot Line Revision)**

2. *Vote to grant Preliminary and Final Subdivision Approval with the following stipulations:*
- 2.1) *The public sewer easement shall be 20' wide centered on the line (10' either side of the line) to the extent possible given the proximity to the property line. Final easement and deed to be reviewed and approved by the DPW Director and Legal Department prior to final acceptance by the City Council.*
  - 2.2) *Property monuments shall be set as required by the Department of Public Works prior to the filing of the plat.*
  - 2.3) *GIS data shall be provided to the Department of Public Works in the form as required by the City.*
  - 2.4) *The final plat and all easement deeds shall be recorded concurrently at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.*

**Site Plan Review**

3. *Vote to grant Site Plan Approval with the following stipulations:*

*Conditions Precedent (prior to the issuance of a building permit):*

- 3.1) *For the community space easement for the North Mill Pond Greenway, the City shall have maintenance rights for the trail, but any landscaped areas shall be maintained by the property owner.*
- 3.2) *Any easement plans and deeds for which the City is a grantor or grantee shall be reviewed and approved by the Planning and Legal Departments prior to acceptance by City Council.*
- 3.3) *The applicant shall prepare a Construction Management and Mitigation Plan (CMMP) for review and approval by the City's Legal and Planning Departments.*
- 3.4) *The site plan and any easement plans and deeds shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.*

*Conditions Subsequent:*

- 3.4) *The Engineer of Record shall submit a written report (with photographs and engineer stamp) certifying that the stormwater infrastructure was constructed to the approved plans and specifications and will meet the design performance;*
- 3.5) *A stormwater inspection and maintenance report shall be completed annually and copies shall be submitted to the City's Planning and Public Works Departments.*

**II. PUBLIC HEARINGS – OLD BUSINESS (Cont.)**

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- B.** Application of **Brora, LLC, Owner, and 210 Commerce Way LLC, Applicant,** for property located at **Shearwater Drive (at intersection of Portsmouth Boulevard and Market Street)** for a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance for an after the fact approval for cutting of vegetation on 88,700 square feet in the wetland and vegetated buffer areas. Said property is shown on Assessor Map 217 Lot 2-1975 and lies within the Office Research (OR) District.

Description

This application is still pending review by the Conservation Commission and the applicant has requested to postpone this application to the next scheduled meeting.

Planning Department Recommendation

*Vote to postpone this application to the August Planning Board Meeting.*

## II. PUBLIC HEARINGS – OLD BUSINESS (Cont.)

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*It is recommended that items II(C) and II(D) be discussed together and voted on separately. A motion is required to consider these items together*

- C.** Application of **The Fritz Family Revocable Living Trust, Owner**, for property located at **0 Patricia Drive** for amended subdivision approval to revise the roadway design and stormwater treatment for a previously approved subdivision that proposes to subdivide a lot with an area of 137,549 s.f. and 414.15 of continuous street frontage on a private road into two (2) lots as follows: Proposed lot 1 with an area of 92,908 s.f. and 150 ft. of continuous street frontage on a private road; and Proposed Lot 2 with an area of 44,641 s.f. and 264.15 ft. of continuous street frontage on a private road. Said property is shown on Assessor Map 283 Lot 11 and lies within the Single Residence A (SRA) District.
- D.** Application of **The Fritz Family Revocable Living Trust, Owner**, for property located at **0 Patricia Drive** for amended wetland conditional use permit approval under Section 10.1017 of the Zoning Ordinance to revise the roadway design and stormwater treatment for a previously approved subdivision which will result in 5,718 square feet of temporary wetland buffer impact. Said property is shown on Assessor Map 283 Lot 11 and lies within the Single Residence A (SRA) District.

### Description

The application was originally heard and approved at the February 18, 2021 Planning Board meeting. Since that time, the applicant applied for a state wetland permit with NHDES. As a result of consultation with NHDES staff, the applicant is proposing to amend their application to show engineered stormwater basins that use existing (previously constructed) catch basins rather than a vegetated infiltration area in the wetland buffer.

This application is still pending final review by the Conservation Commission and the City engineering staff.

### Planning Department Recommendation

*Staff will provide an updated recommendation after the Conservation Commission meeting on Wednesday the 14<sup>th</sup>.*

### III. PUBLIC HEARINGS – CITY COUNCIL REFERRALS (OLD BUSINESS)

#### Statutory Requirements for Unmerger of Involuntarily Merged Lots

RSA 674:39-aa requires the City Council to vote to restore “to their premerger status” any lots or parcels that were “involuntarily merged” by municipal action for zoning, assessing, or taxation purposes without the consent of the owner. Unlike all other lot divisions, there is no statutory role for the Planning Board in this process nor is there any requirement for the City to hold a public hearing. However, in Portsmouth the City Council has historically referred such requests to the Planning Board to conduct a public hearing.

The statute defines “voluntary merger” and “voluntarily merged” to include “any overt action or conduct that indicates an owner regarded said lots as merged such as, but not limited to, abandoning a lot line” (RSA 674:39-aa, I). It is therefore the City Council’s responsibility to determine whether a merger was voluntary (i.e., requested by a lot owner) or involuntary (implemented by the City without the owner’s consent). If the merger was involuntary, the Council must vote to restore the lots to their premerger status. Following such a vote, the City GIS and Assessing staff will update zoning and tax maps accordingly. It will then be up to the owner to take any further action to confirm the restoration to premerger status, such as recording a plan at the Registry of Deeds.

It is important to note that the granting of a request to restore lots to their premerger status does not mean that the resulting lots will be buildable or, if already developed, will conform to zoning. The statute states that “The restoration of the lots to their premerger status shall not be deemed to cure any non-conformity with existing land use ordinances” (RSA 674:39-aa, V). For example, the restored lots may not comply with current zoning requirements for lot area, frontage and depth, and the re-establishment of a lot line between any two premerger lots may introduce a new nonconformity with respect to maximum allowed building coverage or a minimum required side yard where a building already exists on one of the premerger lots. In such cases, the owner(s) of the applicable lot(s) would have to apply to the Zoning Board of Adjustment for the necessary variances to restore zoning compliance or to allow future development.

- A. Request of **David Higgins and Julia Higgins, Owners**, for the restoration of involuntarily merged lots at **344 Aldrich Road** to their pre-merger status pursuant to NH RSA 674:39-aa. Said property is shown on Assessor Map 166 Lot 50 and lies within the Single Residence B (SRB) District.

#### Description

At its meeting on May 3, 2021, the City Council considered a request from Thomas M. Keane, Esq, on behalf of the property owners David and Julia Higgins, requesting the restoration of involuntarily merged lots at 344 Aldrich Road to their pre-merger status pursuant to NH RSA 674:39-aa. The Council voted to refer this request to the Planning Board and the City Assessor for a report back.

Assessing Department Review

The City Assessor has reviewed this application and provided a report on her findings. Her review indicated that it is not clear from City records or records available at the registry and provided by the applicant whether the existing buildings were constructed across the pre-merger boundary line. The Assessor is recommending denial of this request unless more clarity can be provided on the location of the structures in relation to the pre-merger boundary line.

The applicant has requested to postpone consideration of their request to the next Planning Board meeting.

Planning Department Recommendation

*Vote to postpone the public hearing on this request to the August Planning Board meeting.*

- B. Request of Vincent Zingariello and Monica Abruzzese, Owners,** for the restoration of involuntarily merged lots at **135 Thaxter Road** to their pre-merger status pursuant to NH RSA 674:39-aa. Said property is shown on Assessor Map 166 Lot 15 and lies within the Single Residence B District.

Description

At its meeting May 17, 2021, the City Council considered a request from Bernie W. Pelech, Esq., on behalf of the property owners Vincent and Monica Zinganello, requesting the restoration of involuntarily merged lots at 135 Thaxter Road to their pre-merger status pursuant to NH RSA 674:39-aa. The Council voted to refer this request to the Planning Board and the City Assessor for a report back.

Assessing Department Review

The City Assessor has reviewed this request and concluded that it appears the property was voluntarily merged by an overt action of the owner.

Planning Department Recommendation

*Vote to recommend that the City Council deny this request as recommended by the City Assessor.*



#### IV. PUBLIC HEARINGS – NEW BUSINESS

- C. Application of **City of Portsmouth, NH (Owner and Applicant)** for property located on **Marjorie Street** for a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance to construct a municipal wastewater pump station with associated pavement apron which will result in 1,540 square feet of impact in the 100' wetland buffer. Said property is shown on Assessor Map 232, Lot 25 and lies within the Single Residence B (SRB).

Description

The City will be constructing a municipal wastewater pump station.

Conservation commission review

According to Article 10 Section 10.1017.60 Public and Private Utilities within Rights-of-Way in Wetlands and Wetland Buffers the applicant must satisfy the following conditions for approval of this project.

1. *The proposed construction is in the public interest.* The Department of Public Works has chosen to keep all of the work within an existing right of way. This location is appropriate for the work as it will allow City vehicle access without disturbing private property. This work is intended to enhance the City's wastewater system which is maintained and improved for public benefit.
2. *Design, construction, and maintenance methods will utilize best management practices to minimize any detrimental impact of such use upon the wetland and will include restoration of the site as nearly as possible to its original grade, condition and vegetated.* The project has been designed to minimize new impervious surface to just areas which will be plowed. A grass treatment swale and bio-infiltration area have been included in the project to minimize stormwater impacts currently existing and from new site development.
3. *No alternative feasible route exists which does not cross or alter a wetland or have a less detrimental impact on a wetland.* The location selected has the least detrimental impact to the wetland in this area. The proposal expanding a City Right of way with pavement, pump station equipment and new impervious surface. This work has been done in as minimally impacting fashion as possible to have the least adverse impact of all alternatives.
4. *Alterations of natural vegetation or managed woodland will occur only to the extent necessary to achieve construction goals.* The project does require removal of a large willow and some shrub vegetation but has been limited to only that necessary for project completion.

At the June 9, 2021 Conservation Commission meeting, the Commission voted unanimously to recommend approval with the following stipulation (meeting details can be found here -- <https://www.cityofportsmouth.com/planportsmouth/events/conservation-commission-22>):

1. The applicant shall add native trees and shrubs in an area where originally they were going to do a grass seed mix so that the additional plantings will act as more of a buffer and help prevent invasive species.

Planning Department Recommendation

*Vote to grant Wetland Conditional Use Permit with the following stipulation:*

- 1. The applicant shall add native trees and shrubs instead of the proposed grass seed mix.*

#### IV. PUBLIC HEARINGS – NEW BUSINESS (Cont.)

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*It is recommended that items IV(D) and IV(E) be discussed together and voted on separately. A motion is required to consider these items together*

- D. Application of **Banfield Realty, LLC, Owner**, for property located at **375 Banfield Road** requesting a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance for work related to the construction of an industrial building that will require the removal of pavement in the 100' wetland buffer to create a vegetated area which will receive some of the stormwater runoff from the property. Said property is shown on Assessor Map 266, Lot 7 and lies within the Industrial (I) District.
  
- E. The application of **Banfield Realty, LLC, Owner**, for property located at **375 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.

Description

The applicant has requested to postpone consideration of these applications to the August Planning Board meeting.

Planning Department Recommendation

*Vote to postpone the application to the August Planning Board Meeting.*

#### IV. PUBLIC HEARINGS – NEW BUSINESS (Cont.)

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- F. Application of **Chase Bailey, Owner and Applicant**, for property located at **3 Curriers Cove** requesting a Wetland Conditional Use Permit according to Section 10.1017 of the Zoning Ordinance to install a pool and patio area with a permanent impact of 360 square feet and a temporary impact of 320 square feet in the inland wetland buffer. Said property is shown on Assessor Map 204, Lot 12 and lies within the Single Residence A (SRA) District.

##### Description

The applicant has requested a wetland conditional use permit to construct an in-ground pool that will replace an existing pool.

##### Conservation Commission Review

According to Article 10 Section 10.1017.50 of the Zoning Ordinance, the applicant must satisfy the following conditions for approval of this project:

1. *The land is reasonably suited to the use activity or alteration.* This project is to install a patio and pool at the back side of the house furthest from the edge of the wetland immediately adjacent to the house. This is a reasonable location for this work.
2. *There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.* Given the existing house is closer to the wetland this is the most reasonable location for the proposed patio and pool.
3. *There will be no adverse impact on the wetland functional values of the site or surrounding properties.* The construction of the patio and pool can be constructed to prevent any erosion and/or sedimentation to the area and wetland from which this buffer is defined.
4. *Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals.* The patio and pool are proposed in the developed portion of the property where there is not currently vegetation.
5. *The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this section.* Given that the pool and patio are going where a pool previously existed and they are located on the opposite side of the house from the wetland this is the least impacting location for the pool and proposed patio.
6. *Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.* The plan provides for the addition of nine new trees on the outside of the proposed fence.

The Conservation Commission reviewed the wetland conditional use permit application at the June 16, 2021 meeting and voted unanimously to recommend approval of the project to the Planning Board as presented (meeting details can be found here -- <https://www.cityofportsmouth.com/planportsmouth/events/conservation-commission-34>).

|  |
|--|
| <h5><u>Planning Department Recommendation</u></h5> |
|--|

|  |
|--|
| <p><i>Vote to grant the Wetland Conditional Use Permit as presented.</i></p> |
|--|

#### IV. PUBLIC HEARINGS – NEW BUSINESS (Cont.)

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**It is recommended that items IV(G) and IV(H) be discussed together and voted on separately**

**A motion is required to consider these items together**

- G.** 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.
- H.** 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.

Description

The applicant has requested Site Plan and Subdivision approval for a lot line adjustment and the construction of a parking lot. Applicant is requesting to convey 2.66 acres in order to construct a 200 space parking lot adjacent to the existing parking garage.

Technical Advisory Committee Review

The TAC reviewed this application at the July 6, 2021 meeting and voted to recommend approval with the following stipulations (meeting details can be found here -- <https://www.cityofportsmouth.com/planportsmouth/events/site-review-technical-advisory-committee-5>):

1. Add an underdrain system at the proposed wall and account for groundwater at this location in the drainage calculations;
2. HW1 shall be corrected to read "Inv. Out"
3. Add Knox key switch in parking gate;
4. Confirm that the parking gate measures at least 20' when open;
5. Provide truck turning templates to verify truck access through the parking lot aisles to be reviewed by the Fire Department prior to Planning Board review.

On July 8, 2021 the applicant submitted revised plans addressing these stipulations to the satisfaction of the Planning Department.

Planning Department Recommendation

**Subdivision Approval**

1. *Vote to recommend Subdivision approval to the Pease Development Authority.*

**Site Plan Approval**

2. *Vote to recommend Site Plan approval to the Pease Development Authority.*

#### IV. PUBLIC HEARINGS – NEW BUSINESS (Cont.)

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- I. 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 of 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).

Description

According to Section 10.1112.14 of the Zoning Ordinance, the Planning Board may grant a conditional use permit to allow less than the minimum number of off-street parking spaces than required. In this case, the minimum parking required is three (3) spaces. The applicant has requested a conditional use permit to provide no onsite parking for a newly renovated residential condominium unit. The owner is converting the existing office condominium into one residential condominium unit.

Technical Advisory Committee Review

The TAC reviewed this application at the July 6, 2021 meeting and did not have any comments or concerns about the proposed request.

Planning Department Recommendation

*Vote to find that the number of off-street parking spaces provided will be adequate and appropriate for the proposed use of the property and to grant the conditional use permit as presented.*

**IV. PUBLIC HEARINGS – NEW BUSINESS (Cont.)**

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- J. Application of **Kaarin Milne, Owner and Applicant**, for property located at **315 Wibird Street** requesting Conditional Use Permit approval in accordance with Section 10.815 of the Zoning Ordinance to change the use of a studio space above a detached garage to a garden cottage with 610 square feet gross floor area. Said property is shown on Assessor Map 132 Lot 13 and lies within the General Residence A (GRA) District.

Description

The applicant is proposing to convert an existing studio space above a detached garage to a garden cottage. The gross floor area of the living space is 610 square feet (existing studio 405 sq. ft., bathroom and hallway 205 sq. ft.). The total building gross floor area is 904 square feet (including the garage space and stairs). Section 10.814.42 of the Attached Accessory Dwelling Unit section of the Zoning Ordinance excludes existing storage space, shared entries, or other spaces not exclusive to the accessory dwelling unit. By extension of intent, that same provision could apply to the gross floor area requirements for the Garden Cottage as well. However, the applicant is requesting a waiver to include the entire building in the Garden Cottage approval, which exceeds the maximum of 600 square feet.

A Garden Cottage that complies with the standards of Section 10.815 is otherwise exempt from the residential density standards of the Zoning Ordinance (e.g. minimum lot area per dwelling unit).

The Ordinance requires that a Garden Cottage comply with the following standards (Section 10.815.30).

| Required Standard  | Planning Department Comments  |
|--|---|
| The existing accessory building shall not be expanded either vertically or horizontally, other than through the addition of a front entry not to exceed 50 sq. ft., or a side or rear deck not to exceed 300 sq. ft. | The applicant is not proposing any exterior changes to the building.  |
| The garden cottage shall not be larger than 600 sq. ft. gross floor area.  | The applicant is requesting a modification to this requirement in order to allow the total gross floor area of the existing garage to be included in the Garden Cottage approval, which is 904 square feet.   |
| A garden cottage that is within the required yard for the zoning district shall not have any windows or doors higher than eight feet above grade facing the adjacent property.                                       | The application appears to comply with this requirement, but the only window facing an adjacent property is located behind a fence. If the applicant needs a modification for the height of the window, then the granting of such a modification seems merited given that privacy is protected. |



| <b>Required Standard</b>  | <b>Planning Department Comments</b>                                 |
|---|---|
| The principal dwelling unit and the garden cottage shall not be separated in ownership (including by condominium ownership); and either the principal dwelling unit or the garden cottage shall be occupied by the owner of the property. | The applicant has indicated they will comply with this requirement. |
| Where municipal sewer service is not provided, the septic system shall meet NH Water Supply and Pollution Control Division requirements for the combined system demand for total occupancy of the premises.                               | The property is served by public sewer.                             |

In order to grant a conditional use permit for a Garden Cottage, the Planning Board must first make the following findings (Sec. 10.815.40):

| <b>Required Findings</b>  | <b>Planning Department Comments</b>   |
|---|---|
| 1. Exterior design of the Garden Cottage is consistent with the existing single-family dwelling on the lot.   | The exterior design of the Garden Cottage will not be modified and is consistent with the existing single family dwelling.    |
| 2. The site plan provides adequate open space, landscaping and off-street parking for both the Garden Cottage and the primary dwelling.   | The property provides adequate lawn space and off-street parking for both dwellings.  |
| 3. The Garden Cottage will maintain a compatible relationship to adjacent properties in terms of location and design, and will not significantly reduce the privacy of adjacent properties. | The proposed GC will not significantly reduce the privacy of adjacent properties.   |
| 4. The Garden Cottage will not result in excessive noise, traffic or parking congestion.  | The proposed on-bedroom GC will not result in excessive noise, traffic, or parking in this existing residential neighborhood. |

**Request for Modifications:**

The applicant requests modifications of required standards pursuant to Section 10.815.50 of the Zoning Ordinance as follows:

- Include the entire accessory building in the Garden Cottage approval, allowing for a total square footage of 904 square feet.

Planning Department Recommendation

1. *Vote to find that the requested modification will be consistent with the required findings of Section 10.815.40 and to grant a modification to the requirements of Section 10.815.32 as requested by the applicant.*
2. *Vote to grant the conditional use permit as presented, with the following stipulation:*
  - 2.1) *In accordance with Section 10.815.70 of the Zoning Ordinance, the owner is required to obtain a certificate of use from the Planning Department verifying compliance with all standards of Section 10.815, including the owner-occupancy requirement, and shall renew the certificate of use annually.*

**IV. PUBLIC HEARINGS – NEW BUSINESS (Cont.)**

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- K.** The application of **Susan Alex, Owner and Applicant**, for property located at **50 Mount Vernon Street** requesting Conditional Use Permit approval in accordance with Section 10.815 of the Zoning Ordinance to construct a garden cottage with 425 square feet gross floor area of living space above an existing detached garage. Said property is shown on Assessor Map 111 Lot 29 and lies within the General Residence B (GRB) and Historic Districts.

Description

Allow the application references an “Accessory Dwelling Unit” in the narrative, the application is actually for a Garden Cottage. The applicant is proposing to convert the second floor of an existing detached garage to a Garden Cottage. The total proposed living area of the converted space is 425 square feet. The first floor of the building will consist of the existing garage and 170 square feet of entry/storage space including what appears to be a proposed laundry area. Section 10.814.42 of the Attached Accessory Dwelling Unit section of the zoning ordinance excludes existing storage space, shared entries, or other spaces not exclusive to the accessory dwelling unit. By extension of intent, that same provision could apply to the gross floor area requirements for the Garden Cottage as well. However, if the proposed laundry area is intended for use by the Garden Cottage, then the total square footage should include the storage/entry area. Even with this space included, the total gross floor area would be less than the maximum of 600 square feet.

A Garden Cottage that complies with the standards of Section 10.815 is otherwise exempt from the residential density standards of the Zoning Ordinance (e.g. minimum lot area per dwelling unit).

The Ordinance requires that a Garden Cottage comply with the following standards (Section 10.815.30).

Other Land Use Board Approvals

This application was granted variances from the Zoning Board of Adjustment to add dormers to the existing garage requiring relief for an upward expansion in the left side yard and rear yard building setbacks. The application is currently pending review by the Historic District Commission.

| <b>Required Standard</b>   | <b>Planning Department Comments</b>  |
|--|--|
| The existing accessory building shall not be expanded either vertically or horizontally, other than through the addition of a front entry not to exceed 50 sq. ft., or a side or rear deck not to exceed 300 sq. ft. | The applicant is proposing to add dormer windows on both sides of the garages. Addition of dormer windows is considered a vertical expansion of the building and will require that the Planning Board grant a modification to the zoning requirements. |

| <b>Required Standard</b>  | <b>Planning Department Comments</b>  |
|---|--|
| The garden cottage shall not be larger than 600 sq. ft. gross floor area.   | The applicant has indicated that the proposed renovation of the second story will comply with this requirements. If the downstairs entry way is also included in the calculation, then the total square footage will still be less than 600 square feet. |
| A garden cottage that is within the required yard for the zoning district shall not have any windows or doors higher than eight feet above grade facing the adjacent property.  | The applicant is requesting a modification to this requirement as they are proposing to add dormer windows on the second story.  |
| The principal dwelling unit and the garden cottage shall not be separated in ownership (including by condominium ownership); and either the principal dwelling unit or the garden cottage shall be occupied by the owner of the property. | The applicant has indicated they will comply with this requirement.  |
| Where municipal sewer service is not provided, the septic system shall meet NH Water Supply and Pollution Control Division requirements for the combined system demand for total occupancy of the premises.                               | This property is served by municipal sewer.  |

In order to grant a conditional use permit for a Garden Cottage, the Planning Board must first make the following findings (Sec. 10.815.40):

| <b>Required Findings</b>  | <b>Planning Department Comments</b>  |
|---|--|
| 1. Exterior design of the Garden Cottage is consistent with the existing single-family dwelling on the lot.   | The proposed modifications appear to be consistent with the existing single family dwelling and the exterior renovations are required to receive HDC approval. |
| 2. The site plan provides adequate open space, landscaping and off-street parking for both the Garden Cottage and the primary dwelling.   | Both the single family dwelling and the garden cottage will have access to shared yard space and there will be sufficient off-street parking to serve both.    |
| 3. The Garden Cottage will maintain a compatible relationship to adjacent properties in terms of location and design, and will not significantly reduce the privacy of adjacent properties. | The addition of the dormers may reduce the privacy for the adjacent property given the proximity of the garden cottage to the property line.                   |

| <b>Required Findings</b>   | <b>Planning Department Comments</b>  |
|--|--|
| 4. The Garden Cottage will not result in excessive noise, traffic or parking congestion. | The addition of a one-bedroom garden cottage with sufficient off-street parking for both units will not result in excessive noise, traffic, or parking congestion in this existing residential neighborhood. |

Request for Modifications:

The application requires modifications of required standards pursuant to Section 10.815.50 of the Zoning Ordinance as follows:

- Allow for the addition of windows higher than eight feet above grade to face the adjacent property.
- Allow for the upward expansion of the existing garage with the addition of dormers.

Planning Department Recommendation

1. [If the Planning Board finds that the addition of the dormers on the second story meets the spirit and intent of the ordinance...]

*Vote to find that the requested modifications will be consistent with the required findings of Section 10.815.40 and to grant a modification to the requirements of Section 10.815.31 and 10.815.33.*

2. *Vote to grant the conditional use permit as presented, with the following stipulation:*

*2.1) In accordance with Section 10.815.70 of the Zoning Ordinance, the owner is required to obtain a certificate of use from the Planning Department verifying compliance with all standards of Section 10.815, including the owner-occupancy requirement, and shall renew the certificate of use annually.*

## V. PRELIMINARY CONCEPTUAL CONSULTATION

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- A. Application of **The Sagamore Group, LLC** for property located at **1169 & 1171 Sagamore Avenue** for Preliminary Conceptual Consultation to construct a 10-unit condominium complex. Said property is shown on Assessor Map 225 Lot 14 and Lot 15 and lie within the Mixed Residential Office (MRO) District.

### Description

As authorized by NH RSA 676:4,II, the Site Plan Review Regulations require preliminary conceptual consultation for certain proposals, including (1) the construction of 30,000 sq. ft. or more gross floor area, (2) the creation of 20 or more dwelling units, or (3) the construction of more than one principal structure on a lot. Preliminary conceptual consultation precedes review by the Technical Advisory Committee.

Preliminary conceptual consultation is described in the state statute as follows: *[Preliminary conceptual consultation]... shall be directed at review of the basic concept of the proposal and suggestions which might be of assistance in resolving problems with meeting requirements during final consideration. Such consultation shall not bind either the applicant or the board and statements made by planning board members shall not be the basis for disqualifying said members or invalidating any action taken. The board and the applicant may discuss proposals in conceptual form only and in general terms such as desirability of types of development and proposals under the master plan.*

The preliminary conceptual consultation phase provides the Planning Board with an opportunity to review the outlines of a proposed project before it gets to detailed design (and before the applicant refines the plan as a result of review by the Technical Advisory Committee and public comment at TAC hearings). In order to maximize the value of this phase, Board members are encouraged to engage in dialogue with the proponent to offer suggestions and to raise any concerns so that they may be addressed in a formal application. Preliminary conceptual consultation does not involve a public hearing, and no vote is taken by the Board on the proposal at this stage. Unlike Design Review, completion of Preliminary Conceptual Consultation does not vest the project to the current zoning.

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## **VI. OTHER BUSINESS**

- A.** Review of Zoning Ordinance Amendment Priorities

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## **VII. INFORMATIONAL ITEMS**

- A.** Request from City Council to review June 15, 2021 memo from Rick Chellman re: waterfront and building siting

Description

Council voted to refer this item to the Planning Board at the July 12, 2021 meeting and requested a report back. The referenced memo has been added to the Planning Board packet for information purposes. This request will be considered at the August Planning Board meeting.

C0960-011  
July 7, 2021

Mr. Dexter Legg, Chair  
City of Portsmouth Planning Board  
1 Junkins Avenue  
Portsmouth, New Hampshire 03801

**Re: Request for Site Review, Wetland Conditional Use & Lot Line Revision Permits  
Proposed Mixed Use Development 53 Green Street, Portsmouth, NH**

Dear Chairman Legg:

On behalf of Stone Creek Realty, LLC (owner), and CPI Management, LLC (applicant), we are pleased to submit one (1) set of hard copies and one electronic file (.pdf) of the following information to support a request for a Site Review Permit, Wetland Conditional Use Permit for wetland buffer impacts, and a Lot Line Revision Permit for the above referenced project:

- One (1) full size & one (1) half size copy of the Site Plan Set, last revised July 7, 2021;
- TAC & CC Stipulation Response Report, dated July 7, 2021;
- Site Review Checklist, last revised July 7, 2021;
- Subdivision Checklist, last revised July 7, 2021;
- Boundary Line Adjustment Plan, dated May 17, 2021;
- Drainage Analysis, last revised July 7, 2021;
- Operations and Maintenance Plan, dated May 19, 2021;
- Aerial Site Overlay Exhibit, last revised July 7, 2021;
- Grade Plane Exhibit, last revised July 7, 2021;
- Wetland and Buffer Report, dated January 6, 2020;
- Existing Buffer Photograph Log, dated January 27, 2021;
- Wetland Buffer Impervious Surface Exhibit, last revised July 7, 2021;
- Community Space Exhibit, last revised July 7, 2021;
- Fire Truck Turning Exhibit, last revised July 7, 2021;
- Site Traffic Exhibit, last revised July 7, 2021;
- Trip Generation Analysis, last revised July 7, 2021;
- Unutil Will Service Letter, dated February 22, 2021;
- Eversource Will Service Letter, dated June 29, 2021;
- Green Building Statement, dated March 22, 2021;
- Site Lighting Fixture Cut Sheets;
- Building Renderings

## **Project Summary**

### **Existing Conditions**

The proposed project is located at 53 Green Street on property identified as Map 119 Lot 2 on the City of Portsmouth Tax Maps. The existing 1.66-acre parcel is bound by Green Street to south, the AC Hotel to the west, North Mill Pond to the north and the railroad to the east. The property includes 315+/- linear feet of tidal wetlands and buffers along the North Mill





Pond. The limited functions and values of these areas are described in the enclosed Wetland and Buffer Report and shown on the Existing Buffer Photograph Log.

The existing lot contains a L-shaped commercial building that is located within the southwestern portion of the project area and extends towards the center of the property. This building houses several businesses. Several small and discontinuous disturbed forested areas lie to the west of this existing building and along the railroad track to the east, and a small discontinuous disturbed shrub thicket exists within the northernmost portion of the property, near the on-site utility tower. The majority of the eastern portion of the property is paved parking.

The property in question includes a portion of the City of Portsmouth's long planned improvements to the shoreline of the North Mill Pond, the concept of which has been a focus of the City's planning for years. It was included in the Portsmouth Bicycle and Pedestrian Plan in 2014 and the North End Vision Plan in 2015. Many of the stated goals set forth in the City's Master Plan in 2016 called for its creation. The Final Report on the North Mill Pond Greenway and Community Park was issued in 2019.

*The Final Plan calls for "a linear greenway and community park along the North Mill Pond which will create a new north-south pedestrian and bicycle connection from Bartlett Street to Market Street. This multi-use public path with civic amenities is envisioned to be constructed along the southeast shoreline of the pond, will include wetland restoration and pond edge stabilization and is anticipated and constructed through a series of public-private partnerships with private landowners."*

Through a public process, the City of Portsmouth amended the City Zoning Ordinance in 2016 to create an overlay district specifically allowing the construction of taller buildings in the area as incentive for real estate developers to join in these important public private partnerships.

### **Proposed Redevelopment**

The proposed project will include the construction of a 5-story mixed-use residential building that includes basement level parking, first floor residential lobby, commercial space and parking, and 45 upper floor residential units. The project includes associated site improvements that consist of a paved access driveway, pedestrian access, utilities, lighting, landscaping and stormwater management systems that provide treatment for runoff.

The existing condition of the development property does not provide any stormwater treatment. The proposed development will provide stormwater management improvements which are described in further detail in the enclosed Drainage Analysis. The following is a summary:

- Proposed treatment to runoff from the new buildings and paved access driveway will be provided via a stormwater treatment unit. In addition, a lined and under drained underground chamber system with an isolator row has been incorporated into the design to mitigate temperature of the runoff from the paved access driveway area. An additional benefit of the underground chamber system is that it will also reduce peak rates of runoff to the North Mill Pond even though peak rate reduction is not required for direct discharges to tidal waters.
- Stormwater treatment measures have been implemented where the greenway connection area connects to the North Mill Pond greenway trail. Yard drains will capture runoff and put them route through the treatment unit.
- A porous asphalt design has been incorporated into the stormwater design for North Mill Pond greenway trail at the direction of City staff.

The proposed development lot has a unique configuration. Despite its large size at 1.78 acres, the lot only has 103.66 linear feet of frontage on Green Street. The CD-5 zoning district requires lots to provide 80% buildout along the front lot line which is equal to 82.93 feet for the development lot. Even with the 24-foot-wide driveway for vehicular and fire truck access as well as the 20-foot-wide greenway connection community space, the design team was able to meet the zoning requirements for Front Lot Line Buildout.

**Open Space & Buffer Enhancement**

The project is located in the North End incentive overlay district. The applicant will be providing 22,621 SF of community spaces, which will include 15,463 SF of Greenway Community Space located between the North Mill Pond mean high water line and the 50-foot wetland buffer setback. Providing this community space will contribute towards the City realizing a goal of the Master Plan to create public access along the North Mill Pond with a multi-use trail. This Community Space is 29% of the total lot area which exceeds the 20% of total lot area required to receive the incentive bonus for one additional story (10 ft) above the maximum height requirement. The community space calculation is depicted in the enclosed Community Space Exhibit. Overall, the project will be providing 35% open space on the development lot where only 5% is required by zoning.

Proposed work within the 100-foot Tidal Buffer and subject to conditional use approval includes demolition and construction activities. The 100-foot tidal buffer within the development area includes impervious parking surface, walkways and building and a large maintained lawn area.

The project will provide an overall improvement by reducing the impervious cover within the 100-foot tidal buffer. The impervious surface impacts from the design are shown in Table 1. In addition to the summary in Table 1 below, detailed calculations of the impervious surfaces within the buffer for the existing and proposed condition are depicted in the enclosed Wetland Buffer Impervious Surface Exhibit.

The projects landscape plan proposes to replace existing maintained lawn with low mow grass mix and plant native trees in an effort to enhance the previously disturbed wetlands buffer. The work done by the proposed project within the 25-foot buffer to North Mill Pond is limited to the construction of the stormwater outlet.

**Table 1. 53 Green Street, Wetland Buffer Impervious Surfaces**

| Buffer Segment                | Existing Impervious (SF) | Final Impervious (SF) |
|-------------------------------|--------------------------|-----------------------|
| 0-25 feet                     | 0                        | 0                     |
| 25-50 feet                    | 745                      | 110                   |
| 50-100 feet                   | 10,836                   | 8,253                 |
| <b>Total</b>                  | <b>11,581</b>            | <b>8,363</b>          |
| <b>Net Impervious Surface</b> | <b>-3,218</b>            |                       |

Section 10.1017.24 of the Zoning Ordinance which indicates “Where feasible, the application shall include removal of impervious surfaces at least equal in area to the area of impervious surface impact. The intent of this provision is that the project will not result in a net loss of



pervious surface within a jurisdictional wetland buffer.” As shown in Table 1, the proposed project exceeds this requirement by providing a 3,218 SF reduction in impervious surface.

## Land Use Permit Applications

### Permitting Timeline

The applicant is pleased to provide the enclosed information to support requests to the Planning Board to grant the following land-use permits:

- Site Plan Review
- Lot Line Revision
- Wetland Conditional Use Permit

The enclosed information has been prepared and/or revised in response to comments and feedback received throughout the permitting process from the Planning Board, Technical Advisory Committee (TAC), Conservation Commission (CC), and public comment. The following is a summary of meetings with the various land use-boards:

- January 21, 2021 – Planning Board Conceptual Consultation
- February 9, 2021 – Technical Advisory Committee Work Session
- February 10, 2021 – Conservation Commission Work Session
- April 6, 2021 - Technical Advisory Committee Meeting
- April 14, 2021 – Conservation Commission Regular Meeting
- May 4, 2021 - Technical Advisory Committee Meeting
- June 1, 2021 - Technical Advisory Committee Meeting

The enclosed revised plans and supplemental materials have been provided to address stipulations received from the Conservation Commission (CC) and Technical Advisory Committee (TAC) in correspondence dated April 23, 2021 and June 3, 2021 respectively.

In addition to the local land-use permits, the project will also require the following approvals from the New Hampshire Department of Environmental Services (NHDES):

- Alteration of Terrain Permit
- Wetland Impact Permit

The applicant is in the process of working with NHDES to obtain these approvals. The Alteration of Terrain Permit application was submitted to NHDES on April 21, 2021. On February 23, 2021, the applicant had an initial Wetland Permit pre-application design meeting with NHDES to review the project. The applicant had a second pre-application meeting with NHDES to discuss the projects preliminary mitigation proposal on March 18, 2021. The applicant is finalizing the Wetland Impact Permit application and will formally file to NHDES.

### Site Plan Review Permit

The project will require a Site Plan Review Permit for the site improvements described above in the project summary. The project has previously been before the Planning Board for Conceptual Consultation. In addition, the project has been before the Technical Advisory Committee (TAC) four (4) times. On June 1, 2021, TAC recommended to the Planning Board that a Site Plan Review Permit be granted with stipulations. Enclosed with this package is a Stipulation Report addressing each of the TAC stipulations of approval.

**Lot Line Revision Permit**

The project will require a Lot Line Revision Permit to adjust the lot line between Map 119 Lot 2 and Map 119 Lot 3 as shown in the enclosed Boundary Line Adjustment Plan prepared by Doucet Survey Inc. The proposed lot line revision will relocate the lot line between the project parcel and the adjacent railroad. This will increase the development lot area by 0.12 acres for a total lot area of 1.78 acres.

**Wetland Conditional Use Permit**

Jurisdictional wetland areas, including 315+/- linear feet of tidal wetlands and buffers along the North Mill Pond, were identified by Leonard A. Lord, PhD, CSS, CWS, Senior Environmental Scientist at Tighe & Bond, Inc. on October 29 and December 2, 2019. The results of the tidal wetland and buffer review and the assessment of the wetlands functions and values on the proposed project site in the enclosed "Wetland and Buffer" Report dated January 6, 2020.

A Conditional Use Permit for Wetland Buffer Impact will be required for the project for work within the 100 ft wetland buffer. The project received a unanimous recommendation for approval from the Conservation Commission at their April 14, 2021 meeting.

**Conditional Use Permit Criteria**

Based on the above described and enclosed materials, the following addresses how the proposed project warrants the granting of a Wetland Conditional Use Permit by satisfying the following six (6) criteria for approval in Section 10.1017.50 of the Zoning Ordinance:

**(1) The land is reasonably suited to the use, activity or alteration.**

The land is currently a previously disturbed site which consists of an office building and parking lot and is suited for enhancement. Section 10.5A41.10D of the Zoning Ordinance defines the CD5 district as consisting "of high-density center with a mix of building types and residential, retail and other commercial uses". The proposed project design is consistent with the descriptions of uses in these zoning districts. Additionally, the proposed project site consists of previously disturbed tidal buffer area which has historically been used as a commercial area. The proposed project will result in impervious surface reduction in the buffer, buffer enhancement, and will provide public access along North Mill Pond which is a goal of the City's Master Plan.

**(2) There is no alternative location outside the wetland buffer that is feasible and reasonable for the proposed use, activity or alteration.**

The placement of the proposed buildings and access driveway areas was done in a way to reduce the areas of impervious surface within the 100-foot tidal buffer, as well as to adhere to the required setbacks to the abutting railroad. The proposed project design reduces the impervious surface within the 100' buffer and proposes to replace existing maintained lawn with low mow grass mix and plant native trees.

**(3) There will be no adverse impact on the wetland functional values of the site or surrounding properties;**

There will be no adverse impact on the wetland functional values of the site as the existing condition is previously disturbed and consists of building, lawn, parking area and minor scrub at the water's edge. There is no real functional wetland buffer area on the project site. The proposed project designs site and landscape plans enhance the previously disturbed tidal buffer area given the existing condition and provide added value by creating public open space for recreation along the North Mill Pond.

**(4) Alteration of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals; and**

The proposed project design proposes no alteration to any natural woodland or wetlands area. The area impacted consists of impervious surfaces and maintained lawn. Any temporary disturbances of the wetland buffer for construction of the stormwater outlet will be restored following construction.

**(5) The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this Section.**

The proposed project design is not an adverse impact to the site as it would enhance the buffer by reducing overall impervious surface on the site, improve water quality through stormwater treatment and provide public access to the North Mill Pond which is a goal of the City's master plan. Impervious surfaces have been reduced with the use of underground parking. The proposed project will reduce the impervious area within the 100-foot tidal buffer.

**(6) Any area within the vegetated buffer strip will be returned to a natural state to the extent feasible.**

The proposed project design within the vegetated buffer strip is limited to construction of the stormwater outlet from the stormwater collection and treatment system. The existing property has no stormwater treatment measures. The proposed project will collect and treat the onsite impervious surfaces prior to discharging to North Mill Pond. Implementing these treatment measures will help improve the water quality in North Mill Pond. In order for this system to work, disturbances with the buffer strip are necessary. Areas temporarily disturbed for the construction of the outlet will be restored following construction. The landscape plan proposes replacing the existing lawn within the 25' foot wetland buffer with a low mow grass mix, mown as required to keep the space open and avoid incursions of invasive species, and the addition of several native trees on the water side of the path.

**Conclusion**

We trust the above described and enclosed materials address the criteria to grant a Site Plan Review Permit, Lot Line Revision Permit, and Wetland Conditional Use Permit for the proposed project. The proposed project meets requirements of the Zoning Ordinance. The proposed project achieves the goals of City’s Master Plan to provide public access along the North Mill Pond with a Greenway Community Space and to provide buffer enhancement.

As shown in the enclosed information, the proposed plan will reduce impervious surface within the buffer area, improve stormwater management, enhance the North Mill Pond tidal wetland buffer and provide public benefit in the form of open space along the North Mill Pond. Based on this, the applicant respectfully requests approval for the various land-use permits noted above.

We respectfully request to be placed on the Planning Board meeting agenda for July 15, 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](mailto:pmcrimmins@tighebond.com).

Sincerely,

**TIGHE & BOND, INC.**



Patrick M. Crimmins, PE  
Senior Project Manager



Neil A. Hansen, PE  
Project Engineer

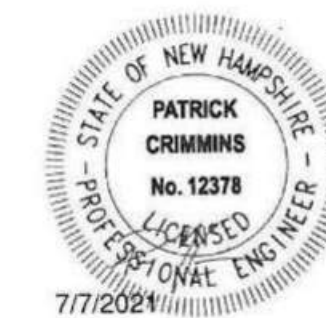
Cc: Stone Creek Realty, LLC (via e-mail)  
CPI Management, LLC (via e-mail)





# PROPOSED MIXED USE DEVELOPMENT

53 GREEN STREET  
 PORTSMOUTH, NEW HAMPSHIRE  
 JANUARY 27, 2021  
 LAST REVISED: JULY 7, 2021



| LIST OF DRAWINGS |  |              |
|------------------|--|--------------|
| SHEET NO.        | SHEET TITLE                                | LAST REVISED |
|                  | COVER SHEET                                | 7/7/2021     |
| 1 OF 2           | EXISTING CONDITIONS PLAN                   | 7/6/2021     |
| 2 OF 2           | EXISTING CONDITIONS PLAN                   | 7/6/2021     |
| C-101            | DEMOLITION PLAN                            | 7/7/2021     |
| C-102.1          | SITE PLAN                                  | 7/7/2021     |
| C-102.2          | BASEMENT & UPPER FLOOR PLAN                | 7/7/2021     |
| C-103            | GRADING, DRAINAGE AND EROSION CONTROL PLAN | 7/7/2021     |
| C-104            | UTILITIES PLAN                             | 7/7/2021     |
| C-201            | WATER MAIN REPLACEMENT PLAN                | 7/7/2021     |
| C-301            | EASEMENT PLAN                              | 7/7/2021     |
| C-501            | EROSION CONTROL NOTES AND DETAILS SHEET    | 7/7/2021     |
| C-502            | DETAILS SHEET                              | 7/7/2021     |
| C-503            | DETAILS SHEET                              | 7/7/2021     |
| C-504            | DETAILS SHEET                              | 7/7/2021     |
| C-505            | DETAILS SHEET                              | 7/7/2021     |
| C-506            | DETAILS SHEET                              | 7/7/2021     |
| C-507            | DETAILS SHEET                              | 7/7/2021     |
| C-508            | DETAILS SHEET                              | 7/7/2021     |
| L-1              | LANDSCAPE PLAN                             | 6/29/2021    |
| 1 OF 1           | PHOTOMETRIC PLAN                           | 7/7/2021     |
| A201             | BUILDING ELEVATIONS                        | 6/18/2021    |
| A202             | BUILDING ELEVATIONS                        | 6/18/2021    |
| A203             | BUILDING ELEVATIONS                        | 6/18/2021    |



LOCATION MAP  
 SCALE: 1" = 2,000'

PREPARED BY:  
**Tighe & Bond**  
 177 CORPORATE DRIVE  
 PORTSMOUTH, NEW HAMPSHIRE 03801  
 603-433-8818

APPLICANT:  
 CPI MANAGEMENT, LLC  
 100 SUMMER STREET, SUITE 1600  
 BOSTON, MASSACHUSETTS 02110

OWNER:  
 TAX MAP 119, LOT 12  
 STONE CREEK REALTY, LLC  
 C/O DOUGLAS PINCIARO  
 PO BOX 121  
 NEW CASTLE, NEW HAMPSHIRE 03854

SURVEYOR:  
 DOUCET SURVEY, LLC  
 192 KENT PLACE  
 NEWMARKET, NEW HAMPSHIRE 30857

**NEW HAMPSHIRE FISH AND GAME AOT PERMIT CONDITIONS RELATED TO THREATENED AND ENDANGERED SPECIES**

a. ALL OBSERVATIONS OF THREATENED OR ENDANGERED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT NONGAME AND ENDANGERED WILDLIFE ENVIRONMENTAL REVIEW PROGRAM BY PHONE AT 603-271-2461 AND BY EMAIL AT [NHFGREVIEW@WILDLIFE.NH.GOV](mailto:NHFGREVIEW@WILDLIFE.NH.GOV). EMAIL SUBJECT LINE: NHB21-0875, PROPOSED MIXED USE DEVELOPMENT, WILDLIFE SPECIES OBSERVATION. PHOTOGRAPHS SHALL BE PROVIDED FOR VERIFICATION AS FEASIBLE; AND

b. THE NEW HAMPSHIRE FISH AND GAME DEPARTMENT SHALL HAVE ACCESS TO THE PROPERTY DURING THE TERM OF THE PERMIT.

c. ALL MANUFACTURED EROSION AND SEDIMENT CONTROL PRODUCTS, EXCEPT FOR SILT FENCE INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.04, UTILIZED FOR, BUT NOT LIMITED TO, SLOPE PROTECTION, RUNOFF DIVERSION, SLOPE INTERRUPTION, PERIMETER CONTROL, INLET PROTECTION, CHECK DAMS, AND SEDIMENT TRAPS SHALL NOT CONTAIN WELDED PLASTIC, PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH.

| LIST OF PERMITS                         |         |      |  |
|---|---------|------|--|
| LOCAL                                   | STATUS  | DATE |  |
| SITE PLAN REVIEW PERMIT                 | PENDING |      |  |
| LOT LINE REVISION PERMIT                | PENDING |      |  |
| CONDITIONAL USE PERMIT - WETLAND BUFFER | PENDING |      |  |
| STATE                                   |         |      |  |
| NHDES - SEWER CONNECTION PERMIT         | PENDING |      |  |
| NHDES - ALTERATION OF TERRAIN PERMIT    | PENDING |      |  |
| NHDES - WETLAND PERMIT                  | PENDING |      |  |

**PB SUBMISSION SET  
 COMPLETE SET 23 SHEETS**

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 Plotted On: Jul 07, 2021 1:12:58pm By: Asellier  
 Tighe & Bond\Projects\C0960-011\_53 Green St., Portsmouth, NH\Drawings\_Figures\AutoCAD\C0960-011\_C-COVER.dwg





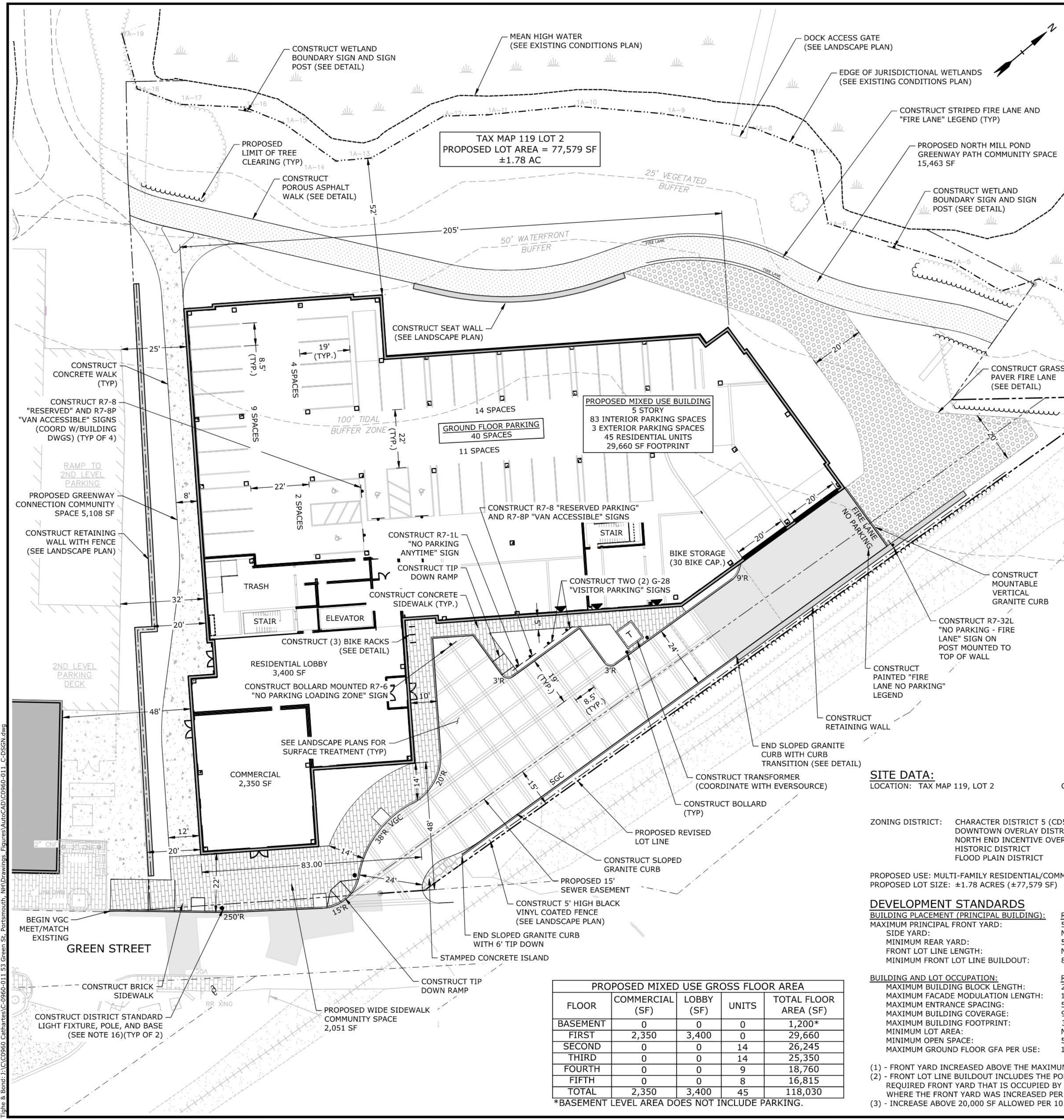












- SITE NOTES:**
1. STRIPE PARKING AREAS AS SHOWN, INCLUDING PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, CROSS WALKS, ARROWS, LEGENDS AND CENTERLINES SHALL BE THERMOPLASTIC MATERIAL. THERMOPLASTIC MATERIAL SHALL MEET THE REQUIREMENTS OF AASHTO M249. (ALL MARKINGS EXCEPT CENTERLINE AND MEDIAN 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").
  2. 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.
  3. SEE DETAILS FOR PARKING STALL MARKINGS, ADA SYMBOLS, SIGNS AND SIGN POSTS.
  4. CENTERLINES SHALL BE FOUR (4) INCH WIDE YELLOW LINES. STOP BARS SHALL BE EIGHTEEN (18) INCHES WIDE.
  5. PAINTED ISLANDS SHALL BE FOUR (4) INCH WIDE DIAGONAL LINES AT 3'-0" O.C. BORDERED BY FOUR (4) INCH WIDE LINES.
  6. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
  7. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
  8. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE AND CITY CODES & SPECIFICATIONS.
  9. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
  10. CONTRACTOR TO SUBMIT AS-BUILT PLANS ON REPRODUCIBLE MYLARS AND IN DIGITAL FORMAT (.DWG FILE) 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.
  11. SEE BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
  12. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS.
  13. CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED. COORDINATE WITH BUILDING CONTRACTOR.
  14. COORDINATE ALL WORK ADJACENT TO BUILDING WITH BUILDING CONTRACTOR.
  15. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
  16. THE STREET LIGHTING TYPE TO BE DISTRICT STYLE FIXTURE AND POLE TO MATCH EXISTING LIGHTING ON GREEN STREET.
  17. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
  18. THE APPLICANT SHALL HAVE A SITE SURVEY CONDUCTED BY A RADIO COMMUNICATIONS CARRIER APPROVED BY THE CITY'S COMMUNICATIONS 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 OWNER SHALL COORDINATE WITH THE SUPERVISOR OF RADIO COMMUNICATIONS FOR THE CITY.
  19. ALL TREES PLANTED ARE TO BE INSTALLED UNDER THE SUPERVISION OF THE CITY OF PORTSMOUTH DPW USING STANDARD INSTALLATION METHODS.
  20. THE APPLICANT SHALL PREPARE A CONSTRUCTION MITIGATION AND MANAGEMENT PLAN (CMMP) FOR REVIEW AND APPROVAL BY THE CITY'S LEGAL AND PLANNING DEPARTMENTS.
  21. A TEMPORARY SUPPORT OF EXCAVATION (SOE) PLAN SHALL BE PREPARED BY THE APPLICANT'S CONTRACTOR TO CONFIRM ANY TEMPORARY ENCUMBRANCES OF THE CITY'S RIGHT-OF-WAY. IF LICENSES ARE REQUIRED FOR THE SOE, THE APPLICANT WILL BE REQUIRED TO OBTAIN THESE FROM THE CITY PRIOR TO CONSTRUCTION.
  22. ALL EXCESS SNOW SHALL BE HAULED OFF-SITE IN ACCORDANCE TO ALL LOCAL AND STATE LAWS. PROPOSED SNOW STAGING AREAS HAVE BEEN PROVIDED TO SHOW TEMPORARY SNOW STORAGE AREAS.
  23. AREAS DESIGNATED FOR FIRE EMERGENCY ACCESS SHALL BE KEPT CLEAR OF SNOW.

- SITE RECORDING 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. THIS IS NOT A BOUNDARY SURVEY AND SHALL NOT BE USED AS SUCH.

**LEGEND**

|     |                            |           |  |
|-----|----------------------------|-----------|--|
| --- | PROPERTY LINE              | [Pattern] | PROPOSED POROUS PAVEMENT               |
| --- | PROPOSED PROPERTY LINE     | [Pattern] | PROPOSED PAVEMENT                      |
| --- | ABUTTER PROPERTY LINE      | [Pattern] | PROPOSED GRASS PAVER FIRE LANE TYPICAL |
| --- | PROPOSED EASEMENT          | [Pattern] | PROPOSED CURB RADIUS                   |
| --- | PROPOSED EDGE OF PAVEMENT  | [Pattern] | PROPOSED VERTICAL GRANITE CURB         |
| --- | PROPOSED CURB              | TYP       | PROPOSED SLOPED GRANITE CURB           |
| --- | PROPOSED BUILDING          | 30'R      | SOLID WHITE LINE CAPACITY              |
| --- | PROPOSED BRICK SIDEWALK    | VGC       |  |
| --- | PROPOSED CONCRETE SIDEWALK | SGC       |  |
| --- | PROPOSED STAMPED CONCRETE  | SWL       |  |
| --- |                            | CAP       |  |

**SITE DATA:**  
 LOCATION: TAX MAP 119, LOT 2  
 OWNER: STONE CREEK REALTY LLC  
 C/O DOUGLAS PINCIARO  
 PO BOX 121  
 NEW CASTLE, NH 03854

**ZONING DISTRICT:** CHARACTER DISTRICT 5 (CD5)  
 DOWNTOWN OVERLAY DISTRICT  
 NORTH END INCENTIVE OVERLAY DISTRICT  
 HISTORIC DISTRICT  
 FLOOD PLAIN DISTRICT

**PROPOSED USE:** MULTI-FAMILY RESIDENTIAL/COMMERCIAL  
 PROPOSED LOT SIZE: ±1.78 ACRES (±77,579 SF)

**BUILDING FORM (PRINCIPAL BUILDING):**

|  |                                    |                              |
|--|------------------------------------|------------------------------|
| BUILDING HEIGHT:   | REQUIRED 5 STORIES(4)<br>60 FT     | PROPOSED 5 STORIES<br><60 FT |
| MAXIMUM FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE: | 36 IN                              | 0 IN                         |
| MINIMUM GROUND STORY HEIGHT:   | 12 FT                              | >12 FT                       |
| MINIMUM SECOND STORY HEIGHT:   | 10 FT                              | >10 FT                       |
| FACADE GLAZING:  | SHOP FRONT 20% - 50%               | 20% - 50%                    |
| ALLOWED ROOF TYPES   | FLAT, GABLE, HIP, GAMBREL, MANSARD | FLAT                         |

(4) - ADDITIONAL 1 STORY UP TO 10FT ALLOWED FOR PROVIDING AT LEAST 20% OF THE SITE TO BE ASSIGNED AS COMMUNITY SPACE PER 10.5A46.10.

**DEVELOPMENT STANDARDS**

|   |               |                    |
|---|---------------|--------------------|
| <b>BUILDING PLACEMENT (PRINCIPAL BUILDING):</b> | REQUIRED      | PROPOSED           |
| MAXIMUM PRINCIPAL FRONT YARD:                   | 5 FT          | 48 FT(1)           |
| SIDE YARD:                                      | NR            | NR                 |
| MINIMUM REAR YARD:                              | 5 FT          | 52 FT              |
| FRONT LOT LINE LENGTH:                          | NR            | 103.66 FT          |
| MINIMUM FRONT LOT LINE BUILDOUT:                | 80% (82.9 FT) | 80.1% (83.0 FT)(2) |

**BUILDING AND LOT OCCUPATION:**

|                                   |                 |                 |
|-----------------------------------|-----------------|-----------------|
| MAXIMUM BUILDING BLOCK LENGTH:    | REQUIRED 225 FT | PROPOSED 205 FT |
| MAXIMUM FACADE MODULATION LENGTH: | 100 FT          | <100 FT         |
| MAXIMUM ENTRANCE SPACING:         | 50 FT           | <50 FT          |
| MAXIMUM BUILDING COVERAGE:        | 95%             | 38%             |
| MAXIMUM BUILDING FOOTPRINT:       | 30,000 SF(3)    | 29,660 SF       |
| MINIMUM LOT AREA:                 | NR              | NR              |
| MINIMUM OPEN SPACE:               | 5%              | 35%             |
| MAXIMUM GROUND FLOOR GFA PER USE: | 15,000 SF       | 3,400 SF        |

**COMMUNITY SPACE:**

|              |              |
|--------------|--------------|
| REQUIRED 20% | PROPOSED 29% |
| 15,516 SF    | 22,622 SF    |

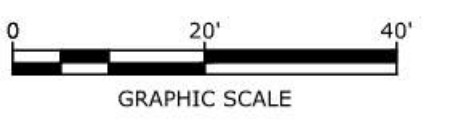
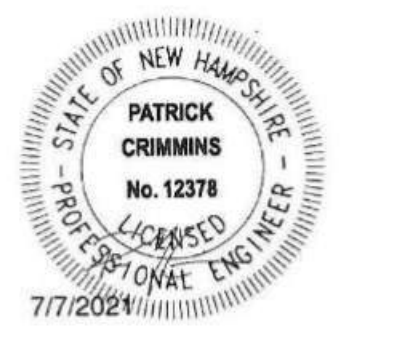
**PARKING REQUIREMENTS**

|   |                       |           |
|---|-----------------------|-----------|
| RESIDENTIAL UNITS (>750 SF)             | 45 UNITS x 1.3 SPACES | 59 SPACES |
| VISITOR SPACES                          | 1 SPACE / 5 UNITS     | 9 SPACES  |
| DOWNTOWN OVERLAY DISTRICT               |                       | 4 SPACES  |
| TOTAL MINIMUM PARKING SPACES REQUIRED = |                       | 64 SPACES |

**PROPOSED MIXED USE GROSS FLOOR AREA**

| FLOOR    | COMMERCIAL (SF) | LOBBY (SF) | UNITS | TOTAL FLOOR AREA (SF) |
|----------|-----------------|------------|-------|-----------------------|
| BASEMENT | 0               | 0          | 0     | 1,200*                |
| FIRST    | 2,350           | 3,400      | 0     | 29,660                |
| SECOND   | 0               | 0          | 14    | 26,245                |
| THIRD    | 0               | 0          | 14    | 25,350                |
| FOURTH   | 0               | 0          | 9     | 18,760                |
| FIFTH    | 0               | 0          | 8     | 16,815                |
| TOTAL    | 2,350           | 3,400      | 45    | 118,030               |

\*BASEMENT LEVEL AREA DOES NOT INCLUDE PARKING.



**Proposed Mixed Use Development**

**CPI Management, LLC**

53 Green Street  
 Portsmouth, NH

| MARK | DATE      | DESCRIPTION         |
|------|-----------|---------------------|
| E    | 7/7/2021  | PB Submission       |
| D    | 5/19/2021 | TAC Resubmission    |
| C    | 4/21/2021 | TAC Resubmission    |
| B    | 3/22/2021 | TAC & CC Submission |
| A    | 1/27/2021 | CC Work Session     |

|             |                      |
|-------------|----------------------|
| PROJECT NO: | C0960-011            |
| DATE:       | January 27, 2021     |
| FILE:       | C0960-011_C-DSGN.DWG |
| DRAWN BY:   | AFS                  |
| CHECKED:    | NAH/PMC              |
| APPROVED:   | BLM                  |

**SITE PLAN**

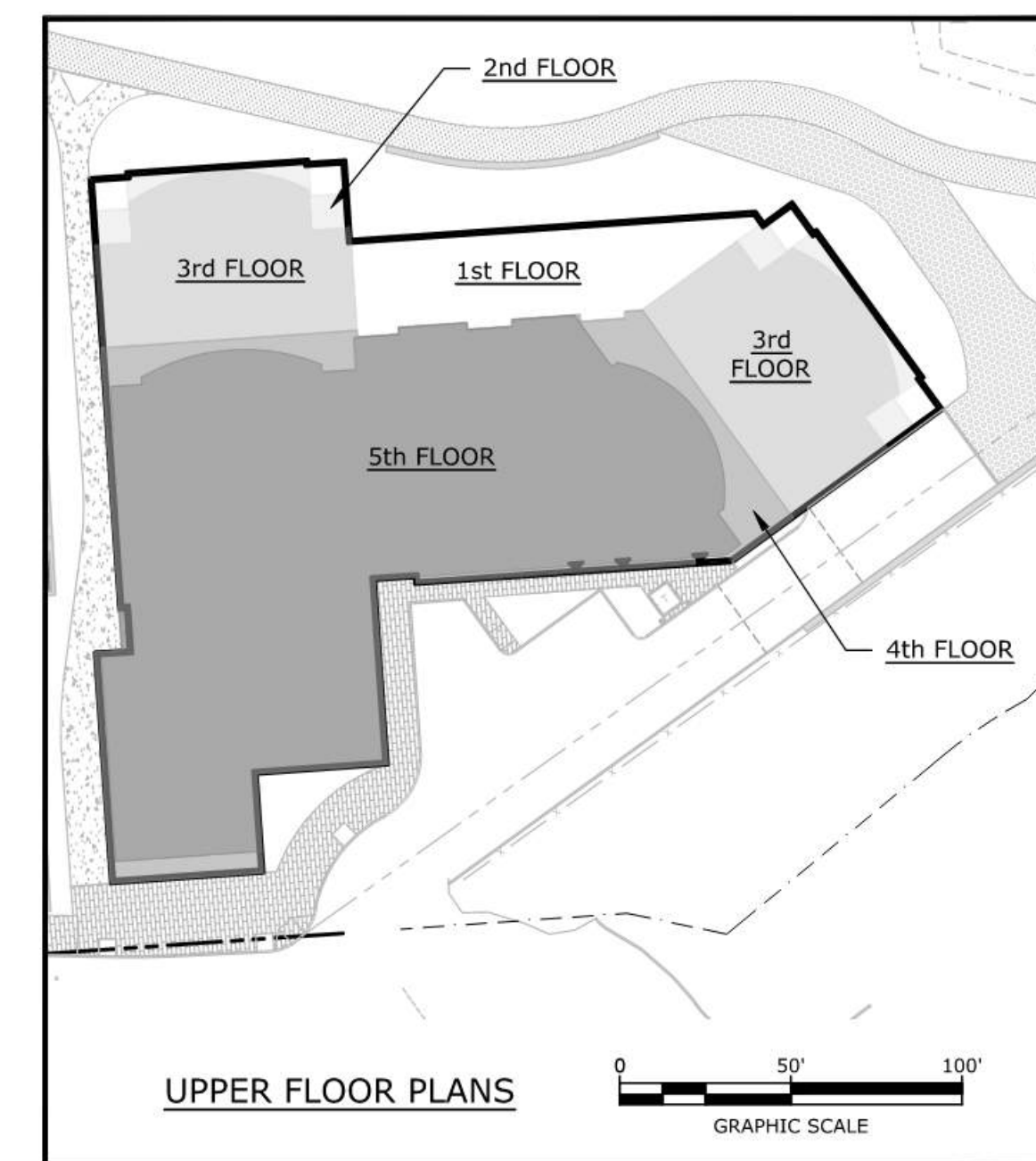
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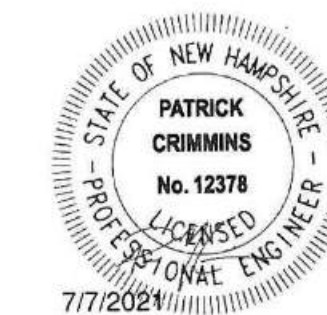
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 Tighe & Bond 210 Commercial Center, Portsmouth, NH 03801  
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**Tighe & Bond**



**Proposed Mixed Use Development**

CPI Management, LLC

53 Green Street  
Portsmouth, NH

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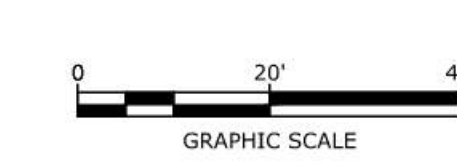
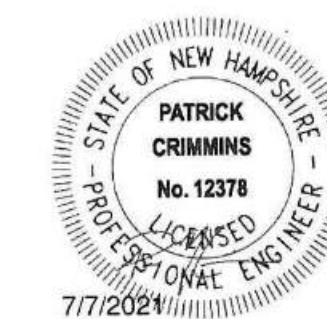
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| FILE:       | C0960-011_C-DSGN.DWG |
| DRAWN BY:   | AFS                  |
| CHECKED:    | NAH/PMC              |
| APPROVED:   | BLM                  |

**BASEMENT & UPPER FLOOR PLAN**

SCALE: AS SHOWN

**C-102.2**



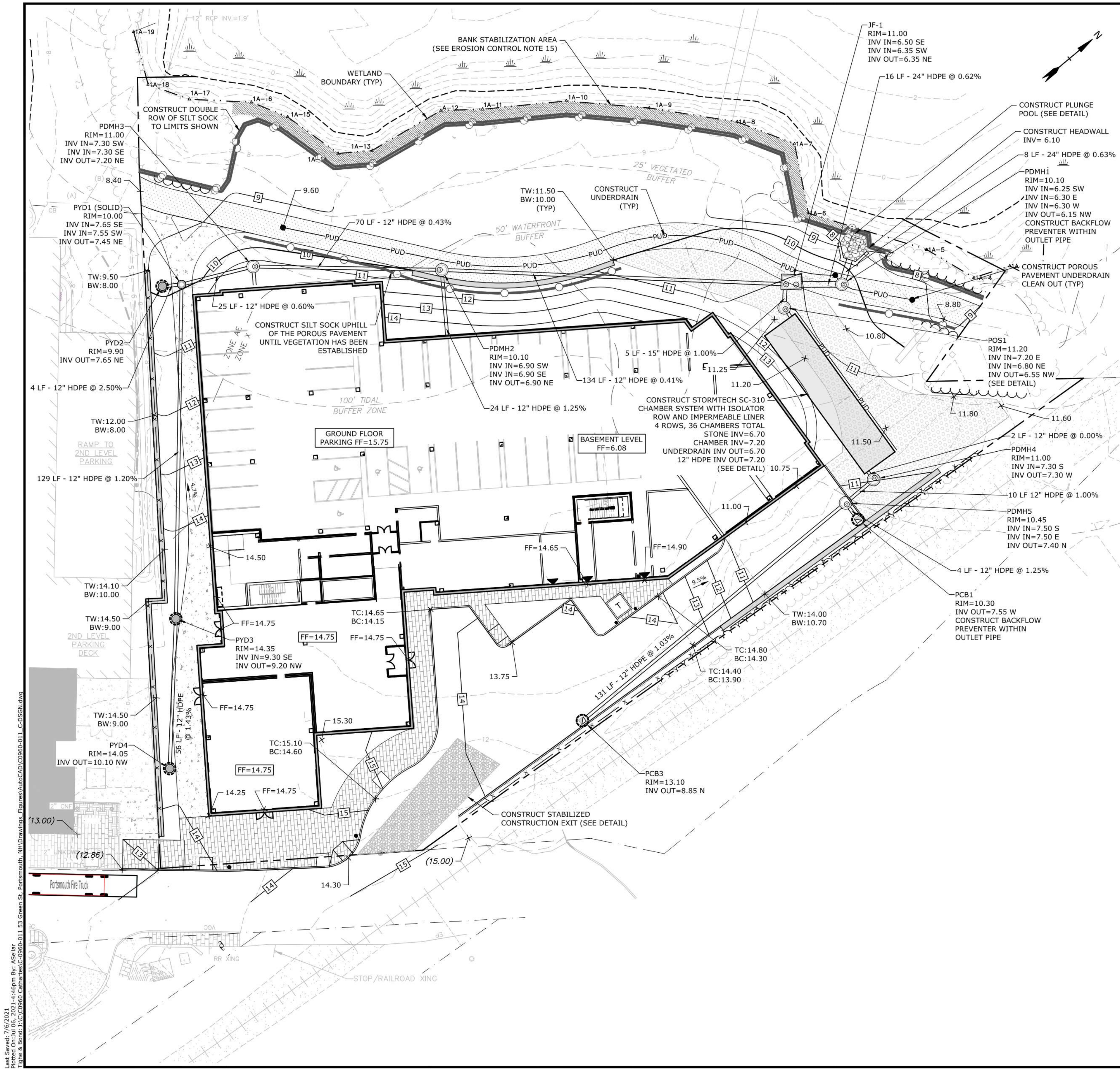


- GRADING AND DRAINAGE NOTES:**
1. COMPACTION REQUIREMENTS:  
BELOW PAVED OR CONCRETE AREAS 95%  
TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL 95%  
BELOW LOAM AND SEED AREAS 90%  
\* ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED 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. ALL STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS N-12 OR EQUAL), UNLESS OTHERWISE SPECIFIED.
  3. SEE UTILITY PLAN FOR ALL SITE UTILITY INFORMATION.
  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.
  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 PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.
  11. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE AND CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS AND CONSTRUCTION SPECIFICATIONS, LATEST REVISIONS.
  12. CONTRACTOR TO SUBMIT AS-BUILT PLANS ON REPRODUCIBLE MYLARS AND IN DIGITAL FORMAT (.DWG FILE) 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 OR PROFESSIONAL ENGINEER.
  13. SEE EXISTING CONDITIONS PLAN FOR BENCH MARK INFORMATION.
  14. ALL DRAIN LINES WITH LESS THAN FOUR (4) FEET OF COVER SHALL BE INSULATED.
  15. THE INSIDE OF THE DRAINAGE STRUCTURE SHALL BE TREATED WITH A SILOXANE COATING. SILOXANE COATING SHALL BE SIKAGARD-705L OR APPROVED EQUAL.

- 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. MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED.
  4. INSTALL STABILIZED CONSTRUCTION ENTRANCES.
  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.
  12. TEMPORARY SOIL STOCKPILE SHALL BE SURROUNDED BY SILT FENCE 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.
  15. THE BANK STABILIZATION AREA SHALL BE REVIEWED BY THE CONTRACTOR UPON THE START OF CONSTRUCTION ACTIVITIES AND INSTALL EROSION CONTROL BLANKET ON ANY AREA EXHIBITING ACTIVE EROSION.
  16. THE FEMA 100-YEAR FLOOD PLAIN ZONE BOUNDARY IS IDENTIFIED ON THE PLAN. THE BASE FLOOD ELEVATION IS 8.76'.

**LEGEND**

|  |  |
|--|--|
|  | PROPOSED MAJOR CONTOUR LINE                                    |
|  | PROPOSED MINOR CONTOUR LINE                                    |
|  | PROPOSED DRAIN LINE  |
|  | PROPOSED UNDERDRAIN  |
|  | PROPOSED SILT SOCK   |
|  | FEMA FLOOD PLAIN ZONE BOUNDARY                                 |
|  | PROPOSED BANK STABILIZATION AREA (SEE EROSION CONTROL NOTE 15) |
|  | PROPOSED RIP RAP   |
|  | PROPOSED STABILIZED CONSTRUCTION EXIT                          |
|  | INLET PROTECTION SILT SACK                                     |
|  | PROPOSED CATCHBASIN  |
|  | PROPOSED DRAIN MANHOLE   |
|  | PROPOSED YARD DRAIN  |
|  | PROPOSED JELLYFISH FILTER                                      |
|  | JELLYFISH FILTER   |
|  | PROPOSED CATCH BASIN   |
|  | PROPOSED DRAIN MANHOLE   |
|  | PROPOSED YARD DRAIN  |
|  | TYPICAL  |



**Proposed Mixed Use Development**

CPI Management, LLC

53 Green Street  
Portsmouth, NH

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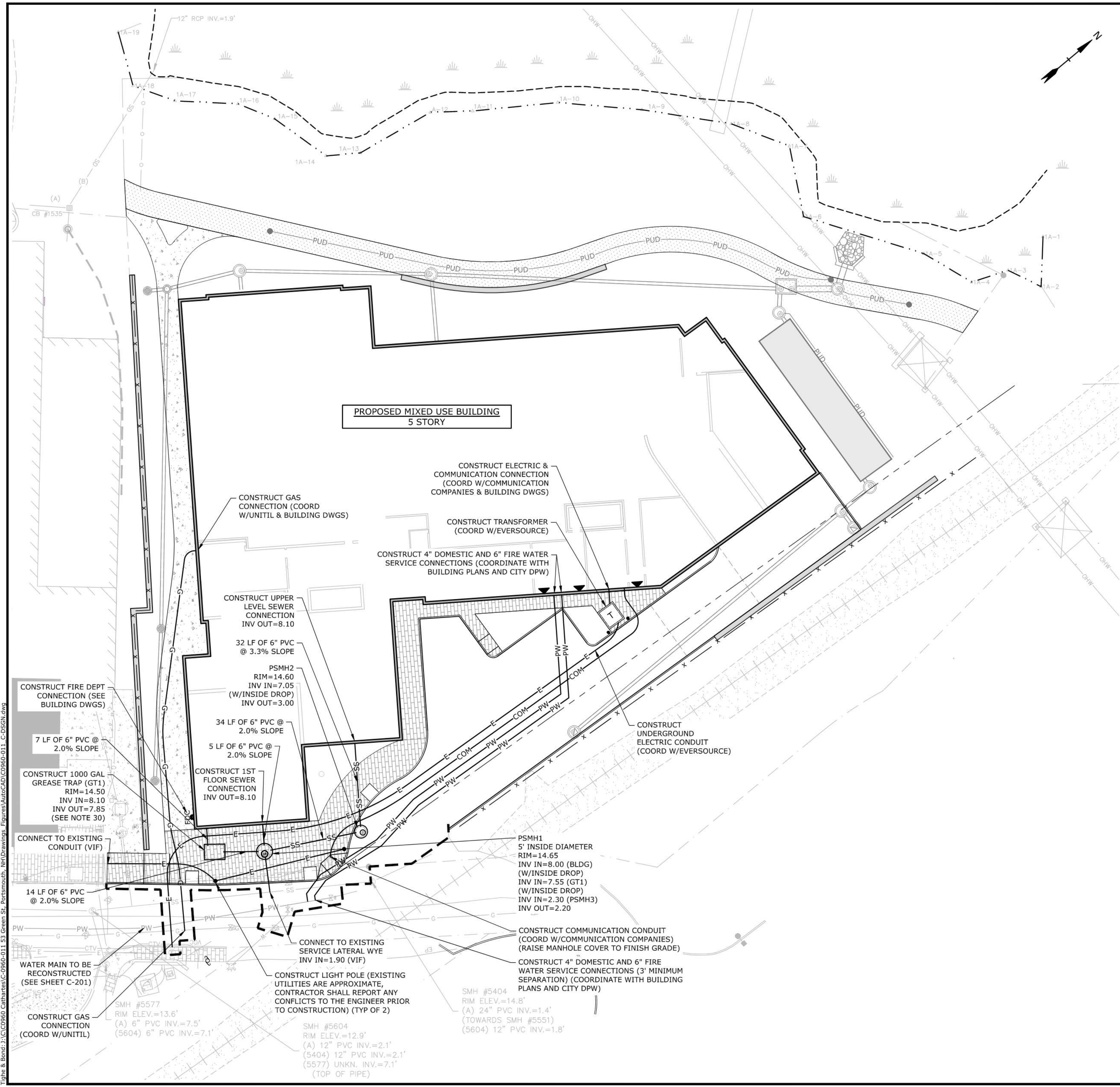
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DATE: January 27, 2021  
FILE: C0960-011\_C-DSGN.DWG  
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APPROVED: BLM

**GRADING, DRAINAGE, AND EROSION CONTROL PLAN**

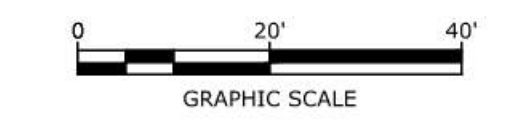
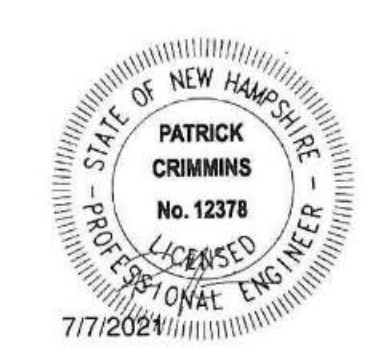
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- UTILITY NOTES:**
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
  - COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
    - NATURAL GAS - UNITIL
    - WATER/SEWER - CITY OF PORTSMOUTH
    - ELECTRIC - EVERSOURCE
    - COMMUNICATIONS - FAIRPOINT AND COMCAST
  - SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
  - SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
  - ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE.
  - ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE PORTSMOUTH WATER DEPARTMENT.
  - ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
  - COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
  - CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ADJUTING PROPERTIES THROUGHOUT CONSTRUCTION.
  - CONNECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO CITY OF PORTSMOUTH STANDARDS.
  - EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
  - ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
  - THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
  - ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
  - ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
  - 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.
  - 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.
  - CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
  - A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
  - 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.
  - 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.
  - SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN
  - HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
  - COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
  - ALL SEWER PIPE WITH LESS THAN 5' OF COVER SHALL BE INSULATED.
  - 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.
  - CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ADJUTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ADJUTING PROPERTIES WITH THE UTILITY COMPANY AND AFFECTED ADJUTING.
  - SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.
  - CONTRACTOR SHALL PERFORM TEST PITS TO VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION AND SHALL NOTIFY ENGINEER IF LOCATIONS DIFFER FROM PLAN.
  - PROPOSED GREASE TRAP AND GREASE WASTE SERVICE CONNECTION TO BE CONSTRUCTED IF PROPOSED COMMERCIAL SPACE BECOMES RESTAURANT USE.



**Proposed Mixed Use Development**

CPI Management, LLC

53 Green Street  
Portsmouth, NH

**LEGEND**

|      |   |
|------|---|
| SD   | EXISTING STORM DRAIN                                    |
| SS   | EXISTING SANITARY SEWER                                 |
| SS   | EXISTING SANITARY SEWER TO BE ABANDONED                 |
| W    | EXISTING WATER SERVICE                                  |
| G    | EXISTING GAS SERVICE                                    |
| E    | EXISTING UNDERGROUND ELECTRIC SERVICE                   |
| OHW  | EXISTING OVERHEAD UTILITY SERVICE                       |
| SS   | PREVIOUSLY APPROVED SEWER                               |
| SS   | PROPOSED STORM DRAIN                                    |
| SS   | PROPOSED SANITARY SEWER                                 |
| PW   | PROPOSED WATER SERVICE                                  |
| G    | PROPOSED GAS SERVICE                                    |
| E    | PROPOSED STREET LIGHTING CONDUIT                        |
| PE&C | PROPOSED UNDERGROUND ELECTRIC AND COMMUNICATION SERVICE |

|   |                                   |       |  |
|---|-----------------------------------|-------|--|
| ⊙ | EXISTING DRAIN MANHOLE            | ⊙     | PROPOSED CATCHBASIN                          |
| ⊙ | EXISTING SEWER MANHOLE            | ⊙     | PROPOSED DRAIN MANHOLE                       |
| ⊙ | PREVIOUSLY APPROVED SEWER MANHOLE | ⊙     | PROPOSED SEWER MANHOLE                       |
| ⊙ | EXISTING HYDRANT                  | ⊙     | PROPOSED WATER VALVE                         |
| ⊙ | EXISTING WATER VALVE              | ⊙     | PROPOSED FIRE DEPARTMENT BUILDING CONNECTION |
| ⊙ | EXISTING WATER SHUTOFF            | ⊙     | PROPOSED GAS VALVE                           |
| ⊙ | EXISTING ELECTRIC MANHOLE         | ⊙     | PROPOSED LIGHT POLE BASE                     |
| ⊙ | EXISTING PAD MOUNTED TRANSFORMER  | BLDG  | BUILDING                                     |
| ⊙ | EXISTING GAS VALVE                | TYP   | TYPICAL                                      |
| ⊙ | EXISTING HANDHOLE                 | COORD | COORDINATE                                   |
| ⊙ | EXISTING COMMUNICATION MANHOLE    | VIF   | VERIFY IN FIELD                              |

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PROJECT NO: C0960-011

DATE: January 27, 2021

FILE: C0960-011\_C-DSGN.DWG

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**UTILITIES PLAN**

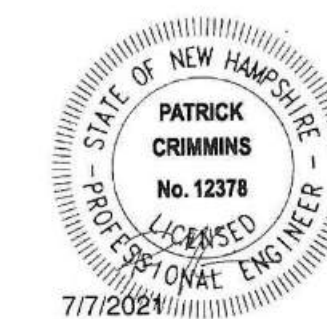
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**Proposed Mixed Use Development**

CPI Management, LLC

53 Green Street  
Portsmouth, NH

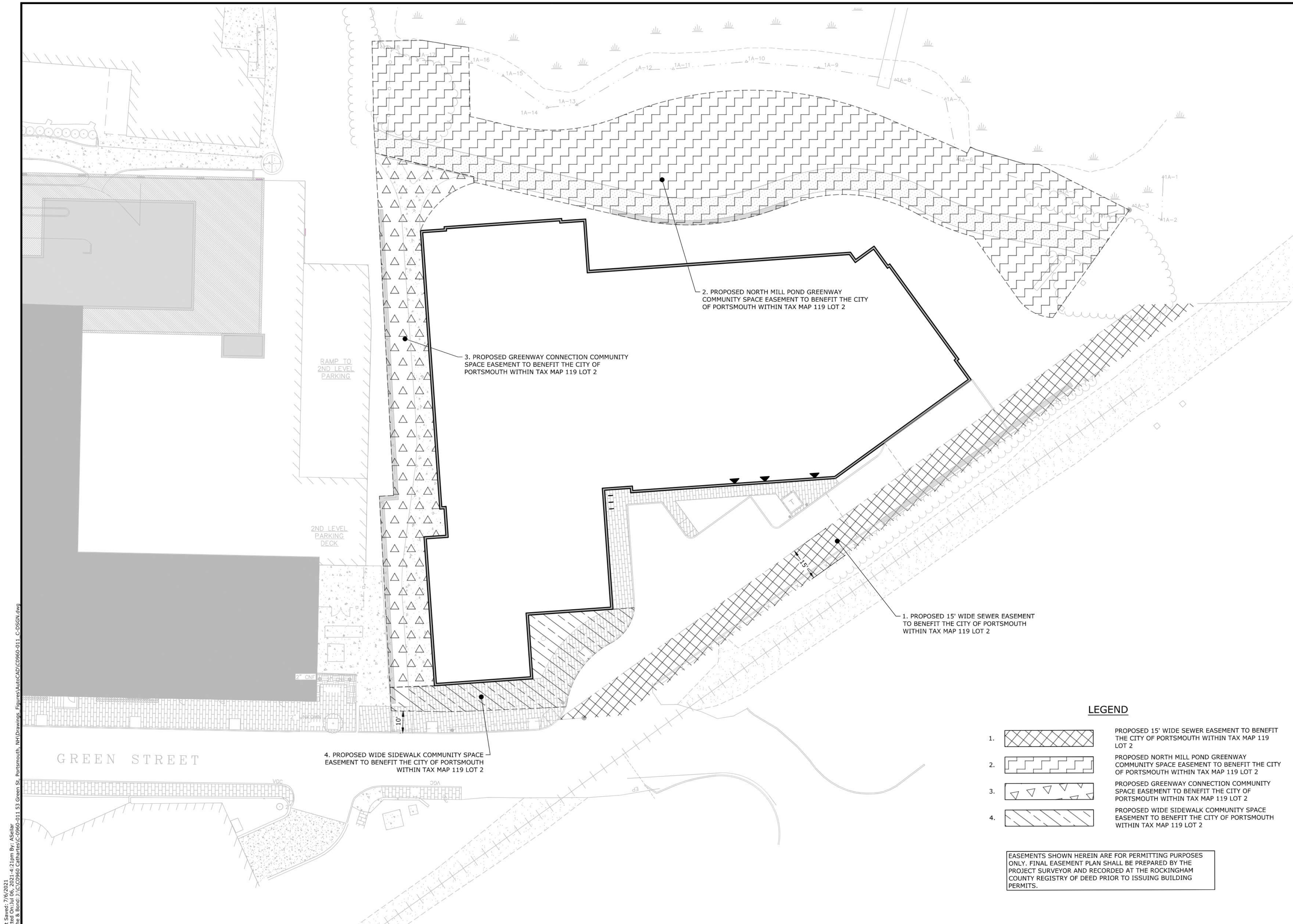
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**EASEMENT PLAN**

SCALE: AS SHOWN

**C-301**



**LEGEND**

|    |  |   |
|----|--|---|
| 1. |  | PROPOSED 15' WIDE SEWER EASEMENT TO BENEFIT THE CITY OF PORTSMOUTH WITHIN TAX MAP 119 LOT 2                           |
| 2. |  | PROPOSED NORTH MILL POND GREENWAY COMMUNITY SPACE EASEMENT TO BENEFIT THE CITY OF PORTSMOUTH WITHIN TAX MAP 119 LOT 2 |
| 3. |  | PROPOSED GREENWAY CONNECTION COMMUNITY SPACE EASEMENT TO BENEFIT THE CITY OF PORTSMOUTH WITHIN TAX MAP 119 LOT 2      |
| 4. |  | PROPOSED WIDE SIDEWALK COMMUNITY SPACE EASEMENT TO BENEFIT THE CITY OF PORTSMOUTH WITHIN TAX MAP 119 LOT 2            |

EASEMENTS SHOWN HEREIN ARE FOR PERMITTING PURPOSES ONLY. FINAL EASEMENT PLAN SHALL BE PREPARED BY THE PROJECT SURVEYOR AND RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEED PRIOR TO ISSUING BUILDING PERMITS.

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**PROJECT NAME AND LOCATION**

PROPOSED MIXED USE DEVELOPMENT  
53 GREEN STREET  
PORTSMOUTH, NH 03801  
43°-04'-48"N  
70°-45'-43"W

**PROJECT DESCRIPTION**

THE PROJECT CONSISTS OF THE CONSTRUCTION OF A FIVE-STORY MIXED USE RESIDENTIAL BUILDING WITH ASSOCIATED SITE IMPROVEMENTS.

**DISTURBED AREA**

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 1.75 ACRES.

**SOIL CHARACTERISTICS**

BASED ON THE NRCS WEB SOIL SURVEY FOR ROCKINGHAM COUNTY - NEW HAMPSHIRE, THE SOILS ON SITE CONSIST OF URBAN LAND.

**NAME OF RECEIVING WATERS**

THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA A PROPOSED OUTLET PIPE TO NORTH MILL POND AND WILL ULTIMATELY FLOW TO THE PISCATAQUA RIVER.

**CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:**

- 1. CUT AND CLEAR TREES.
2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES.
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.
8. FINISH PAVING ALL ROADWAYS AND PARKING LOTS.
9. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
10. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
11. 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 BALE, SILT FENCES, MULCH BERMS, INLET PROTECTION AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
4. 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.
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.
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.
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 TEMPORARILY CEASED IN THAT AREA.
4. 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.
5. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE.
6. 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 ADJACENT 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.
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.
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.
C. MAINTENANCE:
a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED.
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.
c. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM.
d. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW.
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.
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:

Table with 2 columns: SEED MIX and APPLICATION RATE. Rows include CREEPING RED FESCUE (20 LBS/ACRE), TALL FESCUE (20 LBS/ACRE), and 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.
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:**

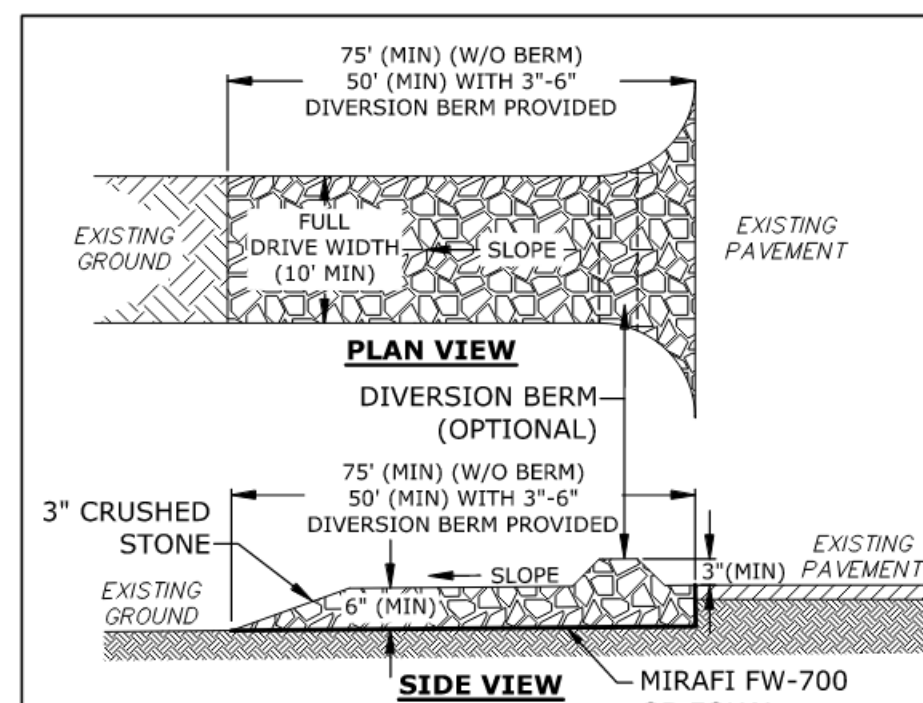
- 1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL,

STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.

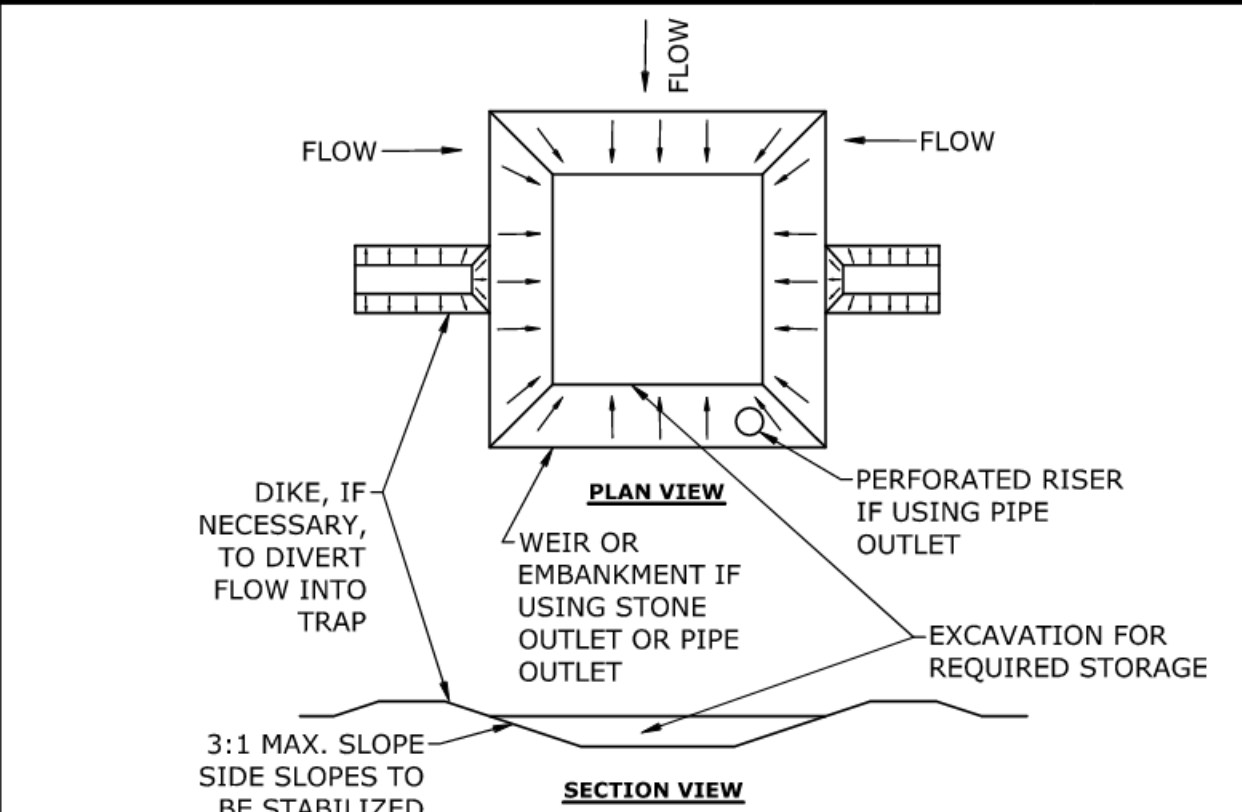
- 2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING 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:
a1. ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
a2. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED.
b. FERTILIZERS:
b1. FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
b2. ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
b3. STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS.
c. PAINTS:
c1. ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
c2. EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
c3. 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.
c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY;
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/VEHICAL 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**

- 1. 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 ON SITE AT ALL TIMES.
2. THE FOLLOWING REPRESENTS THE GENERAL OBSERVATION AND REPORTING PRACTICES THAT SHALL BE FOLLOWED AS PART OF THIS PROJECT:
A. 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;
B. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
C. A REPRESENTATIVE OF THE SITE CONTRACTOR, SHALL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR ACTIVITIES;
D. IF A REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT.

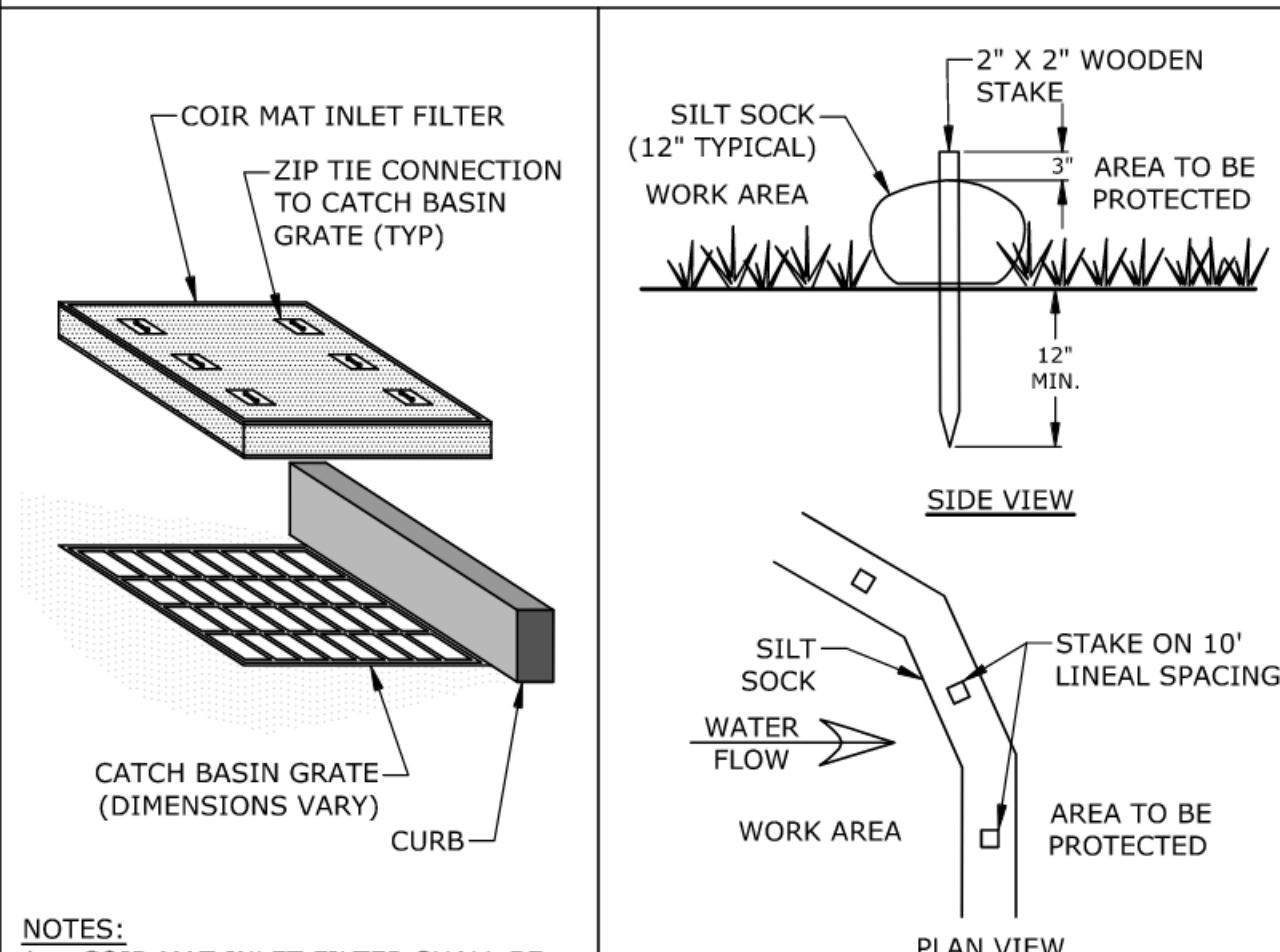


STABILIZED CONSTRUCTION EXIT NO SCALE



- 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.
8. SEDIMENT TRAPS MUST BE USED AS NEEDED TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.

SEDIMENT TRAP NO SCALE

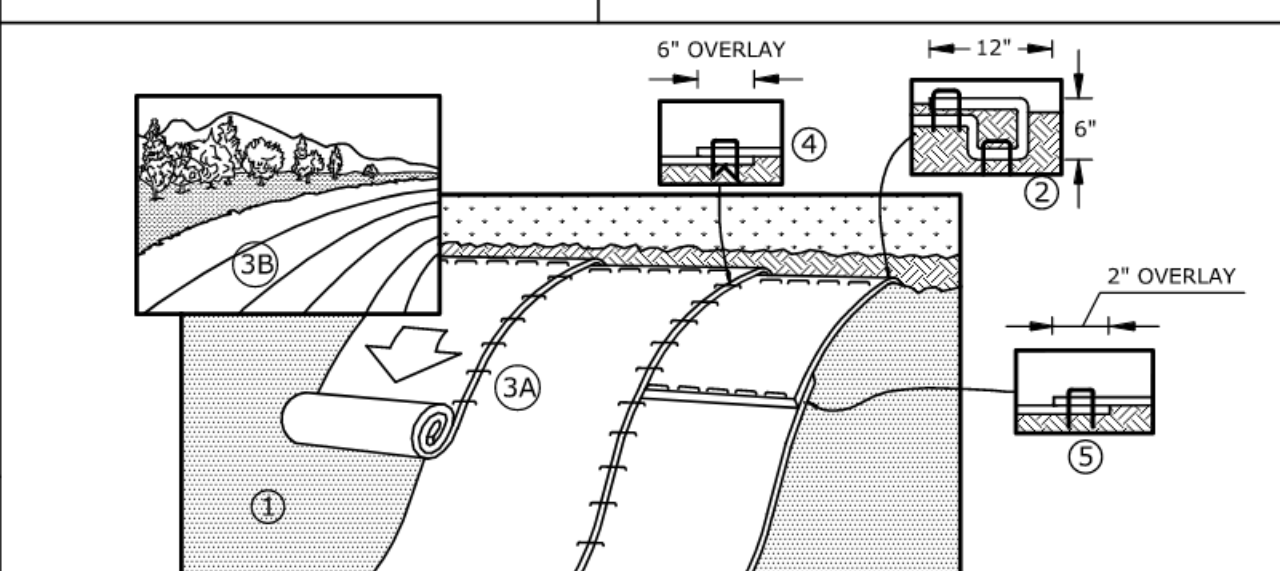


- NOTES:
1. COIR MAT INLET FILTER SHALL BE STORM WATER INLET FILTER BY BLOCKSOM & CO. OR APPROVED EQUAL.
2. INSTALL AND MAINTAIN INLET PROTECTION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

INLET PROTECTION NO SCALE

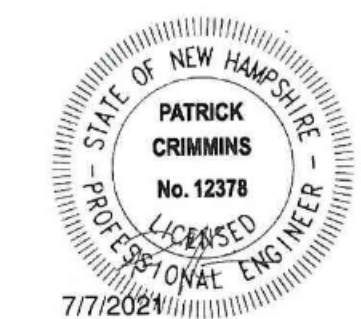
- NOTES:
1. SILT SOCK SHALL BE SILT SOCK NATURAL ORIGINAL BY FILTREXX OR APPROVED EQUAL.
2. INSTALL SILT SOCK IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

SILT SOCK NO SCALE



- NOTES:
1. EROSION CONTROL BLANKET SHALL BE AN ALL NATURAL PRODUCT WITH NO PHOTO DEGRADABLE COMPONENTS, NORTH AMERICAN GREEN SC1500B OR APPROVED EQUAL.
2. STAKES SHALL BE BIODEGRADABLE BIOSTAKES OR ALL NATURAL WOOD ECOSTAKES OR APPROVED EQUAL.
3. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, COMPOST AND SEED.
4. 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.
5. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SOIL SURFACE BY PLACING STAKES IN APPROPRIATE LOCATIONS AS SHOWN ON THE MANUFACTURERS PATTERN GUIDE.

EROSION CONTROL BLANKET NO SCALE



Proposed Mixed Use Development

CPI Management, LLC

53 Green Street Portsmouth, NH

Table with columns: MARK, DATE, DESCRIPTION. Rows include PB Submission, TAC Resubmission, TAC Resubmission, TAC & CC Submission, CC Work Session.

Table with columns: PROJECT NO., DATE, FILE, DRAWN BY, CHECKED BY, APPROVED. Values include C0960-011, January 27, 2021, C0960-011\_C-DTLS.DWG, AFS, NAH/PMC, BLM.

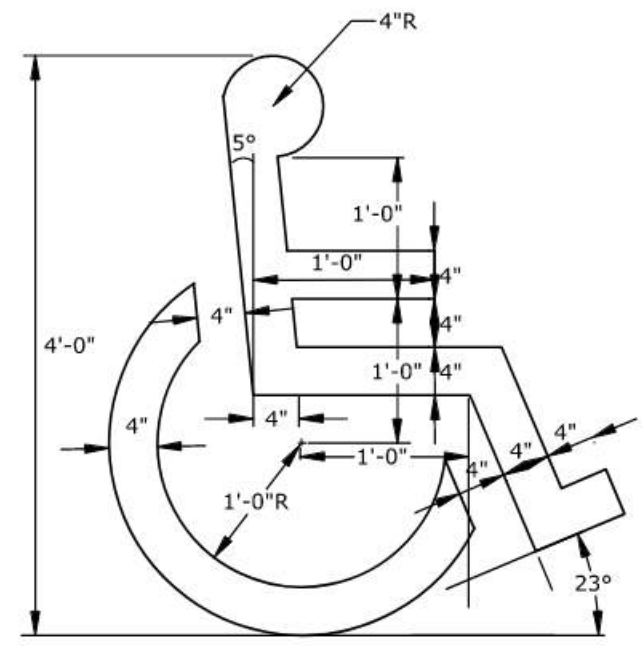
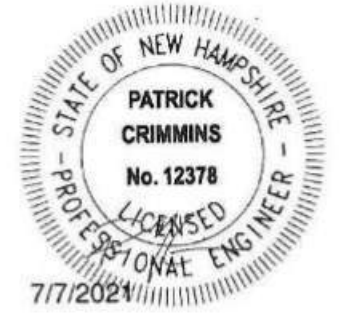
EROSION CONTROL NOTES AND DETAILS SHEET

SCALE: AS SHOWN

C-501

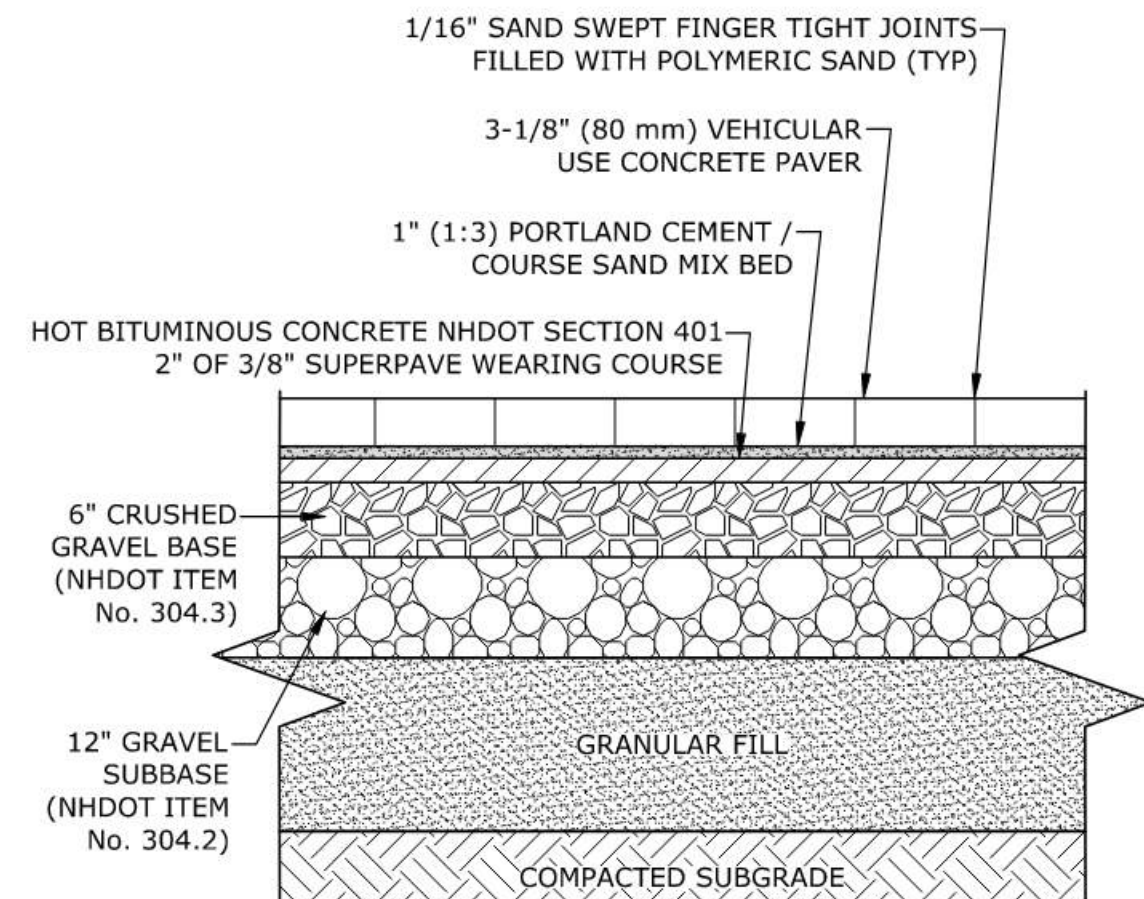
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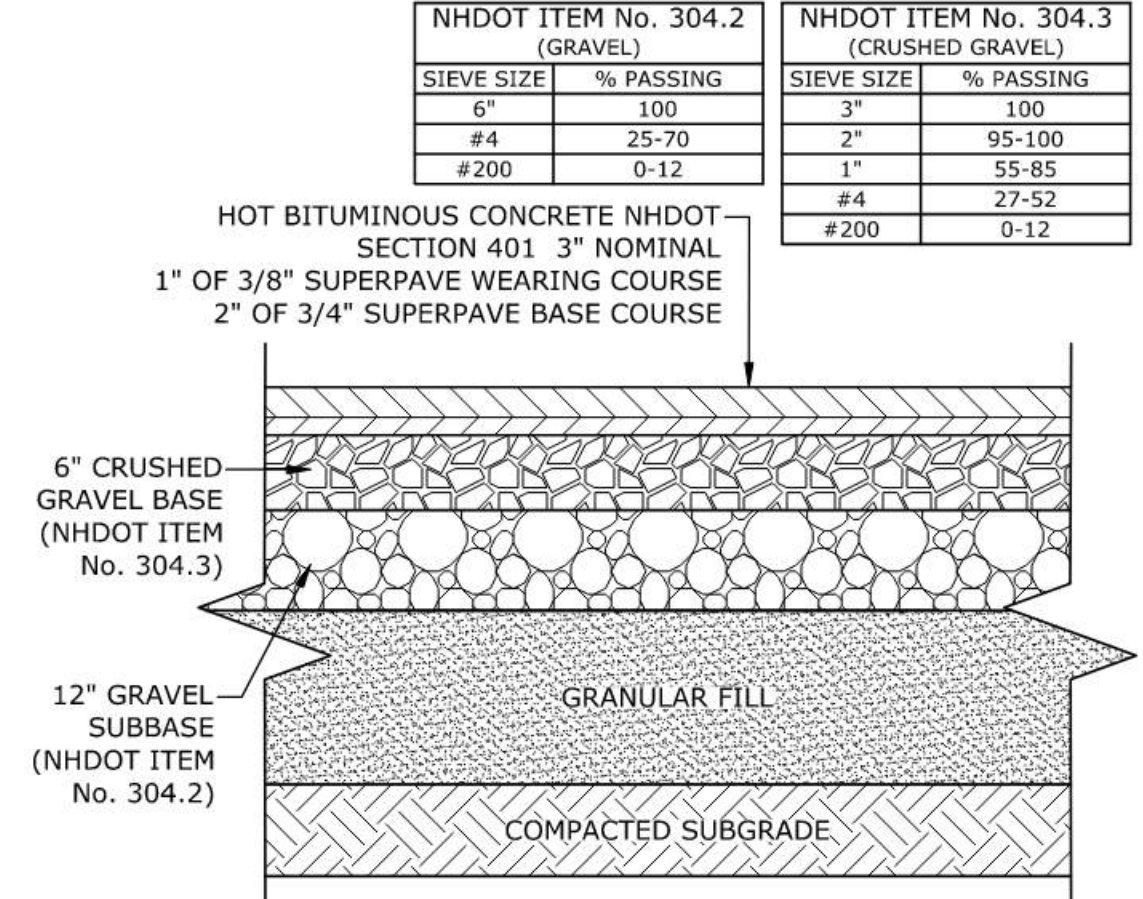
**NOTES:**  
 1. SYMBOL SHALL BE CONSTRUCTED IN ALL ACCESSIBLE SPACES USING FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.  
 2. SYMBOL SHALL BE CONSTRUCTED TO THE LATEST ADA, STATE AND LOCAL REQUIREMENTS.

**ACCESSIBLE SYMBOL**  
NO SCALE



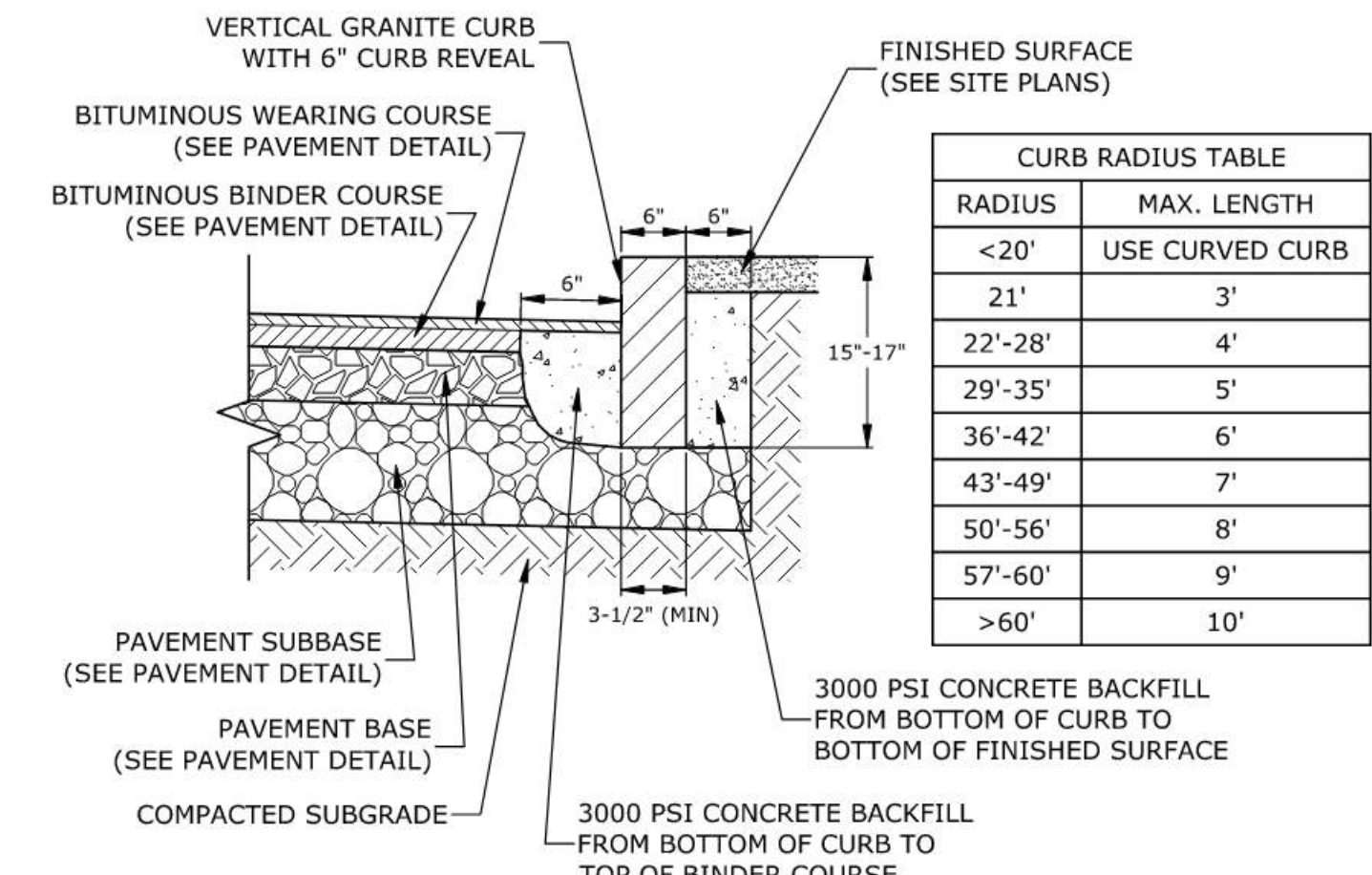
**NOTES:**  
 1. SEE SITE PLAN FOR WIDTH AND LOCATION.  
 2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR SLOPE AND CROSS-SLOPE.  
 3. REFER TO CITY SPECIFICATIONS FOR ASPHALT MIX DESIGN.  
 4. CONTRACTOR SHALL CONFIRM THIS PAVEMENT SECTION WITH THE PROJECT'S GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.

**VEHICULAR PAVER SECTION**  
NO SCALE



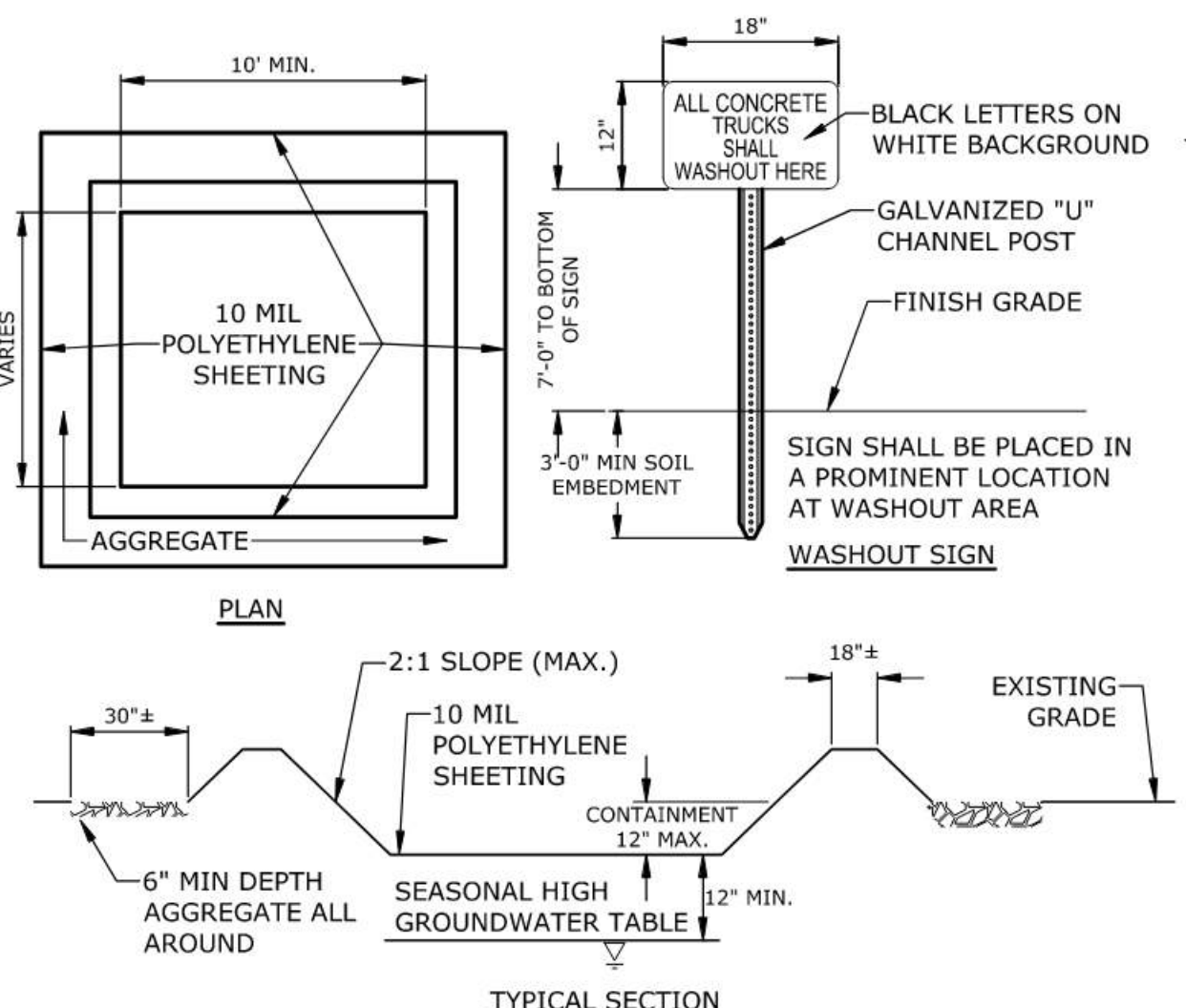
**NOTES:**  
 1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.  
 2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.  
 3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.  
 4. REFER TO CITY SPECIFICATIONS FOR ASPHALT MIX DESIGN.  
 5. CONTRACTOR SHALL CONFIRM THIS PAVEMENT SECTION WITH THE PROJECT'S GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.

**ON-SITE PAVEMENT SECTION**  
NO SCALE



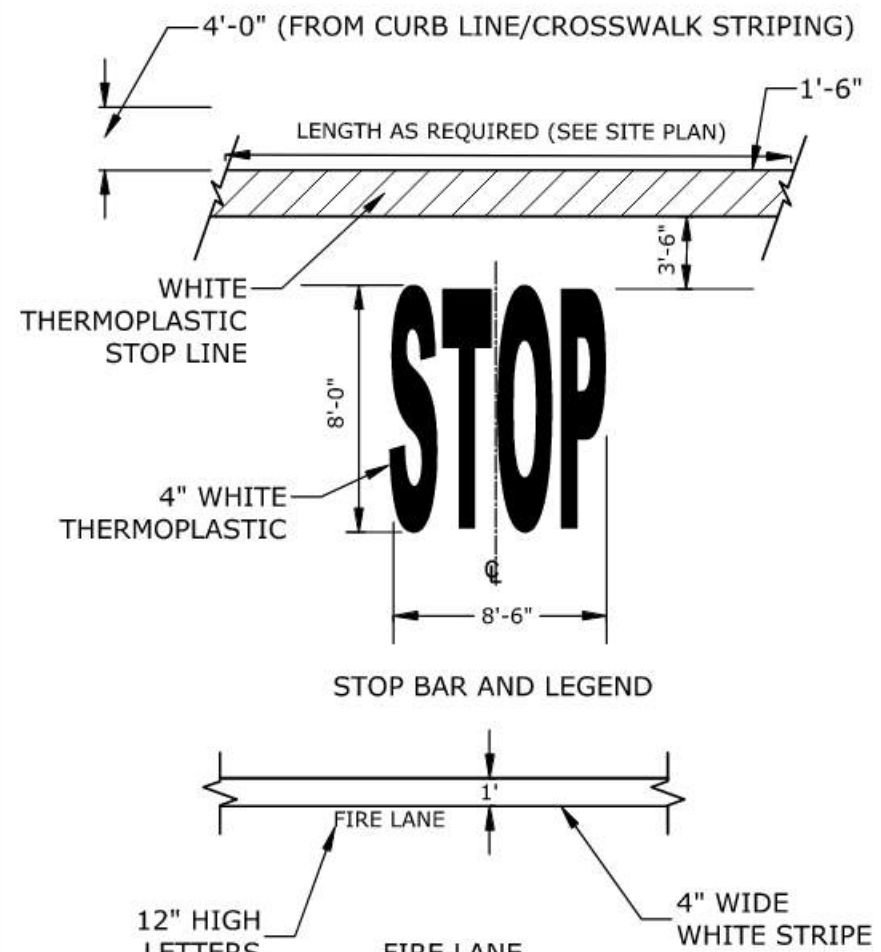
**NOTES:**  
 1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).  
 2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.  
 3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'  
 4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'  
 5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID 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



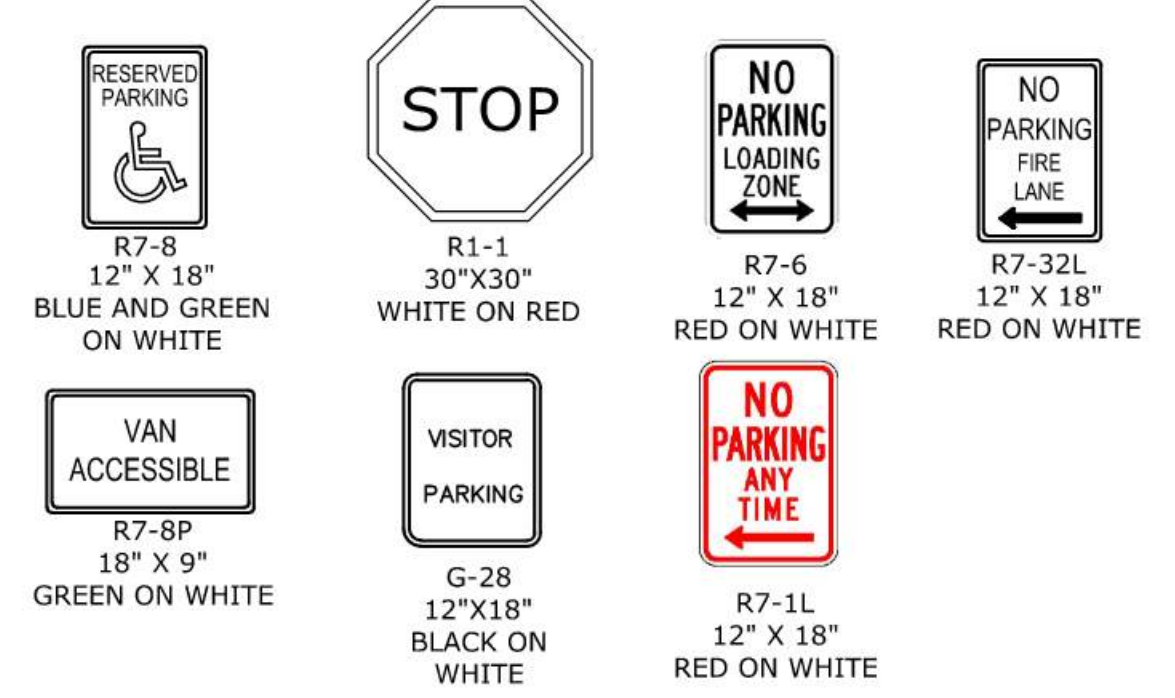
**CONCRETE WASHOUT AREA**  
NO SCALE

**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. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.  
 3. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.  
 4. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.  
 5. AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.



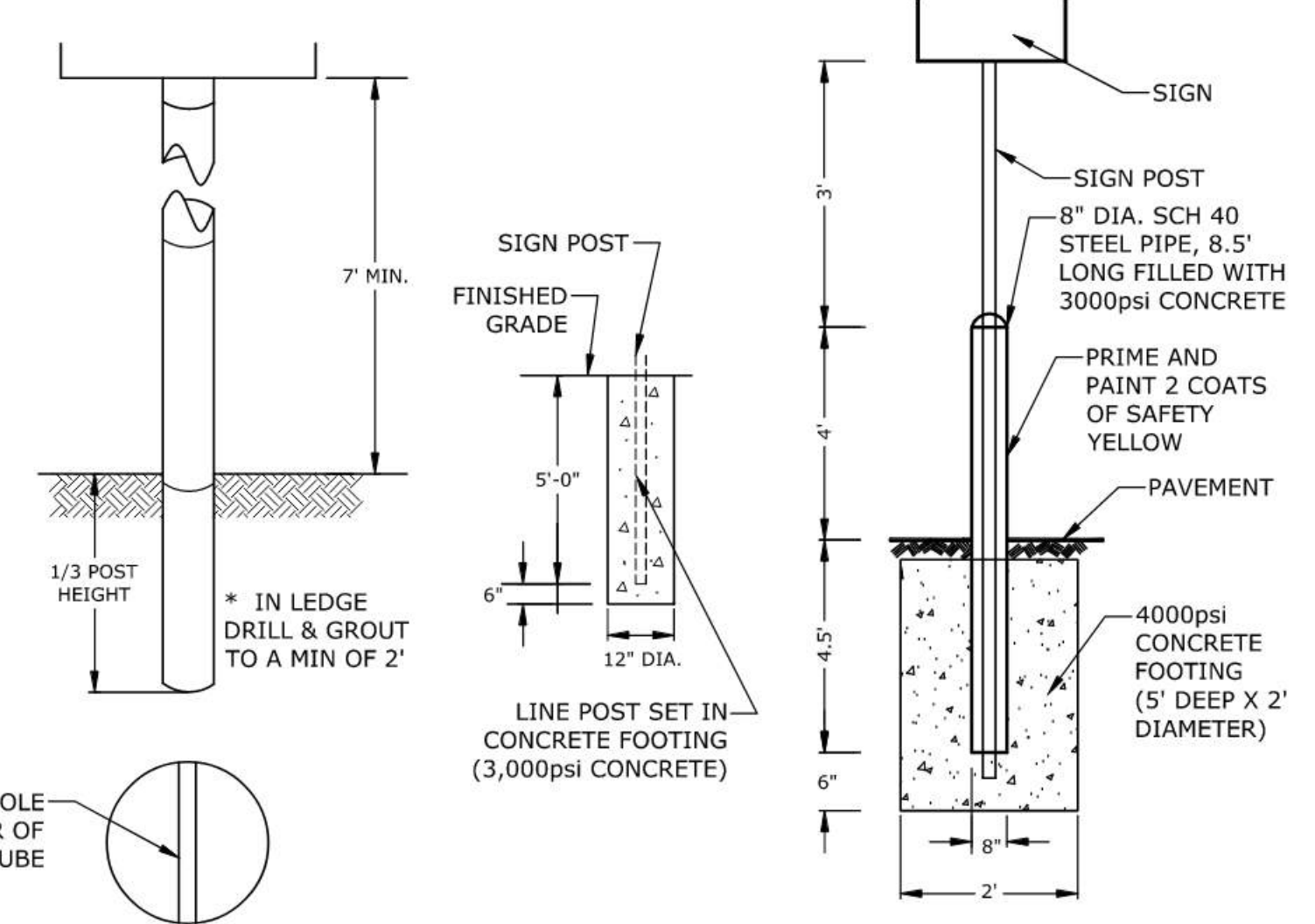
**NOTE:**  
 1. PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS AS SHOWN ON SITE PLAN.  
 2. ALL STOP BARS, WORDS, SYMBOLS AND ARROWS SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTORIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

**PAVEMENT MARKINGS**  
NO SCALE

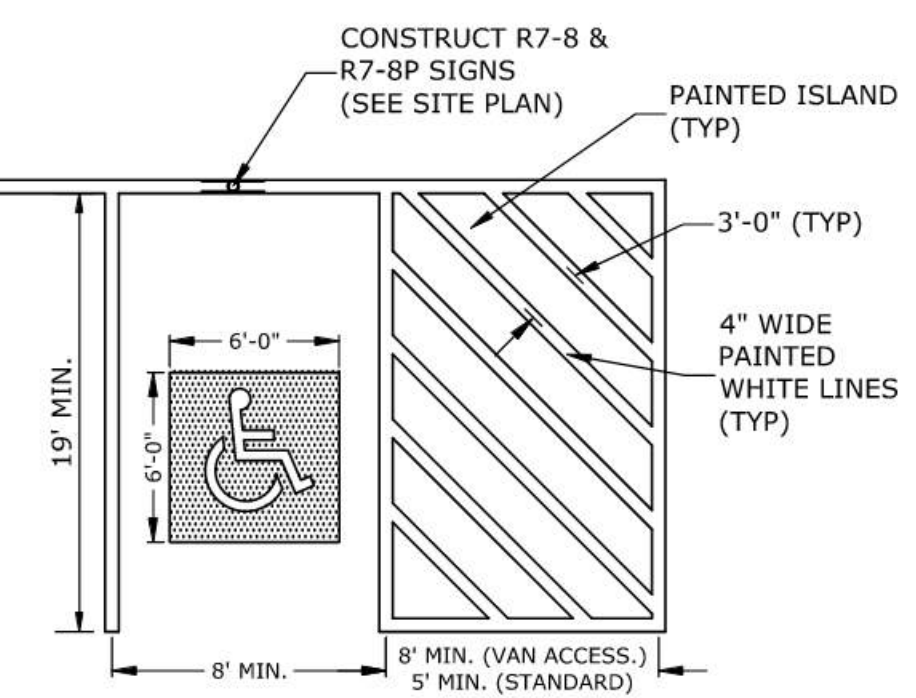


**NOTES:**  
 ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.  
 POST: SCHEDULE 40 GALVANIZED STEEL PIPE (OUTSIDE DIA. = 2.375").  
 FINISH: POST TO BE POWDER COATED GLOSS BLACK  
 LENGTH: AS REQUIRED  
 WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)  
 HOLES: 3/8" DIAMETER (AS REQUIRED)  
 STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070-1080)

**SIGN LEGEND & SIGN POST**  
NO SCALE

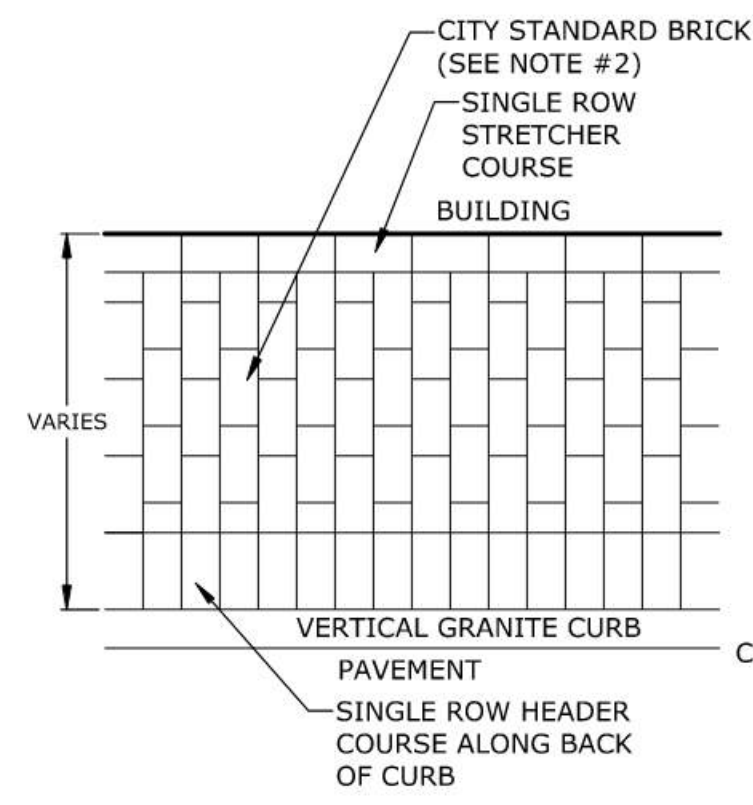


**BOLLARD MOUNTED SIGN DETAIL**  
NO SCALE



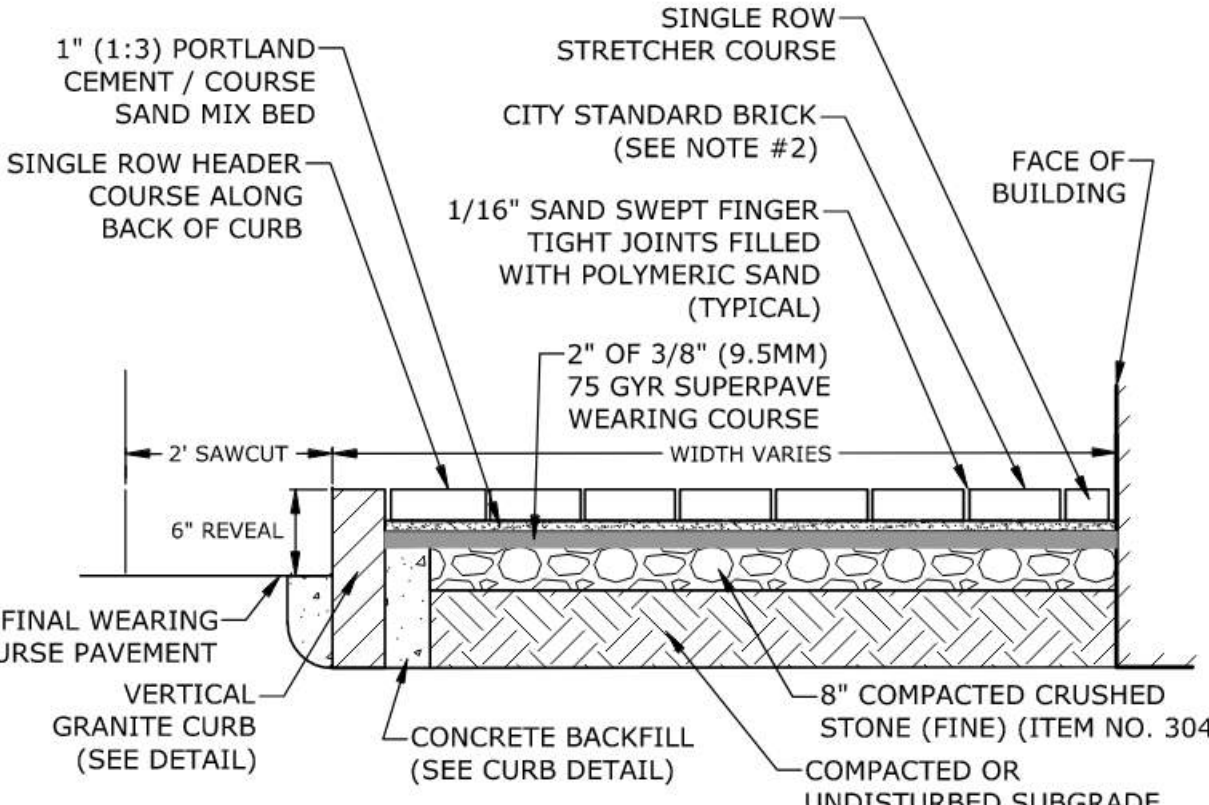
**NOTES:**  
 1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.  
 2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN W/DISABILITIES ACT.

**ACCESSIBLE PARKING STALL**  
NO SCALE



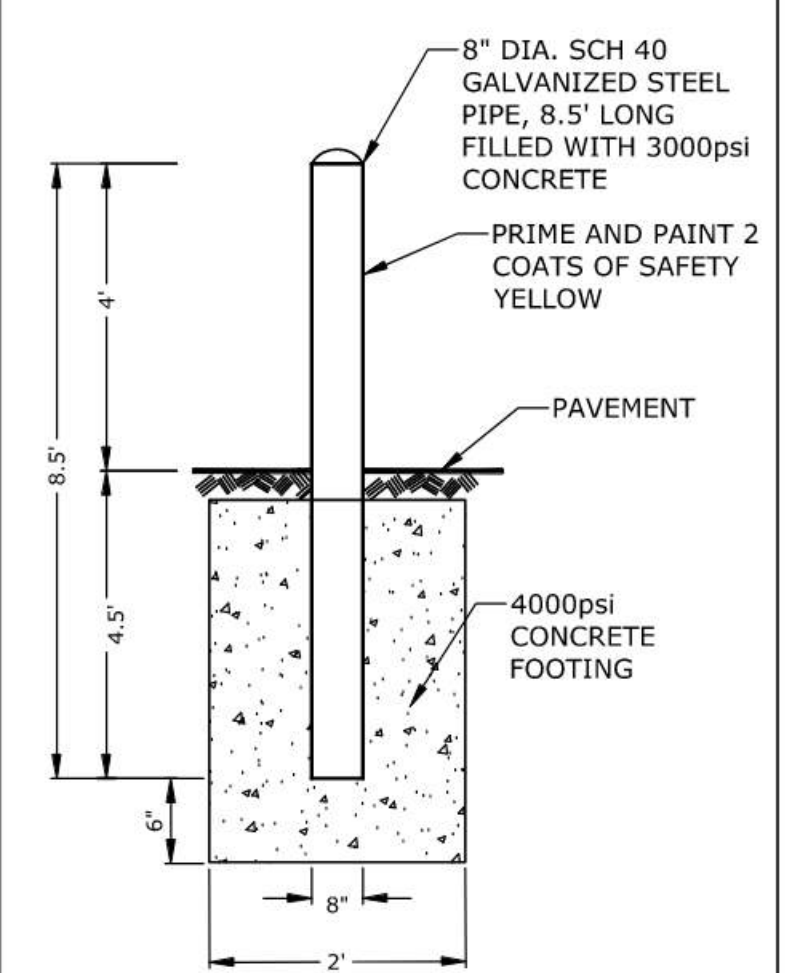
**NOTES:**  
 1. BRICK SIDEWALK SHALL BE INSTALLED AS DETAILED AND PER CITY OF PORTSMOUTH REQUIREMENTS/SPECIFICATIONS AND SHALL INCLUDE A CONTINUOUS APPROVED PAVER EDGE RESTRAINT SYSTEM AT ALL LOCATIONS NOT ADJACENT TO CURB OR BUILDINGS.  
 2. CITY STANDARD BRICK SHALL BE TRADITIONAL EDGE, PATHWAY, FULL RANGE 2.25"x4"x8" PAVER, BY PINE HILL BRICK, INC. BRICK MATERIAL SAMPLES SHALL BE PROVIDED TO DPW PRIOR TO INSTALLATION FOR REVIEW AND APPROVAL.  
 3. BEDDING MATERIAL SHALL BE A PORTLAND CEMENT / COURSE SAND MIX THAT IS 1 PART PORTLAND CEMENT AND 3 PARTS COURSE SAND. SAND SHALL CONFORM WITH ASTM C-33 AND CEMENT SHALL BE PORTLAND CEMENT TYPE I/TYPE II.

**SIDEWALK PLAN VIEW**  
NO SCALE

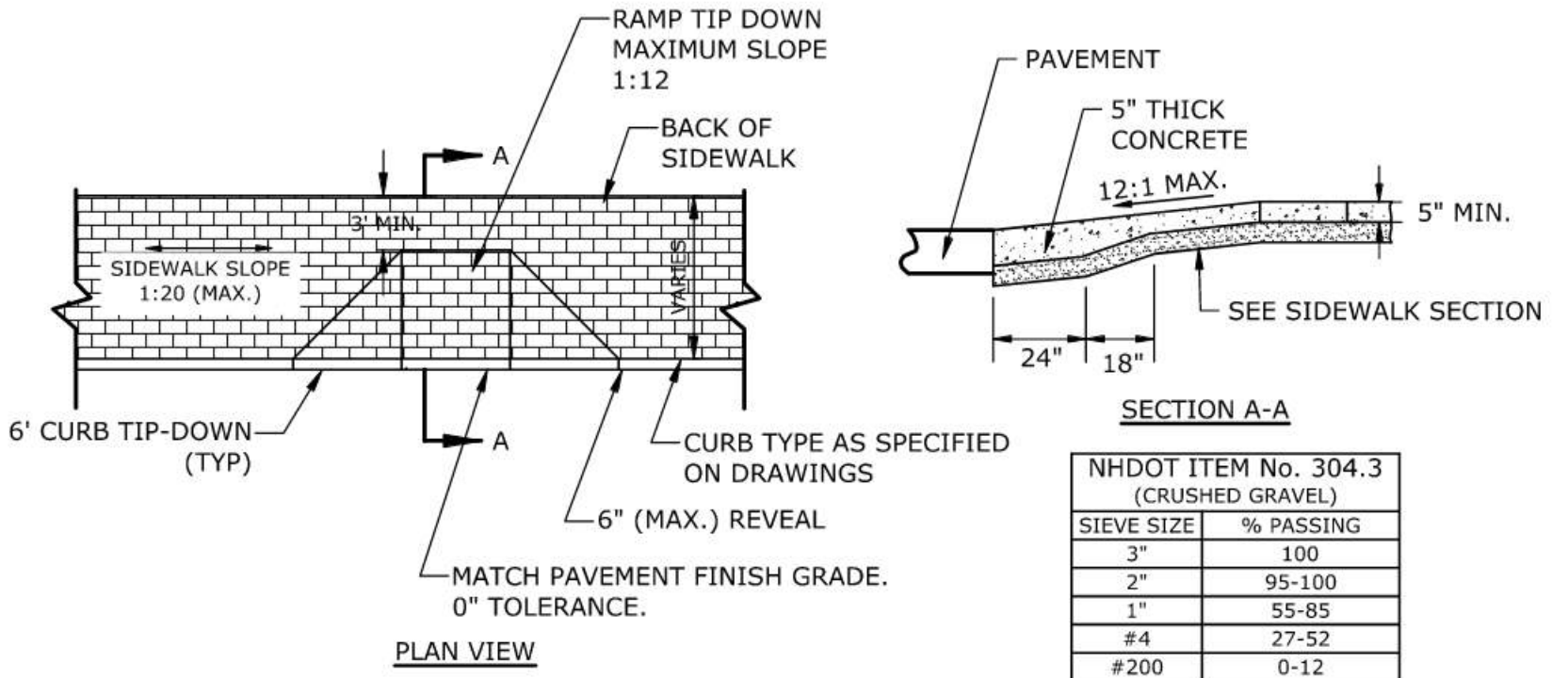


**NOTES:**  
 1. BRICK SIDEWALK SHALL BE INSTALLED AS DETAILED AND PER CITY OF PORTSMOUTH REQUIREMENTS/SPECIFICATIONS AND SHALL INCLUDE A CONTINUOUS APPROVED PAVER EDGE RESTRAINT SYSTEM AT ALL LOCATIONS NOT ADJACENT TO CURB OR BUILDINGS.  
 2. CITY STANDARD BRICK SHALL BE TRADITIONAL EDGE, PATHWAY, FULL RANGE 2.25"x4"x8" PAVER, BY PINE HILL BRICK, INC. BRICK MATERIAL SAMPLES SHALL BE PROVIDED TO DPW PRIOR TO INSTALLATION FOR REVIEW AND APPROVAL.  
 3. BEDDING MATERIAL SHALL BE A PORTLAND CEMENT / COURSE SAND MIX THAT IS 1 PART PORTLAND CEMENT AND 3 PARTS COURSE SAND. SAND SHALL CONFORM WITH ASTM C-33 AND CEMENT SHALL BE PORTLAND CEMENT TYPE I/TYPE II.

**BRICK SIDEWALK**  
NO SCALE



**BOLLARD DETAIL**  
NO SCALE



**NOTES:**  
 1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.  
 2. A 6" COMPACTED CRUSHED GRAVEL BASE (NHDOT ITEM No. 304.3) SHALL BE PROVIDED BENEATH RAMPS.  
 3. THE MAXIMUM RUNNING SLOPE OF ANY SIDEWALK CURB RAMP IS 12:1, THE MAXIMUM CROSS SLOPE IS 2%. THE SLOPE OF THE LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.  
 4. TRANSITIONS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. ROADWAY SHOULDER SLOPES ADJOINING SIDEWALK CURB RAMPS SHALL BE A MAXIMUM OF 5% (FULL WIDTH) FOR A DISTANCE OF 2 FT. FROM THE ROADWAY CURBLINE.  
 5. THE BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING, EXCLUSIVE OF THE FLARED SIDES, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.

**SIDEWALK TIP DOWN RAMP**  
NO SCALE

**Proposed Mixed Use Development**

CPI Management, LLC

53 Green Street  
Portsmouth, NH

| MARK | DATE      | DESCRIPTION         |
|------|-----------|---------------------|
| E    | 7/7/2021  | PB Submission       |
| D    | 5/19/2021 | TAC Resubmission    |
| C    | 4/21/2021 | TAC Resubmission    |
| B    | 3/22/2021 | TAC & CC Submission |
| A    | 1/27/2021 | CC Work Session     |

|             |                      |
|-------------|----------------------|
| PROJECT NO: | C0960-011            |
| DATE:       | January 27, 2021     |
| FILE:       | C0960-011_C-DTLS.DWG |
| DRAWN BY:   | AFS                  |
| CHECKED:    | NAH/PMC              |
| APPROVED:   | BLM                  |

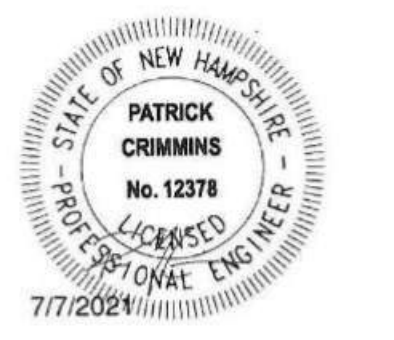
**DETAILS SHEET**

SCALE: AS SHOWN

**C-502**

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**Proposed Mixed Use Development**

CPI Management, LLC

53 Green Street  
Portsmouth, NH

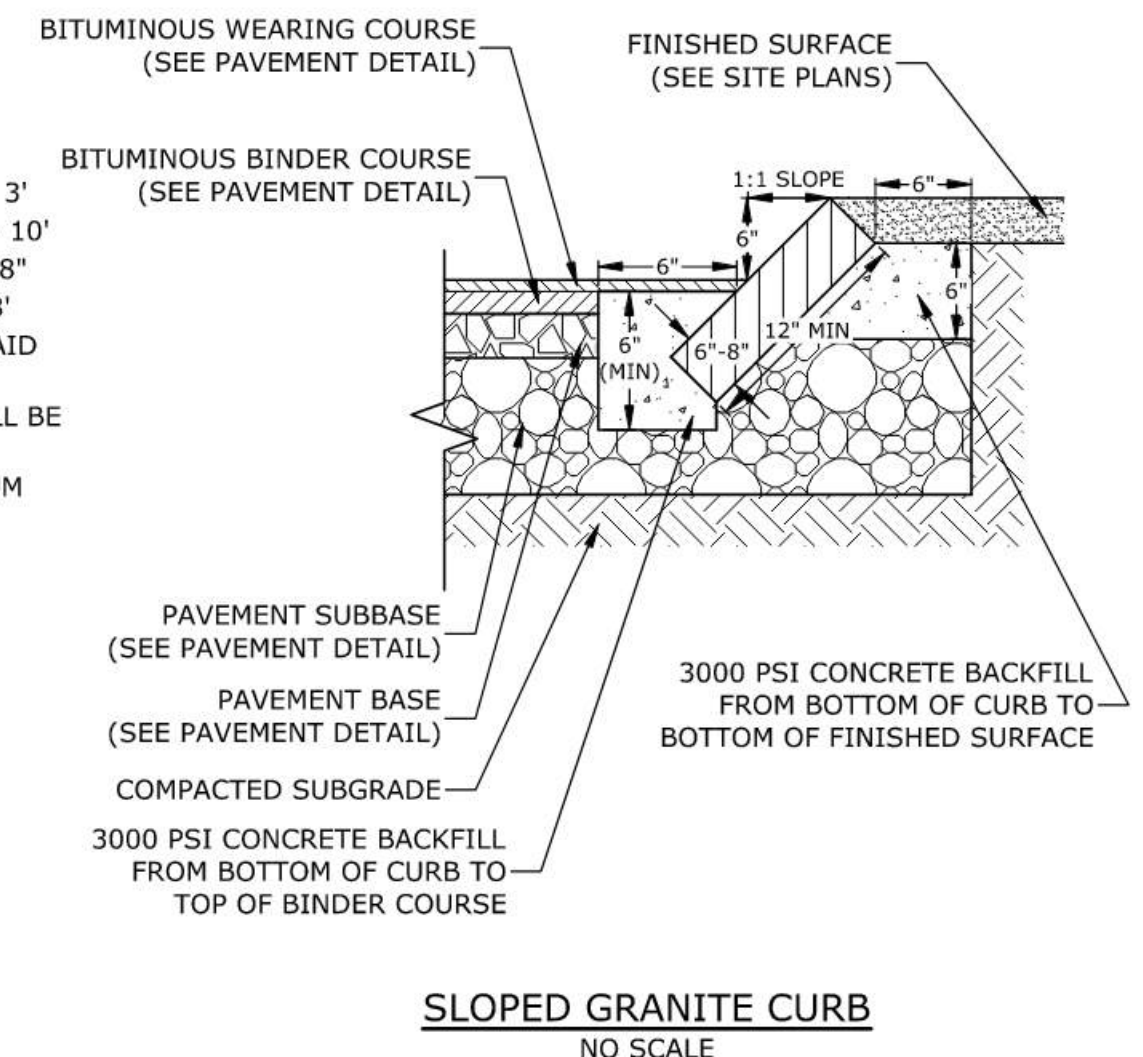
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| DRAWN BY:   | AFS                  |
| CHECKED:    | NAH/PMC              |
| APPROVED:   | BLM                  |

**DETAILS SHEET**

SCALE: AS SHOWN

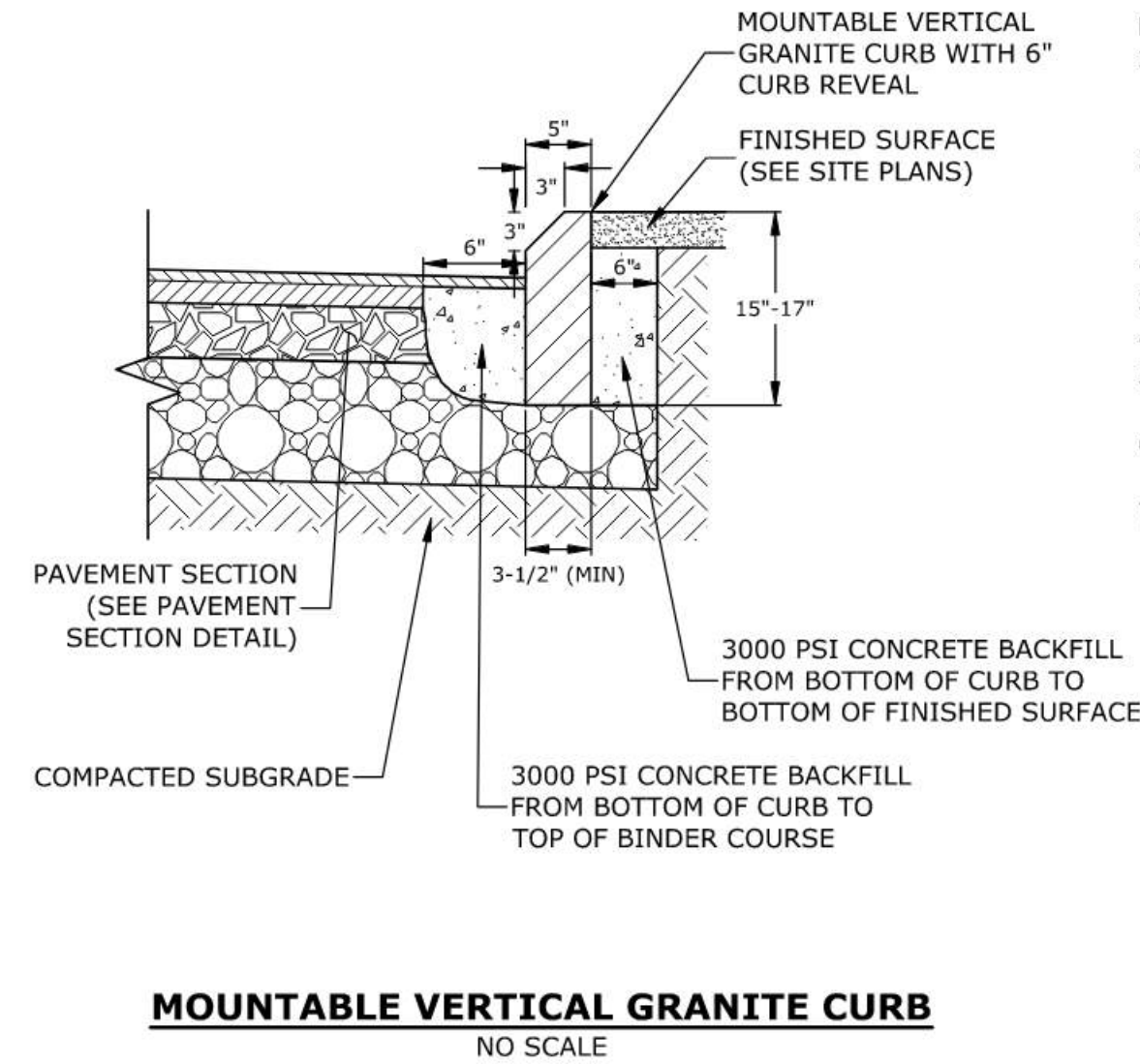
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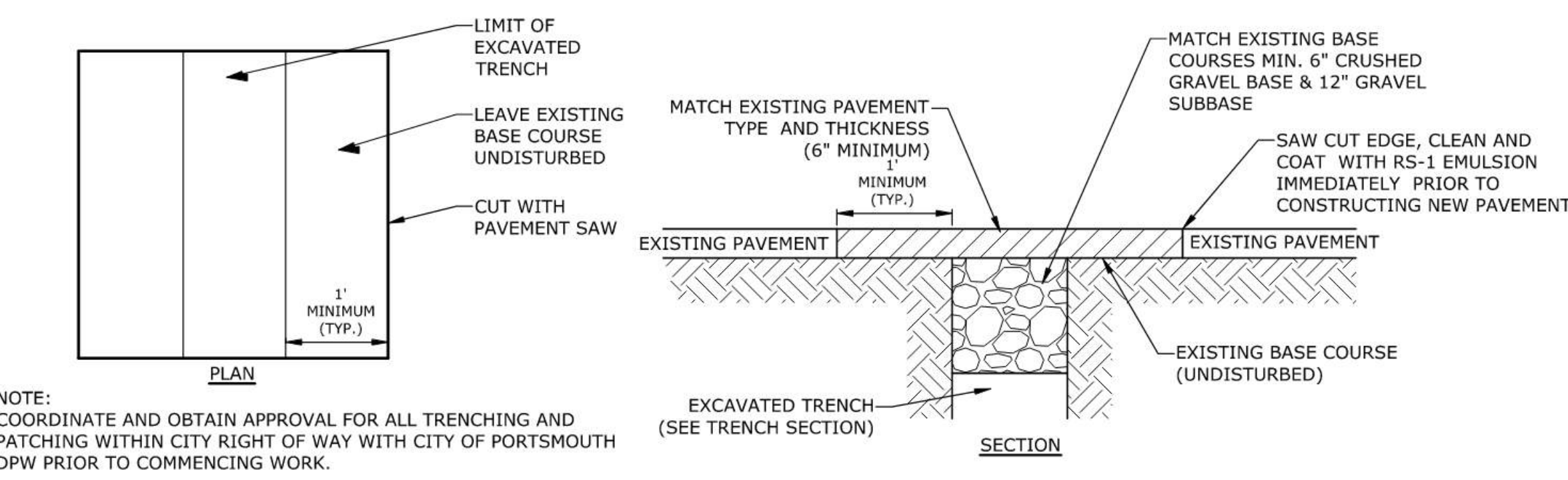
**SLOPED GRANITE CURB**  
NO SCALE

- NOTES:
- SEE SITE PLAN(S) FOR LIMITS OF MOUNTABLE VERTICAL GRANITE CURB (MVGC) AND SLOPED GRANITE CURB (SGC).
  - ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
  - MINIMUM LENGTH OF STRAIGHT MVGC STONES = 3'
  - MAXIMUM LENGTH OF STRAIGHT MVGC STONES = 10'
  - MINIMUM LENGTH OF STRAIGHT SGC STONES = 18"
  - MAXIMUM LENGTH OF STRAIGHT SGC STONES = 8'
  - MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
  - FOR MVGC ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
  - JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

| RADIUS   | MAX LENGTH        |
|----------|-------------------|
| <2'      | USE CURVED CURB   |
| 2'-15'   | USE RADIAL JOINTS |
| 16'-28'  | 1'-6"             |
| 29'-41'  | 1'-2"             |
| 42'-55'  | 2'                |
| 56'-68'  | 3'                |
| 69'-82'  | 4'                |
| 83'-96'  | 5'                |
| 97'-110' | 6'                |
| >110'    | 7'                |
|          | 8'                |

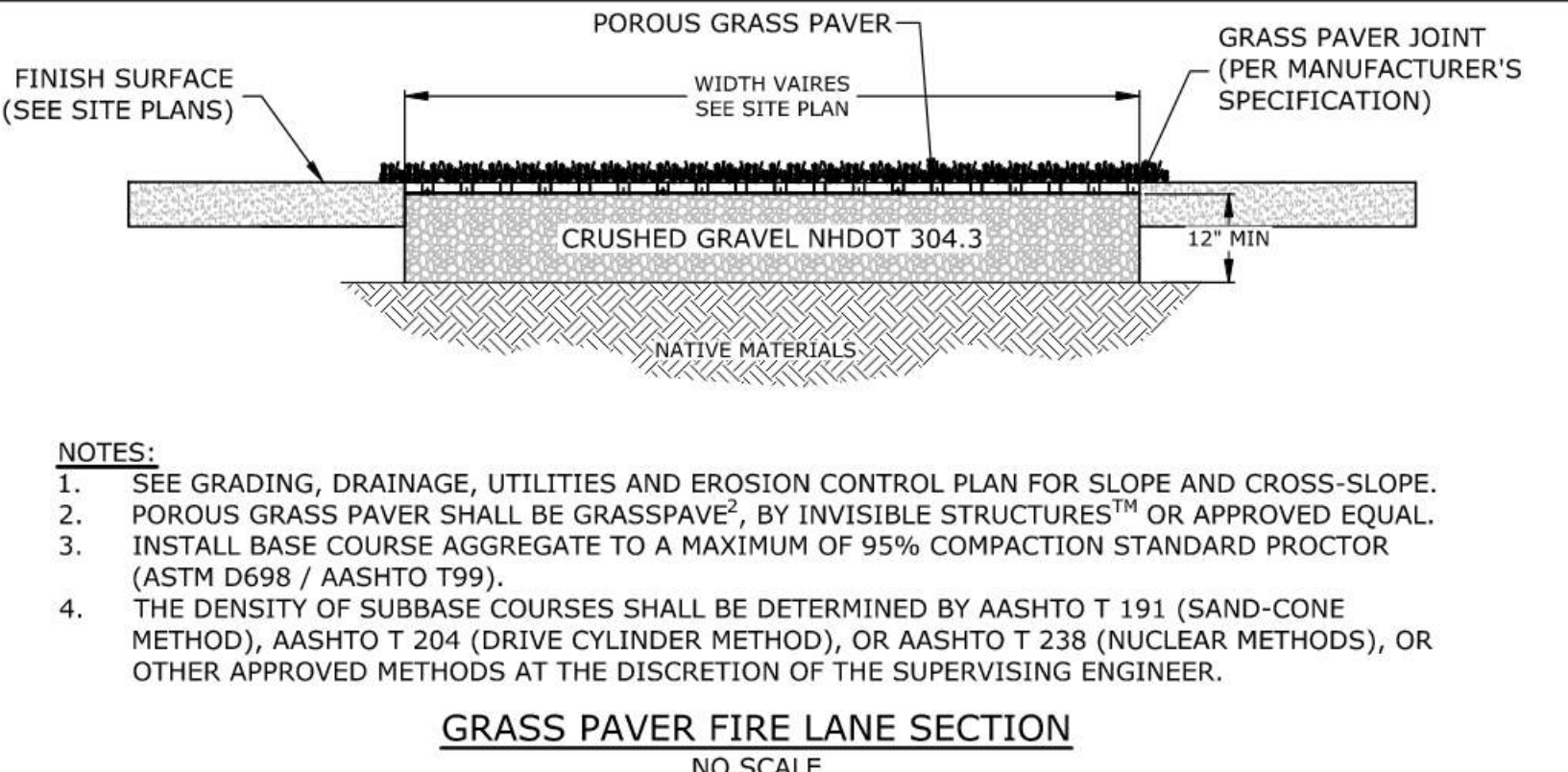


**MOUNTABLE VERTICAL GRANITE CURB**  
NO SCALE



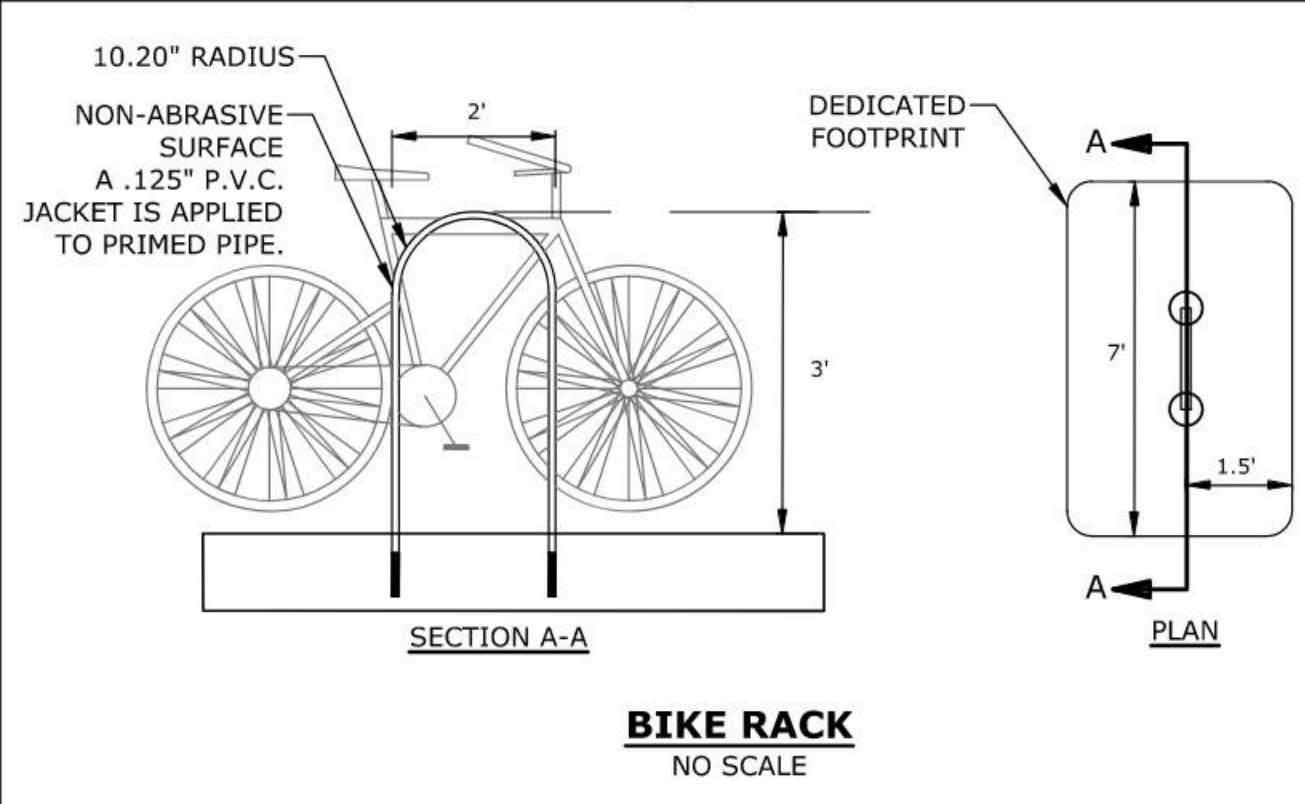
**ROADWAY TRENCH PATCH**  
NO SCALE

NOTE:  
COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT OF WAY WITH CITY OF PORTSMOUTH DPW PRIOR TO COMMENCING WORK.

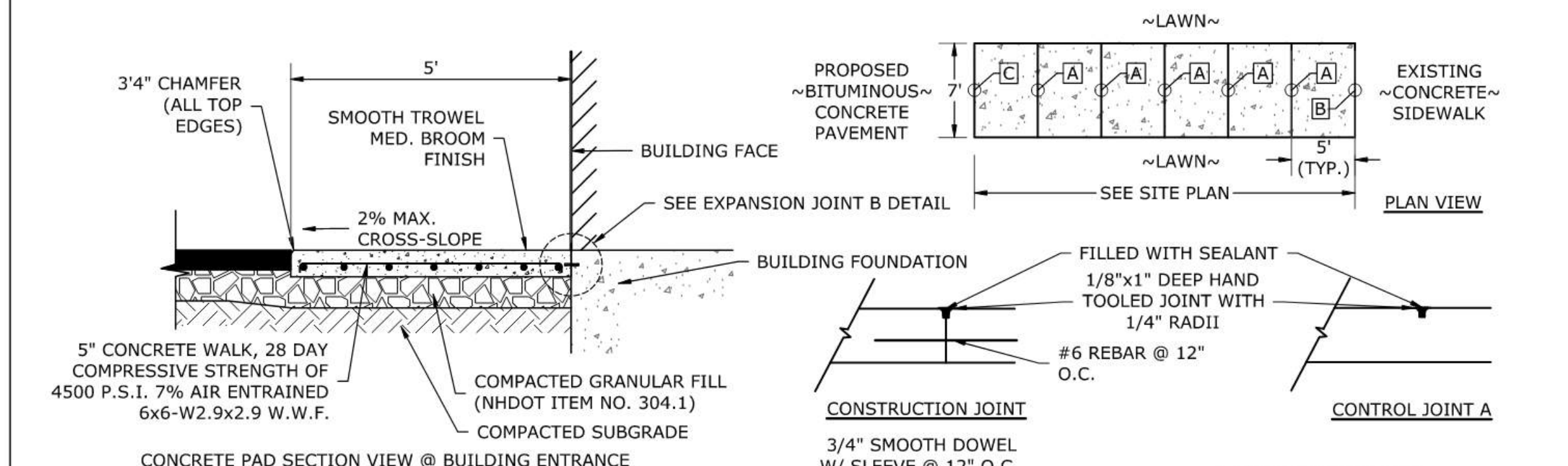


**GRASS PAVER FIRE LANE SECTION**  
NO SCALE

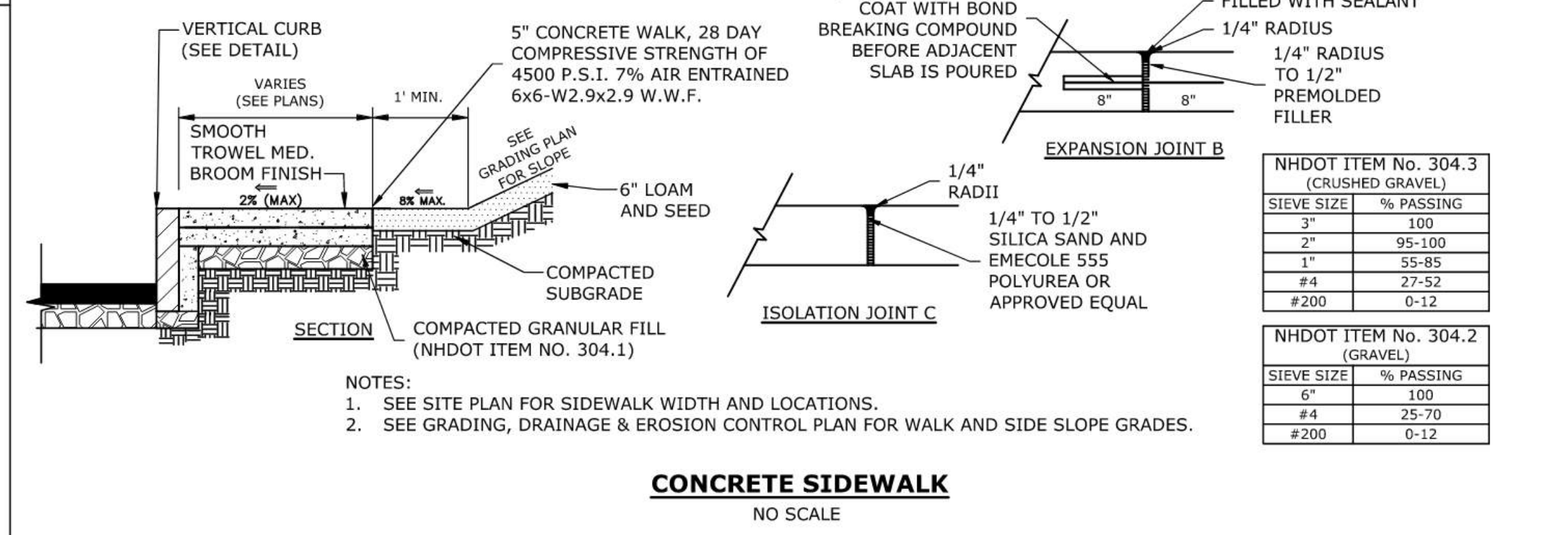
- NOTES:
- SEE GRADING, DRAINAGE, UTILITIES AND EROSION CONTROL PLAN FOR SLOPE AND CROSS-SLOPE.
  - POROUS GRASS PAVER SHALL BE GRASSPAVE<sup>2</sup>, BY INVISIBLE STRUCTURES<sup>TM</sup> OR APPROVED EQUAL.
  - INSTALL BASE COURSE AGGREGATE TO A MAXIMUM OF 95% COMPACTION STANDARD PROCTOR (ASTM D698 / AASHTO T99).
  - THE DENSITY OF SUBBASE COURSES SHALL BE DETERMINED BY AASHTO T 191 (SAND-CONE METHOD), AASHTO T 204 (DRIVE CYLINDER METHOD), OR AASHTO T 238 (NUCLEAR METHODS), OR OTHER APPROVED METHODS AT THE DISCRETION OF THE SUPERVISING ENGINEER.



**BIKE RACK**  
NO SCALE



**CONCRETE PAD SECTION VIEW @ BUILDING ENTRANCE**  
NO SCALE



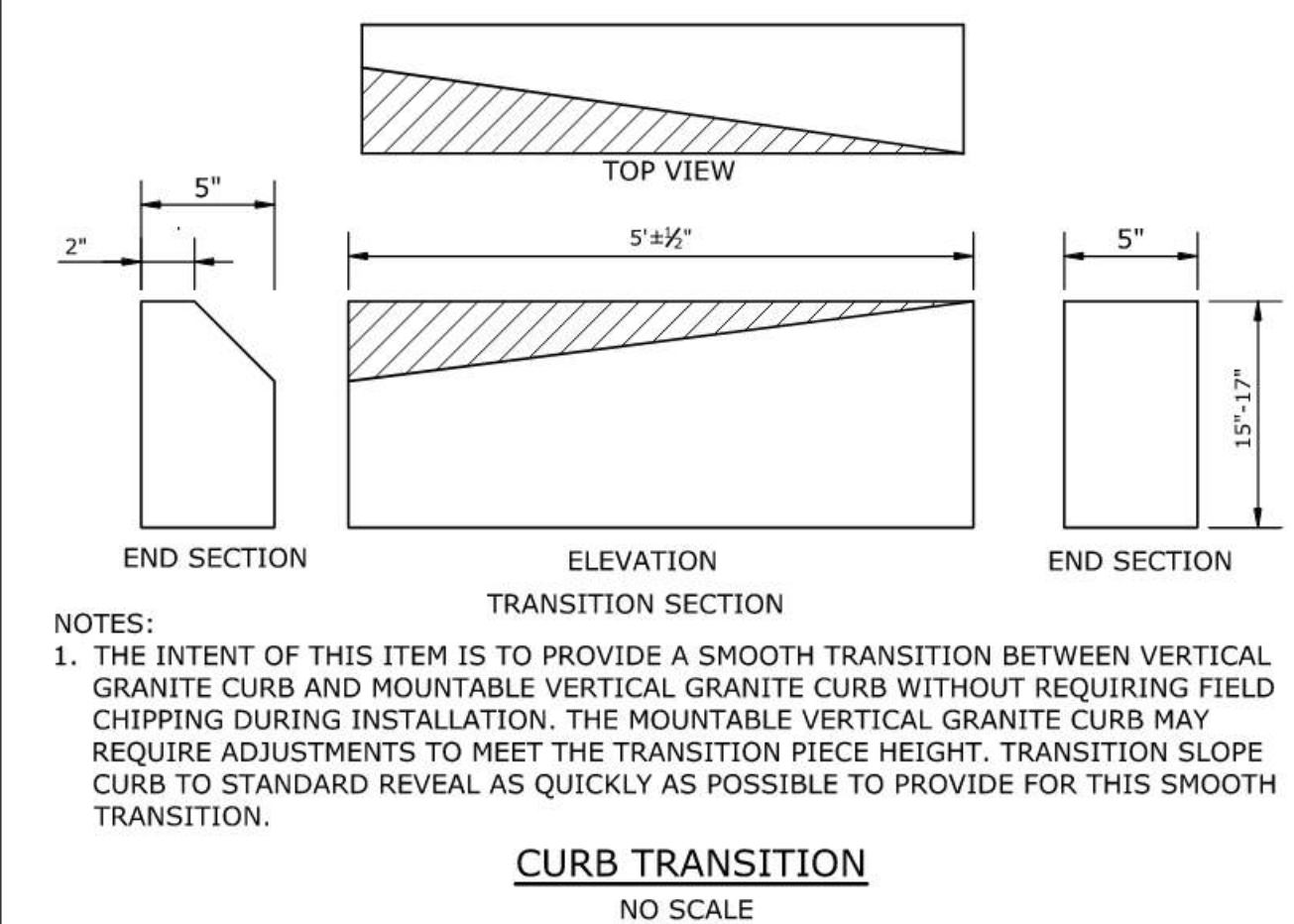
**CONCRETE SIDEWALK**  
NO SCALE

- NOTES:
- SEE SITE PLAN FOR SIDEWALK WIDTH AND LOCATIONS.
  - SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR WALK AND SIDE SLOPE GRADES.

| SIEVE SIZE | % PASSING |
|------------|-----------|
| 3"         | 100       |
| 2"         | 95-100    |
| 1"         | 55-85     |
| #4         | 27-52     |
| #200       | 0-12      |

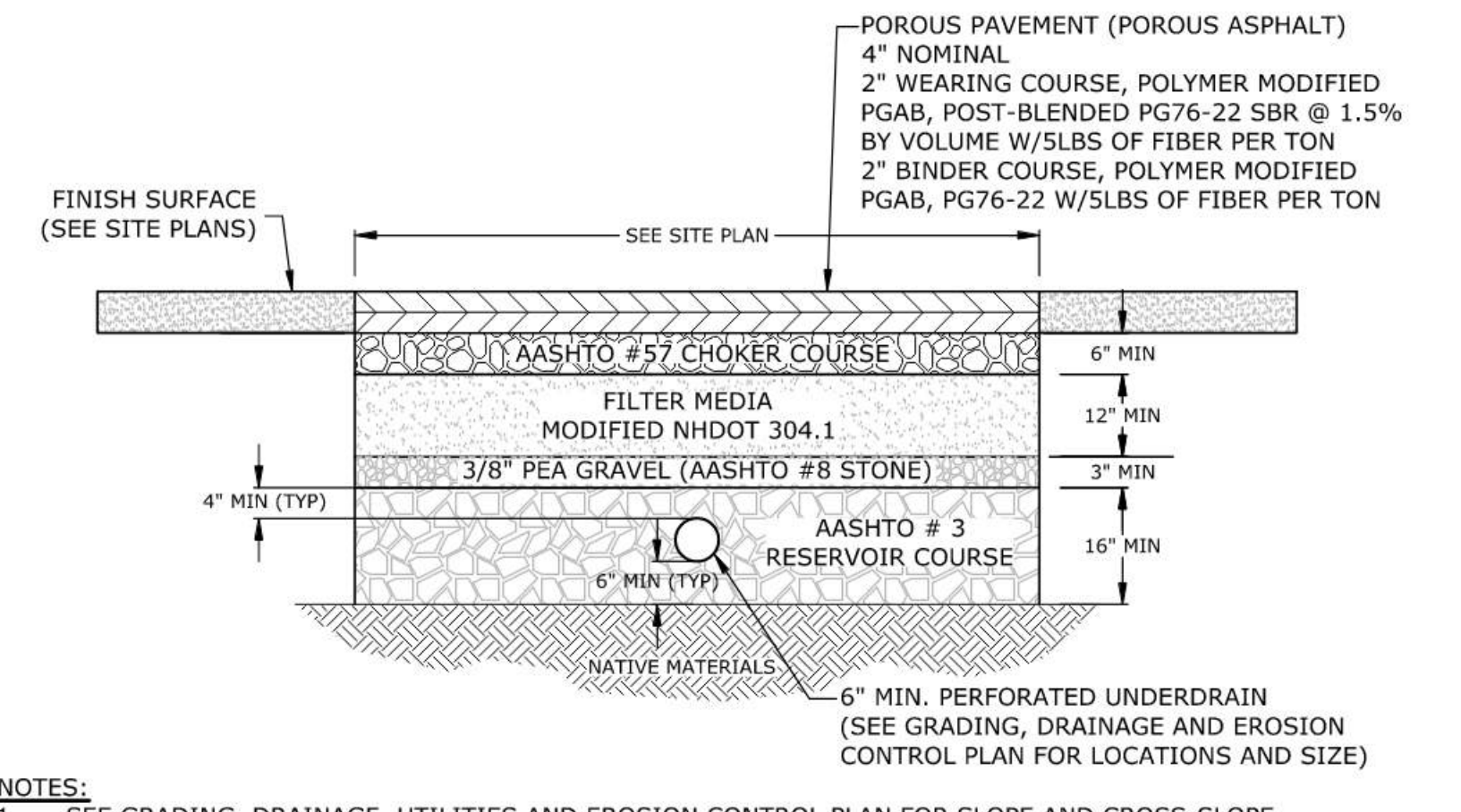
  

| SIEVE SIZE | % PASSING |
|------------|-----------|
| 6"         | 100       |
| #4         | 25-70     |
| #200       | 0-12      |



**CURB TRANSITION**  
NO SCALE

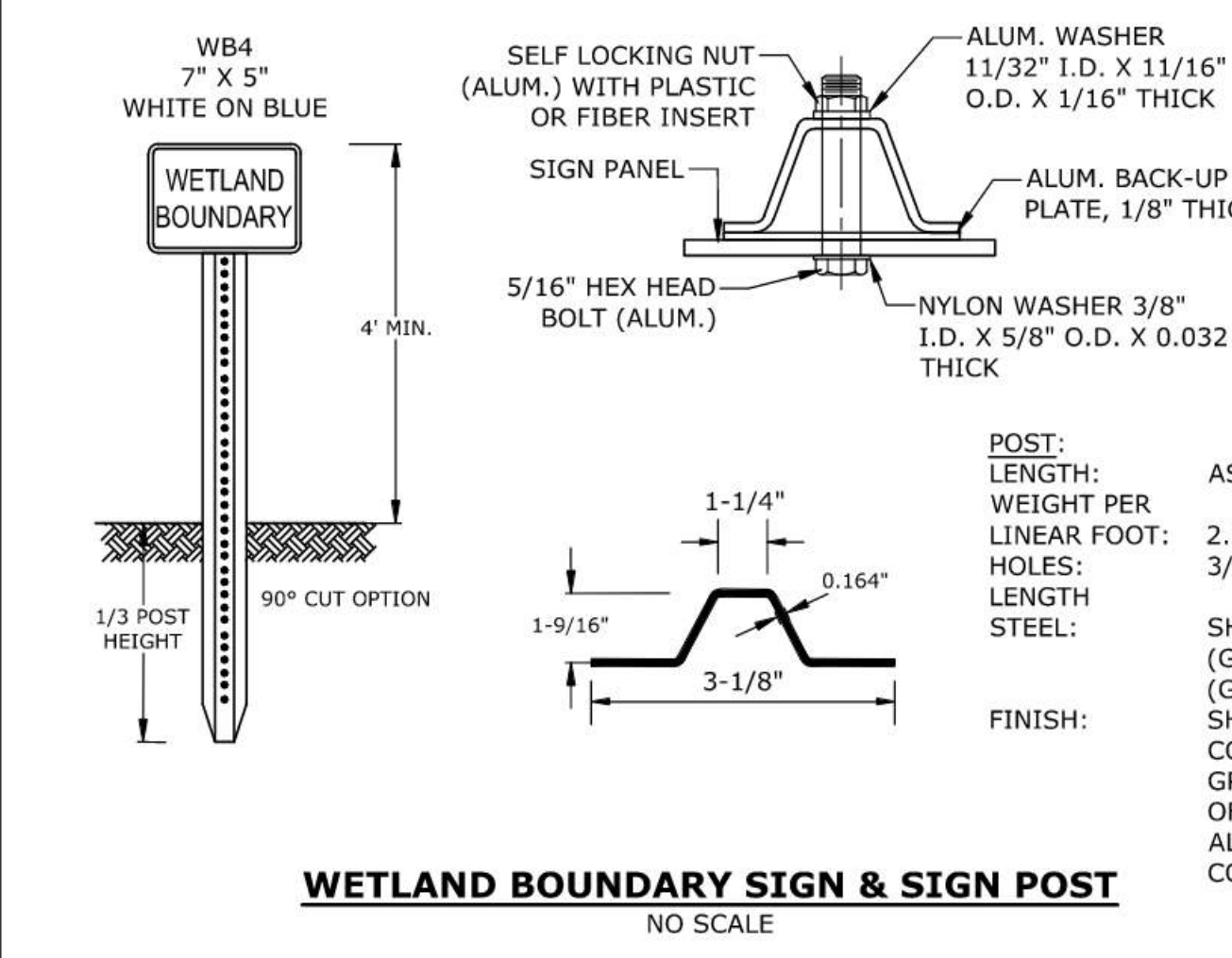
- NOTES:
- THE INTENT OF THIS ITEM IS TO PROVIDE A SMOOTH TRANSITION BETWEEN VERTICAL GRANITE CURB AND MOUNTABLE VERTICAL GRANITE CURB WITHOUT REQUIRING FIELD CHIPPING DURING INSTALLATION. THE MOUNTABLE VERTICAL GRANITE CURB MAY REQUIRE ADJUSTMENTS TO MEET THE TRANSITION PIECE HEIGHT. TRANSITION SLOPE CURB TO STANDARD REVEAL AS QUICKLY AS POSSIBLE TO PROVIDE FOR THIS SMOOTH TRANSITION.



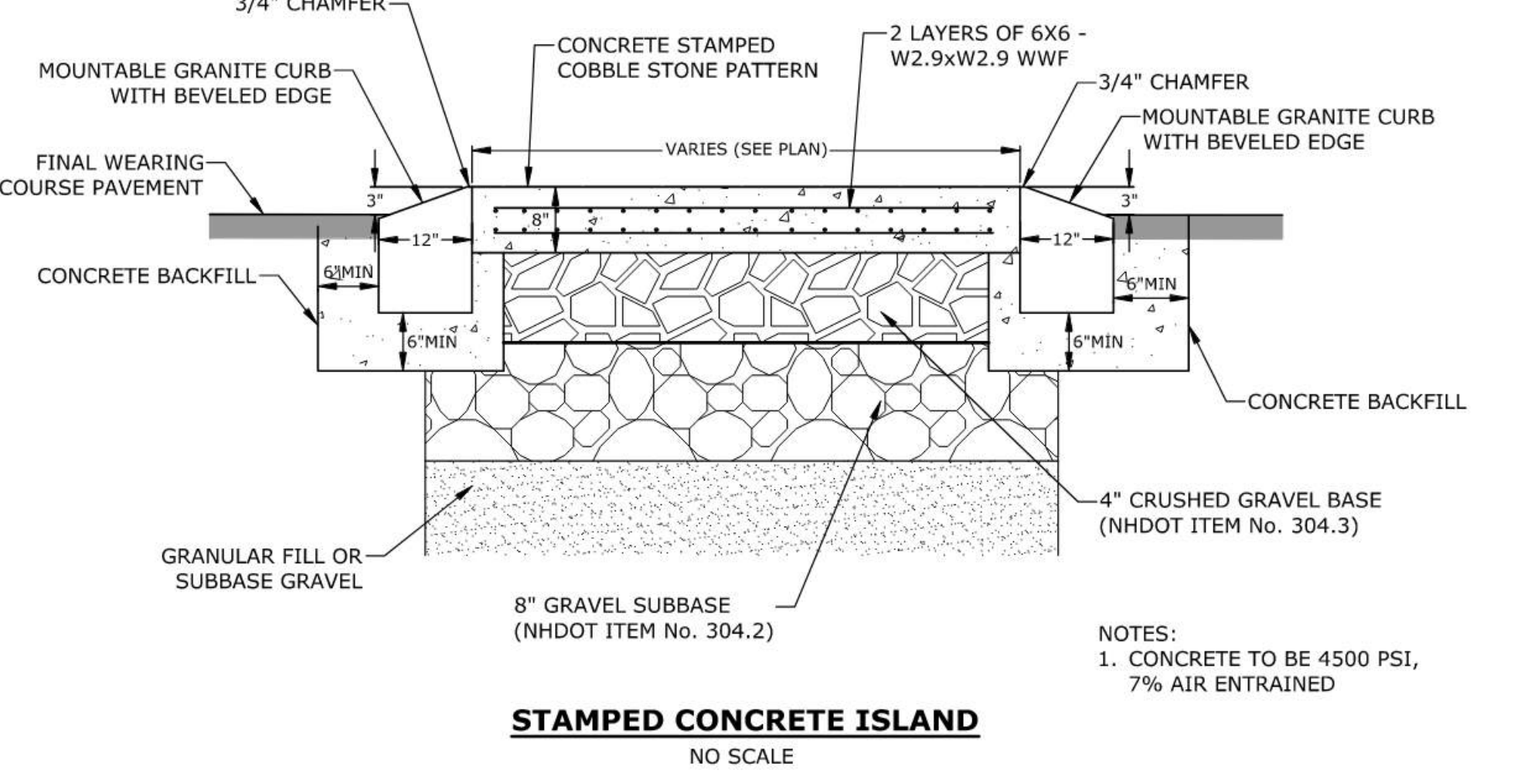
**POROUS PAVEMENT SECTION**  
NO SCALE

- NOTES:
- SEE GRADING, DRAINAGE, UTILITIES AND EROSION CONTROL PLAN FOR SLOPE AND CROSS-SLOPE.
  - GRAVEL SECTION SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST SPECIFICATIONS FROM THE UNH STORMWATER CENTER FOR POROUS ASPHALT.
  - FILTER COURSE TO BE INCREASED AS NECESSARY TO MEET PROPOSED GRADES.
  - INSTALL FILTER COURSE AGGREGATE IN 8-INCH MAXIMUM LIFTS TO A MAXIMUM OF 95% STANDARD PROCTOR COMPACTION (ASTM D698 / AASHTO T99). INSTALL AGGREGATE TO GRADES INDICATED ON THE DRAWINGS.
  - INSTALL CHOKER, GRAVEL, AND STONE BASE COURSE AGGREGATE TO A MAXIMUM OF 95% COMPACTION STANDARD PROCTOR (ASTM D698 / AASHTO T99). CHOKER SHOULD BE PLACED EVENLY OVER SURFACE OF FILTER COURSE BED, SUFFICIENT TO ALLOW PLACEMENT OF PAVEMENT, AND NOTIFY ENGINEER FOR APPROVAL. CHOKER BASE COURSE THICKNESS SHALL BE SUFFICIENT TO ALLOW FOR EVEN PLACEMENT OF THE POROUS ASPHALT BUT NO LESS THAN 6-INCHES IN DEPTH.
  - THE DENSITY OF SUBBASE COURSES SHALL BE DETERMINED BY AASHTO T 191 (SAND-CONE METHOD), AASHTO T 204 (DRIVE CYLINDER METHOD), OR AASHTO T 238 (NUCLEAR METHODS), OR OTHER APPROVED METHODS AT THE DISCRETION OF THE SUPERVISING ENGINEER.
  - CONSTRUCTION AND QA/QC REQUIREMENTS FOR THE POROUS PAVEMENT SHALL BE IN ACCORDANCE WITH THE UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS, FEBRUARY 2014, REVISED SEPTEMBER 2016.
  - CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF THE POROUS PAVED SURFACE THROUGHOUT CONSTRUCTION. THIS INCLUDES BUT NOT LIMITED TO EROSION CONTROL PROTECTION, AND PROHIBITING MATERIAL STORAGE AND HEAVY EQUIPMENT FROM THE POROUS PAVED SURFACE.

| AASHTO #3 STONE (RESERVOIR COURSE) |           | AASHTO #8 STONE (PEA GRAVEL) |           | MODIFIED NHDOT 304.1 |           | NHDOT ITEM No. 304.3 (CRUSHED GRAVEL) |           |
|------------------------------------|-----------|------------------------------|-----------|----------------------|-----------|---------------------------------------|-----------|
| SIEVE SIZE                         | % PASSING | SIEVE SIZE                   | % PASSING | SIEVE SIZE           | % PASSING | SIEVE SIZE                            | % PASSING |
| 2 1/2"                             | 100       | 3"                           | 100       | 6"                   | 100       | 3"                                    | 100       |
| 2"                                 | 90-100    | 2 1/2"                       | 85-100    | #4                   | 70-100    | 2"                                    | 95-100    |
| 1 1/2"                             | 35-70     | #4                           | 10-30     | #8                   | 0-10      | #4                                    | 55-85     |
| 1"                                 | 0-15      | #8                           | 0-5       | #16                  | 0-5       | #4                                    | 27-52     |
| 3/4"                               | 0-5       |                              |           |                      |           | #200                                  | 0-12      |



**WETLAND BOUNDARY SIGN & SIGN POST**  
NO SCALE

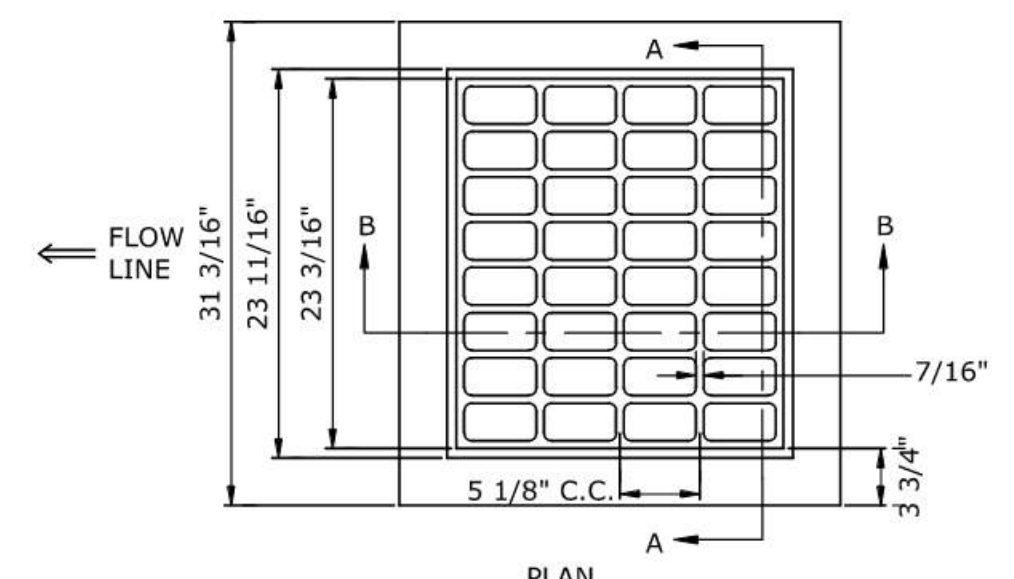


**STAMPED CONCRETE ISLAND**  
NO SCALE

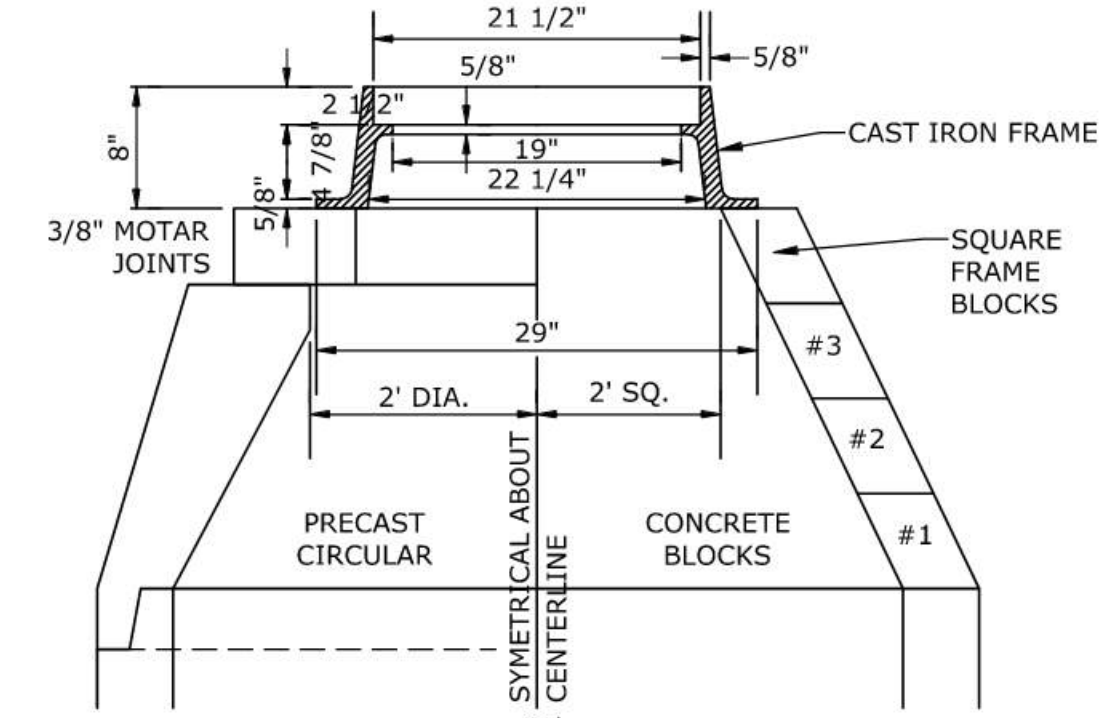
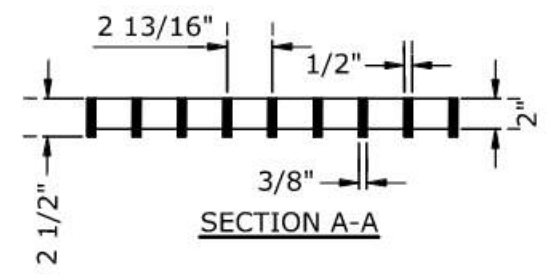
- NOTES:
- CONCRETE TO BE 4500 PSI, 7% AIR ENTRAINED

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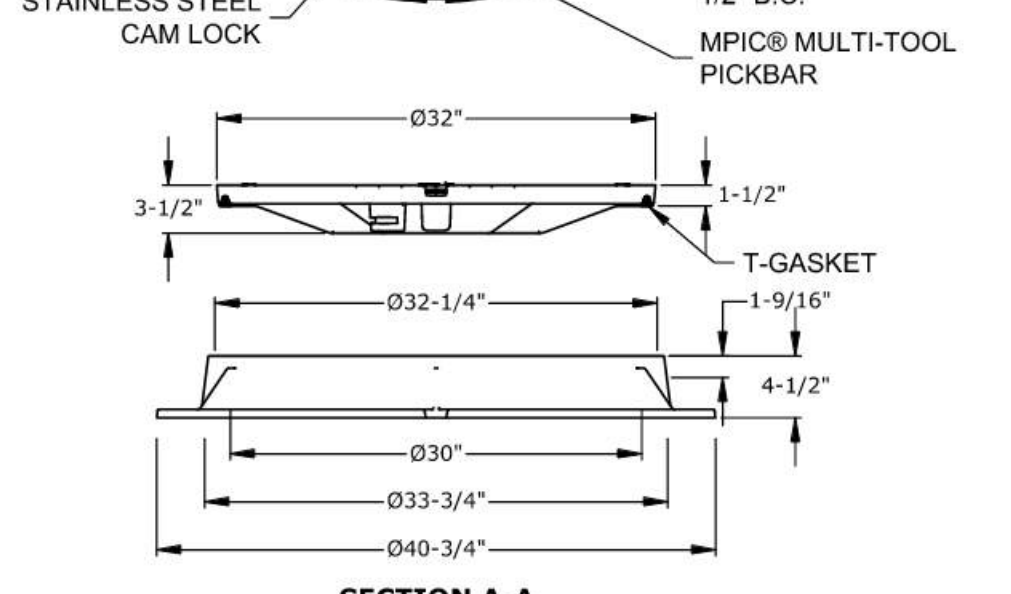
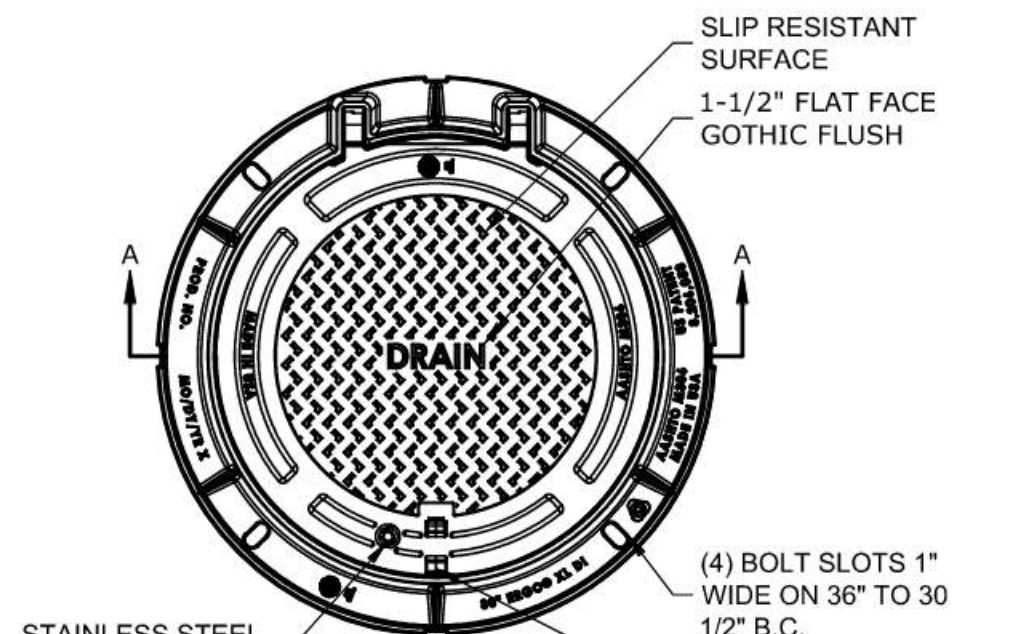




**NOTE:**  
 1. GRATE TO BE CAST IRON (NHDOT TYPE B)  
 2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

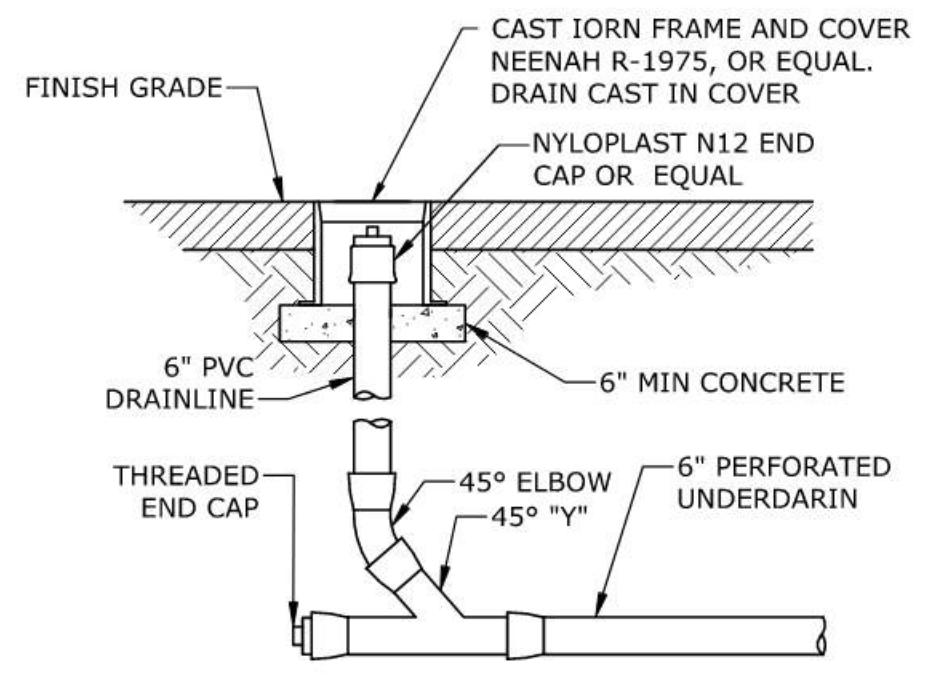


**CATCH BASIN FRAME & GRATE**  
NO SCALE

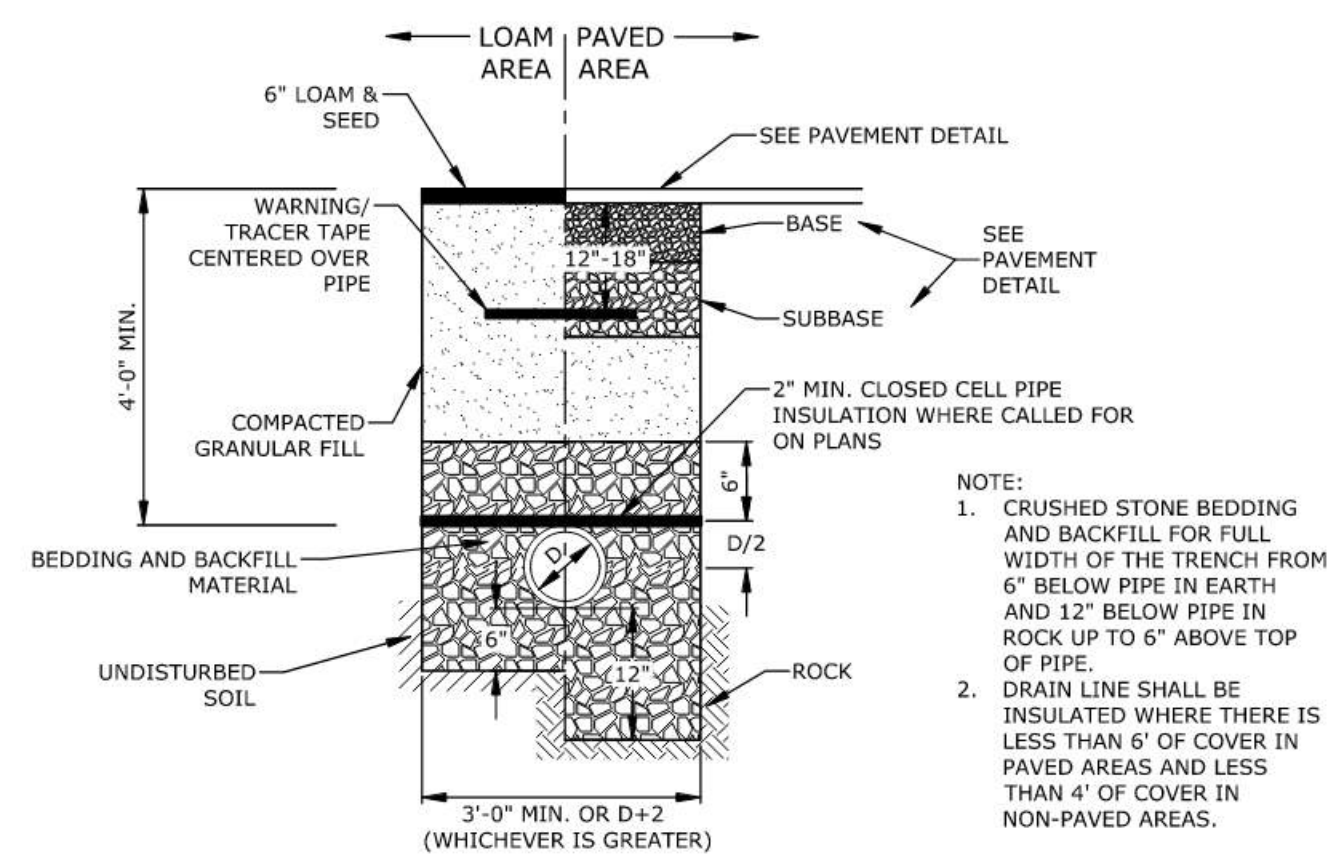


**NOTES:**  
 1. MANHOLE FRAME AND COVER SHALL BE 32" HINGED ERGO XL BY EJ CO.  
 2. ALL DIMENSIONS ARE NOMINAL.  
 3. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:  
 A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.  
 B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF 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.  
 4. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN THE CENTER OF THE COVER.

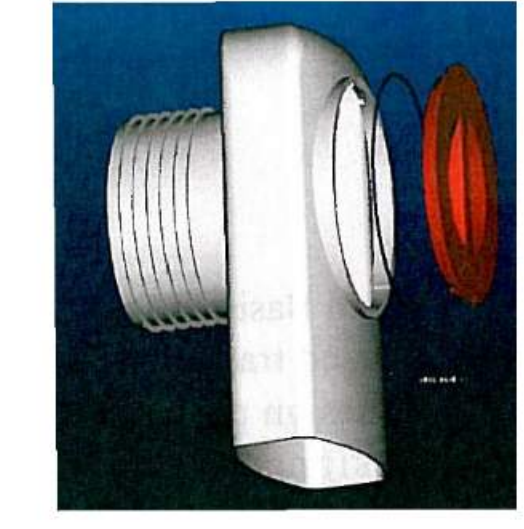
**DRAIN MANHOLE FRAME & COVER**  
NO SCALE



**DRAIN CLEAN-OUT**  
NO SCALE



**STORM DRAIN TRENCH**  
NO SCALE

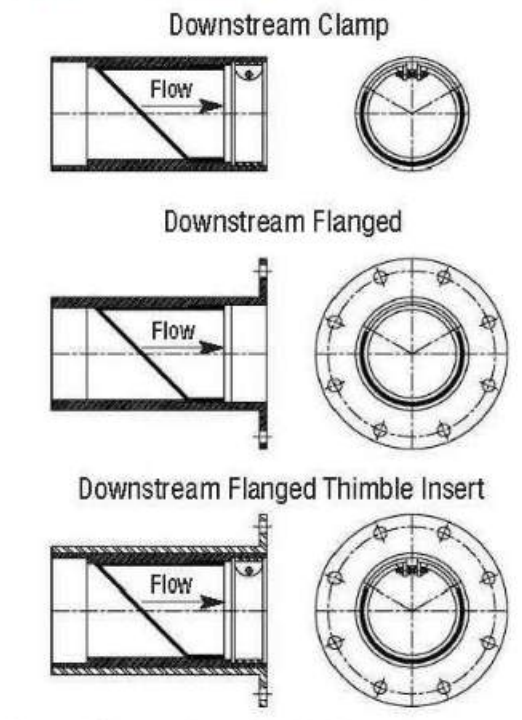


**NOTES:**  
 1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)  
 2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.  
 3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP

**"ELIMINATOR" OIL FLOATING DEBRIS TRAP**  
NO SCALE

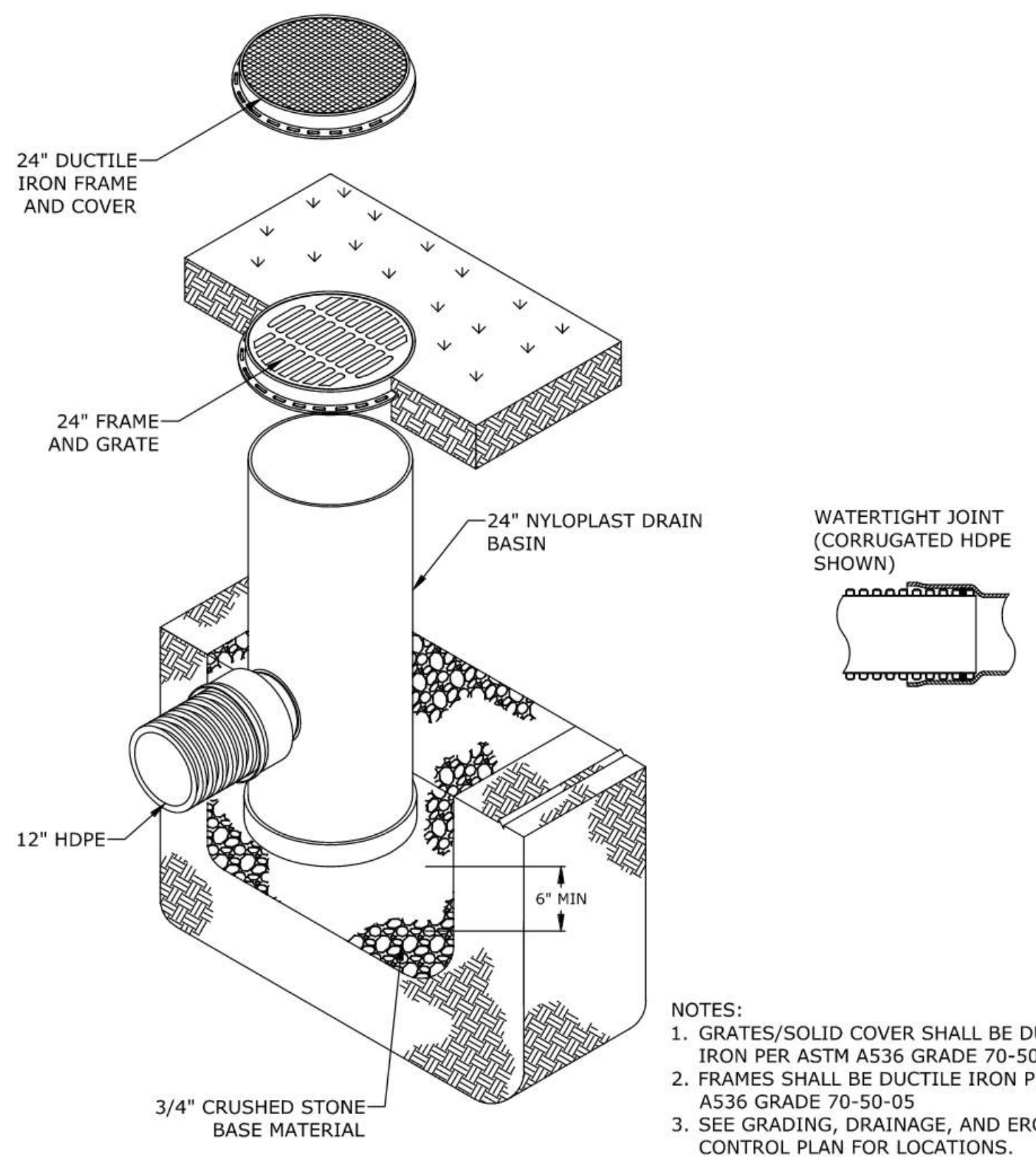
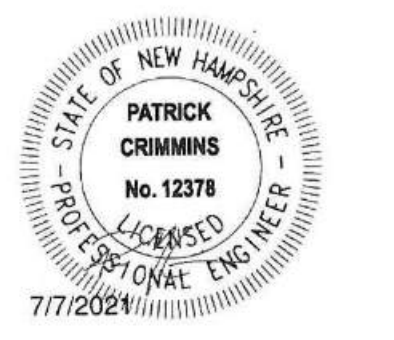
| NOMINAL PIPE SIZE I.D.** |             | OVERALL LENGTH** |             | NUMBER OF CLAMPS | CUFF DEPTH |             | BACK PRESSURE RATING |        |
|--------------------------|-------------|------------------|-------------|------------------|------------|-------------|----------------------|--------|
| Inches                   | Millimeters | Inches           | Millimeters |                  | Inches     | Millimeters | Feet                 | Meters |
| 18                       | 450         | 31               | 787         | 1                | 4          | 102         | 20                   | 6      |

**Mounting Styles and Configurations**



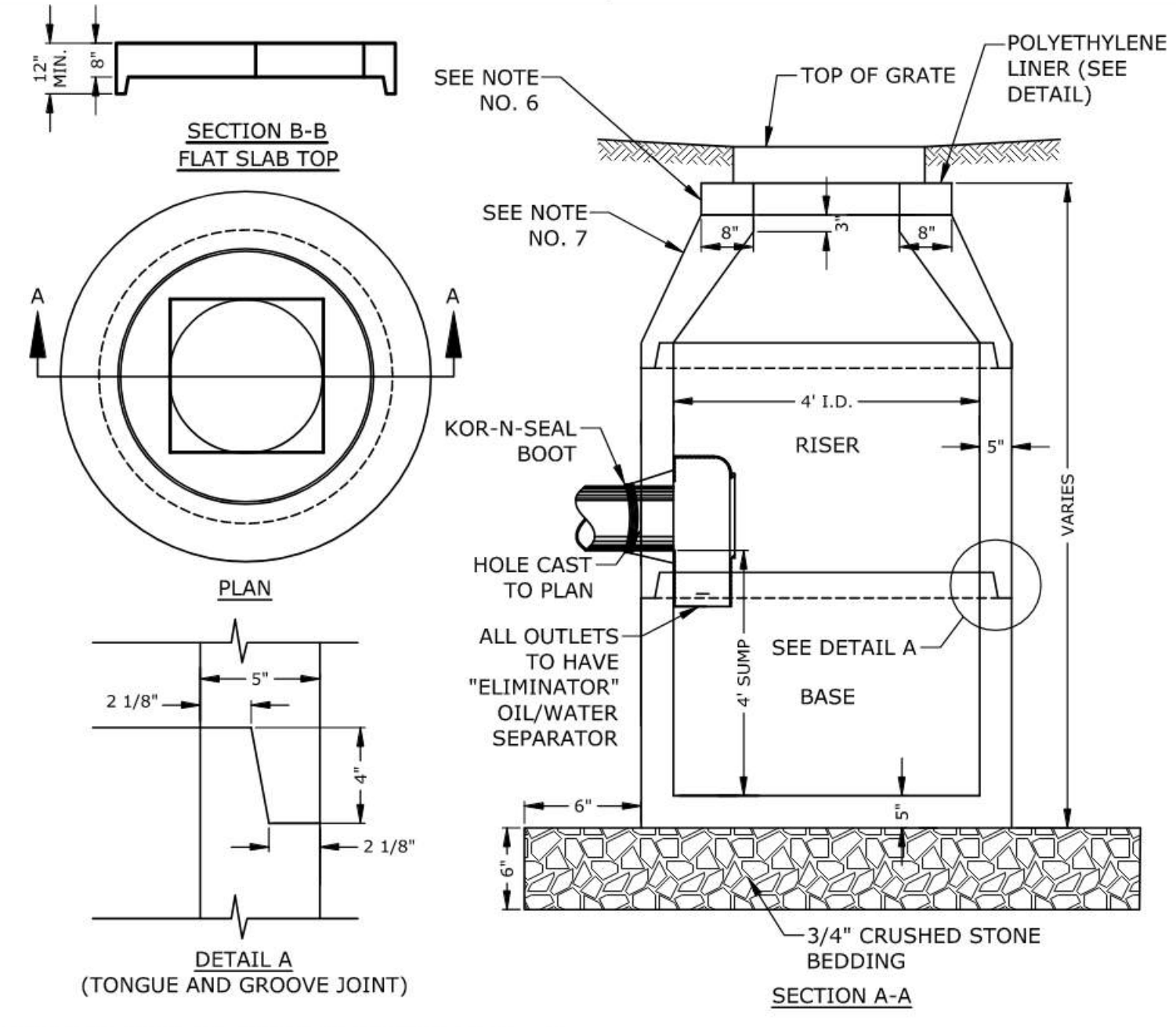
Flange shape and bolt pattern can be customized. Flangeless thimble inserts are available.

**TYPICAL BACK FLOW PREVENTER**  
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 LOCATIONS.

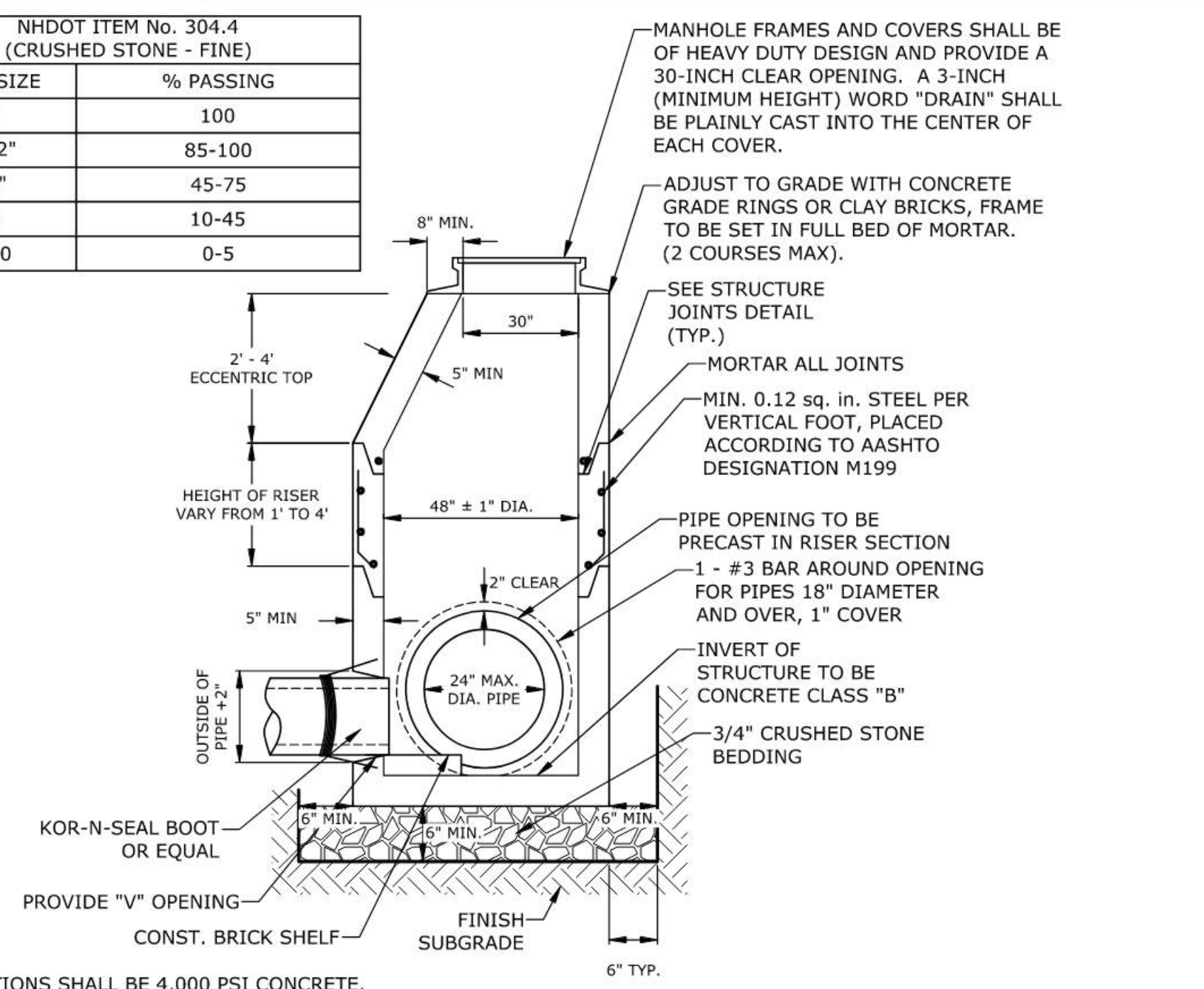
**YARD DRAIN**  
NO SCALE



**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.  
 13. THE INSIDE OF THE CONCRETE STRUCTURE SHALL BE TREATED WITH A SILOXANE COATING AND SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. SILOXANE COATING SHALL BE SIKAGARD-705L OR APPROVED EQUAL.

**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 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.  
 11. THE INSIDE OF THE CONCRETE STRUCTURE SHALL BE TREATED WITH A SILOXANE COATING AND SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. SILOXANE COATING SHALL BE SIKAGARD-705L OR APPROVED EQUAL.

**4' DIAMETER DRAIN MANHOLE**  
NO SCALE

**Proposed Mixed Use Development**

CPI Management, LLC

53 Green Street  
Portsmouth, NH

| MARK | DATE      | DESCRIPTION         |
|------|-----------|---------------------|
| E    | 7/7/2021  | PB Submission       |
| D    | 5/19/2021 | TAC Resubmission    |
| C    | 4/21/2021 | TAC Resubmission    |
| B    | 3/22/2021 | TAC & CC Submission |
| A    | 1/27/2021 | CC Work Session     |

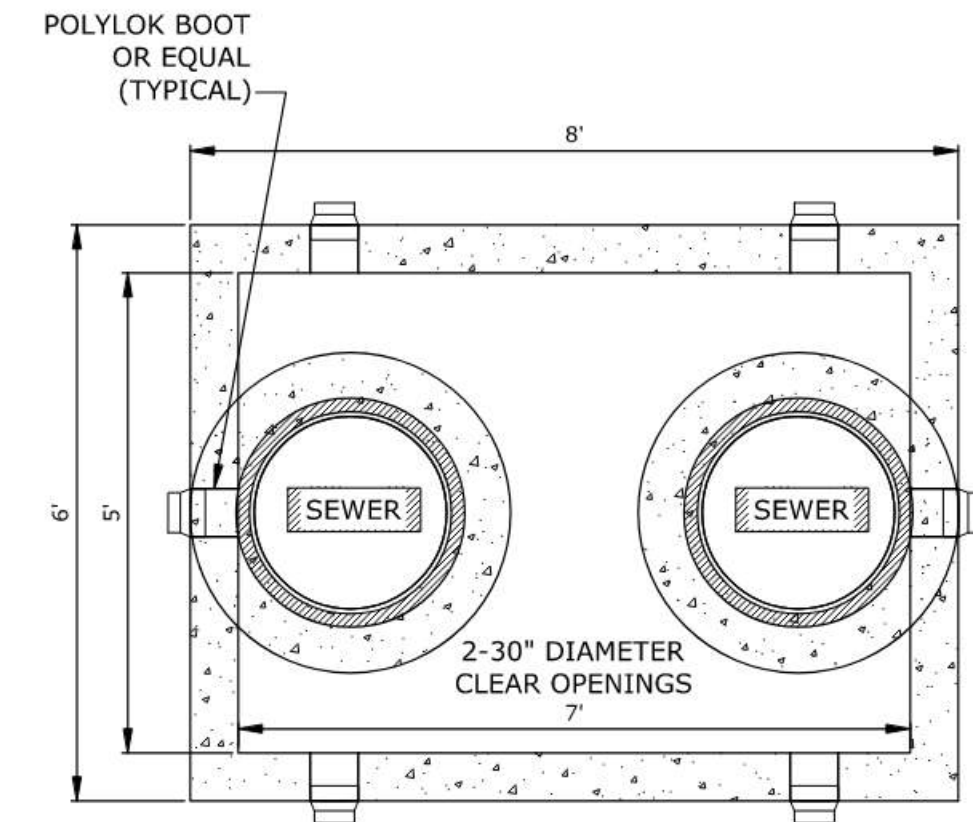
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| DATE:       | January 27, 2021     |
| FILE:       | C0960-011_C-DTLS.DWG |
| DRAWN BY:   | AFS                  |
| CHECKED:    | NAH/PMC              |
| APPROVED:   | BLM                  |

DETAILS SHEET

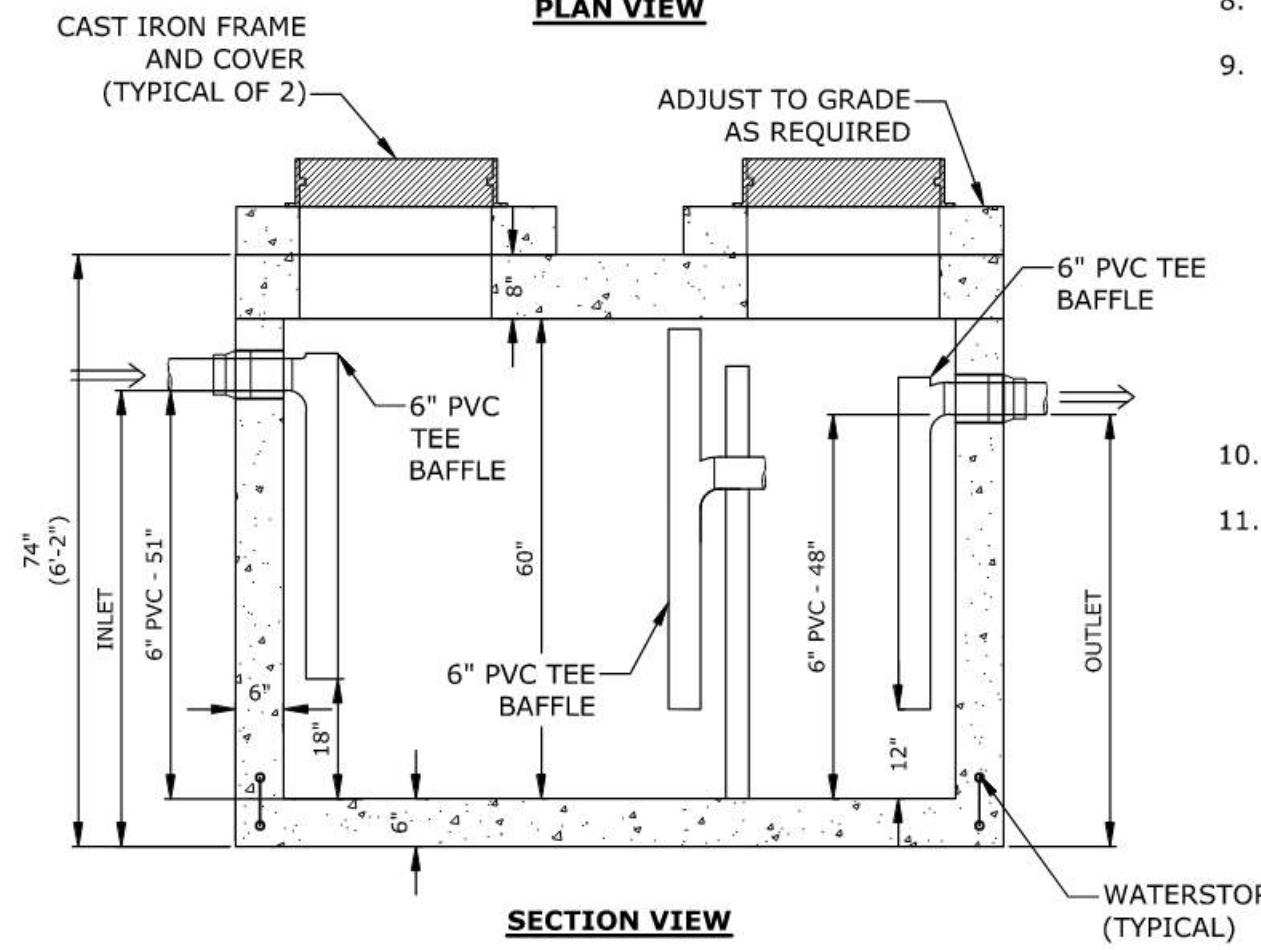
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C-504





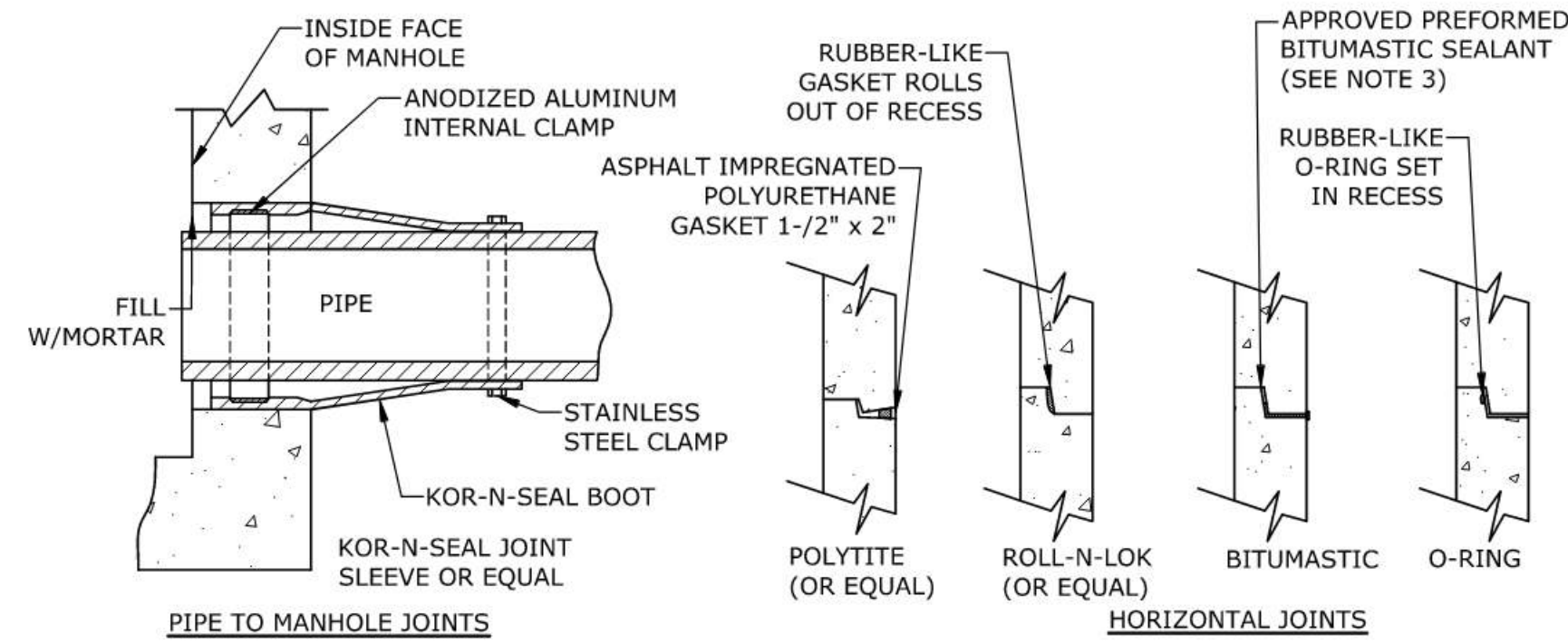
**PLAN VIEW**



**SECTION VIEW**

**1,000 GALLON GREASE TRAP**  
NO SCALE

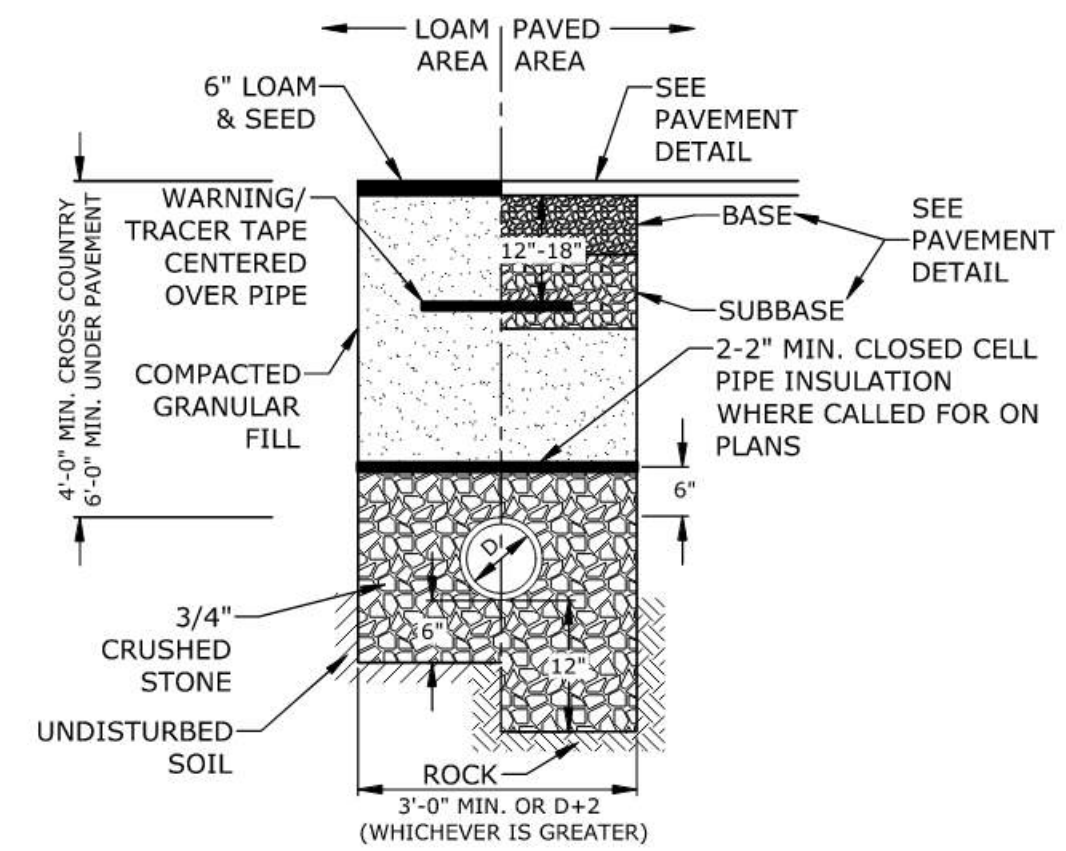
- NOTES:**
1. STEEL REINFORCEMENT SHALL CONFORM TO LATEST ASTM SPECIFICATIONS: ASTM-A615 GRADE 60 REBAR.
  2. CONCRETE SHALL BE  $F_c=5,000$  PSI @ 28 DAYS MINIMUM.
  3. FLEXIBLE SLEEVES SHALL BE PROVIDED ON ALL PIPE CONNECTIONS.
  4. JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
  5. INLET SHALL PENETRATE AT LEAST 9" BELOW THE LIQUID LEVEL, BUT NOT DEEPER THAN THE OUTLET BAFFLE.
  6. OUTLET SHALL EXTEND BELOW THE SURFACE OF THE LIQUID EQUAL TO 40% OF THE LIQUID DEPTH (19").
  7. DESIGN LOADING SHALL BE: AASHTO-HS20-44, ASTM C-890-06.
  8. DESIGN SPECIFIED AS: ASTM C-1227-08, ASTM C-913-08.
  9. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS WITHIN CITY RIGHT OF WAY SHALL BE CITY STANDARD HINGE COVERS MANUFACTURED BY EJ. FRAMES AND COVERS WILL BE PURCHASED FROM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. ALL OTHER MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
  10. GREASE TRAP SHALL BE PHOENIX PRECAST CONCRETE P/N: C-6420 OR EQUAL.
  11. TANK SHALL BE PUMPED AS NEEDED.



**PIPE TO MANHOLE JOINTS**

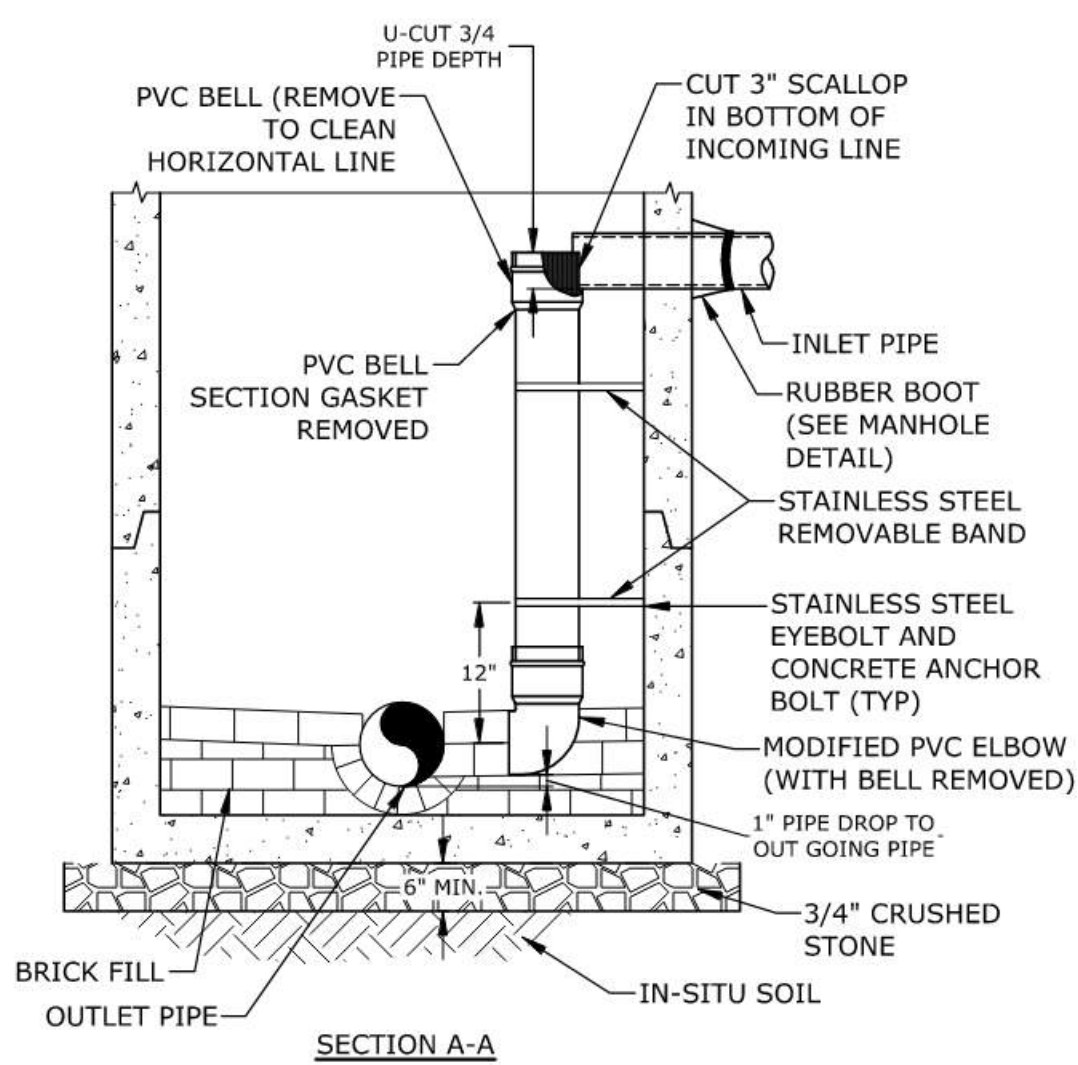
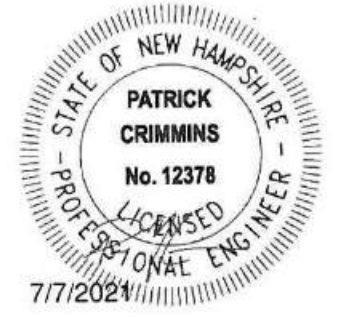
**MANHOLE JOINTS**  
NO SCALE

- NOTES:**
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
  2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
  3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.
  4. ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

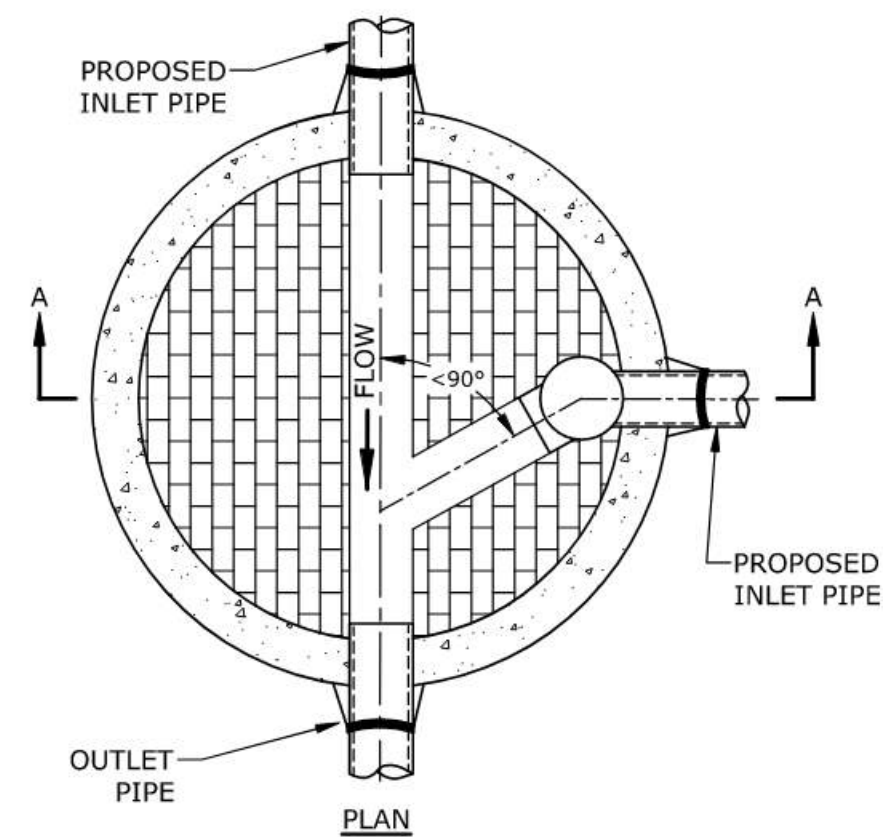


**SEWER SERVICE TRENCH**  
NO SCALE

- NOTE:**
1. CRUSHED STONE BEDDING FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK. CRUSHED STONE SHALL ALSO COMPLETELY ENCASE THE PIPE AND COVER THE PIPE TO A GRADE 6" OVER THE TOP OF THE PIPE FOR THE ENTIRE WIDTH OF THE TRENCH.
  2. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

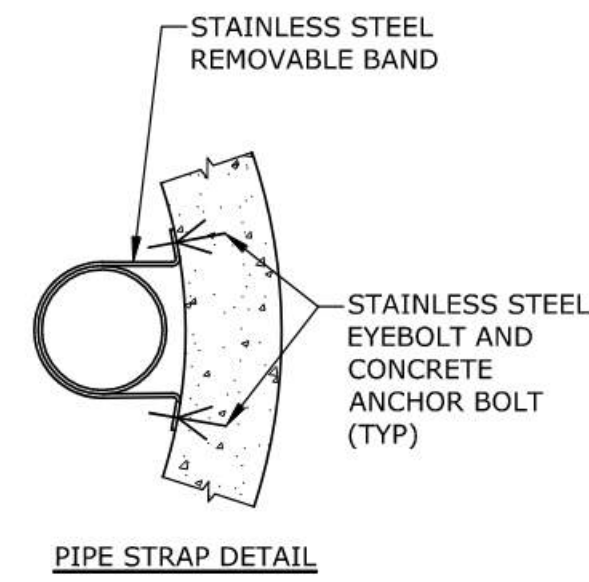


**SECTION A-A**

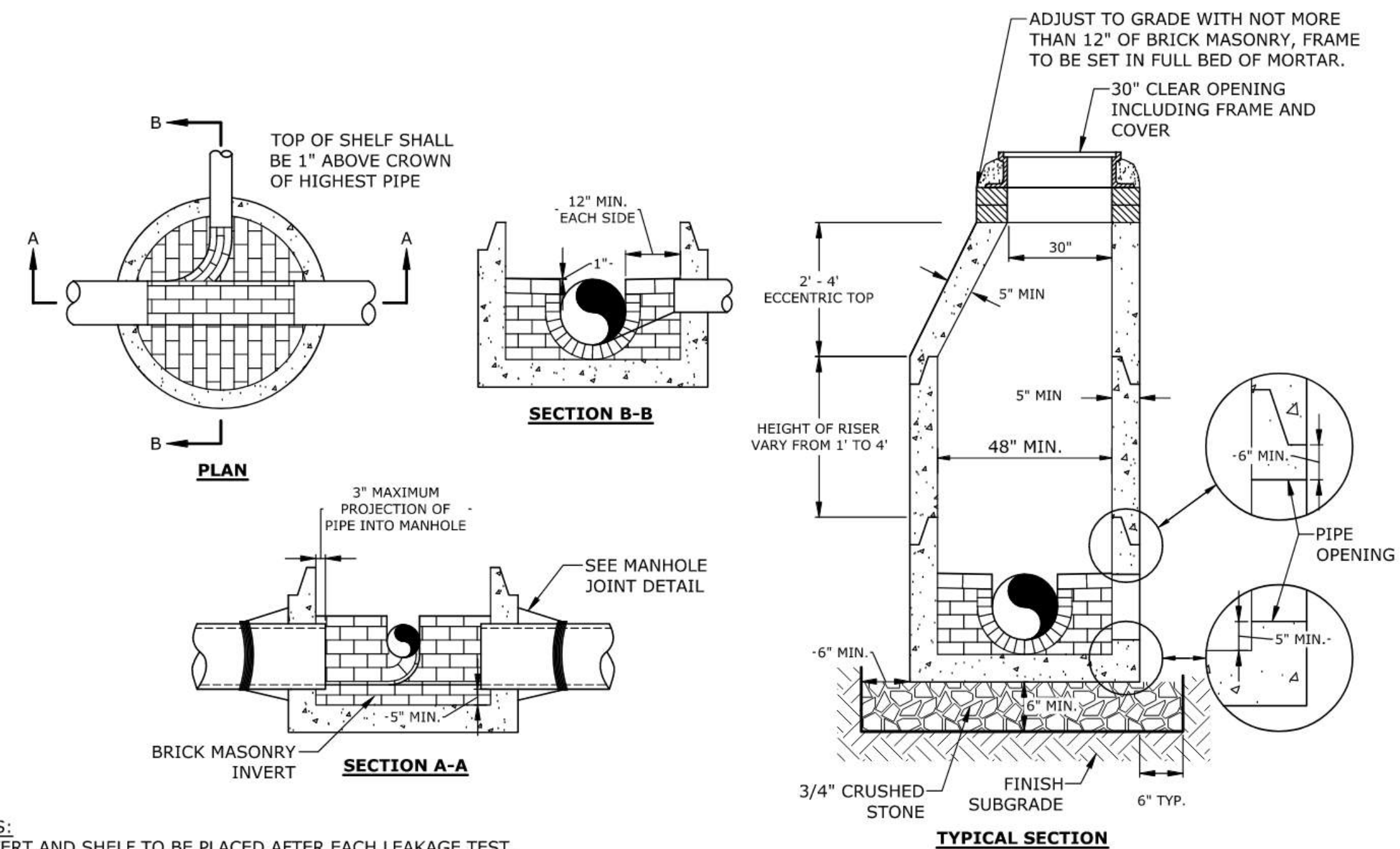


- NOTES:**
1. RISER PIPE AND FITTINGS SHALL BE THE SAME DIAMETER AS THE INLET PIPE AND SHALL BE CONSTRUCTED OF SDR35 PVC PIPE.
  2. SANITARY SEWER SHALL BE INSTALLED PER THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARDS.
  3. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

**INSIDE DROP MANHOLE**  
NO SCALE



**PIPE STRAP DETAIL**



**SEWER MANHOLE**  
NO SCALE

- NOTES:**
1. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
  2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
  3. INVERT BRICKS SHALL BE LAID ON EDGE.
  4. TWO (2) COATS OF BITUMINOUS WATERPROOF COATING SHALL BE APPLIED TO ENTIRE EXTERIOR OF MANHOLE.
  5. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS WITHIN CITY RIGHT OF WAY SHALL BE CITY STANDARD HINGE COVERS MANUFACTURED BY EJ. FRAMES AND COVERS WILL BE PURCHASED FROM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. ALL OTHER MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
  6. HORIZONTAL JOINTS SHALL BE SEALED FOR WATER TIGHTNESS USING A DOUBLE ROW OF ELASTOMERIC OR MASTIC-LIKE SEALANT.
  7. BARREL AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE DESIGNED FOR H20 LOADING, AND CONFORMING TO ASTM C478-06.

**Proposed Mixed Use Development**

**CPI Management, LLC**

53 Green Street  
Portsmouth, NH

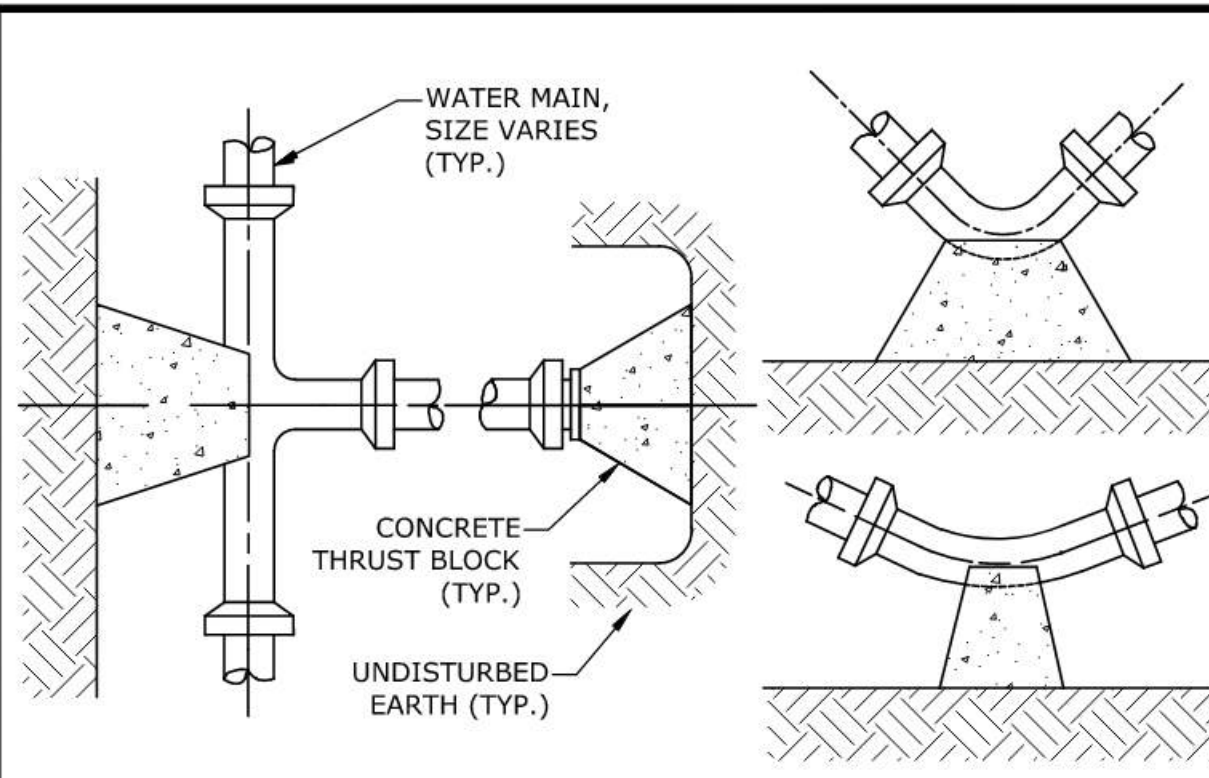
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| PROJECT NO: | C0960-011            |                     |
| DATE:       | January 27, 2021     |                     |
| FILE:       | C0960-011_C-DTLS.DWG |                     |
| DRAWN BY:   | AFS                  |                     |
| CHECKED:    | NAH/PMC              |                     |
| APPROVED:   | BLM                  |                     |

**DETAILS SHEET**

SCALE: AS SHOWN

**C-505**

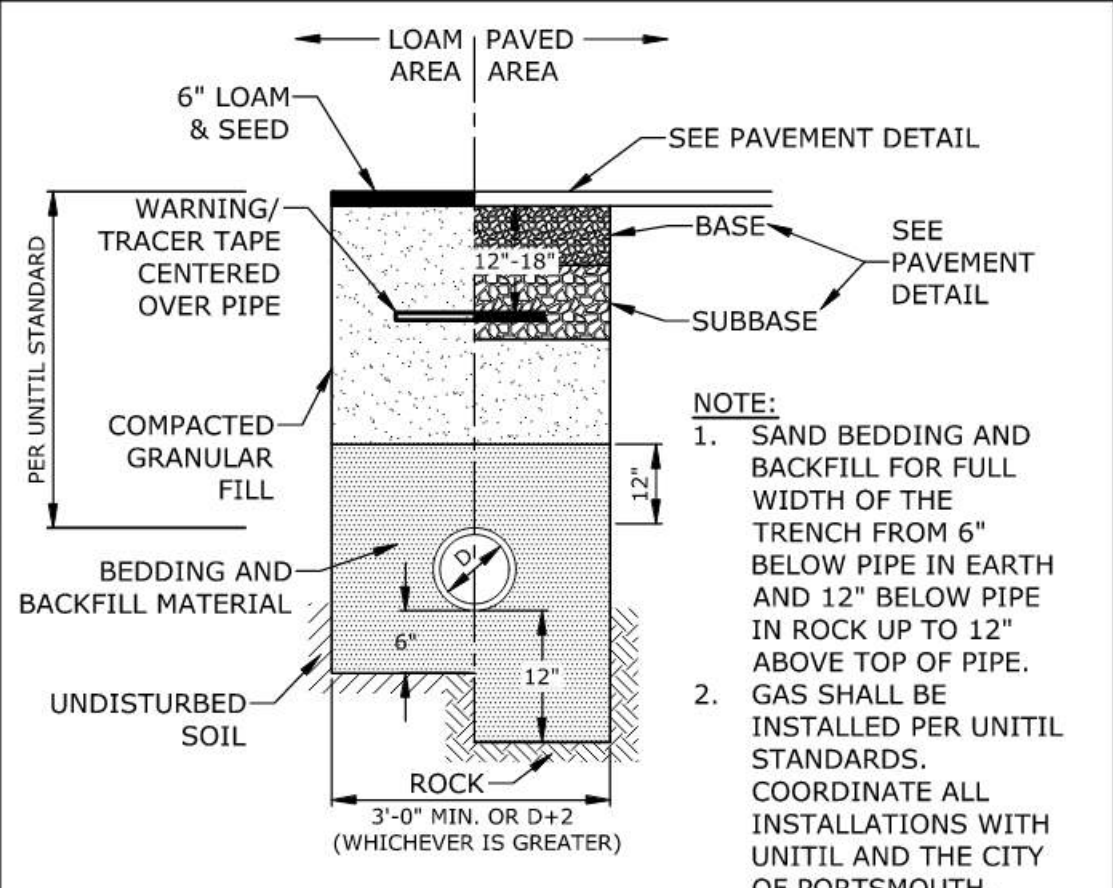




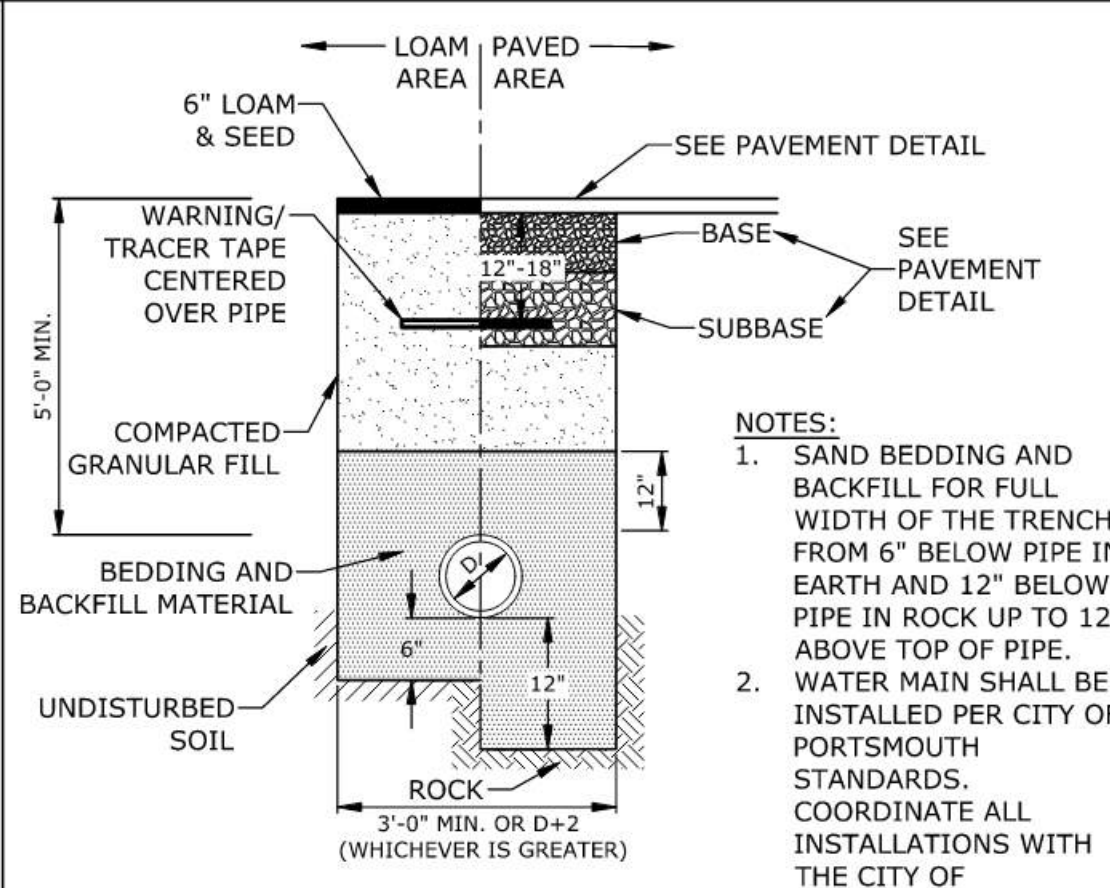
**THRUST BLOCKING DETAIL**  
NO SCALE

| 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  |

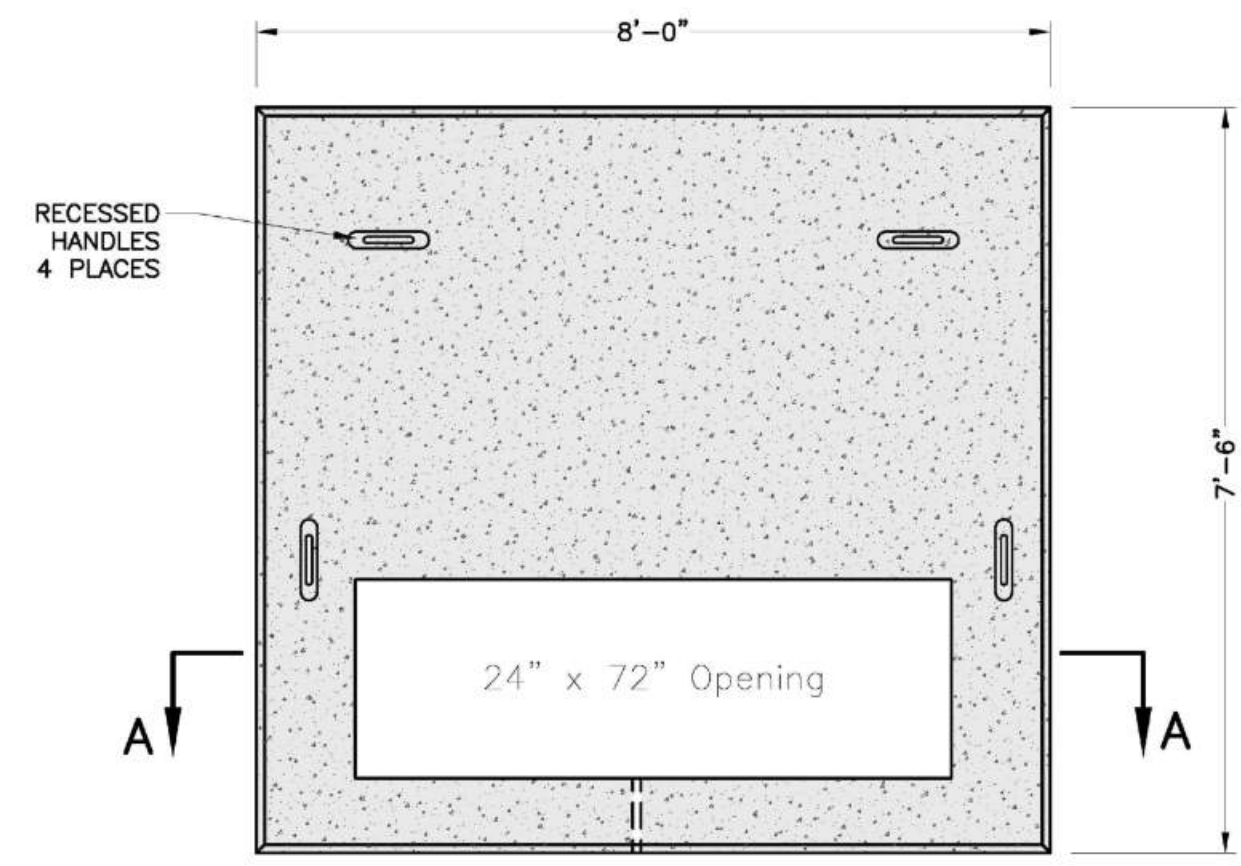
- TEST PRESSURE = 200PSI
- NOTES:
- POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
  - 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.
  - INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE WITH CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS.



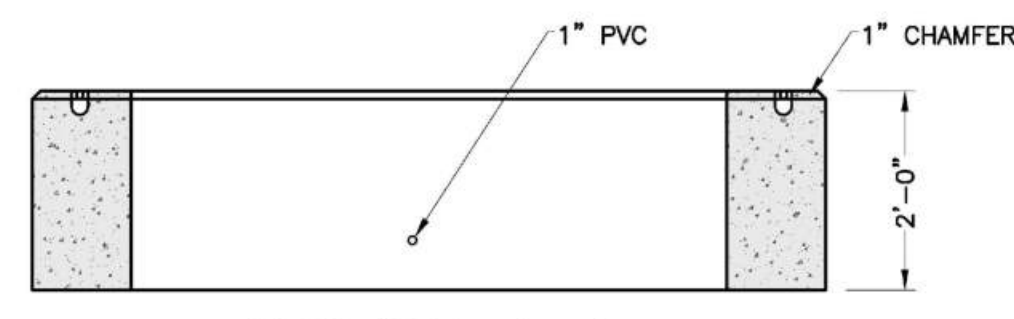
**GAS TRENCH**  
NO SCALE



**WATER TRENCH**  
NO SCALE



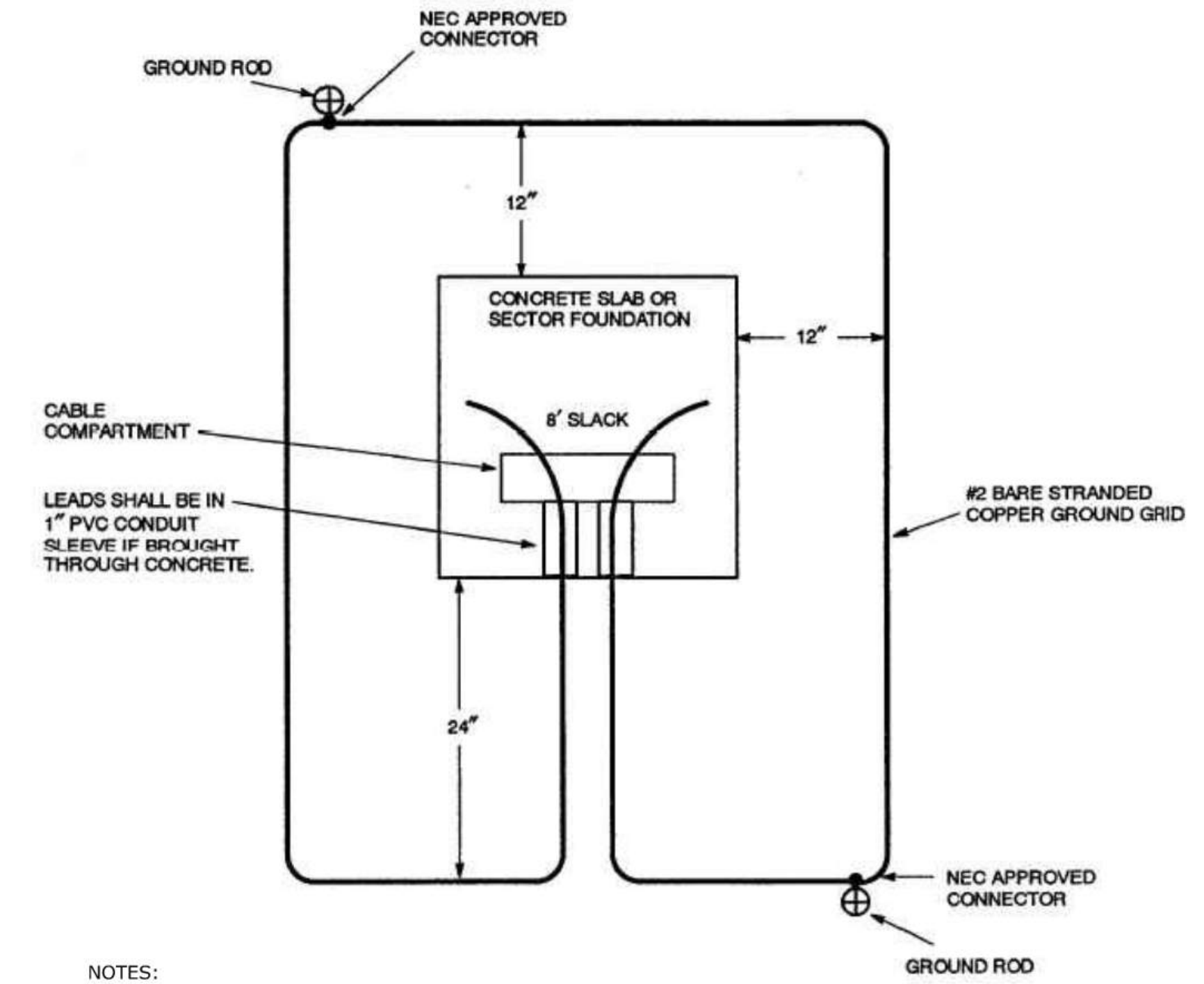
**PLAN**



**SECTION A-A**

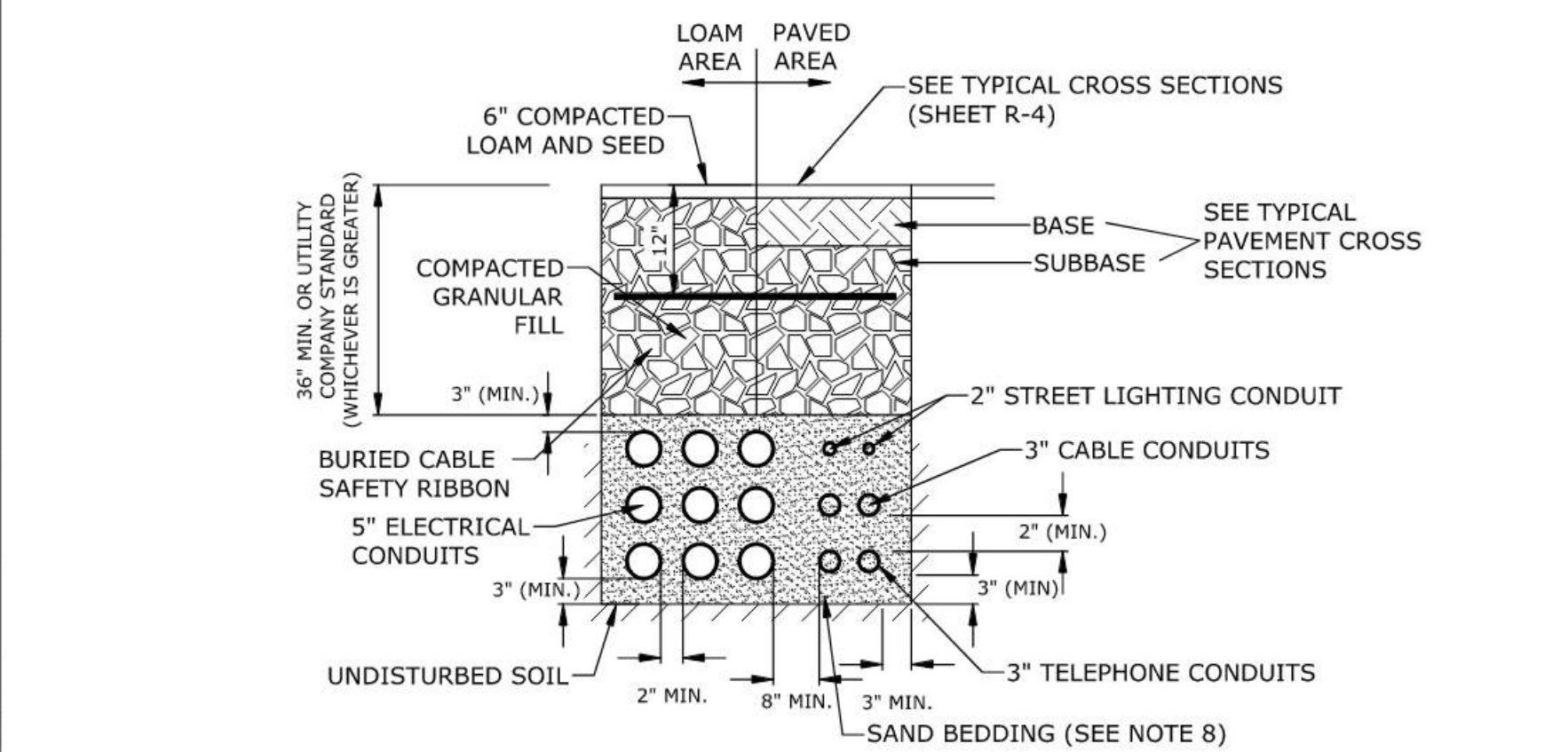
- NOTES:
- DIMENSIONS SHOWN REPRESENT TYPICAL REQUIREMENTS. MANHOLE LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED WITH EVERSOURCE PRIOR TO CONSTRUCTION
  - CONCRETE MINIMUM STRENGTH - 4,000 PSI @ 28 DAYS
  - STEEL REINFORCEMENT - ASTM A615, GRADE 60
  - PAD MEETS OR EXCEEDS EVERSOURCE SPECIFICATIONS

**3-PHASE TRANSFORMER PAD**  
NO SCALE

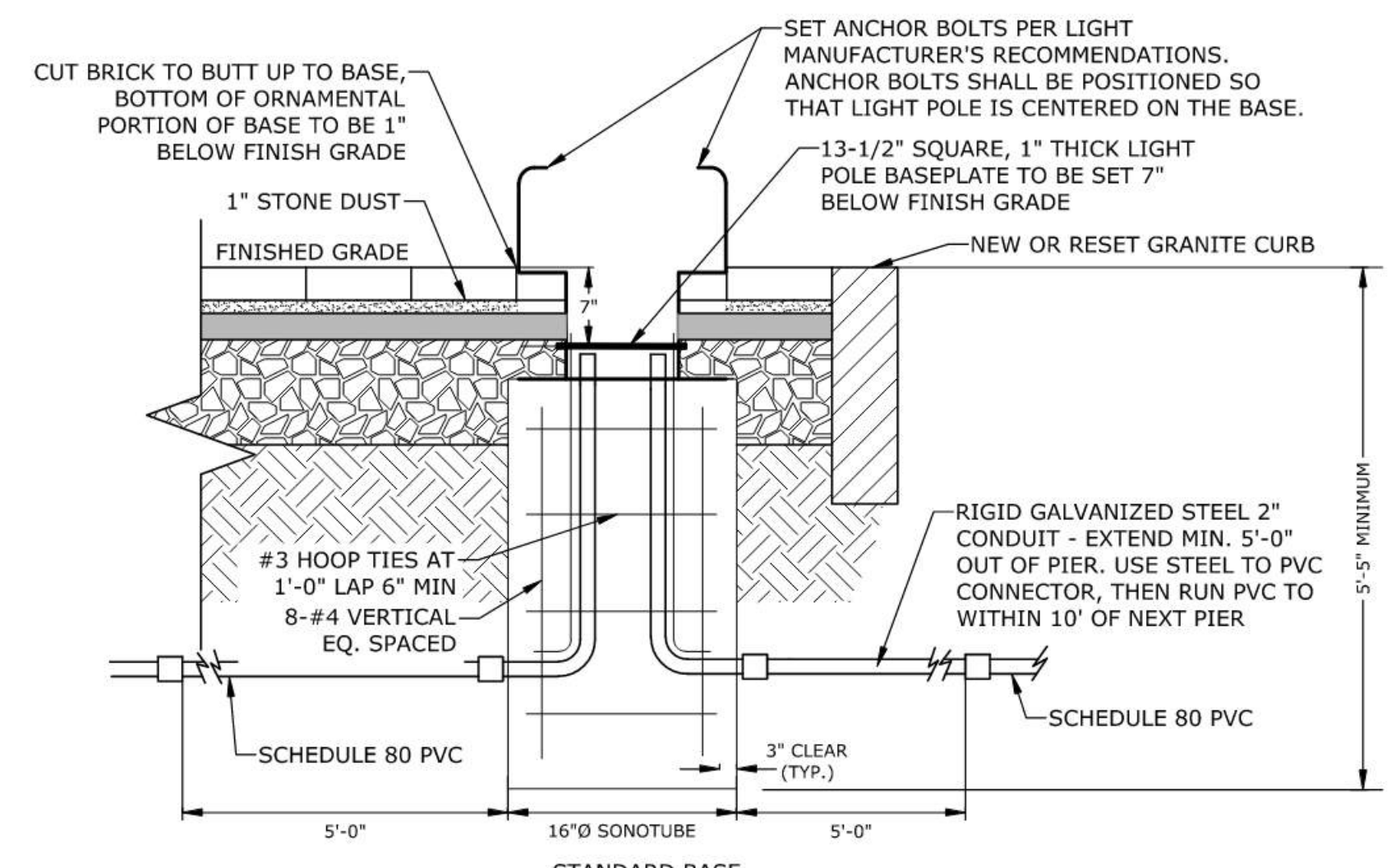


- NOTES:
- THE GROUND GRID SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR AND IS TO BE BURIED AT LEAST 12 INCHES BELOW GRADE. EIGHT FEET OF EXTRA WIRE FOR EACH GROUND GRID LEG SHALL BE LEFT EXPOSED IN THE CABLE COMPARTMENT TO ALLOW FOR THE CONNECTION TO THE TRANSFORMER. THE TWO 8-FOOT GROUND RODS MAY BE EITHER GALVANIZED STEEL OR COPPERWELD AND THEY SHALL BE CONNECTED TO THE GRID WITH NEC APPROVED CONNECTORS.

**PAD-MOUNTED EQUIPMENT GROUNDING GRID DETAIL**  
NO SCALE

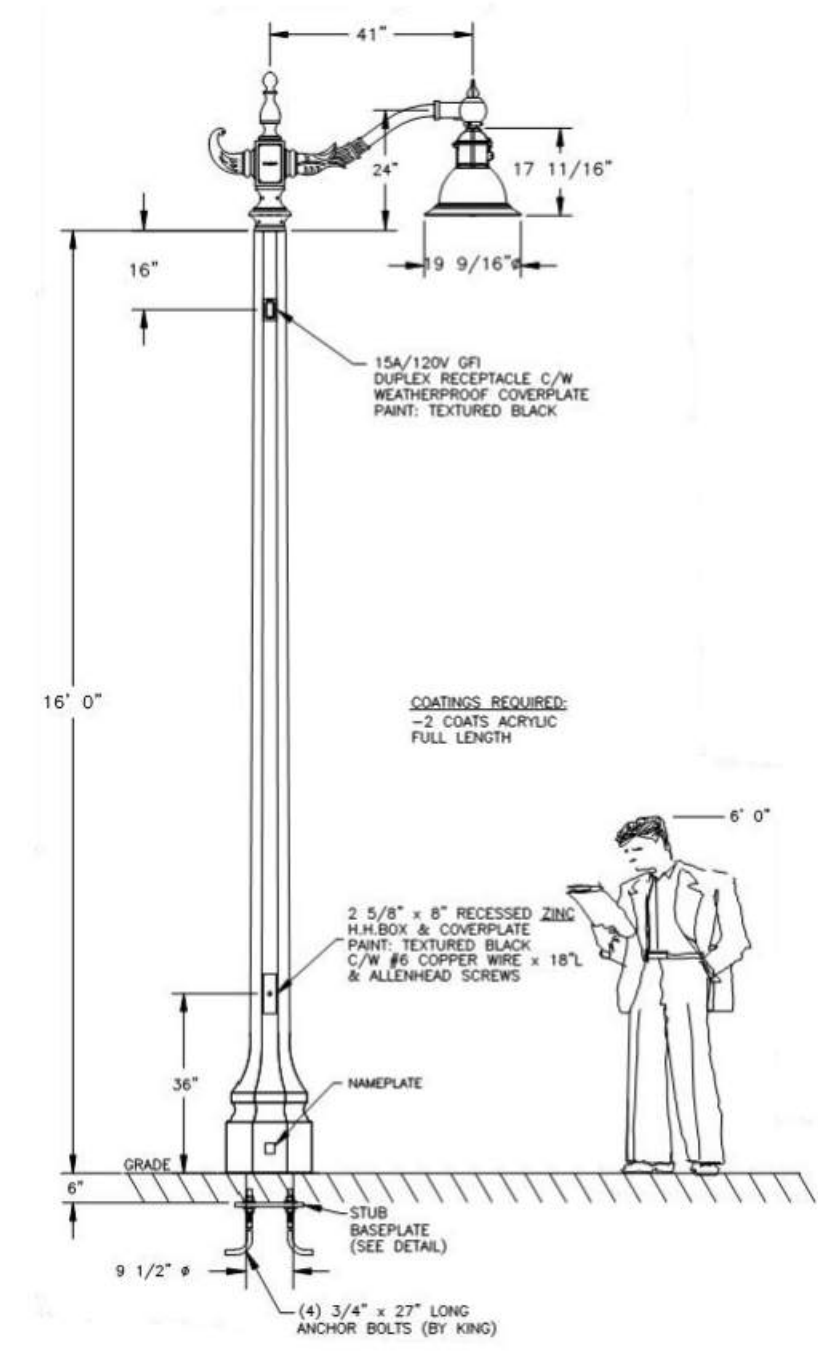


**ELECTRICAL AND COMMUNICATION CONDUIT**  
NO SCALE



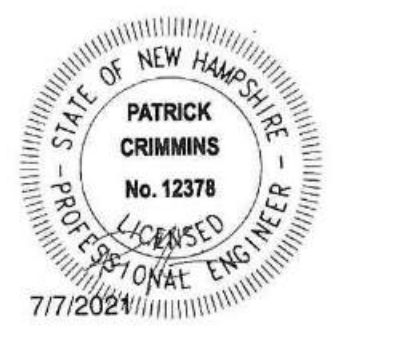
**NORTH END LIGHT FIXTURE BASE**  
NO SCALE

- NOTES:
- REFER TO ELECTRICAL PLANS FOR WIRING DETAILS.
  - CONCRETE: 4000 PSI, AIR ENTRAINED STEEL: 60 KSI
  - LIGHT POLE FOUNDATIONS SHALL BE PLACED PRIOR TO INSTALLATION OF BRICK PAVERS.
  - CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL, TO INCLUDE PERFORMANCE SPECIFICATIONS, CALCULATIONS AND NH LICENSED STRUCTURAL ENGINEER'S STAMP FOR LIGHT POLE FOUNDATION.
  - STANDARD BASE SHALL BE CONSTRUCTED UNLESS THERE IS CONFLICT WITH THE EXISTING DUCT BANK. SPREAD FOOTING BASE SHALL BE USED IN LIEU OF STANDARD BASE IN LOCATIONS WHERE TOP OF DUCT BANK ELEVATION WILL CONFLICT WITH STANDARD POLE BASE DEPTH. CONTRACTOR SHALL VERIFY LOCATIONS WHERE SPREAD FOOTINGS ARE REQUIRED PRIOR TO CONSTRUCTION. SEE NOTE#4 FOR SUBMITTAL REQUIREMENTS.



**DISTRICT STANDARD LIGHT POLE & FIXTURE**  
NO SCALE

- LUMINAIRE SPECIFICATIONS:
- CATALOGUE NO.: K729-P4FL-II-60(SSL)  
-7030-120-277-3K S/F KPL20
- GLOBE MAT'L: FLAT ARRAY, CLEAR FLAT LENS  
TYPE II
- WATTAGE: 60W (7030 SERIES)
- LIGHT SOURCE: SOLID STATE LIGHTING
- LINE VOLTAGE: 120-277V
- CCT: 3000K
- PAINT: TEXTURED BLACK
- OPTIONS: S/F KPL-20 LEVELING DEVICE
- ARM SPECIFICATIONS:
- CATALOGUE NO.: (MOD.) KA72-T-1-3
- MATERIAL: ALUMINUM
- PAINT: TEXTURED BLACK
- OPTIONS: KPL20 LEVELING DEVICE
- POLE SPECIFICATIONS:
- CATALOGUE NO.: KBH16-G-S11-SBP
- C/W 140-30/100 & DR
- OCTAGONAL
- ECLIPSE
- POLISHED
- POLE TOP: 6 3/8" FL/FL
- POLE BUTT: 9 1/2" Ø
- POLE LENGTH: 16' 6"
- APPROX. WEIGHT: 1,190 LBS.
- MIN. RACEWAY: 1 1/8" Ø



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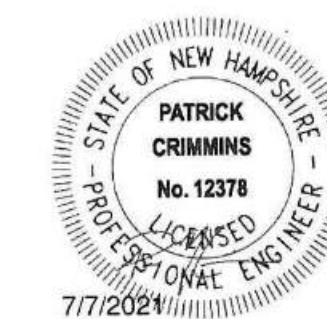
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**DETAILS SHEET**

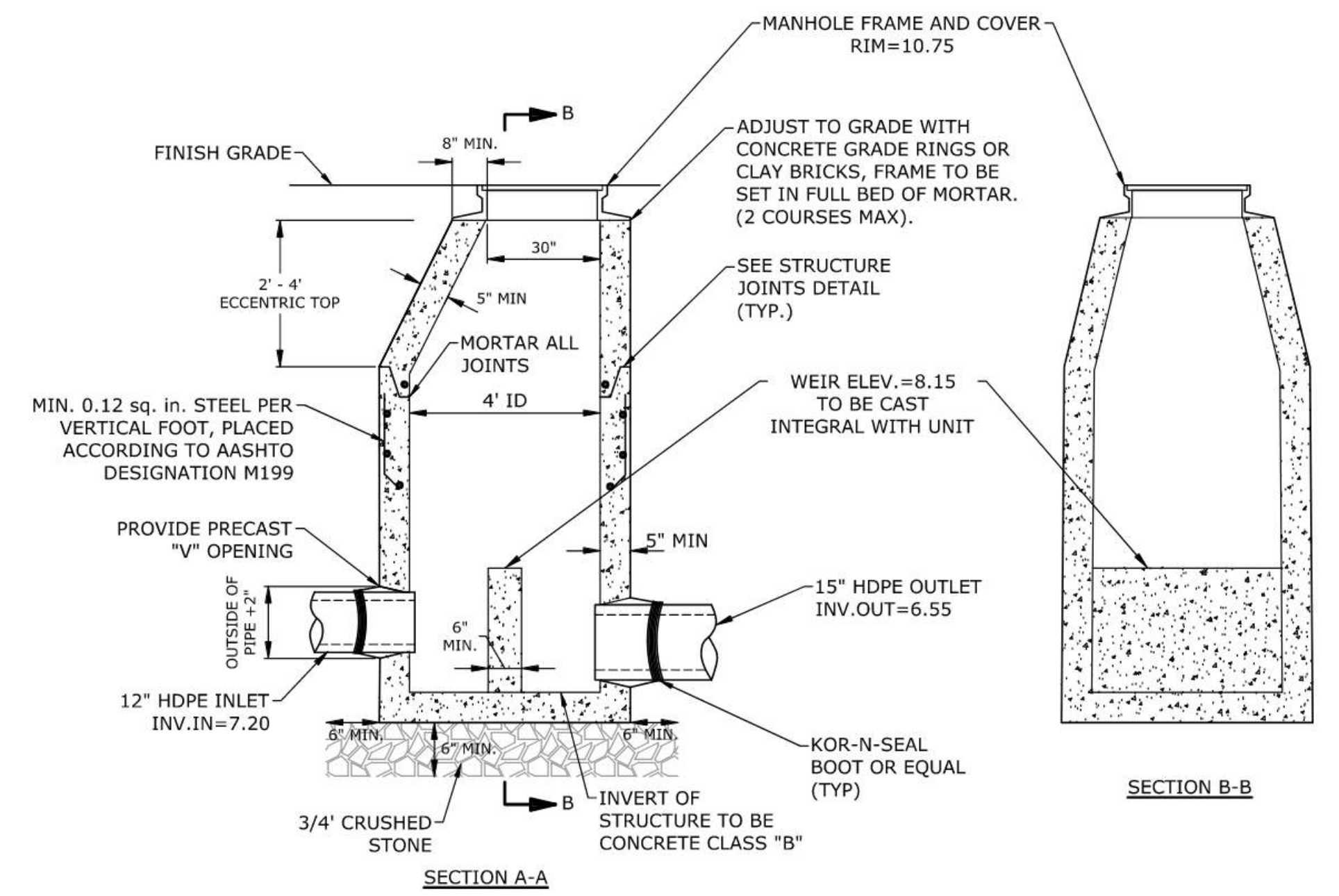
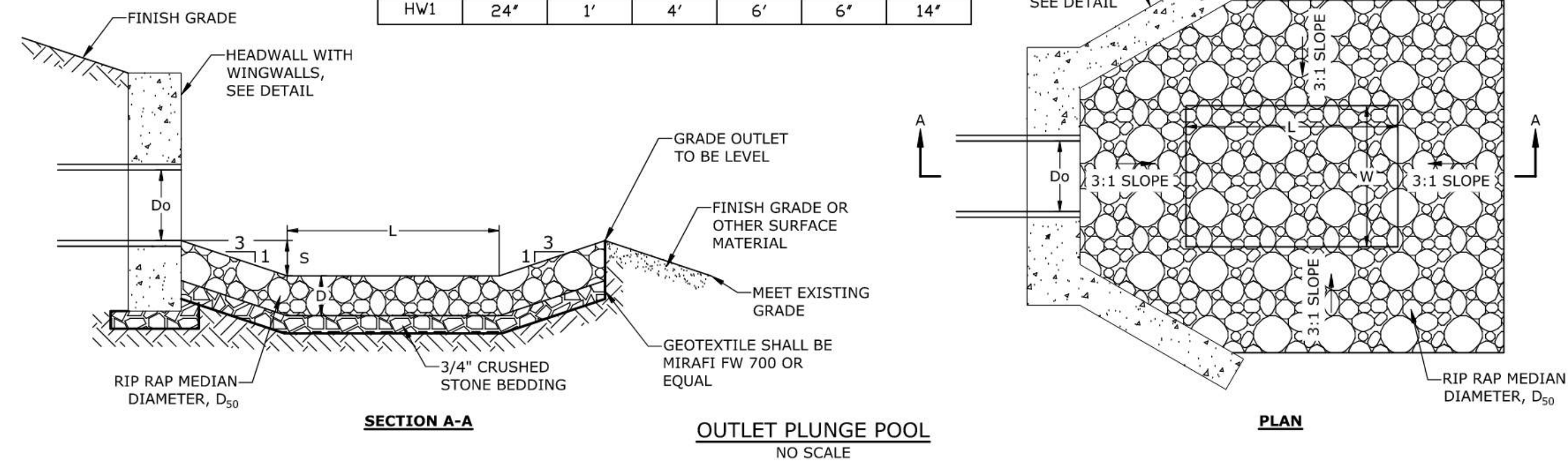
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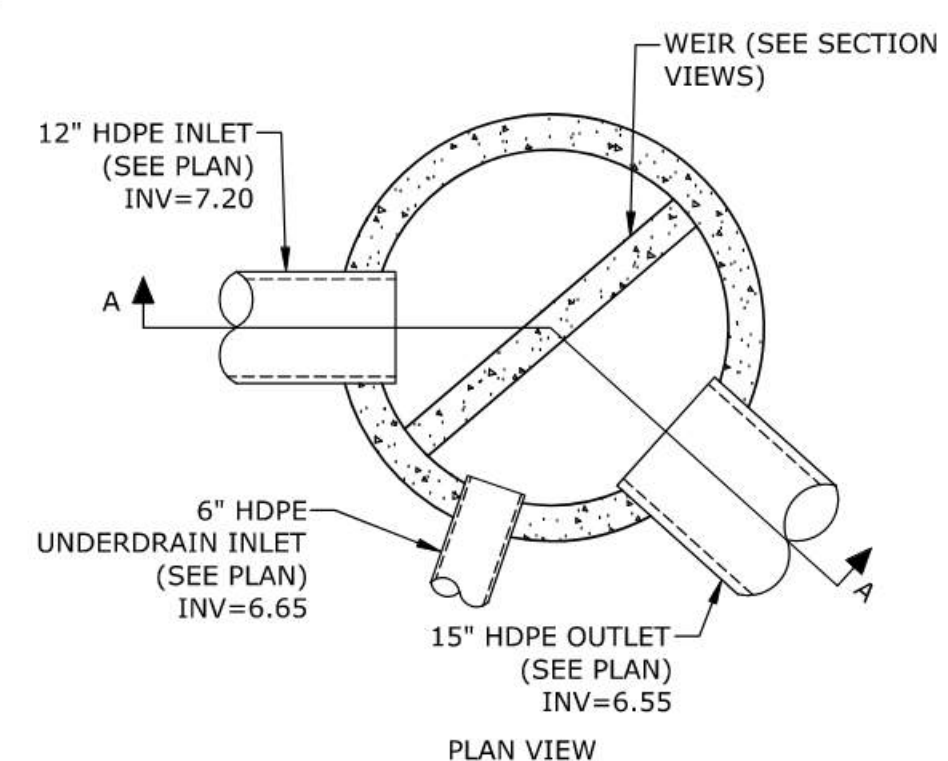




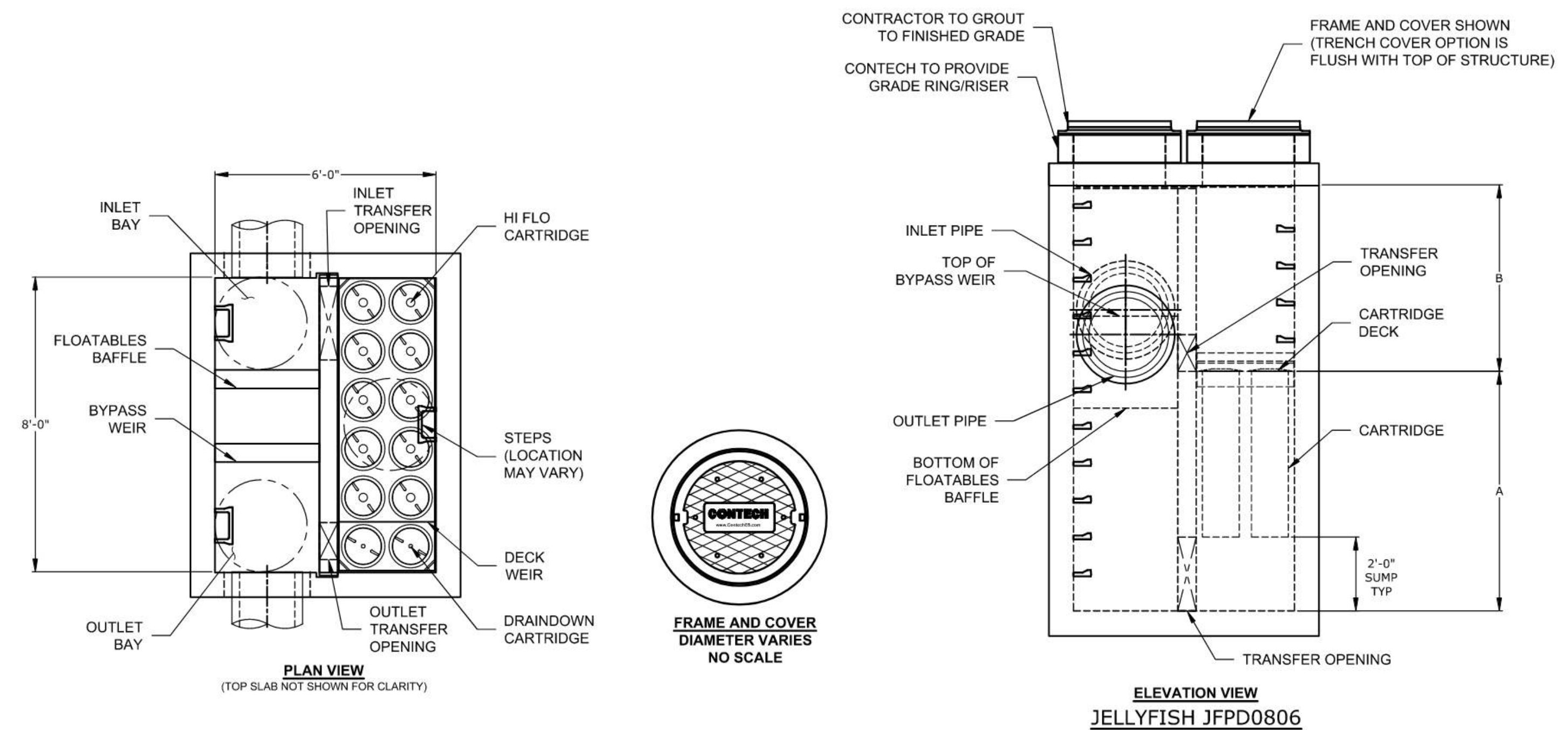
| OUTLET PLUNGE POOL SIZING |     |    |    |    |                 |     |
|---------------------------|-----|----|----|----|-----------------|-----|
| HW1                       | Do  | S  | W  | L  | D <sub>50</sub> | D   |
|                           | 24" | 1' | 4' | 6' | 6"              | 14' |



- NOTES:**
- ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
  - 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.
  - THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
  - THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
  - CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6\"/>



**OUTLET STRUCTURE DETAIL (POS1)**  
NO SCALE



- GENERAL NOTES:**
- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
  - FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. [www.contechES.com](http://www.contechES.com)
  - 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.
  - STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 7'-3\"/>

**JELLYFISH JFPD0806 - DESIGN NOTES**

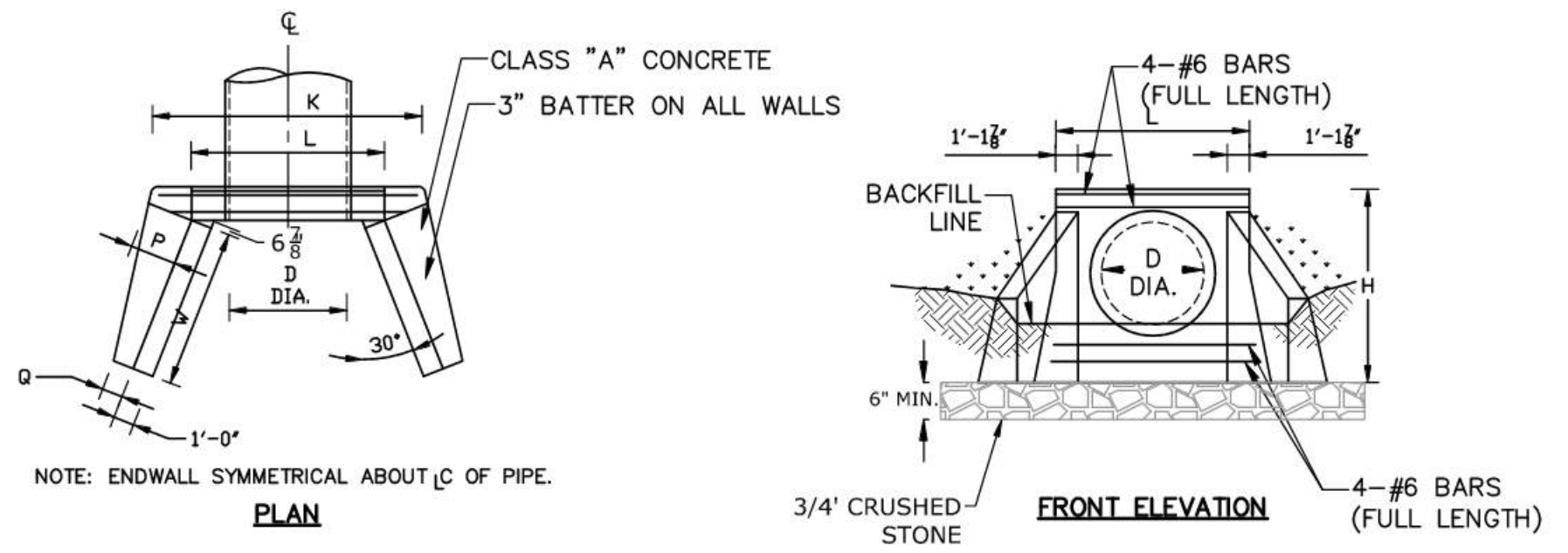
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.

| CARTRIDGE SELECTION                           | 54"           | 40"           | 27"           | 15"           |
|---|---------------|---------------|---------------|---------------|
| 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          |

**SITE SPECIFIC DATA REQUIREMENTS**

| STRUCTURE ID                       | JF-1     |
|------------------------------------|----------|
| MODEL SIZE                         | JFPD0806 |
| WATER QUALITY FLOW RATE (cfs)      | 0.95     |
| PEAK FLOW RATE (cfs)               | 8.50     |
| RETURN PERIOD OF PEAK FLOW (yrs)   | 25       |
| # OF CARTRIDGES REQUIRED (HF / DD) | 5/1      |
| CARTRIDGE SIZE                     | 54"      |

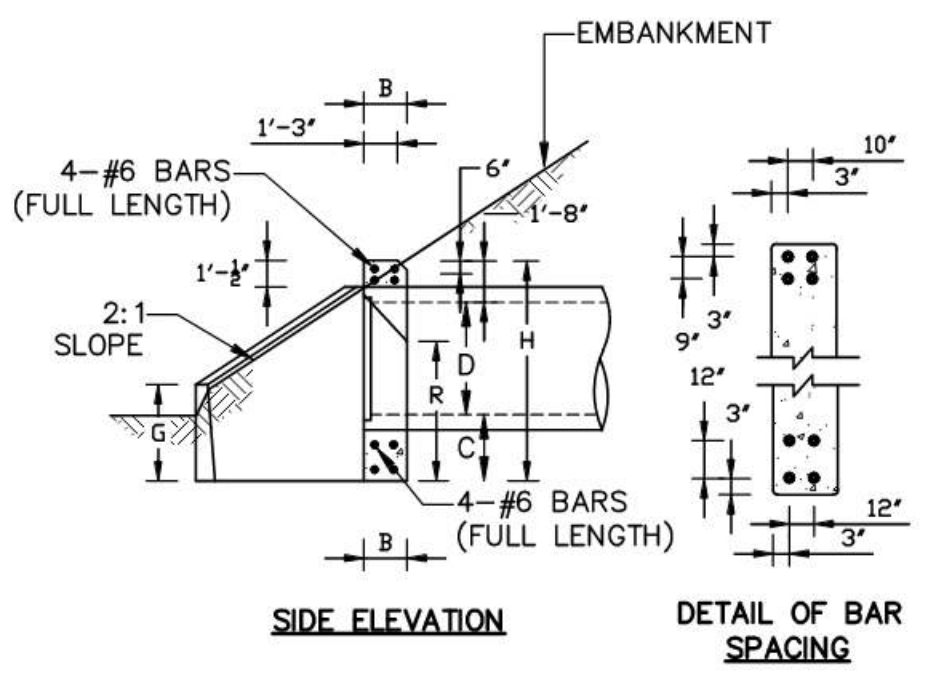
**JELLYFISH FILTER DETAIL (JF-1)**  
NO SCALE



**DIMENSIONS AND QUANTITIES FOR ONE WING TYPE ENDWALL**

| D           | B     | C     | G     | H          | K         | L         | P         | Q          | R         | W     | VOL. |
|-------------|-------|-------|-------|------------|-----------|-----------|-----------|------------|-----------|-------|------|
| IN. * FT-IN | FT-IN | FT-IN | FT-IN | FT-IN      | FT-IN     | FT-IN     | FT-IN     | FT-IN      | FT-IN     | FT-IN | CY   |
| 24 1'-6"    | 2'-0" | 3'-3" | 6'-9" | 9'-1 1/2"  | 7'-3 3/4" | 1'-4 1/2" | 0'-9 1/2" | 3'-4 1/2"  | 5'-5 1/2" | 5'-8" | 5.87 |
| 36 1'-6"    | 2'-0" | 3'-3" | 6'-8" | 9'-1 1/2"  | 7'-3 3/4" | 1'-4 1/2" | 0'-9 1/2" | 3'-4 1/2"  | 5'-5 1/2" | 5'-8" | 5.87 |
| 42 1'-6"    | 2'-0" | 3'-3" | 7'-2" | 9'-10 1/2" | 7'-9 1/2" | 1'-6 1/2" | 0'-9 1/2" | 3'-10 1/2" | 6'-7 1/2" | 6'-7" | 6.67 |

\* FOR D < 36" USE DIMENSIONS LISTED FOR D=36"



**HEADWALL WITH WINGWALLS**  
NO SCALE

**Jellyfish Filter**  
CONTECH ENGINEERED SOLUTIONS LLC  
www.contechES.com  
8025 Centre Pointe Dr., Suite 400, West Chester, OH 45399  
800-338-1122 513-645-7000 513-645-7993 FAX

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DETAILS SHEET

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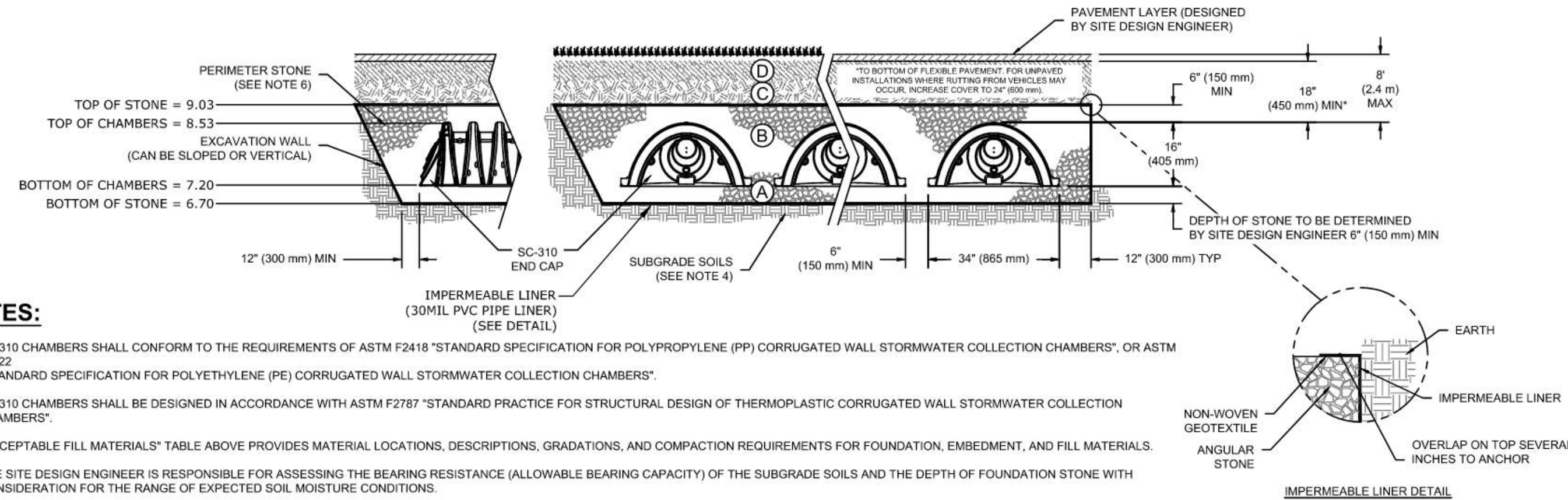
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**ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS**

| MATERIAL LOCATION | DESCRIPTION  | AASHTO MATERIAL CLASSIFICATIONS   | COMPACTION / DENSITY REQUIREMENT   |
|-------------------|--|---|--|
| D                 | FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.  | N/A   | PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.  |
| C                 | INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBERS. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER. | AASHTO M145 <sup>1</sup><br>A-1, A-2, A-3<br>OR<br>AASHTO M43 <sup>2</sup><br>3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10 | BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN), DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN). |
| B                 | EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.   | AASHTO M43 <sup>2</sup><br>3, 357, 4, 467, 5, 56, 57  | NO COMPACTION REQUIRED.  |
| A                 | FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.  | AASHTO M43 <sup>2</sup><br>3, 357, 4, 467, 5, 56, 57  | PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. <sup>2</sup>  |

- PLEASE NOTE:
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR, FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
  - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
  - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



- NOTES:**
- SC-310 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
  - SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
  - "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
  - THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
  - PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
  - ONCE LAYER 'C' IS PLACED, ANY SOIL MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

**STORMTECH CHAMBER SPECIFICATIONS**

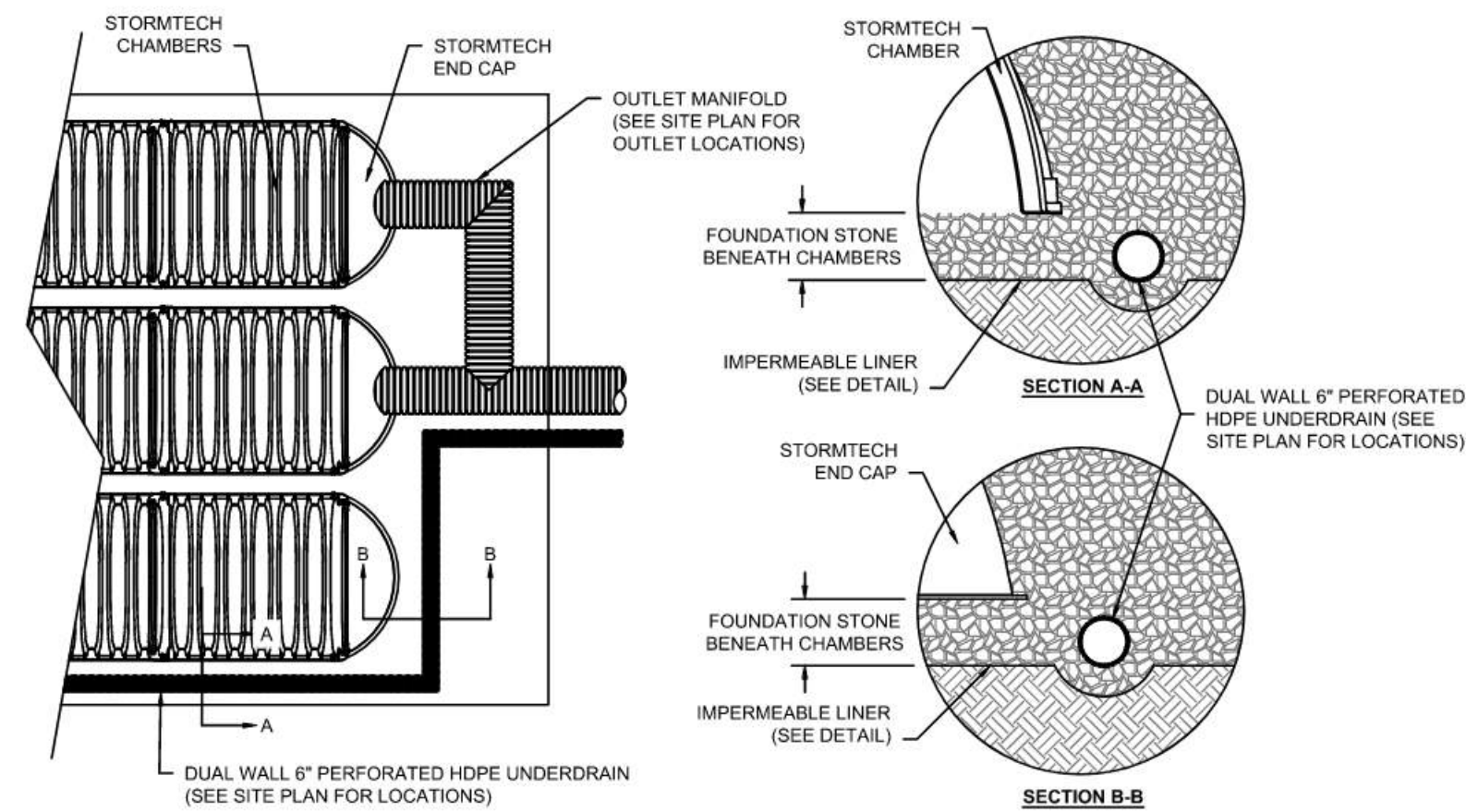
- CHAMBERS SHALL BE STORMTECH SC-740, SC-310, OR APPROVED EQUAL.
- CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS. <sup>1</sup>
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL MEET ASTM F2922 (POLYETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". <sup>1</sup>
- CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
  - A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
  - A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 OR ASTM F2922 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
  - STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

**NOTES FOR CONSTRUCTION EQUIPMENT <sup>1</sup>**

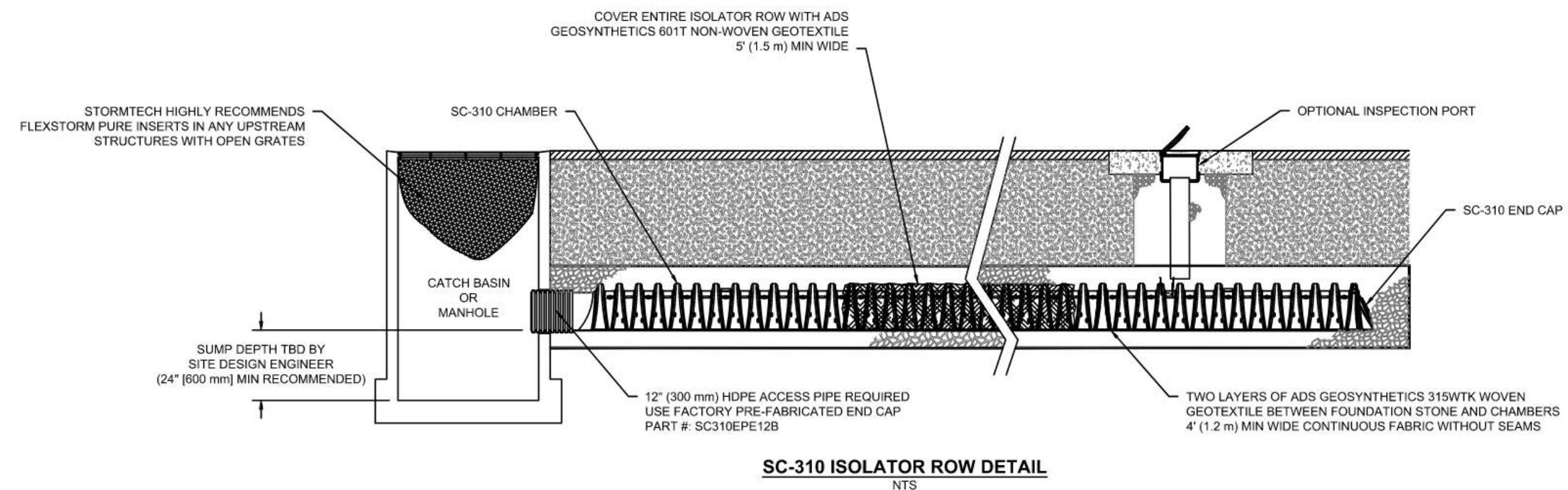
- STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE". <sup>1</sup>
  - THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
    - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
    - NO RUBBER TIRE LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
    - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE". <sup>1</sup>
  - FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.
- USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.**
- CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

**IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310/SC-740 SYSTEM**

- STORMTECH SC-310 & SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS. <sup>1</sup>
- STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE" <sup>1</sup>
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. <sup>1</sup> STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR. <sup>1</sup>
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS. <sup>1</sup>
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE. <sup>1</sup>
- MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS. <sup>1</sup>
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4"-2" (20-50 mm). <sup>1</sup>
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER. <sup>1</sup>
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.



**UNDERDRAIN DETAIL**  
NTS



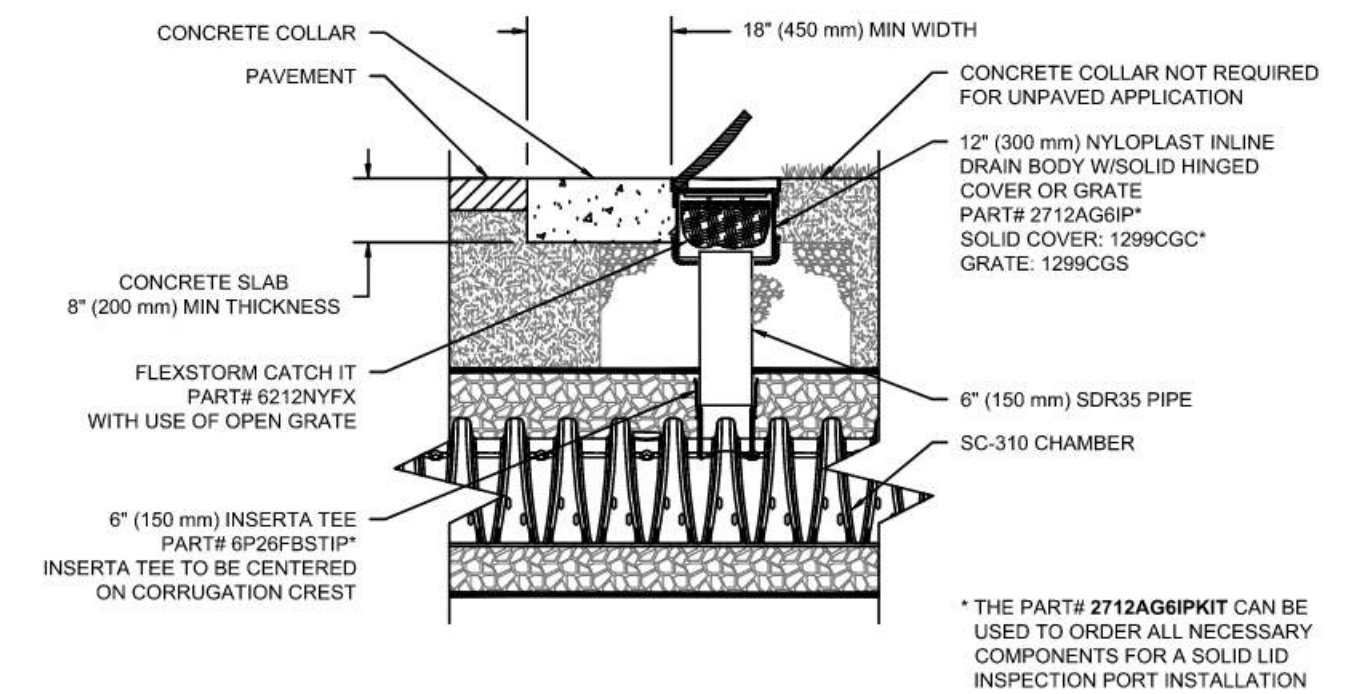
**SC-310 ISOLATOR ROW DETAIL**  
NTS

**INSPECTION & MAINTENANCE**

- STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
- REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
- REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
  - APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
  - VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

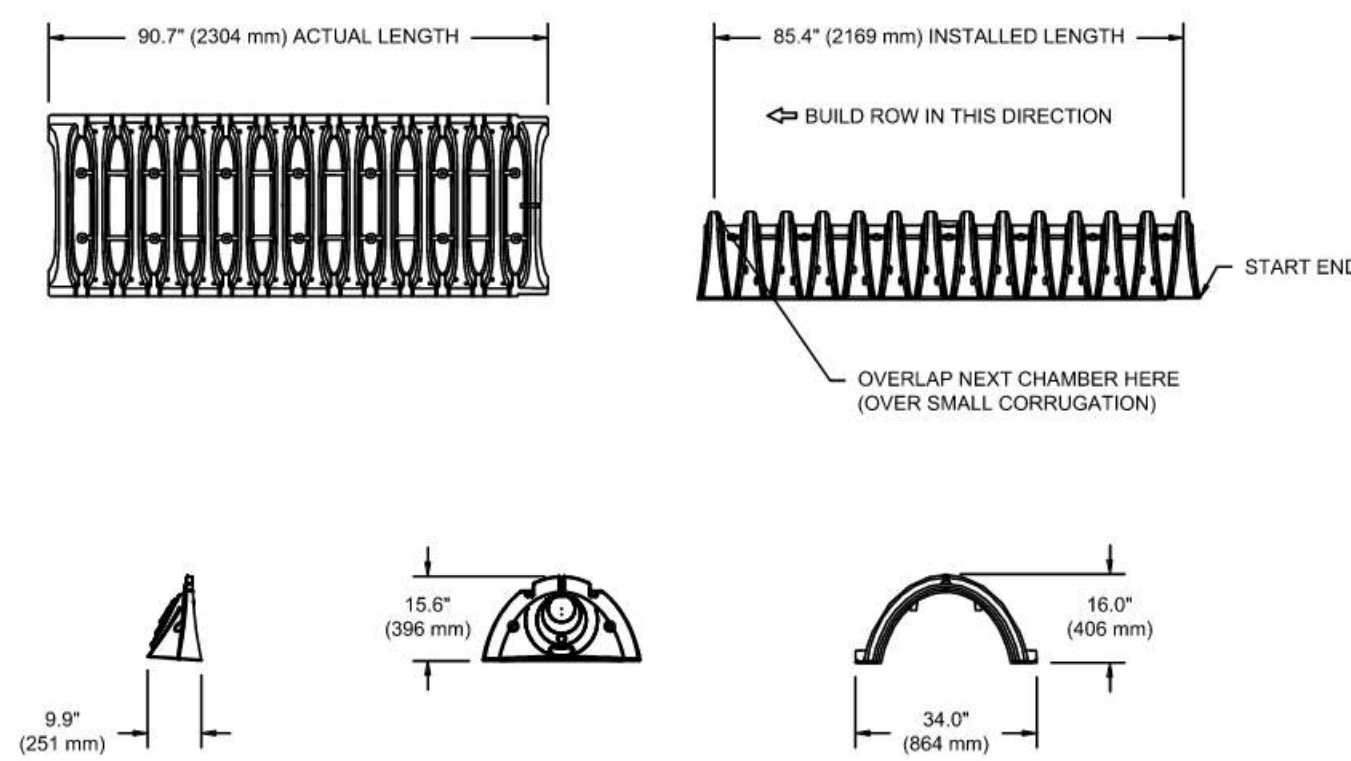
**NOTES**

- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



**SC-310 6" INSPECTION PORT DETAIL**  
NTS

**SC-310 TECHNICAL SPECIFICATION**  
NTS



**NOMINAL CHAMBER SPECIFICATIONS**

| SIZE (W X H X INSTALLED LENGTH) | 34.0" X 16.0" X 85.4"                  | (864 mm X 406 mm X 2169 mm) |
|---------------------------------|--|-----------------------------|
| CHAMBER STORAGE                 | 14.7 CUBIC FEET (0.42 m <sup>3</sup> ) |                             |
| MINIMUM INSTALLED STORAGE*      | 31.0 CUBIC FEET (0.88 m <sup>3</sup> ) |                             |
| WEIGHT                          | 35.0 lbs. (16.8 kg)                    |                             |

\*ASSUMES 6" (152 mm) ABOVE, BELOW, AND BETWEEN CHAMBERS

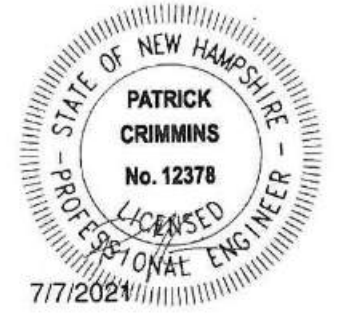
PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"  
 PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"  
 PRE-GORED END CAPS END WITH "PC"

| PART #                      | STUB         | A              | B             | C            |
|-----------------------------|--------------|----------------|---------------|--------------|
| SC310EPE06T / SC310EPE08TPC | 6" (150 mm)  | 9.6" (244 mm)  | 5.8" (147 mm) | —            |
| SC310EPE06B / SC310EPE06BPC | —            | —              | —             | 0.5" (13 mm) |
| SC310EPE08T / SC310EPE08TPC | 8" (200 mm)  | 11.9" (302 mm) | 3.5" (89 mm)  | —            |
| SC310EPE08B / SC310EPE08BPC | —            | —              | —             | 0.6" (15 mm) |
| SC310EPE10T / SC310EPE10TPC | 10" (250 mm) | 12.7" (323 mm) | 1.4" (36 mm)  | —            |
| SC310EPE10B / SC310EPE10BPC | —            | —              | —             | 0.7" (18 mm) |
| SC310EPE12B                 | 12" (300 mm) | 13.5" (343 mm) | —             | 0.9" (23 mm) |

ALL STUBS, EXCEPT FOR THE SC310EPE12B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

\* FOR THE SC310EPE12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL



**Proposed Mixed Use Development**

CPI Management, LLC

53 Green Street  
Portsmouth, NH

| MARK | DATE      | DESCRIPTION         |
|------|-----------|---------------------|
| E    | 7/7/2021  | PB Submission       |
| D    | 5/19/2021 | TAC Resubmission    |
| C    | 4/21/2021 | TAC Resubmission    |
| B    | 3/22/2021 | TAC & CC Submission |
| A    | 1/27/2021 | CC Work Session     |

|             |                      |
|-------------|----------------------|
| PROJECT NO: | C0960-011            |
| DATE:       | January 27, 2021     |
| FILE:       | C0960-011_C-DTLS.DWG |
| DRAWN BY:   | AFS                  |
| CHECKED:    | NAH/PMC              |
| APPROVED:   | BLM                  |

**DETAILS SHEET**

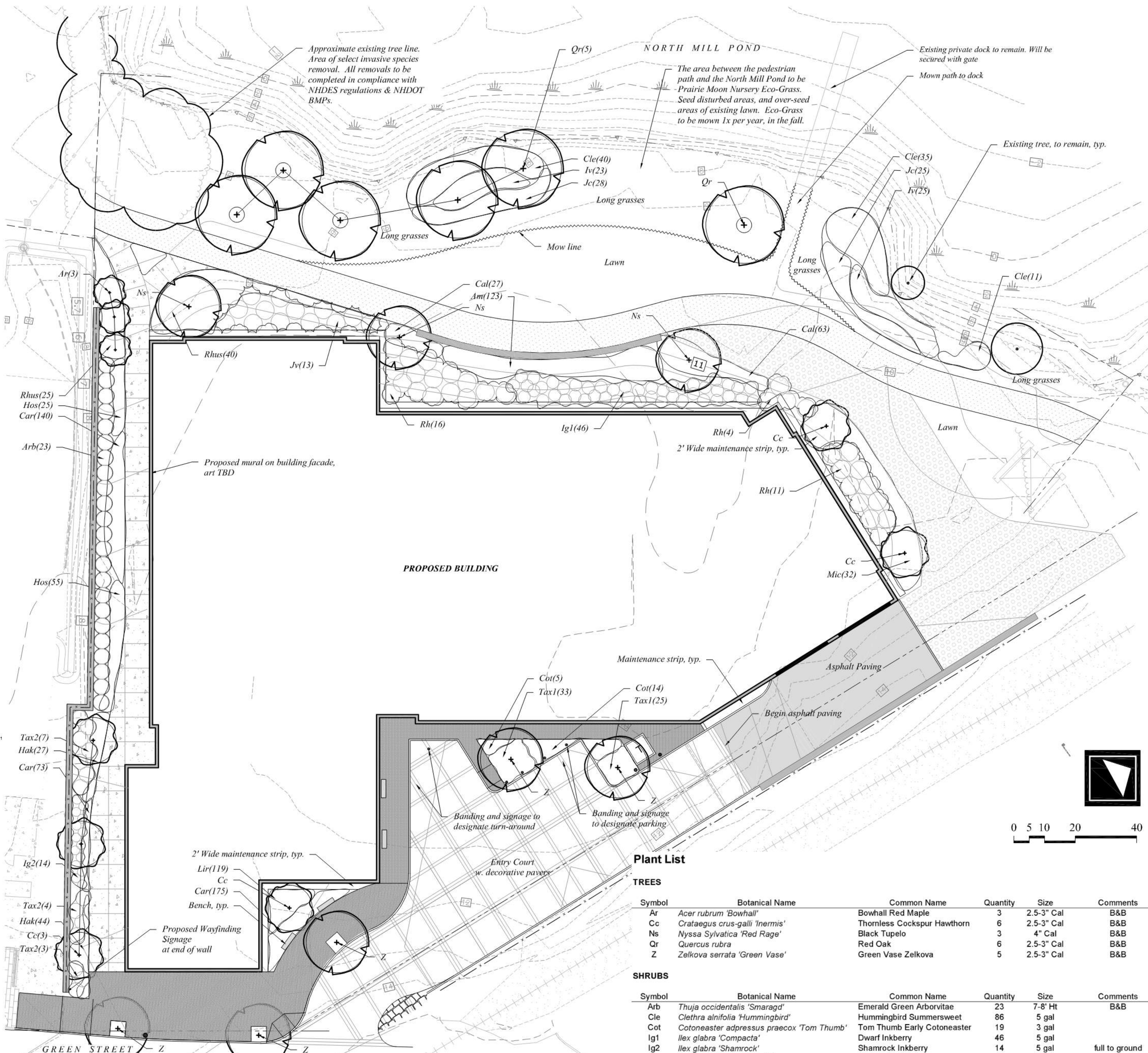
SCALE: AS SHOWN

**C-508**



# Landscape Notes

- Design is based on drawings by Tighe & Bond dated 6/22/2021 and may require adjustment due to actual field conditions.
- The contractor shall follow best management practices during construction and shall take all means necessary to stabilize and protect the site from erosion.
- Erosion Control shall be in place prior to construction.
- Erosion Control to consist of Hay Bales and Erosion Control Fabric shall be staked in place between the work and Water bodies, Wetlands and/or drainage ways prior to any construction.
- The Contractor shall verify layout and grades and inform the Landscape Architect or Client's Representative of any discrepancies or changes in layout and/or grade relationships prior to construction.
- It is the contractor's responsibility to verify drawings provided are to the correct scale prior to any bid, estimate or installation. A graphic scale bar has been provided on each sheet for this purpose. If it is determined that the scale of the drawing is incorrect, the landscape architect will provide a set of drawings at the correct scale, at the request of the contractor.
- Trees to Remain within the construction zone shall be protected from damage for the duration of the project by snow fence or other suitable means of protection to be approved by Landscape Architect or Client's Representative. Snow fence shall be located at the drip line at a minimum and shall include any and all surface roots. Do not fill or mulch on the trunk flare. Do not disturb roots. In order to protect the integrity of the roots, branches, trunk and bark of the tree(s) no vehicles or construction equipment shall drive or park in or on the area within the drip line(s) of the tree(s). Do not store any refuse or construction materials or portalets within the tree protection area.
- Location, support, protection, and restoration of all existing utilities and appurtenances shall be the responsibility of the Contractor.
- The Contractor shall verify exact location and elevation of all utilities with the respective utility owners prior to construction. Call DIGSAFE at 1-888-344-7233.
- The Contractor shall procure any required permits prior to construction.
- Prior to any landscape construction activities Contractor shall test all existing loam and loam from off-site intended to be used for lawns and plant beds using a thorough sampling throughout the supply. Soil testing shall indicate levels of pH, nitrates, macro and micro nutrients, texture, soluble salts, and organic matter. Contractor shall provide Landscape Architect with test results and recommendations from the testing facility along with soil amendment plans as necessary for the proposed plantings to thrive. All loam to be used on site shall be amended as approved by the Landscape Architect prior to placement.
- Contractor shall notify landscape architect or owner's representative immediately if at any point during demolition or construction a site condition is discovered which may negatively impact the completed project. This includes, but is not limited to, unforeseen drainage problems, unknown subsurface conditions, and discrepancies between the plan and the site. If a contractor is aware of a potential issue, and does not bring it to the attention of the landscape architect or owner's representative immediately, they may be responsible for the labor and materials associated with correcting the problem.
- The Contractor shall furnish and plant all plants shown on the drawings and listed thereon. All plants shall be nursery-grown under climatic conditions similar to those in the locality of the project. Plants shall conform to the botanical names and standards of size, culture, and quality for the highest grades and standards as adopted by the American Association of Nurserymen, Inc. in the American Standard of Nursery Stock, American Standards Institute, Inc. 230 Southern Building, Washington, D.C. 20005.
- A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.
- All plants shall be legibly tagged with proper botanical name.
- The Contractor shall guarantee all plants for not less than one year from time of acceptance.
- Owner or Owner's Representative will inspect plants upon delivery for conformity to Specification requirements. Such approval shall not affect the right of inspection and rejection during or after the progress of the work. The Owner reserves the right to inspect and/or select all trees at the place of growth and reserves the right to approve a representative sample of each type of shrub, herbaceous perennial, annual, and ground cover at the place of growth. Such sample will serve as a minimum standard for all plants of the same species used in this work.
- No substitutions of plants may be made without prior approval of the Owner or the Owner's Representative for any reason.
- All landscaping shall be provided with the following:
  - Outside hose attachments spaced a maximum of 150 feet apart, and
  - An underground irrigation system, or
  - A temporary irrigation system designed for a two-year period of plant establishment.
- If an automatic irrigation system is installed, all irrigation valve boxes shall be located within planting bed areas.
- The contractor is responsible for all plant material from the time their work commences until final acceptance. This includes but is not limited to maintaining all plants in good condition, the security of the plant material once delivered to the site, and watering of plants. Plants shall be appropriately watered prior to, during and after planting. It is the contractor's responsibility to provide clean water suitable for plant health from off site, should it not be available on site.
- All disturbed areas will be dressed with 6" of topsoil and planted as noted on the plans or seeded except plant beds. Plant beds shall be prepared to a depth of 12" with 75% loam and 25% compost.
- Trees, ground cover, and shrub beds shall be mulched to a depth of 2" with one-year-old, well-composted, shredded native bark not longer than 4" in length and 1/2" in width, free of woodchips and sawdust. Mulch for ferns and herbaceous perennials shall be no longer than 1" in length. Trees in lawn areas shall be mulched in a 5' diameter min. saucer. Color of mulch shall be black.
- Drip strip shall extend to 6" beyond roof overhang and shall be edged with 3/16" thick metal edger.
- In no case shall mulch touch the stem of a plant nor shall mulch ever be more than 3" thick total (including previously applied mulch) over the root ball of any plant.
- Secondary lateral branches of deciduous trees overhanging vehicular and pedestrian travel ways shall be pruned up to a height of 6' to allow clear and safe passage of vehicles and pedestrians under tree canopy. Within the sight distance triangles at vehicle intersections the canopies shall be raised to 8' min.
- Snow shall be stored a minimum of 5' from shrubs and trunks of trees.
- Landscape Architect is not responsible for the means and methods of the contractor.

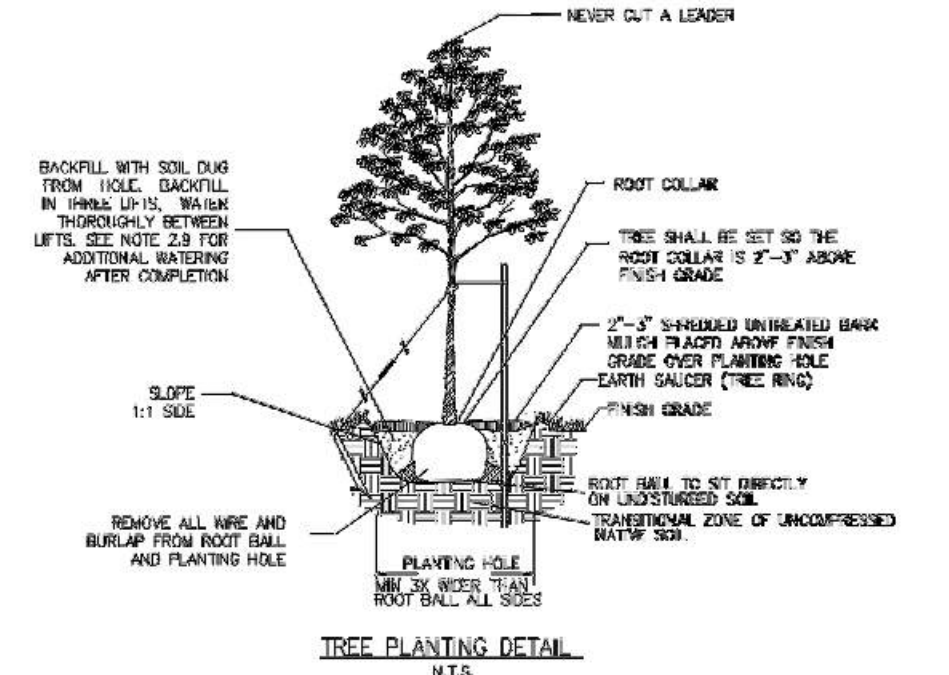


### PART 1 - GENERAL

- 1.1 THE BASIS OF THE CITY OF PORTSMOUTH TREE PLANTING REQUIREMENTS IS THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPORTING AND ALSO PART 6 LAYS OUT TERMS AND BASIC STANDARDS AS SET FORTH BY INDUSTRY BUT IT IS NOT THE INTENT OF THIS SPECIFICATION TO REPLICATE THE REQUIREMENTS OF THE CITY OF PORTSMOUTH, NH TREE PLANTING REQUIREMENTS THAT ARE IN ADDITION TO OR THAT GO BEYOND THE ANSI A300 PART 6.

### PART 2 - EXECUTION

- 2.1 ALL PLANTING HOLES SHALL BE DIG BY HAND - NO MACHINES. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE NEW PLANTING HOLES ARE BEING CREATED AND PLANTING SPACES WITH SILVA CELLS ARE BEING CREATED. IF A MACHINE IS USED TO DIG IN ANY OF THESE SITUATIONS AND PLANTING SPACES NEEDS TO BE RAISED THE MATERIAL IN THE BOTTOM OF THE PLANTING HOLE MUST BE FIRMED WITH MACHINE TO PREVENT SINKING OF THE ROOT BALL.
- 2.2 ALL WIRE AND BURIAL SHALL BE REMOVED FROM THE ROOT BALL AND PLANTING HOLE.
- 2.3 THE ROOT BALL OF THE TREE SHALL BE WORKED SO THAT THE ROOT COLLAR OF THE TREE IS VISIBLE AND NO GROUND ROOTS ARE PRESENT.
- 2.4 THE ROOT COLLAR OF THE TREE SHALL BE 2"-3" ABOVE GRADE OF PLANTING HOLE FOR PERMANENT DEPTH.
- 2.5 ALL PLANTINGS SHALL BE BACKFILLED WITH SOIL FROM THE SITE AND AMENDED NO MORE THAN 20% WITH ORGANIC COMPOST. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE ENGINEERED SOIL IS BEING USED IN CONJUNCTION WITH SILVA CELLS AND WHERE NEW PLANTING BEDS ARE BEING CREATED.
- 2.6 ALL PLANTINGS SHALL BE BACKFILLED IN THREE LIFTS AND ALL LIFTS SHALL BE WATERED SO THE PLANTING WILL BE SET AND FREE OF AIR POCKETS - NO EXCEPTIONS.
- 2.7 AN 18" X 18" PERM SHALL BE PLACED AROUND THE PERIMETER OF THE PLANTING HOLE EXCEPT WHERE CURBED PLANTING BEDS OR ITS ARE BEING USED.
- 2.8 2"-3" OF MULCH SHALL BE PLACED OVER THE PLANTING AREA.
- 2.9 AT THE TIME OF PLANTING IS COMPLETE THE PLANTING SHALL RECEIVE ADDITIONAL WATER TO ENSURE COMPLETE HYDRATION OF THE ROOTS, BACKFILL MATERIAL AND MULCH LAYER.
- 2.10 STAKES AND CUTS SHALL BE USED WHERE APPROPRIATE AND/OR NECESSARY. CUT MATERIAL SHALL BE NON-DAMAGING TO THE TREE.
- 2.11 ALL PLANTING SIZES SHALL BE SHOWN IN QUANTITY, HEIGHT OR SPACING AND BE BASED ON MEASUREMENT. THE CITY OF PORTSMOUTH HAS RESERVES THE RIGHT TO INSPECT ANY PLANT MATERIAL OR PLANTING ACTION THAT FAILS TO MEET THE STANDARDS SET FORTH IN THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPORTATION AND/OR THE CITY OF PORTSMOUTH, NH PLANTING REQUIREMENTS.



### Plant List

| Symbol | Botanical Name                        | Common Name                 | Quantity | Size       | Comments |
|--------|---------------------------------------|-----------------------------|----------|------------|----------|
| Ar     | <i>Acer rubrum</i> 'Bowhall'          | Bowhall Red Maple           | 3        | 2.5-3" Cal | B&B      |
| Cc     | <i>Crataegus crus-galli</i> 'Inermis' | Thornless Cockspur Hawthorn | 6        | 2.5-3" Cal | B&B      |
| Ns     | <i>Nyssa sylvatica</i> 'Red Rage'     | Black Tupelo                | 3        | 4" Cal     | B&B      |
| Qr     | <i>Quercus rubra</i>                  | Red Oak                     | 6        | 2.5-3" Cal | B&B      |
| Z      | <i>Zelkova serrata</i> 'Green Vase'   | Green Vase Zelkova          | 5        | 2.5-3" Cal | B&B      |

### SHRUBS

| Symbol | Botanical Name                                   | Common Name                 | Quantity | Size    | Comments       |
|--------|--|-----------------------------|----------|---------|----------------|
| Arb    | <i>Thuja occidentalis</i> 'Smaragd'              | Emerald Green Arborvitae    | 23       | 7-8" Ht |                |
| Cle    | <i>Clethra alnifolia</i> 'Hummingbird'           | Hummingbird Summersweet     | 86       | 5 gal   |                |
| Cot    | <i>Cotoneaster adpressus praecox</i> 'Tom Thumb' | Tom Thumb Early Cotoneaster | 19       | 3 gal   |                |
| Ig1    | <i>Ilex glabra</i> 'Compacta'                    | Dwarf Inkberry              | 46       | 5 gal   |                |
| Ig2    | <i>Ilex glabra</i> 'Shamrock'                    | Shamrock Inkberry           | 14       | 5 gal   | fill to ground |
| Iv     | <i>Ilex verticillata</i> 'Red Sprite'            | Red Sprite Winterberry      | 48       | 5 gal   |                |
| Jc     | <i>Juniperus communis</i> 'Blueberry Delight'    | Blueberry Delight Juniper   | 53       | 3 gal   |                |
| Jv     | <i>Juniperus virginiana</i> 'Emerald Sentinel'   | Emerald Sentinel Red Cedar  | 13       | 7-8" Ht | B&B            |
| Mic    | <i>Microbiota decussata</i>                      | Russian Cypress             | 32       | 3 gal   |                |
| Rh     | <i>Rhododendron maximum</i>                      | Rosebay Rhododendron        | 31       | 3-4' Ht | B&B            |
| Rhus   | <i>Rhus aromatica</i> 'Grow-Low'                 | Grow Low Sumac              | 65       | 3 gal   |                |
| Tax1   | <i>Taxus media</i> 'Ever-Low'                    | Ever-Low Yew                | 58       | 3 gal   |                |
| Tax2   | <i>Taxus media</i> 'Greenwave'                   | Greenwave Yew               | 14       | 5 gal   |                |

### PERENNIALS, GROUNDCOVERS, VINES and ANNUALS

| Symbol | Botanical Name                                  | Common Name          | Quantity | Size  | Comments |
|--------|---|----------------------|----------|-------|----------|
| Am     | <i>Amsonia hubrichtii</i>                       | Blue Star Flower     | 123      | 1 gal |          |
| Car    | <i>Carex appalachica</i>                        | Appalachian Sedge    | 388      | 1 gal |          |
| Cal    | <i>Calamagrostis acutifolia</i> 'Karl Foerster' | Feather Reed Grass   | 90       | 1 gal |          |
| Hak    | <i>Hakonechloa macra</i>                        | Japanese Frost Grass | 71       | 1 gal |          |
| Hos    | <i>Hosta 'Guacamole'</i>                        | Guacamole Hosta      | 80       | 1 gal |          |
| Lir    | <i>Liriope spicata</i>                          | Lily Turf            | 119      | 1 gal |          |
| Lawn   | <i>Pennilton Smartseed Tall Fescue Blend</i>    |                      |          |       |          |

City of Portsmouth Tree Planting Detail

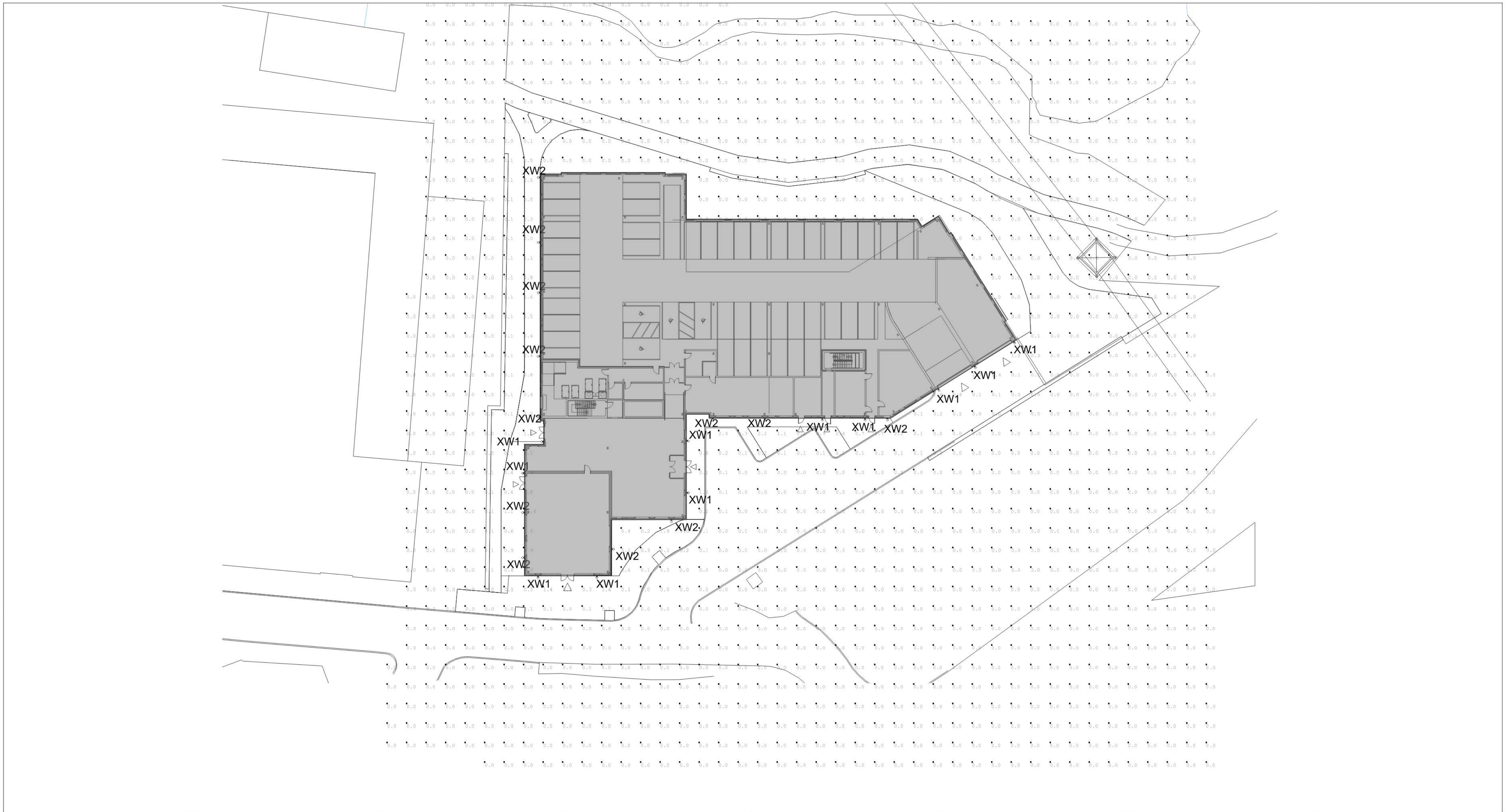
**woodburn & company**  
LANDSCAPE ARCHITECTURE  
103 Kent Place  
New Hampshire  
Phone: 603.659.5949

**Proposed Mixed Use Development**  
**LANDSCAPE PLAN**  
53 Green Street Portsmouth, New Hampshire

Drawn By: VM  
Checked By: RW  
Scale: 1" = 20' - 0"  
Date: March 22, 2021  
Revisions: April 21, 2021  
May 19, 2021  
June 29, 2021

**L-1**  
Sheet 1 of 1





| Luminaire Schedule |     |       |             |              |
|--------------------|-----|-------|-------------|--------------|
| Symbol             | Qty | Label | Arrangement | Description  |
| ☐                  | 11  | XW1   | SINGLE      | WS-W54614-XX |
| ◻                  | 12  | XW2   | SINGLE      | WP-LED119-30 |

| Calculation Summary |       |      |      |     |         |         |
|---------------------|-------|------|------|-----|---------|---------|
| Label               | Units | Avg  | Max  | Min | Avg/Min | Max/Min |
| CalcPts 1           | Fc    | 0.67 | 11.4 | 0.0 | N.A.    | N.A.    |

| # | Date  | Comments   |
|---|-------|------------|
| 1 | XX/XX | XXXXXXXXXX |

| Revisions |  |
|-----------|--|
| 7/7/2021  |  |





1 SOUTH ELEVATION  
1/8" = 1'-0"



4 EAST ELEVATION - DROP OFF  
1/8" = 1'-0"



2 SOUTH ELEVATION - PART 2  
1/8" = 1'-0"



3 SOUTH ELEVATION - PART 3  
1/8" = 1'-0"

ARCHITECT  
**EMBARC**

60 K STREET, 3RD FLOOR  
BOSTON, MA 02127  
O: 617.766.8330  
www.embarcstudio.com

OWNER

CATHARTES  
100 SUMMER STREET, SUITE #1600  
BOSTON, MA 02110  
617.742.6000

CONSULTANTS

CIVIL ENGINEER  
TIGHE & BONDE  
177 CORPORATE DRIVE  
PORTSMOUTH, NH 03801  
603.433.8818

53 GREEN STREET  
53 GREEN STREET PORTSMOUTH, NH  
03801  
PLANNING BOARD

REVISIONS

| MARK | ISSUE | DATE |
|------|-------|------|
|      |       |      |

DRAWING INFORMATION

ISSUE: PLANNING BOARD  
DATE: JUNE 18, 2021  
PROJECT #: 20055  
SCALE: 1/8" = 1'-0"

DRAWING TITLE

BUILDING  
ELEVATIONS

DRAWING NUMBER

A201

copyright: EMBARC STUDIO, LLC



| MARK | ISSUE | DATE |
|------|-------|------|
|      |       |      |

|            |                |
|------------|----------------|
| ISSUE:     | PLANNING BOARD |
| DATE:      | JUNE 18, 2021  |
| PROJECT #: | 20055          |
| SCALE:     | 1/8" = 1'-0"   |

BUILDING  
ELEVATIONS

A202



1 WEST ELEVATION  
1/8" = 1'-0"



2 NORTH ELEVATION  
1/8" = 1'-0"





1 EAST ELEVATION - WATER  
1/8" = 1'-0"



2 NORTH ELEVATION - WING  
1/8" = 1'-0"



3 EAST ELEVATION  
1/8" = 1'-0"

ARCHITECT  
**EMBARC**

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CIVIL ENGINEER  
TIGHE & BONDE  
177 CORPORATE DRIVE  
PORTSMOUTH, NH 03801  
603.433.8818

53 GREEN STREET  
53 GREEN STREET PORTSMOUTH, NH  
03801  
PLANNING BOARD

REVISIONS

| MARK | ISSUE | DATE |
|------|-------|------|
|      |       |      |

DRAWING INFORMATION

ISSUE: PLANNING BOARD  
DATE: JUNE 18, 2021  
PROJECT #: 20055  
SCALE: 1/8" = 1'-0"

DRAWING TITLE

BUILDING  
ELEVATIONS

DRAWING NUMBER

A203

copyright: EMBARC STUDIO, LLC

| City of Portsmouth TAC, June 1, 2021:            |  |   |                            |
|--|--|---|----------------------------|
|  | TAC Stipulation  | Applicant Response  | Sheet                      |
| <b>TAC Stipulations from 6/3 Correspondence:</b> |  |   |                            |
| 1  | The applicant shall evaluate the intersection of Vaughan Street and Green Street to confirm the larger trucks (including the City fire truck) can navigate to and from Vaughan Street onto Green Street. | The intersection has been reviewed by the applicant in coordination with the City's Traffic Engineer and Fire Department. A turning exhibit has been provided to show the anticipated fire truck turning at the intersection. | Fire Truck Turning Exhibit |
| 2  | The applicant shall update the landscaping plan to confirm the surface treatment for the pavement around the proposed loading zone.  | An updated landscaping has been provided to address the surface treatment around the proposed loading zone.   | L-1                        |
| 3  | The applicant shall update the landscaping plan to indicate that the landscape plants along the water are salt tolerant in case of inundation.   | The landscape plan has been updated to provide only salt tolerant plantings within the floodplain.  | L-1                        |
| 4  | The community space easement shall reflect that the City shall not be responsible for maintenance of landscaping in the community space areas.   | The easement reflects that the maintenance of the landscaping within the easement area shall be the sole responsibility of the Grantor.   | N/A                        |
| 5  | The applicant shall add signage and/or markings to delineate the fire lane areas.  | Additional signage and pavement markings have been provided in coordination with the Fire Department.   | C-102.1                    |
| 6  | The applicant shall reach out the abutting property owner to discuss possible coordination related to allow for ongoing maintenance and access to the rain garden area on the abutting property.         | The applicant has coordinated this access with the abutting property owner.   | N/A                        |

| City of Portsmouth CC, April 14, 2021:           |   |  |  |
|--|---|--|--|
|  | CC Stipulation  | Applicant Response   | Sheet                                    |
| <b>CC Stipulations from 4/23 Correspondence:</b> |   |  |  |
| 1  | Move the greenway path closer to the building and align it over the fire access that is shown on the plan set.  | The greenway path has been moved closer to the building and is aligned with the fire lane. | C-102.1                                  |
| 2  | The applicant shall agree to maintain all greenway according to NOFA standards.   | Comment Acknowledged   | N/A                                      |
| 3  | The applicant shall add an update the porous paving maintenance plan to include: no sand spreading and increase sweeping from once to twice per year. | The Long-Term Operation and Maintenance plan has been updated to address these changes.    | Long-Term Operation and Maintenance Plan |
| 4  | The applicant shall add more native understory plants to the pond side of the greenway path.  | Additional native understory plants have been added along the greenway path as advised.    | L-1                                      |



# 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. The checklist is required to be completed and uploaded to the Site Plan application in the City's online permitting system. 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.

Name of Applicant: CPI Management, LLC Date Submitted: July 7, 2021

Application # (in City's online permitting): LU 21-55

Site Address: 53 Green Street Map: 119 Lot: 2

| Application Requirements            |  |  |                     |
|-------------------------------------|--|--|---------------------|
| <input checked="" type="checkbox"/> | Required Items for Submittal   | Item Location<br>(e.g. Page or<br>Plan Sheet/Note #) | Waiver<br>Requested |
| <input checked="" type="checkbox"/> | Complete <a href="#">application</a> form submitted via the City's web-based permitting program (2.5.2.1(2.5.2.3A))  | Enclosed   | N/A                 |
| <input checked="" type="checkbox"/> | All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline.<br>(2.5.2.8) | Enclosed   | N/A                 |

| Site Plan Review Application Required Information |   |   |                     |
|---|---|---|---------------------|
| <input checked="" type="checkbox"/>               | Required Items for Submittal  | Item Location<br>(e.g. Page/line or<br>Plan Sheet/Note #) | Waiver<br>Requested |
| <input checked="" type="checkbox"/>               | Statement that lists and describes "green" building components and systems.<br>(2.5.3.1B)   | Enclosed  |                     |
| <input checked="" type="checkbox"/>               | Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor.<br>(2.5.3.1C) | Site Plan Sheet C-102.1                                   | N/A                 |
| <input checked="" type="checkbox"/>               | Tax map and lot number, and current zoning of all parcels under Site Plan Review.<br>(2.5.3.1D)   | Site Plan Sheet C-102.1                                   | N/A                 |



| <b>Site Plan Review Application Required Information</b> |   |  |                             |
|--|---|--|-----------------------------|
| <input checked="" type="checkbox"/>                      | <b>Required Items for Submittal</b>   | <b>Item Location<br/>(e.g. Page/line or<br/>Plan Sheet/Note #)</b> | <b>Waiver<br/>Requested</b> |
| <input checked="" type="checkbox"/>                      | Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner.<br><b>(2.5.3.1E)</b>  | Enclosed<br>Existing Conditions<br>Plan                            | N/A                         |
| <input checked="" type="checkbox"/>                      | 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.<br><b>(2.5.3.1F)</b> | Existing Conditions<br>Plan  | N/A                         |
| <input checked="" type="checkbox"/>                      | Names, addresses and telephone numbers of all professionals involved in the site plan design.<br><b>(2.5.3.1G)</b>  | Cover Sheet  | N/A                         |
| <input checked="" type="checkbox"/>                      | List of reference plans.<br><b>(2.5.3.1H)</b>   | Existing Conditions<br>Plan  | N/A                         |
| <input checked="" type="checkbox"/>                      | List of names and contact information of all public or private utilities servicing the site.<br><b>(2.5.3.1I)</b>   | Utilities Plan Sheet<br>C-104                                      | N/A                         |

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

**Site Plan Specifications – Required Exhibits and Data**

| <input checked="" type="checkbox"/> | Required Items for Submittal   | Item Location<br>(e.g. Page/line or<br>Plan Sheet/Note #) | Waiver<br>Requested |
|-------------------------------------|--|---|---------------------|
| <input checked="" type="checkbox"/> | <p><b>1. Existing Conditions: (2.5.4.3A)</b></p> <ul style="list-style-type: none"> <li>• Surveyed plan of site showing existing natural and built features;</li> <li>• Existing building footprints and gross floor area;</li> <li>• Existing parking areas and number of parking spaces provided;</li> <li>• Zoning district boundaries;</li> <li>• Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre;</li> <li>• Existing impervious and disturbed areas;</li> <li>• Limits and type of existing vegetation;</li> <li>• Wetland delineation, wetland function and value assessment (including vernal pools);</li> <li>• SFHA, 100-year flood elevation line and BFE data, as required.</li> </ul> | Existing Conditions Plan                                  |                     |
| <input checked="" type="checkbox"/> | <p><b>2. Buildings and Structures: (2.5.4.3B)</b></p> <ul style="list-style-type: none"> <li>• Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;</li> <li>• Elevations: Height, massing, placement, materials, lighting, façade treatments;</li> <li>• Total Floor Area;</li> <li>• Number of Usable Floors;</li> <li>• Gross floor area by floor and use.</li> </ul>  | Site Plan Sheets C.102.1 & C.102.2                        |                     |
| <input checked="" type="checkbox"/> | <p><b>3. Access and Circulation: (2.5.4.3C)</b></p> <ul style="list-style-type: none"> <li>• Location/width of access ways within site;</li> <li>• Location of curbing, right of ways, edge of pavement and sidewalks;</li> <li>• Location, type, size and design of traffic signing (pavement markings);</li> <li>• Names/layout of existing abutting streets;</li> <li>• Driveway curb cuts for abutting prop. and public roads;</li> <li>• If subdivision; Names of all roads, right of way lines and easements noted;</li> <li>• AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).</li> </ul>   | Site Plan Sheet C-102.1                                   |                     |
| <input checked="" type="checkbox"/> | <p><b>4. Parking and Loading: (2.5.4.3D)</b></p> <ul style="list-style-type: none"> <li>• Location of off street parking/loading areas, landscaped areas/buffers;</li> <li>• Parking Calculations (# required and the # provided).</li> </ul>  | Site Plan Sheet C-102.1                                   |                     |
| <input checked="" type="checkbox"/> | <p><b>5. Water Infrastructure: (2.5.4.3E)</b></p> <ul style="list-style-type: none"> <li>• Size, type and location of water mains, shut-offs, hydrants &amp; Engineering data;</li> <li>• Location of wells and monitoring wells (include protective radii).</li> </ul>  | Utilities Plan Sheet C-104                                |                     |
| <input checked="" type="checkbox"/> | <p><b>6. Sewer Infrastructure: (2.5.4.3F)</b></p> <ul style="list-style-type: none"> <li>• Size, type and location of sanitary sewage facilities &amp; Engineering data, including any onsite temporary facilities during construction period.</li> </ul>  | Utilities Plan Sheet C-104                                |                     |

|                                     |  |  |  |
|-------------------------------------|--|--|--|
| <input checked="" type="checkbox"/> | <b>7. Utilities: (2.5.4.3G)</b> <ul style="list-style-type: none"> <li>The size, type and location of all above &amp; below ground utilities;</li> <li>Size type and location of generator pads, transformers and other fixtures.</li> </ul>   | Utilities Plan Sheet C-104   |  |
| <input checked="" type="checkbox"/> | <b>8. Solid Waste Facilities: (2.5.4.3H)</b>   | Site Plan Sheet C-102.1  |  |
|                                     | <ul style="list-style-type: none"> <li>The size, type and location of solid waste facilities.</li> </ul>   | Site Plan Sheet C-102.1  |  |
| <input checked="" type="checkbox"/> | <b>9. Storm water Management: (2.5.4.3I)</b> <ul style="list-style-type: none"> <li>The location, elevation and layout of all storm-water drainage.</li> <li>The location of onsite snow storage areas and/or proposed off-site snow removal provisions.</li> <li>Location and containment measures for any salt storage facilities</li> <li>Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.</li> </ul> | Grading and Drainage Plan Sheet C-103                                |  |
| <input checked="" type="checkbox"/> | <b>10. Outdoor Lighting: (2.5.4.3J)</b> <ul style="list-style-type: none"> <li>Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.</li> </ul>   | Photometrics Plan Sheet  |  |
| <input checked="" type="checkbox"/> | <b>11. Indicate where dark sky friendly lighting measures have been implemented. (10.1)</b>  | Photometrics Plan Sheets   |  |
| <input checked="" type="checkbox"/> | <b>12. Landscaping: (2.5.4.3K)</b> <ul style="list-style-type: none"> <li>Identify all undisturbed area, existing vegetation and that which is to be retained;</li> <li>Location of any irrigation system and water source.</li> </ul>   | Landscaping Plan Sheet L-1   |  |
| <input checked="" type="checkbox"/> | <b>13. Contours and Elevation: (2.5.4.3L)</b> <ul style="list-style-type: none"> <li>Existing/Proposed contours (2 foot minimum) and finished grade elevations.</li> </ul>   | Grading and Drainage Plan Sheet C-103                                |  |
| <input checked="" type="checkbox"/> | <b>14. Open Space: (2.5.4.3M)</b> <ul style="list-style-type: none"> <li>Type, extent and location of all existing/proposed open space.</li> </ul>   | Site Plan Sheet C-102  |  |
| <input checked="" type="checkbox"/> | <b>15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)</b>  | Existing Conditions Plan   |  |
| <input checked="" type="checkbox"/> | <b>16. Character/Civic District (All following information shall be included): (2.5.4.3P)</b> <ul style="list-style-type: none"> <li>Applicable Building Height (10.5A21.20 &amp; 10.5A43.30);</li> <li>Applicable Special Requirements (10.5A21.30);</li> <li>Proposed building form/type (10.5A43);</li> <li>Proposed community space (10.5A46).</li> </ul>  | Site Plan Sheet C-102.1  |  |
| <input checked="" type="checkbox"/> | <b>17. Special Flood Hazard Areas (2.5.4.3Q)</b> <ul style="list-style-type: none"> <li>The proposed development is consistent with the need to minimize flood damage;</li> <li>All public utilities and facilities are located and construction to minimize or eliminate flood damage;</li> <li>Adequate drainage is provided so as to reduce exposure to flood hazards.</li> </ul>   | Grading and Drainage Plan Sheet and Utility Plan Sheet C.103 & C.104 |  |


| <b>Other Required Information</b>   |   |  |                             |
|-------------------------------------|---|--|-----------------------------|
| <input checked="" type="checkbox"/> | <b>Required Items for Submittal</b>   | <b>Item Location<br/>(e.g. Page/line or<br/>Plan Sheet/Note #)</b> | <b>Waiver<br/>Requested</b> |
| <input checked="" type="checkbox"/> | Traffic Impact Study or Trip Generation Report, as required.<br><b>(3.2.1-2)</b>  | Enclosed   |                             |
| <input checked="" type="checkbox"/> | Indicate where Low Impact Development Design practices have been incorporated. <b>(7.1)</b>   | Grading and Drainage Plan Sheet C-103                              |                             |
| <input checked="" type="checkbox"/> | 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. <b>(7.3.1)</b> | N/A  |                             |
| <input checked="" type="checkbox"/> | Stormwater Management and Erosion Control Plan.<br><b>(7.4)</b>   | Enclosed   |                             |
| <input checked="" type="checkbox"/> | Inspection and Maintenance Plan <b>(7.6.5)</b>  | Enclosed   |                             |

| <b>Final Site Plan Approval Required Information</b> |  |  |                             |
|--|--|--|-----------------------------|
| <input checked="" type="checkbox"/>                  | <b>Required Items for Submittal</b>  | <b>Item Location<br/>(e.g. Page/line or<br/>Plan Sheet/Note #)</b> | <b>Waiver<br/>Requested</b> |
| <input checked="" type="checkbox"/>                  | All local approvals, permits, easements and licenses required, including but not limited to: <ul style="list-style-type: none"> <li>• Waivers;</li> <li>• Driveway permits;</li> <li>• Special exceptions;</li> <li>• Variances granted;</li> <li>• Easements;</li> <li>• Licenses.</li> </ul> <b>(2.5.3.2A)</b>   | Cover Sheet  |                             |
| <input checked="" type="checkbox"/>                  | Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: <ul style="list-style-type: none"> <li>• Calculations relating to stormwater runoff;</li> <li>• Information on composition and quantity of water demand and wastewater generated;</li> <li>• Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls;</li> <li>• Estimates of traffic generation and counts pre- and post-construction;</li> <li>• Estimates of noise generation;</li> <li>• A Stormwater Management and Erosion Control Plan;</li> <li>• Endangered species and archaeological / historical studies;</li> <li>• Wetland and water body (coastal and inland) delineations;</li> <li>• Environmental impact studies.</li> </ul> <b>(2.5.3.2B)</b> | Enclosed   |                             |
| <input checked="" type="checkbox"/>                  | 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.<br><b>(2.5.3.2D)</b>   | Enclosed   |                             |



**Final Site Plan Approval Required Information**

| <input checked="" type="checkbox"/> | Required Items for Submittal   | Item Location<br>(e.g. Page/line or<br>Plan Sheet/Note #) | Waiver<br>Requested |
|-------------------------------------|--|---|---------------------|
| <input checked="" type="checkbox"/> | A list of any required state and federal permit applications required for the project and the status of same.<br><b>(2.5.3.2E)</b>   | Cover Sheet   |                     |
| <input checked="" type="checkbox"/> | 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."<br><b>(2.5.4.2E)</b>   | Site Plan Sheets<br>C-102                                 | N/A                 |
| <input checked="" type="checkbox"/> | For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334.<br><b>(2.5.4.2F)</b>   | N/A   |                     |
| <input checked="" type="checkbox"/> | Plan sheets submitted for recording shall include the following notes:<br>a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds."<br>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."<br><b>(2.13.3)</b> | Site Plan Sheets<br>C-102.1                               | N/A                 |

Applicant's Signature:  Date: 7/7/21



# 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 the Preliminary or final plat and supporting documents and studies submitted in PDF format with the [online application](#). Please consult with Planning staff for submittal requirements.

Owner: Stone Creek Realty, LLC Date Submitted: 7/7/2021

Applicant: CPI Management, LLC

Phone Number: 617 742 6000 E-mail: rob@cathartes.com

Site Address 1: 53 Green Street Map: 119 Lot: 2

Site Address 2: \_\_\_\_\_ Map: \_\_\_\_\_ Lot: \_\_\_\_\_

| Application Requirements            |  |   |                  |
|-------------------------------------|--|---|------------------|
| <input checked="" type="checkbox"/> | Required Items for Submittal   | Item Location<br>(e.g. Page or Plan Sheet/Note #) | Waiver Requested |
| <input checked="" type="checkbox"/> | Completed <a href="#">Application form</a> submitted via View Point (the City's web-based permitting program).<br><b>(III.C.2-3)</b>   | Enclosed  | N/A              |
| <input checked="" type="checkbox"/> | All application documents, plans, supporting documentation and other materials uploaded to the application form in View Point in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline.<br><b>(III.C.4)</b> | Enclosed  | N/A              |

| Requirements for Preliminary/Final Plat |   |  |  |
|---|---|--|--|
| <input checked="" type="checkbox"/>     | Required Items for Submittal  | Item Location<br>(e.g. Page/line or Plan Sheet/Note #) | Required for Preliminary / Final Plat  |
| <input checked="" type="checkbox"/>     | 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.<br><b>(Section IV.1/V.1)</b> | Existing Conditions Plan                               | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |

| Requirements for Preliminary/Final Plat |   |   |  |                     |
|---|---|---|--|---------------------|
| <input checked="" type="checkbox"/>     | Required Items for Submittal  | Item Location<br>(e.g. Page/line or<br>Plan Sheet/Note #) | Required for<br>Preliminary / Final<br>Plat  | Waiver<br>Requested |
| <input checked="" type="checkbox"/>     | <p><b>Preliminary Plat</b><br/>Names and addresses of all adjoining property owners. <b>(Section IV.2)</b></p> <p><b>Final Plat</b><br/>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. <b>(Section V.2)</b></p>   | Boundary Line Adjustment Plan                             | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat | N/A                 |
| <input checked="" type="checkbox"/>     | North point, date, and bar scale. <b>(Section IV.3/V3)</b>  | Required on all Plan Sheets                               | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat | N/A                 |
| <input checked="" type="checkbox"/>     | Zoning classification and minimum yard dimensions required. <b>(Section IV.4/V.4)</b>   | Site Plan, sheet C.102.1                                  | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat | N/A                 |
| <input checked="" type="checkbox"/>     | <p><b>Preliminary Plat</b><br/>Scale (not to be smaller than one hundred (100) feet = 1 inch) and location map (at a scale of 1" = 1000'). <b>(Section IV.5)</b></p> <p><b>Final Plat</b><br/>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. <b>(Section V.5)</b></p> | Required on all plans sheets                              | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat | N/A                 |
| <input checked="" type="checkbox"/>     | 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. <b>(Section IV.6)</b>  | Boundary Line Adjustment Plan                             | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |                     |
| <input checked="" type="checkbox"/>     | 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. <b>(Section V.6/ IV.7)</b>   | Boundary Line Adjustment Plan                             | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat | N/A                 |
| <input checked="" type="checkbox"/>     | 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. <b>(Section IV.8/V.7)</b>  | Boundary Line Adjustment Plan & Existing Conditions Plan  | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |                     |

| Requirements for Preliminary/Final Plat |  |   |  |                     |
|---|--|---|--|---------------------|
| <input checked="" type="checkbox"/>     | Required Items for Submittal   | Item Location<br>(e.g. Page/line or<br>Plan Sheet/Note #) | Required for<br>Preliminary / Final<br>Plat  | Waiver<br>Requested |
| <input checked="" type="checkbox"/>     | Location of significant physical features, including bodies of water, watercourses, wetlands, railroads, important vegetation, stone walls and soils types that may influence the design of the subdivision.<br><b>(Section IV.9/V.8)</b>  | Existing Conditions Plan                                  | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |                     |
| <input checked="" type="checkbox"/>     | <b>Preliminary Plat</b><br>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. <b>(Section IV.10)</b><br><b>Final Plat</b><br>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.<br><b>(Section V.9)</b> | Boundary Line Adjustment Plan                             | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |                     |
| <input checked="" type="checkbox"/>     | 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.<br><b>(Section IV.10)</b>  | N/A   | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |                     |
| <input checked="" type="checkbox"/>     | Base flood elevation (BFE) for subdivisions involving greater than five (5) acres or fifty (50) lots.<br><b>(Section IV.11)</b>  | N/A   | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |                     |
| <input checked="" type="checkbox"/>     | 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.<br><b>(Section IV.12/ V.12)</b>   | N/A   | <input checked="" type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |                     |



| Requirements for Preliminary/Final Plat |   |   |   |                     |
|---|---|---|---|---------------------|
| <input checked="" type="checkbox"/>     | Required Items for Submittal  | Item Location<br>(e.g. Page/line or<br>Plan Sheet/Note #) | Required for<br>Preliminary / Final<br>Plat   | Waiver<br>Requested |
| <input checked="" type="checkbox"/>     | Dates and permit numbers of all necessary permits from governmental agencies from which approval is required by Federal or State law.<br><b>(Section V.10)</b>                                      | Cover Sheet   | <input type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |                     |
| <input checked="" type="checkbox"/>     | 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.<br><b>(Section V.11)</b> | N/A   | <input type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |                     |
| <input checked="" type="checkbox"/>     | Location of all permanent monuments.<br><b>(Section V.12)</b>   | Boundary Line<br>Adjustment Plan                          | <input type="checkbox"/> Preliminary Plat<br><input checked="" type="checkbox"/> Final Plat |                     |

**General Requirements<sup>1</sup>**

| <input checked="" type="checkbox"/>  | Required Items for Submittal  | Item Location<br>(e.g. Page/line or<br>Plan Sheet/Note #) | Waiver<br>Requested |
|--|---|---|---------------------|
| <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/>   | <b>1. Basic Requirements: (VI.1)</b><br>a. Conformity to Official Plan or Map<br>b. Hazards<br>c. Relation to Topography<br>d. Planned Unit Development   | Boundary Line Adjustment Plan                             |                     |
| <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/>   | <b>2. Lots: (VI.2)</b><br>a. Lot Arrangement<br>b. Lot sizes<br>c. Commercial and Industrial Lots   | Boundary Line Adjustment Plan                             |                     |
| <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> | <b>3. Streets: (VI.3)</b><br>a. Relation to adjoining Street System<br>b. Street Rights-of-Way<br>c. Access<br>d. Parallel Service Roads<br>e. Street Intersection Angles<br>f. Merging Streets<br>g. Street Deflections and Vertical Alignment<br>h. Marginal Access Streets<br>i. Cul-de-Sacs<br>j. Rounding Street Corners<br>k. Street Name Signs<br>l. Street Names<br>m. Block Lengths<br>n. Block Widths<br>o. Grade of Streets<br>p. Grass Strips | N/A   |                     |
| <input checked="" type="checkbox"/>  | <b>4. Curbing: (VI.4)</b>   | See Site Plan C.102.1                                     |                     |
| <input checked="" type="checkbox"/>  | <b>5. Driveways: (VI.5)</b>   | See Site Plan C.102.1                                     |                     |
| <input checked="" type="checkbox"/>  | <b>6. Drainage Improvements: (VI.6)</b>   | See Sheet C.103   |                     |
| <input checked="" type="checkbox"/>  | <b>7. Municipal Water Service: (VI.7)</b>   | See Utility Plan C.104                                    |                     |
| <input checked="" type="checkbox"/>  | <b>8. Municipal Sewer Service: (VI.8)</b>   | See Utility Plan C.104                                    |                     |
| <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/><br><input checked="" type="checkbox"/>  | <b>9. Installation of Utilities: (VI.9)</b><br>a. All Districts<br>b. Indicator Tape  | See Utility Plan C.104                                    |                     |
| <input checked="" type="checkbox"/>  | <b>10. On-Site Water Supply: (VI.10)</b>  | Enclosed  |                     |
| <input type="checkbox"/>   | <b>11. On-Site Sewage Disposal Systems: (VI.11)</b>   | N/A   |                     |
| <input checked="" type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/>  | <b>12. Open Space: (VI.12)</b><br>a. Natural Features<br>b. Buffer Strips<br>c. Parks<br>d. Tree Planting   | See Landscape Plan L-1                                    |                     |
| <input checked="" type="checkbox"/><br><input checked="" type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/>   | <b>13. Flood Hazard Areas: (VI.13)</b><br>a. Permits<br>b. Minimization of Flood Damage<br>c. Elevation and Flood-Proofing Records<br>d. Alteration of Watercourses   | Cover sheet   |                     |

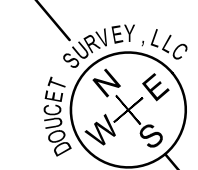
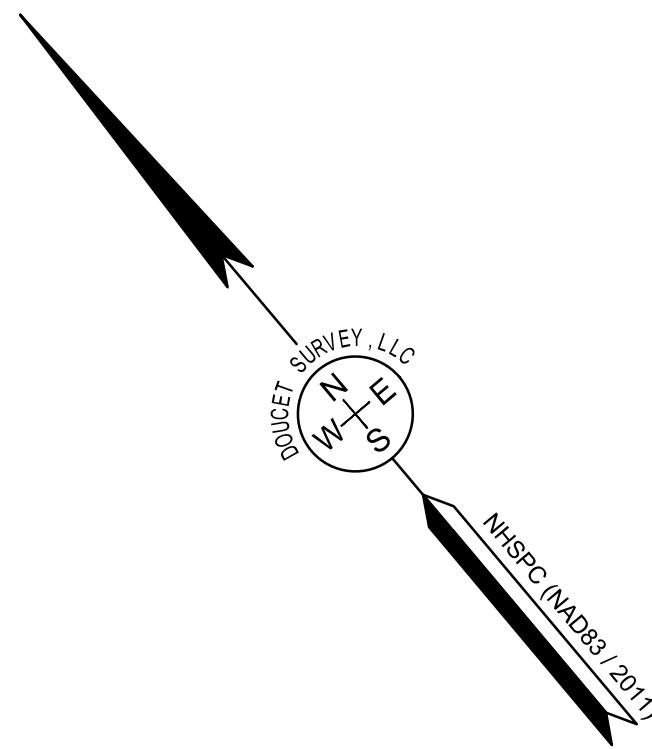
|                                     |  |  |                             |
|-------------------------------------|--|--|-----------------------------|
| <input checked="" type="checkbox"/> | <b>14. Erosion and Sedimentation Control (VI.14)</b> |  |                             |
| <input checked="" type="checkbox"/> | <b>Required Items for Submittal</b>                  | <b>Item Location<br/>(e.g. Page/line or<br/>Plan Sheet/Note #)</b> | <b>Waiver<br/>Requested</b> |
| <input checked="" type="checkbox"/> | <b>15. Easements (VI.15)</b>                         | Existing Conditions<br>Plan  |                             |
| <input checked="" type="checkbox"/> | a. Utilities   |  |                             |
| <input type="checkbox"/>            | b. Drainage  |  |                             |
| <input checked="" type="checkbox"/> | <b>16. Monuments: (VI.16)</b>                        | Existing Conditions Plan   |                             |
| <input checked="" type="checkbox"/> | <b>17. Benchmarks: (VI.17)</b>                       | Existing Conditions Plan   |                             |
| <input type="checkbox"/>            | <b>18. House Numbers (VI.18)</b>                     | N/A  |                             |

| <b>Design Standards</b>             |  |  |                             |
|-------------------------------------|--|--|-----------------------------|
|                                     | <b>Required Items for Submittal</b>  | <b>Indicate compliance and/or<br/>provide explanation as to<br/>alternative design</b> | <b>Waiver<br/>Requested</b> |
| <input checked="" type="checkbox"/> | <b>1. Streets have been designed according to the design standards required under Section (VII.1).</b><br>a. Clearing<br>b. Excavation<br>c. Rough Grade and Preparation of Sub-Grade<br>d. Base Course<br>e. Street Paving<br>f. Side Slopes<br>g. Approval Specifications<br>h. Curbing<br>i. Sidewalks<br>j. Inspection and Methods | See Site Plan C.102.1  |                             |
| <input checked="" type="checkbox"/> | <b>2. Storm water Sewers and Other Drainage Appurtenances have been designed according to the design standards required under Section (VII.2).</b><br>a. Design<br>b. Standards of Construction  | See Grading and Drainage Sheet C.103   |                             |
| <input checked="" type="checkbox"/> | <b>3. Sanitary Sewers have been designed according to the design standards required under Section (VII.3).</b><br>a. Design<br>b. Lift Stations<br>c. Materials<br>d. Construction Standards   | See Utility Plan C.104   |                             |
| <input checked="" type="checkbox"/> | <b>4. Water Mains and Fire Hydrants have been designed according to the design standards required under Section (VII.4).</b><br>a. Connections to Lots<br>b. Design and Construction<br>c. Materials<br>d. Notification Prior to Construction  | See Utility Plan C.104   |                             |

<sup>1</sup> See City of Portsmouth, NH Subdivision Rules and Regulations for details.  
 Subdivision Application Checklist/September 2020





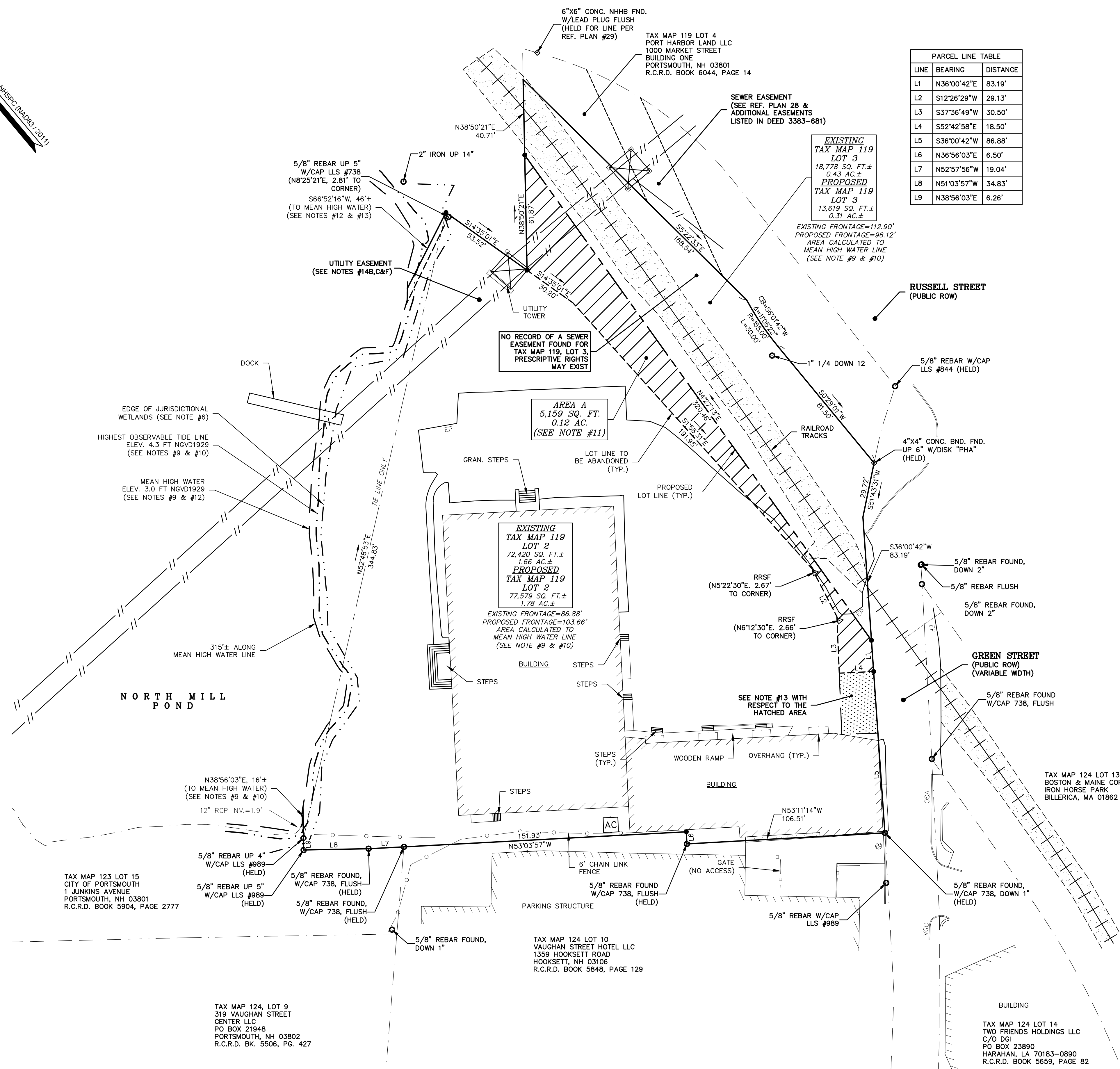


**LEGEND**

- LOT LINE
- - - PROPOSED LOT LINE
- - - - - LOT LINE TO BE ABANDONED
- - - - - APPROXIMATE ABUTTERS LOT LINE
- STOCKADE FENCE
- CHAIN LINK FENCE
- OVERHEAD WIRE
- MEAN HIGH WATER LINE
- - - HIGH TIDE LINE
- - - - - EDGE OF WETLAND
- ▨ CRUSHED STONE
- BOUND FOUND
- IRON PIPE/ROD FOUND
- TYP. BOUND FOUND
- EP EDGE OF PAVEMENT
- VCC VERTICAL GRANITE CURB
- 5/8" REBAR W/D CAP TO BE SET

**PARCEL LINE TABLE**

| LINE | BEARING     | DISTANCE |
|------|-------------|----------|
| L1   | N36°00'42"E | 83.19'   |
| L2   | S12°26'29"W | 29.13'   |
| L3   | S37°36'49"W | 30.50'   |
| L4   | S52°42'58"E | 18.50'   |
| L5   | S36°00'42"W | 86.88'   |
| L6   | N36°56'03"E | 6.50'    |
| L7   | N52°57'56"W | 19.04'   |
| L8   | N51°03'57"W | 34.83'   |
| L9   | N38°56'03"E | 6.26'    |



**EXISTING TAX MAP 119 LOT 3**  
 18,778 SQ. FT. ±  
 0.43 AC. ±  
**PROPOSED TAX MAP 119 LOT 3**  
 13,619 SQ. FT. ±  
 0.31 AC. ±

NO RECORD OF A SEWER EASEMENT FOUND FOR TAX MAP 119, LOT 3. PRESCRIPTIVE RIGHTS MAY EXIST.

**AREA A**  
 5,159 SQ. FT.  
 0.12 AC.  
 (SEE NOTE #11)

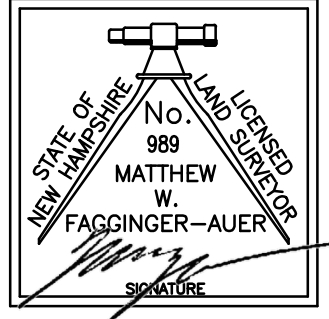
**EXISTING TAX MAP 119 LOT 2**  
 72,420 SQ. FT. ±  
 1.66 AC. ±  
**PROPOSED TAX MAP 119 LOT 2**  
 77,579 SQ. FT. ±  
 1.78 AC. ±

EXISTING FRONTAGE=86.88'  
 PROPOSED FRONTAGE=103.66'  
 AREA CALCULATED TO MEAN HIGH WATER LINE  
 (SEE NOTE #9 & #10)

APPROVED FOR THE RECORD

CHAIRMAN PORTSMOUTH PLANNING BOARD      DATE

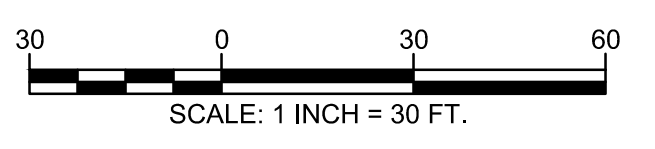
I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.



Matthew W. Fagginger-Auer, L.L.S. #989  
 5/27/21 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.

**SEE SHEET 2 FOR NOTES, REFERENCE PLANS, LOCUS AND KEY PLAN**



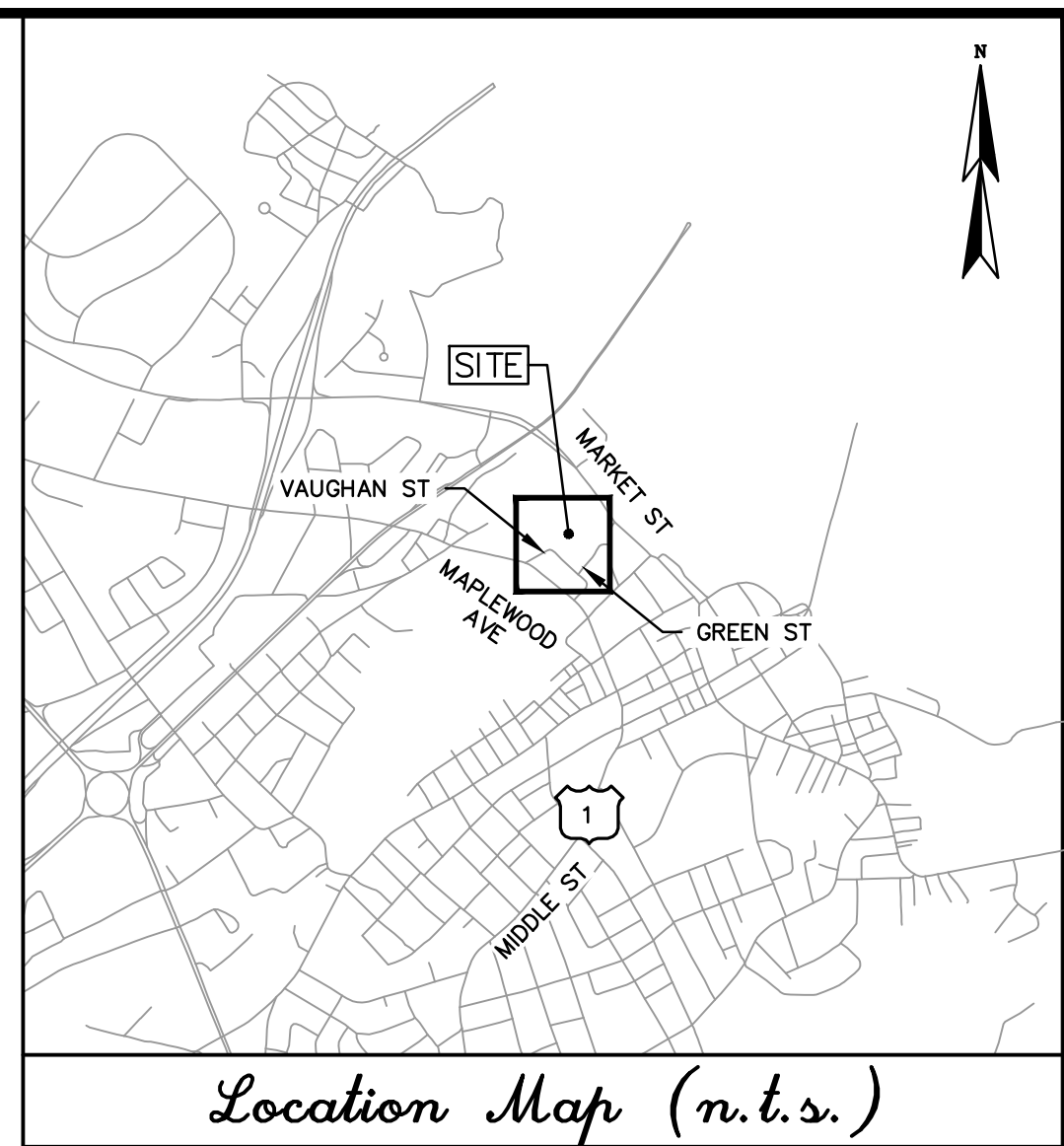
**BOUNDARY LINE ADJUSTMENT PLAN**  
 BETWEEN LAND OF  
**STONE CREEK REALTY LLC**  
 (TAX MAP 119, LOT 2)  
 AND  
**BOSTON & MAINE CORP.**  
 (TAX MAP 119, LOT 3)  
 53 GREEN STREET  
 PORTSMOUTH, NEW HAMPSHIRE

| NO. | DATE | DESCRIPTION | BY |
|-----|------|-------------|----|
|     |      |             |    |
|     |      |             |    |
|     |      |             |    |
|     |      |             |    |

|             |        |              |                |
|-------------|--------|--------------|----------------|
| DRAWN BY:   | M.W.F. | DATE:        | APRIL 29, 2021 |
| CHECKED BY: | W.J.D. | DRAWING NO.: | 4383G          |
| JOB NO.:    | 4383   | SHEET        | 1 OF 2         |

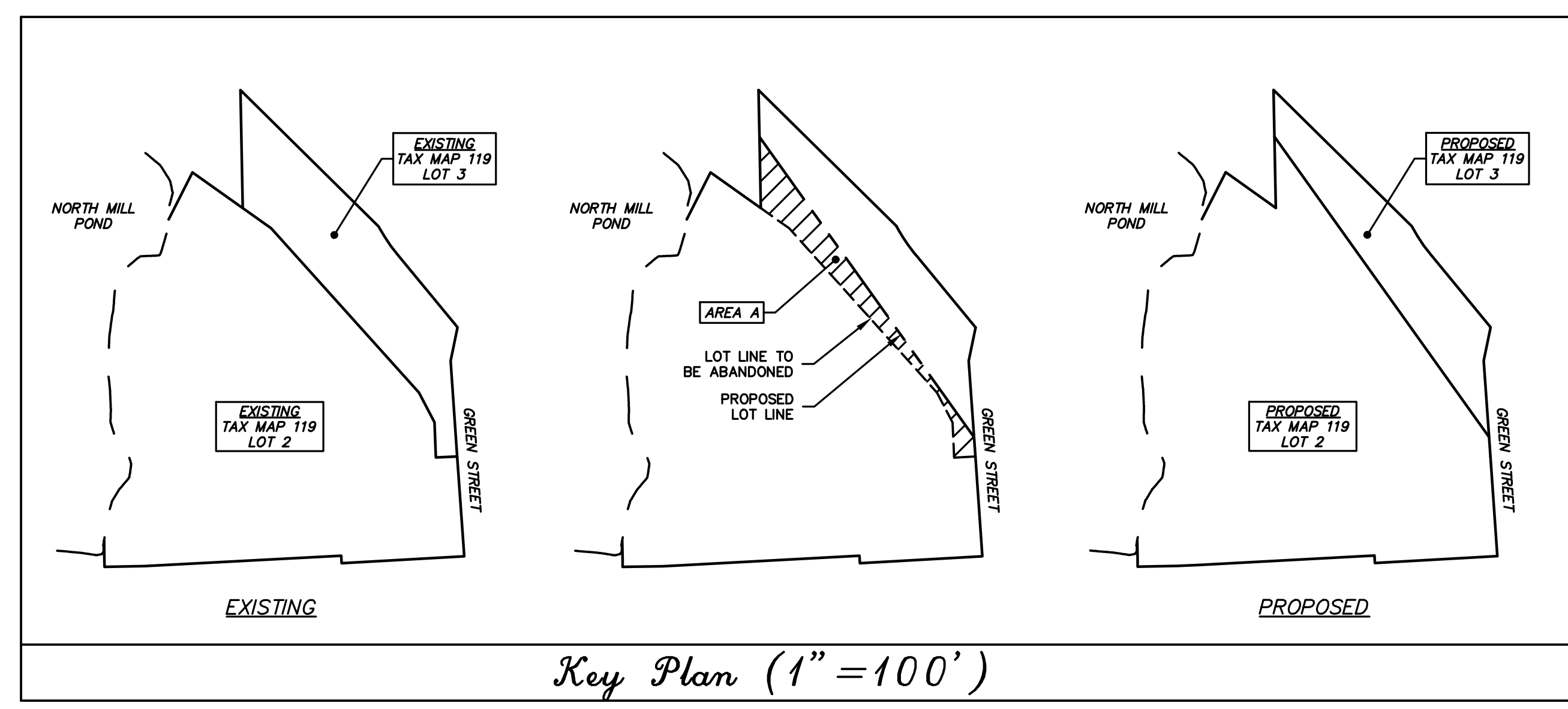
**DOUCET SURVEY**  
 Serving Your Professional Surveying & Mapping Needs  
 102 Kent Place, Newmarket, NH 03857 (603) 659-6560  
 2 Commerce Drive (Suite 202) Bedford, NH 03110 (603) 614-4060  
 10 Storer Street (Riverview Suite) Kennebunk, ME (207) 502-7005  
<http://www.doucetsurvey.com>

FILE NAME: Y:\PROJECTS\4383 - CONDOMINIUMS (BAY CENTER) LAYOUT (NAME: TPOD PLAN (1) - EUTTED: Monday, May 17, 2021 - 10:51am



- NOTES:
- REFERENCE: TAX MAP 119, LOTS 2 & 3  
53 GREEN STREET  
D.S.I. PROJECT NO. 4383
  - TOTAL PARCEL AREA: TAX MAP 119, LOT 2  
72,420 SQ. FT. ± OR 1.66 AC. ±  
(AREA CALCULATED TO MEAN HIGH WATER)  
(SEE NOTE #12)  
TAX MAP 119, LOT 3  
18, 778 SQ. FT. OR 0.43 AC.
  - OWNER OF RECORD: TAX MAP 119, LOT 2  
STONE CREEK REALTY LLC  
C/O DOUGLAS PINCIARO  
PO BOX 121  
NEW CASTLE, NH 03854  
R.C.R.D. BOOK 3300, PAGE 329  
TAX MAP 119, LOT 3  
BOSTON & MAINE CORP  
IRON HORSE PARK  
BILLERICA, MA 01862
  - ZONE: CD5  
OVERLAY DISTRICTS  
-DOWNTOWN OVERLAY DISTRICT  
-HISTORIC DISTRICT
- ZONING DISTRICTS BASED ON THE CITY OF PORTSMOUTH ZONING MAP DATED 11/12/15 AS AVAILABLE ON THE CITY WEBSITE ON 11/18/19. SEE CITY OF PORTSMOUTH ZONING ORDINANCE ARTICLE 5A, SECTION 10.5440 FOR DIMENSIONAL REGULATIONS. THE LAND OWNER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE MUNICIPAL, STATE AND FEDERAL REGULATIONS.
- THE SITE IS SUBJECT TO THE STATE OF NH SHORELAND WATER QUALITY PROTECTION ACT. SEE NHDES WEBSITE FOR SPECIFIC DIMENSIONAL REQUIREMENT.
- FIELD SURVEY PERFORMED BY D.J.B. & J.H.H. DURING APRIL 2021 & D.C.B. & K.J.L. DURING NOVEMBER 2019 USING A TRIMBLE S7 TOTAL STATION AND A TRIMBLE R8 SURVEY GRADE GPS WITH A TRIMBLE TSC3 DATA COLLECTOR AND A TRIMBLE DINI DIGITAL LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.
  - JURISDICTIONAL WETLANDS DELINEATED BY TIGHE & BOND, DURING OCTOBER 2019 IN ACCORDANCE WITH 1987 CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, TECHNICAL REPORT Y-87-1 AND THE INTERIM REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTH CENTRAL AND NORTHEAST REGION (OCTOBER, 2009).
  - VERTICAL DATUM IS BASED ON NGVD29 PER DISK B2 1923.
  - HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.
  - WATER BOUNDARIES ARE DYNAMIC IN NATURE AND ARE SUBJECT TO CHANGE DUE TO NATURAL CAUSES SUCH AS EROSION OR ACCRETION.
  - MEAN HIGH WATER (EL. 3.0' NGVD1929) AND HIGHEST OBSERVABLE TIDE (EL. 4.3' NGVD1929) ELEVATIONS PER "MAPLEWOOD AVENUE CULVERT REPLACEMENT AND NORTH MILL POND RESTORATION, WATERFRONT/STRUCTURAL BASIS OF DESIGN, BY WATERFRONT ENGINEERS, LLC, DATED DECEMBER 30, 2009", PROVIDED BY TIGHE & BOND ON 11-30-15.
  - 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.
  - DUE TO THE COMPLEXITY OF RESEARCHING ROAD RECORDS AS A RESULT OF INCOMPLETE, UNORGANIZED, INCONCLUSIVE, OBLITERATED, OR LOST DOCUMENTS, THERE IS AN INHERENT UNCERTAINTY INVOLVED WHEN ATTEMPTING TO DETERMINE THE LOCATION AND WIDTH OF A ROADWAY RIGHT OF WAY. THE EXTENT OF GREEN STREET AS DEPICTED HEREON IS/ARE BASED ON RESEARCH CONDUCTED AT THE CITY OF PORTSMOUTH CITY HALL, THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS & THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
  - THE GEOMETRY SHOWN ON REFERENCE PLANS 12 & 13 INDICATE THE HATCHED AREA MAY BE SUBJECT TO THE GREEN STREET RIGHT-OF-WAY. R.C.R.D. BOOK 589, PAGE 206 INDICATES FEE OWNERSHIP EXTENDS TO THE CENTERLINE OF GREEN STREET IN THIS AREA.
  - TAX MAP 119 LOT 2 SHOWN HEREON IS SUBJECT TO AND/OR IN BENEFIT OF THE FOLLOWING EASEMENTS & COVENANTS.
    - SIGNAL FACILITIES EXCEPTIONS AND RESERVATIONS, SEE R.C.R.D. BOOK 1339, PAGE 298, (LOCATION UNKNOWN).
    - EASEMENT IN FAVOR OF WESTERN UNION TELEGRAPH COMPANY, SEE R.C.R.D. BOOK 1339, PAGE 298 (NO DIMENSIONS GIVEN).
    - ELECTRIC EASEMENT IN FAVOR OF NEW HAMPSHIRE ELECTRIC COMPANY, SEE R.C.R.D. BOOK 1339, PAGE 298 (NO DIMENSIONS GIVEN).
    - SEWER LINE EASEMENT IN FAVOR OF THE CITY OF PORTSMOUTH, SEE R.C.R.D. BOOK 1339, PAGE 298 (LOCATION UNKNOWN).
    - ADDITIONAL FIRE RESTRICTION, SEE R.C.R.D. BOOK 1339, PAGE 298.
    - POLE AND WIRE AGREEMENT, PER NOTE #8 ON REFERENCE PLAN #1, (RECORDED AGREEMENT NOT FOUND).
    - ACCESS RIGHTS, SEE R.C.R.D. BOOK 589, PAGE 206 (LOCATION UNKNOWN).
  - ALL UNDERGROUND UTILITIES (ELECTRIC, GAS, TEL. WATER, SEWER DRAIN SERVICES) ARE SHOWN IN SCHEMATIC FASHION. THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATIONS FOR INFORMATION REGARDING SUCH. CALL DIG-SAFE AT 1-888-DIG-SAFE.

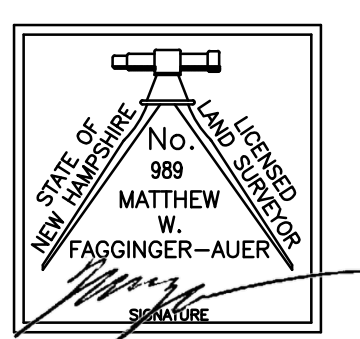
- REFERENCE PLANS:
- "STANDARD BOUNDARY SURVEY, TAX MAP 119 - LOT 2, LAND OF STONE CREEK REALTY", DATED MARCH 2016, BY AMBIT ENGINEERING, INC., NOT RECORDED.
  - "PLAN OF LAND, VAUGHAN AND GREEN STREETS, PORTSMOUTH, NH" DATED JULY 1955 BY JOHN W. DURGIN R.C.R.D. PLAN #02541.
  - "STANDARD BOUNDARY SURVEY, TAX MAP 123 - LOT 15 & TAX MAP 124 LOT 10" DATED JULY 2008, REVISED 4/25/13 BY AMBIT ENGINEERING, INC. R.C.R.D. PLAN #D-37722.
  - "EASEMENT PLAN, EGRESS EASEMENT TO 319 VAUGHAN STREET CENTER, LLC, TAX MAP 124, LOT 9 & TAX MAP 123, LOT 15, PROPERTY OF 299 VAUGHAN STREET, LLC C/O CATHARTES PRIVATE INVESTMENTS", BY AMBIT ENGINEERING, INC., DATED MARCH 2014, R.C.R.D. PLAN #D-38358.
  - "CONDOMINIUM SITE PLAN TAX MAP 124 LOT 14, 233 VAUGHAN STREET, A CONDOMINIUM FOR 233 VAUGHAN STREET, LLC", BY AMBIT ENGINEERING, INC., DATED NOVEMBER 2013, R.C.R.D. PLAN #D-39078.
  - "LOT LINE RELOCATION PLAN PROPERTY OF HARBORCORP, LLC & BOSTON & MAINE CORPORATION", BY AMES MSC, DATED MARCH 15, 2005, R.C.R.D. PLAN #D-32675.
  - "LAND AT 233 VAUGHAN STREET PORTSMOUTH, NH BOSTON & MAINE CORPORATION TO BLUE STAR PROPERTIES, LLC", BY JAMES VERRA & ASSOCIATES, INC., DATED 6/3/01, R.C.R.D. PLAN #D-29702.
  - "VAUGHAN STREET URBAN RENEWAL PROJECT N.H. R-10 PORTSMOUTH, NH, DISPOSITION MAP", BY ANDERSON-NICHOLS & CO., INC., DATED NOVEMBER 1969, R.C.R.D. PLAN D-2408
  - "PLAN OF LAND FOR SOLIMON NEGM", BY TOWN PLANNING & ENGINEERING ASSOCIATES, INC., DATED 3/28/79, R.C.R.D. PLAN #C-8575.
  - "VAUGHAN STREET URBAN RENEWAL PROJECT N.H. R-10 PORTSMOUTH, NH, DISPOSITION PLAN PARCEL 2", BY ANDERSON-NICHOLS & CO., INC., DATED OCTOBER 1973, R.C.R.D. PLAN D-4115.
  - "PLAN OF PROPERTY CORNER VAUGHAN AND GREEN STREETS", DATED FEBRUARY 1907, R.C.R.D. PLAN #306.
  - "LAND SHOWING LAND AND WHARFAGE OWNED BY SILAS PEIRCE AND CO. LTD.", BY A.C. HOYT SURVEYOR, DATED AUGUST 6, 1902, R.C.R.D. PLAN #266.
  - "PLAN OF LAND PORTSMOUTH, NH FOR GEORGE D. EMERSON CO., BY JOHN W. DURGIN, DATED APRIL 1952, ON FILE AT JAMES VERRA AND ASSOCIATES.
  - "PLAN OF LAND VAUGHAN AND GREEN STREETS PORTSMOUTH, NH FOR SAMUEL W. & SUMNER L. POORVU", BY JOHN W. DURGIN, DATED JANUARY 1956, ON FILE AT JAMES VERRA AND ASSOCIATES.
  - "PLAN OF PROPERTY IN PORTSMOUTH, NH OWNED BY R.I. SUGDEN", BY WM A. GROVER, DATED APRIL 15, 1919, ON FILE AT JAMES VERRA AND ASSOCIATES.
  - "LAND ON VAUGHAN STREET PORTSMOUTH, NH, ESTATE OF CARRIE HAM TO LAWRENCE V. REGAN" BY JOHN W. DURGIN, DATED AUGUST 6, 1937, ON FILE AT JAMES VERRA AND ASSOCIATES.
  - "LAND IN PORTSMOUTH, NH, BOSTON & MAINE RAILROAD TO GEORGE D. EMERSON COMPANY", DATED JUNE 1954, R.C.R.D. BOOK 1339, PAGE 305.
  - TRACK PLAN, R.C.R.D. BOOK 1345, PAGE 51.
  - "VAUGHAN STREET URBAN RENEWAL PROJECT N.H. R-10 PORTSMOUTH, NH, APPROVED AS SHOWING VAUGHAN STREET URBAN RENEWAL PROJECT BOUNDARIES AND AREA ONLY, CONDEMNATION MAP", BY ANDERSON-NICHOLS & CO., INC., DATED FEBRUARY 1971, R.C.R.D. PLAN 2425.
  - "SURVEY OF HARBORSIDE & HARBORPARK LAND IN PORTSMOUTH, NH", BY BRIGGS ASSOCIATES, INC., DATED AUGUST 13, 1985, REV. AUGUST 27, 1985, R.C.R.D. PLAN 14043.
  - "SUBDIVISION PLAN OF TAX MAP 123, LOT 15 FOR 299 VAUGHAN STREET, LLC", BY DOUCET SURVEY, INC., DATED MAY 19, 2017, R.C.R.D. PLAN D-40759.
  - "LICENSE, EASEMENT & LAND TRANSFER PLAN FOR VAUGHAN STREET, LLC AND VAUGHAN STREET HOTEL, LLC", BY DOUCET SURVEY, INC., DATED AUGUST 2017, R.C.R.D. PLAN D-40760.
  - "LOT MERGER PLAN FOR VAUGHAN STREET HOTEL, LLC", BY DOUCET SURVEY, INC., DATED SEPTEMBER 2017.
  - "STATION MAP - LANDS, BOSTON AND MAINE RAILROAD OPERATED BY THE BOSTON AND MAINE RAILROAD, STATION 2966+20 TO STATION 3019+0", DATED JUNE 30, 1914, ON FILE AT THE BOSTON AND MAINE CORPORATION.
  - "VAUGHAN STREET PROJECT, PROJECT NO. N.H. R-10, RIGHT OF WAY ADJUSTMENT", BY METCALF & EDDY, DATED MAY 5, 1966, R.C.R.D. PLAN D-2413.
  - "SKETCH OF RAILROAD CONVEYANCE, SEE R.C.R.D. BOOK 446, PAGE 164A.
  - "VAUGHAN STREET URBAN RENEWAL PROJECT N.H. R-10, PORTSMOUTH, NH, DISPOSITION PLAN, PARCEL 2B", BY ANDERSON-NICHOLS & CO., INC., DATED APRIL 1974, R.C.R.D. PLAN DC-4518.
  - "SEWER EASEMENT PLAN, TAX MAP 119, LOT 4, PROPERTY OF NORTH END MASTER DEVELOPMENT LP, GREEN MARKET & RUSSELL STREETS, PORTSMOUTH, NEW HAMPSHIRE, COUNTY OF ROCKINGHAM", BY TFM, DATED JULY 16, 2019.
  - "SUBDIVISION PLAN OF PARCELS 1 & 2 IN PORTSMOUTH, NH FOR THE CITY OF PORTSMOUTH", BY BRIGGS ASSOCIATES INC., DATED AUGUST 1, 1984, R.C.R.D. PLAN D-13798.
  - "VAUGHAN STREET PROJECT, PROJECT NO. N.H. R-10, PROPERTY MAP-A, PORTSMOUTH HOUSING AUTHORITY, PORTSMOUTH, NEW HAMPSHIRE, ROCKINGHAM COUNTY", BY METCALF & EDDY, DATED MAY 5, 1966, R.C.R.D. PLAN D-2410.
  - "LAND IN PORTSMOUTH, NH, BOSTON & MAINE RAILROAD TO ROSE R. WOLFSON", DATED JUNE 1954, R.C.R.D. PLAN 2282.



**BOUNDARY LINE  
ADJUSTMENT PLAN**  
BETWEEN LAND OF  
STONE CREEK REALTY LLC  
(TAX MAP 119, LOT 2)  
AND  
BOSTON & MAINE CORP.  
(TAX MAP 119, LOT 3)  
53 GREEN STREET  
PORTSMOUTH, NEW HAMPSHIRE

| NO. | DATE | DESCRIPTION | BY |
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| CHECKED BY: | W.J.D. | DRAWING NO.: | 4383G          |
| JOB NO.:    | 4383   | SHEET:       | 2 OF 2         |



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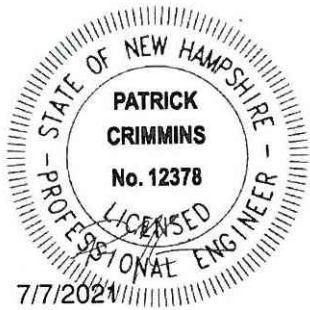
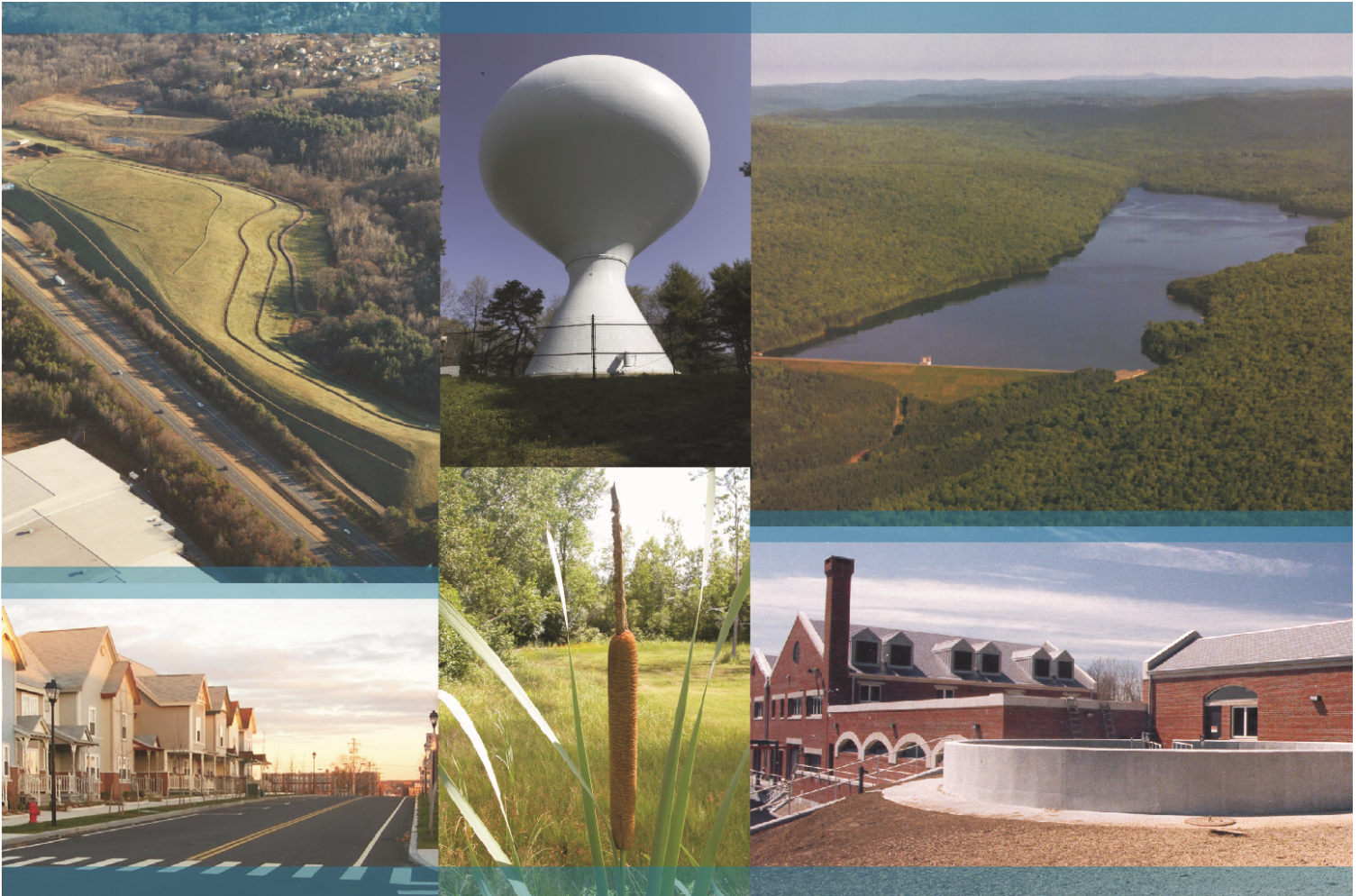
*Matthew W. Fagginger-Auer*  
L.L.S. #989  
5/17/21 DATE

APPROVED FOR THE RECORD  
CHAIRMAN PORTSMOUTH PLANNING BOARD 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.

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**Tighe & Bond**

Proposed Mixed-Use Development  
 53 Green Street  
 Portsmouth, NH

## Drainage Analysis

Prepared For:  
**CPI Management, LLC**  
**100 Summer Street**  
**Boston, Massachusetts 02110**

March 22, 2021  
 Last Revised: July 7, 2021





**Section 1 Project Description**

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1.2 Pre- and Post-Development Comparison .....1-1  
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**Section 5 BMP Worksheet and Sizing Memo**

Appendices

A Site Specific Soils Report  
B Extreme Precipitation Tables  
C "Examination of Thermal Impacts from Stormwater BMPs", By The University of  
New Hampshire Stormwater Center



# **Section 1**

## **Project Description**

The proposed project is located at 53 Green Street in Portsmouth and is identified as Map 119, Lot 2 on the City of Portsmouth's Tax Maps. This parcel is approximately 1.65 acres. As part of this project, this parcel will acquire a portion of the adjacent lot that contains the rail line, identified as Tax Map 119 Lot 3. This will result in a total acreage of approximately 1.77 acres for the proposed parcel. The parcel is bounded to the north and west by North Mill Pond, to the south by an adjacent parcel, and to the east by Green Street and the Boston and Maine (B&M) railroad.

The lot is currently occupied by two (2) single-story commercial tenant buildings, which total approximately 21,000 square feet, and associated parking. The lot is predominantly impervious and has a maintained lawn area along the North Mill Pond shoreline. There is an existing utility easement on the north corner of the parcel which contains a utility tower with overhead wire connections, not directly associated with the site.

The proposed project includes the demolition of the two existing single-story structures and construction of a single five story mixed-use building. The project will include associated site improvements that consist of below grade parking, utilities, stormwater management and treatment, landscaping, lighting, and a public recreation trail in coordination with the City. Additionally, the land associated with the public recreation trail will be deeded to the City of Portsmouth and designated as community space for the City's North Mill Pond Trail project.

### **1.1 On-Site Soil Description**

The site is a highly disturbed site along the North Mill Pond. The property shows evidence of what appears to be very old filling and grading associated with the existing development. The site consists of terrain that is generally flat and slopes from the south to the north to North Mill Pond. The existing property has an approximate high point of elevation of 14 near Green Street

A site specific soils survey was conducted by Leonard Lord, PhD, CSS, CWS of Tighe & Bond, Inc and can be found in Appendix A of this Report. Based on the soil survey, the runoff analyzed within these studies has been modeled using mostly Hydrologic Soil Group B soils and some portions of Hydrologic Soil Group C soils, as much of the site is comprised of Udorthents with two drainage classifications, moderately poorly drained soils and portions of well drained soils.

### **1.2 Pre- and Post-Development Comparison**

The pre-development and post-development watershed areas have been analyzed at a single point of analysis. While the point of analysis remained unchanged, its contributing sub-catchment areas varied between pre-development and post-development conditions. These adjustments were made to reflect the differences in drainage patterns between the existing and proposed conditions. The overall area analyzed as part of this drainage analysis was held constant. For reference, PA-1 assesses flows that discharge directly to North Mill Pond via overland flow or various outlets.

Since North Mill Pond is a tidal water, NHDES does not require peak runoff control requirements to be met (Env-Wq 1507.06(d)). However, a Stormtech Isolator Row and detention system is proposed on the development site for the purpose of mitigating temperature differences between the stormwater runoff and the North Mill Pond.

### 1.3 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. The peak discharge rates 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, with an additional 15% added factor of safety as required by Env-Wq 1503.08(l).

**Table 1.2:** Extreme Precipitation Estimates (NRCC)

| <b>YEAR</b> | <b>24-hr Estimate<br/>(inches)</b> | <b>+ 15%<br/>(inches)</b> |
|-------------|------------------------------------|---------------------------|
| <b>2</b>    | 3.20                               | 3.68                      |
| <b>10</b>   | 4.86                               | 5.59                      |
| <b>25</b>   | 6.16                               | 7.08                      |
| <b>50</b>   | 7.37                               | 8.48                      |

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.



## **Section 2**

# **Pre-Development Conditions**

In order to analyze the pre-development condition, the site has been divided into one (1) watershed area modeled at one (1) point of analysis. This point of analysis and watershed are depicted on the plan entitled "Pre-Development Watershed Plan", Sheets C-801.

The point of analysis and its contributing watershed area is described below:

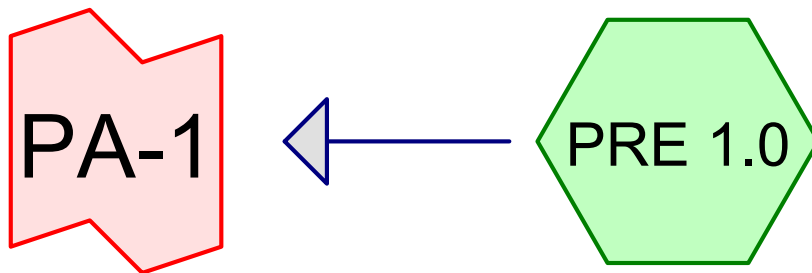
### **Point of Analysis (PA-1)**

Point of Analysis 1 (PA-1) is the North Mill Pond which borders the northwest boundary of the site. The North Mill Pond is a tidal wetland which directly feeds into the Piscataqua River.

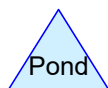
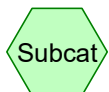
Pre-development Watershed 1.0 (PRE 1.0) is the single watershed analyzed in the pre-development condition. It is comprised of mostly impervious surfaces including paved parking and structures, disturbed forested areas to the north and west adjacent to the North Mill Pond shoreline and a maintained lawn between the building and shoreline. Additionally, this watershed is comprised of a small impervious section of Green Street and a small section of the railroad property which flows onto the site. Runoff from this watershed area travels via overland flow to discharge into North Mill Pond. The runoff is currently untreated before discharge.

## **2.1 Pre-Development Calculations**

## **2.2 Pre-Development Watershed Plans**



## POINT OF ANALYSIS 1



**Area Listing (all nodes)**

| Area<br>(sq-ft) | CN        | Description<br>(subcatchment-numbers)   |
|-----------------|-----------|---|
| 27,086          | 61        | >75% Grass cover, Good, HSG B (PRE 1.0) |
| 2,659           | 74        | >75% Grass cover, Good, HSG C (PRE 1.0) |
| 2,188           | 85        | Gravel, HSG B (PRE 1.0)                 |
| 24,699          | 98        | Paved parking, HSG B (PRE 1.0)          |
| 21,715          | 98        | Roofs, HSG B (PRE 1.0)                  |
| 4,790           | 55        | Woods, Good, HSG B (PRE 1.0)            |
| <b>83,137</b>   | <b>82</b> | <b>TOTAL AREA</b>                       |

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**Soil Listing (all nodes)**

| Area<br>(sq-ft) | Soil<br>Group | Subcatchment<br>Numbers |
|-----------------|---------------|-------------------------|
| 0               | HSG A         |                         |
| 80,478          | HSG B         | PRE 1.0                 |
| 2,659           | HSG C         | PRE 1.0                 |
| 0               | HSG D         |                         |
| 0               | Other         |                         |
| <b>83,137</b>   |               | <b>TOTAL AREA</b>       |

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**Ground Covers (all nodes)**

| HSG-A<br>(sq-ft) | HSG-B<br>(sq-ft) | HSG-C<br>(sq-ft) | HSG-D<br>(sq-ft) | Other<br>(sq-ft) | Total<br>(sq-ft) | Ground<br>Cover           |
|------------------|------------------|------------------|------------------|------------------|------------------|---------------------------|
| 0                | 27,086           | 2,659            | 0                | 0                | 29,745           | >75% Grass<br>cover, Good |
| 0                | 2,188            | 0                | 0                | 0                | 2,188            | Gravel                    |
| 0                | 24,699           | 0                | 0                | 0                | 24,699           | Paved parking             |
| 0                | 21,715           | 0                | 0                | 0                | 21,715           | Roofs                     |
| 0                | 4,790            | 0                | 0                | 0                | 4,790            | Woods, Good               |
| <b>0</b>         | <b>80,478</b>    | <b>2,659</b>     | <b>0</b>         | <b>0</b>         | <b>83,137</b>    | <b>TOTAL AREA</b>         |



**C0960-011 PRE**

*Type III 24-hr 2 Year Storm Rainfall=3.68"*

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Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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=83,137 sf 55.83% Impervious Runoff Depth=1.93"  
Flow Length=380' Tc=5.0 min CN=82 Runoff=4.43 cfs 13,387 cf

**Link PA-1: POINT OF ANALYSIS1**

Inflow=4.43 cfs 13,387 cf  
Primary=4.43 cfs 13,387 cf

**Total Runoff Area = 83,137 sf Runoff Volume = 13,387 cf Average Runoff Depth = 1.93"**  
**44.17% Pervious = 36,723 sf 55.83% Impervious = 46,414 sf**

**Summary for Subcatchment PRE 1.0:**

Runoff = 8.22 cfs @ 12.08 hrs, Volume= 25,023 cf, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs  
Type III 24-hr 10 Year Storm Rainfall=5.59"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 21,715    | 98 | Roofs, HSG B                  |
| 24,699    | 98 | Paved parking, HSG B          |
| 27,086    | 61 | >75% Grass cover, Good, HSG B |
| 4,790     | 55 | Woods, Good, HSG B            |
| 2,659     | 74 | >75% Grass cover, Good, HSG C |
| * 2,188   | 85 | Gravel, HSG B                 |
| 83,137    | 82 | Weighted Average              |
| 36,723    |    | 44.17% Pervious Area          |
| 46,414    |    | 55.83% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft)                            | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|--|-------------------|----------------|--|
| 0.9      | 100           | 0.0330                                   | 1.80              |                | <b>Sheet Flow,</b><br>Smooth surfaces n= 0.011 P2= 3.68"             |
| 1.9      | 223           | 0.0090                                   | 1.93              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps              |
| 0.7      | 57            | 0.0400                                   | 1.40              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 3.5      | 380           | Total, Increased to minimum Tc = 5.0 min |                   |                |  |

**Summary for Link PA-1: POINT OF ANALYSIS 1**

Inflow Area = 83,137 sf, 55.83% Impervious, Inflow Depth = 3.61" for 10 Year Storm event  
 Inflow = 8.22 cfs @ 12.08 hrs, Volume= 25,023 cf  
 Primary = 8.22 cfs @ 12.08 hrs, Volume= 25,023 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs

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*Type III 24-hr 25 Year Storm Rainfall=7.08"*

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Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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=83,137 sf 55.83% Impervious Runoff Depth=4.99"  
Flow Length=380' Tc=5.0 min CN=82 Runoff=11.23 cfs 34,579 cf

**Link PA-1: POINT OF ANALYSIS1**

Inflow=11.23 cfs 34,579 cf  
Primary=11.23 cfs 34,579 cf

**Total Runoff Area = 83,137 sf Runoff Volume = 34,579 cf Average Runoff Depth = 4.99"**  
**44.17% Pervious = 36,723 sf 55.83% Impervious = 46,414 sf**

**C0960-011 PRE**

*Type III 24-hr 50 Year Storm Rainfall=8.48"*

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Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 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=83,137 sf 55.83% Impervious Runoff Depth=6.32"  
Flow Length=380' Tc=5.0 min CN=82 Runoff=14.07 cfs 43,762 cf

**Link PA-1: POINT OF ANALYSIS1**

Inflow=14.07 cfs 43,762 cf  
Primary=14.07 cfs 43,762 cf

**Total Runoff Area = 83,137 sf Runoff Volume = 43,762 cf Average Runoff Depth = 6.32"**  
**44.17% Pervious = 36,723 sf 55.83% Impervious = 46,414 sf**













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## Section 3

# Post-Development Conditions

The post-development condition was analyzed by dividing the watersheds into six (6) watershed areas. Stormwater runoff from these sub-catchments predominantly flows via subsurface drainage systems prior to discharging into North Mill Pond (PA-1). A negligible amount of runoff from the sidewalk along Green Street will sheet flow into the City's closed drainage system due to the existing grades of the street sloping away from the site. The City's drainage system eventually discharges into North Mill Pond (PA-1), and, therefore, has been included in the single point of analysis.

A Stormtech Isolator Row and detention system is included on the development site for the purpose of mitigating temperature differences between the stormwater runoff and the North Mill Pond. This system and outlet structure have been designed to mitigate temperature of the water quality volume (WQV). Runoff that exceeds this volume will utilize an overflow and discharge into North Mill Pond (PA-1). This detention basin is used to mitigate increased temperature of the initial surface runoff, based on data provided in a publication by the University of New Hampshire Stormwater Center (UNHSC), titled "Examination of Thermal Impacts from Stormwater BMPs" and can be found in Appendix C. Due to this system being included in the design, post-development flows from the site have been reduced from the pre-development condition. As previously described, North Mill Pond is a tidal water, therefore, NHDES does not require peak runoff control requirements to be met (per Env-Wq 1507.06(d)).

The point of analysis and sub-catchment areas are depicted on the plan entitled "Post-Development Watershed Plan," Sheet C-802. The points of analysis and its contributing watershed areas are described below:

### **Point of Analysis (PA-1)**

Point of Analysis 1 (PA-1), North Mill Pond, has the same overall contributing area as in the pre-development condition. PA-1 includes an underground detention basin, which is designed to detain the water quality volume of the paved surface runoff. Additional impervious surface runoff will be collected and filtered prior to discharging into the North Mill Pond.

Post-development Watershed 1.1 (POST-1.1) is approximately 52% impervious surface of either pavement or concrete surface. The area includes the site access driveway and entrance turnaround. The pervious portion of this watershed includes the railroad gravel area and a porous grass paver section intended for emergency use for fire truck access. Additional pervious areas that contribute to this watershed include landscaped areas along the building façade. The stormwater runoff created from this area is collected via offline deep-sump and hooded catch basins and conveyed via a closed drainage system to the underground stormtech chamber system (POND-1). The detention basin is equipped with an isolator row as recommended by the UNHSC publication and is lined due to high seasonal high water table in the area. The system is underdrained and treatment is attained post detention by use of a proprietary membrane filtration treatment device identified as Jellyfish Filter 1 (JF-1). All collected runoff from this catchment is discharged into the North Mill Pond (PA-1).



Post-development Watershed 1.2 (POST-1.2) is 100% impervious roof surface that is collected via internal building plumbing system and conveyed via piping to a proprietary membrane filtration treatment device identified as Jellyfish Filter 1 (JF-1). The treated runoff eventually discharges into North Mill Pond (PA-1).

Post-development Watershed 1.3 (POST-1.3) is the connection path for public access to the public recreation trail along the shoreline. The area is approximately 53% impervious surface and consists of landscaping and grassed lawn areas in the post-development condition. The runoff associated with this area is captured via yard drains and is conveyed via piping to a proprietary membrane filtration treatment device identified as Jellyfish Filter 1 (JF-1). The treated runoff eventually discharges into North Mill Pond (PA-1).

Post-development Watershed 1.4 (POST-1.4) is 100% pervious surface. The area consists mostly of lawn, wooded, and landscaped areas. Runoff from this area remains similar to existing conditions and flows overland and discharges into the North Mill Pond.

Post-development Watershed 1.5 (POST-1.5) is 100% impervious sidewalk surface and flows overland onto Green Street. This subcatchment represents a proposed city sidewalk which flows onto the city street for collection. The closed drainage system associated with Green Street eventually discharges into North Mill Pond (PA-1).

Post-development Watershed 1.6 (POST-1.6) includes a city recreation trail which the city requested that be porous pavement, as not to increase impervious area so close to the waterfront. The runoff associated with this area flows overland and is captured and treated by the porous pavement section and is conveyed via piping to discharge into North Mill Pond.

### 3.1 Peak Rate Comparison

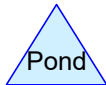
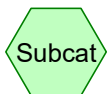
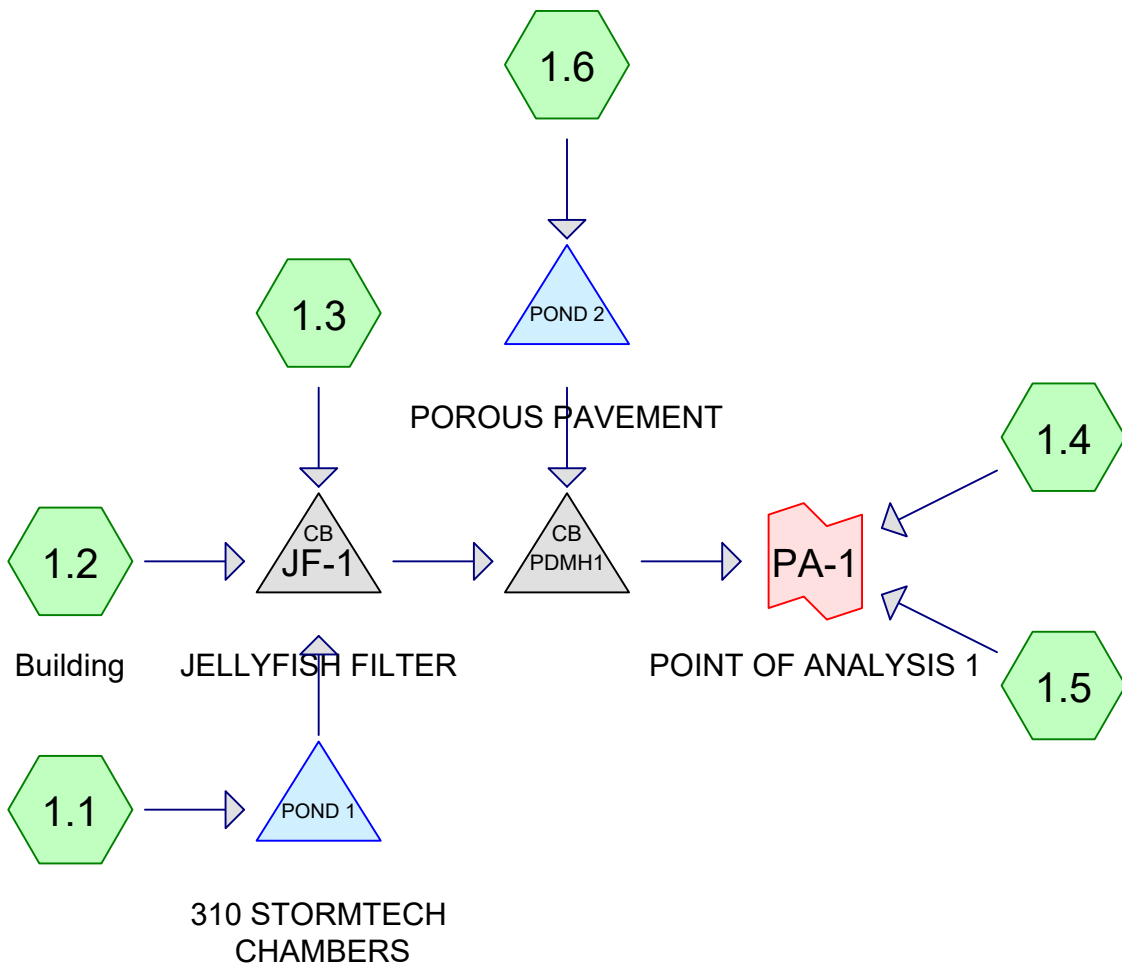
The following table summarizes and compares the pre- and post-development peak runoff rates for the 2-year, 10-year, 25-year and 50-year storm events at each point of analysis. Though peak flow mitigation is not required, the following table is provided for reference.

| Point of Analysis | Pre/ <b>Post</b><br>2-Year<br>Storm<br>(cfs) | Pre/ <b>Post</b><br>10-Year<br>Storm<br>(cfs) | Pre/ <b>Post</b><br>25-Year<br>Storm<br>(cfs) | Pre/ <b>Post</b><br>50-Year<br>Storm<br>(cfs) |
|-------------------|--|---|---|---|
| PA1               | 4.43/ <b>3.50</b>                            | 8.22/ <b>5.91</b>                             | 11.23/ <b>9.70</b>                            | 14.07/ <b>11.55</b>                           |

### 3.2 Post-Development Calculations

### 3.3 Post-Development Watershed Plans







**C0960-011 POST**

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**Area Listing (all nodes)**

| Area<br>(sq-ft) | CN        | Description<br>(subcatchment-numbers)              |
|-----------------|-----------|--|
| 28,467          | 61        | >75% Grass cover, Good, HSG B (1.1, 1.3, 1.4, 1.6) |
| 2,659           | 74        | >75% Grass cover, Good, HSG C (1.4)                |
| 2,188           | 85        | Gravel, HSG B (1.1)                                |
| 14,989          | 98        | Paved parking, HSG B (1.1, 1.3, 1.5, 1.6)          |
| 3,392           | 98        | Porous Paved Path, HSG B (1.6)                     |
| 29,630          | 98        | Roofs, HSG B (1.2)                                 |
| 1,812           | 55        | Woods, Good, HSG B (1.1, 1.4)                      |
| <b>83,137</b>   | <b>83</b> | <b>TOTAL AREA</b>                                  |



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**Soil Listing (all nodes)**

| Area<br>(sq-ft) | Soil<br>Group | Subcatchment<br>Numbers      |
|-----------------|---------------|------------------------------|
| 0               | HSG A         |                              |
| 80,478          | HSG B         | 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 |
| 2,659           | HSG C         | 1.4                          |
| 0               | HSG D         |                              |
| 0               | Other         |                              |
| <b>83,137</b>   |               | <b>TOTAL AREA</b>            |

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**Ground Covers (all nodes)**

| HSG-A<br>(sq-ft) | HSG-B<br>(sq-ft) | HSG-C<br>(sq-ft) | HSG-D<br>(sq-ft) | Other<br>(sq-ft) | Total<br>(sq-ft) | Ground<br>Cover           |
|------------------|------------------|------------------|------------------|------------------|------------------|---------------------------|
| 0                | 28,467           | 2,659            | 0                | 0                | 31,126           | >75% Grass<br>cover, Good |
| 0                | 2,188            | 0                | 0                | 0                | 2,188            | Gravel                    |
| 0                | 14,989           | 0                | 0                | 0                | 14,989           | Paved parking             |
| 0                | 3,392            | 0                | 0                | 0                | 3,392            | Porous Paved<br>Path      |
| 0                | 29,630           | 0                | 0                | 0                | 29,630           | Roofs                     |
| 0                | 1,812            | 0                | 0                | 0                | 1,812            | Woods, Good               |
| <b>0</b>         | <b>80,478</b>    | <b>2,659</b>     | <b>0</b>         | <b>0</b>         | <b>83,137</b>    | <b>TOTAL AREA</b>         |



**C0960-011 POST**

Type III 24-hr 2 Year Storm Rainfall=3.68"

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Time span=0.00-48.00 hrs, dt=0.04 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

|  |  |
|--|--|
| <b>Subcatchment 1.1:</b>                   | Runoff Area=19,827 sf 52.01% Impervious Runoff Depth=2.01"<br>Tc=5.0 min CN=83 Runoff=1.10 cfs 3,323 cf                  |
| <b>Subcatchment 1.2: Building</b>          | Runoff Area=29,630 sf 100.00% Impervious Runoff Depth=3.45"<br>Tc=5.0 min CN=98 Runoff=2.49 cfs 8,509 cf                 |
| <b>Subcatchment 1.3:</b>                   | Runoff Area=3,963 sf 52.99% Impervious Runoff Depth=1.86"<br>Tc=5.0 min CN=81 Runoff=0.20 cfs 613 cf                     |
| <b>Subcatchment 1.4:</b>                   | Runoff Area=15,732 sf 0.00% Impervious Runoff Depth=0.75"<br>Tc=5.0 min CN=63 Runoff=0.27 cfs 982 cf                     |
| <b>Subcatchment 1.5:</b>                   | Runoff Area=2,141 sf 100.00% Impervious Runoff Depth=3.45"<br>Tc=5.0 min CN=98 Runoff=0.18 cfs 615 cf                    |
| <b>Subcatchment 1.6:</b>                   | Runoff Area=11,844 sf 32.31% Impervious Runoff Depth=1.30"<br>Tc=5.0 min CN=73 Runoff=0.41 cfs 1,285 cf                  |
| <b>Pond JF-1: JELLYFISH FILTER</b>         | Peak Elev=7.31' Inflow=3.06 cfs 12,443 cf<br>24.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=3.06 cfs 12,443 cf |
| <b>Pond PDMH1:</b>                         | Peak Elev=7.05' Inflow=3.06 cfs 13,044 cf<br>24.0" Round Culvert n=0.013 L=8.0' S=0.0062 '/' Outflow=3.06 cfs 13,044 cf  |
| <b>Pond POND 1: 310 STORMTECH CHAMBERS</b> | Peak Elev=7.62' Storage=516 cf Inflow=1.10 cfs 3,323 cf<br>Outflow=0.68 cfs 3,322 cf                                     |
| <b>Pond POND 2: POROUS PAVEMENT</b>        | Peak Elev=6.53' Storage=803 cf Inflow=0.41 cfs 1,285 cf<br>Outflow=0.03 cfs 601 cf                                       |
| <b>Link PA-1: POINT OF ANALYSIS 1</b>      | Inflow=3.50 cfs 14,641 cf<br>Primary=3.50 cfs 14,641 cf  |

**Total Runoff Area = 83,137 sf Runoff Volume = 15,326 cf Average Runoff Depth = 2.21"**  
**42.25% Pervious = 35,126 sf 57.75% Impervious = 48,011 sf**

**C0960-011 POST**

Type III 24-hr 10 Year Storm Rainfall=5.59"

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**Summary for Subcatchment 1.1:**

Runoff = 2.01 cfs @ 12.08 hrs, Volume= 6,134 cf, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs  
Type III 24-hr 10 Year Storm Rainfall=5.59"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 10,313    | 98 | Paved parking, HSG B          |
| 6,941     | 61 | >75% Grass cover, Good, HSG B |
| 385       | 55 | Woods, Good, HSG B            |
| * 2,188   | 85 | Gravel, HSG B                 |
| 19,827    | 83 | Weighted Average              |
| 9,514     |    | 47.99% Pervious Area          |
| 10,313    |    | 52.01% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description          |
|----------|---------------|---------------|-------------------|----------------|----------------------|
| 5.0      |               |               |                   |                | <b>Direct Entry,</b> |

**Summary for Subcatchment 1.2: Building**

Runoff = 3.80 cfs @ 12.07 hrs, Volume= 13,216 cf, Depth= 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs  
Type III 24-hr 10 Year Storm Rainfall=5.59"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 29,630    | 98 | Roofs, HSG B            |
| 29,630    |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description          |
|----------|---------------|---------------|-------------------|----------------|----------------------|
| 5.0      |               |               |                   |                | <b>Direct Entry,</b> |

**Summary for Subcatchment 1.3:**

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 1,160 cf, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs  
Type III 24-hr 10 Year Storm Rainfall=5.59"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 2,100     | 98 | Paved parking, HSG B          |
| 1,863     | 61 | >75% Grass cover, Good, HSG B |
| 3,963     | 81 | Weighted Average              |
| 1,863     |    | 47.01% Pervious Area          |
| 2,100     |    | 52.99% Impervious Area        |



**C0960-011 POST**

Type III 24-hr 10 Year Storm Rainfall=5.59"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 1.4:**

Runoff = 0.79 cfs @ 12.08 hrs, Volume= 2,484 cf, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs  
Type III 24-hr 10 Year Storm Rainfall=5.59"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 11,646    | 61 | >75% Grass cover, Good, HSG B |
| 1,427     | 55 | Woods, Good, HSG B            |
| 2,659     | 74 | >75% Grass cover, Good, HSG C |
| 15,732    | 63 | Weighted Average              |
| 15,732    |    | 100.00% Pervious Area         |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 1.5:**

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 955 cf, Depth= 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs  
Type III 24-hr 10 Year Storm Rainfall=5.59"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| 2,141     | 98 | Paved parking, HSG B    |
| 2,141     |    | 100.00% Impervious Area |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**Summary for Subcatchment 1.6:**

Runoff = 0.90 cfs @ 12.08 hrs, Volume= 2,716 cf, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs  
Type III 24-hr 10 Year Storm Rainfall=5.59"

**C0960-011 POST**

Type III 24-hr 10 Year Storm Rainfall=5.59"

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| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 435       | 98 | Paved parking, HSG B          |
| 8,017     | 61 | >75% Grass cover, Good, HSG B |
| * 3,392   | 98 | Porous Paved Path, HSG B      |
| 11,844    | 73 | Weighted Average              |
| 8,017     |    | 67.69% Pervious Area          |
| 3,827     |    | 32.31% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description          |
|----------|---------------|---------------|-------------------|----------------|----------------------|
| 5.0      |               |               |                   |                | <b>Direct Entry,</b> |

**Summary for Pond JF-1: JELLYFISH FILTER**

Inflow Area = 53,420 sf, 78.70% Impervious, Inflow Depth = 4.61" for 10 Year Storm event  
 Inflow = 4.86 cfs @ 12.10 hrs, Volume= 20,509 cf  
 Outflow = 4.86 cfs @ 12.10 hrs, Volume= 20,509 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 4.86 cfs @ 12.10 hrs, Volume= 20,509 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs / 2  
 Peak Elev= 7.61' @ 12.10 hrs  
 Flood Elev= 12.00'

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 6.35'  | <b>24.0" Round Culvert</b><br>L= 16.0' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 6.35' / 6.25' S= 0.0063 '/ Cc= 0.900<br>n= 0.013, Flow Area= 3.14 sf |

**Primary OutFlow** Max=4.81 cfs @ 12.10 hrs HW=7.60' TW=7.31' (Dynamic Tailwater)  
 ↑**1=Culvert** (Outlet Controls 4.81 cfs @ 3.33 fps)

**Summary for Pond PDMH1:**

[80] Warning: Exceeded Pond POND 2 by 0.85' @ 12.04 hrs (0.71 cfs 1,193 cf)

Inflow Area = 65,264 sf, 70.28% Impervious, Inflow Depth = 4.14" for 10 Year Storm event  
 Inflow = 4.86 cfs @ 12.10 hrs, Volume= 22,541 cf  
 Outflow = 4.86 cfs @ 12.10 hrs, Volume= 22,541 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 4.86 cfs @ 12.10 hrs, Volume= 22,541 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs / 2  
 Peak Elev= 7.31' @ 12.10 hrs  
 Flood Elev= 10.10'

| Device | Routing | Invert | Outlet Devices  |
|--------|---------|--------|---|
| #1     | Primary | 6.15'  | <b>24.0" Round Culvert</b><br>L= 8.0' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 6.15' / 6.10' S= 0.0062 '/ Cc= 0.900<br>n= 0.013, Flow Area= 3.14 sf |



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Type III 24-hr 10 Year Storm Rainfall=5.59"

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**Primary OutFlow** Max=4.80 cfs @ 12.10 hrs HW=7.31' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 4.80 cfs @ 3.68 fps)

**Summary for Pond POND 1: 310 STORMTECH CHAMBERS**

Exfiltration Rate derived from Site Specific Soil Survey report which compares existing soil classification to Sutton Soil HSG-B, which has a low Hydraulic conductivity rate of 0.6 in/hr, per NHDES regulations shall be modeling as 0.3 in/hr.

|               |                               |                      |                                    |
|---------------|-------------------------------|----------------------|------------------------------------|
| Inflow Area = | 19,827 sf, 52.01% Impervious, | Inflow Depth = 3.71" | for 10 Year Storm event            |
| Inflow =      | 2.01 cfs @ 12.08 hrs,         | Volume=              | 6,134 cf                           |
| Outflow =     | 1.54 cfs @ 12.16 hrs,         | Volume=              | 6,133 cf, Atten= 23%, Lag= 4.9 min |
| Primary =     | 1.54 cfs @ 12.16 hrs,         | Volume=              | 6,133 cf                           |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs / 2

Peak Elev= 8.30' @ 12.16 hrs Surf.Area= 998 sf Storage= 946 cf

Flood Elev= 9.36' Surf.Area= 998 sf Storage= 1,250 cf

Plug-Flow detention time= 14.7 min calculated for 6,133 cf (100% of inflow)

Center-of-Mass det. time= 14.3 min ( 822.3 - 808.1 )

| Volume | Invert | Avail.Storage | Storage Description   |
|--------|--------|---------------|---|
| #1A    | 6.70'  | 719 cf        | <b>14.83'W x 67.28'L x 2.33'H Field A</b><br>2,329 cf Overall - 531 cf Embedded = 1,798 cf x 40.0% Voids  |
| #2A    | 7.20'  | 531 cf        | <b>ADS_StormTech SC-310 +Cap</b> x 36 Inside #1<br>Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf<br>Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap<br>4 Rows of 9 Chambers |
|        |        | 1,250 cf      | Total Available Storage   |

Storage Group A created with Chamber Wizard

| Device | Routing  | Invert | Outlet Devices   |
|--------|----------|--------|--|
| #1     | Primary  | 6.40'  | <b>15.0" Round Culvert</b><br>L= 12.0' CMP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 6.40' / 6.30' S= 0.0083 '/ Cc= 0.900<br>n= 0.013, Flow Area= 1.23 sf |
| #2     | Device 1 | 6.70'  | <b>6.0" Vert. Orifice/Grate</b> C= 0.600   |
| #3     | Device 1 | 8.15'  | <b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)   |
| #4     | Device 3 | 7.20'  | <b>12.0" Vert. Orifice/Grate</b> C= 0.600  |

**Primary OutFlow** Max=1.55 cfs @ 12.16 hrs HW=8.29' TW=7.50' (Dynamic Tailwater)

↑1=Culvert (Passes 1.55 cfs of 5.26 cfs potential flow)

↑2=Orifice/Grate (Orifice Controls 0.84 cfs @ 4.29 fps)

↑3=Sharp-Crested Rectangular Weir (Weir Controls 0.71 cfs @ 1.24 fps)

↑4=Orifice/Grate (Passes 0.71 cfs of 1.44 cfs potential flow)

**Summary for Pond POND 2: POROUS PAVEMENT**

Inflow Area = 11,844 sf, 32.31% Impervious, Inflow Depth = 2.75" for 10 Year Storm event  
 Inflow = 0.90 cfs @ 12.08 hrs, Volume= 2,716 cf  
 Outflow = 0.30 cfs @ 12.57 hrs, Volume= 2,031 cf, Atten= 67%, Lag= 29.6 min  
 Primary = 0.30 cfs @ 12.57 hrs, Volume= 2,031 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs / 2  
 Peak Elev= 6.92' @ 12.47 hrs Surf.Area= 3,392 sf Storage= 1,324 cf  
 Flood Elev= 9.35' Surf.Area= 3,392 sf Storage= 2,992 cf

Plug-Flow detention time= 198.4 min calculated for 2,030 cf (75% of inflow)  
 Center-of-Mass det. time= 110.0 min ( 943.6 - 833.6 )

| Volume           | Invert            | Avail.Storage | Storage Description  |                        |
|------------------|-------------------|---------------|--|------------------------|
| #1               | 5.94'             | 2,992 cf      | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |                        |
| Elevation (feet) | Surf.Area (sq-ft) | Voids (%)     | Inc.Store (cubic-feet)                                     | Cum.Store (cubic-feet) |
| 5.94             | 3,392             | 0.0           | 0  | 0                      |
| 7.52             | 3,392             | 40.0          | 2,144  | 2,144                  |
| 8.52             | 3,392             | 10.0          | 339  | 2,483                  |
| 9.02             | 3,392             | 30.0          | 509  | 2,992                  |
| 9.35             | 3,392             | 0.0           | 0  | 2,992                  |

| Device | Routing  | Invert | Outlet Devices  |
|--------|----------|--------|---|
| #1     | Primary  | 6.44'  | <b>6.0" Vert. Underdrain</b> C= 0.600                           |
| #2     | Device 1 | 5.94'  | <b>10.000 in/hr Filter Media Infiltration over Surface area</b> |

**Primary OutFlow** Max=0.28 cfs @ 12.57 hrs HW=6.89' TW=6.79' (Dynamic Tailwater)  
 ↑1=Underdrain (Orifice Controls 0.28 cfs @ 1.50 fps)  
 ↑2=Filter Media Infiltration (Passes 0.28 cfs of 0.79 cfs potential flow)

**Summary for Link PA-1: POINT OF ANALYSIS 1**

Inflow Area = 83,137 sf, 57.75% Impervious, Inflow Depth = 3.75" for 10 Year Storm event  
 Inflow = 5.91 cfs @ 12.09 hrs, Volume= 25,980 cf  
 Primary = 5.91 cfs @ 12.09 hrs, Volume= 25,980 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs



**C0960-011 POST**

Type III 24-hr 25 Year Storm Rainfall=7.08"

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Time span=0.00-48.00 hrs, dt=0.04 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 1.1:** Runoff Area=19,827 sf 52.01% Impervious Runoff Depth=5.10"  
 Tc=5.0 min CN=83 Runoff=2.73 cfs 8,432 cf

**Subcatchment 1.2: Building** Runoff Area=29,630 sf 100.00% Impervious Runoff Depth=6.84"  
 Tc=5.0 min CN=98 Runoff=4.82 cfs 16,891 cf

**Subcatchment 1.3:** Runoff Area=3,963 sf 52.99% Impervious Runoff Depth=4.88"  
 Tc=5.0 min CN=81 Runoff=0.53 cfs 1,611 cf

**Subcatchment 1.4:** Runoff Area=15,732 sf 0.00% Impervious Runoff Depth=2.96"  
 Tc=5.0 min CN=63 Runoff=1.27 cfs 3,882 cf

**Subcatchment 1.5:** Runoff Area=2,141 sf 100.00% Impervious Runoff Depth=6.84"  
 Tc=5.0 min CN=98 Runoff=0.35 cfs 1,221 cf

**Subcatchment 1.6:** Runoff Area=11,844 sf 32.31% Impervious Runoff Depth=4.00"  
 Tc=5.0 min CN=73 Runoff=1.31 cfs 3,952 cf

**Pond JF-1: JELLYFISH FILTER** Peak Elev=8.08' Inflow=8.10 cfs 26,934 cf  
 24.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=8.10 cfs 26,934 cf

**Pond PDMH1:** Peak Elev=7.71' Inflow=8.10 cfs 30,202 cf  
 24.0" Round Culvert n=0.013 L=8.0' S=0.0062 '/' Outflow=8.10 cfs 30,202 cf

**Pond POND 1: 310 STORMTECH CHAMBERS** Peak Elev=8.47' Storage=1,022 cf Inflow=2.73 cfs 8,432 cf  
 Outflow=2.87 cfs 8,431 cf

**Pond POND 2: POROUS PAVEMENT** Peak Elev=7.27' Storage=1,801 cf Inflow=1.31 cfs 3,952 cf  
 Outflow=0.52 cfs 3,268 cf

**Link PA-1: POINT OF ANALYSIS 1** Inflow=9.70 cfs 35,304 cf  
 Primary=9.70 cfs 35,304 cf

**Total Runoff Area = 83,137 sf Runoff Volume = 35,989 cf Average Runoff Depth = 5.19"**  
**42.25% Pervious = 35,126 sf 57.75% Impervious = 48,011 sf**

**C0960-011 POST**

Type III 24-hr 50 Year Storm Rainfall=8.48"

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Time span=0.00-48.00 hrs, dt=0.04 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 1.1:** Runoff Area=19,827 sf 52.01% Impervious Runoff Depth=6.44"  
 Tc=5.0 min CN=83 Runoff=3.40 cfs 10,635 cf

**Subcatchment 1.2: Building** Runoff Area=29,630 sf 100.00% Impervious Runoff Depth=8.24"  
 Tc=5.0 min CN=98 Runoff=5.78 cfs 20,346 cf

**Subcatchment 1.3:** Runoff Area=3,963 sf 52.99% Impervious Runoff Depth=6.20"  
 Tc=5.0 min CN=81 Runoff=0.66 cfs 2,046 cf

**Subcatchment 1.4:** Runoff Area=15,732 sf 0.00% Impervious Runoff Depth=4.05"  
 Tc=5.0 min CN=63 Runoff=1.75 cfs 5,309 cf

**Subcatchment 1.5:** Runoff Area=2,141 sf 100.00% Impervious Runoff Depth=8.24"  
 Tc=5.0 min CN=98 Runoff=0.42 cfs 1,470 cf

**Subcatchment 1.6:** Runoff Area=11,844 sf 32.31% Impervious Runoff Depth=5.24"  
 Tc=5.0 min CN=73 Runoff=1.70 cfs 5,169 cf

**Pond JF-1: JELLYFISH FILTER** Peak Elev=8.27' Inflow=9.38 cfs 33,027 cf  
 24.0" Round Culvert n=0.013 L=16.0' S=0.0063 '/' Outflow=9.38 cfs 33,027 cf

**Pond PDMH1:** Peak Elev=7.86' Inflow=9.38 cfs 37,511 cf  
 24.0" Round Culvert n=0.013 L=8.0' S=0.0062 '/' Outflow=9.38 cfs 37,511 cf

**Pond POND 1: 310 STORMTECH CHAMBERS** Peak Elev=8.65' Storage=1,095 cf Inflow=3.40 cfs 10,635 cf  
 Outflow=3.14 cfs 10,635 cf

**Pond POND 2: POROUS PAVEMENT** Peak Elev=7.88' Storage=2,265 cf Inflow=1.70 cfs 5,169 cf  
 Outflow=0.75 cfs 4,485 cf

**Link PA-1: POINT OF ANALYSIS 1** Inflow=11.55 cfs 44,291 cf  
 Primary=11.55 cfs 44,291 cf

**Total Runoff Area = 83,137 sf Runoff Volume = 44,976 cf Average Runoff Depth = 6.49"**  
**42.25% Pervious = 35,126 sf 57.75% Impervious = 48,011 sf**

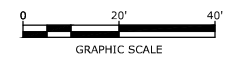
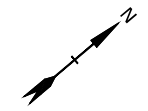


**Stage-Area-Storage for Pond POND 1: 310 STORMTECH CHAMBERS**

| Elevation<br>(feet) | Storage<br>(cubic-feet) | Elevation<br>(feet) | Storage<br>(cubic-feet) | Elevation<br>(feet) | Storage<br>(cubic-feet) |
|---------------------|-------------------------|---------------------|-------------------------|---------------------|-------------------------|
| 6.70                | 0                       | 7.74                | 600                     | 8.78                | 1,149                   |
| 6.72                | 8                       | 7.76                | 614                     | 8.80                | 1,157                   |
| 6.74                | 16                      | 7.78                | 628                     | 8.82                | 1,165                   |
| 6.76                | 24                      | 7.80                | 642                     | 8.84                | 1,173                   |
| 6.78                | 32                      | 7.82                | 655                     | 8.86                | 1,181                   |
| 6.80                | 40                      | 7.84                | 669                     | 8.88                | 1,189                   |
| 6.82                | 48                      | 7.86                | 683                     | 8.90                | 1,197                   |
| 6.84                | 56                      | 7.88                | 696                     | 8.92                | 1,205                   |
| 6.86                | 64                      | 7.90                | 709                     | 8.94                | 1,213                   |
| 6.88                | 72                      | 7.92                | 723                     | 8.96                | 1,221                   |
| 6.90                | 80                      | 7.94                | 736                     | 8.98                | 1,229                   |
| 6.92                | 88                      | 7.96                | 749                     | 9.00                | 1,237                   |
| 6.94                | 96                      | 7.98                | 762                     | 9.02                | 1,245                   |
| 6.96                | 104                     | 8.00                | 774                     | 9.04                | <b>1,250</b>            |
| 6.98                | 112                     | 8.02                | 787                     | 9.06                | 1,250                   |
| 7.00                | 120                     | 8.04                | 800                     | 9.08                | 1,250                   |
| 7.02                | 128                     | 8.06                | 812                     | 9.10                | 1,250                   |
| 7.04                | 136                     | 8.08                | 824                     | 9.12                | 1,250                   |
| 7.06                | 144                     | 8.10                | 836                     | 9.14                | 1,250                   |
| 7.08                | 152                     | 8.12                | 848                     | 9.16                | 1,250                   |
| 7.10                | 160                     | 8.14                | 860                     | 9.18                | 1,250                   |
| 7.12                | 168                     | 8.16                | 872                     | 9.20                | 1,250                   |
| 7.14                | 176                     | 8.18                | 883                     | 9.22                | 1,250                   |
| 7.16                | 184                     | 8.20                | 895                     | 9.24                | 1,250                   |
| 7.18                | 192                     | 8.22                | 906                     | 9.26                | 1,250                   |
| 7.20                | 200                     | 8.24                | 917                     | 9.28                | 1,250                   |
| 7.22                | 215                     | 8.26                | 927                     | 9.30                | 1,250                   |
| 7.24                | 230                     | 8.28                | 937                     | 9.32                | 1,250                   |
| 7.26                | 246                     | 8.30                | 948                     | 9.34                | 1,250                   |
| 7.28                | 261                     | 8.32                | 957                     | 9.36                | 1,250                   |
| 7.30                | 276                     | 8.34                | 967                     |                     |                         |
| 7.32                | 292                     | 8.36                | 976                     |                     |                         |
| 7.34                | 307                     | 8.38                | 985                     |                     |                         |
| 7.36                | 322                     | 8.40                | 994                     |                     |                         |
| 7.38                | 337                     | 8.42                | 1,003                   |                     |                         |
| 7.40                | 352                     | 8.44                | 1,012                   |                     |                         |
| 7.42                | 367                     | 8.46                | 1,020                   |                     |                         |
| 7.44                | 382                     | 8.48                | 1,028                   |                     |                         |
| 7.46                | 397                     | 8.50                | 1,037                   |                     |                         |
| 7.48                | 412                     | 8.52                | 1,045                   |                     |                         |
| 7.50                | 427                     | 8.54                | 1,053                   |                     |                         |
| 7.52                | 442                     | 8.56                | 1,061                   |                     |                         |
| 7.54                | 457                     | 8.58                | 1,069                   |                     |                         |
| 7.56                | 471                     | 8.60                | 1,077                   |                     |                         |
| 7.58                | 486                     | 8.62                | 1,085                   |                     |                         |
| 7.60                | 500                     | 8.64                | 1,093                   |                     |                         |
| 7.62                | 515                     | 8.66                | 1,101                   |                     |                         |
| 7.64                | 529                     | 8.68                | 1,109                   |                     |                         |
| 7.66                | 544                     | 8.70                | 1,117                   |                     |                         |
| 7.68                | 558                     | 8.72                | 1,125                   |                     |                         |
| 7.70                | 572                     | 8.74                | 1,133                   |                     |                         |
| 7.72                | 586                     | 8.76                | 1,141                   |                     |                         |







**Proposed Mixed Use Development**

CPI Management, LLC

53 Green Street  
Portsmouth, NH

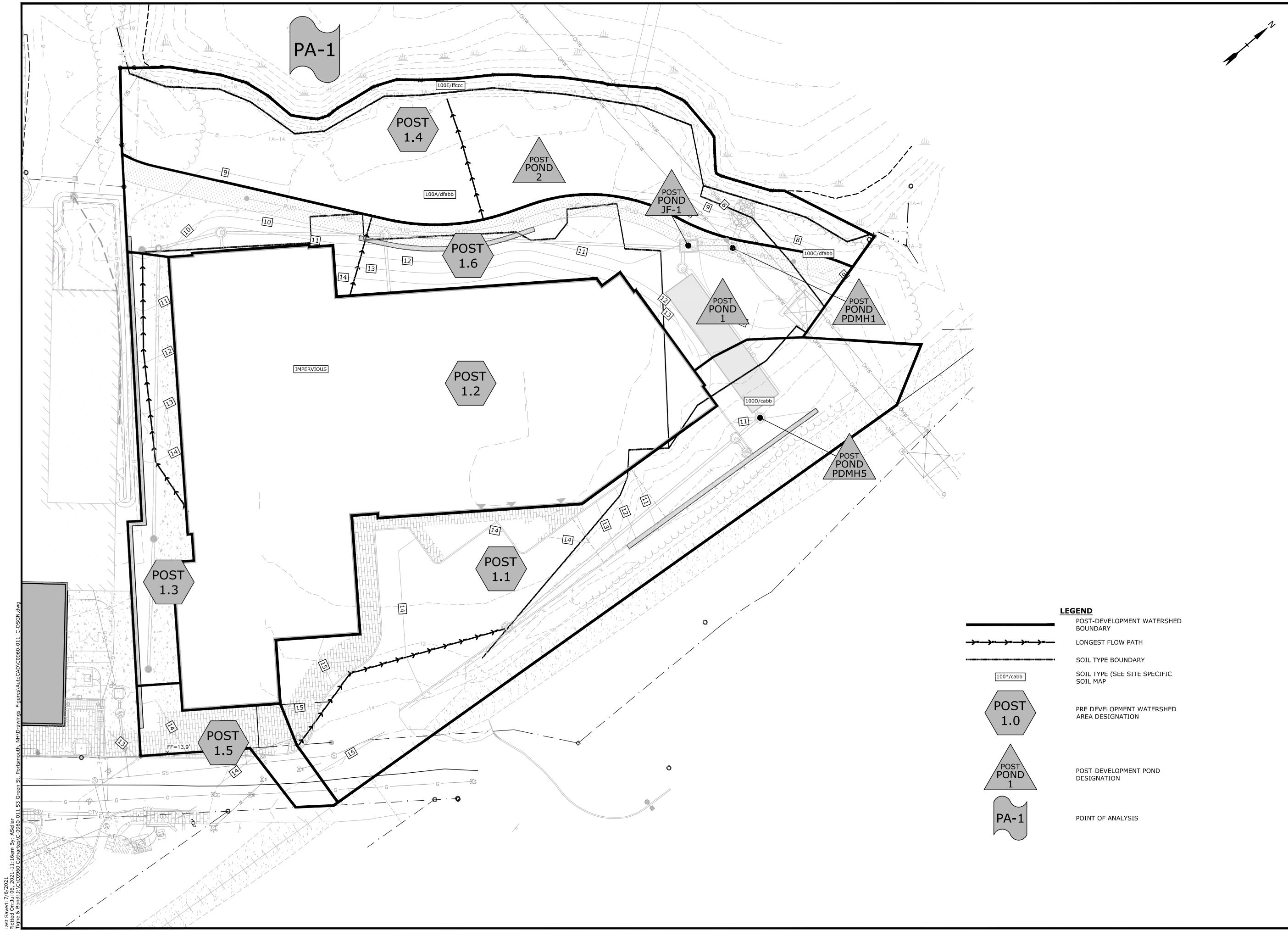
| MARK | DATE      | DESCRIPTION         |
|------|-----------|---------------------|
| E    | 7/7/2021  | PB Submission       |
| D    | 5/19/2021 | TAC Resubmission    |
| C    | 4/21/2021 | TAC Resubmission    |
| B    | 3/22/2021 | TAC & CC Submission |
| A    | 1/27/2021 | CC Work Session     |

|             |                      |
|-------------|----------------------|
| PROJECT NO: | C0960-011            |
| DATE:       | January 27, 2021     |
| FILE:       | C0960-011_C-DSGN.DWG |
| DRAWN BY:   | AFS                  |
| CHECKED:    | NAH/PMC              |
| APPROVED:   | BLM                  |

**POST-DEVELOPMENT WATERSHED PLAN**

SCALE: AS SHOWN

**C-802**



**LEGEND**

- POST-DEVELOPMENT WATERSHED BOUNDARY
- LONGEST FLOW PATH
- SOIL TYPE BOUNDARY
- SOIL TYPE (SEE SITE SPECIFIC SOIL MAP)
- PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- POST-DEVELOPMENT POND DESIGNATION
- POINT OF ANALYSIS

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## Section 4 Stormwater Treatment

The stormwater management system has been designed to provide stormwater treatment as required by the City of Portsmouth Site Review Regulations and NHDES AoT Regulations (Env-Wq 1500).

### 4.1 Pre-Treatment Methods for Protecting Water Quality

Pre-treatment for the stormwater that is collected on-site is pretreated through use of offline deep-sump and hooded catch basins .

### 4.2 Treatment Methods for Protecting Water Quality

The runoff from proposed impervious areas will be treated by a Contech Jellyfish stormwater filtration system. The Jellyfish system is sized to treat the Water Quality Flow from the contributing subcatchment areas. The system is outfitted with an internal bypass that diverts peak flows away from treatment. The BMP worksheet for this practice has been included in Section 5 of this report.

The multiuse path along the North Mill Pond will be constructed as porous pavement with and underdrain. The underdrain will discharge to the onsite closed drainage system prior to discharging to the Pond.

| BMP  | Total Suspended Solids | Total Nitrogen | Total Phosphorus |
|--|------------------------|----------------|------------------|
| Jellyfish Filter w/Pretreatment <sup>1</sup> | 91%                    | 53%            | 61%              |
| Porous Pavement w/Underdrain <sup>2</sup>    | 90%                    | 10%            | 45%              |

1. Pollutant removal calculations for Jellyfish Filter with deep sump catch basin pretreatment shown in Table 4.2.
2. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix B.

| <b>Table 4.2 – Pollutant Removal Calculations</b> |                  |                   |             |                    |
|---|------------------|-------------------|-------------|--------------------|
| <b>Contech Jellyfish Filter</b>                   |                  |                   |             |                    |
| BMP   | TSS Removal Rate | Starting TSS Load | TSS Removed | Remaining TSS Load |
| Deep Sump Catchbasin w/Hood <sup>1</sup>          | 0.15             | 1.00              | 0.15        | 0.85               |
| Jellyfish Filter <sup>2</sup>                     | 0.89             | 0.85              | 0.76        | 0.09               |
| <b>Total Suspended Solids Removed:</b>            |                  |                   |             | <b>91%</b>         |
|   | TN Removal Rate  | Starting TN Load  | TN Removed  | Remaining TN Load  |
| Deep Sump Catchbasin w/Hood <sup>1</sup>          | 0.05             | 1.00              | 0.05        | 0.95               |
| Jellyfish Filter <sup>2</sup>                     | 0.51             | 0.95              | 0.48        | 0.47               |
| <b>Total Nitrogen Removed:</b>                    |                  |                   |             | <b>53%</b>         |
|   | TP Removal Rate  | Starting TP Load  | TP Removed  | Remaining TP Load  |
| Deep Sump Catchbasin w/Hood <sup>1</sup>          | 0.05             | 1.00              | 0.05        | 0.95               |
| Jellyfish Filter <sup>2</sup>                     | 0.59             | 0.95              | 0.56        | 0.39               |
| <b>Total Phosphorus Removed:</b>                  |                  |                   |             | <b>61%</b>         |

1. Pollutant removal efficiencies from NH Stormwater Manual Volume 2, Appendix E.
2. Pollutant removal efficiencies from Contech Engineered Solutions, Jellyfish Filter Stormwater Treatment performance testing results.



## **Section 5**

# **BMP Worksheet and Sizing Memo**



## 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)

|      |          |   |
|------|----------|---|
| 0.46 | ac       | A = Area draining to the practice                                     |
| 0.24 | ac       | $A_i$ = Impervious area draining to the practice                      |
| 0.51 | decimal  | I = Percent impervious area draining to the practice, in decimal form |
| 0.51 | unitless | $R_v$ = Runoff coefficient = $0.05 + (0.9 \times I)$                  |
| 0.23 | ac-in    | $WQV = 1'' \times R_v \times A$                                       |
| 851  | 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".  |
| 0.51  | inches                  | Q = Water quality depth. $Q = WQV/A$  |
| 94    | unitless                | CN = Unit peak discharge curve number. $CN = 1000 / (10 + 5P + 10Q - 10 * [Q^2 + 1.25 * Q * P]^{0.5})$                          |
| 0.6   | inches                  | S = Potential maximum retention. $S = (1000/CN) - 10$   |
| 0.125 | inches                  | $I_a$ = Initial abstraction. $I_a = 0.2S$   |
| 5.0   | minutes                 | $T_c$ = Time of Concentration   |
| 655.0 | cfs/mi <sup>2</sup> /in | $q_u$ is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.   |
| 0.240 | cfs                     | $WQF = q_u \times WQV$ . Conversion: to convert "cfs/mi <sup>2</sup> /in * ac-in" to "cfs" multiply by 1mi <sup>2</sup> /640ac. |

Designer's Notes:

\_\_\_\_\_

This calculation represents the treatment train directed to the underground detention pond for temperature mitigation.

\_\_\_\_\_

Pretreatment is accomplished by use a offline deep sump/hooded catch basins prior to entering the underground detention structure.

\_\_\_\_\_

Treatment is achieved by use of the Jellyfish filter strucutre (JF-1).

\_\_\_\_\_

Temperature mitigation is achieved by detaining WQV and dispersing through stone and underdrain.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_





## 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)

|       |          |   |
|-------|----------|---|
| 1.22  | ac       | A = Area draining to the practice                                     |
| 0.96  | ac       | A <sub>i</sub> = Impervious area draining to the practice             |
| 0.79  | decimal  | I = Percent impervious area draining to the practice, in decimal form |
| 0.76  | unitless | R <sub>v</sub> = Runoff coefficient = 0.05 + (0.9 x I)                |
| 0.93  | ac-in    | WQV = 1" x R <sub>v</sub> x A   |
| 3,358 | 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".   |
| 0.76  | inches                  | Q = Water quality depth. Q = WQV/A   |
| 98    | unitless                | CN = Unit peak discharge curve number. CN = 1000 / (10 + 5P + 10Q - 10 * [Q <sup>2</sup> + 1.25 * Q * P] <sup>0.5</sup> )          |
| 0.2   | inches                  | S = Potential maximum retention. S = (1000/CN) - 10  |
| 0.049 | inches                  | I <sub>a</sub> = Initial abstraction. I <sub>a</sub> = 0.2S  |
| 5.0   | minutes                 | T <sub>c</sub> = Time of Concentration   |
| 655.0 | cfs/mi <sup>2</sup> /in | q <sub>u</sub> is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.                                   |
| 0.947 | cfs                     | WQF = q <sub>u</sub> x WQV. Conversion: to convert "cfs/mi <sup>2</sup> /in * ac-in" to "cfs" multiply by 1mi <sup>2</sup> /640ac. |

Designer's Notes:

This calculation represents the treatment train directed to the Contech Jellyfish Filter (JF-1).

Full Treatment in compliance with Env-Wq 1508.10 shall be achieved by use of a proprietary flow-through device. A Contech Jellyfish Filter model JFPD0806-5-1 will be used to treat the WQF as calculated in the above spreadsheet. The specified device is designed to treat up to 0.98 cfs of flow.

See attached sizing calculation sheet from manufacturer.



CONTECH Stormwater Solutions Inc. Engineer:  
Date Prepared:

DRA  
3/17/2021

### Site Information

Project Name **53 Green Street**  
Project State **NH**  
Project City **Portsmouth**

Total Drainage Area, Ad **1.12** ac  
Post Development Impervious Area, Ai **0.97** ac  
Pervious Area, Ap **0.15** ac  
% Impervious **87%**  
Runoff Coefficient, Rc **0.83**

### Mass Loading Calculations

Mean Annual Rainfall, P **50** in  
Agency Required % Removal **80%**  
Percent Runoff Capture **90%**  
Mean Annual Runoff, Vt **151752** ft<sup>3</sup>  
Event Mean Concentration of Pollutant, EMC **75** mg/l  
Annual Mass Load, M total **710.10** lbs

### Filter System

Filtration Brand **Jelly Fish**  
Cartridge Length **54** in

### Jelly Fish Sizing

Mass to be Captured by System **568.08** lbs  
Water Quality Flow **0.95** cfs

### Method to Use

**FLOW BASED**

### Summary

|             |                     |              |
|-------------|---------------------|--------------|
| <b>Flow</b> | Treatment Flow Rate | 0.98 cfs     |
|             | Required Size       | JFPD0806-5-1 |



**APPENDIX A**







Proposed Mixed Use Development  
53 Green Street, Portsmouth, NH

## **SITE SPECIFIC SOIL MAP REPORT**

CPI Management, LLC

March 2021



**Tighe&Bond**





## 1.0 Introduction

This report is provided in conjunction with a 1.81 +/- acre Site Specific Soil Map (SSSM) prepared by Tighe & Bond for a parcel at 53 Green Street in Portsmouth, NH. The purpose of the mapping was to assist in the evaluation of drainage and other soil-related uses associated with site improvements, and may be used as part of an Alteration of Terrain (AoT) permit application.

## 2.0 Methods

Fieldwork for the soil mapping was completed October 22 and December 2, 2019 based on *Site-Specific Soil Mapping Standards for New Hampshire and Vermont, Version 5.0*, (Society of Soil Scientists of Northern New England [SSSNNE] Special Publication No. 3, December 2017). The poorly and very poorly drained soil types under this system are based on the most recent version of *Field Indicators for Identifying Hydric Soils in New England, Version 4* (New England Interstate Water Pollution Control Commission, 2018).

The soil legend for this map is based on the soil series currently mapped in the State of New Hampshire as published in the *New Hampshire State-Wide Numerical Soils Legend* (USDA Natural Resources Conservation Service, Issue #10, 2011). Since this soil map includes disturbed soils and may be used for an AoT application, the map symbols are composed of two major parts separated by a forward slash (/). The first part of the soil symbol includes a numerical identifier from the state-wide soil legend, followed by a letter indicating the slope class (e.g., 299A). Slope class identifiers are as follows:

|   |       |   |        |
|---|-------|---|--------|
| A | 0-3%  | D | 15-25% |
| B | 3-8%  | E | 25-50% |
| C | 8-15% | F | >50%   |

The second part of the symbol is based on the SSSNNE Disturbed Soil Supplemental Symbols, which are included within the Site Specific Soil Map (SSSM) standards. This portion of the symbol translates as follows:

### **Character 1: Drainage Class**

- a-Excessively Drained
- b-Somewhat Excessively Drained
- c-Well Drained
- d-Moderately Well Drained
- e-Somewhat Poorly Drained
- f-Poorly Drained
- g-Very Poorly Drained
- h-Not Determined

**Character 2: Parent Material** (of naturally formed soil only, if present)

- a-No natural soil within 60 inches
- b-Glaciofluvial deposits (outwash/terraces of sand or sand and gravel)
- c-Glacial till material (active ice)
- d-Glaciolacustrine very fine sand and silt deposits (glacial lakes)
- e-Loamy/sandy over silt/clay deposits
- f-Marine silt and clay deposits (ocean waters)
- g-Alluvial deposits (floodplains)
- h-Organic materials-fresh water wetlands
- i-Organic materials-tidal wetlands

**Character 3: Restrictive Properties**

- a-None
- b-Bouldery surface with more than 15% of the surface covered with boulders
- c-Mineral restrictive layer(s) are present in the soil profile less than 40 inches below the soil surface such as hard pan, platy structure or clayey texture with consistence of at least firm (i.e. more than 20 newtons).
- d-Bedrock in the soil profile; 0-20 inches
- e-Bedrock in the soil profile; 20-60 inches
- f-Areas where depth to bedrock is so variable that a single soil type cannot be applied, will be mapped as a complex of soil types
- g-Subject to flooding
- h-Manufactured impervious surface including pavement, concrete, or built-up surfaces (e.g. buildings) with no morphological restrictive layer within control section

**Character 4: Estimated Ksat** (most limiting layer excluding symbol 3h above)

- a-High
- b-Moderate
- c-Low
- d-Not determined \*See "Guidelines for Ksat Class Placement" in Chapter 3 of the Soil Survey Manual, USDA



**Character 5: Hydrologic Soil Group**

- a-Group A
- b-Group B
- c-Group C
- d-Group D
- e-Not determined

SSSM report standards require estimates of the maximum size of *limiting* inclusions for the entire soil map and an estimate of the percentage of *dissimilar* inclusions within each map unit. *Limiting* inclusions are soils "...that differ appreciably in one or more soil properties from the named soil in a map unit. The difference in soil properties is more restrictive and may affect use and management." *Dissimilar* inclusions are "...soils that either do not share limits of some important diagnostic properties of the named taxon, or, in the professional judgment of the soil scientist, have different use or management requirements." The maximum size of any limiting inclusions in this soil map is estimated to be less than 2,000 square feet. Any dissimilar inclusions noted during the mapping are listed below within the map unit descriptions.

### **3.0 Site Features**

The parcel is a highly disturbed site along the North Mill Pond. The property shows evidence of what appears to be very old filling and grading associated with the existing development.

### **4.0 Soil Map Unit Descriptions**

Below are descriptions for the map unit found on the accompanying SSSM. The "\*" after the numerical map unit symbol represents a placeholder for the slope class indicators described above.

#### **100\*/cfabb—Udorthents, wet substratum**

Landscape Setting: Soils that have been filled over what was originally hydric soils

Drainage Class: Well drained

Parent Material: Fill over marine silts and clays at <60 inches.

Typical Textures: Gravelly sandy loam fill

Hydrologic Soil Group: B

Dissimilar Inclusions: None noted

Limiting Inclusions: Upper slopes along the shore are steeper than the mapped unit and are affected by tidal inundation. These areas comprise less than 10% of the unit

Additional Notes: Soils in these areas have properties that are similar to the Charlton soil series for Hydrologic Soil Group determination

**100\*/dfabb—Udorthents, wet substratum**

Landscape Setting: Soils that have been filled and leveled over what was originally hydric soils

Drainage Class: Moderately well drained

Parent Material: Fill over marine silts and clays at <60 inches.

Typical Textures: Very gravelly sandy loam fill

Hydrologic Soil Group: B

Dissimilar Inclusions: None noted

Limiting Inclusions: Slopes along the shore are steeper than the mapped unit and are affected by tidal inundation. These areas comprise less than 10% of the unit

Additional Notes: Soils in these areas have properties that are similar to the Sutton soil series for Hydrologic Soil Group determination

**100\*/ffccc—Udorthents, wet substratum**

Landscape Setting: Soils that have been filled over what was originally hydric soils

Drainage Class: Poorly drained

Parent Material: Fill over marine silts and clays at <60 inches.

Typical Textures: Gravelly and cobbly sandy loam fill with some anthropogenic debris, such as bricks, over silt loam

Hydrologic Soil Group: C

Dissimilar Inclusions: None noted

Limiting Inclusions: None noted

Additional Notes: Soils in these areas have properties that are similar to the Shaker soil series for Hydrologic Soil Group determination. These soils are regularly inundated by the tides.



**Site Specific Soil Map Legend**

**53 Green Street, Portsmouth, NH**

**Slope Class Identifiers**

|   |       |   |        |
|---|-------|---|--------|
| A | 0-3%  | D | 15-25% |
| B | 3-8%  | E | 25-50% |
| C | 8-15% | F | >50%   |

**Map Unit Symbols**

| <b><u>Map Number*<br/>/Disturbed Soil<br/>Numerator**</u></b> | <b><u>Soil Map Unit Name</u></b>   | <b><u>Hydrologic<br/>Soil Group</u></b> |
|---|--|---|
| 100*/cfabb  | Udorthents, wet substratum / well drained, fill over marine silts and clays, no restrictive layer within 40 inches, moderate Ksat, Hydrologic Soil Group B                         | B                                       |
| 100*/dfabb  | Udorthents, wet substratum, 0-3% slopes / moderately well drained, fill over marine silts and clays, no restrictive layer within 40 inches, moderate Ksat, Hydrologic Soil Group B | B                                       |
| 100*/ffccc  | Udorthents, wet substratum, 0-3% slopes / poorly drained, fill over marine silts and clays, restrictive layer is present within 40 inches, low Ksat, Hydrologic Soil Group C       | 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

**Soil Mapping Notes:**

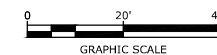
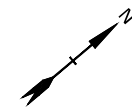
1. Hydrologic soil groups for disturbed soils were based on most similar soil series listed in *Ksat Values for NH Soils*, SSSNNE Special Publication No. 5, 2009.
2. Fieldwork for this map was conducted by Leonard A. Lord, PhD, NHCSS #19 on October 22 and December 2, 2019.
3. This detailed Site Specific 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.



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### Proposed Mixed Use Development

CPI Management, LLC

53 Green Street  
Portsmouth, NH

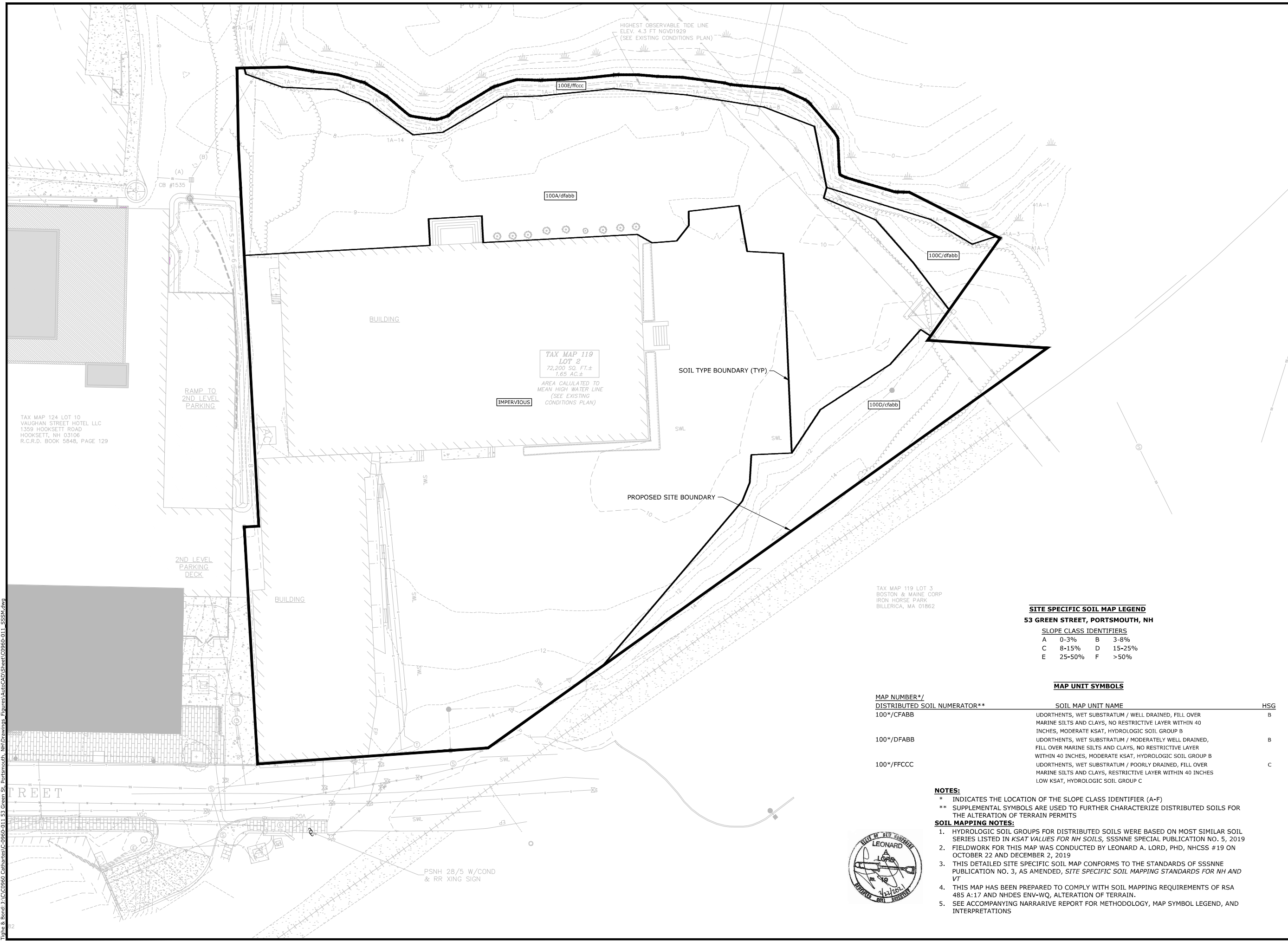
**SITE SPECIFIC SOIL MAP LEGEND**  
53 GREEN STREET, PORTSMOUTH, NH

| SLOPE CLASS IDENTIFIERS |        |
|-------------------------|--------|
| A                       | 0-3%   |
| B                       | 3-8%   |
| C                       | 8-15%  |
| D                       | 15-25% |
| E                       | 25-50% |
| F                       | >50%   |

| MAP NUMBER*/<br>DISTRIBUTED SOIL NUMERATOR** | SOIL MAP UNIT NAME  | HSG |
|--|---|-----|
| 100*/CFABB                                   | UDORTMENTS, WET SUBSTRATUM / WELL DRAINED, FILL OVER MARINE SILTS AND CLAYS, NO RESTRICTIVE LAYER WITHIN 40 INCHES, MODERATE KSAT, HYDROLOGIC SOIL GROUP B            | B   |
| 100*/DFABB                                   | UDORTMENTS, WET SUBSTRATUM / MODERATELY WELL DRAINED, FILL OVER MARINE SILTS AND CLAYS, NO RESTRICTIVE LAYER WITHIN 40 INCHES, MODERATE KSAT, HYDROLOGIC SOIL GROUP B | B   |
| 100*/FFCCC                                   | UDORTMENTS, WET SUBSTRATUM / POORLY DRAINED, FILL OVER MARINE SILTS AND CLAYS, RESTRICTIVE LAYER WITHIN 40 INCHES LOW KSAT, HYDROLOGIC SOIL GROUP C                   | C   |

**NOTES:**  
\* INDICATES THE LOCATION OF THE SLOPE CLASS IDENTIFIER (A-F)  
\*\* SUPPLEMENTAL SYMBOLS ARE USED TO FURTHER CHARACTERIZE DISTRIBUTED SOILS FOR THE ALTERATION OF TERRAIN PERMITS

- SOIL MAPPING NOTES:**
1. HYDROLOGIC SOIL GROUPS FOR DISTRIBUTED SOILS WERE BASED ON MOST SIMILAR SOIL SERIES LISTED IN *KSAT VALUES FOR NH SOILS*, SSSNNE SPECIAL PUBLICATION NO. 5, 2019
  2. FIELDWORK FOR THIS MAP WAS CONDUCTED BY LEONARD A. LORD, PHD, NHCSS #19 ON OCTOBER 22 AND DECEMBER 2, 2019
  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



TAX MAP 124 LOT 10  
VAUGHAN STREET HOTEL LLC  
1359 HOOKSETT ROAD  
HOOKSETT, NH 03106  
R.C.R.D. BOOK 5848, PAGE 129

Last Saved: 3/19/2021  
Plotted On: Mar 19, 2021 1:31:15pm  
By: ASchlar  
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| MARK        | DATE               | DESCRIPTION |
|-------------|--------------------|-------------|
| PROJECT NO: | C0960-011          |             |
| DATE:       | MARCH 22, 2021     |             |
| FILE:       | C0960-011_SSSM.DWG |             |
| DRAWN BY:   | AFS                |             |
| CHECKED:    | LAL                |             |
| APPROVED:   | LAL                |             |

SITE SPECIFIC SOIL MAP

SCALE: AS SHOWN





**APPENDIX B**

---





# 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 | 70.764 degrees West             |
| Latitude  | 43.080 degrees North            |
| Elevation | 0 feet                          |
| Date/Time | Fri, 24 Jul 2020 12:23:19 -0400 |

**Refer to Table 1.2  
for Coastal  
Precipitation  
Increase**

### 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  | 2.65  | 2.92  | 1yr   | 2.35  | 2.81  | 3.22  | 3.94  | 4.54  | 1yr   |
| 2yr   | 0.32 | 0.50  | 0.62  | 0.81  | 1.02  | 1.30   | 2yr   | 0.88 | 1.18 | 1.52 | 1.94 | 2.48  | 3.20  | 3.57  | 2yr   | 2.84  | 3.43  | 3.93  | 4.67  | 5.32  | 2yr   |
| 5yr   | 0.37 | 0.58  | 0.73  | 0.97  | 1.25  | 1.61   | 5yr   | 1.08 | 1.47 | 1.89 | 2.43 | 3.14  | 4.06  | 4.57  | 5yr   | 3.59  | 4.40  | 5.03  | 5.93  | 6.69  | 5yr   |
| 10yr  | 0.41 | 0.65  | 0.82  | 1.11  | 1.45  | 1.89   | 10yr  | 1.25 | 1.72 | 2.23 | 2.89 | 3.74  | 4.86  | 5.52  | 10yr  | 4.30  | 5.31  | 6.07  | 7.09  | 7.96  | 10yr  |
| 25yr  | 0.48 | 0.76  | 0.97  | 1.33  | 1.77  | 2.33   | 25yr  | 1.53 | 2.14 | 2.77 | 3.62 | 4.73  | 6.16  | 7.09  | 25yr  | 5.45  | 6.81  | 7.78  | 9.00  | 10.03 | 25yr  |
| 50yr  | 0.53 | 0.86  | 1.10  | 1.53  | 2.07  | 2.75   | 50yr  | 1.78 | 2.52 | 3.28 | 4.31 | 5.65  | 7.37  | 8.57  | 50yr  | 6.53  | 8.24  | 9.40  | 10.79 | 11.95 | 50yr  |
| 100yr | 0.59 | 0.96  | 1.24  | 1.76  | 2.41  | 3.25   | 100yr | 2.08 | 2.97 | 3.90 | 5.15 | 6.75  | 8.83  | 10.36 | 100yr | 7.82  | 9.96  | 11.35 | 12.93 | 14.24 | 100yr |
| 200yr | 0.67 | 1.10  | 1.42  | 2.04  | 2.82  | 3.82   | 200yr | 2.43 | 3.51 | 4.60 | 6.11 | 8.06  | 10.58 | 12.52 | 200yr | 9.37  | 12.04 | 13.71 | 15.50 | 16.98 | 200yr |
| 500yr | 0.80 | 1.31  | 1.71  | 2.48  | 3.47  | 4.75   | 500yr | 2.99 | 4.37 | 5.75 | 7.68 | 10.19 | 13.45 | 16.11 | 500yr | 11.90 | 15.49 | 17.61 | 19.72 | 21.44 | 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  | 0.73  | 0.88   | 1yr   | 0.63 | 0.86 | 0.92 | 1.33 | 1.68 | 2.23 | 2.48  | 1yr   | 1.97 | 2.39  | 2.86  | 3.18  | 3.88  | 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 | 3.05 | 3.45  | 2yr   | 2.70 | 3.31  | 3.82  | 4.54  | 5.07  | 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 | 3.78 | 4.18  | 5yr   | 3.34 | 4.02  | 4.71  | 5.52  | 6.23  | 5yr   |
| 10yr  | 0.38 | 0.59  | 0.73  | 1.02  | 1.32  | 1.60   | 10yr  | 1.14 | 1.56 | 1.80 | 2.39 | 3.06 | 4.36 | 4.85  | 10yr  | 3.86 | 4.66  | 5.42  | 6.39  | 7.17  | 10yr  |
| 25yr  | 0.44 | 0.67  | 0.83  | 1.18  | 1.56  | 1.90   | 25yr  | 1.34 | 1.86 | 2.10 | 2.76 | 3.54 | 4.70 | 5.87  | 25yr  | 4.16 | 5.64  | 6.62  | 7.76  | 8.65  | 25yr  |
| 50yr  | 0.48 | 0.73  | 0.91  | 1.31  | 1.76  | 2.17   | 50yr  | 1.52 | 2.12 | 2.34 | 3.07 | 3.93 | 5.31 | 6.77  | 50yr  | 4.70 | 6.51  | 7.68  | 9.00  | 9.98  | 50yr  |
| 100yr | 0.53 | 0.81  | 1.01  | 1.46  | 2.00  | 2.47   | 100yr | 1.73 | 2.41 | 2.62 | 3.42 | 4.35 | 5.96 | 7.81  | 100yr | 5.28 | 7.51  | 8.92  | 10.45 | 11.52 | 100yr |
| 200yr | 0.59 | 0.89  | 1.12  | 1.63  | 2.27  | 2.81   | 200yr | 1.96 | 2.75 | 2.93 | 3.79 | 4.79 | 6.68 | 9.01  | 200yr | 5.91 | 8.66  | 10.34 | 12.15 | 13.31 | 200yr |
| 500yr | 0.68 | 1.02  | 1.31  | 1.90  | 2.70  | 3.36   | 500yr | 2.33 | 3.28 | 3.41 | 4.32 | 5.46 | 7.76 | 10.87 | 500yr | 6.87 | 10.45 | 12.58 | 14.86 | 16.11 | 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  | 2.52  | 3.42  | 3.70  | 2yr   | 3.03  | 3.56  | 4.08  | 4.83  | 5.62  | 2yr   |
| 5yr   | 0.40 | 0.62  | 0.76  | 1.05  | 1.34  | 1.62   | 5yr   | 1.15 | 1.58 | 1.88 | 2.53  | 3.25  | 4.33  | 4.96  | 5yr   | 3.84  | 4.77  | 5.37  | 6.37  | 7.15  | 5yr   |
| 10yr  | 0.47 | 0.72  | 0.89  | 1.24  | 1.61  | 1.97   | 10yr  | 1.39 | 1.93 | 2.28 | 3.11  | 3.95  | 5.33  | 6.20  | 10yr  | 4.72  | 5.96  | 6.82  | 7.83  | 8.74  | 10yr  |
| 25yr  | 0.57 | 0.87  | 1.09  | 1.55  | 2.04  | 2.57   | 25yr  | 1.76 | 2.51 | 2.95 | 4.07  | 5.15  | 7.77  | 8.34  | 25yr  | 6.88  | 8.02  | 9.15  | 10.33 | 11.40 | 25yr  |
| 50yr  | 0.67 | 1.02  | 1.27  | 1.82  | 2.46  | 3.12   | 50yr  | 2.12 | 3.05 | 3.59 | 5.00  | 6.32  | 9.73  | 10.46 | 50yr  | 8.62  | 10.06 | 11.45 | 12.71 | 13.95 | 50yr  |
| 100yr | 0.79 | 1.19  | 1.49  | 2.15  | 2.95  | 3.80   | 100yr | 2.55 | 3.72 | 4.37 | 6.15  | 7.76  | 12.18 | 13.11 | 100yr | 10.78 | 12.61 | 14.32 | 15.68 | 17.08 | 100yr |
| 200yr | 0.92 | 1.39  | 1.76  | 2.54  | 3.55  | 4.64   | 200yr | 3.06 | 4.54 | 5.33 | 7.58  | 9.53  | 15.29 | 16.45 | 200yr | 13.53 | 15.82 | 17.94 | 19.34 | 20.91 | 200yr |
| 500yr | 1.14 | 1.70  | 2.19  | 3.18  | 4.52  | 6.02   | 500yr | 3.90 | 5.89 | 6.92 | 10.01 | 12.54 | 20.67 | 22.22 | 500yr | 18.29 | 21.37 | 24.18 | 25.50 | 27.33 | 500yr |







**APPENDIX C**

---





# Examination of Thermal Impacts from Stormwater BMPs



In a study in Durham, New Hampshire, four years of runoff temperature data were examined for a range of stormwater best management practices (BMPs) in relation to established environmental indicators.

## The stormwater BMPs examined included:

| Conventional  | Low Impact Development   | Manufactured Treatment Devices   |
|---|--|--|
| <ul style="list-style-type: none"> <li>• Vegetated Swale</li> <li>• Detention Pond</li> <li>• Retention Pond</li> </ul> | <ul style="list-style-type: none"> <li>• Bioretention</li> <li>• Gravel Wetland</li> </ul> | <ul style="list-style-type: none"> <li>• Storm Tech Isolator Row</li> <li>• ADS Infiltration System</li> <li>• Hydrodynamic Separator</li> </ul> |



Surface systems that are exposed to direct sunlight have been shown to increase already elevated summer runoff temperatures, while systems that provide treatment by infiltration and filtration can moderate runoff temperatures by thermal exchange with cool subsurface materials.

The storm drain system in this study had an annual average event mean temperature (EMT) greater than the mean groundwater temperature of 47°F that commonly feeds coldwater streams.

The examination of BMPs indicates that outflow from the larger surface systems is warmer and more variable than from parking lots. The filtration and infiltration systems cooled stormwater runoff to temperatures close to groundwater temperature.



*Top: A view of a healthy coldwater fishery. Center: Large parking areas store tremendous amounts of heat which is transferred into stormwater runoff. Bottom: Subsurface treatment systems such as gravel wetlands can buffer temperature impacts for stormwater runoff.*

## SURFACE SYSTEMS: Thermal Extremes

The summer temperatures of the two stormwater ponds, vegetated swale, and HDS (Hydrodynamic Separators) systems, indicate that they **provide little to no reduction of high runoff temperatures.**

The Retention and Detention ponds have the largest variation in temperature. The Retention Pond is the only system to exceed both the Upper Optimum Limit (UOL) and the Lethal Limit of 80°F, however, the Detention Pond with a maximum temperature of 79.4°F comes very close.

The permanent pool of water in the Retention Pond appears to act as a heat sink during periods of extreme heat.

## FILTRATION & INFILTRATION SYSTEMS: Thermal Buffers

Filtration and infiltration systems **showed the strongest ability to reduce temperature variations.** The gravel wetland, the ADS (Advanced Drainage Systems™) Infiltration System, and the StormTech Isolator Row have a strong capacity to reduce temperatures of runoff.

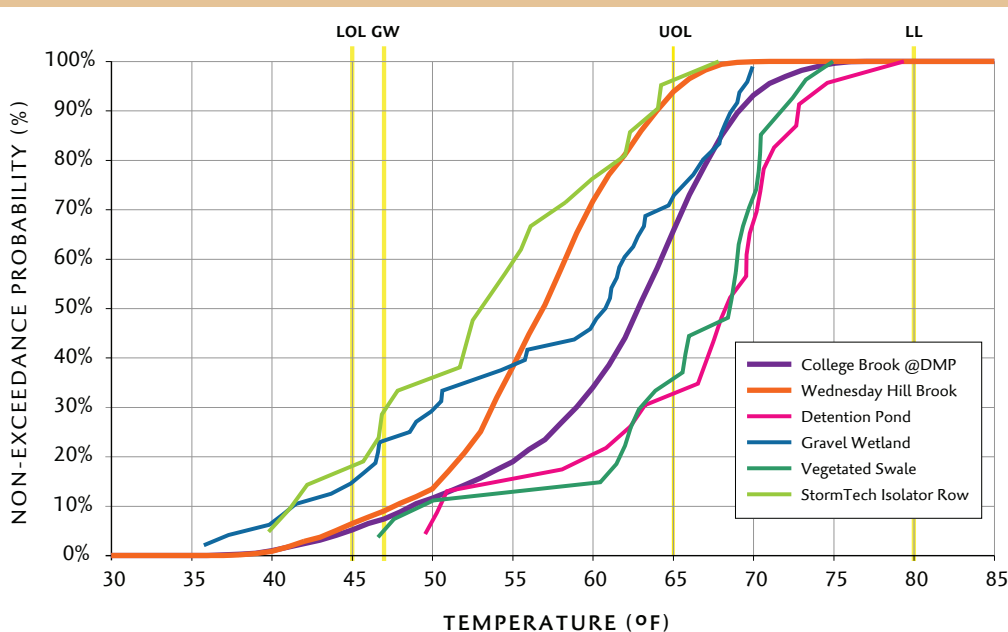
The Bioretention system showed minor buffering capacity and was consistently cooler in the summer and warmer in the winter than the runoff. These filtration and infiltration systems are, on average, reducing the summer temperatures and increasing the winter temperatures of the runoff to near the average groundwater temperature of 47°F.

The two subsurface infiltration systems, ADS and STIR, are the only systems with mean July temperatures within the optimum zone of 45°F to 65°F for coldwater aquatic species. All other systems result in runoff within the stress zone for aquatic species, between 65°F and 80°F.

The Gravel Wetland, the ADS infiltration system, and the Isolator Row systems have the lowest exceedance values of the UOL at 13.0%, 5.0%, 1.5% respectively.



*StormTech Isolator Row.*



Comparison of summer temperatures for two streams: Wednesday Hill Brook (unimpacted) and College Brook (impacted); a wet and dry pond, a gravel wetland, and subsurface infiltration (Stormtech Isolator Row) with environmental indicators for cold water fisheries:

**Average Annual Groundwater Temperature (GW) = 47°F**

**Lower Optimum Limit (LOL) = 45°F**

**Upper Optimum Limit (UOL) = 65°F**

**Lethal Limit (LL) = 80°F**



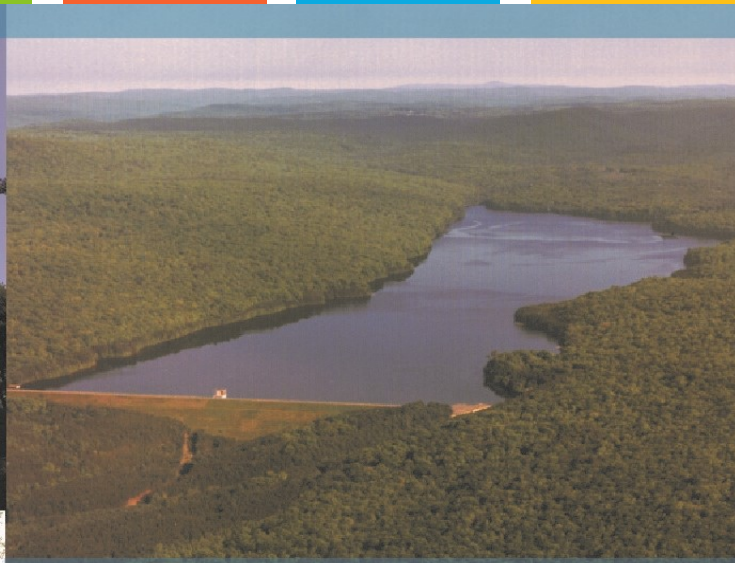
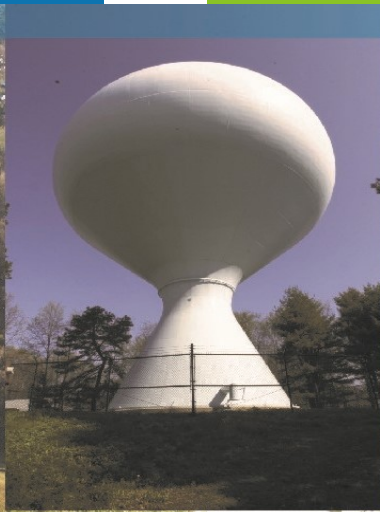




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Proposed Mixed Use Development  
53 Green Street  
Portsmouth, NH

## Long-Term Operation & Maintenance Plan

CPI Management, LLC

May 19, 2021

**Tighe&Bond**





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**Section 4 Annual Updates and Log Requirements**

---





# **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**

| <b>Maintenance Area</b>                  | <b>Contact/Responsible Party</b>   |
|--|--|
| Map 119 Lot 2                            | CPI Management, LLC<br>100 Summer Street, Suite 1600<br>Boston, MA 02110 |
| North Mill Pond Trail<br>(City Easement) | City of Portsmouth DPW<br>680 Peverly Hill Road<br>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
- ADS Stormtech System with Isolator Row
- Contech Jellyfish Filtration System
- Porous Pavement

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                          | Responsible Party      |
|---|---|------------------------|
| Litter/Debris Removal   | Weekly  | CPI Management, LLC    |
| Pavement Sweeping<br>- Sweep impervious areas to remove sand and litter.                        | Bi-annually                                       | CPI Management, LLC    |
| Landscaping<br>- Landscaped islands to be maintained and mulched.                               | Maintained as required and mulched each Spring    | CPI Management, LLC    |
| Catch Basin (CB) Cleaning<br>- CB to be cleaned of solids and oils.                             | Annually  | CPI Management, LLC    |
| Jelly Fish Units  | In accordance with Manufacturer's Recommendations | CPI Management, LLC    |
| ADS Stormtech System with Isolator Row<br>- Visual observation of sediment levels within system | In accordance with Manufacturer's Recommendations | CPI Management, LLC    |
| Porous Pavement<br>- Clean using a vacuum sweeper   | Bi-Annually                                       | City of Portsmouth DPW |

#### 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 ADS Stormtech System with Isolator Row

| <b>ADS Stormtech System w/Isolator Row<br/>Inspection/Maintenance Requirements</b> |   |   |
|--|---|---|
| <b>Inspection/<br/>Maintenance</b>   | <b>Frequency</b>  | <b>Action</b>   |
| Monitor inlet and outlet structures for sediment accumulation                      | Two (2) times annually  | <ul style="list-style-type: none"> <li>- Trash, debris and sediment to be removed</li> <li>- Any required maintenance shall be addressed</li> </ul>                                 |
| Inspect Isolator Row for sediment  | 6 months for the first year, then adjust based on previous observations | - Inspect inside the isolator row through inspection ports (if provided) or through the upstream structure.   |
| Jetting and Vacuuming  | Annually or as required by inspection.                                  | <ul style="list-style-type: none"> <li>- If sediment is 3" or above, then clean out isolator row using the jetvac process.</li> <li>- Vacuum structure sump as required.</li> </ul> |





# Isolator<sup>®</sup> Row O&M Manual





## THE ISOLATOR<sup>®</sup> ROW

### INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

### THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC-310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the “first flush” and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the overflow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

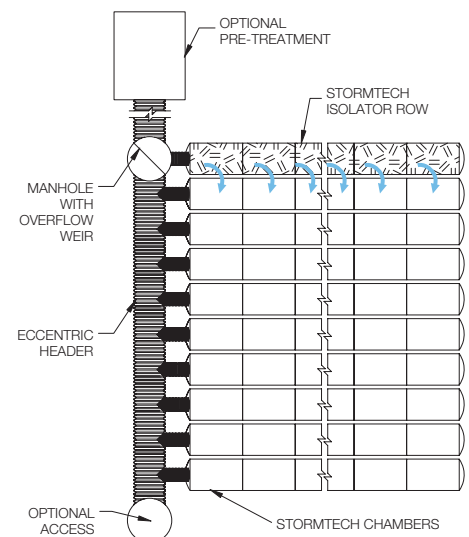
*Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.*



Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.



StormTech Isolator Row with Overflow Spillway (not to scale)







## ISOLATOR ROW INSPECTION/MAINTENANCE

### INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

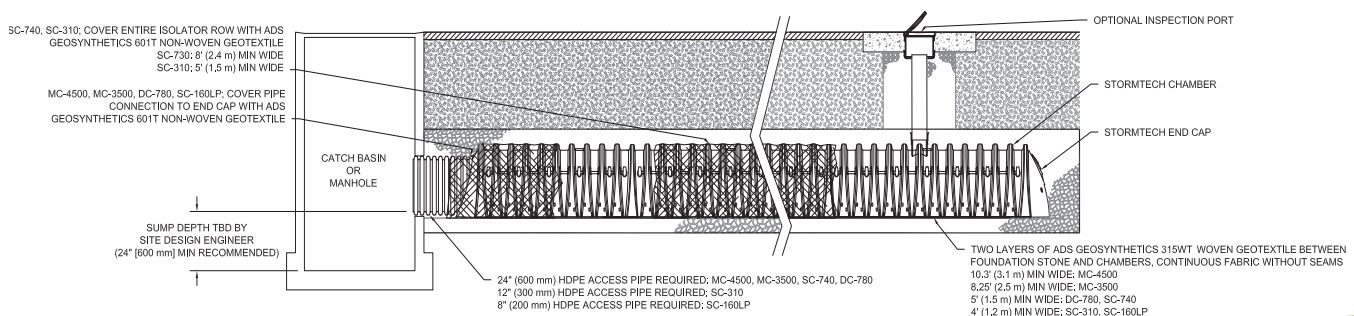
### MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45” are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

### StormTech Isolator Row (not to scale)

*Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.*



# ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

## STEP 1

Inspect Isolator Row for sediment.

- A) Inspection ports (if present)
  - i. Remove lid from floor box frame
  - ii. Remove cap from inspection riser
  - iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.
  - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.
- B) All Isolator Rows
  - i. Remove cover from manhole at upstream end of Isolator Row
  - ii. Using a flashlight, inspect down Isolator Row through outlet pipe
    - 1. Mirrors on poles or cameras may be used to avoid a confined space entry
    - 2. Follow OSHA regulations for confined space entry if entering manhole
  - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

## STEP 2

Clean out Isolator Row using the JetVac process.

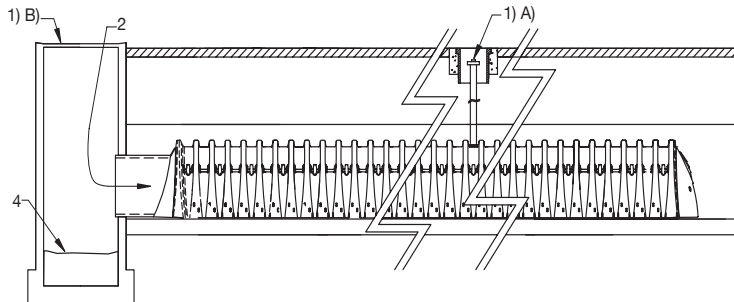
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

## STEP 3

Replace all caps, lids and covers, record observations and actions.

## STEP 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



## SAMPLE MAINTENANCE LOG

| Date    | Stadia Rod Readings                  |                                       | Sediment Depth<br>(1)-(2) | Observations/Actions   | Inspector |
|---------|--------------------------------------|---------------------------------------|---------------------------|--|-----------|
|         | Fixed point to chamber<br>bottom (1) | Fixed point to top of<br>sediment (2) |                           |  |           |
| 3/15/11 | 6.3 ft                               | none                                  |                           | New installation. Fixed point is CI frame at grade                         | DJM       |
| 9/24/11 |                                      | 6.2                                   | 0.1 ft                    | Some grit felt   | SM        |
| 6/20/13 |                                      | 5.8                                   | 0.5 ft                    | Mucky feel, debris visible in manhole and in Isolator Row, maintenance due | NV        |
| 7/7/13  | 6.3 ft                               |                                       | 0                         | System jetted and vacuumed   | DJM       |



## 1.5 Contech Jellyfish Filter System Maintenance Requirements

| <b>Contech Jellyfish Filter System Inspection/Maintenance Requirements</b>            |   |  |
|---|---|--|
| <b>Inspection/<br/>Maintenance</b>  | <b>Frequency</b>  | <b>Action</b>  |
| 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:<br>- >4" of sediment on the vault floor<br>- >1/4" of sediment on top of the cartridge<br>- .4" of static water above the cartridge bottom more than 24 hours after a rain event<br>- If pore space between media is absent.<br>- 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.<br>- Vacuum sediment from vault.<br>- Install new cartridges per manufacturer methods   |





**Jellyfish<sup>®</sup> Filter  
Owner's Manual**



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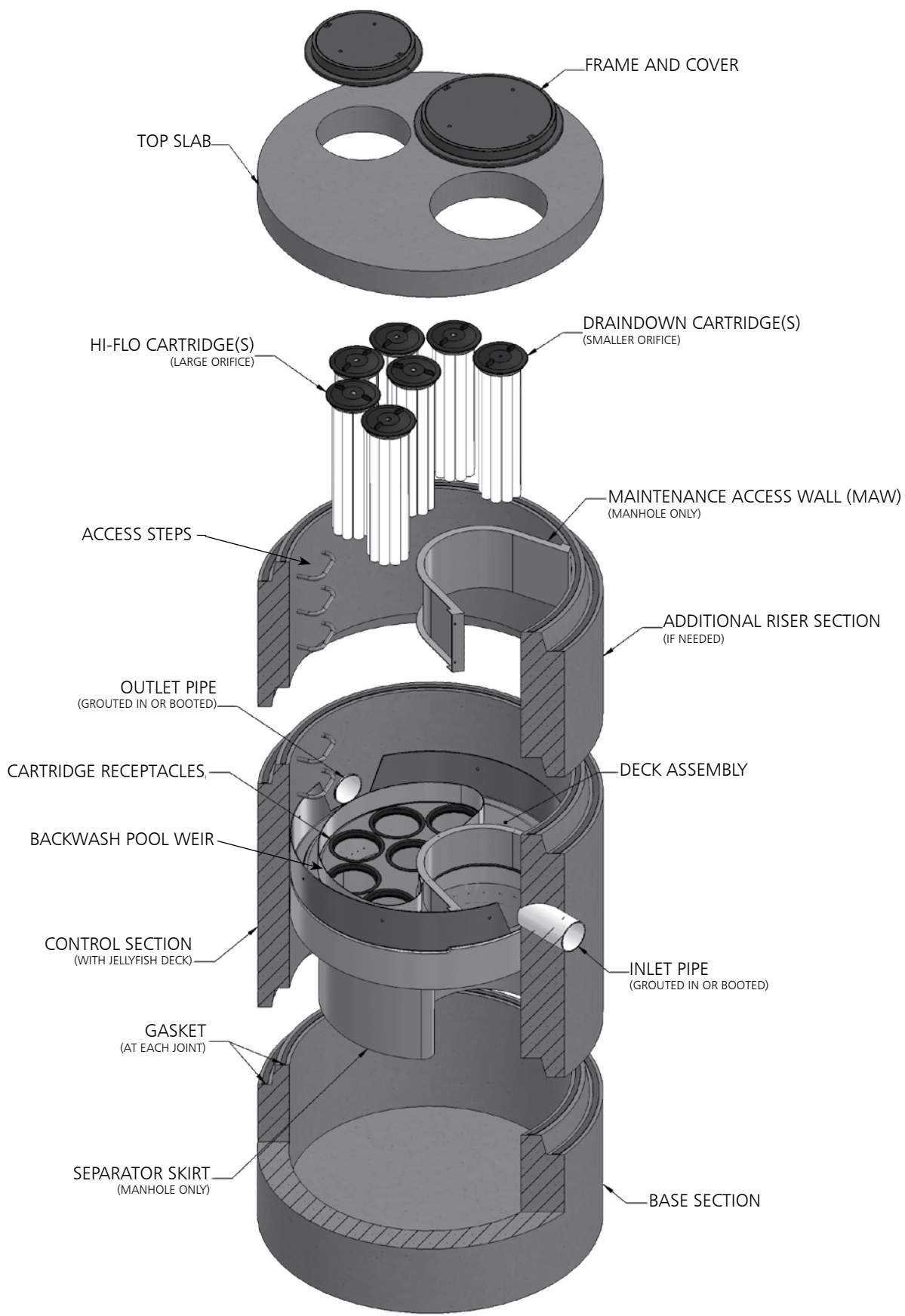
## THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

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





## 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:

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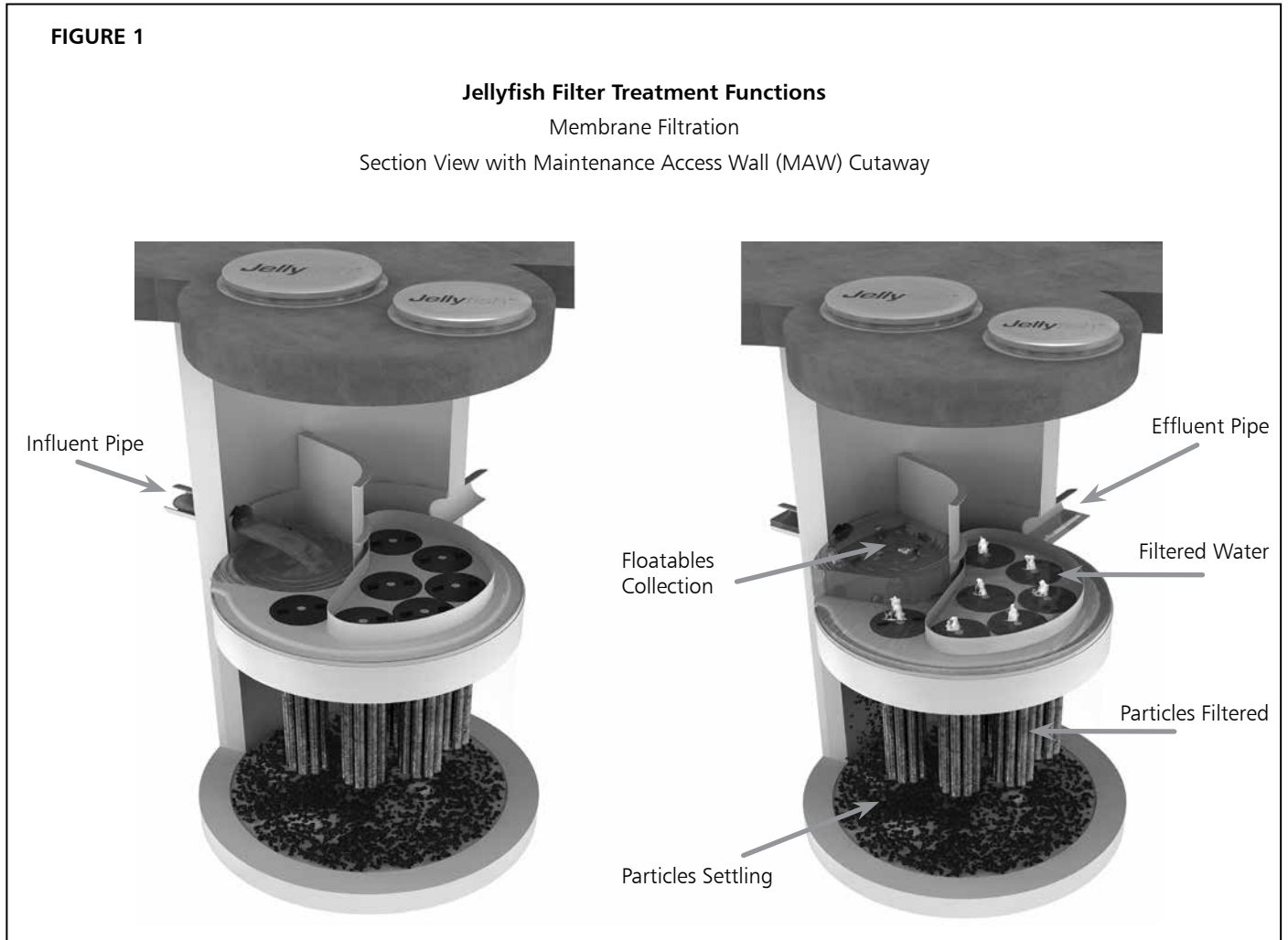


## Chapter 2

### 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.



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.

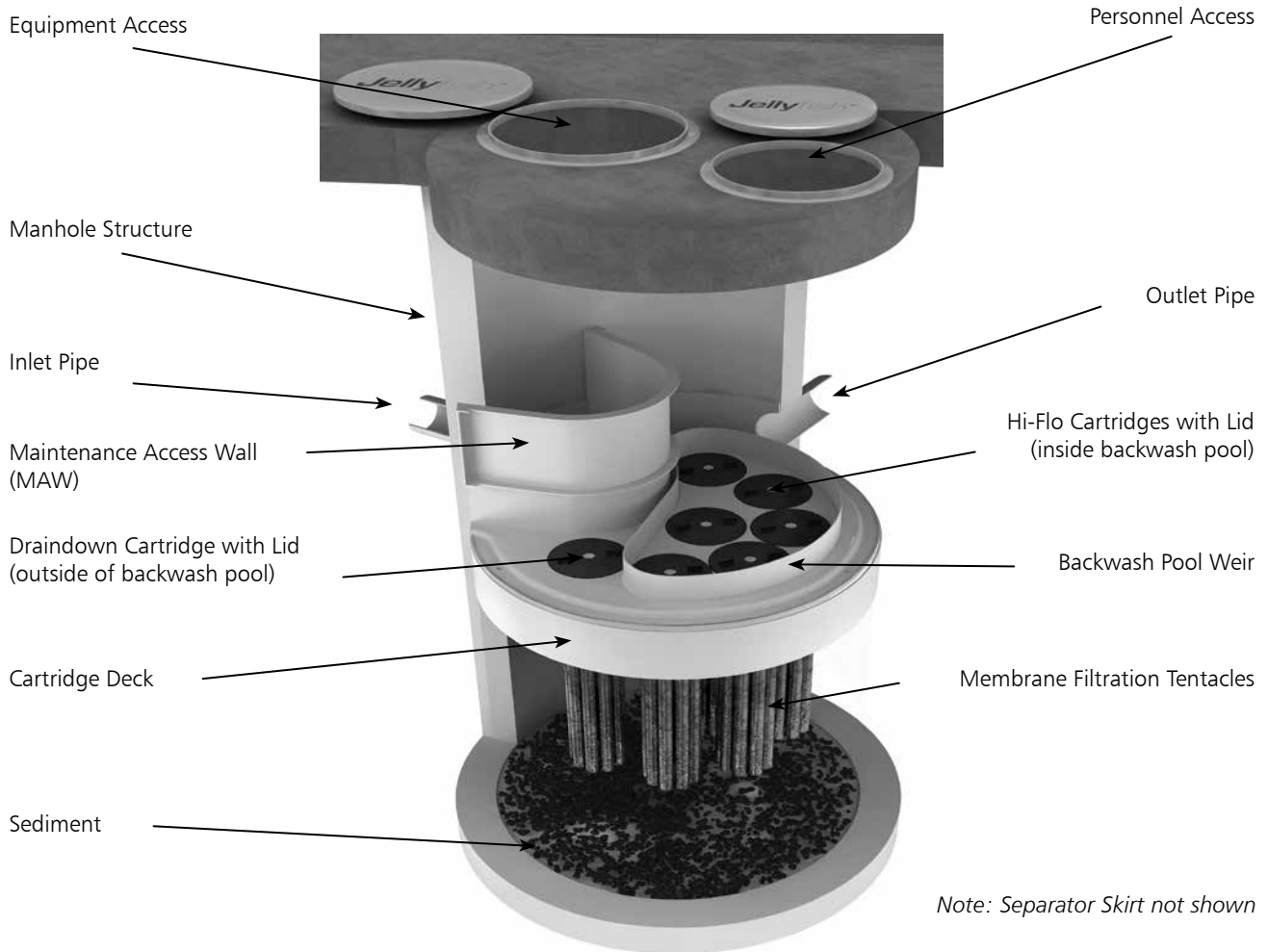
For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at [www.ContechES.com](http://www.ContechES.com).

## 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:

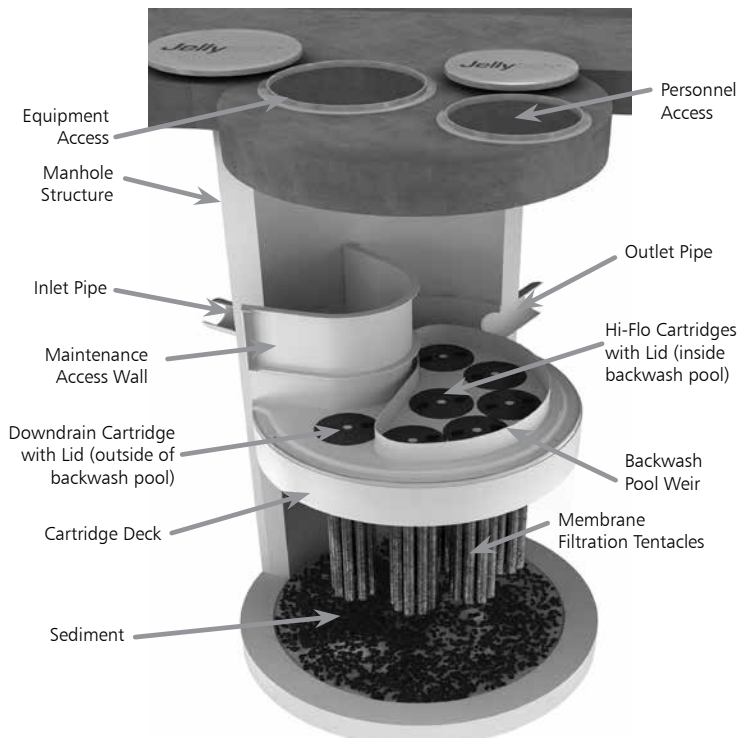
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

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 ( $\geq 1/16''$ ) 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



Cartridge Removal & Lifting Device



threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.

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 Floatables 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 ( $\geq 8$ -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

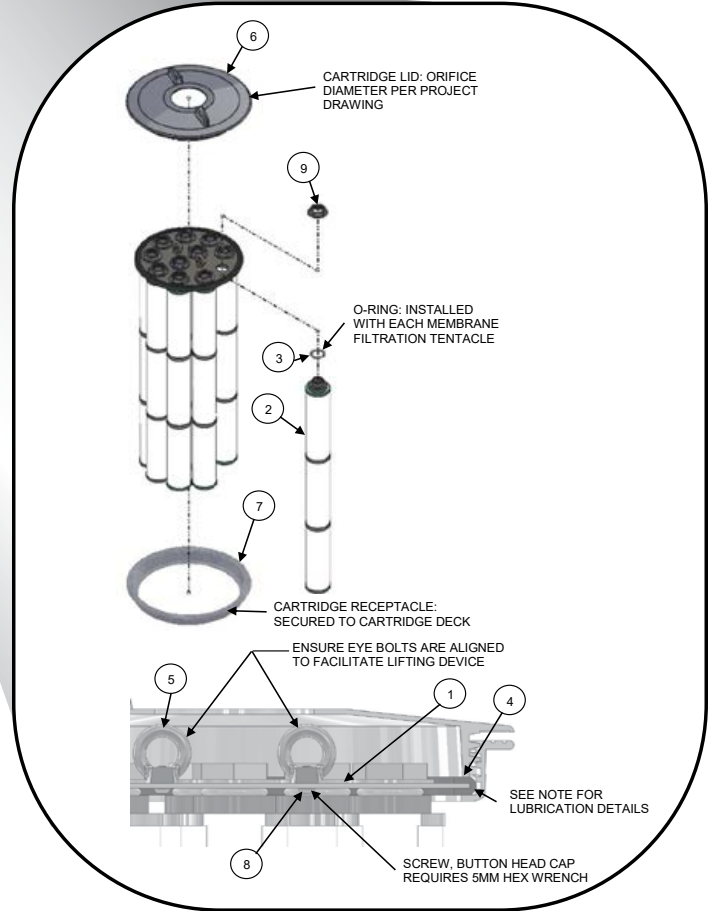
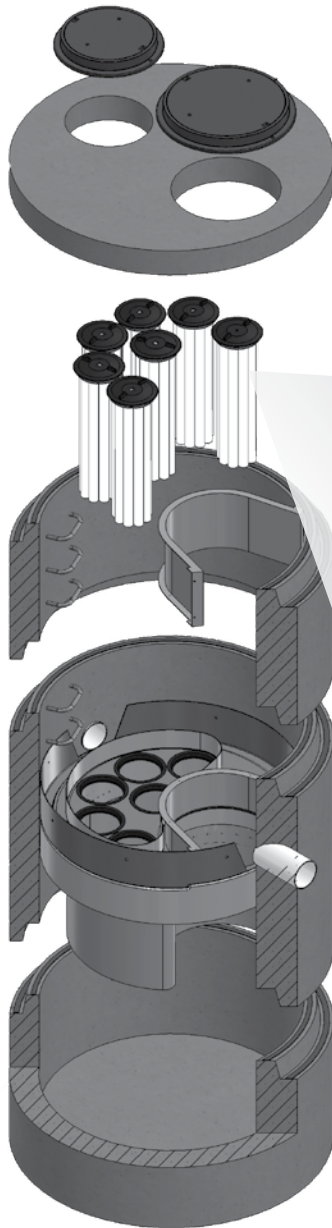


TABLE 1: BOM

| 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:   |  |  |  |  |  |



## 1.6 Porous Asphalt Maintenance Requirements

| Porous Asphalt Inspection/Maintenance Requirements                       |                                    |   |
|--|------------------------------------|---|
| Inspection/<br>Maintenance   | Frequency                          | Action  |
| Monitor for sediment build up, particularly in the winter.               | Two (2) – Four (4) Times Annually. | - Clean with vacuum sweeper, bi-annually<br>- Loose debris such as leaves or can be removed using a power/leaf blower or gutter broom. Fall and spring cleanup should be accompanied by pavement vacuuming. |
| Inspect Adjacent Vegetation  | Two (2) – Four (4) Times Annually. | - Repair or replace any eroded areas.   |
| Inspect for standing water<br>-Within 30 minutes following a rain event. | One (1) – Two (2) Times Annually   | - Use of a power washer or compressed air blower at an angle of 30 degrees or less can be effective, vacuum or vacuum sweeper if necessary.   |
| Damage to pavement   | As needed                          | - Repairs should be made as identified.   |

### **Porous Asphalt Winter Maintenance Guidelines:**

- ***No winter sanding or salting of porous pavements is permitted***
- Porous surfaces are commonly not treated and plowed until 2 or more inches of snow accumulation.
- Plow after every storm. If possible, plow with a slightly raised blade, this will help prevent pavement scarring.

### **Additional Porous Asphalt Operation and Maintenance Requirements:**

- Never reseal or repave with impermeable materials.
- Inspect annually for pavement deterioration or spalling.
- Monitor periodically to ensure the pavement surface drains effectively after storms.

## **1.7 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). The property manager will be responsible for timely snow removal from all private sidewalks, driveways, and parking areas. Snow removal will be hauled off-site and legally disposed of when snowbanks exceed 3 feet in height. Salt storage areas shall be covered or located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt storage is not permitted within the 100' wetland buffer. 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,).



## **Section 2**

# **Chloride Management Plan**

### **Winter Operational Guidelines**

The following Chloride Management Plan is for the 53 Green Street, Mixed Use Development 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 53 Green Street, Mixed Use Development is located along the North Mill Pond in Portsmouth, New Hampshire.

#### **2.2 Operational Guidelines – Chloride Management**

All private contractors engaged at the development site for the purposes of winter operational snow removal and surface maintenance, are responsible for assisting in meeting compliance for the following protocols. 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 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 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 premises for the purpose of winter operational snow removal and surface maintenance shall provide to the property management two copies of the annual UNHT2 Green SnowPro certificate or equivalent for each operator utilized on the premises. The annual UNHT2 Green SnowPro certificate or equivalent for each operator will be available on file in the Facilities Management office and be present in the vehicle/carrier at all times.

##### **2.2.2 Improved Weather Monitoring**

The property manager 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 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 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 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 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 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 Management Team in order to accurately dispense material. All private contractors engaged at the premises for the purpose of winter operational snow removal and surface maintenance will be subject to spot inspections by members of the Property 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 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 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 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 premises. The property manager 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 Operational Manual and are to be used to qualify and retain all private contractors engaged at the 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 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 employees directly involved with winter operational activities, and all private contractors engaged at the 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.





### Deicing Application Rate Guidelines

24' of pavement (typical 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.

| Pavement Temp. (°F) and Trend (↑↓) | Weather Condition     | Maintenance Actions                           | Pounds per two-lane mile                    |   |                 |                                    |
|------------------------------------|-----------------------|---|---|---|-----------------|------------------------------------|
|                                    |                       |   | 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<sub>2</sub> or CaCl<sub>2</sub> 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 3**

# **Invasive Species**

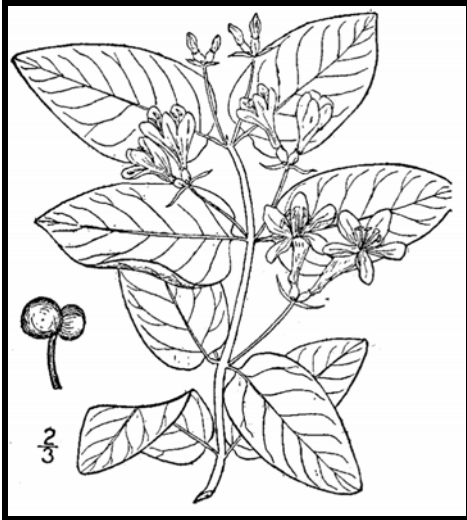
With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.







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](http://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.

**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.





**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.


**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.

| Woody Plants   | Method of Reproducing   | Methods of Disposal  |
|--|---|--|
| Norway maple<br><i>(Acer platanoides)</i><br>European barberry<br><i>(Berberis vulgaris)</i><br>Japanese barberry<br><i>(Berberis thunbergii)</i><br>autumn olive<br><i>(Elaeagnus umbellata)</i><br>burning bush<br><i>(Euonymus alatus)</i><br>Morrow's honeysuckle<br><i>(Lonicera morrowii)</i><br>Tatarian honeysuckle<br><i>(Lonicera tatarica)</i><br>showy bush honeysuckle<br><i>(Lonicera x bella)</i><br>common buckthorn<br><i>(Rhamnus cathartica)</i><br>glossy buckthorn<br><i>(Frangula alnus)</i> |   | <p><b>Prior to fruit/seed ripening</b></p> <p>Seedlings and small plants</p> <ul style="list-style-type: none"> <li>▪ Pull or cut and leave on site with roots exposed. No special care needed.</li> </ul> <p>Larger plants</p> <ul style="list-style-type: none"> <li>▪ Use as firewood.</li> <li>▪ Make a brush pile.</li> <li>▪ Chip.</li> <li>▪ Burn.</li> </ul> |
|  |   | <p><b>After fruit/seed is ripe</b></p> <p>Don't remove from site.</p> <ul style="list-style-type: none"> <li>▪ Burn.</li> <li>▪ Make a covered brush pile.</li> <li>▪ Chip once all fruit has dropped from branches.</li> <li>▪ Leave resulting chips on site and monitor.</li> </ul>  |
| oriental bittersweet<br><i>(Celastrus orbiculatus)</i><br>multiflora rose<br><i>(Rosa multiflora)</i>  |  | <p><b>Prior to fruit/seed ripening</b></p> <p>Seedlings and small plants</p> <ul style="list-style-type: none"> <li>▪ Pull or cut and leave on site with roots exposed. No special care needed.</li> </ul> <p>Larger plants</p> <ul style="list-style-type: none"> <li>▪ Make a brush pile.</li> <li>▪ Burn.</li> </ul>  |
|  |   | <p><b>After fruit/seed is ripe</b></p> <p>Don't remove from site.</p> <ul style="list-style-type: none"> <li>▪ Burn.</li> <li>▪ Make a covered brush pile.</li> <li>▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</li> </ul>   |

| Non-Woody Plants   | Method of Reproducing   | Methods of Disposal   |
|--|---|---|
| <p>garlic mustard<br/>(<i>Alliaria petiolata</i>)</p> <p>spotted knapweed<br/>(<i>Centaurea maculosa</i>)</p> <ul style="list-style-type: none"> <li>▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.</li> </ul> <p>black swallow-wort<br/>(<i>Cynanchum nigrum</i>)</p> <ul style="list-style-type: none"> <li>▪ May cause skin rash. Wear gloves and long sleeves when handling.</li> </ul> <p>pale swallow-wort<br/>(<i>Cynanchum rossicum</i>)</p> <p>giant hogweed<br/>(<i>Heracleum mantegazzianum</i>)</p> <ul style="list-style-type: none"> <li>▪ Can cause major skin rash. Wear gloves and long sleeves when handling.</li> </ul> <p>dame's rocket<br/>(<i>Hesperis matronalis</i>)</p> <p>perennial pepperweed<br/>(<i>Lepidium latifolium</i>)</p> <p>purple loosestrife<br/>(<i>Lythrum salicaria</i>)</p> <p>Japanese stilt grass<br/>(<i>Microstegium vimineum</i>)</p> <p>mile-a-minute weed<br/>(<i>Polygonum perfoliatum</i>)</p> | <p><b>Fruits and Seeds</b></p>    | <p><b>Prior to flowering</b></p> <p>Depends on scale of infestation</p> <p>Small infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and leave on site with roots exposed.</li> </ul> <p>Large infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).</li> <li>▪ Monitor. Remove any re-sprouting material.</li> </ul> <hr/> <p><b>During and following flowering</b></p> <p>Do nothing until the following year or remove flowering heads and bag and let rot.</p> <p>Small infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and leave on site with roots exposed.</li> </ul> <p>Large infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).</li> <li>▪ Monitor. Remove any re-sprouting material.</li> </ul> |
| <p>common reed<br/>(<i>Phragmites australis</i>)</p> <p>Japanese knotweed<br/>(<i>Polygonum cuspidatum</i>)</p> <p>Bohemian knotweed<br/>(<i>Polygonum x bohemicum</i>)</p>  | <p><b>Fruits, Seeds, Plant Fragments</b></p> <p>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.</p> | <p><b>Small infestation</b></p> <ul style="list-style-type: none"> <li>▪ Bag all plant material and let rot.</li> <li>▪ Never pile and use resulting material as compost.</li> <li>▪ Burn.</li> </ul> <p><b>Large infestation</b></p> <ul style="list-style-type: none"> <li>▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.</li> <li>▪ Monitor and remove any sprouting material.</li> <li>▪ Pile, let dry, and burn.</li> </ul>  |

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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



Spraying chemicals to control invasive plants.

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.

### 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.]

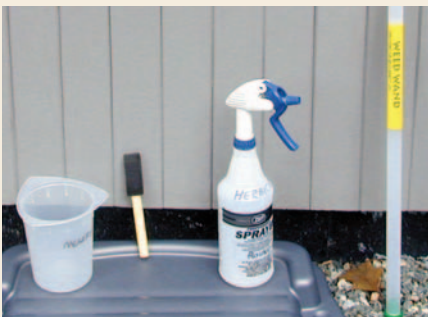
### Foliar applications

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](http://tncweeds.ucdavis.edu)). An upcoming posting on the Invasive Plant Atlas of New England ([www.ipane.org](http://www.ipane.org)) and the New England Wild Flower Society ([www.newfs.org](http://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](http://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](http://www.state.me.us/dep/blwq/docstand/nrpapage.htm)

**NH:** Department of Environmental Services  
[www.des.state.nh.us/wetlands/](http://www.des.state.nh.us/wetlands/)

**VT:** Department of Environmental Conservation  
[www.anr.state.vt.us/dec/waterq/permits/htm/pm\\_cud.htm](http://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](http://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 City of Portsmouth on an annual basis.



| <b>Stormwater Management Report</b>    |                           |  |  |  |                                  |                     |
|--|---------------------------|--|--|--|----------------------------------|---------------------|
| <b>Mixed Use Development</b>           |                           | <b>53 Green Street – Map 119 Lot 2</b> |  |  |                                  |                     |
| <b>BMP Description</b>                 | <b>Date of Inspection</b> | <b>Inspector</b>                       | <b>BMP Installed and Operating Properly?</b>             | <b>Cleaning / Corrective Action Needed</b> | <b>Date of Cleaning / Repair</b> | <b>Performed By</b> |
| Deep Sump CB's                         |                           |  | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |                                  |                     |
| ADS Stormtech System with Isolator Row |                           |  | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |                                  |                     |
| Jellyfish Filter 1                     |                           |  | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |                                  |                     |





| Stormwater Management Report |                    |                       |  |                                     |                           |              |
|------------------------------|--------------------|-----------------------|--|-------------------------------------|---------------------------|--------------|
| City of Portsmouth           |                    | North Mill Pond Trail |  |                                     |                           |              |
| BMP Description              | Date of Inspection | Inspector             | BMP Installed and Operating Properly?                    | Cleaning / Corrective Action Needed | Date of Cleaning / Repair | Performed By |
| Porous Pavement              |                    |                       | <input type="checkbox"/> Yes <input type="checkbox"/> No |                                     |                           |              |







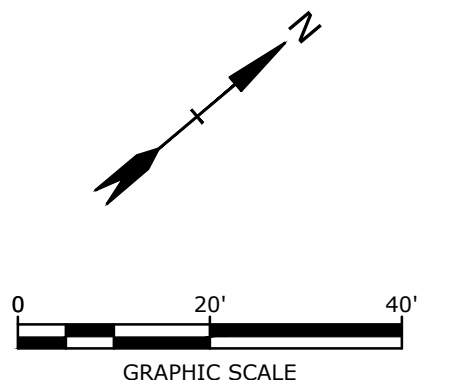


PROPOSED MIXED USE DEVELOPMENT  
53 GREEN STREET  
PORTSMOUTH, NEW HAMPSHIRE

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SITE OVERLAY EXHIBIT



**Tighe & Bond**

Last Save Date: July 6, 2021, 2:25 PM By: ASELLAR  
Plot Date: Tuesday, July 06, 2021, Plotted By: Alexander Stellar  
T&B File Location: J:\C0960\011\_53 Green St, Portsmouth, NH\Drawings\_Figures\AutoCAD\C0960-011\_C-FIGS.dwg Layout: Tab: SITE AERIAL

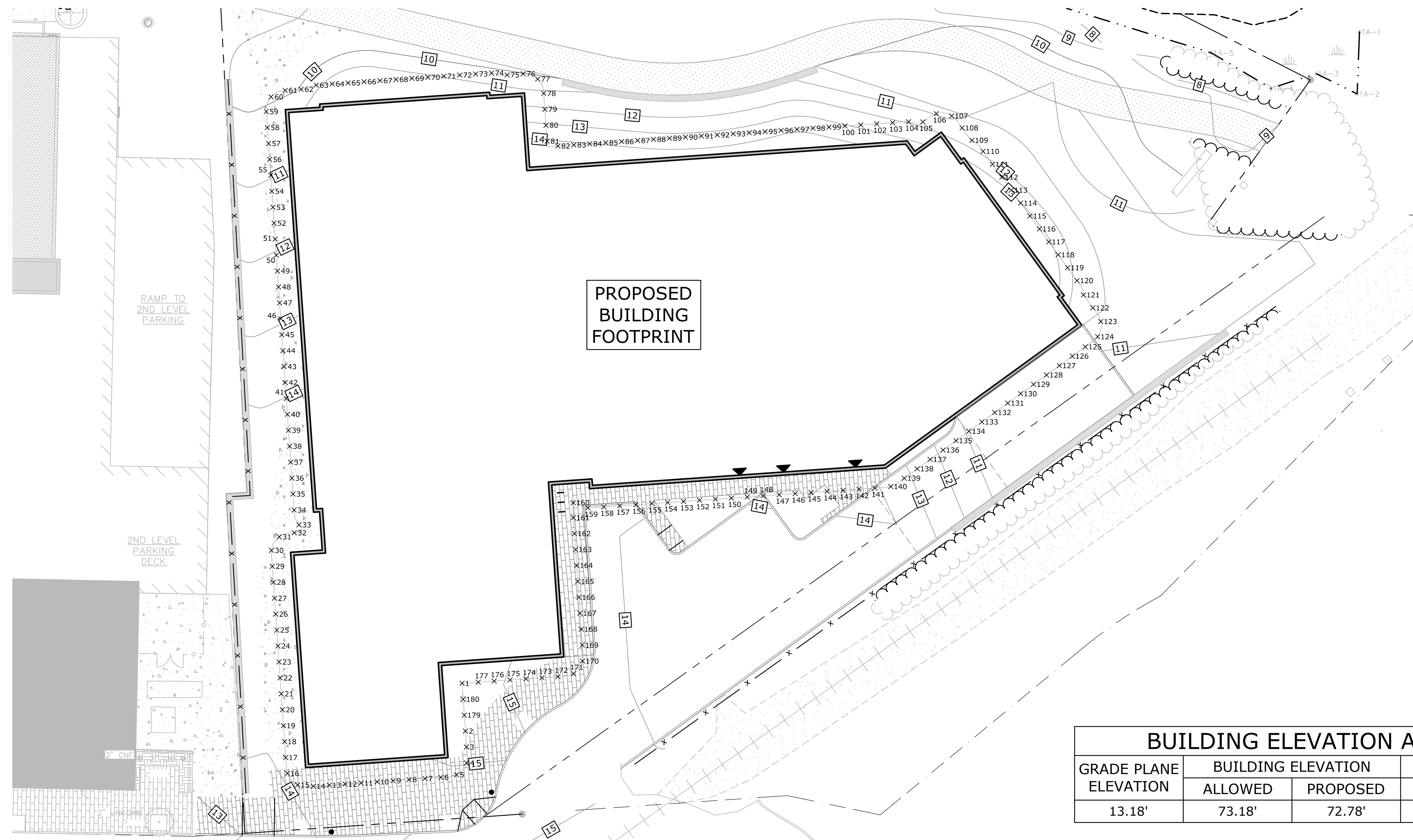


**PROPOSED MIXED USE DEVELOPMENT  
53 GREEN STREET  
PORTSMOUTH, NEW HAMPSHIRE**

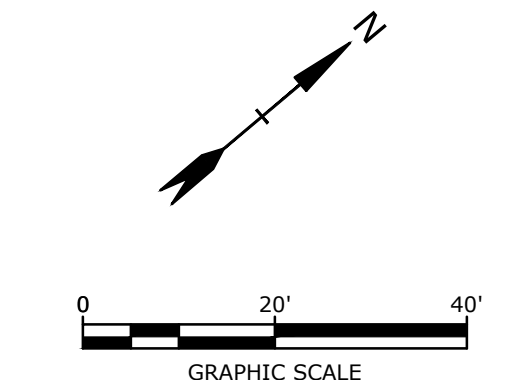
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**GRADE PLANE EXHIBIT**

| Point Table |           | Point Table |           | Point Table |           | Point Table |           | Point Table |           | Point Table |           | Point Table |           | Point Table |              |
|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|
| Point #     | Elevation | Point #     | Elevation | Point #     | Elevation | Point #     | Elevation | Point #     | Elevation | Point #     | Elevation | Point #     | Elevation | Point #     | Elevation    |
| 1           | 15.20     | 20          | 14.45     | 40          | 14.05     | 60          | 10.00     | 80          | 13.00     | 100         | 13.00     | 120         | 13.00     | 140         | 13.85        |
| 179         | 15.15     | 21          | 14.55     | 41          | 14.00     | 61          | 10.00     | 81          | 14.00     | 101         | 12.50     | 121         | 11.50     | 141         | 14.65        |
| 2           | 15.10     | 22          | 14.55     | 42          | 13.85     | 62          | 10.00     | 82          | 14.25     | 102         | 12.25     | 122         | 11.25     | 142         | 14.65        |
| 3           | 15.05     | 23          | 14.55     | 43          | 13.60     | 63          | 10.50     | 83          | 14.00     | 103         | 12.00     | 123         | 11.25     | 143         | 14.65        |
| 4           | 15.00     | 24          | 14.55     | 44          | 13.45     | 64          | 11.00     | 84          | 13.75     | 104         | 12.00     | 124         | 11.25     | 144         | 14.65        |
| 5           | 14.95     | 25          | 14.55     | 45          | 13.20     | 65          | 11.25     | 85          | 13.50     | 105         | 11.75     | 125         | 10.75     | 145         | 14.65        |
| 6           | 14.95     | 26          | 14.55     | 46          | 13.00     | 66          | 11.25     | 86          | 13.50     | 106         | 11.00     | 126         | 10.65     | 146         | 14.65        |
| 7           | 14.90     | 27          | 14.55     | 47          | 12.70     | 67          | 11.25     | 87          | 13.50     | 107         | 11.00     | 127         | 10.65     | 147         | 14.65        |
| 8           | 14.85     | 28          | 14.55     | 48          | 12.50     | 68          | 11.25     | 88          | 13.50     | 108         | 11.25     | 128         | 10.65     | 148         | 14.65        |
| 9           | 14.80     | 29          | 14.55     | 49          | 12.20     | 69          | 11.00     | 89          | 13.25     | 109         | 11.75     | 129         | 10.65     | 149         | 14.65        |
| 10          | 14.75     | 30          | 14.55     | 50          | 12.00     | 70          | 11.00     | 90          | 13.25     | 110         | 12.00     | 130         | 10.65     | 150         | 14.65        |
| 11          | 14.70     | 31          | 14.55     | 51          | 11.80     | 71          | 10.75     | 91          | 13.25     | 111         | 12.25     | 131         | 10.90     | 151         | 14.65        |
| 12          | 14.65     | 32          | 14.55     | 52          | 11.60     | 72          | 10.50     | 92          | 13.25     | 112         | 12.75     | 132         | 10.90     | 152         | 14.65        |
| 13          | 14.60     | 33          | 14.55     | 53          | 11.40     | 73          | 10.50     | 93          | 13.25     | 113         | 13.00     | 133         | 10.90     | 153         | 14.65        |
| 14          | 14.55     | 34          | 14.55     | 54          | 11.25     | 74          | 10.50     | 94          | 13.50     | 114         | 13.00     | 134         | 10.90     | 154         | 14.65        |
| 15          | 14.10     | 35          | 14.50     | 55          | 11.00     | 75          | 10.00     | 95          | 13.50     | 115         | 13.00     | 135         | 11.50     | 155         | 14.65        |
| 16          | 14.10     | 36          | 14.45     | 56          | 10.75     | 76          | 10.00     | 96          | 13.75     | 116         | 13.00     | 136         | 12.00     | 156         | 14.65        |
| 17          | 14.15     | 37          | 14.35     | 57          | 10.50     | 77          | 10.00     | 97          | 14.00     | 117         | 13.00     | 137         | 12.25     | 157         | 14.65        |
| 18          | 14.25     | 38          | 14.25     | 58          | 10.25     | 78          | 11.00     | 98          | 14.00     | 118         | 13.00     | 138         | 12.85     | 158         | 14.65        |
| 19          | 14.35     | 39          | 14.15     | 59          | 10.00     | 79          | 12.00     | 99          | 13.50     | 119         | 13.00     | 139         | 13.15     | 159         | 14.65        |
|             |           |             |           |             |           |             |           |             |           |             |           |             |           | <b>AVG.</b> | <b>13.18</b> |



| BUILDING ELEVATION AND HEIGHT |                    |          |                 |          |
|-------------------------------|--------------------|----------|-----------------|----------|
| GRADE PLANE ELEVATION         | BUILDING ELEVATION |          | BUILDING HEIGHT |          |
|                               | ALLOWED            | PROPOSED | ALLOWED         | PROPOSED |
| 13.18'                        | 73.18'             | 72.78'   | 60.00'          | 59.75'   |



Last Save Date: July 6, 2021, 2:02 PM By: ASELLAR  
 Plot Date: Tuesday, July 06, 2021, Plotted By: Alexander Sellar  
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## 53 Green Street, Portsmouth, NH: Wetland & Buffer Report

**To:** Patrick Crimmins, PE  
**FROM:** Leonard A. Lord, PhD, CSS, CWS  
**DATE:** January 6, 2020  
**PROJECT:** P-0595-007

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On October 29 and December 2, 2019, Tighe & Bond delineated and assessed tidal wetlands and their 100-foot buffers at 53 Green Street, Portsmouth, NH. This 1.81-acre parcel lies along the northwestern end of North Mill Pond.

### Methods

The wetland delineation was based on criteria specified in the *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1* (January 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (January 2012). The Highest Observable Tide Line (HOTL) was delineated based on the definition found in the NH Department of Environmental Services (NHDES) Wetland Rules, Env-Wt 101.49/Env-Wt 602.23. Wetlands were classified based on the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). The only wetlands located on the parcel are tidal wetlands (HOTL), which were delineated with sequentially-numbered flagging labelled 1A-1 to 1A-19.

Important wetland functions and values were also assessed and summarized in the vicinity of the parcel. The assessment was based on the *Maine Citizens Guide to Evaluating, Restoring, and Managing Tidal Marshes* (Bryan et al., 1997) and *The Highway Methodology Workbook Supplement—Wetland Functions and Values: A Descriptive Approach*, NAEPP-360-1-30a, US Army Corps of Engineers, New England Division, (September 1999).

### Wetlands

Wetlands on this site were classified as estuarine intertidal rocky shore, rubble, and regularly flooded (E2RS2N). The wetland edge slopes sharply and is predominantly covered with angular stones and cobbles. Sparse halophytic vegetation along the upper portion of the tidal wetland edge includes seaside plantain (*Plantago maritima*), sea lavender (*Limonium carolinianum*), salt meadow grass (*Spartina patens*), and seaside goldenrod (*Solidago sempervirens*). Lower portions of the slopes were covered with rockweed (*Ascophyllum nodosum*) within the intertidal zone. Important wetland functions and values in this portion of North Mill Pond include recreation potential and aesthetic quality, though both are impacted by the density and character of the surrounding urban development.

### Tidal Buffer

The 100-foot tidal buffer on this parcel consists primarily of maintained lawn, a commercial building, and a parking lot. There are small patches of shrubby vegetation and small trees at the tops of the slopes between the lawn and tidal wetlands, particularly near both ends of the wetland delineation. Species in these areas include black locust (*Robinia pseudoacacia*),

eastern red cedar (*Juniperus virginiana*), staghorn sumac (*Rhus typhina*), and black cherry (*Prunus serotina*). The highly-developed tidal buffer provides some vegetated permeable surfaces to help reduce and filter runoff but otherwise does little to enhance and protect the downgradient tidal wetland.

\\tighebond.com\data\Data\Projects\P\0595 Pro Con General Proposals\0595-007 Raynes Ave Hotel\Raynes+Green Wetlands+Soils\Green St Wetland-Buffer Rept- 2020-1-9.pdf

# Photographic Log

**Client:** ProCon

**Job Number:** P-0595-007

**Site:** 53 Green Street, Portsmouth, NH

|                          |                         |                                   |
|--------------------------|-------------------------|-----------------------------------|
| <b>Photograph No.:</b> 1 | <b>Date:</b> 10/29/2019 | <b>Direction Taken:</b> Northeast |
|--------------------------|-------------------------|-----------------------------------|

**Description:** Intertidal rocky shore and tidal buffer viewed from the southwest end of the site.



|                          |                         |                                   |
|--------------------------|-------------------------|-----------------------------------|
| <b>Photograph No.:</b> 2 | <b>Date:</b> 10/29/2019 | <b>Direction Taken:</b> Northeast |
|--------------------------|-------------------------|-----------------------------------|

**Description:** Intertidal rocky shore and narrow shrubby portion of the tidal buffer at the northeastern end of the site.



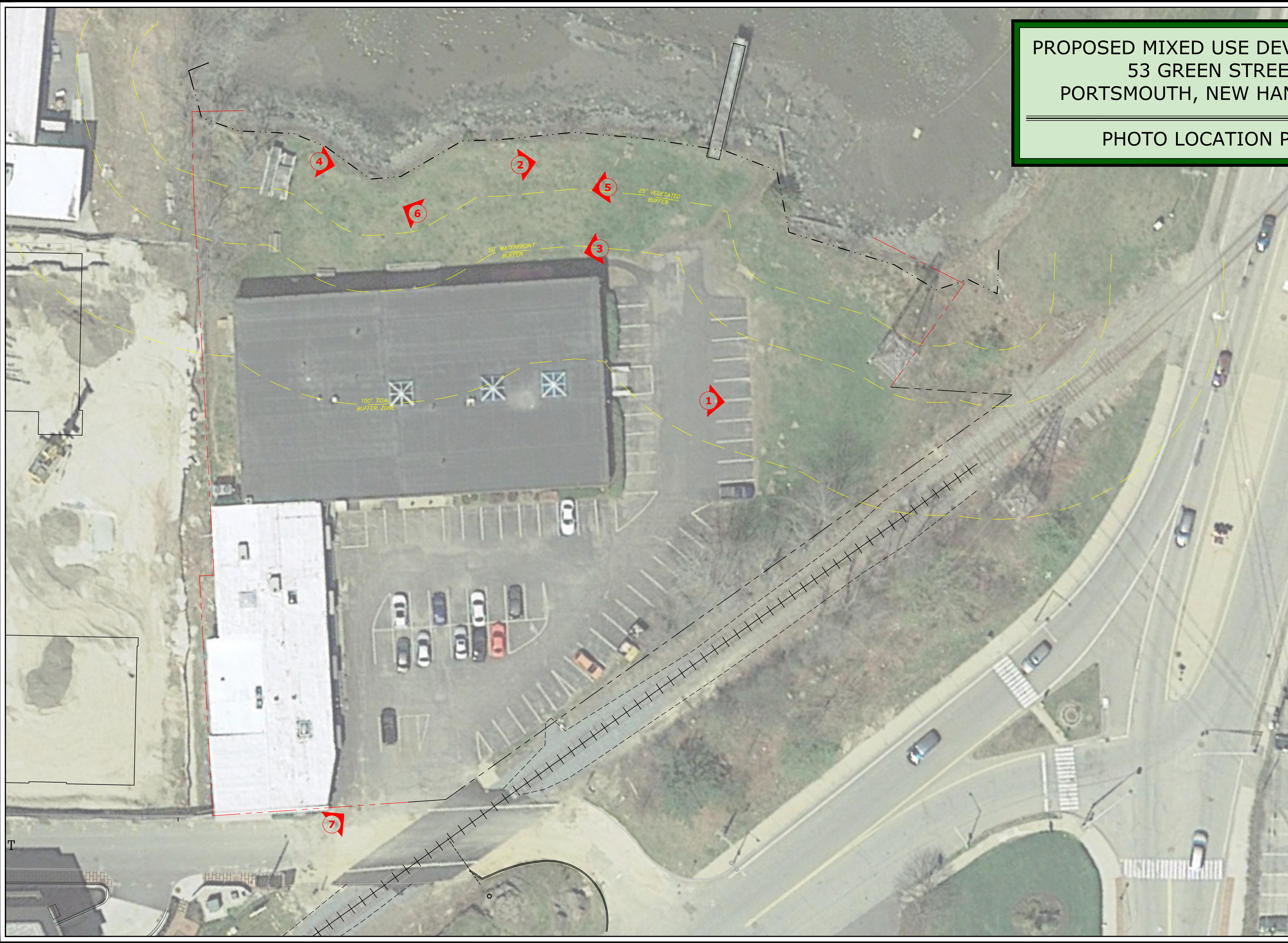


PROPOSED MIXED USE DEVELOPMENT  
53 GREEN STREET  
PORTSMOUTH, NEW HAMPSHIRE

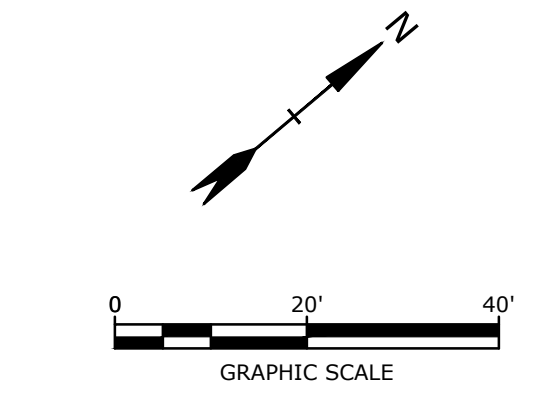
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PHOTO LOCATION PLAN



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Plot Date: Wednesday, January 27, 2021, Plotted By: Craig M. Langton  
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0 20' 40'  
GRAPHIC SCALE

**Tighe & Bond**

January 27, 2021  
C0960-011\_C\_Photo Location.dwg





Photo #1: Looking northeast at existing utility towers and parking located in 100-foot tidal wetland buffer.



Photo #2: Looking northeast towards Market Street across existing maintained lawn area located in 100-foot tidal wetland buffer.





Photo #3: Looking southwest along existing building within 100-foot tidal wetland buffer.



Photo #4: Looking northeast toward existing building and parking located in 100-foot tidal wetland buffer.





Photo #5: Looking southwest towards existing building and maintained lawn area located in 100-foot tidal wetland buffer.



Photo #6: Looking west across existing maintained lawn area and North Mill Pond toward location of future City park.



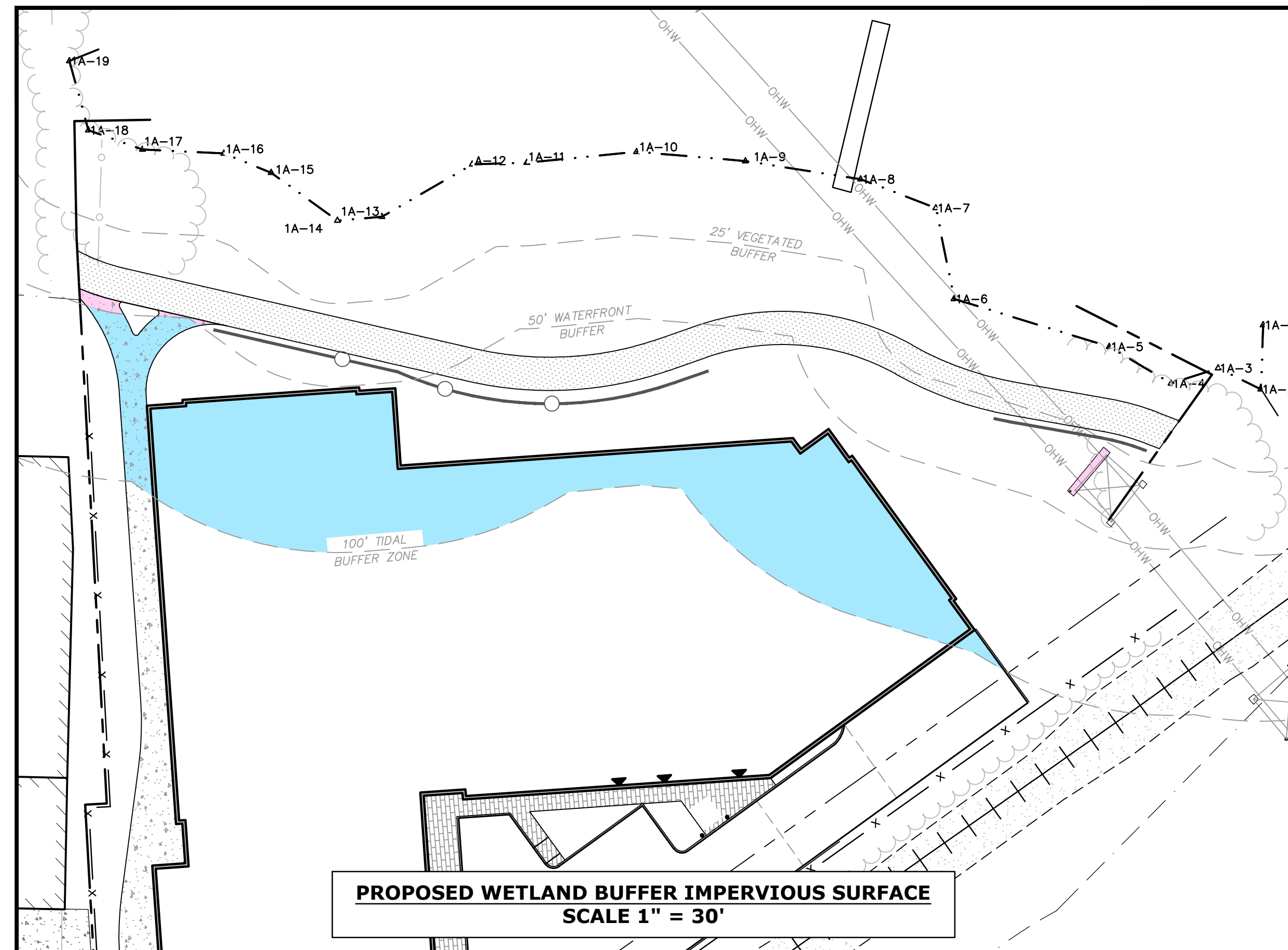
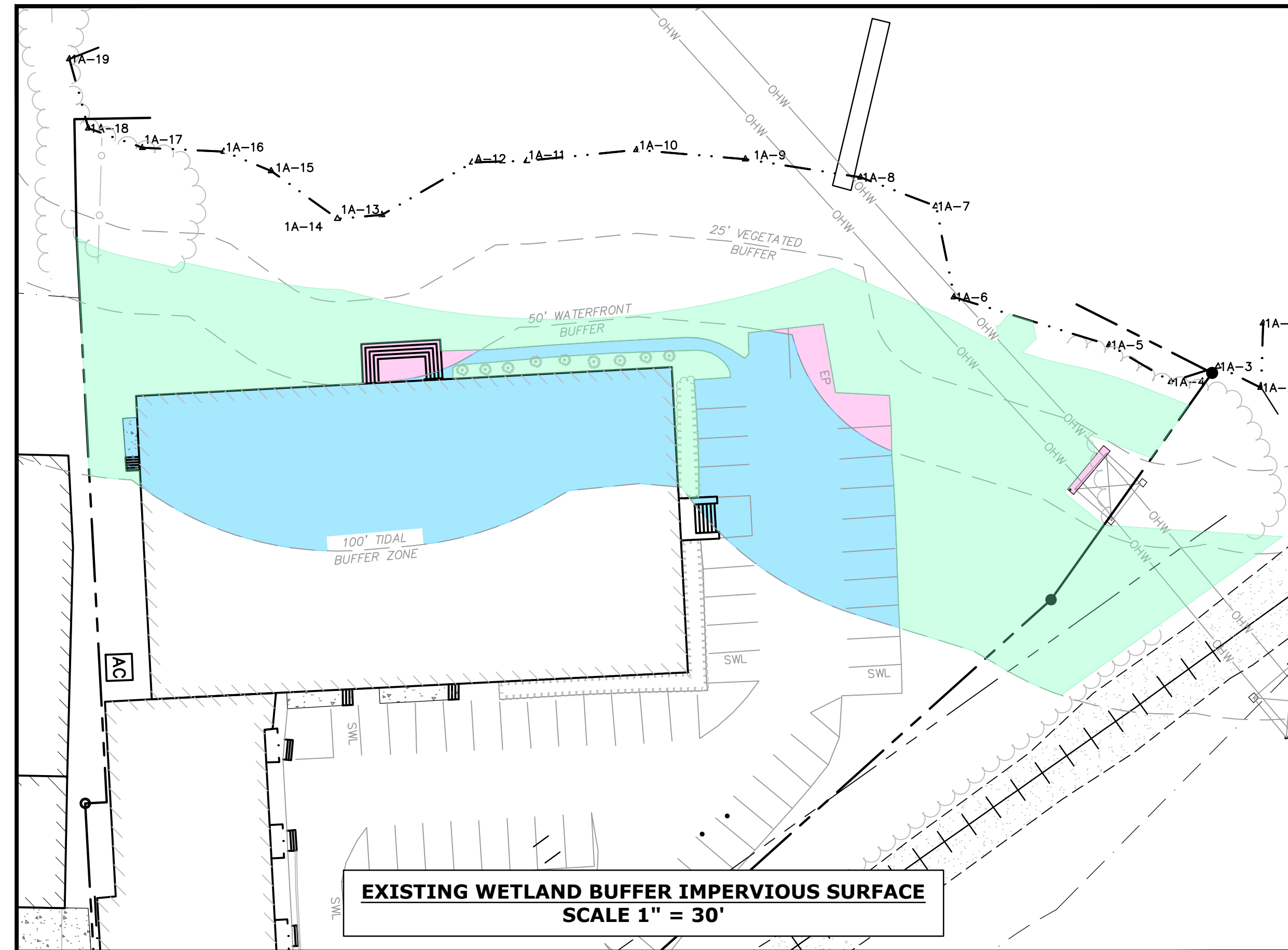
Photo #7: Looking north toward existing parking lot.



**PROPOSED MIXED USE DEVELOPMENT  
53 GREEN STREET**

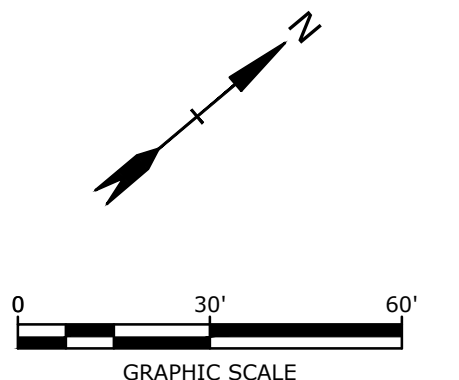
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**WETLAND BUFFER IMPERVIOUS  
SURFACE EXHIBIT**



| Impervious Surface Within Buffer Area |                    |                      |
|---------------------------------------|--------------------|----------------------|
| Local Wetland Buffer Setback          | Impervious Surface |                      |
|                                       | Existing Condition | Proposed Development |
| 0 - 25 FT                             | 0 SF               | 0 SF                 |
| 25 - 50 FT                            | 745 SF             | 110 SF               |
| 50 - 100 FT                           | 10,836 SF          | 8,253 SF             |
| <b>Total Impervious Surface</b>       | <b>11,581 SF</b>   | <b>8,363 SF</b>      |
| <b>Net Impervious Surface</b>         | <b>-3,218 SF</b>   |                      |

AREA OF TEMPORARY WETLAND BUFFER IMPACTS FOR CONSTRUCTION

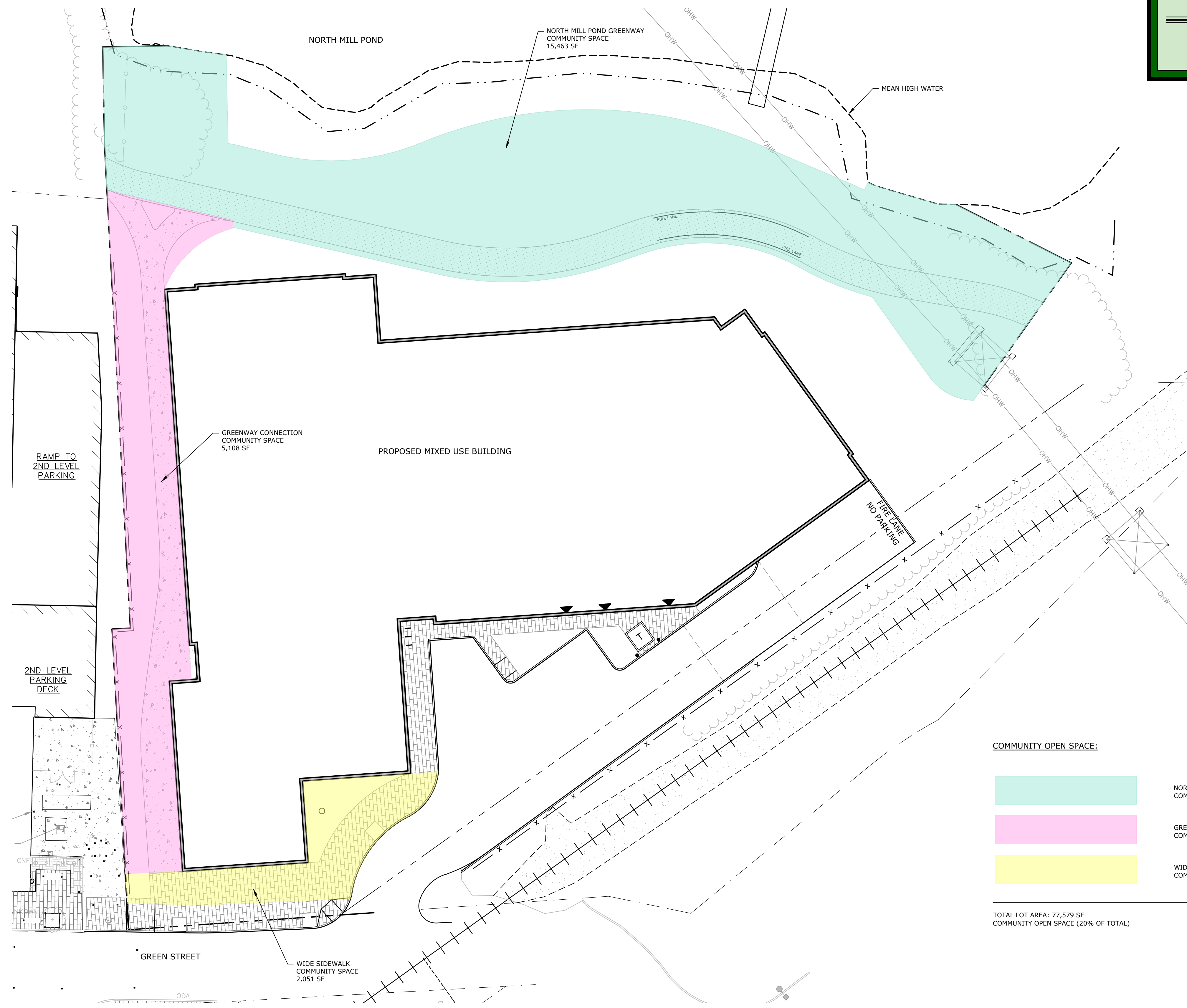


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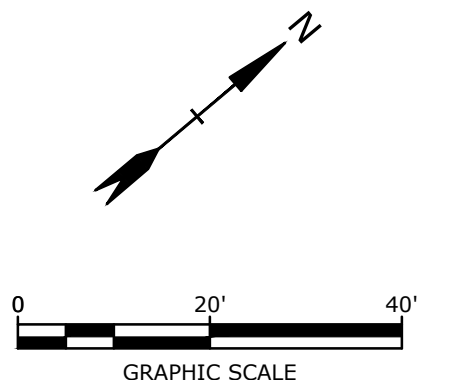
**PROPOSED MIXED USE DEVELOPMENT  
53 GREEN STREET  
PORTSMOUTH, NEW HAMPSHIRE**

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**COMMUNITY SPACE EXHIBIT**



| COMMUNITY OPEN SPACE:  |  | REQUIRED  | PROVIDED  |
|--|--|-----------|-----------|
|  | NORTH MILL POND GREENWAY COMMUNITY SPACE |           | 15,463 SF |
|  | GREENWAY CONNECTION COMMUNITY SPACE      |           | 5,108 SF  |
|  | WIDE SIDEWALK COMMUNITY SPACE            |           | 2,051 SF  |
| TOTAL LOT AREA: 77,579 SF<br>COMMUNITY OPEN SPACE (20% OF TOTAL) |  | 15,516 SF | 22,622 SF |



**Tighe & Bond**

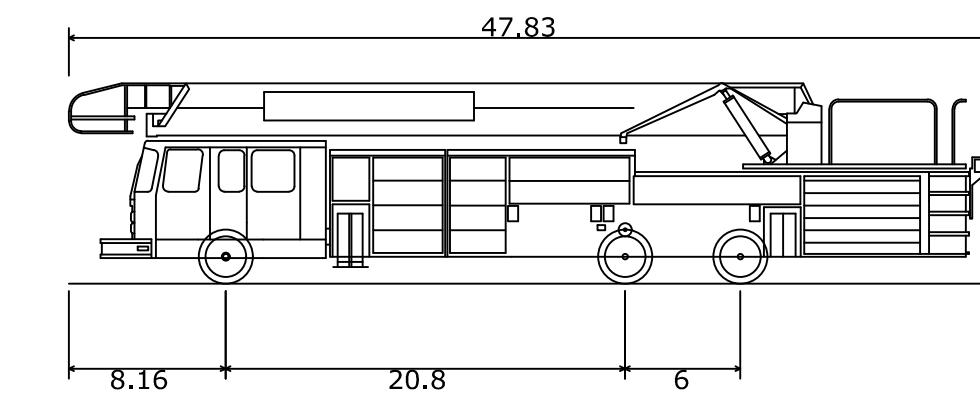
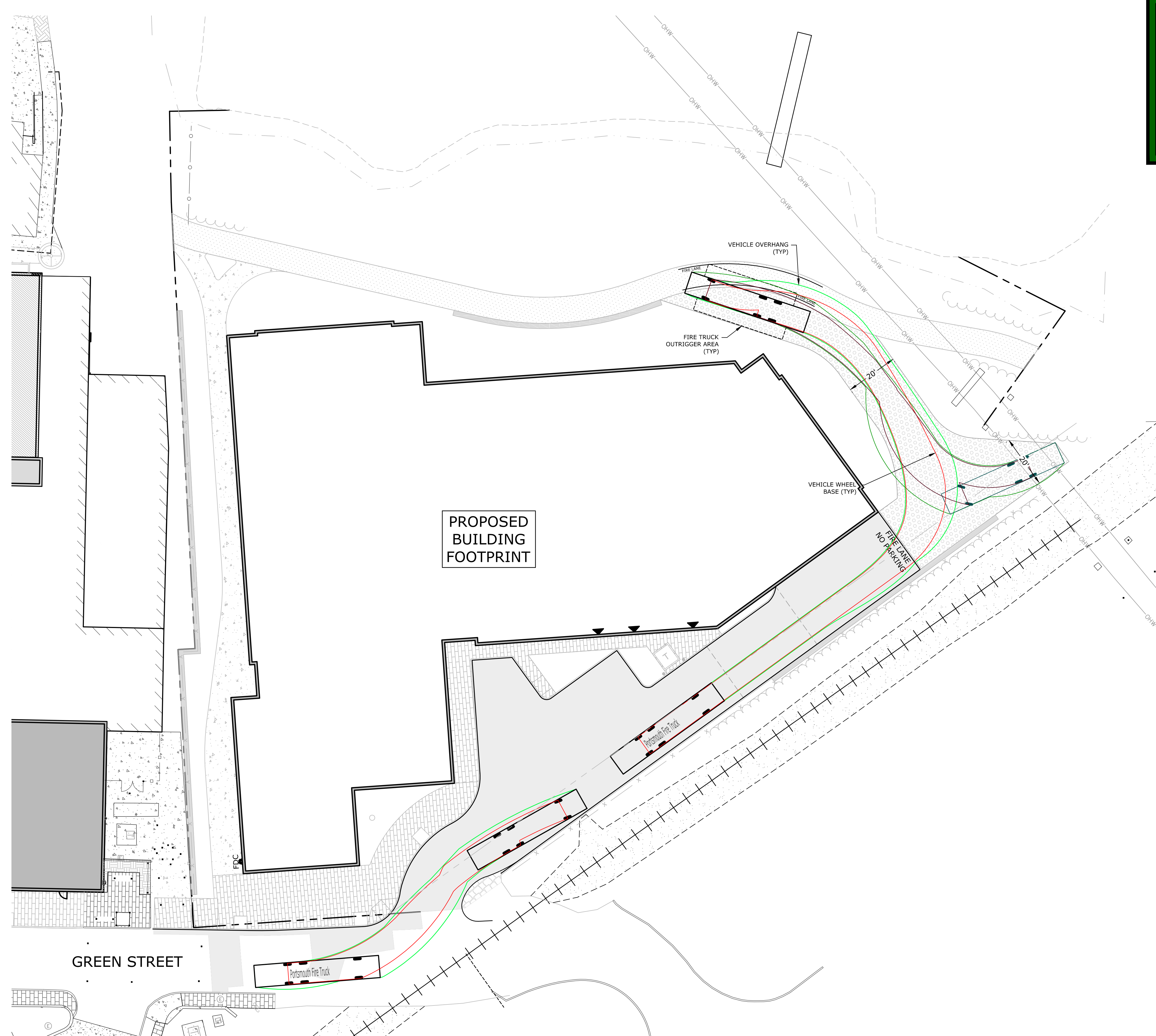
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**PROPOSED MIXED USE DEVELOPMENT  
53 GREEN STREET  
PORTSMOUTH, NEW HAMPSHIRE**

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**FIRE TRUCK TURNING EXHIBIT 1**



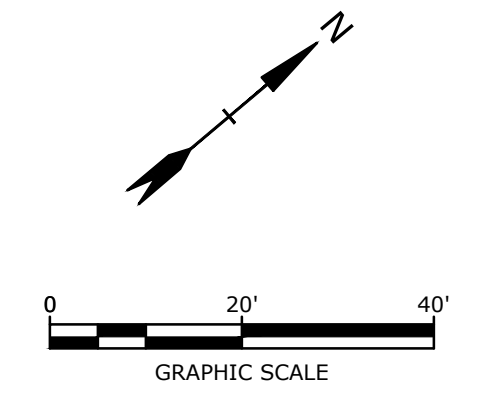
|                              |          |
|------------------------------|----------|
| Portsmouth Fire Truck        |          |
| Overall Length               | 47.830ft |
| Overall Width                | 8.500ft  |
| Overall Body Height          | 10.432ft |
| Min Body Ground Clearance    | 0.862ft  |
| Track Width                  | 8.000ft  |
| Lock-to-lock time            | 6.00s    |
| Max Steering Angle (Virtual) | 38.00°   |

**PROPOSED  
BUILDING  
FOOTPRINT**

**LEGEND**

- VEHICLE WHEEL BASE
- VEHICLE OVERHANG
- VEHICLE WHEEL BASE (REVERSE)
- VEHICLE OVERHANG (REVERSE)

**GREEN STREET**



**Tighe & Bond**

Last Save Date: July 6, 2021 3:11 PM By: ASELLAR  
 Plot Date: Tuesday, July 06, 2021 Plotted By: Alexander Stellar  
 TSS File Location: J:\C0960\011\_53 Green St, Portsmouth, NH\Drawings\Figures\AutoCAD\C0960-011\_C-DSGN.dwg Layout Tab: FIRE TRUCK 1



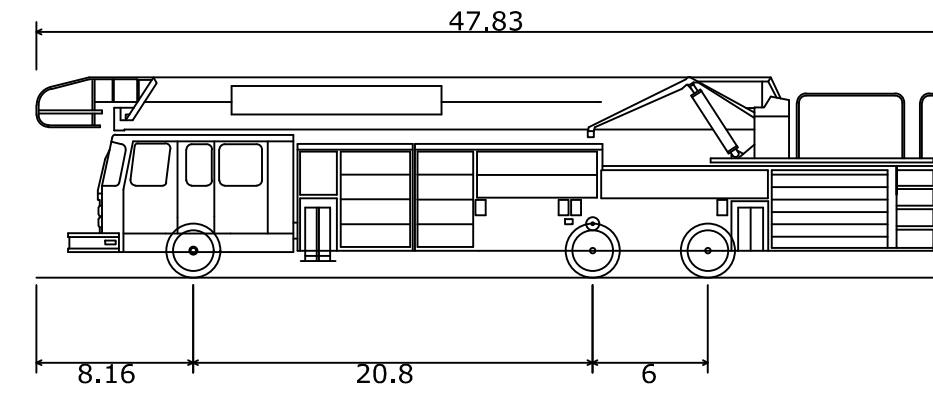
**PROPOSED MIXED USE DEVELOPMENT  
53 GREEN STREET  
PORTSMOUTH, NEW HAMPSHIRE**

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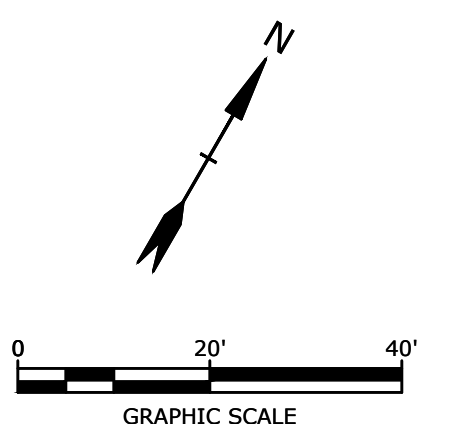
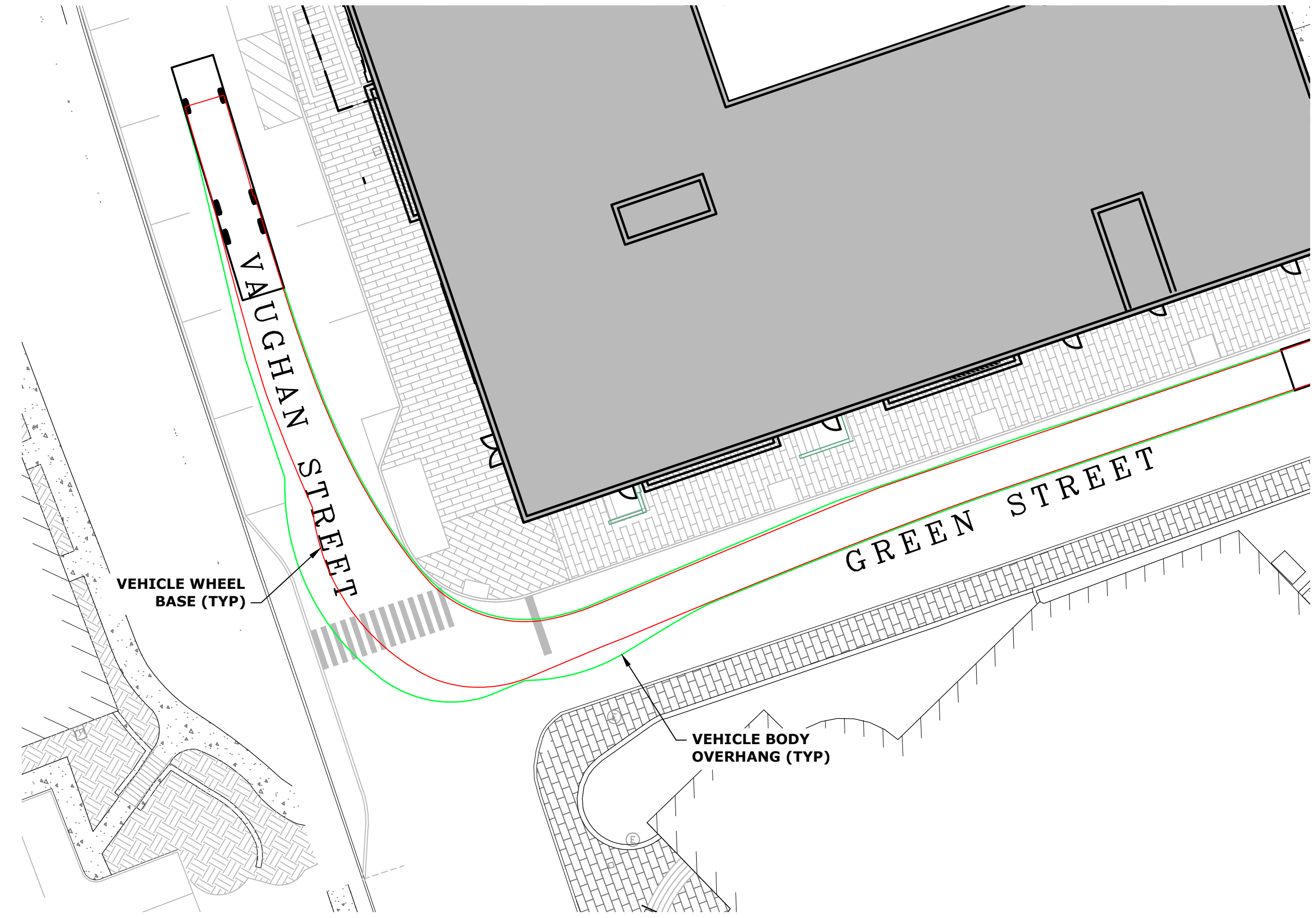
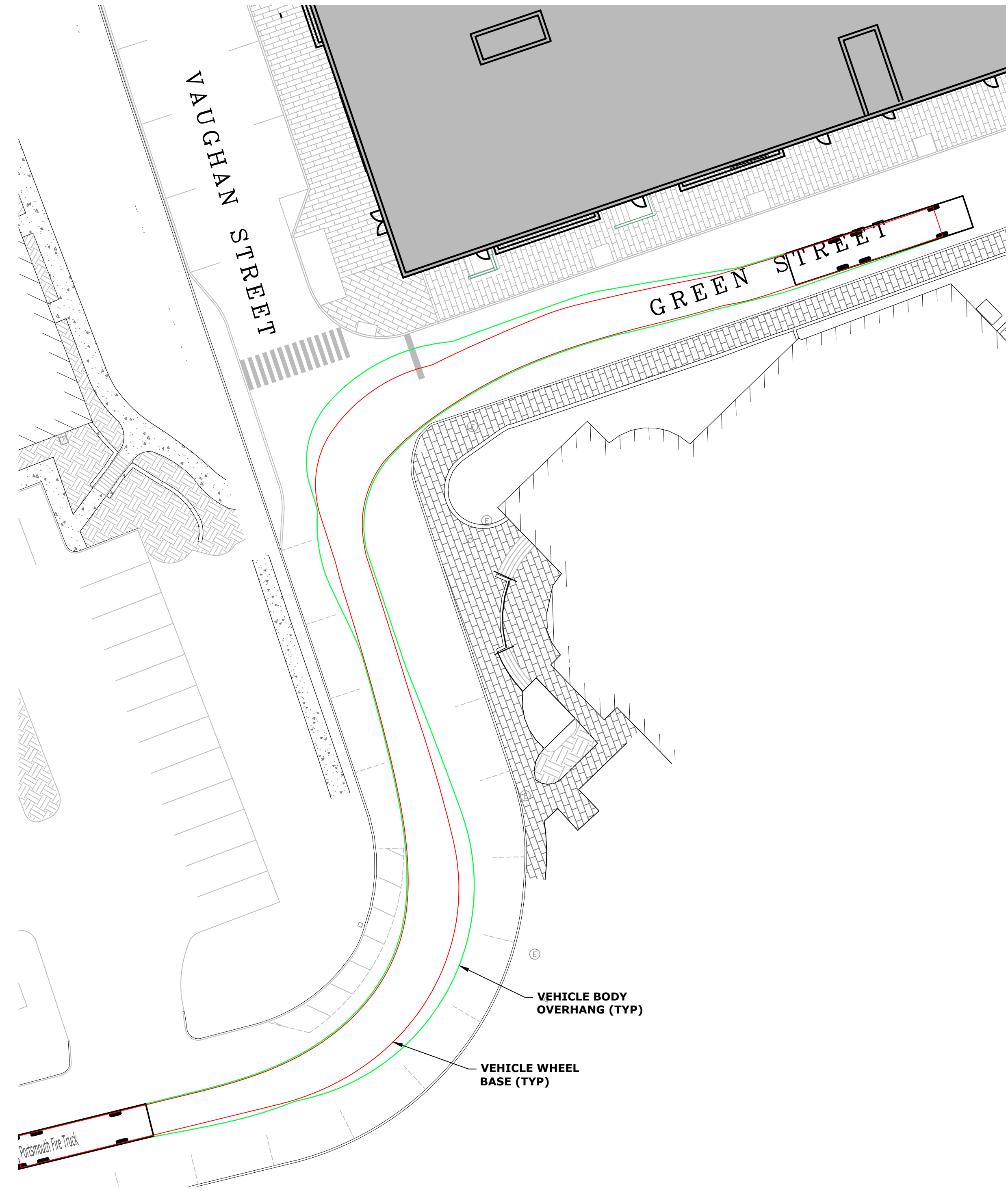
**FIRE TRUCK TURNING EXHIBIT 2**

**LEGEND**

- VEHICLE WHEEL BASE
- VEHICLE OVERHANG



|                              |          |
|------------------------------|----------|
| Portsmouth Fire Truck        |          |
| Overall Length               | 47.830ft |
| Overall Width                | 8.500ft  |
| Overall Body Height          | 10.432ft |
| Min Body Ground Clearance    | 0.862ft  |
| Track Width                  | 8.000ft  |
| Lock-to-lock time            | 6.00s    |
| Max Steering Angle (Virtual) | 38.00°   |



**Tighe & Bond**





Last Save Date: July 6, 2021, 3:38 PM By: ASELLAR  
 Plot Date: Tuesday, July 06, 2021, Plotted By: Alexander Steller  
 T88 File Location: J:\C0960\Cabarrus\C-0960-011 53 Green St, Portsmouth, NH\Drawings\Figures\AutoCAD\C0960-011\_C-DSGN.dwg Layout Tab: FIRE TRUCK 2

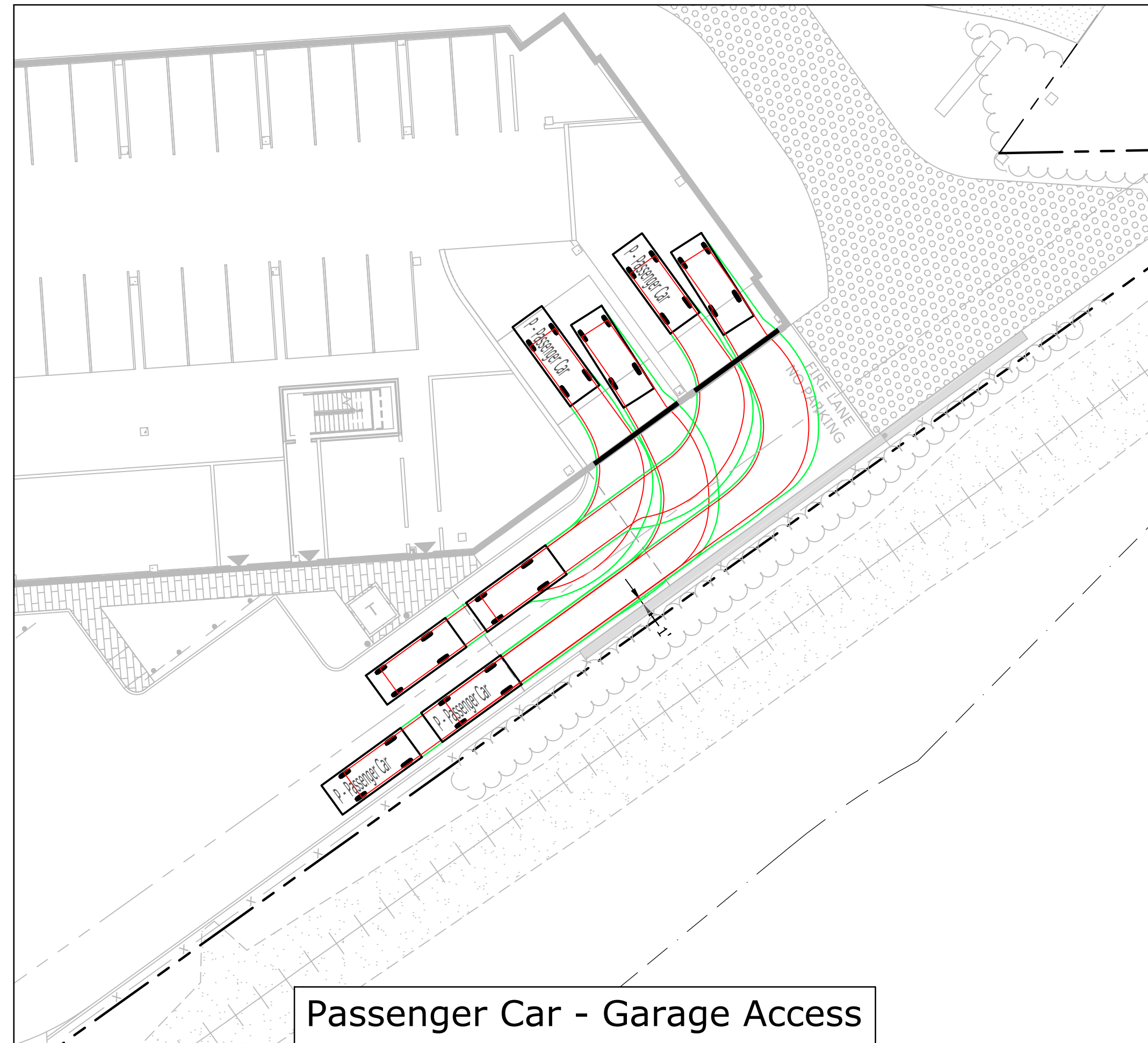


PROPOSED MIXED USE DEVELOPMENT  
53 GREEN STREET  
PORTSMOUTH, NEW HAMPSHIRE

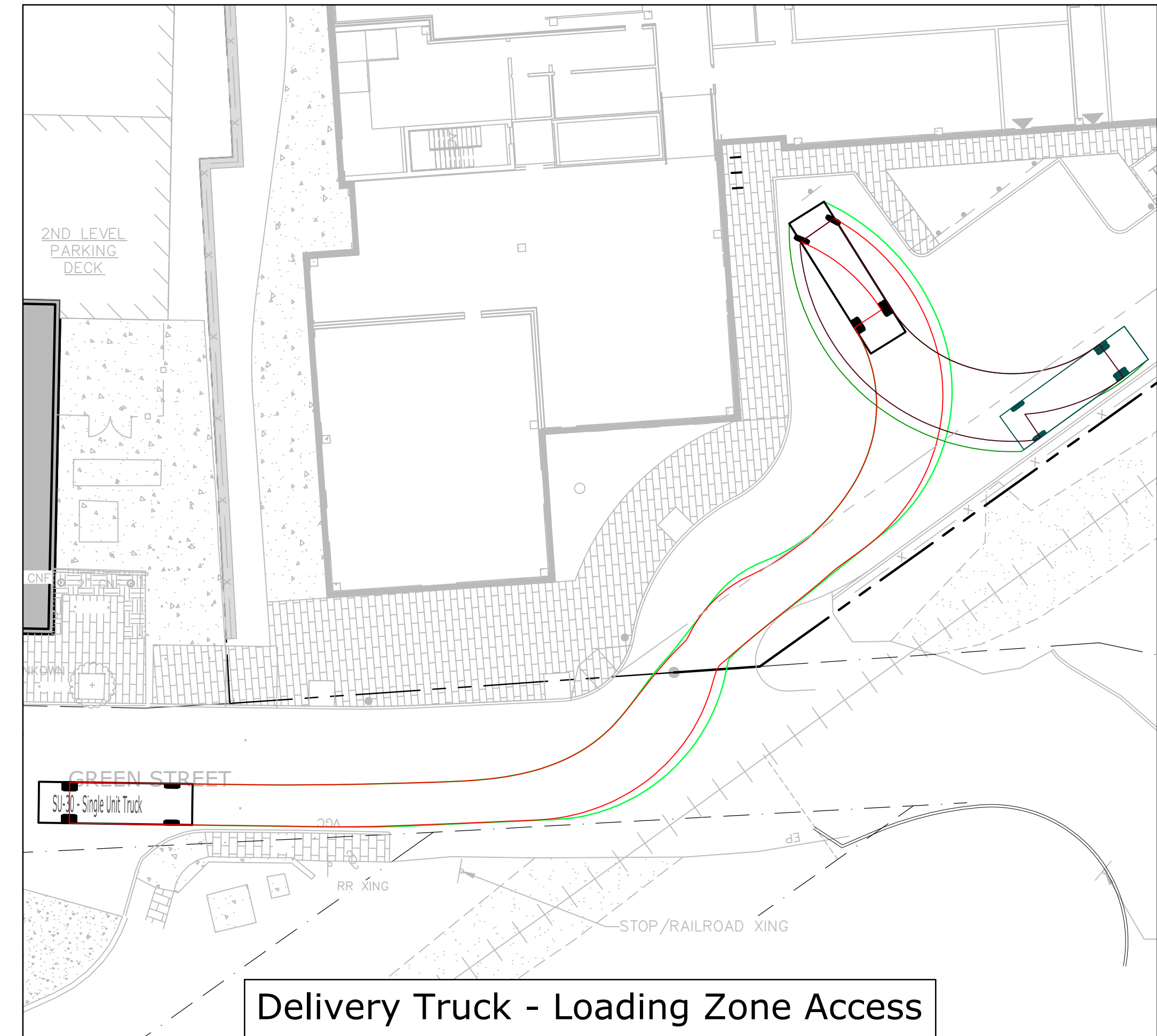
SITE TRAFFIC EXHIBIT

LEGEND

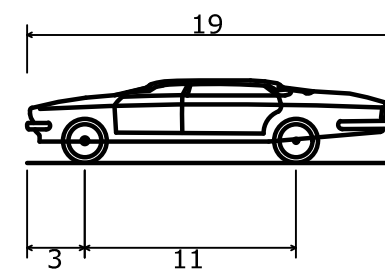
-  VEHICLE WHEEL BASE
-  VEHICLE OVERHANG
-  VEHICLE WHEEL BASE (REVERSE)
-  VEHICLE OVERHANG (REVERSE)



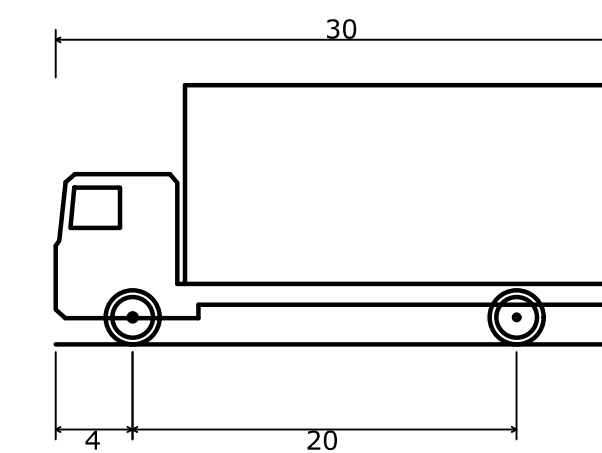
Passenger Car - Garage Access



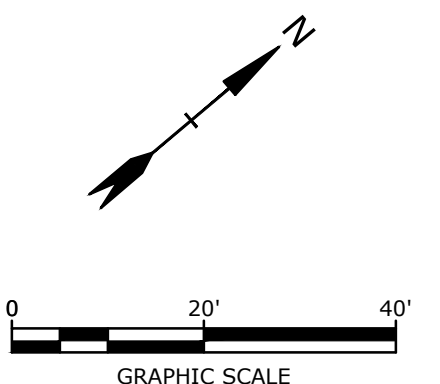
Delivery Truck - Loading Zone Access



P - Passenger Car  
Overall Length 19.000ft  
Overall Width 7.000ft  
Overall Body Height 4.300ft  
Min Body Ground Clearance 1.115ft  
Track Width 6.000ft  
Lock-to-lock time 4.00s  
Max Steering Angle (Virtual) 31.60°



SU-30 - Single Unit Truck  
Overall Length 30.000ft  
Overall Width 8.000ft  
Overall Body Height 13.500ft  
Min Body Ground Clearance 1.367ft  
Track Width 8.000ft  
Lock-to-lock time 5.00s  
Max Steering Angle (Virtual) 31.80°



Tighe & Bond

C0960-011  
July 7, 2021

Mr. Peter Rice, Director of Public Works  
City of Portsmouth  
Department of Public Works  
680 Peverly Hill Road  
Portsmouth New Hampshire

Re: **Trip Generation Analysis**  
**Proposed Mixed Use Development – 53 Green Street, Portsmouth, NH**

Dear Peter:

Tighe & Bond has performed a trip generation analysis for traffic related to a proposed mixed-use development on a parcel of land located at 53 Green Street that is identified as Map 119 Lot 2 on the City of Portsmouth Tax Maps.

This analysis was performed utilizing Institute of Transportation Engineers (ITE) Trip Generation Manual, latest edition. For purposes of analysis, we have compared the existing and proposed uses for the parcel. The parcel's existing uses consists of 14,600 SF of office, 3,000 SF of medical office and 4,070 SF of spa with on-site parking. These buildings will be demolished. The proposed building consists 45 dwelling units with associated on-site parking. The proposed building also includes ±2,350 SF of first floor commercial space along Green Street but there are no on-site parking spaces required for this use, however it was included as part of this Trip Generation Analysis to provide a more conservative analysis.

|                             | Existing  |           |                | Proposed            |            | Net Trips  |
|-----------------------------|-----------|-----------|----------------|---------------------|------------|------------|
|                             | Office    | Spa       | Medical Office | Multifamily Housing | Commercial |            |
| <b>Weekday AM Peak Hour</b> |           |           |                |                     |            |            |
| Trips Entering              | 15        | 5         | 6              | 4                   | 4          | -18        |
| Trips Exiting               | 2         | 0         | 2              | 12                  | 1          | +9         |
| <b>Total Vehicle Trips</b>  | <b>17</b> | <b>5</b>  | <b>8</b>       | <b>16</b>           | <b>5</b>   | <b>-9</b>  |
| <b>Weekday PM Peak Hour</b> |           |           |                |                     |            |            |
| Trips Entering              | 3         | 1         | 3              | 12                  | 2          | +7         |
| Trips Exiting               | 15        | 5         | 7              | 8                   | 4          | -15        |
| <b>Total Vehicle Trips</b>  | <b>18</b> | <b>6</b>  | <b>10</b>      | <b>20</b>           | <b>6</b>   | <b>-8</b>  |
| <b>Saturday Peak Hour</b>   |           |           |                |                     |            |            |
| Trips Entering              | 4         | 8         | 5              | 10                  | 0          | -7         |
| Trips Exiting               | 4         | 13        | 4              | 10                  | 1          | -10        |
| <b>Total Vehicle Trips</b>  | <b>8</b>  | <b>21</b> | <b>9</b>       | <b>20</b>           | <b>1</b>   | <b>-17</b> |

**Source:** Institute of Transportation Engineering, Trip Generation, 10<sup>th</sup> Edition  
Land Uses – 221 Multifamily Housing (Mid-Rise), 710 General Office, 712 Small Office Building, 720 Medical Office, 918 Hair Salon





As depicted above, the proposed 45 residential units and 2,350 SF of small office space in place of the existing 14,600 SF of office use, 3,000 SF of medical office use and 4,070 SF of spa use will result in a reduction of 9 vehicle trips during the Weekday AM Peak Hour, 8 vehicle trips during the Weekday PM Peak Hour and 17 vehicle trips during the Saturday Peak Hour. It is anticipated there will be a reduced number of vehicle trips associated with this project resulting in no additional impact to the surrounding roadway network during peak hour times.

Please feel free to contact us if you have any questions or need any additional information.

Sincerely,

**TIGHE & BOND, INC.**



Neil A. Hansen, PE  
Project Engineer



Patrick M. Crimmins, PE  
Senior Project Manager



February 22, 2021

Rob Simmons  
CPI Management, LLC  
100 Summer Street, Ste 1600  
Boston, MA 02109

RE: Natural Gas Availability to 53 Green St Portsmouth NH Project

Dear Rob,

Unitil's natural gas division has reviewed the requested site for natural gas service.

Unitil hereby confirms natural gas service will be available to 53 Green St Portsmouth NH Project.

Installation is pending an authorized installation agreement with CPI Management, LLC and street opening approval from the City of Portsmouth DPW.

Let me know if you have any questions. You can email me at [oliver@unitil.com](mailto:oliver@unitil.com). My phone number is 603-294-5174.

Sincerely,

Janet Oliver  
Senior Business Development Representative





1700 Lafayette Road  
Portsmouth, NH 03801

**Michael J Busby**  
603-436-7708 x555-5678  
michael.busby@eversource.com

June 29, 2021

Rob Simmons  
CPI Management, LLC  
100 Summer Street, Ste 1600  
Boston, MA 02109

Dear Rob:

I am responding to your request to confirm the availability of electric service for the proposed 53 Green Street Portsmouth, NH project being constructed for/by CPI Management, LCC. This letter to serve supersedes the previously signed letter dated June 15, 2021.

The proposed project consists of a 5-story building with 45 residential units approximately 2,200 s/f of retail/office space at the ground level and parking below grade. The proposed development will be constructed along Green Street.

The developer will be responsible for the installation of all underground facilities and infrastructure required to service the new building. The service will be as shown on attached marked up utility plans C-104 & C-401. The proposed building service will be fed from Green Street as depicted on utility plans C-104 & C-401. The developer will work with Eversource to obtain all necessary easements and licenses for the proposed underground facilities listed above.

This letter serves as confirmation that Eversource has sufficient capacity in the area to provide service to this proposed development. The cost of extending service to the aforementioned location and any associated infrastructure improvements necessary to provide service will be borne by the developer unless otherwise agreed upon.

The attached drawing titled "C-104 Utility Plan" dated 07/07/2021, shows transformer locations to service your proposed project. The attached drawing titled "C-401 Eversource Duct Bank" dated 04/21/2021, shows required infrastructure improvements along Russell Street required to supply service to your project.

Eversource approves the locations shown; assuming the final installed locations meet all clearances, physical protection, and access requirements as outlined in Eversource's "Information & Requirements For Electric Supply" (<https://www.eversource.com/content/docs/default-source/pdfs/requirements-for-electric-service-connections.pdf?sfvrsn=2>).

If you require additional information or I can be of further assistance please do not hesitate to contact me at our Portsmouth Office, 603-436-7708 Ext. 555-5678

Respectfully,

Michael J. Busby, PE

NH Eastern Regional Engineering and Design Manager, Eversource

cc: (via e-mail)

Thomas Boulter, Eastern Region Operations Manager, Eversource

Nickolai Kosko, Field Supervisor, Electric Design, Eversource

# EMBARC

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March 22, 2021

Portsmouth Planning Board  
53 Green Street  
Portsmouth, NH 03801

## Green Building Statement

### 53 Green Street Proposed Mixed-Use Building

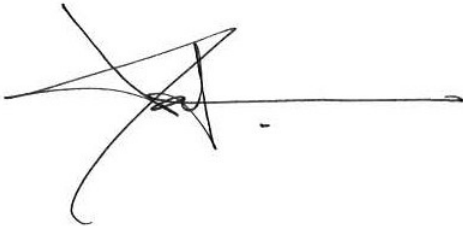
- **Site/Landscape:** In its current condition, the site consists of the existing building, parking to the south and east, and a mown lawn to the top of the bank by the North Mill Pond. The building has a foundation planting of mature Rhododendron. A small area of trees is found at the northwest and southeast corners of the property. The proposed landscape plan provides a pedestrian connector from Green Street to the North Mill Pond Greenway along the west side of the building. This pathway is buffered from the AC Hotel with a green wall of Arborvitae and ornamental grasses creating a garden connector to the greenway beyond. The north side of the building will be faced with a mixed evergreen screen of native shrubs (Inkberry, Rhododendron, Eastern Red Cedar) and the 25' buffer will be enhanced with the addition of Red Oaks and a fescue grass mix for disturbed areas that will be left long, mowed once a year to discourage the incursion of invasive plant material. Between the building and the greenway path will be a mown fescue lawn. The south side of the building will be reserved for vehicular access to the entry and parking garage.
- **Exterior Wall Systems:** The exterior wall systems will meet or exceed the 2015 IECC standards for energy efficiency and will include a continuous air barrier and continuous insulation on all exterior wall enclosing heated spaces as well as insulation within the stud cavities. The exterior cladding materials will include a combination of masonry and metal panel rain screen systems that utilize an air space outboard of the insulation layer for efficient moisture management.
- **Window Systems:** All window systems in the project will meet or exceed 2015 IECC standards for u-value, shading coefficient and solar heat gain coefficient, including a thermally-broken frame and insulated, high-performance, low-E glazing to reduce



thermal transfer. Large window expanses provide plenty of natural daylight to all building occupants.

- **Roofing Systems:** The roofing system will include a light-colored, reflective “cool roof” over continuous, sloped rigid insulation that meets or exceeds code requirements.
- **HVAC Systems:** The dwelling units will be provided with individualized systems providing either heating and cooling or both. System may include electric heat pumps or a hydronic gas fired heating system with gas fired domestic hot water heaters.
- **Plumbing Systems:** All plumbing fixtures in the proposed project will be low-flow fixtures. Individual EnergyStar rated instantaneous hot water heaters will be used for domestic hot water and heating.
- **Lighting Systems:** Interior lighting systems will use LED fixtures throughout the building, including the use of occupancy sensors. Exterior lighting design will include energy-efficient LED cutoff fixtures to minimize light pollution.
- **Appliances:** All appliances for the project will be EnergyStar rated.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dartagnan Brown', with a horizontal line extending to the right.

Dartagnan Brown | Founder + CEO

Fixture Type: \_\_\_\_\_

Catalog Number: \_\_\_\_\_

Project: \_\_\_\_\_

Location: \_\_\_\_\_

## Icon

### Outdoor Wall Sconce 3000K

| Model & Size  | Color Temp & CRI | Finish                                       | Watt  | LED Lumens | Delivered Lumens |
|---------------|------------------|--|-------|------------|------------------|
| WS-W54614 14" | 3000K 90         | AL Brushed Aluminum<br>BK Black<br>BZ Bronze | 10.9W | 845        | 458              |

Example: **WS-W54614-BZ**

For custom requests please contact [customs@wacighting.com](mailto:customs@wacighting.com)

#### DESCRIPTION

Like a simple reference to something greater, the up and down lights accentuate linear architectural forms. A simple shape, with infinite applications, the Icon features a shielded light source for great low-glare illumination. Constructed with a solid die-cast aluminum and powder coated finish. The light engine is factory sealed for maximum protection against the

#### FEATURES

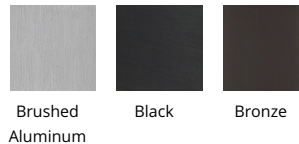
- Weather resistant powder coat finish
- Simple shape, simple idea, infinite applications
- Up & down light
- Shielded light source for great low-glare illumination
- Driver concealed within the fixture
- 5 year warranty

#### SPECIFICATIONS

|               |  |
|---------------|--|
| Color Temp:   | 3000K                                      |
| Input:        | 120-277 VAC, 50/60Hz                       |
| CRI:          | 90   |
| Dimming:      | ELV: 100-10%                               |
| Rated Life:   | 54000 Hours                                |
| Mounting:     | Can be mounted on wall in all orientations |
| Standards:    | ETL, cETL, IP65                            |
|               | Wet Location Listed                        |
| Construction: | Aluminum hardware with glass diffuser      |

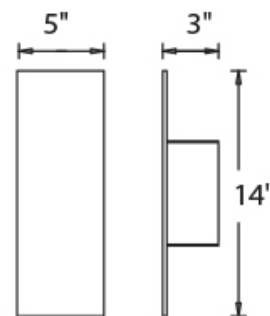


#### FINISHES:



Brushed Aluminum    Black    Bronze

#### LINE DRAWING:





Fixture Type: \_\_\_\_\_

Catalog Number: \_\_\_\_\_

Project: \_\_\_\_\_

Location: \_\_\_\_\_

## Icon

### Outdoor Wall Sconce 3000K

| Model & Size  | Color Temp & CRI | Finish                                       | Watt  | LED Lumens | Delivered Lumens |
|---------------|------------------|--|-------|------------|------------------|
| WS-W54620 20" | 3000K 90         | AL Brushed Aluminum<br>BK Black<br>BZ Bronze | 11.1W | 847        | 478              |

Example: **WS-W54620-BZ**

For custom requests please contact [customs@wacighting.com](mailto:customs@wacighting.com)

#### DESCRIPTION

Like a simple reference to something greater, the up and down lights accentuate linear architectural forms. A simple shape, with infinite applications, the Icon features a shielded light source for great low-glare illumination. Constructed with a solid die-cast aluminum and powder coated finish. The light engine is factory sealed for maximum protection against the

#### FEATURES

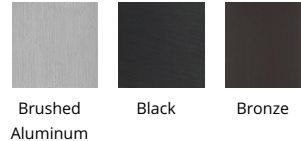
- Weather resistant powder coat finish
- Simple shape, simple idea, infinite applications
- Up & down light
- Shielded light source for great low-glare illumination
- Driver concealed within the fixture
- 5 year warranty

#### SPECIFICATIONS

|               |  |
|---------------|--|
| Color Temp:   | 3000K                                      |
| Input:        | 120-277 VAC, 50/60Hz                       |
| CRI:          | 90   |
| Dimming:      | ELV: 100-10%                               |
| Rated Life:   | 54000 Hours                                |
| Mounting:     | Can be mounted on wall in all orientations |
| Standards:    | ETL, cETL, IP65<br>Wet Location Listed     |
| Construction: | Aluminum hardware with glass diffuser      |

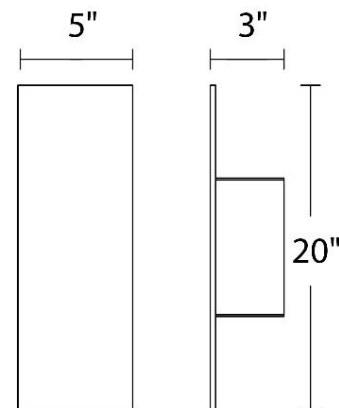


#### FINISHES:



Brushed Aluminum    Black    Bronze

#### LINE DRAWING:



WS-W54620

# FIN - model: WP-LED1

## Endurance Wallpack

# WAC LIGHTING

Responsible Lighting®



Fixture Type:

Catalog Number:

Project: \_\_\_\_\_

Location: \_\_\_\_\_

### SPECIFICATIONS

**Construction:** Die-cast aluminum

**Power:** Integral driver in luminaire. Universal voltage input (120V-277V)

**Dimming:** 100% - 30% with 0 - 10V dimmer (120V - 277V)

100% - 15% with Electronic Low Voltage (ELV) dimmer (120V only)

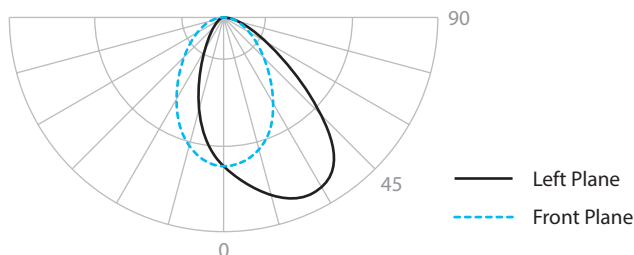
**Finish:** Architectural Bronze, Graphite, and White

**Standards:** IP66, Wet Location, ETL & cETL Listed

**Total Harmonic Distortion:** 35%

**Operating Temperature:** -40°C (-40°F) to 40°C (104°F)

### PHOTOMETRY



### PRODUCT DESCRIPTION

Die cast aluminum factory sealed housings with patent pending design for a water and dust proof IP66 rated outdoor luminaire

### FEATURES

- Factory-Sealed LED Light Engine
- 20° Forward Throw Illumination
- Photo/Motion Sensor Compatible (Sold Separately)
- Built-in Level For Easy Adjustment
- Suitable to install in all directions
- Multi-Function Dimming: ELV (120V) or 0-10V
- 85 CRI
- 100,000 hour rated life

### ORDER NUMBER

|  | Power            | Comparable | Color Temp | Delivered Lumens | CBCP | Finish   |
|--|------------------|------------|------------|------------------|------|--|
|  | <b>WP-LED119</b> | 19W        | 39W HID    | 30 3000K         | 1390 | 1030   |
|  |                  |            |            | 50 5000K         | 1460 | 1048   |
|  | <b>WP-LED127</b> | 27W        | 70W HID    | 30 3000K         | 2075 | 1461   |
|  |                  |            |            | 50 5000K         | 2135 | 1467   |
|  | <b>WP-LED135</b> | 35W        | 100W HID   | 30 3000K         | 2750 | 1930   |
|  |                  |            |            | 50 5000K         | 2825 | 1921   |
|  |                  |            |            |                  |      | <b>aBZ</b> Architectural Bronze<br><b>aGH</b> Architectural Graphite<br><b>aWT</b> Architectural White |

-  -

Example: **WP-LED119-50-BZ**

### ACCESSORIES

Motion Sensor  
(120V)

|                  |        |
|------------------|--------|
| <b>MS-120-BZ</b> | Bronze |
| <b>MS-120-GY</b> | Gray   |
| <b>MS-120-WT</b> | White  |

Photo Sensor  
(120V)

|                  |        |
|------------------|--------|
| <b>PC-120-BZ</b> | Bronze |
| <b>PC-120-GY</b> | Gray   |
| <b>PC-120-WT</b> | White  |

### WAC Lighting

www.waclighting.com

Phone (800) 526.2588 • Fax (800) 526.2585

### Headquarters/Eastern Distribution Center

44 Harbor Park Drive • Port Washington, NY 11050

Phone (516) 515.5000 • Fax (516) 515.5050

### Western Distribution Center

1750 Archibald Avenue • Ontario, CA 91760

Phone (800) 526.2588 • Fax (800) 526.2585















# 2 LOT SUBDIVISION PLAN FOR

# DUBE PLUS CONSTRUCTION

## TAX MAP 283, LOT 11

## HEMLOCK WAY, PORTSMOUTH, NH 03801

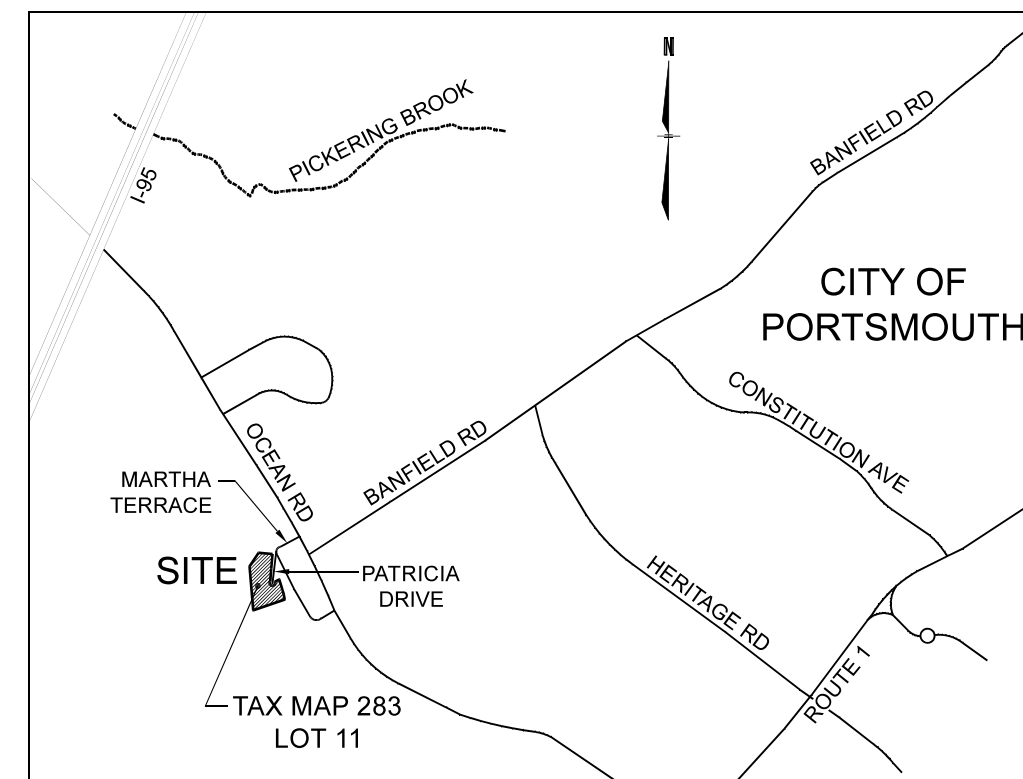
## ROCKINGHAM CO.

**NOTES:**

1. THE PURPOSE OF THIS PLAN IS TO SUBDIVIDE TAX MAP 283, LOT 11 INTO 2 LOTS.
2. THE PROPERTY IS DESIGNATED AS TAX MAP 283, LOT 11.
3. THE AREA OF THE EXISTING LOT 11 IS 3.16 ACRES (137,549 SQFT).
4. THE CURRENT OWNER FOR TAX MAP 283, LOT 11: FRITZ FAMILY REVOC LIV TRUST, P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261. BK 3338 PG 173.
5. THE ZONING DESIGNATION FOR THE PROPERTY IS (SRA) SINGLE RESIDENCE A DISTRICT.
6. DIMENSIONAL REQUIREMENTS PROVIDED FOR ZONE (SRA) DISTRICT:
 

|                                |                     |
|--------------------------------|---------------------|
| MIN. ROAD FRONTAGE             | =150'               |
| MIN. LOT DEPTH                 | =200'               |
| MIN. LOT SIZE                  | =43,560 SF (1 ACRE) |
| MIN. ROAD SETBACK              | =30'                |
| MIN. REAR SETBACK              | =40'                |
| MIN. SIDE SETBACK              | =20'                |
| WETLAND/WATERBODY SETBACK      | =100'               |
| WETLAND/LIMITED CUT            | =50'                |
| WETLAND/VEGETATED BUFFER STRIP | =25'                |
| MAXIMUM STRUCTURE HEIGHT       | =35'                |
| SEPTIC SETBACK                 | =75' HYDRIC SOILS   |

 OVERLAY DISTRICTS: (STEEP SLOPES, SOILS, WETLANDS, CONSERVATION)
7. THE PROPOSED GRADING PLANS ARE CONCEPTUAL AND FINAL LOCATION OF DRIVEWAYS, LEACHFIELDS, STRUCTURES, ETC. SHALL BE SUBJECT TO BUILDING PERMIT APPLICATION.
8. THE EXISTING USE OF TM 283 LOT 11 IS VACANT LAND.
9. THE PROPOSED USE OF TM 283 LOT 11 WILL BE 2 LOT SUBDIVISION.
10. SEWER TO BE PROVIDED BY ON-SITE SEPTIC SYSTEMS.
11. WATER TO BE PROVIDED BY MUNICIPAL PUBLIC WATER.
12. RIGHT OF WAY WIDTH DETERMINED BY SURVEY, FIELD INVESTIGATION, RECORDED DEEDS AND PLANS OF REFERENCE.
13. ADJUTING PROPERTY INFORMATION PROVIDED BY A COMBINATION OF ON-LINE TAX MAP DATA AND DATA PROVIDED BY [granitview.unh.edu](http://granitview.unh.edu).
14. SHEET 9 OF 10 THIS SET WILL BE RECORDED, A COMPLETE PLAN SET WILL BE FILED AT THE CITY OF PORTSMOUTH.
15. THE FEMA MAP NUMBER FOR THIS SITE IS 33015C0270E. EFFECTIVE DATE: MAY 17, 2005. SITE IS LOCATED WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
16. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO CITY OF PORTSMOUTH SUBDIVISION PLAN REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
17. IF DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE CITY.
18. IF DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE CITY.
19. ELEVATIONS AND COORDINATES ARE BASED ON STATE PLANE COORDINATES FROM A SOLUTION GENERATED BY NGS OPUS ON JUNE 18, 2020 FROM DATA COLLECTED BY THIS OFFICE ON JUNE 18, 2020. THE OPUS SOLUTION IS BASED ON THE NAD 83 (2011) REF. FRAME AND THE NAVD 83.
20. EASEMENT TO BE PROVIDED TO THE CITY OF PORTSMOUTH OVER THE ENTIRE PRIVATE R.O.W. AREA FOR THE PURPOSES OF ACCESSING WATER VALVES AND LEAK DETECTION OF WATER LINES. TO BE RECORDED AT ROCKINGHAM REGISTRY OF DEEDS.



**LOCATION PLAN**

SCALE: 1"=2,000'

**SHEET INDEX**

| DWG  | SHT NO.  | DESCRIPTION                      |
|------|----------|----------------------------------|
| CVR  | 1 OF 10  | COVER SHEET                      |
| ECP  | 2 OF 10  | EXISTING CONDITIONS PLAN         |
| DMP  | 3 OF 10  | DEMOLITION PLAN                  |
| PGP  | 4 OF 10  | PROPOSED GRADING PLAN            |
| PDPP | 5 OF 10  | PROPOSED DRIVEWAY PLAN & PROFILE |
| PBIP | 6 OF 10  | PROPOSED BUFFER IMPACT PLAN      |
| PUP  | 7 OF 10  | PROPOSED UTILITY PLAN            |
| PCP  | 8 OF 10  | PROPOSED CONDITIONS PLAN         |
| PSP  | 9 OF 10  | PROPOSED SUBDIVISION             |
| DET  | 10 OF 10 | DETAIL SHEET                     |

**PROFESSIONAL CONSULTANTS LIST**

- |                        |  |
|------------------------|--|
| SURVEYOR:              | NEW HAMPSHIRE LAND CONSULTANTS, PLLC.<br>683C FIRST NH TURNPIKE (RT.4)<br>NORTHWOOD, NH 03261 PH: (603) 942-9220 |
| WETLAND/SOIL SCIENTIST | GOVE ENVIRONMENTAL SERVICES, INC.<br>8 CONTINENTAL DR., BLDG. 2, UNIT H,<br>EXETER, NH 03833 PH: (603) 778-0644  |
| CIVIL ENGINEER         | RJB ENGINEERING, LLC<br>2 GLENDALE ROAD<br>CONCORD, NH 03301   |



**OWNER:**

FRITZ FAMILY REVOC LIV TRUST,  
EDGAR H FRITZ, TRUSTEE  
P.O. BOX 524, 50 SHORE DR.  
NORTHWOOD, NH 03261  
BK 3338 PG 0173

**APPLICANT:**

DUBE PLUS CONSTRUCTION,  
10 BRICKETTS MILL ROAD,  
HAMPSTEAD, NH 03841

**AGENCY APPROVALS**

NHDES SUBDIVISION : \_\_\_\_\_



CONTACT DIG SAFE 72 HOURS  
PRIOR TO CONSTRUCTION

THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. NEW HAMPSHIRE LAND CONSULTANTS, PLLC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ANY UTILITIES WHETHER THEY BE ABOVE OR BELOW GROUND. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233).

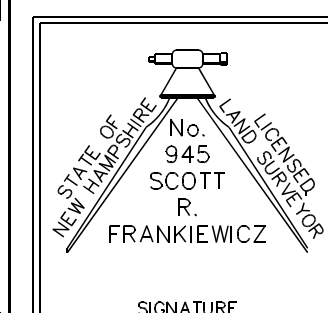
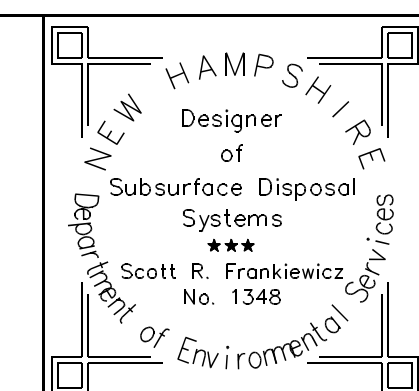
**NOTE:**

ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO THE CITY OF PORTSMOUTH REGULATIONS AND THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", LATEST EDITION.

| REVISIONS |            |   |     |
|-----------|------------|---|-----|
| NO.       | DATE       | DESCRIPTION                             | BY  |
| 13        | 06/29/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS | TDB |
| 14        | 07/08/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS | TDB |
|           |            |   |     |
|           |            |   |     |

## N.H. LAND Consultants

SURVEYING • LAND PLANNING • REAL ESTATE  
A VETERAN OWNED COMPANY  
683C FIRST NH TURNPIKE, NORTHWOOD, NH 03261 PH 603-942-9220 WEBSITE: NHLANDCONSULTANTS.COM



COVER SHEET  
TAX MAP 283 LOT 11

## DUBE PLUS CONSTRUCTION

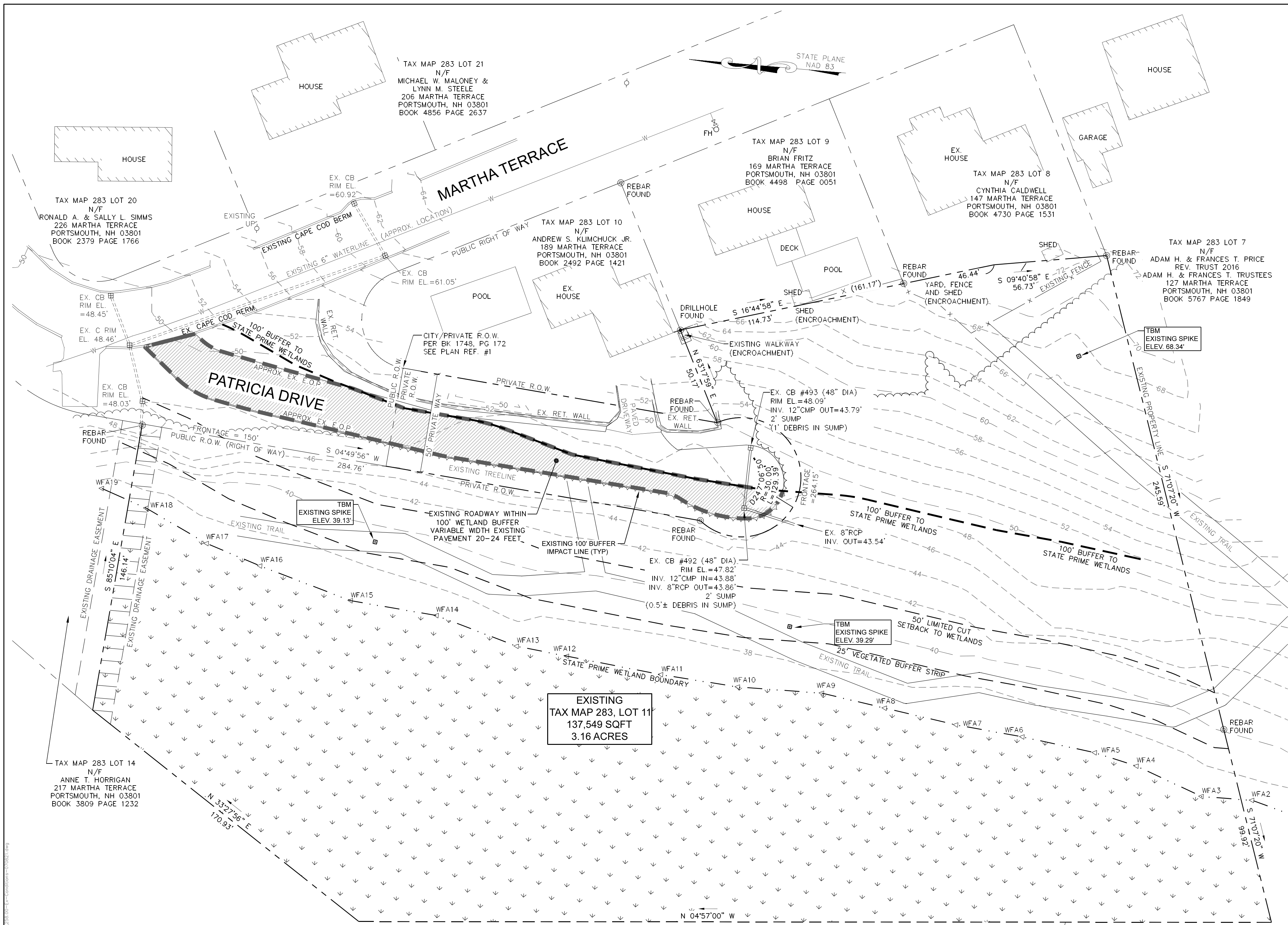
HEMLOCK WAY, PORTSMOUTH NH 03801  
OWNED BY  
FRITZ FAMILY REVOC LIV TRUST,  
EDGAR H FRITZ, TRUSTEE  
P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261  
BOOK 3338 PAGE 0173

JOB NO: 258.00  
ROCKINGHAM CO.  
DATE: SEPTEMBER 23, 2020

# CVR

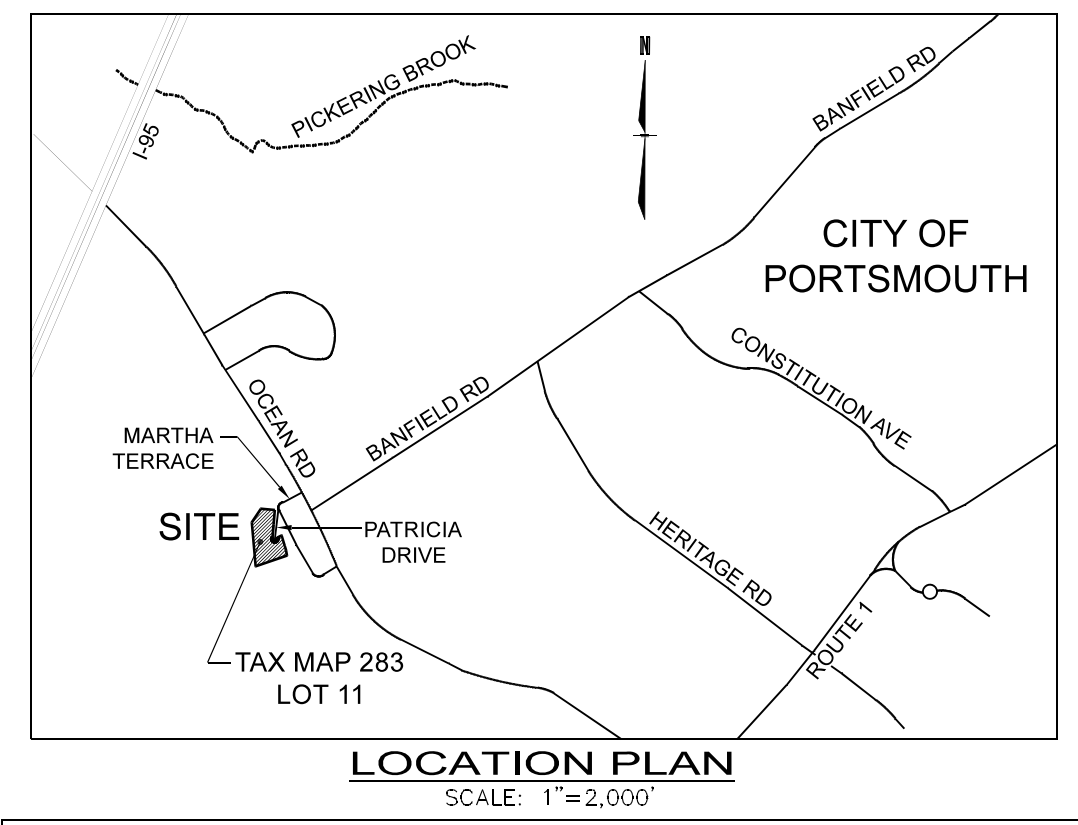
SHT. 1 of 10





**ABUTTERS LIST:**

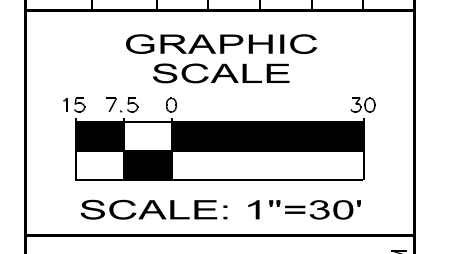
|     |                |                                      |  |                     |
|-----|----------------|--------------------------------------|--|---------------------|
| N/F | MAP 283 LOT 7  | ADAM H. & FRANCES T. PRICE, TRUSTEES | 127 MARTHA TERRACE, PORTSMOUTH, NH 03801 | BOOK 5767 PAGE 1849 |
| N/F | MAP 283 LOT 8  | CYNTHIA CALDWELL                     | 147 MARTHA TERRACE, PORTSMOUTH, NH 03801 | BOOK 4730 PAGE 1531 |
| N/F | MAP 283 LOT 9  | BRIAN A FRITZ                        | 169 MARTHA TERRACE, PORTSMOUTH, NH 03801 | BOOK 4491 PAGE 0051 |
| N/F | MAP 283 LOT 10 | ANDREW S KLIMCHUCK JR                | 189 MARTHA TERRACE, PORTSMOUTH, NH 03801 | BOOK 2492 PAGE 1421 |
| N/F | MAP 283 LOT 11 | ADAM H. & FRANCES T. PRICE, TRUSTEES | 127 MARTHA TERRACE, PORTSMOUTH, NH 03801 | BOOK 5767 PAGE 1849 |
| N/F | MAP 283 LOT 12 | ELIZABETH J ROLSTON                  | 185 POST ROAD, GREENLAND, NH 03840       | BOOK 2679 PAGE 2523 |
| N/F | MAP 283 LOT 13 | CITY OF PORTSMOUTH, DPW              | P.O. BOX 628, PORTSMOUTH, NH 03802       | BOOK 2249 PAGE 432  |
| N/F | MAP 283 LOT 14 | ANNE T. HERRIGAN                     | 217 MARTHA TERRACE, PORTSMOUTH, NH 03801 | BOOK 3809 PAGE 1232 |
| N/F | MAP 283 LOT 20 | RONALD A. & SALLY L. SIMMS           | 226 MARTHA TERRACE, PORTSMOUTH, NH 03801 | BOOK 2379 PAGE 1766 |
| N/F | MAP 283 LOT 21 | MICHAEL W. MALONEY & LYNN M. STEELE  | 206 MARTHA TERRACE, PORTSMOUTH, NH 03801 | BOOK 4856 PAGE 2637 |



- NOTES:**
- THE PURPOSE OF THIS PLAN IS TO SUBDIVIDE TAX MAP 283, LOT 11 INTO 2 LOTS.
  - THE PROPERTY IS DESIGNATED AS TAX MAP 283, LOT 11.
  - THE AREA OF THE EXISTING LOT 11 IS 3.16 ACRES (137,549 SQFT.)
  - THE CURRENT OWNER FOR TAX MAP 283, LOT 11: FRITZ FAMILY REVOC LIV TRUST, P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261. BK 3338 PG 173.
  - THE ZONING DESIGNATION FOR THE PROPERTY IS (SRA) SINGLE RESIDENCE A DISTRICT.
  - DIMENSIONAL REQUIREMENTS PROVIDED FOR ZONE (SRA) DISTRICT:
    - MIN. ROAD FRONTAGE = 150'
    - MIN. LOT DEPTH = 200'
    - MIN. LOT SIZE = 43,560 SF (1 ACRE)
    - MIN. ROAD SETBACK = 30'
    - MIN. REAR SETBACK = 40'
    - MIN. SIDE SETBACK = 20'
    - WETLAND/WATERBODY SETBACK = 100'
    - WETLAND/LIMITED CUT = 50'
    - WETLAND/VEGETATED BUFFER STRIP = 25'
    - MAXIMUM STRUCTURE HEIGHT = 35'
    - SEPTIC SETBACK = 5'
    - OVERLAY DISTRICTS: (STEEP SLOPES, SOILS, WETLANDS, CONSERVATION)
  - THE PROPOSED GRADING PLANS ARE CONCEPTUAL AND FINAL LOCATION OF DRIVEWAYS, LEACHFIELDS, STRUCTURES, ETC. SHALL BE SUBJECT TO BUILDING PERMIT APPLICATION.
  - THE EXISTING USE OF TM 283 LOT 11 IS VACANT LAND.
  - THE PROPOSED USE OF TM 283 LOT 11 WILL BE 2 LOT SUBDIVISION.
  - SEWER TO BE PROVIDED BY ON-SITE SEPTIC SYSTEMS.
  - WATER TO BE PROVIDED BY MUNICIPAL WATER.
  - RIGHT OF WAY WIDTH DETERMINED BY SURVEY, FIELD INVESTIGATION, RECORDED DEEDS AND PLANS OF REFERENCE.
  - ABUTTING PROPERTY INFORMATION PROVIDED BY A COMBINATION OF ON-LINE TAX MAP DATA AND DATA PROVIDED BY grantview.unh.edu.
  - SHEET 9 OF 10 THIS SET WILL BE RECORDED, A COMPLETE PLAN SET WILL BE FILED AT THE CITY OF PORTSMOUTH.
  - THE FEMA MAP NUMBER FOR THIS SITE IS 33015C0270E, EFFECTIVE DATE: MAY 17, 2005. SITE IS LOCATED WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
  - ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO CITY OF PORTSMOUTH SUBDIVISION PLAN REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
  - IF DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE CITY.
  - IF DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE CITY.
  - ELEVATIONS AND COORDINATES ARE BASED ON STATE PLANE COORDINATES FROM A STATION OPERATED BY NCS OPUS ON JUNE 18, 2020 FROM DATA COLLECTED BY THIS OFFICE ON JUNE 18, 2020. THE OPUS SOLUTION IS BASED ON THE NAD 83 (2011) REF. FRAME AND THE NAVD 88.
  - EASEMENT TO BE PROVIDED TO THE CITY OF PORTSMOUTH OVER THE ENTIRE PRIVATE R.O.W. AREA FOR THE PURPOSES OF ACCESSING WATER VALVES AND LEAK DETECTION OF WATER LINES. TO BE RECORDED AT ROCKINGHAM REGISTRY OF DEEDS.

**REVISIONS**

| NO. | DATE       | DESCRIPTION                             | BY  |
|-----|------------|---|-----|
| 13  | 05/28/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS | TDB |
| 14  | 07/08/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS | TDB |



**N.H. LAND Consultants**  
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A Veteran Owned Company

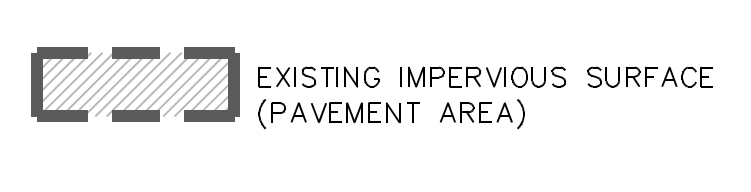
683C FIRST NH TURNPIKE, NORTHWOOD, NH 03261  
PH: 603-942-9220  
WEBSITE: NH.LANDCONSULTANTS.COM

- PLAN REFERENCES:**
- R.C.R.D. PLAN #195, RECORDED APRIL 10, 1964, TITLED: "PARCIAL PLAN OF OCEAN MANOR, PORTSMOUTH, NH", PREPARED FOR: HILTON HOMES, INC., GREENLAND NH, DATED, JANUARY, 1964, PREPARED BY: JOHN DURGIN CIVIL ENGINEERS, SCALE: 1"=40', PLAN APPROVED BY PORTSMOUTH PLANNING BOARD ON MARCH 20, 1964.
  - R.C.R.D. PLAN #05967, RECORDED MAY 21, 1976, TITLED: "RESUBDIVISION OF OCEAN MANOR", PREPARED FOR: ANDREWS PROPERTIES, INC., PORTSMOUTH NH, DATED: MARCH 1976, REVISED MAY 1976, PREPARED BY: JOHN DURGIN CIVIL ENGINEERS, SCALE: 1"=50', PLAN APPROVED BY PORTSMOUTH PLANNING BOARD DURING 1976.
  - R.C.R.D. PLAN #C8102, RECORDED SEPTEMBER 18, 1978, TITLED: "LOT LINE REVISION, LAND OF LEVESQUE AND GERACI, PORTSMOUTH NH", PREPARED BY: JOHN W. DURGIN ASSOCIATES INC., ENGINEERS, SURVEYORS & DESIGNERS OF PORTSMOUTH AND ROCHESTER, DATED SEPTEMBER 1978, SCALE: 1"=50', APPROVED BY PORTSMOUTH PLANNING BOARD ON SEPTEMBER 18, 1978.
  - R.C.R.D. PLAN #D33328, RECORDED DECEMBER 6, 2005, TITLED: "SUBDIVISION AND LOT LINE RELOCATION PLAN, MAP 283 - LOTS 7 & 11", PREPARED FOR: ADAM H. & FRANCES PRICE AND ADAM H. PRICE & FRITZ FAMILY REV. LIVING TRUST, 127 MARTHA TERRACE & PATRICIA DRIVE, PORTSMOUTH NH, PREPARED BY: AMBIT ENGINEERING, INC., CIVIL ENGINEERS & LAND SURVEYORS, PORTSMOUTH NH., SCALE: 1"=50', DATED MARCH 2005, APPROVED BY PORTSMOUTH PLANNING BOARD ON OCTOBER 24, 2005.

**100' WETLAND BUFFER IMPACT AREAS**

EXISTING IMPERVIOUS SURFACE (PAVEMENT AREA) = 5,718 SF

EXISTING OVERALL IMPACT = 5,718 SF



**LEGEND**

|                         |           |                                    |       |
|-------------------------|-----------|------------------------------------|-------|
| EXISTING RETAINING WALL | =====     | WETLANDS                           | ~~~~~ |
| ABUTTERS PROPERTY LINES | -----     | DRILL HOLE FOUND                   | ⊙     |
| SUBJECT PROPERTY LINES  | -----     | REBAR W/ CAP FOUND                 | ⊙     |
| PROPOSED PROPERTY LINES | -----     | STONE BOUND FOUND                  | ⊙     |
| EXISTING TIE LINE       | -----     | EXISTING GATE VALVE & FIRE HYDRANT | ⊙     |
| EDGE OF PAVEMENT        | -----     |                                    |       |
| PROPOSED BLDG SETBACK   | -----     |                                    |       |
| EXISTING CONTOUR (MNR)  | -572----- |                                    |       |
| EXISTING CONTOUR (M.R)  | -570----- |                                    |       |

TAX MAP 283 LOT 13 N/F CITY OF PORTSMOUTH DPW P.O. BOX 628 PORTSMOUTH, NH 03802 BOOK 2249 PAGE 432

TAX MAP 283 LOT 12 N/F ELIZABETH J ROLSTON 185 POST ROAD GREENLAND, NH 03840 BOOK 2679 PAGE 2523

TIE LINE PER PLAN - BOUNDARY LINE BY THE THREAD OF THE BROOK

NEW STATE OF NH REGISTERED LAND SURVEYOR  
NO. 945  
SCOTT R. FRANKIEWICZ  
SIGNATURE

I CERTIFY THAT THIS PLAN IS BASED UPON THE PLAN REFERENCES AND A FIELD SURVEY CONDUCTED ON THE GROUND IN SPRING OF 2020, MEETING THE MINIMUM REQUIREMENTS FOR ACCURACY, 1:10,000 AND COMPLETENESS PER THE STATE OF NEW HAMPSHIRE AND THE CITY OF PORTSMOUTH, NH.

SCOTT R. FRANKIEWICZ, LLS DATE: \_\_\_\_\_

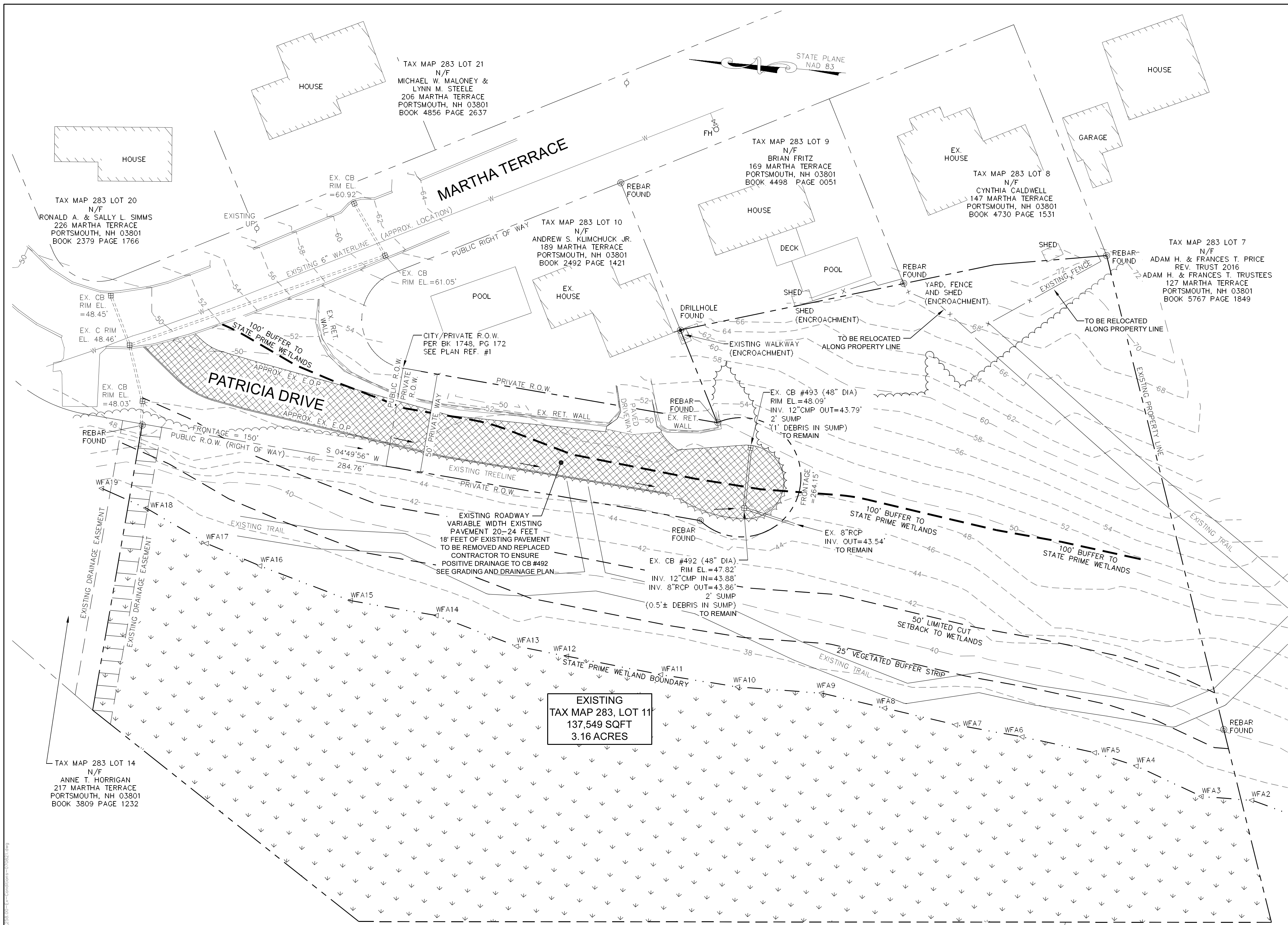
EXISTING CONDITIONS PLAN  
TAX MAP 283 LOT 11  
**DUBE PLUS CONSTRUCTION**  
HEMLOCK WAY, PORTSMOUTH NH 03801

OWNED BY  
**FRITZ FAMILY REVOC LIV TRUST,**  
EDGAR H FRITZ, TRUSTEE  
P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261  
BOOK 3338 PAGE 0173

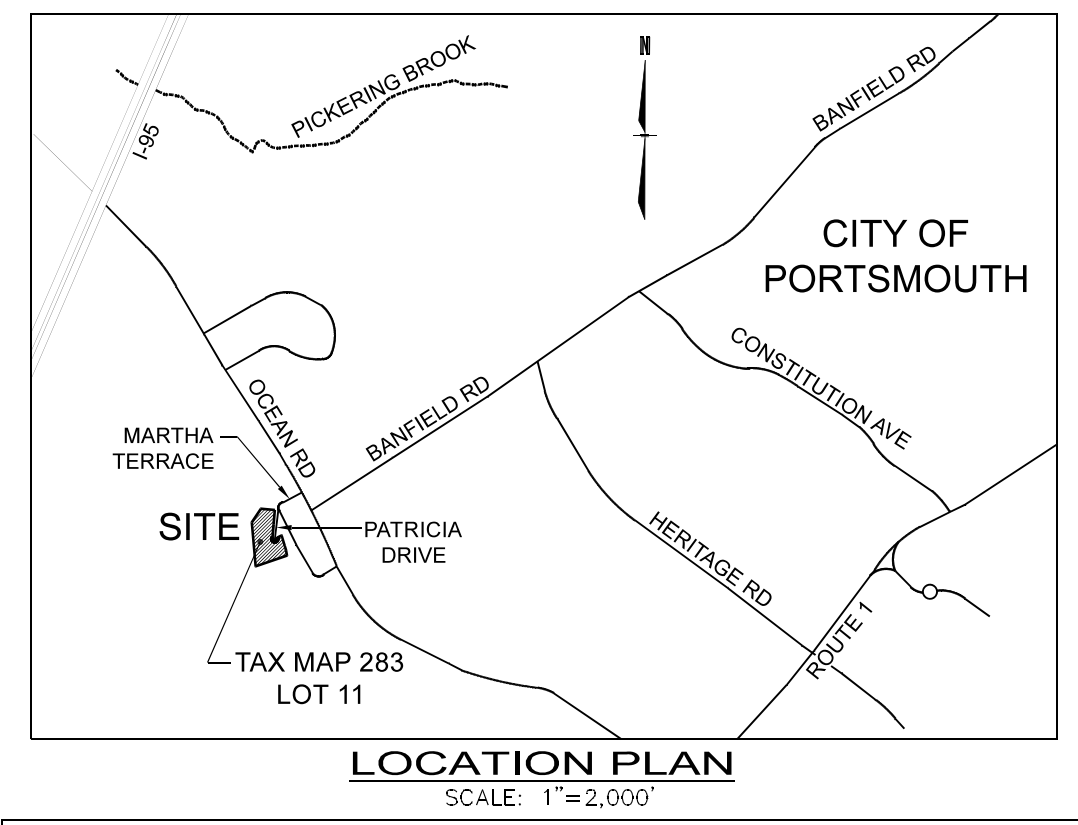
ROCKINGHAM CO.  
JOB NO: 258.00  
DATE: SEPTEMBER 23, 2020

**ECP**  
SHT. 2 of 10





- ABUTTERS LIST:**
- N/F  
MAP 283 LOT 7  
ADAM H. & FRANCES T. PRICE, TRUSTEES  
127 MARTHA TERRACE,  
PORTSMOUTH, NH 03801  
BOOK 5767 PAGE 1849
  - N/F  
MAP 283 LOT 8  
CYNTHIA CALDWELL,  
147 MARTHA TERRACE,  
PORTSMOUTH, NH 03801  
BOOK 4730 PAGE 1531
  - N/F  
MAP 283 LOT 9  
BRIAN A FRITZ  
169 MARTHA TERRACE  
PORTSMOUTH, NH 03801  
BOOK 4491 PAGE 0051
  - N/F  
MAP 283 LOT 10  
ANDREW S KLIMCHUCK JR  
189 MARTHA TERRACE  
PORTSMOUTH, NH 03801  
BOOK 2492 PAGE 1421
  - N/F  
MAP 283 LOT 11  
ADAM H. & FRANCES T. PRICE  
REV. TRUST 2016  
127 MARTHA TERRACE  
PORTSMOUTH, NH 03801  
BOOK 5767 PAGE 1849
  - N/F  
MAP 283 LOT 12  
RONALD A. & SALLY L. SIMMS  
226 MARTHA TERRACE  
PORTSMOUTH, NH 03801  
BOOK 2379 PAGE 1766
  - N/F  
MAP 283 LOT 13  
CITY OF PORTSMOUTH, DPW  
P.O. BOX 628  
PORTSMOUTH, NH 03802  
BOOK 2249 PAGE 0432
  - N/F  
MAP 283 LOT 14  
ANNE T. HERRIGAN  
217 MARTHA TERRACE  
PORTSMOUTH, NH 03801  
BOOK 3809 PAGE 1232
  - N/F  
MAP 283 LOT 20  
ADAM H. & FRANCES T. PRICE  
REV. TRUST 2016  
127 MARTHA TERRACE  
PORTSMOUTH, NH 03801  
BOOK 5767 PAGE 1849
  - N/F  
MAP 283 LOT 21  
MICHAEL W. MALONEY &  
LYNN M. STEELE  
206 MARTHA TERRACE  
PORTSMOUTH, NH 03801  
BOOK 4856 PAGE 2637



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MIN. REAR SETBACK = 40'  
MIN. SIDE SETBACK = 20'  
WETLAND/WATERBODY SETBACK = 100'  
WETLAND/LIMITED CUT = 50'  
WETLAND/VEGETATED BUFFER STRIP = 25'  
MAXIMUM STRUCTURE HEIGHT = 35'  
SEPTIC SETBACK = 55'  
OVERLAY DISTRICTS: (STEEP SLOPES, SOILS, WETLANDS, CONSERVATION)
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STATE OF NEW HAMPSHIRE  
 LAND SURVEYOR  
 No. 945  
 SCOTT  
 FRANKIEWICZ  
 SIGNATURE

I CERTIFY THAT THIS PLAN IS BASED UPON THE PLAN REFERENCES AND A FIELD SURVEY CONDUCTED ON THE GROUND IN SPRING OF 2020, MEETING THE MINIMUM REQUIREMENTS FOR ACCURACY, 1:10,000 AND COMPLETENESS PER THE STATE OF NEW HAMPSHIRE AND THE CITY OF PORTSMOUTH, NH.

SCOTT R. FRANKIEWICZ, LLS DATE: \_\_\_\_\_

**LEGEND**

|                         |           |                               |       |
|-------------------------|-----------|-------------------------------|-------|
| EXISTING RETAINING WALL | =====     | WETLANDS                      | ~~~~~ |
| ABUTTERS PROPERTY LINES | -----     | DRILL HOLE FOUND              | ⊙     |
| SUBJECT PROPERTY LINES  | -----     | REBAR W/ CAP FOUND            | ⊙     |
| PROPOSED PROPERTY LINES | -----     | STONE BOUND FOUND             | ⊙     |
| EXISTING TIE LINE       | -----     | EXISTING GATE VALVE & HYDRANT | ⊙     |
| EDGE OF PAVEMENT        | -----     |                               |       |
| PROPOSED BLDG SETBACK   | -----     |                               |       |
| EXISTING CONTOUR (MNR)  | -572----- |                               |       |
| EXISTING CONTOUR (M.R)  | -570----- |                               |       |

ENGINEER

| NO. | DATE       | DESCRIPTION                             |
|-----|------------|---|
| 13  | 05/28/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS |
| 14  | 07/08/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS |

**GRAPHIC SCALE**  
 15 7.5 0 30  
 SCALE: 1"=30'

**N.H. LAND Consultants**  
 SURVEYING • LAND PLANNING • REAL ESTATE  
 A Veteran Owned Company

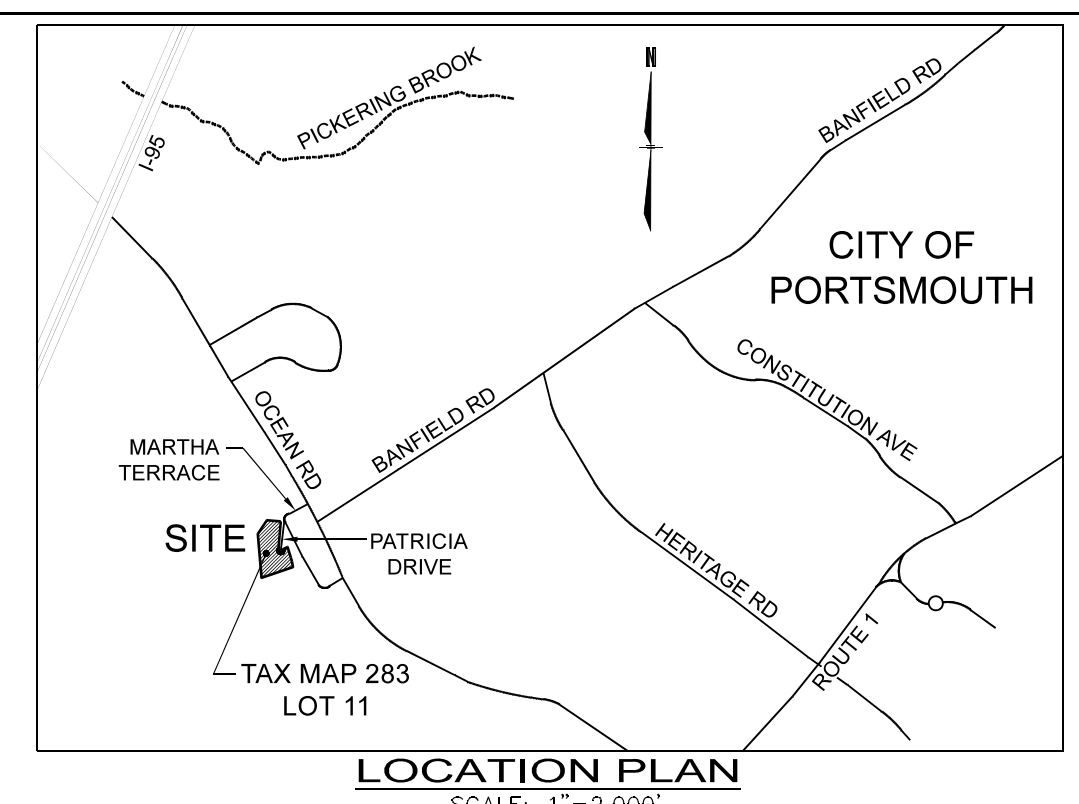
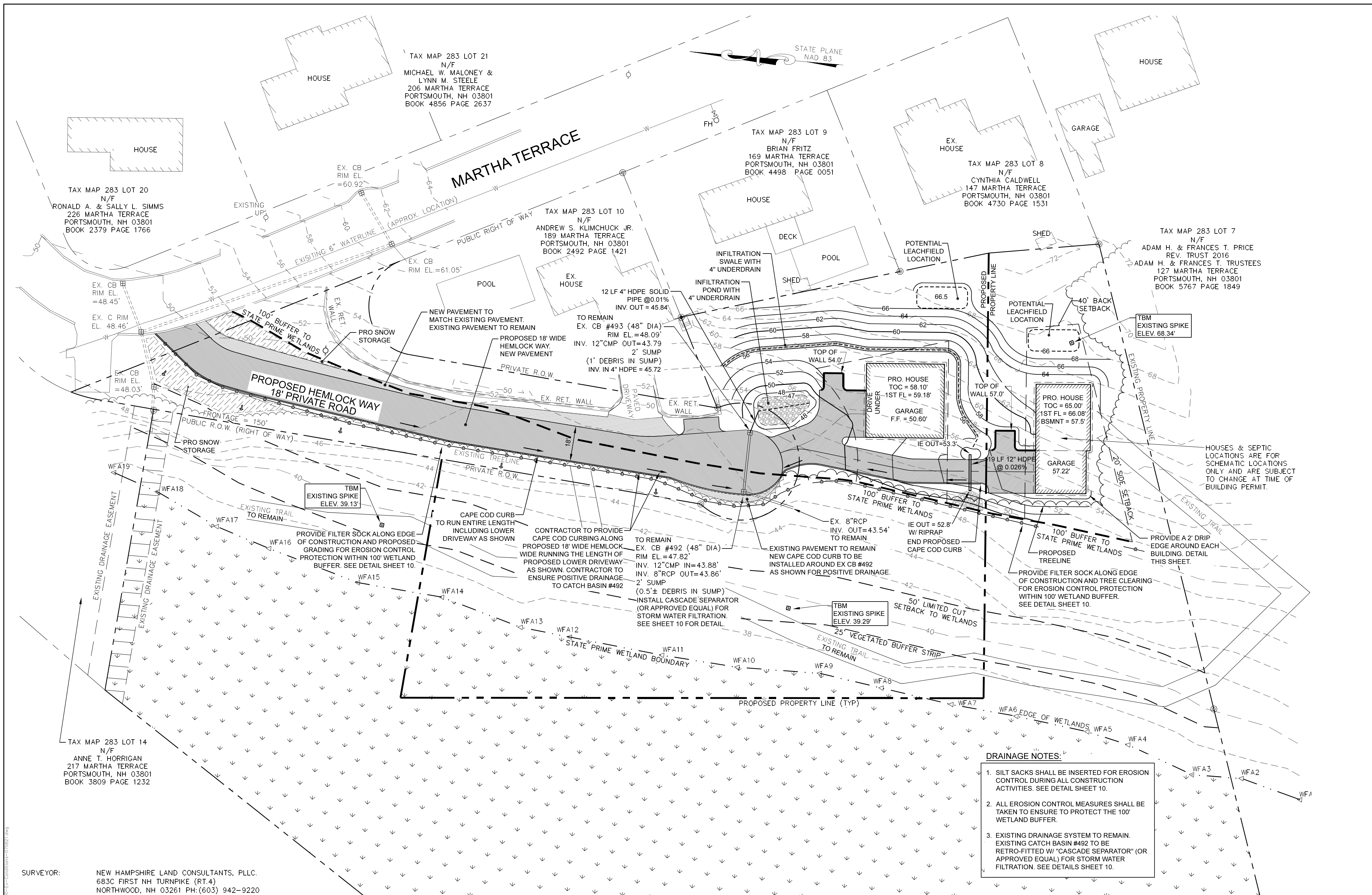
DEMOLITION PLAN LOT 11  
 TAX MAP 283  
**DUBE PLUS CONSTRUCTION**  
 HEMLOCK WAY, PORTSMOUTH NH 03801  
 OWNED BY  
**FRITZ FAMILY REVOC LIV TRUST,**  
**EDGAR H FRITZ, TRUSTEE**  
 P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261  
 BOOK 3338 PAGE 0173

ROCKINGHAM CO.  
**JOB NO: 258.00**  
 DATE: SEPTEMBER 23, 2020

**DMP**  
 SHT. 3 of 10

WEBSITE: INLANDCONSULTANTS.COM  
 PH: 603-942-9220  
 683C FIRST NH TURNPIKE, NORTHWOOD, NH 03261

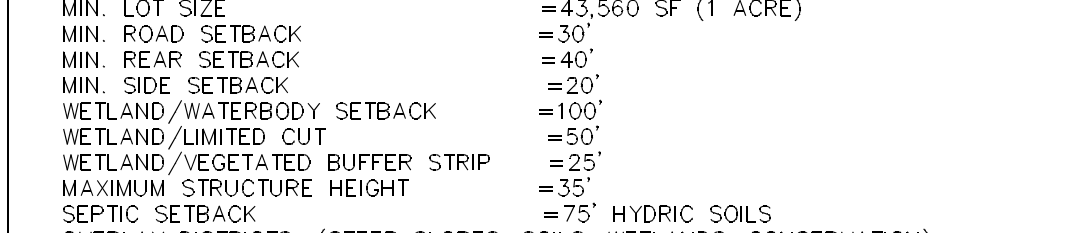




**NOTES:**

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- DIMENSIONAL REQUIREMENTS PROVIDED FOR ZONE (SRA) DISTRICT:
 

|                                |                     |
|--------------------------------|---------------------|
| MIN. ROAD FRONTAGE             | =150'               |
| MIN. LOT DEPTH                 | =200'               |
| MIN. LOT SIZE                  | =43,560 SF (1 ACRE) |
| MIN. ROAD SETBACK              | =30'                |
| MIN. REAR SETBACK              | =40'                |
| MIN. SIDE SETBACK              | =20'                |
| WETLAND/WATERBODY SETBACK      | =100'               |
| WETLAND/LIMITED CUT            | =50'                |
| WETLAND/VEGETATED BUFFER STRIP | =25'                |
| MAXIMUM STRUCTURE HEIGHT       | =35'                |
| SEPTIC SETBACK                 | =75' HYDRIC SOILS   |
- THE PROPOSED GRADING PLANS ARE CONCEPTUAL AND FINAL LOCATION OF DRIVEWAYS, LEACHFIELDS, STRUCTURES, ETC. SHALL BE SUBJECT TO BUILDING PERMIT APPLICATION.
- THE EXISTING USE OF TM 283 LOT 11 IS VACANT LAND.
- THE PROPOSED USE OF TM 283 LOT 11 WILL BE 2 LOT SUBDIVISION.
- SEWER TO BE PROVIDED BY ON-SITE SEPTIC SYSTEMS.
- WATER TO BE PROVIDED BY MUNICIPAL PUBLIC WATER.
- RIGHT OF WAY WIDTH DETERMINED BY SURVEY, FIELD INVESTIGATION, RECORDED DEEDS AND PLANS OF REFERENCE.
- ABUTTING PROPERTY INFORMATION PROVIDED BY A COMBINATION OF ON-LINE TAX MAP DATA AND DATA PROVIDED BY grantview.unh.edu.
- SHEET 9 OF 10 THIS SET WILL BE RECORDED. A COMPLETE PLAN SET WILL BE FILED AT THE CITY OF PORTSMOUTH.
- THE FEMA MAP NUMBER FOR THIS SITE IS 33015C0270E, EFFECTIVE DATE, MAY 17, 2005. SITE IS LOCATED WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
- ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO CITY OF PORTSMOUTH SUBDIVISION PLAN REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
- IF DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE CITY.
- IF DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE CITY.
- ELEVATIONS AND COORDINATES ARE BASED ON STATE PLANE COORDINATES FROM A SECTION OBTAINED BY GPS OPUS ON JUNE 18, 2020 FROM DATA COLLECTED BY THIS OFFICE ON JUNE 18, 2020. THE OPUS SOLUTION IS BASED ON THE NAD 83 (2011) REF. FRAME AND THE NAVD 88.
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- PLANNING REFERENCES:**
- R.C.R.D. PLAN #195, RECORDED APRIL 10, 1964, TITLED: "PARCIAL PLAN OF OCEAN MANOR, PORTSMOUTH, NH", PREPARED FOR: HILTON HOMES, INC. GREENLAND NH, DATED, JANUARY, 1964, PREPARED BY: JOHN DURGIN CIVIL ENGINEERS, SCALE: 1"=40', PLAN APPROVED BY PORTSMOUTH PLANNING BOARD ON MARCH 20, 1964.
  - R.C.R.D. PLAN #05967, RECORDED MAY 21, 1976, TITLED: "RESUBDIVISION OF OCEAN MANOR", PREPARED FOR: ANDREWS PROPERTIES, INC., PORTSMOUTH NH, DATED: MARCH 1976, REVISED MAY 1976, PREPARED BY: JOHN DURGIN CIVIL ENGINEERS, SCALE: 1"=50', PLAN APPROVED BY PORTSMOUTH PLANNING BOARD DURING 1976.
  - R.C.R.D. PLAN #C8102, RECORDED SEPTEMBER 18, 1978, TITLED: "LOT LINE REVISION, LAND OF LEVESQUE AND GERACI, PORTSMOUTH NH", PREPARED BY: JOHN W. DURGIN ASSOCIATES INC., ENGINEERS, SURVEYORS & DESIGNERS OF PORTSMOUTH AND ROCHESTER, DATED: SEPTEMBER 1978, SCALE: 1"=50', APPROVED BY PORTSMOUTH PLANNING BOARD ON SEPTEMBER 18, 1978.
  - R.C.R.D. PLAN #033328, RECORDED DECEMBER 6, 2005, TITLED: "SUBDIVISION AND LOT LINE RELOCATION PLAN, MAP 283 - LOTS 7 & 11", PREPARED FOR: ADAM H. & FRANCES T. PRICE AND ADAM H. PRICE & FRITZ FAMILY REV. LIVING TRUST, 127 MARTHA TERRACE & PATRICIA DRIVE, PORTSMOUTH NH, PREPARED BY: AMBIT ENGINEERING, INC., CIVIL ENGINEERS & LAND SURVEYORS, PORTSMOUTH NH, SCALE: 1"=50', DATED MARCH 2005, APPROVED BY PORTSMOUTH PLANNING BOARD ON OCTOBER 24, 2005.

- DRAINAGE NOTES:**
- SILT SACKS SHALL BE INSERTED FOR EROSION CONTROL DURING ALL CONSTRUCTION ACTIVITIES. SEE DETAIL SHEET 10.
  - ALL EROSION CONTROL MEASURES SHALL BE TAKEN TO ENSURE TO PROTECT THE 100' WETLAND BUFFER.
  - EXISTING DRAINAGE SYSTEM TO REMAIN. EXISTING CATCH BASIN #492 TO BE RETRO-FITTED W/ "CASCADE SEPARATOR" (OR APPROVED EQUAL) FOR STORM WATER FILTRATION. SEE DETAILS SHEET 10.

**SURVEYOR:** NEW HAMPSHIRE LAND CONSULTANTS, PLLC.  
683C FIRST NH TURNPIKE (RT.4)  
NORTHWOOD, NH 03261 PH: (603) 942-9220

**WETLAND/SOIL SCIENTIST:** COVE ENVIRONMENTAL SERVICES, INC.  
8 CONTINENTAL DR., BLDG. 2, UNIT H,  
EXETER, NH 03833 PH: (603) 778-0644

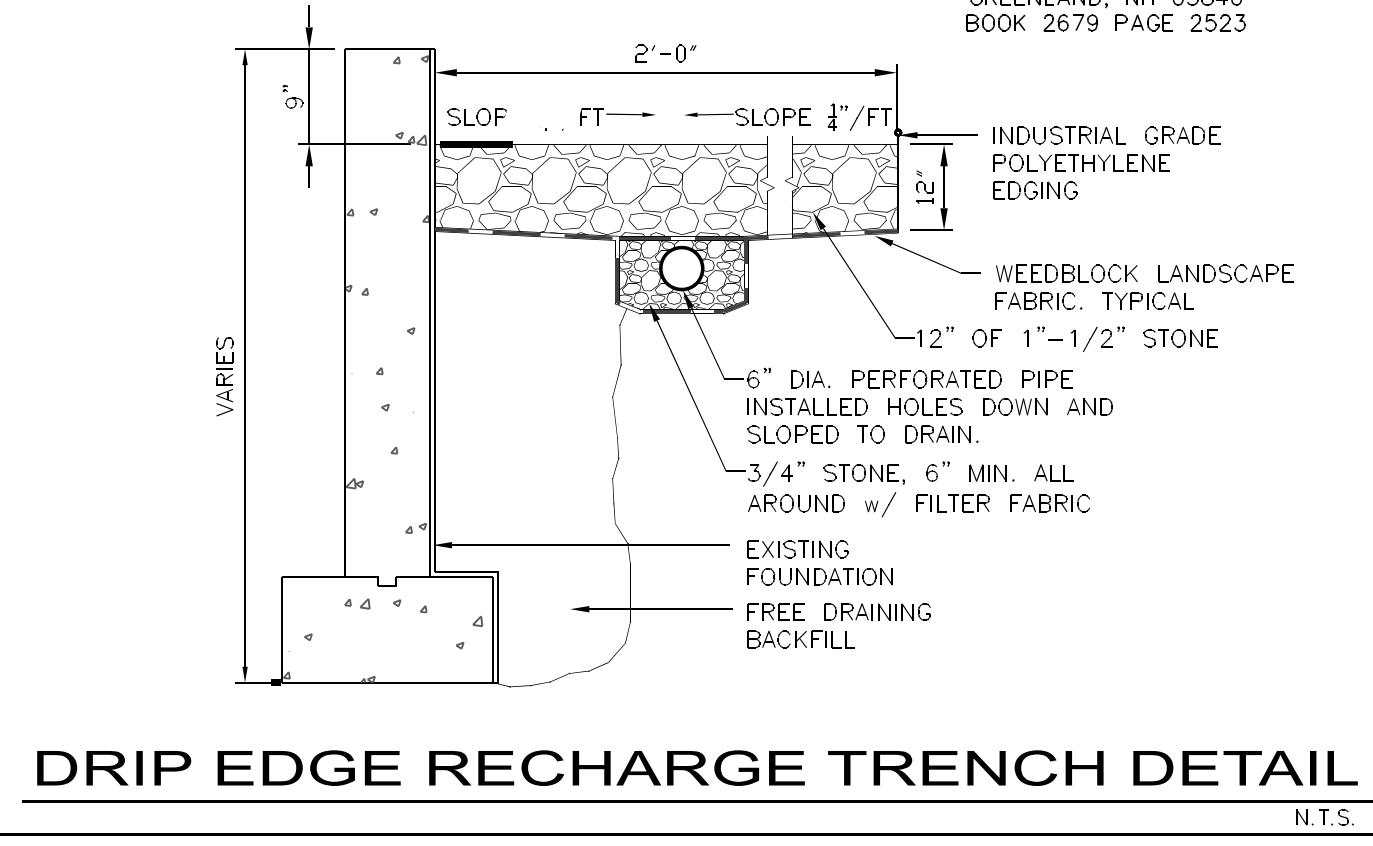
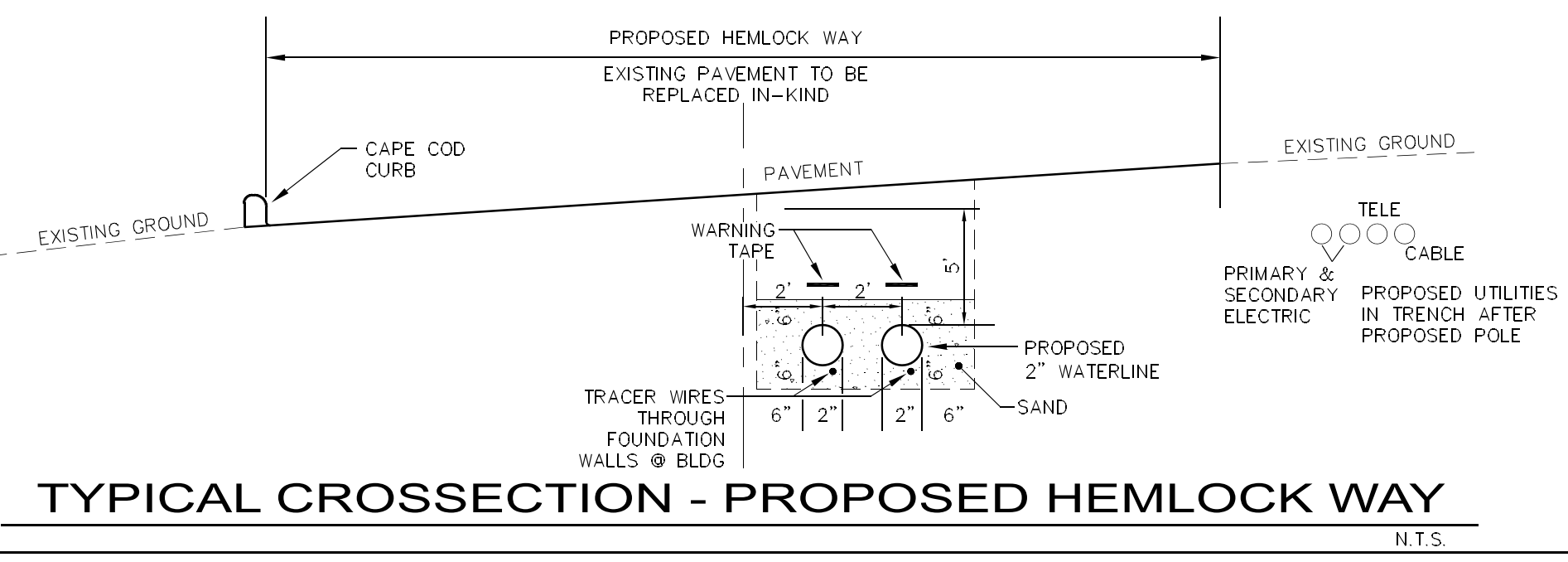
WETLANDS WERE DELINEATED ON JUNE 4, 2020 AND LOCATED DURING JUNE 2020

**ZONE:** SRA  
**LOT SIZE:** 1 ACRES  
**FRONTAGE:** 150'  
**LOT DEPTH:** 200'  
**FRONT SETBACK:** 30'  
**SIDE SETBACK:** 20'  
**REAR SETBACK:** 40'

**SOILS:** 140B/C CHATFIELD-HOLLIS-CANTON COMPLEX

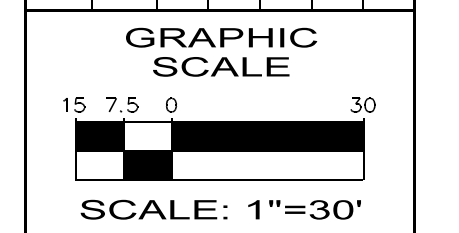
CHATFIELD - NHDES GROUP 4  
HOLLIS - NHDES GROUP 4  
CANTON - NHDES GROUP 2

**LOT SIZE USING GROUP 4 SLOPE C = 48,000 SQ FT**  
WITH PUBLIC WATER = 24,000 SQ FT.



**REVISIONS**

| NO. | DATE       | DESCRIPTION                             | BY  |
|-----|------------|---|-----|
| 13  | 05/28/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS | TDB |
| 14  | 07/08/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS | TDB |



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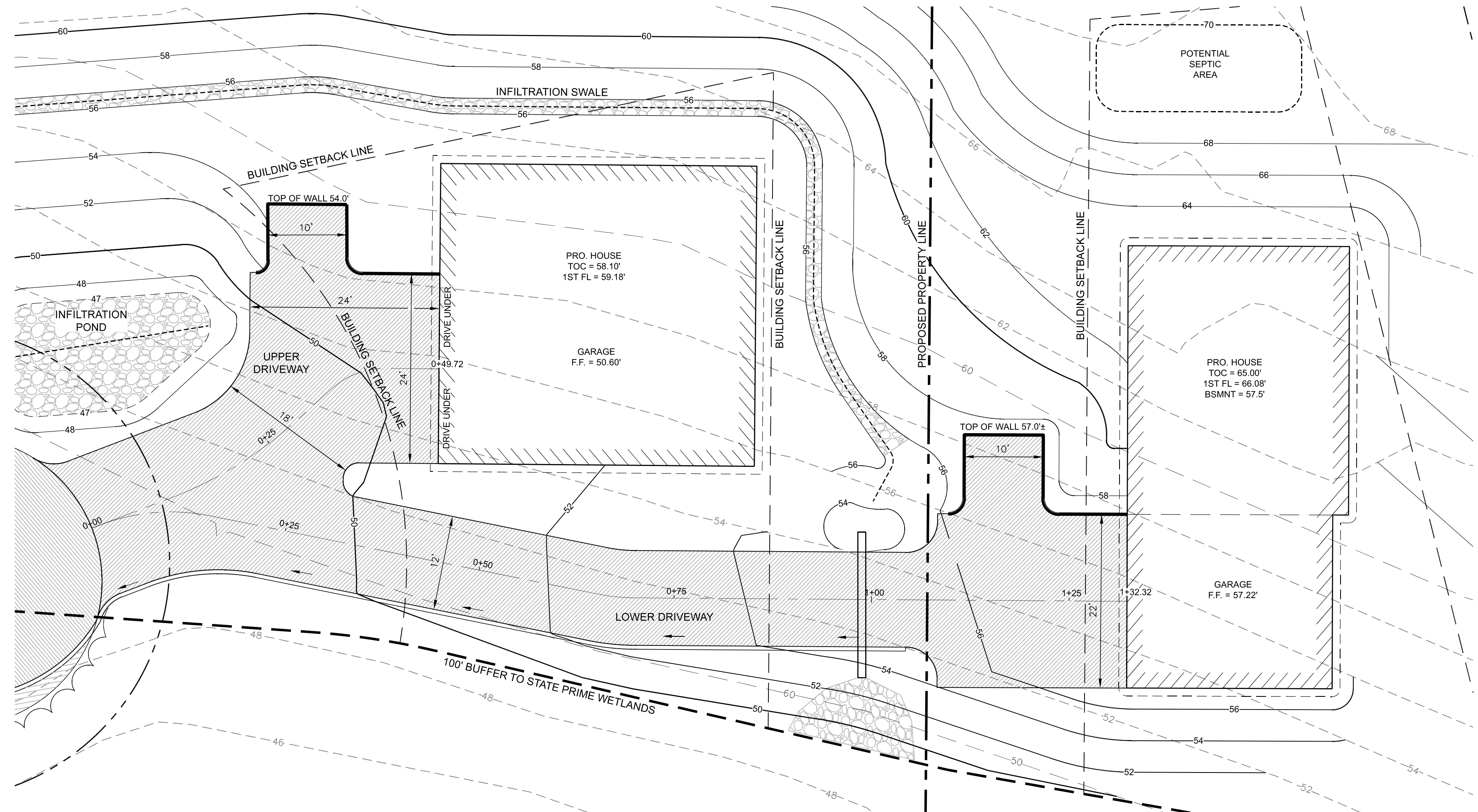
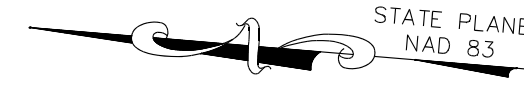
683C FIRST NH TURNPIKE, NORTHWOOD, NH 03261 PH: 603-942-9220 WEBSITE: NH.LANDCONSULTANTS.COM

**PROPOSED GRADING PLAN**  
TAX MAP 283 LOT 11  
**DUBE PLUS CONSTRUCTION**  
HEMLOCK WAY, PORTSMOUTH NH 03801  
OWNED BY  
**FRITZ FAMILY REVOC LIV TRUST,**  
**EDGAR H FRITZ, TRUSTEE**  
P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261  
BOOK 3338 PAGE 0173

**ROCKINGHAM CO.**  
**JOB NO: 258.00**  
**DATE: SEPTEMBER 23, 2020**

**PGP**  
SHT. 4 of 10

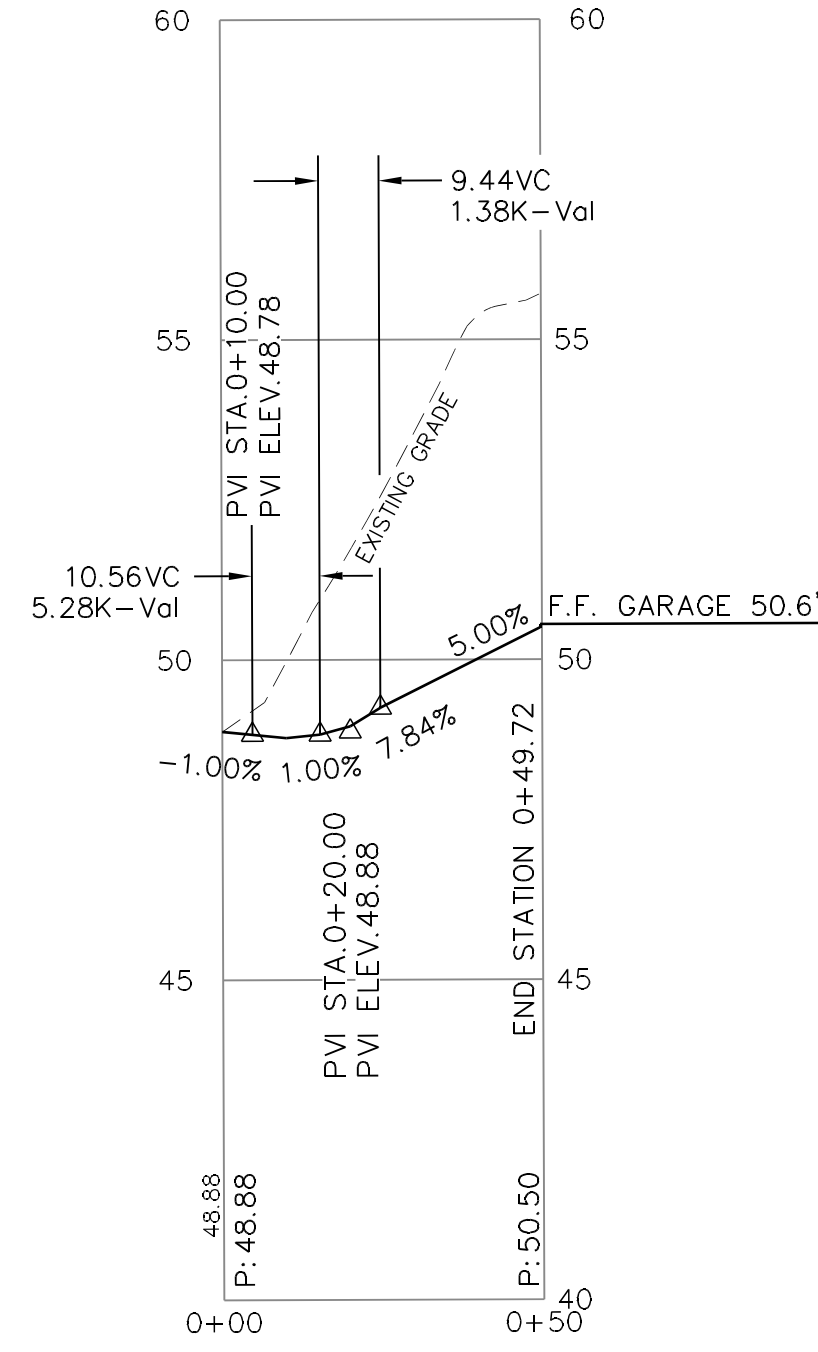




**PROPOSED UPPER AND LOWER DRIVEWAY PLAN VIEW**

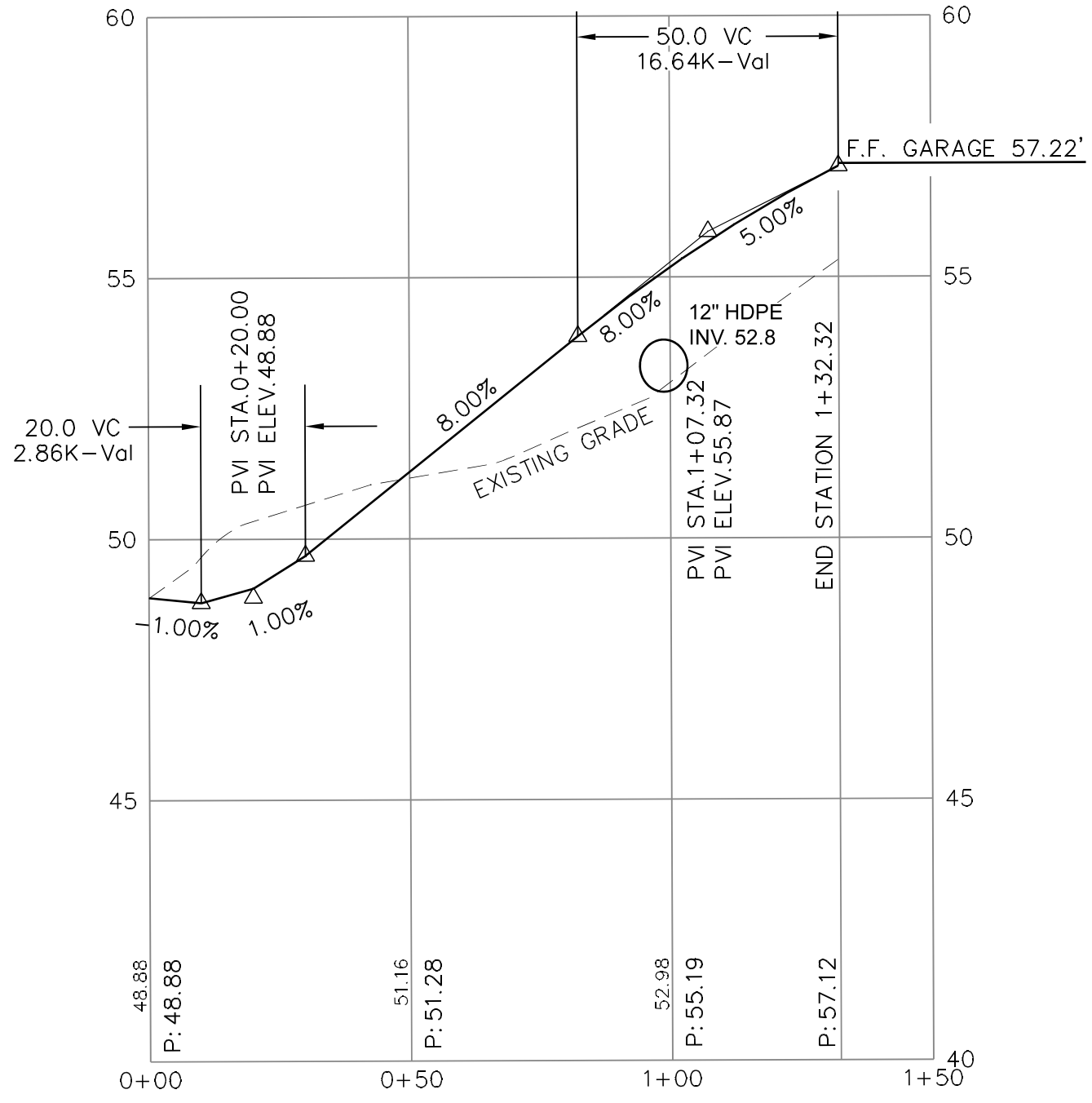
SCALE: 1"=10'

LARGER SCALE FORMAT FOR GRAPHICAL PURPOSES



**PROFILE - UPPER DRIVEWAY**

SCALE: 1"=30'H, 3' VERT.



**PROFILE - LOWER DRIVEWAY**

SCALE: 1"=30'H, 3' VERT.

| REVISIONS |            |   |     |
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|           |            |   |     |
|           |            |   |     |

GRAPHIC SCALE AS SHOWN



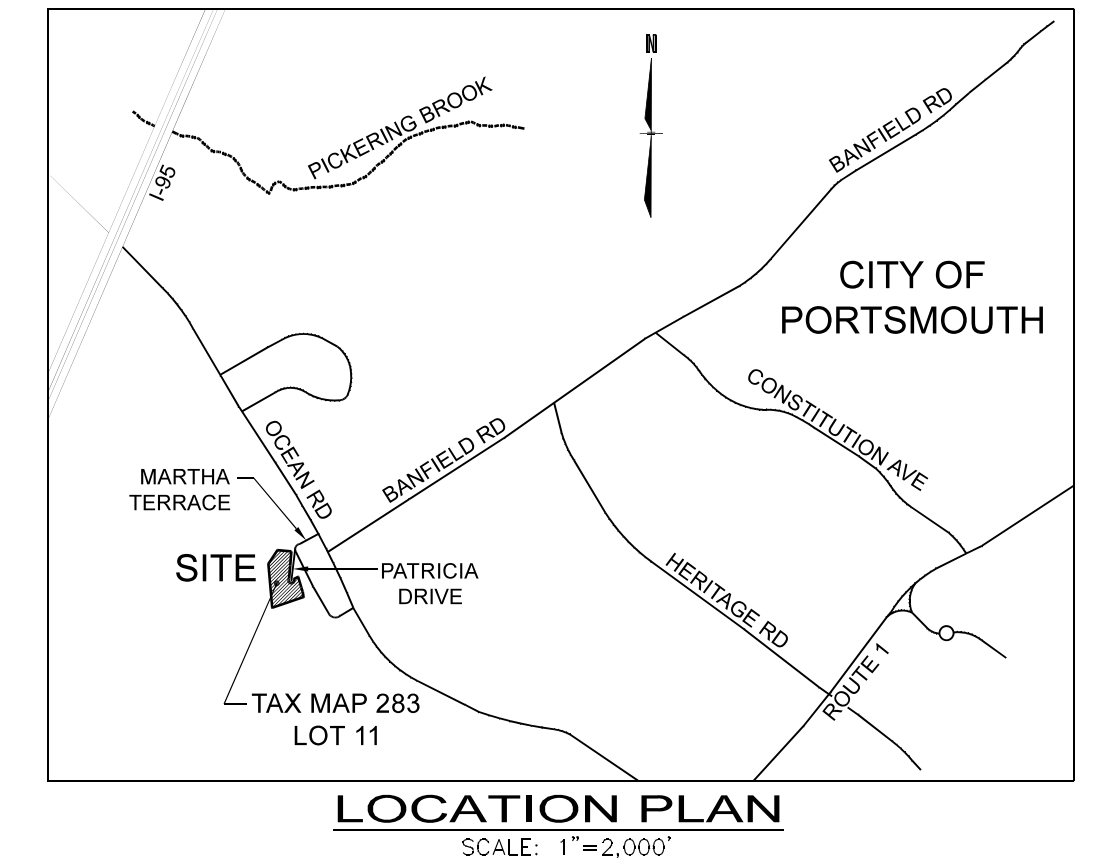
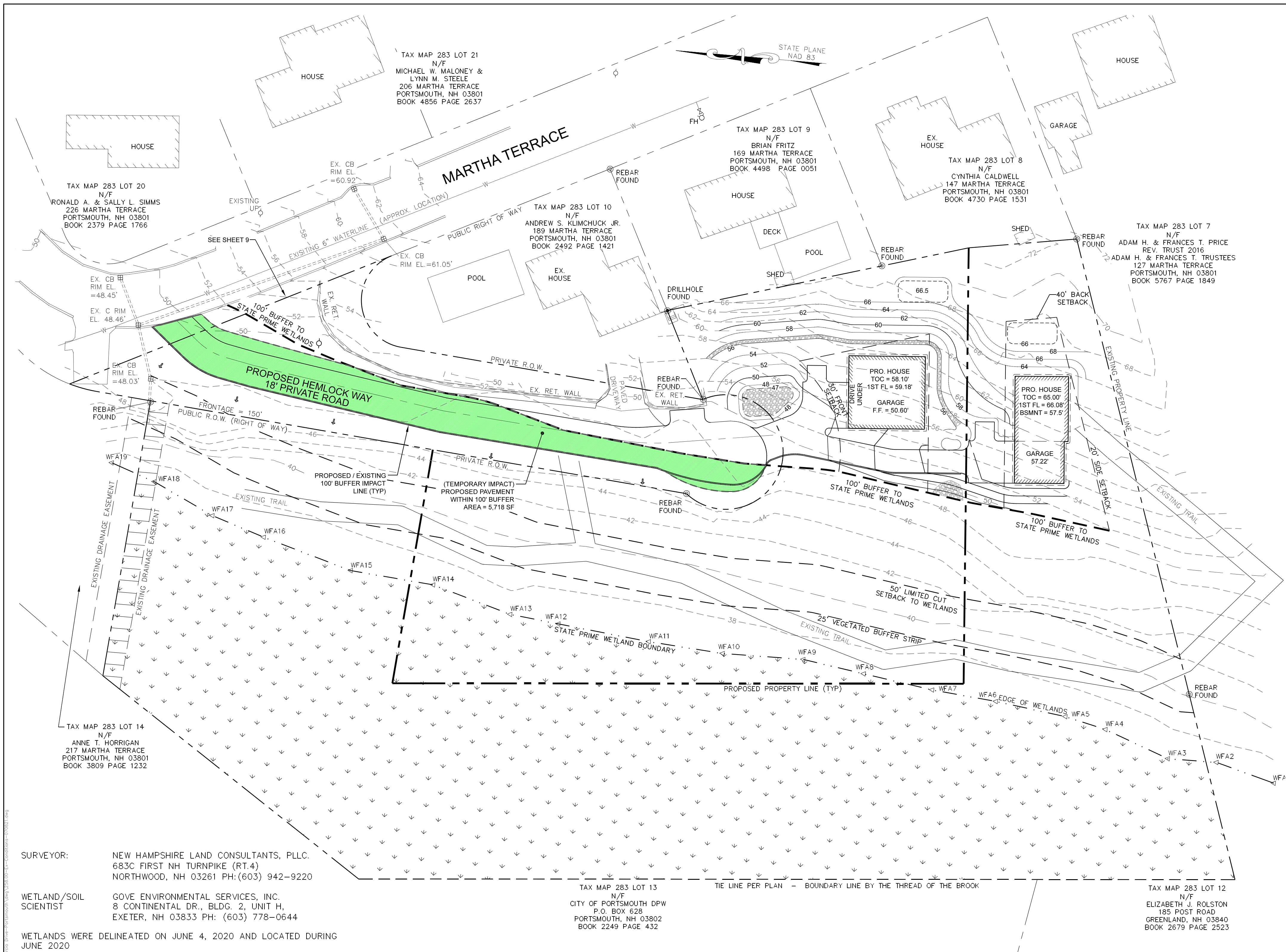
PROPOSED DRIVEWAY PLAN & PROFILES  
 TAX MAP 283 LOT 11  
**DUBE PLUS CONSTRUCTION**  
 HEMLOCK WAY, PORTSMOUTH NH 03801  
 OWNED BY  
**FRITZ FAMILY REVOC LIV TRUST,**  
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 JOB NO: 258.00  
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**PDPP**  
 SHT. 5 of 10

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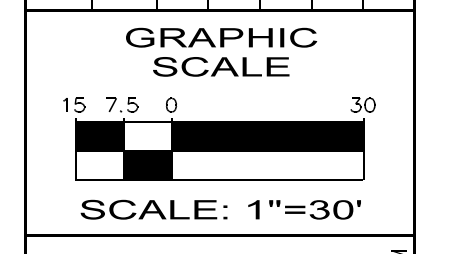


**BUFFER NOTES:**

1. THE 100' STATE PRIME WETLAND BUFFER TO BE MARKED EVERY 50' BY PLACARDS AS APPROVED BY CITY OF PORTSMOUTH CONVERSATION COMMISSION.
2. PROPOSED PRIVATE DRIVE WILL BE A "NO SALT ZONE" WITHIN THE 100' STATE PRIME WETLAND BUFFER.
3. LANDSCAPE LAWN MAINTENANCE PER "NORTH EAST ORGANIC FARMING ASSOCIATION (NOFA) OR OTHER SUITABLE ORGANIC STANDARDS. SEE CONSTRUCTION SEQUENCE ON SHEET 10 FOR ADDITIONAL SEEDING NOTES.
4. TOPSOIL USED ON LOTS SHALL NOT INCLUDE PESTICIDES AND FERTILIZERS.

DESIGNER OF  
Subsurface Disposal  
Systems  
\*\*\*  
Scott R. Frankiewicz  
No. 1348  
Department of Environmental Services  
NEW HAMPSHIRE

| REVISIONS |  |
|-----------|--|
| NO.       | DESCRIPTION  |
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WETLAND/SOIL SCIENTIST: COVE ENVIRONMENTAL SERVICES, INC.  
8 CONTINENTAL DR., BLDG. 2, UNIT H,  
EXETER, NH 03833 PH: (603) 778-0644

WETLANDS WERE DELINEATED ON JUNE 4, 2020 AND LOCATED DURING JUNE 2020

ZONE: SRA  
LOT SIZE: 1 ACRES  
FRONTAGE: 150'  
LOT DEPTH: 200'  
FRONT SETBACK: 30'  
SIDE SETBACK: 20'  
REAR SETBACK: 40'

SOILS: 140B/C CHATFIELD-HOLLIS-CANTON COMPLEX  
CHATFIELD - NHDES GROUP 4  
HOLLIS - NHDES GROUP 4  
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LOT SIZE USING GROUP 4 SLOPE C = 48,000 SQ FT  
WITH PUBLIC WATER = 24,000 SQ FT.

**LEGEND**

|                         |           |                               |       |
|-------------------------|-----------|-------------------------------|-------|
| EXISTING RETAINING WALL | =====     | WETLANDS                      | ~~~~~ |
| ABUTTERS PROPERTY LINES | -----     | DRILL HOLE FOUND              | ⊙     |
| SUBJECT PROPERTY LINES  | -----     | REBAR W/ CAP FOUND            | ⊙     |
| PROPOSED PROPERTY LINES | -----     | STONE BOUND FOUND             | ⊙     |
| EXISTING TIE LINE       | -----     | EXISTING GATE VALVE & HYDRANT | FH    |
| EDGE OF PAVEMENT        | -----     |                               |       |
| PROPOSED BLDG SETBACK   | -----     |                               |       |
| EXISTING CONTOUR (MNR)  | -572----- |                               |       |
| EXISTING CONTOUR (MJP)  | -570----- |                               |       |

**100' WETLAND BUFFER IMPACT AREAS (PERMANENT IMPACTS)**

Temporary impacts (SF):  
(including all areas that will be restored to the current-existing condition) 5,718 SF

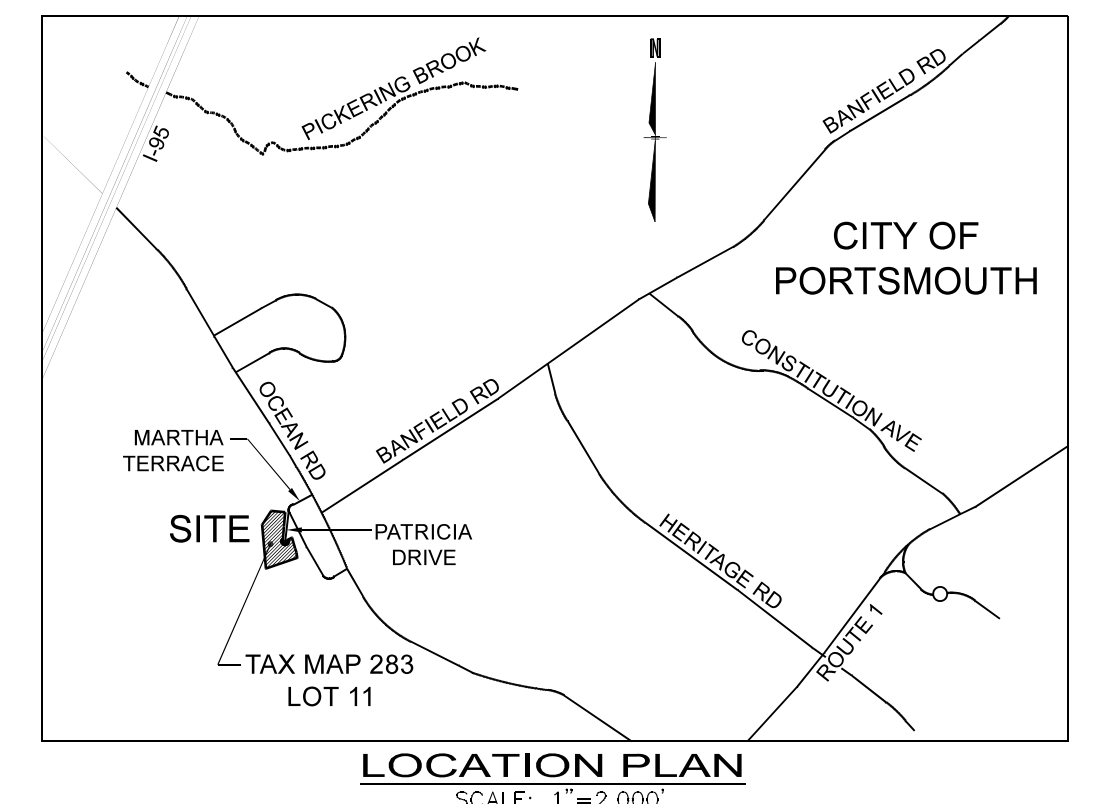
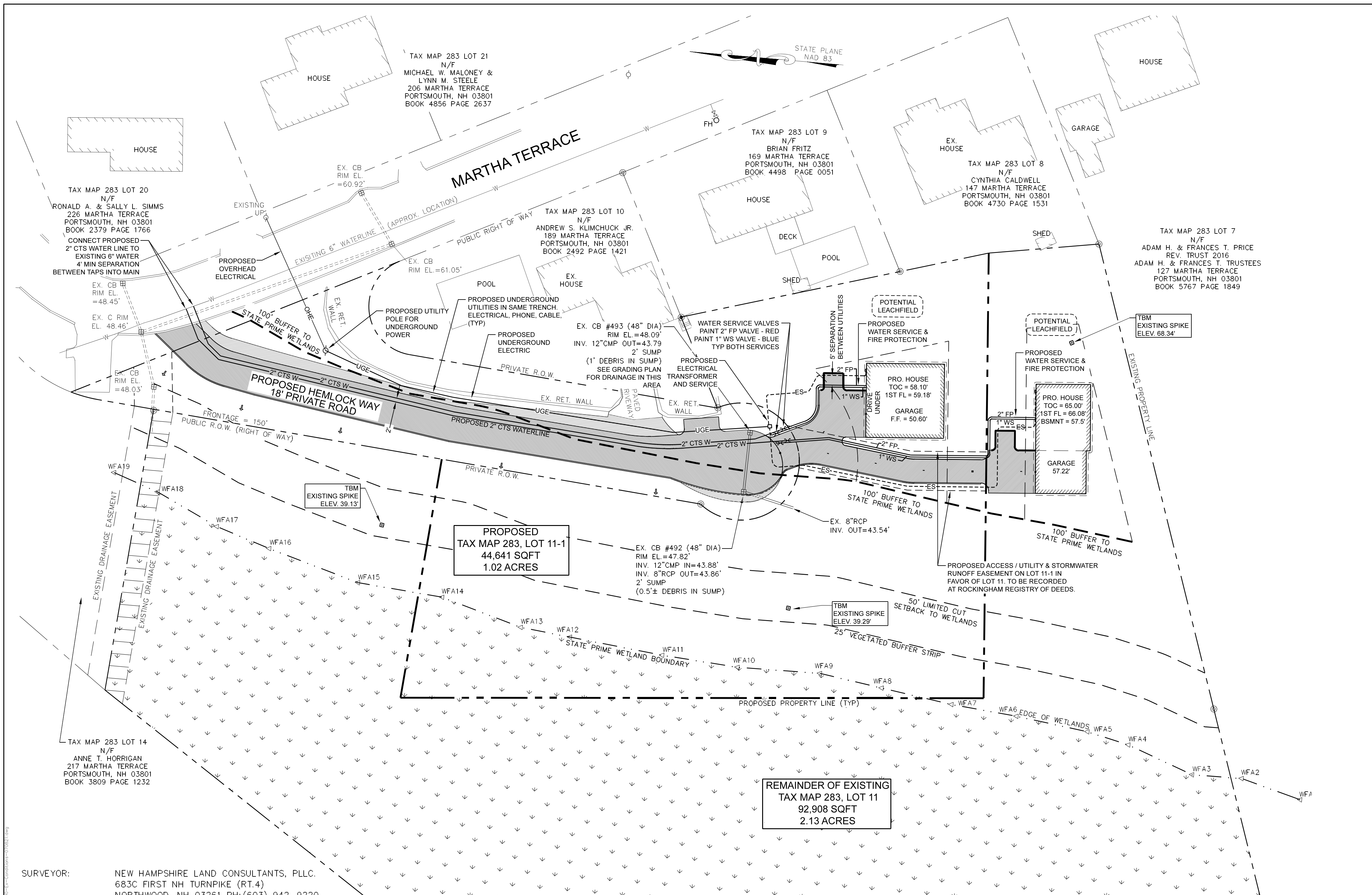


PROPOSED BUFFER IMPACT PLAN  
TAX MAP 283 LOT 11  
**DUBE PLUS CONSTRUCTION**  
HEMLOCK WAY, PORTSMOUTH, NH 03801  
OWNED BY  
**FRITZ FAMILY REVOC LIV TRUST,**  
EDGAR H FRITZ, TRUSTEE  
P.O. BOX 524, 50 SHORE DR., NORTHWOOD, NH, 03261  
BOOK 3358 PAGE 0173

ROCKINGHAM CO.  
JOB NO: 258.00  
DATE: SEPTEMBER 23, 2020

**PBIP**  
SHT. 6 of 10

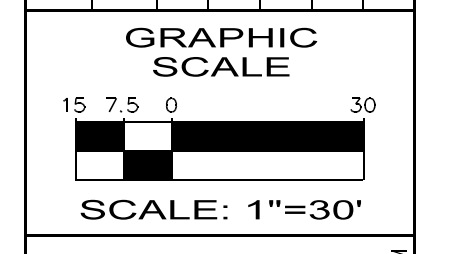




- NOTES:**
- THE PURPOSE OF THIS PLAN IS TO SUBDIVIDE TAX MAP 283, LOT 11 INTO 2 LOTS.
  - THE PROPERTY IS DESIGNATED AS TAX MAP 283, LOT 11.
  - THE AREA OF THE EXISTING LOT 11 IS 3.16 ACRES (137,549 SQFT.)
  - THE CURRENT OWNER FOR TAX MAP 283, LOT 11: FRITZ FAMILY REVOC LIV TRUST, P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261. BK 3338 PG 173.
  - THE ZONING DESIGNATION FOR THE PROPERTY IS (SRA) SINGLE RESIDENCE A DISTRICT.
  - DIMENSIONAL REQUIREMENTS PROVIDED FOR ZONE (SRA) DISTRICT:
    - MIN. ROAD FRONTAGE = 150'
    - MIN. LOT DEPTH = 200'
    - MIN. LOT SIZE = 43,560 SF (1 ACRE)
    - MIN. ROAD SETBACK = 30'
    - MIN. REAR SETBACK = 40'
    - MIN. SIDE SETBACK = 20'
    - WETLAND/WATERBODY SETBACK = 100'
    - WETLAND/LIMITED CUT = 50'
    - WETLAND/VEGETATED BUFFER STRIP = 25'
    - MAXIMUM STRUCTURE HEIGHT = 35'
    - SEPTIC SETBACK = 75' HYDRIC SOILS
    - OVERLAY DISTRICTS: (STEEP SLOPES, SOILS, WETLANDS, CONSERVATION)
  - THE PROPOSED GRADING PLANS ARE CONCEPTUAL AND FINAL LOCATION OF DRIVEWAYS, LEACHFIELDS, STRUCTURES, ETC. SHALL BE SUBJECT TO BUILDING PERMIT APPLICATION.
  - THE EXISTING USE OF TM 283 LOT 11 IS VACANT LAND.
  - THE PROPOSED USE OF TM 283 LOT 11 WILL BE 2 LOT SUBDIVISION.
  - SEWER TO BE PROVIDED BY ON-SITE SEPTIC SYSTEMS.
  - WATER TO BE PROVIDED BY MUNICIPAL PUBLIC WATER.
  - RIGHT OF WAY WIDTH DETERMINED BY SURVEY, FIELD INVESTIGATION, RECORDED DEEDS AND PLANS OF REFERENCE.
  - ADJUTING PROPERTY INFORMATION PROVIDED BY A COMBINATION OF ON-LINE TAX MAP DATA AND DATA PROVIDED BY [granitview.unh.edu](http://granitview.unh.edu).
  - SHEET 9 OF 10 THIS SET WILL BE RECORDED, A COMPLETE PLAN SET WILL BE FILED AT THE CITY OF PORTSMOUTH.
  - THE FEMA MAP NUMBER FOR THIS SITE IS 33015002706. EFFECTIVE DATE: MAY 17, 2005. SITE IS LOCATED WITHIN ZONE X. AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
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**REVISIONS**

| NO. | DATE       | DESCRIPTION                             | BY  |
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**PROPOSED UTILITY PLAN**  
 TAX MAP 283 LOT 11  
**DUBE PLUS CONSTRUCTION**  
 HEMLOCK WAY, PORTSMOUTH NH 03801  
 OWNED BY  
**FRITZ FAMILY REVOC LIV TRUST,**  
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 P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261  
 BOOK 3338 PAGE 0173

ROCKINGHAM CO.  
 JOB NO: 258.00  
 DATE: SEPTEMBER 23, 2020  
**PUP**  
 SH. 7 of 10

**SURVEYOR:** NEW HAMPSHIRE LAND CONSULTANTS, PLLC.  
 683C FIRST NH TURNPIKE (RT.4)  
 NORTHWOOD, NH 03261 PH: (603) 942-9220

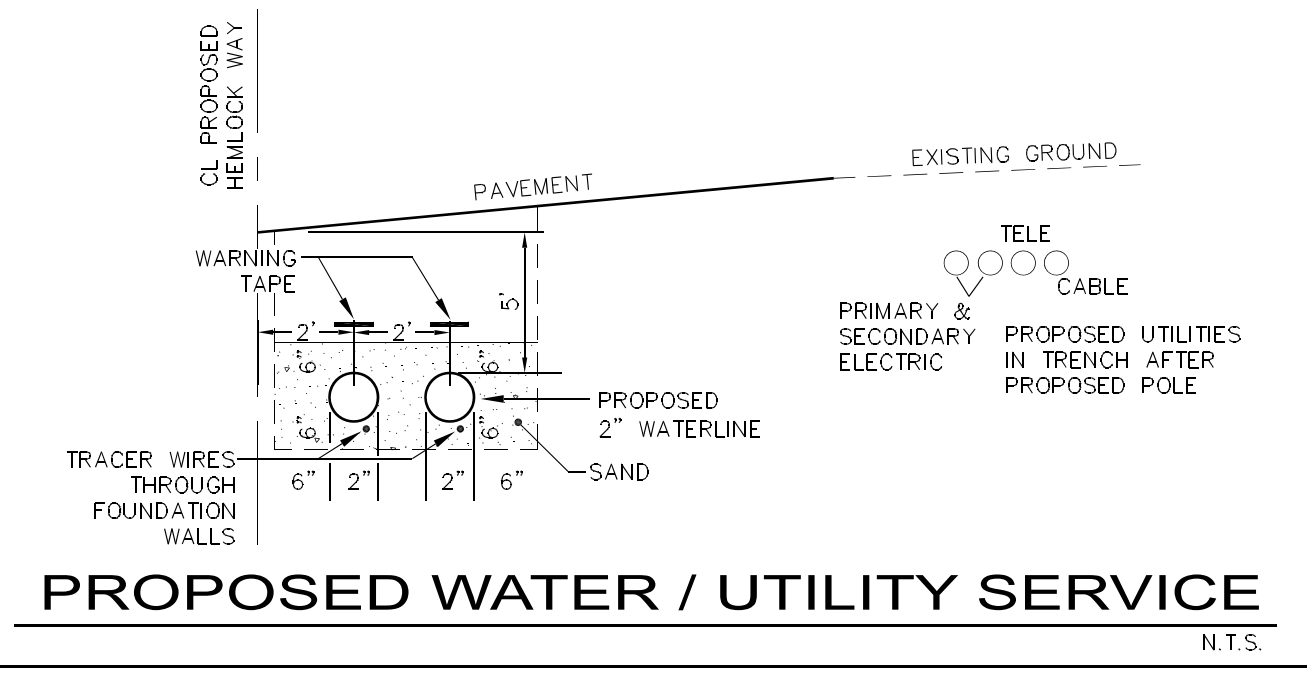
**WETLAND/SOIL SCIENTIST:** COVE ENVIRONMENTAL SERVICES, INC.  
 8 CONTINENTAL DR., BLDG. 2, UNIT H,  
 EXETER, NH 03833 PH: (603) 778-0644

WETLANDS WERE DELINEATED ON JUNE 4, 2020 AND LOCATED DURING JUNE 2020

- UTILITY NOTES:**
- ALL PROPOSED UTILITY WORK WITH IN THE CITY RIGHT OF WAY SHALL BE COORDINATED WITH CITY OF PORTSMOUTH DPW.
  - PULL BOXES, ELECTRICAL EQUIPMENT TO BE SUPPLIED BY ELECTRICAL COMPANY.
  - CONTRACTOR TO COORDINATE W/ POWER COMPANY AND LOCAL UTILITIES FOR INSTALLATION OF POWER, PHONE AND CABLE.
  - CONTRACTOR TO COORDINATE THE CONNECTION AND INSTALLATION OF WATER SERVICE WITH CITY OF PORTSMOUTH DPW.
  - INSTALLATION OF WATERLINE SHALL BE (2") 2" CTS PIPE TAPPED FROM THE EXISTING 6" MAIN ON MARTHA TERRACE EACH 2" PIPE W/ 4" SEPARATION, WILL BE DEDICATED TO EACH NEW HOME, PROVIDING WATER SERVICE AND FIRE PROTECTION.
  - NEAREST EXISTING FIRE HYDRANT IS LOCATED ON MARTHA TERRACE AND IS APPROXIMATELY 570' TO 585' TO THE FURTHEST PROPOSED HOUSE DEPENDING ON METHOD OF MEASUREMENT.
  - IF THE FIRE DEPARTMENT REQUIRES FIRE SUPPRESSION IN THE PROPOSED HOMES, THE ENGINEER OF RECORD SHALL REVIEW THE PROPOSED WATER SERVICE SHOWN, AND SHOW THAT THE DESIGN WILL BE SUFFICIENT FOR PRESSURE AND FLOW.
  - SEPTIC DESIGNS TO BE APPROVED BY NHDES.

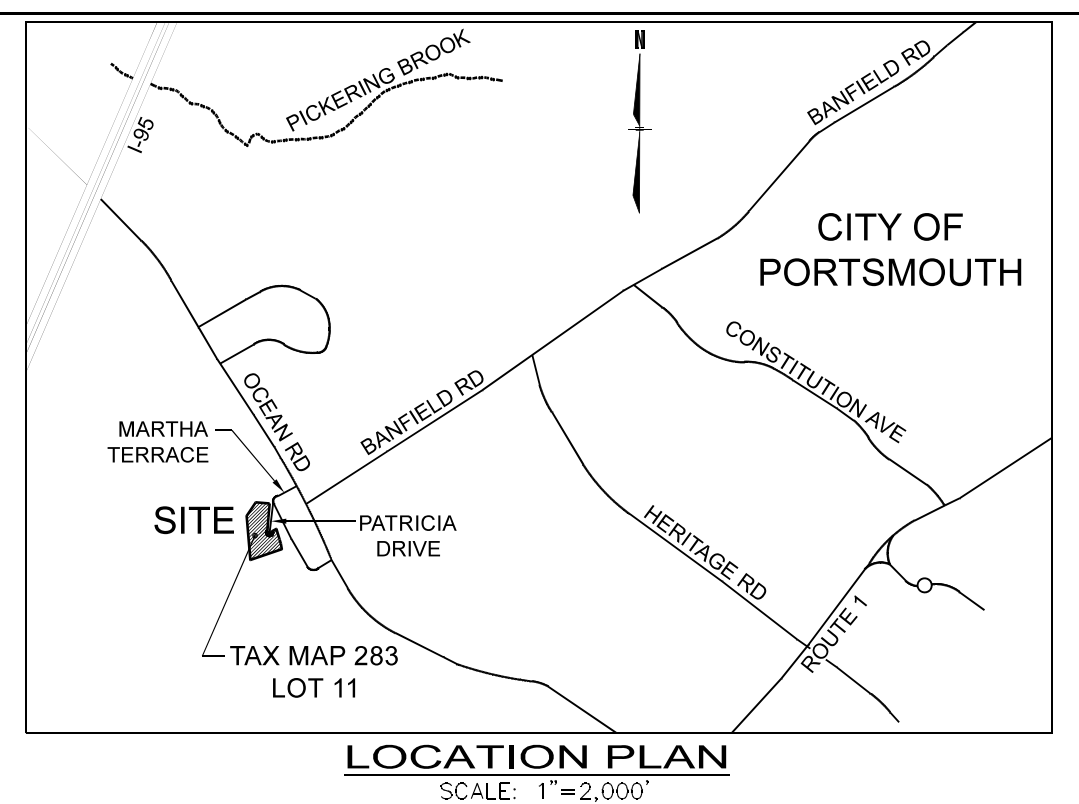
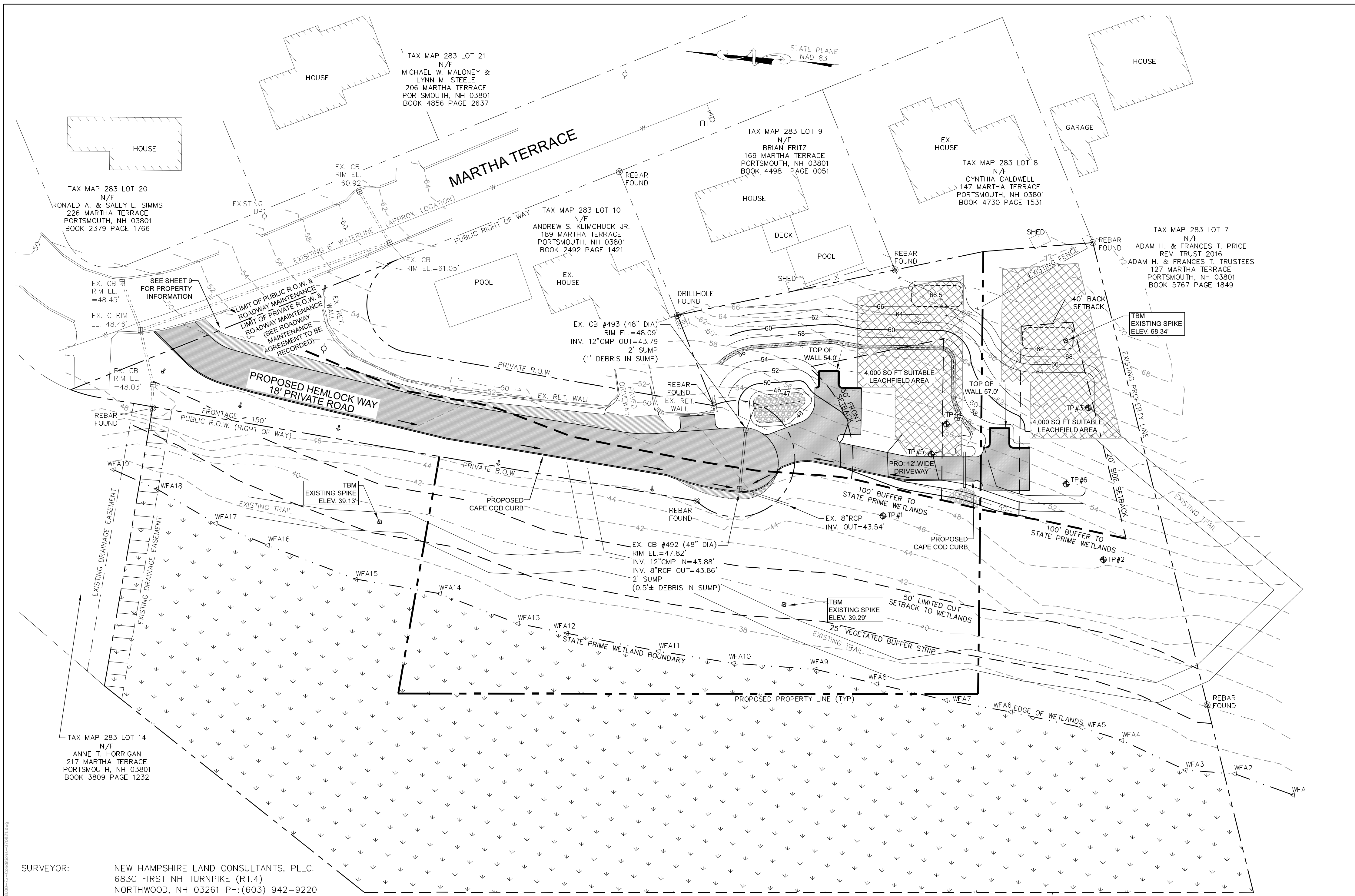
**LEGEND**

|                             |   |          |
|-----------------------------|---|----------|
| EXISTING RETAINING WALL     | PROPOSED 2" WATER MAIN                      | 2" CTS W |
| ADJUTERS PROPERTY LINES     | FIRE PROTECTION & WATER SERVICE SAME TRENCH | FP-WS    |
| SUBJECT PROPERTY LINES      | WETLANDS                                    | WFA      |
| PROPOSED PROPERTY LINES     | DRILL HOLE FOUND                            | ⊙        |
| EDGE OF PAVEMENT            | REBAR W/ CAP FOUND                          | ⊠        |
| PROPOSED BLDG SETBACK       | STONE BOUND FOUND                           | ⊡        |
| PROPOSED ELECTRICAL SERVICE | EXISTING GATE VALVE & HYDRANT               | FH       |
| PROPOSED WATER SERVICE      |   |          |



683C FIRST NH TURNPIKE, NORTHWOOD, NH 03261 PH: 603-942-9220 WEBSITE: NH.LANDCONSULTANTS.COM





**NOTES:**

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12. RIGHT OF WAY WIDTH DETERMINED BY SURVEY, FIELD INVESTIGATION, RECORDED DEEDS AND PLANS OF REFERENCE.
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14. SHEET 9 OF 10 THIS SET WILL BE RECORDED, A COMPLETE PLAN SET WILL BE FILED AT THE CITY OF PORTSMOUTH.
15. THE FEMA MAP NUMBER FOR THIS SITE IS 3301500270E, EFFECTIVE DATE: MAY 17, 2005. SITE IS LOCATED WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
16. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO CITY OF PORTSMOUTH SUBDIVISION PLAN REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
17. IF DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE CITY.
18. IF DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE CITY.
19. ELEVATIONS AND COORDINATES ARE BASED ON STATE PLANE COORDINATES FROM A SOLUTION GENERATED BY NGS OPUS ON JUNE 18, 2020 FROM DATA COLLECTED BY THIS OFFICE ON JUNE 18, 2020. THE OPUS SOLUTION IS BASED ON THE NAD 83 (2011) REF. FRAME AND THE NAVD 88.
20. EASEMENT TO BE PROVIDED TO THE CITY OF PORTSMOUTH OVER THE ENTIRE PRIVATE R.O.W. AREA FOR THE PURPOSES OF ACCESSING WATER VALVES AND LEAK DETECTION OF WATER LINES. TO BE RECORDED AT ROCKINGHAM REGISTRY OF DEEDS.

**PLAN REFERENCES:**

1. R.C.R.D. PLAN #195, RECORDED APRIL 10, 1964, TITLED: "PARCEL PLAN OF OCEAN MANOR, PORTSMOUTH, NH", PREPARED FOR: HILTON HOMES, INC., GREENLAND NH, DATED, JANUARY, 1964, PREPARED BY: JOHN DURGIN CIVIL ENGINEERS, SCALE: 1"=40', PLAN APPROVED BY PORTSMOUTH PLANNING BOARD ON MARCH 20, 1964.
2. R.C.R.D. PLAN #05967, RECORDED MAY 21, 1976, TITLED: "RESUBDIVISION OF OCEAN MANNER", PREPARED FOR: ANDREWS PROPERTIES, INC., PORTSMOUTH NH, DATED: MARCH 1976, REVISED MAY 1976, PREPARED BY: JOHN DURGIN CIVIL ENGINEERS, SCALE: 1"=50', PLAN APPROVED BY PORTSMOUTH PLANNING BOARD DURING 1976.
3. R.C.R.D. PLAN #C8102, RECORDED SEPTEMBER 18, 1978, TITLED: "LOT LINE REVISION, LAND OF LEVESQUE AND GERACI, PORTSMOUTH NH", PREPARED BY: JOHN W. DURGIN ASSOCIATES INC., ENGINEERS, SURVEYORS & DESIGNERS OF PORTSMOUTH AND ROCHESTER, DATED SEPTEMBER 1978, SCALE: 1"=50', APPROVED BY PORTSMOUTH PLANNING BOARD ON SEPTEMBER 18, 1978.
4. R.C.R.D. PLAN #033328, RECORDED DECEMBER 6, 2005, TITLED: "SUBDIVISION AND LOT LINE RELOCATION PLAN, MAP 283 - LOTS 7 & 11", PREPARED FOR: ADAM H. & FRANCES T. PRICE AND ADAM H. PRICE & FRITZ FAMILY REV. LIV TRUST, 127 MARTHA TERRACE & PATRICIA DRIVE, PORTSMOUTH NH, PREPARED BY: AMBIT ENGINEERING, INC., CIVIL ENGINEERS & LAND SURVEYORS, PORTSMOUTH NH, SCALE: 1"=50', DATED MARCH 2005, APPROVED BY PORTSMOUTH PLANNING BOARD ON OCTOBER 24, 2005.

**LEGEND**

|                         |       |                               |       |
|-------------------------|-------|-------------------------------|-------|
| EXISTING RETAINING WALL | ===== | WETLANDS                      | ----- |
| ABUTTERS PROPERTY LINES | ----- | DRILL HOLE FOUND              | ⊙     |
| SUBJECT PROPERTY LINES  | ----- | REBAR W/ CAP FOUND            | ⊙     |
| PROPOSED PROPERTY LINES | ----- | STONE BOUND FOUND             | ⊙     |
| EXISTING TIE LINE       | ----- | EXISTING GATE VALVE & HYDRANT | ⊙     |
| EDGE OF PAVEMENT        | ----- |                               |       |
| PROPOSED BLDG SETBACK   | ----- |                               |       |
| EXISTING CONTOUR (MNR)  | -572- |                               |       |
| EXISTING CONTOUR (MJR)  | -570- |                               |       |

**SURVEYOR:** NEW HAMPSHIRE LAND CONSULTANTS, PLLC.  
683C FIRST NH TURNPIKE (RT.4)  
NORTHWOOD, NH 03261 PH: (603) 942-9220

**WETLAND/SOIL SCIENTIST:** COVE ENVIRONMENTAL SERVICES, INC.  
8 CONTINENTAL DR., BLDG. 2, UNIT H,  
EXETER, NH 03833 PH: (603) 778-0644

WETLANDS WERE DELINEATED ON JUNE 4, 2020 AND LOCATED DURING JUNE 2020

**ZONE:** SRA  
**LOT SIZE:** 1 ACRES  
**FRONTAGE:** 150'  
**LOT DEPTH:** 200'  
**FRONT SETBACK:** 30'  
**SIDE SETBACK:** 20'  
**REAR SETBACK:** 40'

**SOILS:** 140B/C CHATFIELD-HOLLIS-CANTON COMPLEX

**CHATFIELD - NHDES GROUP 4**  
**HOLLIS - NHDES GROUP 4**  
**CANTON - NHDES GROUP 2**

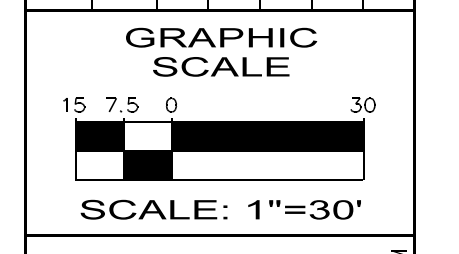
**LOT SIZE USING GROUP 4 SLOPE C = 48,000 SQ FT**  
**WITH PUBLIC WATER = 24,000 SQ FT.**

| TEST PIT #1  | TEST PIT #2  | TEST PIT #3  | TEST PIT #4  | TEST PIT #5  | TEST PIT #6  |
|--|--|--|--|--|--|
| DATE: 5-26-20<br>PERFORMED BY: SCOTT FRANKIEWICZ, PERMIT #1348                                       | DATE: 5-26-20<br>PERFORMED BY: SCOTT FRANKIEWICZ, PERMIT #1348                                       | DATE: 5-26-20<br>PERFORMED BY: SCOTT FRANKIEWICZ, PERMIT #1348                                       | DATE: 5-26-20<br>PERFORMED BY: SCOTT FRANKIEWICZ, PERMIT #1348                                       | DATE: 9-18-20<br>PERFORMED BY: SCOTT FRANKIEWICZ, PERMIT #1348                                       | DATE: 9-18-20<br>PERFORMED BY: SCOTT FRANKIEWICZ, PERMIT #1348                                       |
| 0-6" Topsoil   | 0-6" Topsoil   | 0-6" Topsoil   | 0-6" Topsoil   | 0-6" Topsoil   | 0-6" Topsoil   |
| 6-24" Loamy Sand Granular/Friable 7.5 YR 5/6 - Strong Brown  | 6-30" Loamy Sand Granular/Friable 7.5 YR 5/6 - Strong Brown  | 6-30" Loamy Sand Granular/Friable 7.5 YR 5/6 - Strong Brown  | 6-26" Loamy Sand Granular/Friable 7.5 YR 5/6 - Strong Brown  | 6-36" Gravelly Sand Granular/Friable 7.5 YR 5/6 - Strong Brown                                       | 6-34" Gravelly Sand Granular/Friable 7.5 YR 5/6 - Strong Brown                                       |
| 24-60" Loam Sand Granular/Firm in place 2.5Y 5/6 - Light Olive Brown                                 | 30-56" Sand Granular/Firm in place 2.5Y 5/6 - Light Olive Brown                                      | 30-56" Sand Granular/Firm in place 2.5Y 5/6 - Light Olive Brown                                      | 26-70" Sand Granular/Firm in place 2.5Y 5/6 - Light Olive Brown                                      | 36-60" Gravelly Sand Granular/Firm in place 2.5Y 5/6 - Light Olive Brown                             | 34-60" Gravelly Sand Granular/Firm in place 2.5Y 5/6 - Light Olive Brown                             |
| ESHWT = 24"<br>Roots to 24"<br>No ledge observed<br>No water observed<br>Many stones throughout hole | ESHWT = 30"<br>Roots to 30"<br>No ledge observed<br>No water observed<br>Many stones throughout hole | ESHWT = 30"<br>Roots to 30"<br>No ledge observed<br>No water observed<br>Many stones throughout hole | ESHWT = 26"<br>Roots to 26"<br>No ledge observed<br>No water observed<br>Many stones throughout hole | ESHWT = 36"<br>Roots to 36"<br>No ledge observed<br>No water observed<br>Many stones throughout hole | ESHWT = 34"<br>Roots to 34"<br>No ledge observed<br>No water observed<br>Many stones throughout hole |

**NEW HAMPSHIRE**  
Designer of  
Subsurface Disposal  
Systems  
\*\*\*  
Scott R. Frankiewicz  
No. 1348  
Department of Environmental Services

**REVISIONS**

| NO. | DATE       | DESCRIPTION                             |
|-----|------------|---|
| 13  | 05/28/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS |
| 14  | 07/08/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS |



**N.H. LAND Consultants**  
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A Veteran Owned Company

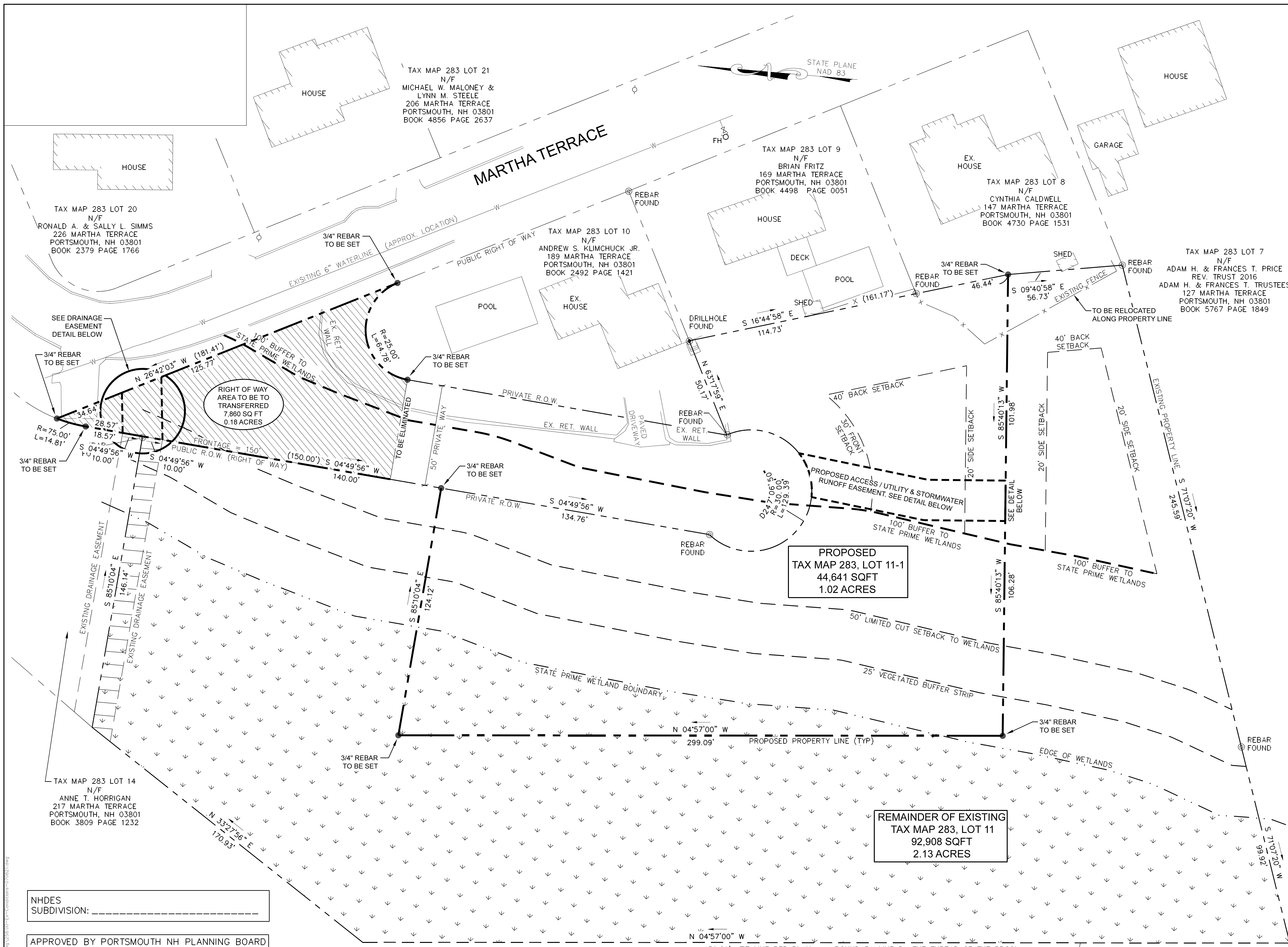
683C FIRST NH TURNPIKE, NORTHWOOD, NH 03261  
PH: 603-942-9220  
WEBSITE: NHLANDCONSULTANTS.COM

**PROPOSED CONDITIONS PLAN**  
**DUBE PLUS CONSTRUCTION**  
HEMLOCK WAY, PORTSMOUTH NH 03801  
FRITZ FAMILY REVOC LIV TRUST,  
EDGAR H FRITZ, TRUSTEE  
P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261  
BOOK 3338 PAGE 0173

**ROCKINGHAM CO.**  
**JOB NO: 258.00**  
**DATE: SEPTEMBER 23, 2020**

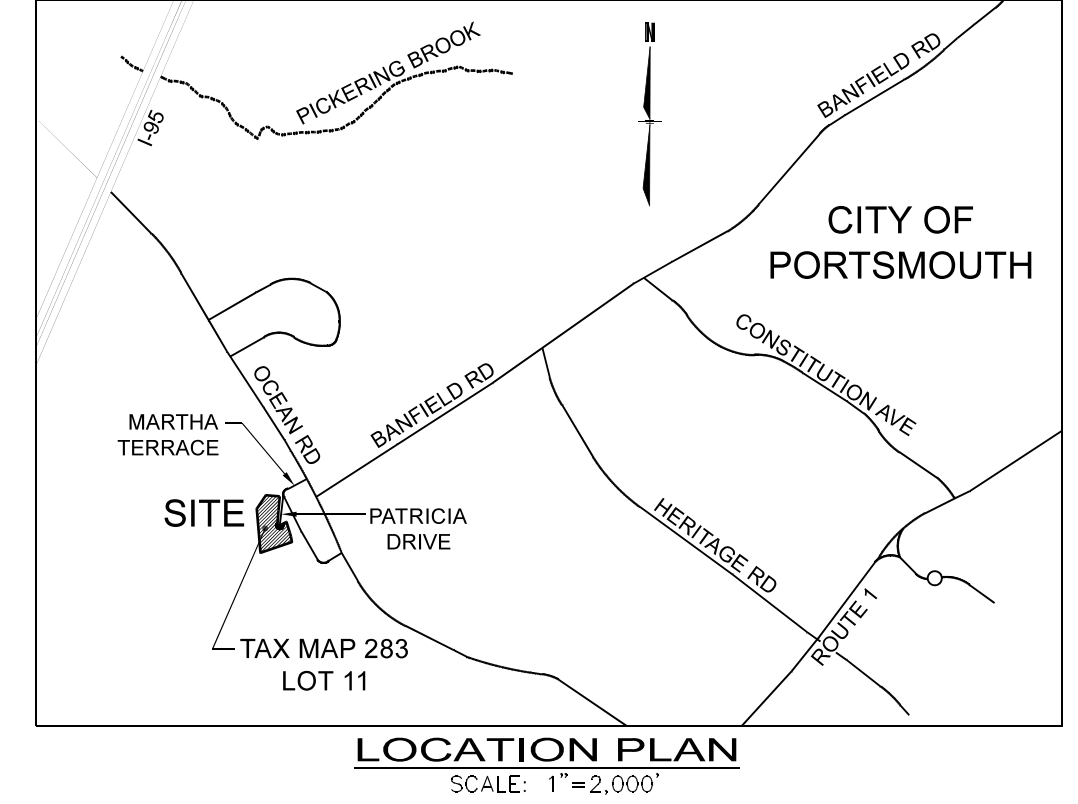
**PCP**  
SHT. 8 of 10





**ABUTTERS LIST:**

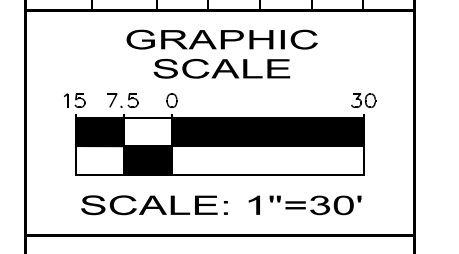
|  |
|--|
| N/F<br>MAP 283 LOT 7<br>ADAM H. & FRANCES T. PRICE,<br>127 MARTHA TERRACE,<br>PORTSMOUTH, NH 03801<br>BOOK 5767 PAGE 1849          |
| N/F<br>MAP 283 LOT 8<br>CYNTHIA CALDWELL<br>147 MARTHA TERRACE,<br>PORTSMOUTH, NH 03801<br>BOOK 4730 PAGE 1531                     |
| N/F<br>MAP 283 LOT 9<br>BRIAN A FRITZ<br>169 MARTHA TERRACE<br>PORTSMOUTH, NH 03801<br>BOOK 4498 PAGE 0051                         |
| N/F<br>MAP 283 LOT 10<br>ANDREW S KLIMCHUCK JR.<br>189 MARTHA TERRACE<br>PORTSMOUTH, NH 03801<br>BOOK 2492 PAGE 1421               |
| N/F<br>MAP 283 LOT 21<br>MICHAEL W MALONEY &<br>LYNN M STEELE<br>206 MARTHA TERRACE<br>PORTSMOUTH, NH 03801<br>BOOK 4856 PAGE 2637 |
| N/F<br>MAP 283 LOT 14<br>ANNE T. HERRIGAN<br>217 MARTHA TERRACE<br>PORTSMOUTH, NH 03801<br>BOOK 3809 PAGE 1232                     |
| N/F<br>MAP 283 LOT 13<br>RONALD A. & SALLY L. SIMMS<br>226 MARTHA TERRACE<br>PORTSMOUTH, NH 03801<br>BOOK 2249 PAGE 432            |
| N/F<br>MAP 283 LOT 12<br>ELIZABETH J. ROLSTON<br>185 POST ROAD<br>GREENLAND, NH 03840<br>BOOK 2679 PAGE 2523                       |



- NOTES:**
- THE PURPOSE OF THIS PLAN IS TO SUBDIVIDE TAX MAP 283, LOT 11 INTO 2 LOTS.
  - THE PROPERTY IS DESIGNATED AS TAX MAP 283, LOT 11.
  - THE AREA OF THE EXISTING LOT 11 IS 3.16 ACRES (137,549 SQ FT.).
  - THE CURRENT OWNER FOR TAX MAP 283, LOT 11: FRITZ FAMILY REVOC LIV TRUST, P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261.
  - THE ZONING DESIGNATION FOR THE PROPERTY IS (SRA) SINGLE RESIDENCE A DISTRICT.
  - DIMENSIONAL REQUIREMENTS PROVIDED FOR ZONE (SRA) DISTRICT:  
 MIN. ROAD FRONTAGE = 150'  
 MIN. LOT DEPTH = 200'  
 MIN. LOT SIZE = 43,560 SF (1 ACRE)  
 MIN. ROAD SETBACK = 30'  
 MIN. REAR SETBACK = 40'  
 MIN. SIDE SETBACK = 20'  
 WETLAND/WATERBODY SETBACK = 100'  
 WETLAND/LIMITED CUT = 50'  
 WETLAND/VEGETATED BUFFER STRIP = 25'  
 MAXIMUM STRUCTURE HEIGHT = 35'  
 SEPTIC SETBACK = 75' HYDRIC SOILS  
 OVERLAY DISTRICTS: (STEEP SLOPES, SOILS, WETLANDS, CONSERVATION)
  - THE PROPOSED GRADING PLANS ARE CONCEPTUAL AND FINAL LOCATION OF DRIVEWAYS, LEACHFIELDS, STRUCTURES, ETC. SHALL BE SUBJECT TO BUILDING PERMIT APPLICATION.
  - THE EXISTING USE OF TM 283 LOT 11 IS VACANT LAND.
  - THE PROPOSED USE OF TM 283 LOT 11 WILL BE 2 LOT SUBDIVISION.
  - SEWER TO BE PROVIDED BY ON-SITE SEPTIC SYSTEMS.
  - WATER TO BE PROVIDED BY MUNICIPAL WATER.
  - RIGHT OF WAY WIDTH DETERMINED BY SURVEY, FIELD INVESTIGATION, RECORDED DEEDS AND PLANS OF REFERENCE.
  - ABUTTING PROPERTY INFORMATION PROVIDED BY A COMBINATION OF ON-LINE TAX MAP DATA AND DATA PROVIDED BY granitview.unh.edu.
  - SHEET 9 OF 10 THIS SET WILL BE RECORDED, A COMPLETE PLAN SET WILL BE FILED AT THE CITY OF PORTSMOUTH.
  - THE FEMA MAP NUMBER FOR THIS SITE IS 33015C0270E, EFFECTIVE DATE: MAY 17, 2005. SITE IS LOCATED WITHIN ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
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**REVISIONS**

| NO. | DATE       | DESCRIPTION                             | BY  |
|-----|------------|---|-----|
| 13  | 05/28/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS | TDB |
| 14  | 07/08/2021 | REVISED PER CITY OF PORTSMOUTH COMMENTS | TDB |



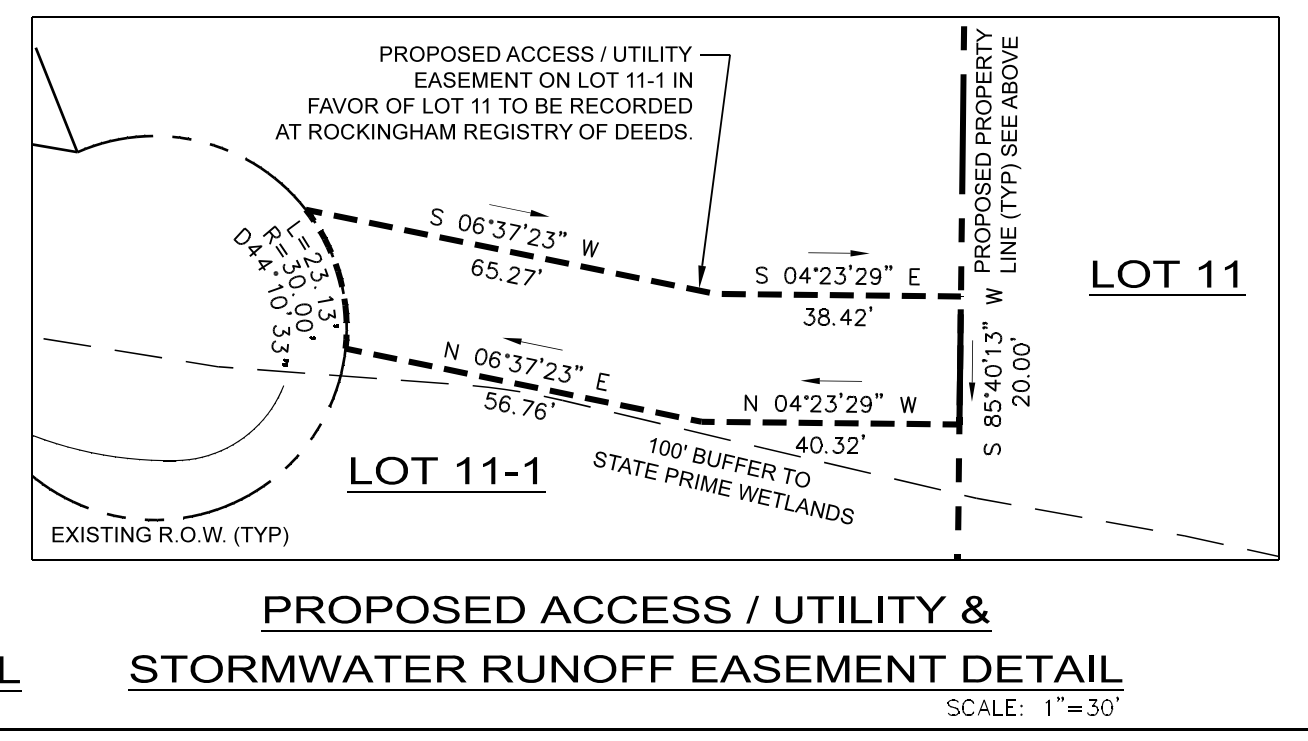
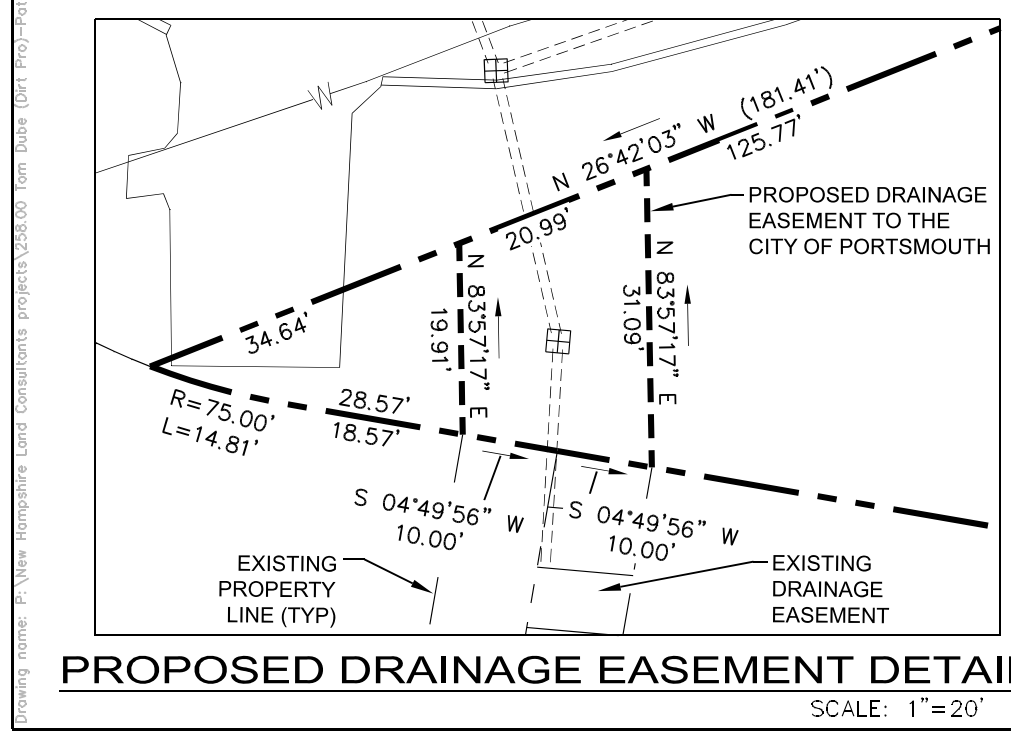
**N.H. LAND Consultants**  
 SURVEYING • LAND PLANNING • REAL ESTATE  
 A VETERAN OWNED COMPANY

6832 FIRST NH TURNPIKE, NORTHWOOD, NH 03261 PH. 603-942-9220 REG. ST. NH.LANDCONSULTANTS.COM

NHDES SUBDIVISION: \_\_\_\_\_

APPROVED BY PORTSMOUTH NH PLANNING BOARD

CHAIRMAN \_\_\_\_\_ DATE \_\_\_\_\_



MONUMENTS AND BOUNDS SHOWN ON PLAN HAVE OR WILL BE SET UNDER HIS/HER SUPERVISION PRIOR TO CONVEYANCE OF ANY PROPOSED LOTS.

THE SUBDIVISION REGULATIONS OF THE CITY OF PORTSMOUTH ARE A PART OF THIS PLAN, AND APPROVAL OF THIS PLAN IS CONTINGENT ON COMPLETION OF ALL THE REQUIREMENTS OF SAID SUBDIVISION REGULATIONS, EXCEPTING ONLY ANY VARIANCES OR MODIFICATIONS AND SUBJECT TO ANY CONDITIONS MADE IN WRITING BY THE BOARD AND ATTACHED HERETO.

I CERTIFY THAT THIS PLAN IS BASED UPON THE PLAN REFERENCES AND A FIELD SURVEY CONDUCTED ON THE GROUND IN SPRING OF 2020, MEETING THE MINIMUM REQUIREMENTS FOR ACCURACY, 1:10,000 AND COMPLETENESS PER THE STATE OF NEW HAMPSHIRE AND THE CITY OF PORTSMOUTH, NH.

SCOTT R. FRANKIEWICZ, LLS DATE: \_\_\_\_\_

**LEGEND**

|                               |           |
|-------------------------------|-----------|
| EXISTING RETAINING WALL       | =====     |
| ABUTTERS PROPERTY LINES       | -----     |
| SUBJECT PROPERTY LINES        | - - - - - |
| PROPOSED PROPERTY LINES       | -----     |
| EXISTING TIE LINE             | -----     |
| EDGE OF PAVEMENT              | -----     |
| PROPOSED BLDG SETBACK         | -----     |
| WETLANDS                      | .....     |
| DRILL HOLE FOUND              | ⊙         |
| REBAR W/ CAP FOUND            | ⊠         |
| STONE BOUND FOUND             | ⊡         |
| 3/4" REBAR TO BE SET          | ⊙         |
| EXISTING GATE VALVE & HYDRANT | ⊙         |

- PLAN REFERENCES:**
- R.C.R.D. PLAN #195, RECORDED APRIL 10, 1964, TITLED: "PARCIAL PLAN OF OCEAN MANOR, PORTSMOUTH, NH", PREPARED FOR: HILTON HOMES, INC., GREENLAND NH, DATED: JANUARY, 1964, PREPARED BY: JOHN DURGON CIVIL ENGINEERS, SCALE: 1"=40', PLAN APPROVED BY PORTSMOUTH PLANNING BOARD ON MARCH 20, 1964.
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  - R.C.R.D. PLAN #033328, RECORDED DECEMBER 6, 2005, TITLED: "SUBDIVISION AND LOT LINE RELOCATION PLAN, MAP 283 - LOTS 7 & 11", PREPARED FOR: ADAM H. & FRANCES PRICE AND ADAM H. PRICE & FRITZ FAMILY REV. LIVING TRUST, 127 MARTHA TERRACE & PATRICIA DRIVE, PORTSMOUTH NH, PREPARED BY: AMBIT ENGINEERING, INC., CIVIL ENGINEERS & LAND SURVEYORS, PORTSMOUTH NH, SCALE: 1"=50', DATED MARCH 2005, APPROVED BY PORTSMOUTH PLANNING BOARD ON OCTOBER 24, 2005.

- REQUIRED NOTES:**
- THE DUMPING OF ANY KIND IS PROHIBITED IN THE WETLAND BUFFER.
  - SALTING OF ROAD IS PROHIBITED DUE TO CLOSE PROXIMITY TO A PRIME WETLAND.

PROPOSED SUBDIVISION PLAN  
 TAX MAP 283 LOT 11  
**DUBE PLUS CONSTRUCTION**  
 HEMLOCK WAY, PORTSMOUTH NH 03801  
 OWNED BY  
**FRITZ FAMILY REVOC LIV TRUST,**  
**EDGAR H FRITZ, TRUSTEE**  
 P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261  
 BOOK 3338 PAGE 0173

ROCKINGHAM CO.  
 JOB NO: 258.00  
 DATE: SEPTEMBER 23, 2020

**PSP**  
 SHT. 9 of 10



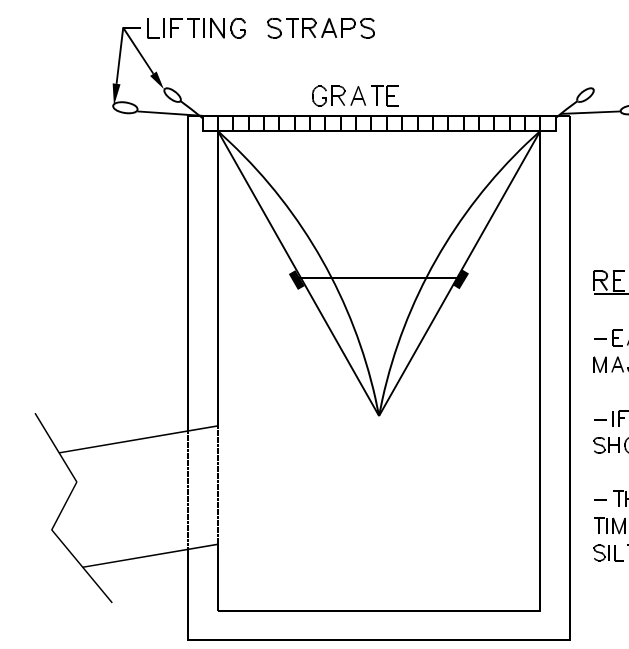
## CONSTRUCTION SEQUENCE:

- CUT AND CLEAR TREES, REMOVE EXISTING PAVEMENT WITHIN LIMIT OF WORK (PROPOSED TREE LINE), UNLESS OTHERWISE NOTED. ALL STUMPS, BRANCHES, TOPS AND BRUSH TO BE PROPERLY DISPOSED OF, PREFERABLY OFF SITE.
- CONSTRUCT TEMPORARY AND PERMANENT EROSION CONTROL FACILITIES (DETENTION BASIN, DIVERSION BERM, GRASS SWALE) PRIOR TO ANY EARTH MOVING OPERATION.
- ALL AREAS SHALL BE PROTECTED FROM EROSION. SIDE SLOPES AND DETENTION POND SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
- POND SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE (BEFORE ROUGH GRADING THE SITE).
- ALL STORM DRAINAGE SYSTEMS SUCH AS DETENTION/RETENTION BASINS, LEVEL SPREADERS SHALL BE PROTECTED FROM EROSION. ALL STORM DRAINAGE SYSTEMS SHALL BE STABILIZED PRIOR TO DIRECTING FLOW INTO THEM.
- CONSTRUCT TEMPORARY CULVERTS, DIVERSION DITCHES/SWALES OR BERMS AS REQUIRED TO MINIMIZE THE EROSION AFFECTS OF STORMWATER RUNOFF DURING ALL CONSTRUCTION ACTIVITIES. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL AREAS ARE STABILIZED.
- ALL MATERIAL SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED IN UPLANDS AREAS. ALL STOCKPILES SHALL BE SEEDED WITH WINTER RYE AND IF NECESSARY, SURROUNDED WITH SILT FENCE, AND/OR STRAW BALES, IN ORDER TO PREVENT OR CONTAIN SOIL EROSION.
- ALL MATERIAL SUITABLE FOR FILL OR SELECT MATERIAL SHALL BE STOCKPILED IN UPLANDS AREAS. ALL STOCKPILES SHALL BE SURROUNDED WITH SILT FENCE, AND/OR STRAW BALES, IN ORDER TO CONTAIN SOIL EROSION.
- REMOVE ALL IMPROPER ROADWAY MATERIAL WITHIN 18" OF SUBGRADE. REPLACE WITH COMPACTED GRANULAR FILL ACCEPTABLE TO THE STATE/TOWN SPECIFICATIONS. ALL SUITABLE FILL MATERIAL SHALL BE COMPACTED TO AT LEAST 95% OF THE DRY WEIGHT AS DETERMINED BY MODIFIED PROCTOR TESTING (ASTM D-1556) REQUIREMENTS.
- CONSTRUCT ALL UNDERGROUND UTILITIES INCLUDING, BUT NOT LIMITED TO DRAIN, DATA, CABLE AND POWER.
- ROUGH GRADE SITE WITHIN LIMIT OF WORK AND COMMENCE CONSTRUCTION OF ROADWAY.
- SITE SHALL BE STABILIZED WITHIN 72 HOURS OF FINISHED GRADE.
- COMPLETE ROADWAY SLOPE GRADING/EMBANKMENT CONSTRUCTION. ALL SLOPES SHALL BE STABILIZED AND SEEDING IMMEDIATELY AFTER GRADING. THE CONTRACTOR SHALL STABILIZE SLOPES WITH APPROPRIATE SEEDING PROGRAM OR JUTE MAT, WHEREVER SPECIFIED. ALL CUT AND FILL SLOPES SHALL BE SEEDING/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
- APPLY TOPSOIL TO SITE SLOPES AND OTHER AREAS DISTURBED BY CONSTRUCTION. TOPSOIL USED SHALL BE NATIVE ORGANIC MATERIAL SCREENED AS TO BE FREE FROM ROOTS, BRANCHES, STONES, AND OTHER DELETERIOUS MATERIALS. TOPSOIL SHALL BE APPLIED SO AS TO PROVIDE A MINIMUM OF A 4-INCH COMPACTED THICKNESS. UPON COMPLETION OF TOPSOILING, FINISHED SECTIONS ARE TO BE LIMED, SEED, AND MULCHED. CONSERVATION SEED MIX SHALL BE USED ALONG "PROPOSED PRIVATE DRIVE" AND WILDFLOWER MIX TO BE USED IN DETENTION BASIN AND OTHER OPEN AREAS. THE CONTRACTOR SHALL INSPECT COMPLETED SECTIONS OF WORK ON A REGULAR BASIS AND REMEDY ANY PROBLEM AREAS UNTIL A HEALTHY STAND OF GRASS IS ESTABLISHED.
- MAINTAIN, REPAIR, AND REPLACE TEMPORARY EROSION CONTROL MEASURES AS NECESSARY FOR A MINIMUM PERIOD OF 12 MONTHS FOLLOWING SUBSTANTIAL COMPLETION.
- AFTER STABILIZATION (12 MONTHS FOLLOWING SUBSTANTIAL COMPLETION), REMOVE AND PROPERLY DISPOSE OF TEMPORARY EROSION CONTROL MEASURES, PREFERABLY OFF SITE.
- THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.

DEFINITION OF THE WORD STABLE: AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:

- BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
- A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED.
- A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED.
- OR, EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

- ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.

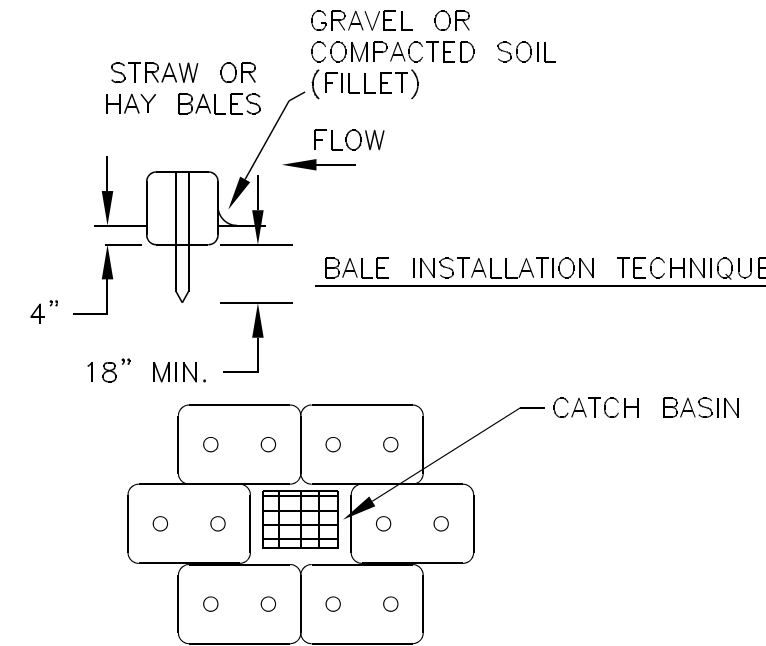


### RECOMMENDED MAINTENANCE SCHEDULE

- EACH SILTSACK SHOULD BE INSPECTED AFTER EVERY MAJOR RAIN EVENT
- IF THERE HAVE BEEN NO MAJOR EVENTS, SILTSACK SHOULD BE INSPECTED EVERY 2-3 WEEKS
- THE RESTRAINT CORD SHOULD BE VISIBLE AT ALL TIMES. IF CORD IS COVERED WITH SEDIMENT, THE SILTSACK SHOULD BE EMPTIED.

### SILTSACK DETAIL

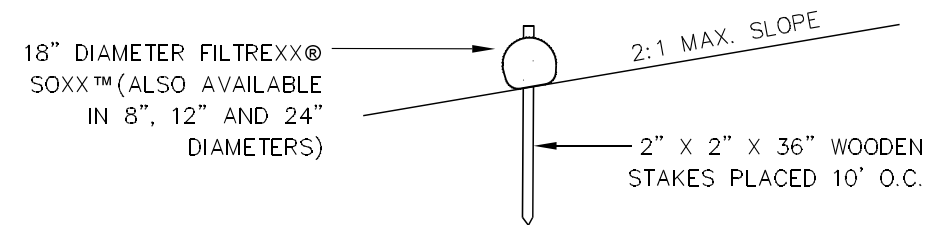
NOT TO SCALE



### EROSION PROTECTION

#### TYPE "E"

NORMAL USE AROUND CATCH BASINS  
NOT TO SCALE



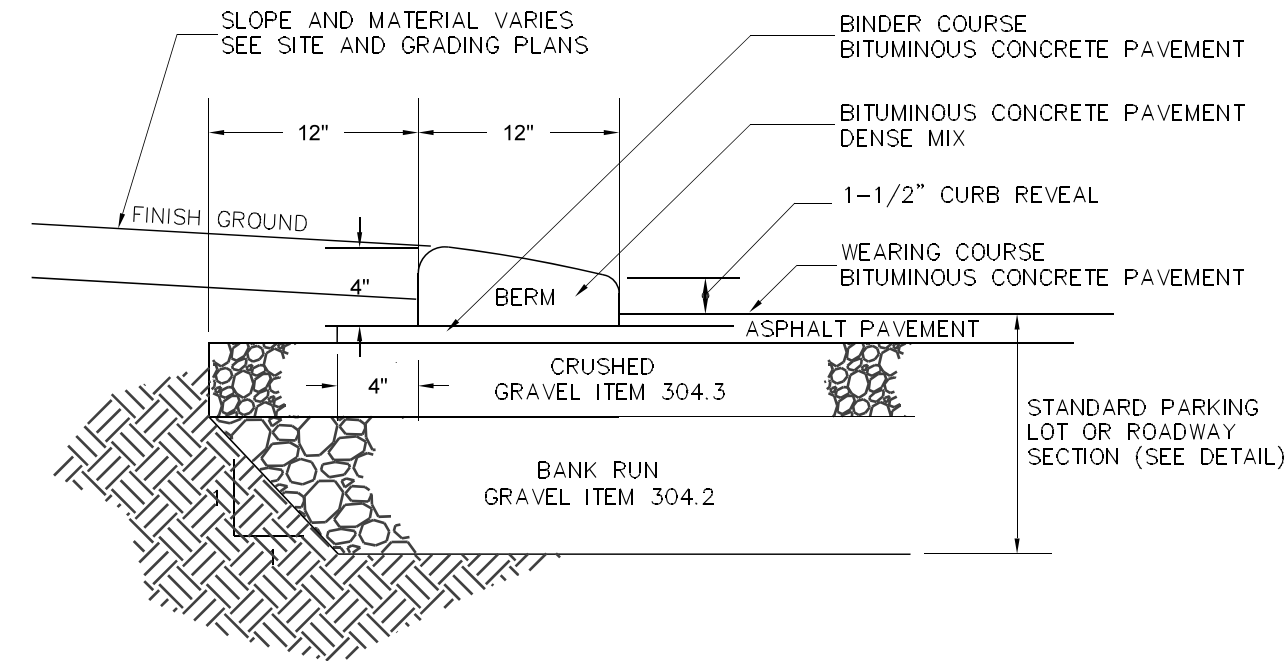
### FILTER SOCK DETAIL

FILTREXX® OR APPROVED EQUAL

NOT TO SCALE

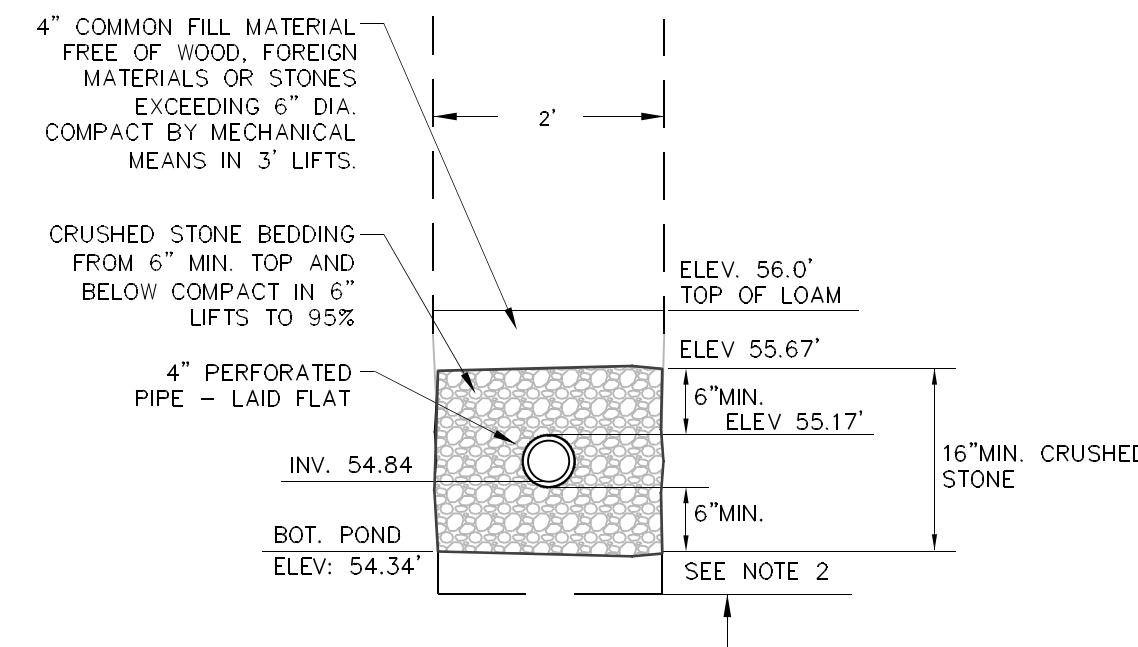
## CONSTRUCTION SPECIFICATIONS FOR STRAW OR HAY BALE BARRIERS

- STRUCTURES SHALL BE INSTALLED ACCORDING TO THE DIMENSIONS SHOWN ON THE PLANS AT THE APPROPRIATE SPACING.
- CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER SO THAT EROSION AND AIR AND WATER POLLUTION WILL BE MINIMIZED.
- WHEN HAY BALES ARE USED, THE BALES SHALL BE EMBEDDED AT LEAST 4 INCHES INTO THE SOIL. WHEN TIMBER STRUCTURES ARE USED, THE TIMBER SHALL EXTEND AT LEAST 18 INCHES INTO THE SOIL.
- HAY OR STRAW BALES SHALL BE ANCHORED INTO THE SOIL USING 2" X 2" STAKES DRIVEN THROUGH THE BALES AND AT LEAST 18 INCHES INTO THE SOIL.
- SEEDING, FERTILIZING, AND MULCHING SHALL CONFORM TO THE RECOMMENDATIONS IN THE APPROPRIATE VEGETATIVE BMP.
- STRUCTURES SHALL BE REMOVED FROM THE CHANNEL WHEN THEIR USEFUL LIFE HAS BEEN COMPLETED.



### CAPE COD CURB (ASPHALT) DETAIL

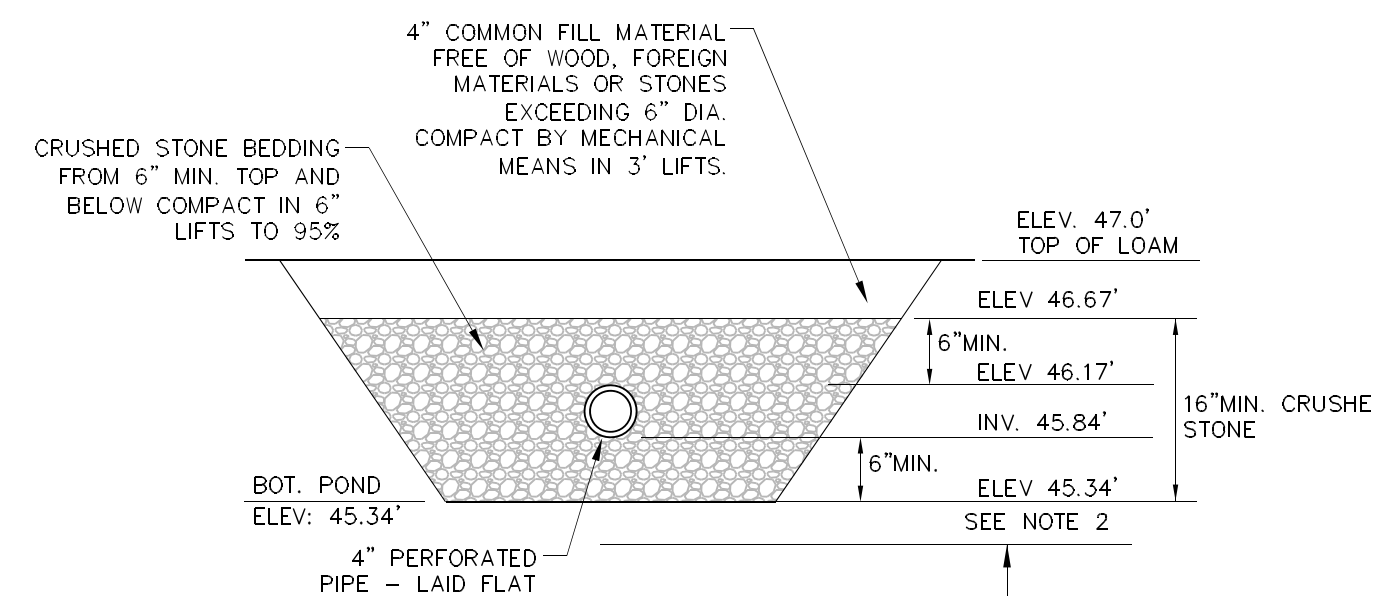
NOT TO SCALE



- FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUND TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
- ORDERED EXCAVATION OF UNSUITED MATERIAL BELOW GRADE. RE-FILL WITH BEDDING MATERIAL.

### INFILTRATION SWALE WITH 4" UNDERDRAIN DETAIL

NOT TO SCALE



- FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUND TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
- ORDERED EXCAVATION OF UNSUITED MATERIAL BELOW GRADE. RE-FILL WITH BEDDING MATERIAL.

### INFILTRATION POND WITH 4" UNDERDRAIN PIPE DETAIL

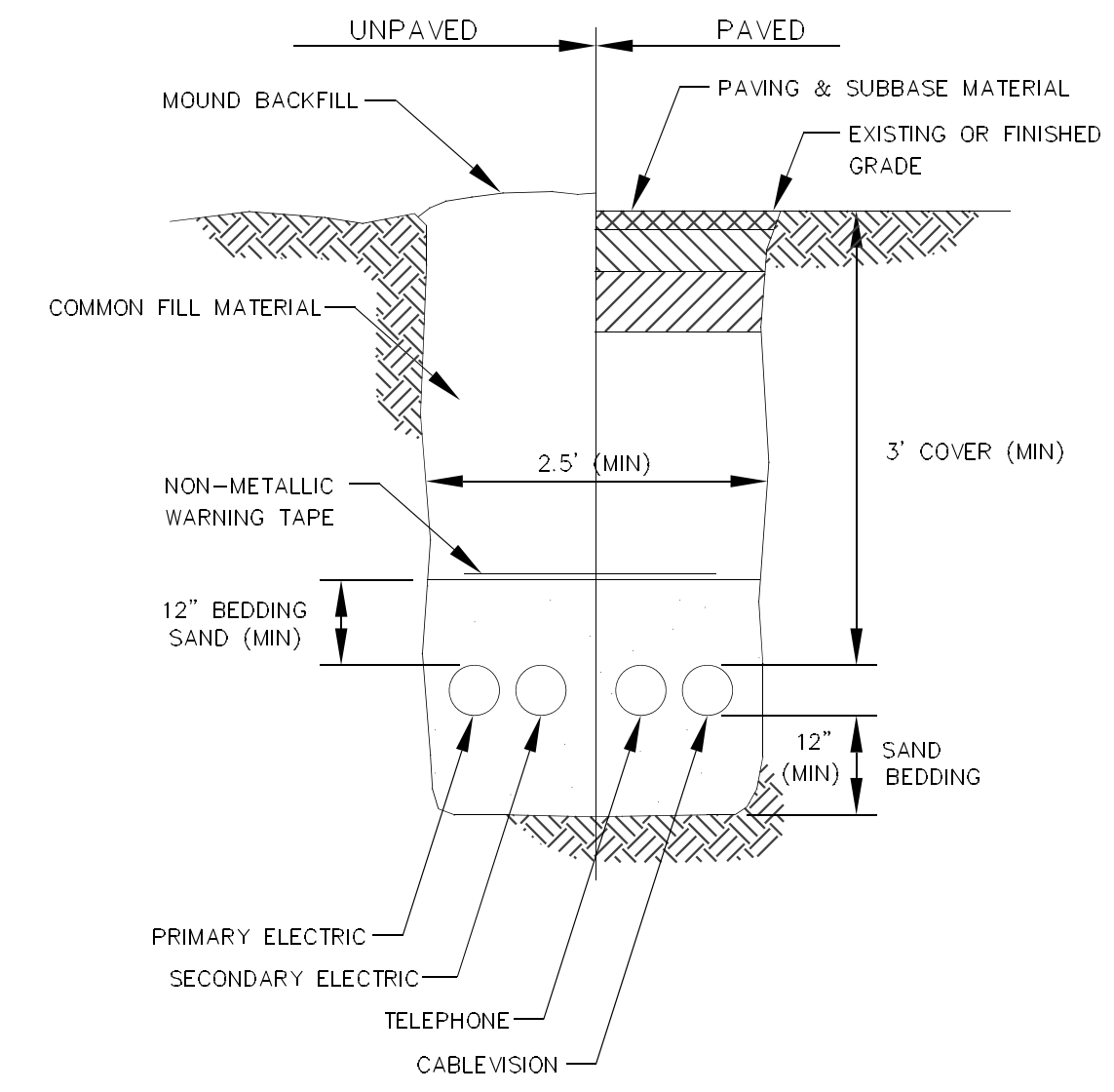
NOT TO SCALE

## MAINTENANCE

THE LEVEL SPREADER SHOULD BE CHECKED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE IF THE LIP HAS BEEN DAMAGED AND TO DETERMINE THAT THE DESIGN CONDITIONS HAVE NOT CHANGED. ANY DETRIMENTAL SEDIMENT ACCUMULATION SHOULD BE REMOVED. IF FILLING 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 THE OUTLET AREA. FERTILIZATION SHOULD BE DONE AS NECESSARY TO KEEP THE VEGETATION HEALTHY AND DENSE.

### CONSTRUCTION SPECIFICATIONS

- CONSTRUCT THE LEVEL SPREADER LIP ON A ZERO GRADE TO INSURE UNIFORM SPREADING RUNOFF.
- LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
- AN EROSION STOP SHALL BE PLACED VERTICALLY A MINIMUM OF SIX INCHES DEEP IN A SILT 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.
- THE ENTIRE LIP AREA SHALL BE PROTECTED BY PLACING TWO STRIPS OF JUTE OR EXCELSTOR MATTING ALONG THE LIP. EACH STRIP SHALL OVERLAP THE EROSION STOP BY AT LEAST SIX INCHES.
- THE ENTRANCE CHANNEL TO THE LEVEL SPREADER SHALL NOT EXCEED A 1 PERCENT GRADE FOR AT LEAST 50 FEET BEFORE ENTERING INTO THE SPREADER.
- THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER SHOULD NOT RE-CONCENTRATE IMMEDIATELY BELOW THE SPREADER.
- PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PERFORMED.

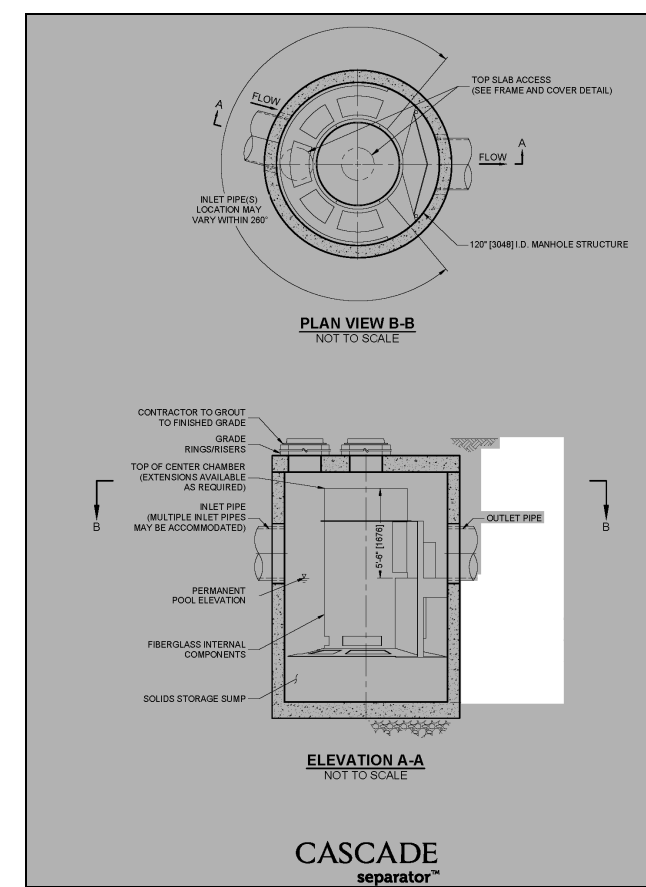


### UTILITY TRENCH DETAIL

NOT TO SCALE

PAVEMENT SECTION

NOT TO SCALE



### CASCADE separator

OR APPROVED EQUAL

### The Cascade Separator® OR APPROVED EQUAL

#### Advanced Sediment Capture Technology

The Cascade Separator® is the newest innovation in stormwater treatment from CorTech. The Cascade Separator was developed by CorTech's stormwater experts using advanced modeling tools and CorTech's industry leading stormwater technology.

This innovative hydrodynamic separator results in sediment capture and retention while also removing hydrocarbons, trash, and debris from stormwater runoff. What makes the Cascade Separator unique is the use of opposing vertical flow patterns to create a vortex that captures sediment and debris into the sump while reducing turbulence and momentum of particles captured. These two factors allow the Cascade Separator to treat high flow rates in a small footprint, resulting in an efficient and economical solution for any site.

#### FEATURE BENEFIT

Unique skirt design & opposing vortex

Separates TSS without reduced system size and costs

Heat area accepts wide range of inlet pipe angle

Design and installation flexibility

Accepts multiple inlet pipes

Eliminates the need for separate junction structure

Gate lift option

Eliminates the need for a separate gate lift structure

Internal bypass

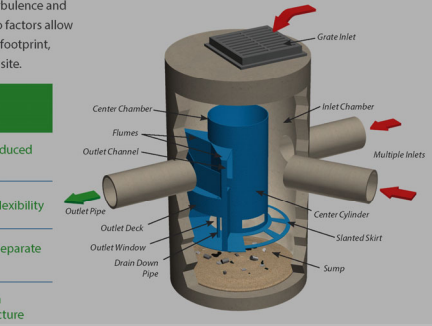
Eliminates the need for a separate bypass structure

Clear access to sump and float (optional)

Fast, easy maintenance

CorTech provides professional services to assist with design, installation, and maintenance of your Cascade Separator.

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#### CASCADE MAINTENANCE

CorTech provides professional services to assist with design, installation, and maintenance of your Cascade Separator.

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| REVISIONS |             | NO.                                    | DATE | DESCRIPTION |
|-----------|-------------|--|------|-------------|
| BY        | DESCRIPTION | NO. <td>DATE</td> <td>DESCRIPTION</td> | DATE | DESCRIPTION |
| BY        | DESCRIPTION | NO. <td>DATE</td> <td>DESCRIPTION</td> | DATE | DESCRIPTION |
| BY        | DESCRIPTION | NO. <td>DATE</td> <td>DESCRIPTION</td> | DATE | DESCRIPTION |

SCALE AS SHOWN

**N.H. LAND Consultants**  
A Veteran Owned Company  
SURVEYING • LAND PLANNING • REAL ESTATE

DETAIL SHEET  
TAX MAP 283 LOT 11  
**DUBE PLUS CONSTRUCTION**  
HEMLOCK WAY, PORTSMOUTH NH 03801  
OWNED BY  
**FRITZ FAMILY REVOC LIV TRUST,**  
**EDGAR H FRITZ, TRUSTEE**  
P.O. BOX 524, 50 SHORE DR., NORTHWOOD NH, 03261  
BOOK 3358 PAGE 0173

ROCKINGHAM CO.

JOB NO: 258.00

DATE: SEPTEMBER 23, 2020

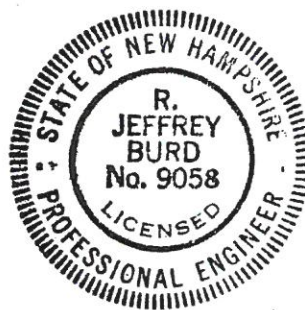
**DET**  
SHT. 10 of 10

**DRAINAGE ANALYSIS**

Prepared for:  
**DUBE PLUS CONSTRUCTION**  
**TAX MAP 283 LOT 11**  
**PATRICIA DRIVE**  
**PORTSMOUTH, NH**

Prepared by:  
**NEW HAMPSHIRE LAND CONSULTANTS, PLLC**  
**683C FIRST NH TURNPIKE**  
**NORTHWOOD, NH 03261**  
**&**  
**RJB ENGINEERING**  
**JEFFREY BURD, P.E.**

Project Number:  
258.00



*RJ Burd*



## **PROJECT NARATIVE**

## **1. Table of Contents**

1. Narrative of the project with summary table of peak discharge rates
2. Drainage analysis-Full Pre & Post summary of the 50-YR
3. Conclusion



## **Narrative**

### **Introduction**

This drainage analysis details the surface water drainage patterns on a parcel located at Patricia Drive in Portsmouth, NH. Using HydroCAD to model storm events this analysis estimates the amount of storm water surface runoff from this site before and after the proposed parking lot and sidewalk. The design of this project will decrease the runoff.

The proposed improvements are on Patricia Drive and Tax Map 283 Lot 11. The applicant, Dube Plus Construction, wishes to rebuild Patricia Drive and construct 2 single family homes. We are proposing 1 detention basin and one treatment/detention system to control, pre-treat and treat the stormwater runoff from the reconstructed road, driveways and yards. The houses will be constructed with drip edges and all roof runoff will be infiltrated via the drip edge. The roadway stormwater runoff is directed to a detention/infiltration area that is equipped with a sediment forebay, a bio-retention system and detention area. The stormwater the isn't infiltrated will leave this detention/infiltration/filtration system will be directed to a rip rap slope to a level spreader and directed to 75' natural filter strip, which will provide additional overland treatment prior to reaching the prime wetland.

The area that has been analyzed is all upland, Chatfield-Hollis-Canton, Sandy Loam soils (Hydro group B soils) as categorized by the Soil Conservation District.

The following section explains the methods used to determine the runoff quantities generated by the existing conditions site. The objective of this analysis is to obtain surface storm water runoff flow data. This information is compared to evaluate whether there may be an impact to existing drainage system in the area.

### **Methodology**

The drainage analysis performed utilizes nationally recognized techniques developed by the USDA, Soil Conservation Service (SCS). The techniques and models used for this analysis are described in "Urban Hydrology for Small Watersheds, Technical Release Number 55" dated 1986 and in USDOT Federal Highway Administration (FHWA) "Hydraulic Design of Highway Culverts" dated September 1985.

Design computations were based on a Type III 24-hour storm event as recommended for New Hampshire. 10 year – 24-hour event of 4.92 inches of precipitation respectively was analyzed. Pre and Post-development conditions were analyzed by the same method. An investigation was conducted to confirm published watershed soil and vegetative characteristics that were used for the input program "HydroCAD Storm water Modeling System, Version 10.00-25". Tabulated summaries of the results are shown in the results section of this report.

### **Procedure**

To begin the stormwater study, the limits and areas of the watershed for this development were identified. The existing watershed area is treated as 1 sub-catchment. The proposed development watershed area is treated as 5 sub-catchments. Weighted runoff curve numbers (CN) were calculated for each sub-catchment watershed area. Runoff curve numbers were chosen based on site investigation, TR-55, USDA Agriculture Handbook 590 (1997), and USDA Soil Conservation

Service Soil Survey, issued October 1994. The value of CN depends on soil type, vegetative cover and hydraulic conditions of the land surface. Surface water run off rate and total volume during and after a storm event is also influenced by: slope of the land, area of the watershed, hydraulic length of watershed, and ponds and swamps. In addition, the amount of surface runoff produced by a given storm event is a function of the duration and intensity of the storm.

Pre-development and post-development conditions for the watershed were analyzed by the method outlined in USDA Soil Conservation Service Soil Survey, issued October 1994. Using this post-development information, computer generated hydrographs were calculated and peak runoff rates determined for each specific storm event.

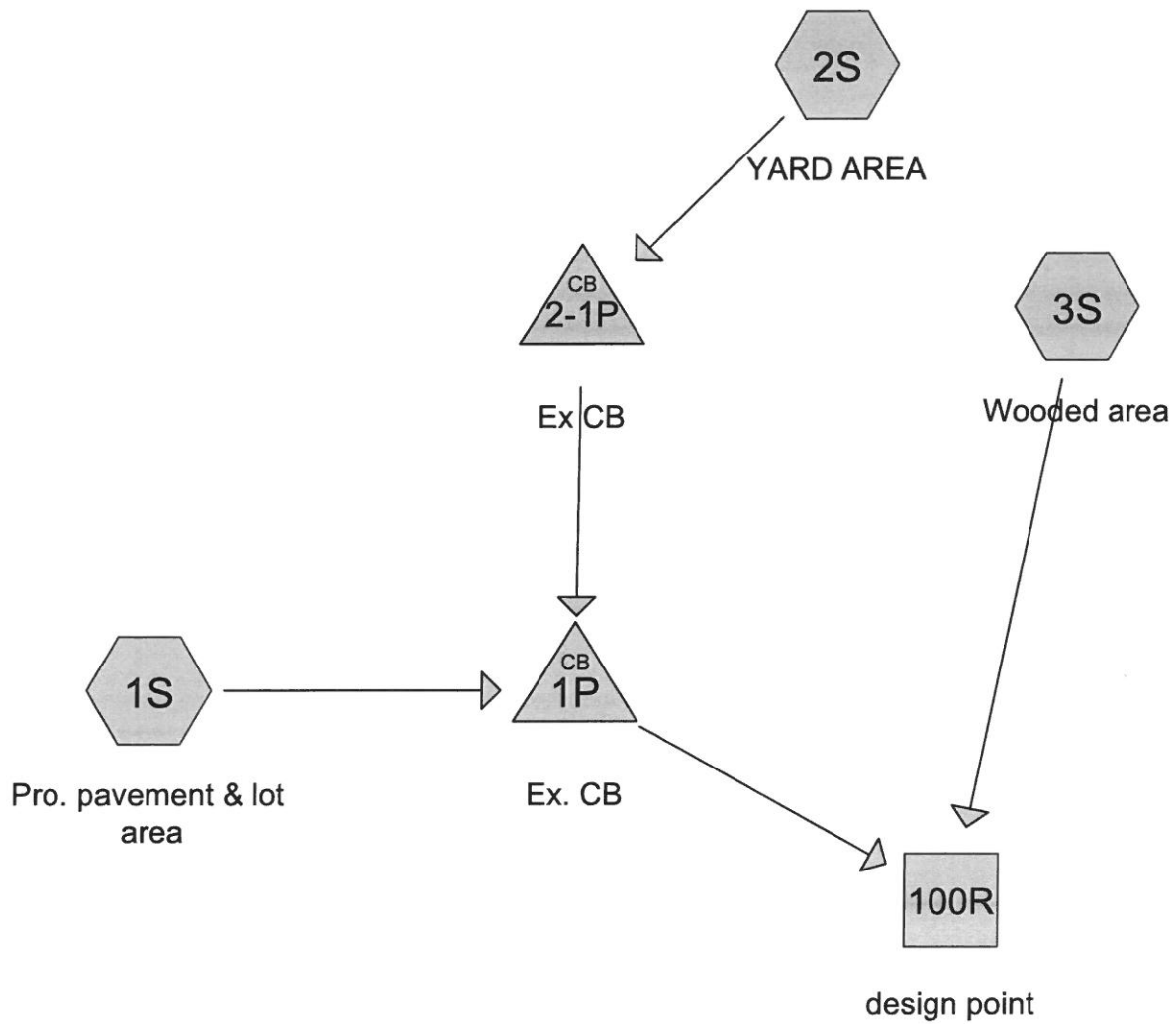
The entire area to be developed will disturb approximately 34,000 square feet. Re-graded areas along the edge of construction will ultimately become stabilized and generally resume their pre-development characteristics.



**DRAINAGE ANALYSIS PRE & POST**

**Pre-Conditions Drainage Analysis**  
**Full summary**  
**50 YR – 24 HR rainfall = 7.48”**





**Routing Diagram for Ex drainage rev 7-5-21**  
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**Ex drainage rev 7-5-21**

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Page 2

**Area Listing (all nodes)**

| Area<br>(acres) | CN        | Description<br>(subcatchment-numbers)      |
|-----------------|-----------|--|
| 0.261           | 61        | >75% Grass cover, Good, HSG B (1S, 2S, 3S) |
| 0.261           | 98        | Impervious (1S, 2S, 3S)                    |
| 0.508           | 55        | Woods, Good, HSG B (2S, 3S)                |
| <b>1.030</b>    | <b>67</b> | <b>TOTAL AREA</b>                          |



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**Soil Listing (all nodes)**

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>Numbers |
|-----------------|---------------|-------------------------|
| 0.000           | HSG A         |                         |
| 0.769           | HSG B         | 1S, 2S, 3S              |
| 0.000           | HSG C         |                         |
| 0.000           | HSG D         |                         |
| 0.261           | Other         | 1S, 2S, 3S              |
| <b>1.030</b>    |               | <b>TOTAL AREA</b>       |

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**Ground Covers (all nodes)**

| HSG-A<br>(acres) | HSG-B<br>(acres) | HSG-C<br>(acres) | HSG-D<br>(acres) | Other<br>(acres) | Total<br>(acres) | Ground<br>Cover        | Subcatchment<br>Numbers |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------------|-------------------------|
| 0.000            | 0.261            | 0.000            | 0.000            | 0.000            | 0.261            | >75% Grass cover, Good | 1S, 2S,<br>3S           |
| 0.000            | 0.000            | 0.000            | 0.000            | 0.261            | 0.261            | Impervious             | 1S, 2S,<br>3S           |
| 0.000            | 0.508            | 0.000            | 0.000            | 0.000            | 0.508            | Woods, Good            | 2S, 3S                  |
| <b>0.000</b>     | <b>0.769</b>     | <b>0.000</b>     | <b>0.000</b>     | <b>0.261</b>     | <b>1.030</b>     | <b>TOTAL AREA</b>      |                         |



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**Pipe Listing (all nodes)**

| Line# | Node Number | In-Invert (feet) | Out-Invert (feet) | Length (feet) | Slope (ft/ft) | n     | Diam/Width (inches) | Height (inches) | Inside-Fill (inches) |
|-------|-------------|------------------|-------------------|---------------|---------------|-------|---------------------|-----------------|----------------------|
| 1     | 1P          | 43.86            | 43.54             | 25.0          | 0.0128        | 0.013 | 8.0                 | 0.0             | 0.0                  |
| 2     | 2-1P        | 43.79            | 43.88             | 28.0          | -0.0032       | 0.013 | 12.0                | 0.0             | 0.0                  |

**Ex drainage rev 7-5-21**

Type III 24-hr 50 yr 24 hr Rainfall=7.48"

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Time span=5.00-60.00 hrs, dt=0.05 hrs, 1101 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: Pro. pavement & lot area** Runoff Area=10,927 sf 76.95% Impervious Runoff Depth>6.16"  
Tc=5.0 min CN=89 Runoff=1.73 cfs 0.129 af

**Subcatchment 2S: YARD AREA** Runoff Area=10,031 sf 17.32% Impervious Runoff Depth=3.48"  
Tc=5.0 min CN=65 Runoff=0.94 cfs 0.067 af

**Subcatchment 3S: Wooded area** Runoff Area=23,910 sf 5.06% Impervious Runoff Depth=2.74"  
Tc=5.0 min CN=58 Runoff=1.72 cfs 0.125 af

**Reach 100R: design point** Inflow=4.36 cfs 0.321 af  
Outflow=4.36 cfs 0.321 af

**Pond 1P: Ex. CB** Peak Elev=46.75' Inflow=2.66 cfs 0.195 af  
8.0" Round Culvert n=0.013 L=25.0' S=0.0128 '/ Outflow=2.66 cfs 0.195 af

**Pond 2-1P: Ex CB** Peak Elev=44.50' Inflow=0.94 cfs 0.067 af  
12.0" Round Culvert n=0.013 L=28.0' S=-0.0032 '/ Outflow=0.94 cfs 0.067 af

**Total Runoff Area = 1.030 ac Runoff Volume = 0.321 af Average Runoff Depth = 3.74"**  
**74.69% Pervious = 0.769 ac 25.31% Impervious = 0.261 ac**



**Ex drainage rev 7-5-21**

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Type III 24-hr 50 yr 24 hr Rainfall=7.48"

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**Summary for Subcatchment 1S: Pro. pavement & lot area**

[49] Hint:  $T_c < 2dt$  may require smaller dt

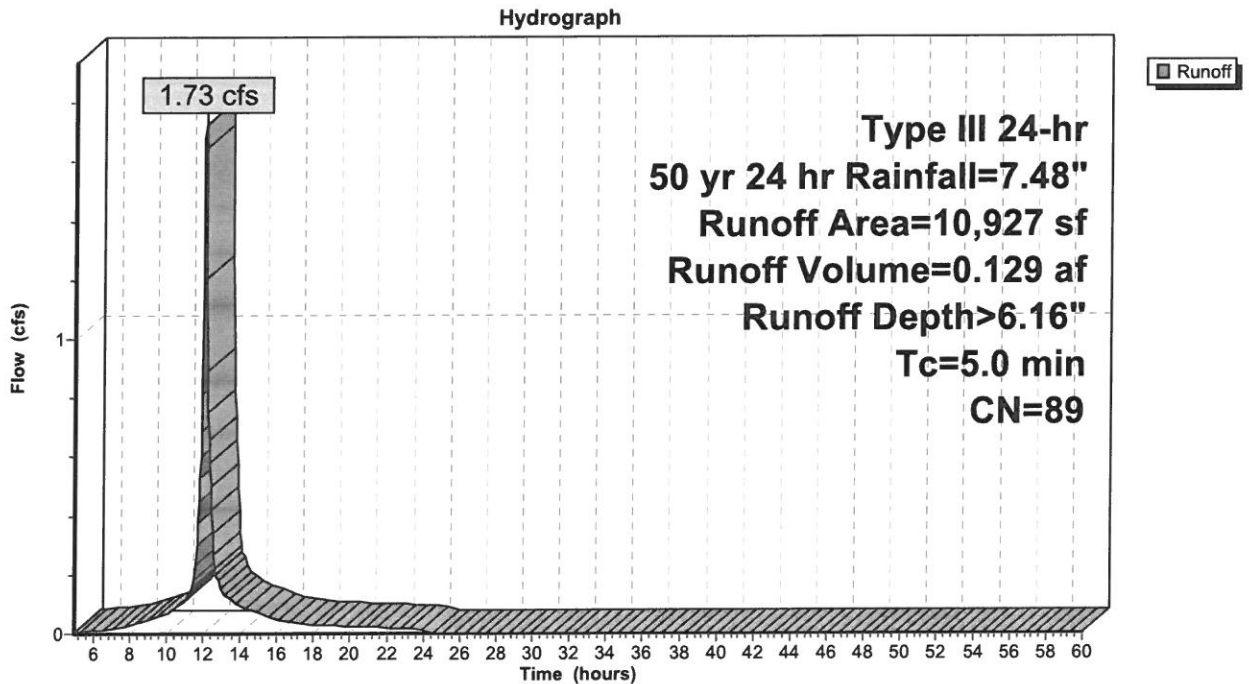
Runoff = 1.73 cfs @ 12.07 hrs, Volume= 0.129 af, Depth> 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 50 yr 24 hr Rainfall=7.48"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 8,408   | 98 | Impervious                    |
| 2,519     | 61 | >75% Grass cover, Good, HSG B |
| 10,927    | 89 | Weighted Average              |
| 2,519     |    | 23.05% Pervious Area          |
| 8,408     |    | 76.95% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description     |
|----------|---------------|---------------|-------------------|----------------|-----------------|
| 5.0      |               |               |                   |                | Direct Entry, 1 |

**Subcatchment 1S: Pro. pavement & lot area**



**Summary for Subcatchment 2S: YARD AREA**

[49] Hint:  $T_c < 2dt$  may require smaller dt

Runoff = 0.94 cfs @ 12.08 hrs, Volume= 0.067 af, Depth= 3.48"

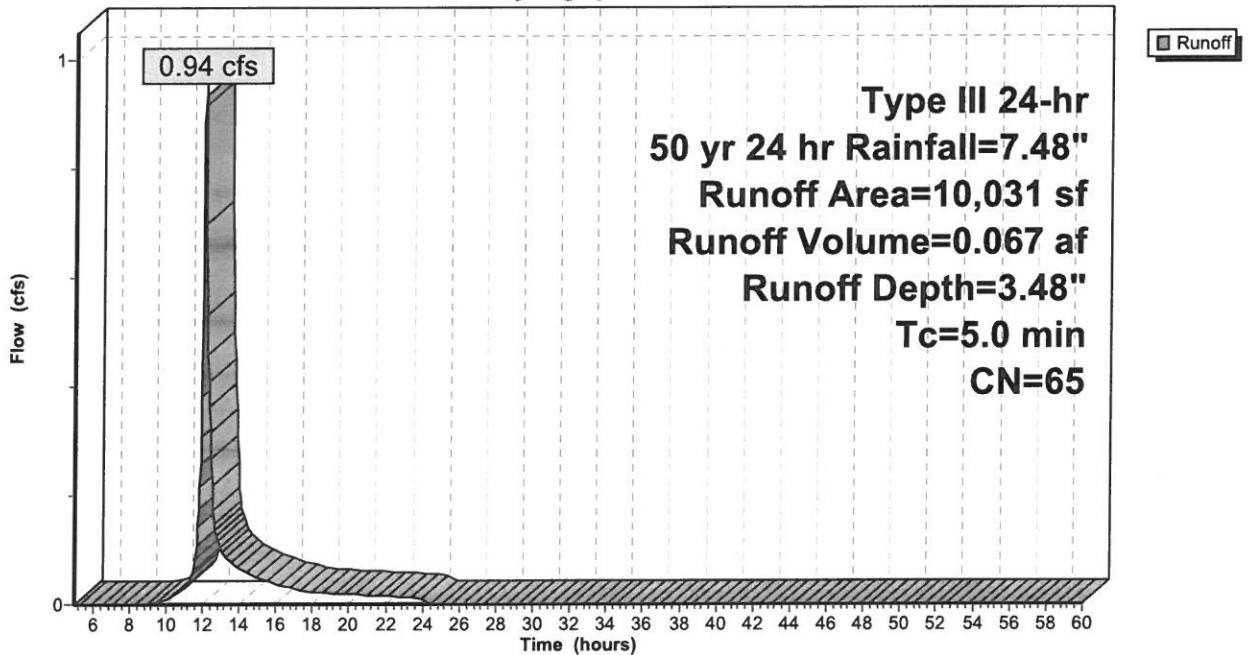
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 50 yr 24 hr Rainfall=7.48"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,143     | 55 | Woods, Good, HSG B            |
| * 1,737   | 98 | Impervious                    |
| 4,151     | 61 | >75% Grass cover, Good, HSG B |
| 10,031    | 65 | Weighted Average              |
| 8,294     |    | 82.68% Pervious Area          |
| 1,737     |    | 17.32% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 2S: YARD AREA**

Hydrograph





**Summary for Subcatchment 3S: Wooded area**

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.72 cfs @ 12.08 hrs, Volume= 0.125 af, Depth= 2.74"

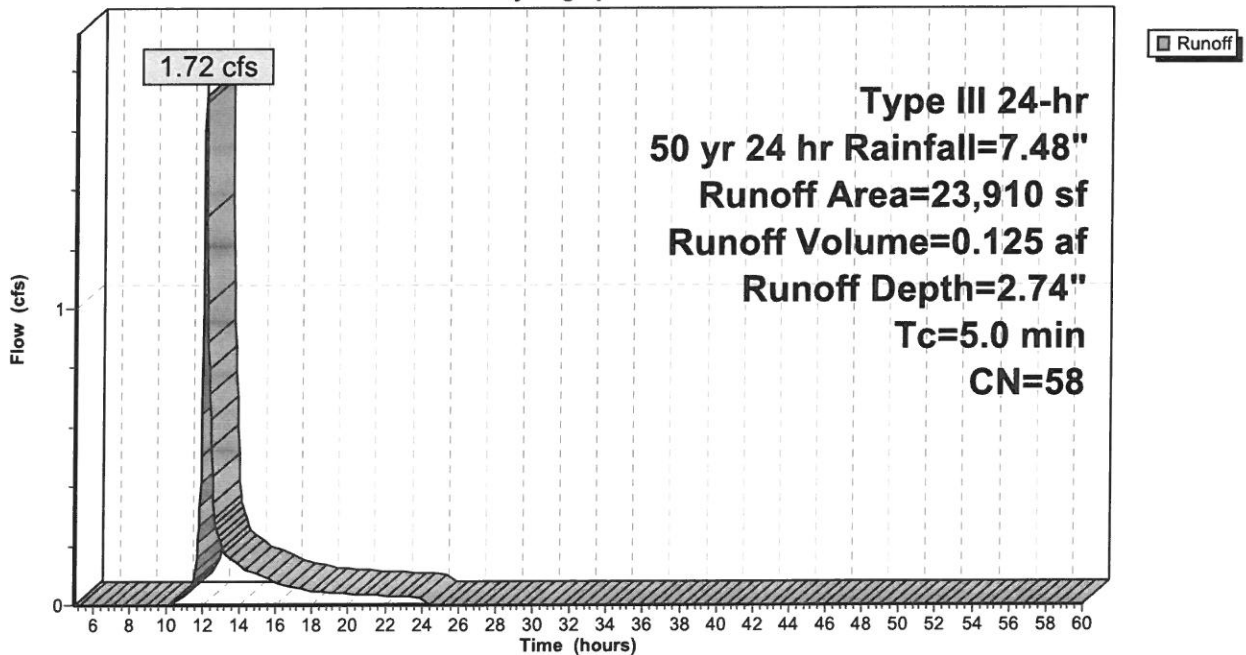
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 50 yr 24 hr Rainfall=7.48"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 17,990    | 55 | Woods, Good, HSG B            |
| * 1,210   | 98 | Impervious                    |
| 4,710     | 61 | >75% Grass cover, Good, HSG B |
| 23,910    | 58 | Weighted Average              |
| 22,700    |    | 94.94% Pervious Area          |
| 1,210     |    | 5.06% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 3S: Wooded area**

Hydrograph



### Summary for Reach 100R: design point

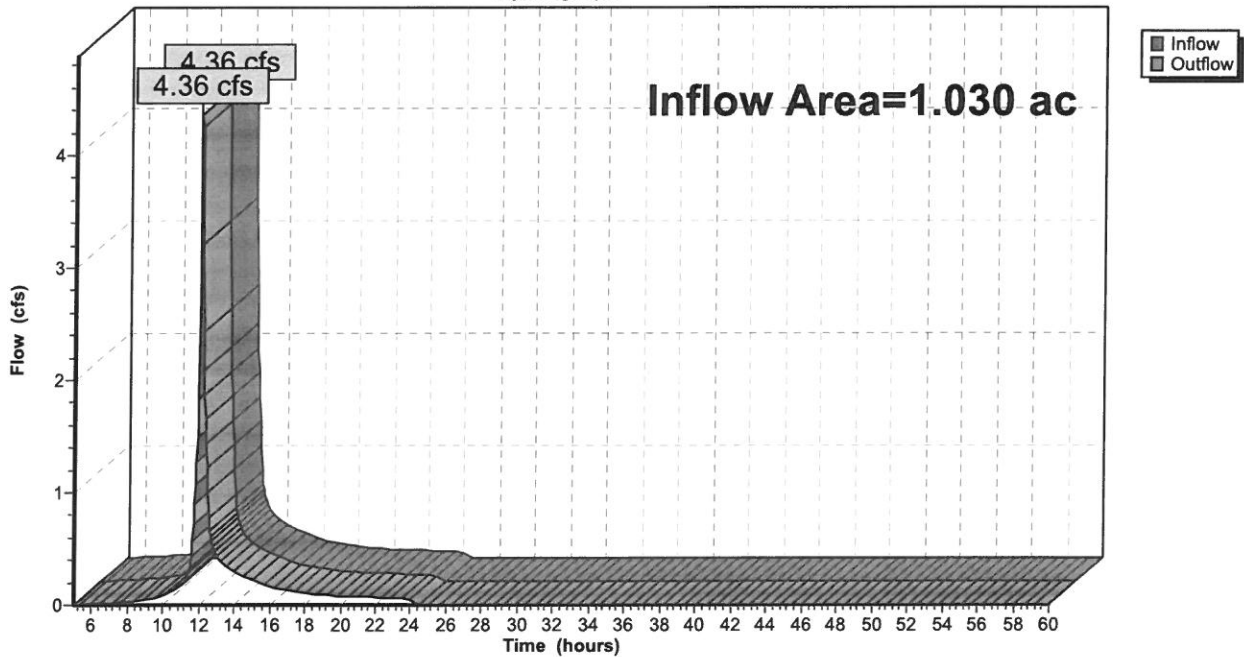
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.030 ac, 25.31% Impervious, Inflow Depth > 3.74" for 50 yr 24 hr event  
Inflow = 4.36 cfs @ 12.08 hrs, Volume= 0.321 af  
Outflow = 4.36 cfs @ 12.08 hrs, Volume= 0.321 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs

### Reach 100R: design point

Hydrograph





**Summary for Pond 1P: Ex. CB**

[82] Warning: Early inflow requires earlier time span  
 [81] Warning: Exceeded Pond 2-1P by 2.12' @ 12.05 hrs

Inflow Area = 0.481 ac, 48.41% Impervious, Inflow Depth > 4.88" for 50 yr 24 hr event  
 Inflow = 2.66 cfs @ 12.07 hrs, Volume= 0.195 af  
 Outflow = 2.66 cfs @ 12.07 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.66 cfs @ 12.07 hrs, Volume= 0.195 af

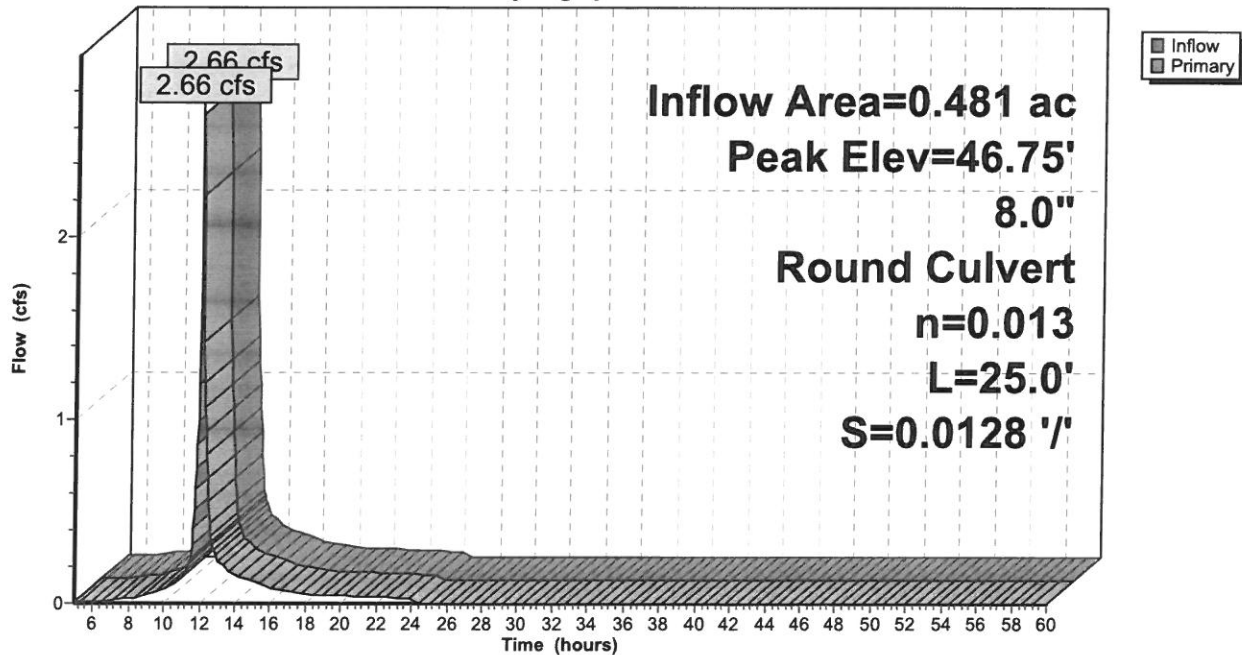
Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 46.75' @ 12.07 hrs  
 Flood Elev= 47.82'

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 43.86' | <b>8.0" Round Culvert</b> L= 25.0' Ke= 0.500<br>Inlet / Outlet Invert= 43.86' / 43.54' S= 0.0128 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.35 sf |

**Primary OutFlow** Max=2.57 cfs @ 12.07 hrs HW=46.60' (Free Discharge)  
 ←1=Culvert (Barrel Controls 2.57 cfs @ 7.35 fps)

**Pond 1P: Ex. CB**

Hydrograph



**Ex drainage rev 7-5-21**

Type III 24-hr 50 yr 24 hr Rainfall=7.48"

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**Summary for Pond 2-1P: Ex CB**

Inflow Area = 0.230 ac, 17.32% Impervious, Inflow Depth = 3.48" for 50 yr 24 hr event  
 Inflow = 0.94 cfs @ 12.08 hrs, Volume= 0.067 af  
 Outflow = 0.94 cfs @ 12.08 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.94 cfs @ 12.08 hrs, Volume= 0.067 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 44.50' @ 12.08 hrs

Flood Elev= 48.09'

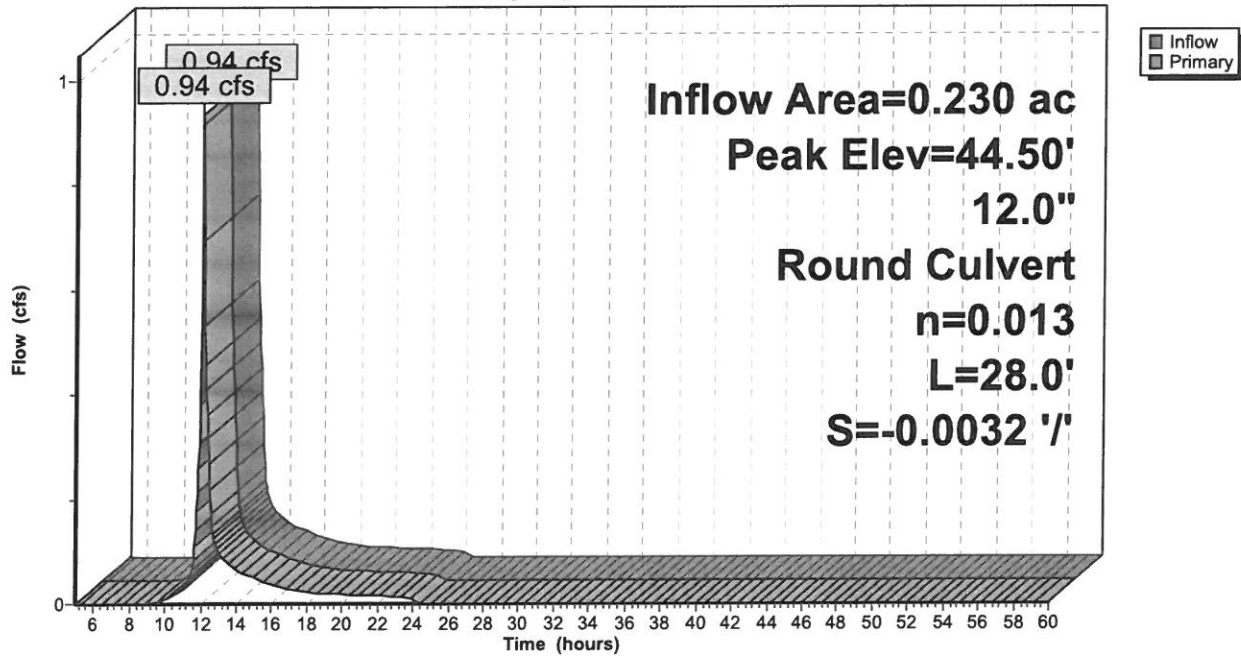
| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 43.88' | <b>12.0" Round Culvert</b> L= 28.0' Ke= 0.500<br>Inlet / Outlet Invert= 43.79' / 43.88' S= -0.0032 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.91 cfs @ 12.08 hrs HW=44.49' (Free Discharge)

←1=Culvert (Barrel Controls 0.91 cfs @ 2.18 fps)

**Pond 2-1P: Ex CB**

Hydrograph





**Ex drainage rev 7-5-21**

Type III 24-hr First flush Rainfall=1.00"

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Time span=5.00-60.00 hrs, dt=0.05 hrs, 1101 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: Pro. pavement & lot area** Runoff Area=10,927 sf 76.95% Impervious Runoff Depth=0.28"  
Tc=5.0 min CN=89 Runoff=0.08 cfs 0.006 af

**Subcatchment 2S: YARD AREA** Runoff Area=10,031 sf 17.32% Impervious Runoff Depth=0.00"  
Tc=5.0 min CN=65 Runoff=0.00 cfs 0.000 af

**Subcatchment 3S: Wooded area** Runoff Area=23,910 sf 5.06% Impervious Runoff Depth=0.00"  
Tc=5.0 min CN=58 Runoff=0.00 cfs 0.000 af

**Reach 100R: design point** Inflow=0.08 cfs 0.006 af  
Outflow=0.08 cfs 0.006 af

**Pond 1P: Ex. CB** Peak Elev=44.01' Inflow=0.08 cfs 0.006 af  
8.0" Round Culvert n=0.013 L=25.0' S=0.0128 '/ Outflow=0.08 cfs 0.006 af

**Pond 2-1P: Ex CB** Peak Elev=43.88' Inflow=0.00 cfs 0.000 af  
12.0" Round Culvert n=0.013 L=28.0' S=-0.0032 '/ Outflow=0.00 cfs 0.000 af

**Total Runoff Area = 1.030 ac Runoff Volume = 0.006 af Average Runoff Depth = 0.07"**  
**74.69% Pervious = 0.769 ac 25.31% Impervious = 0.261 ac**

**Summary for Subcatchment 1S: Pro. pavement & lot area**

[49] Hint:  $T_c < 2dt$  may require smaller dt

Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af, Depth= 0.28"

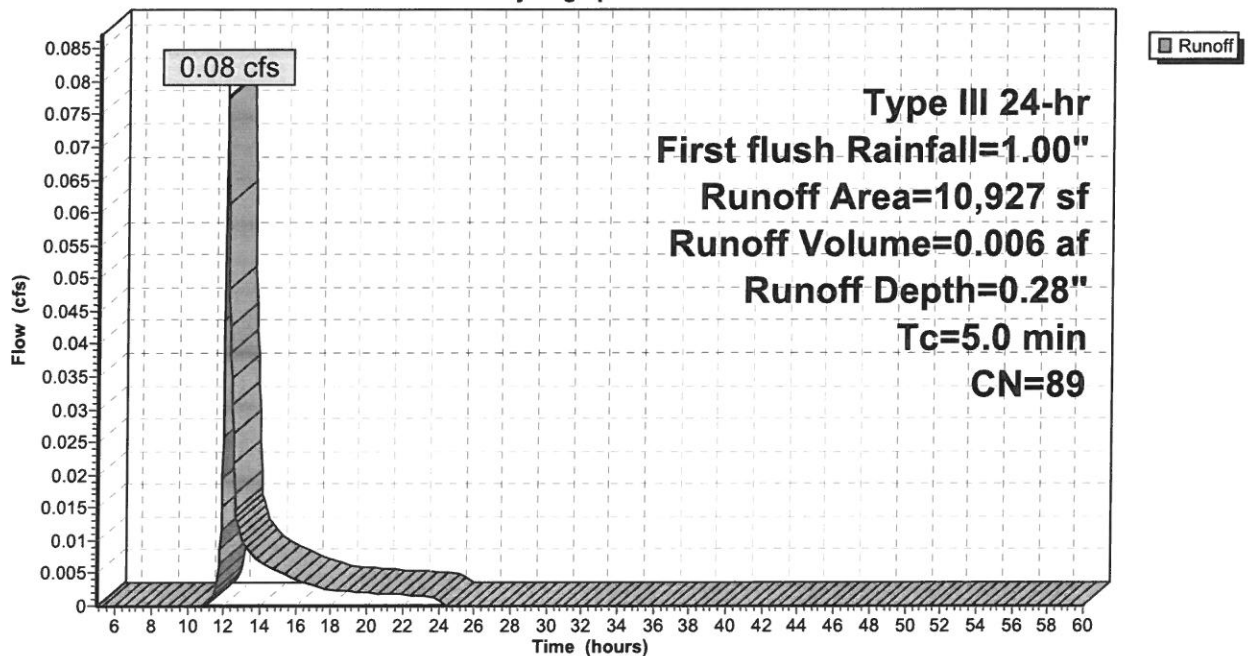
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr First flush Rainfall=1.00"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 8,408   | 98 | Impervious                    |
| 2,519     | 61 | >75% Grass cover, Good, HSG B |
| 10,927    | 89 | Weighted Average              |
| 2,519     |    | 23.05% Pervious Area          |
| 8,408     |    | 76.95% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description     |
|----------|---------------|---------------|-------------------|----------------|-----------------|
| 5.0      |               |               |                   |                | Direct Entry, 1 |

**Subcatchment 1S: Pro. pavement & lot area**

Hydrograph





**Summary for Subcatchment 2S: YARD AREA**

[49] Hint: Tc<2dt may require smaller dt

[45] Hint: Runoff=Zero

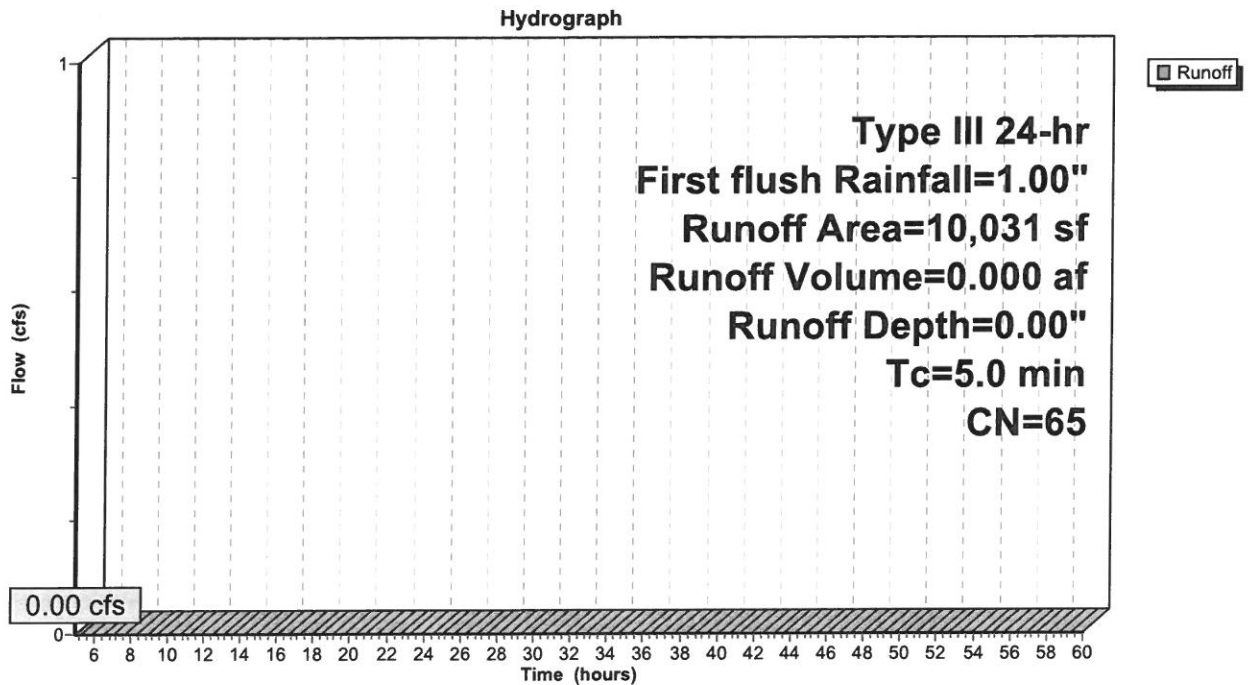
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr First flush Rainfall=1.00"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 4,143     | 55 | Woods, Good, HSG B            |
| * 1,737   | 98 | Impervious                    |
| 4,151     | 61 | >75% Grass cover, Good, HSG B |
| 10,031    | 65 | Weighted Average              |
| 8,294     |    | 82.68% Pervious Area          |
| 1,737     |    | 17.32% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 2S: YARD AREA**



**Summary for Subcatchment 3S: Wooded area**

[49] Hint: Tc<2dt may require smaller dt

[45] Hint: Runoff=Zero

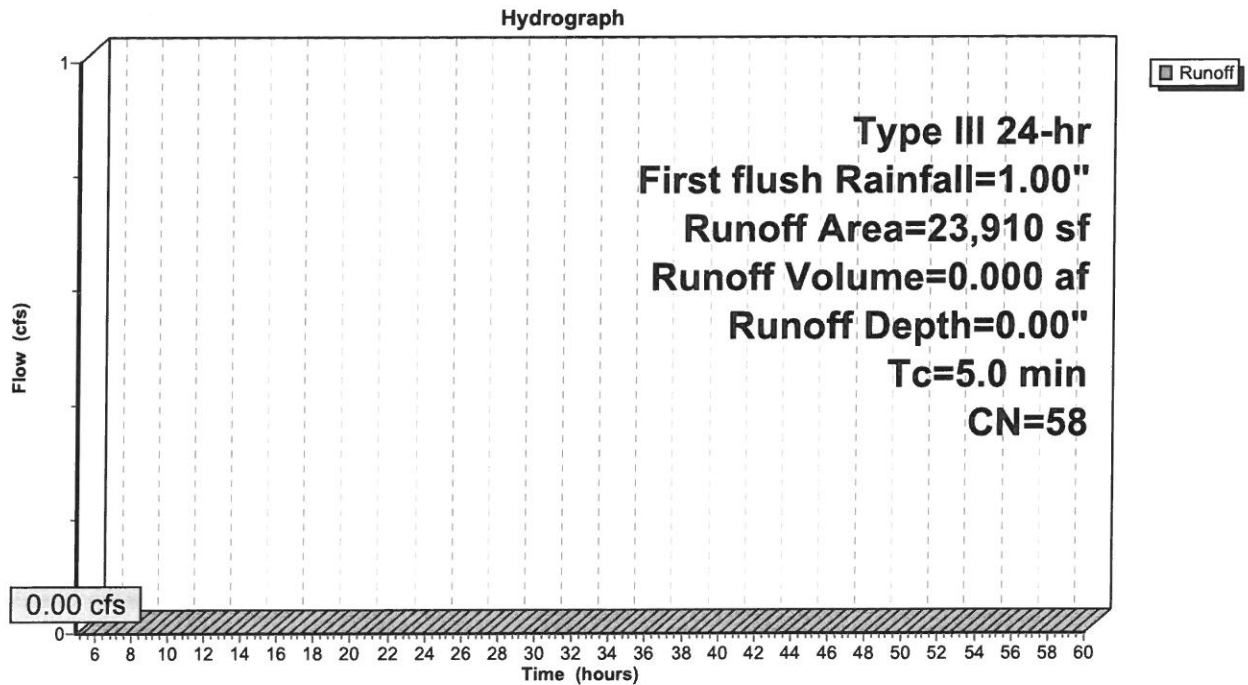
Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr First flush Rainfall=1.00"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 17,990    | 55 | Woods, Good, HSG B            |
| * 1,210   | 98 | Impervious                    |
| 4,710     | 61 | >75% Grass cover, Good, HSG B |
| 23,910    | 58 | Weighted Average              |
| 22,700    |    | 94.94% Pervious Area          |
| 1,210     |    | 5.06% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 3S: Wooded area**





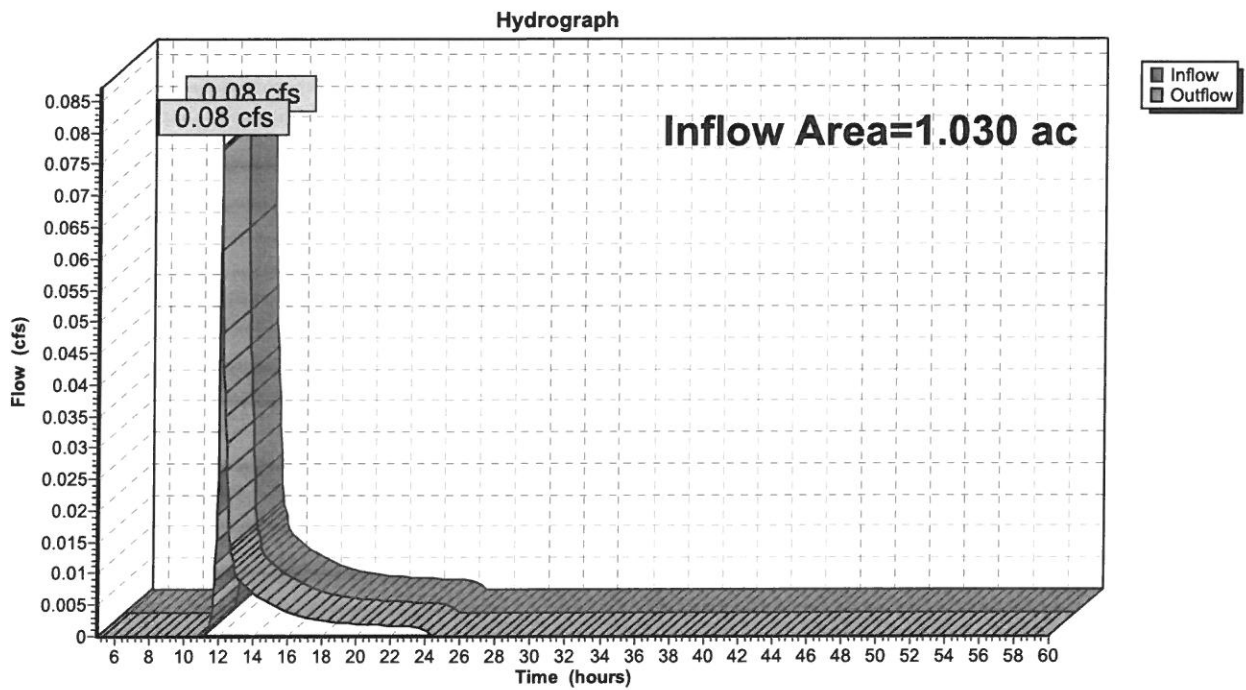
### Summary for Reach 100R: design point

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.030 ac, 25.31% Impervious, Inflow Depth = 0.07" for First flush event  
Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af  
Outflow = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs

### Reach 100R: design point



**Summary for Pond 1P: Ex. CB**

[81] Warning: Exceeded Pond 2-1P by 0.13' @ 12.10 hrs

Inflow Area = 0.481 ac, 48.41% Impervious, Inflow Depth = 0.15" for First flush event  
 Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af  
 Outflow = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af

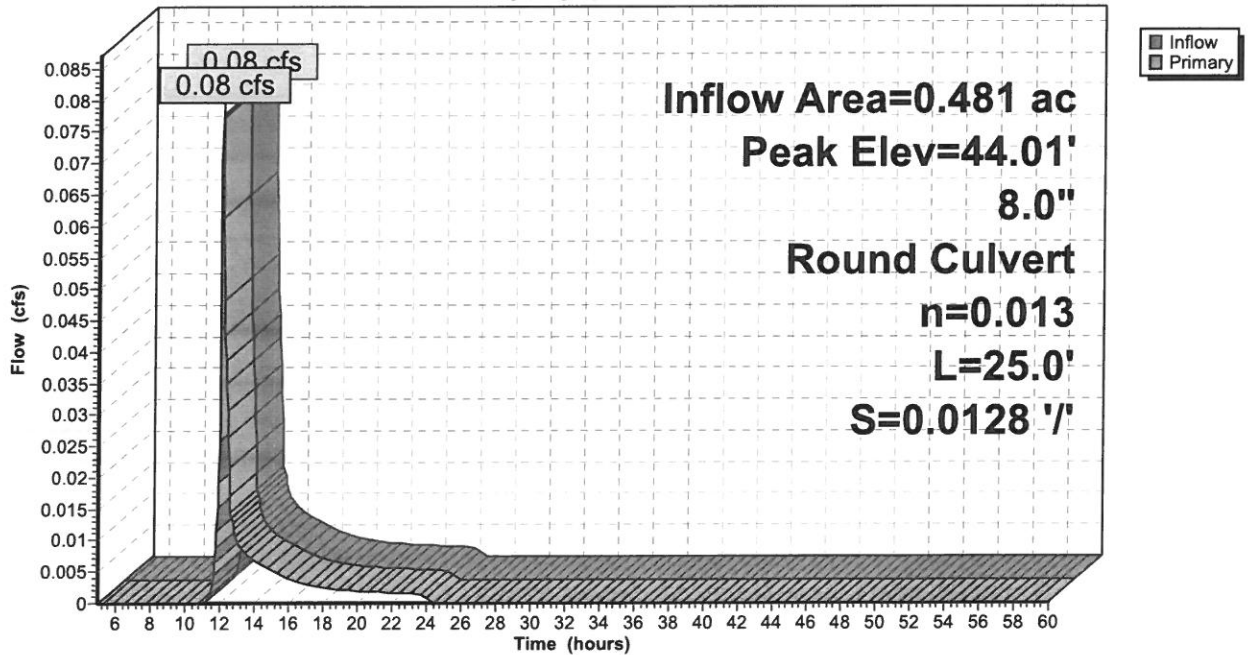
Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 44.01' @ 12.09 hrs  
 Flood Elev= 47.82'

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 43.86' | <b>8.0" Round Culvert</b> L= 25.0' Ke= 0.500<br>Inlet / Outlet Invert= 43.86' / 43.54' S= 0.0128 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.35 sf |

**Primary OutFlow** Max=0.08 cfs @ 12.09 hrs HW=44.01' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 0.08 cfs @ 1.97 fps)

**Pond 1P: Ex. CB**

Hydrograph





**Ex drainage rev 7-5-21**

Type III 24-hr First flush Rainfall=1.00"

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**Summary for Pond 2-1P: Ex CB**

Inflow Area = 0.230 ac, 17.32% Impervious, Inflow Depth = 0.00" for First flush event  
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

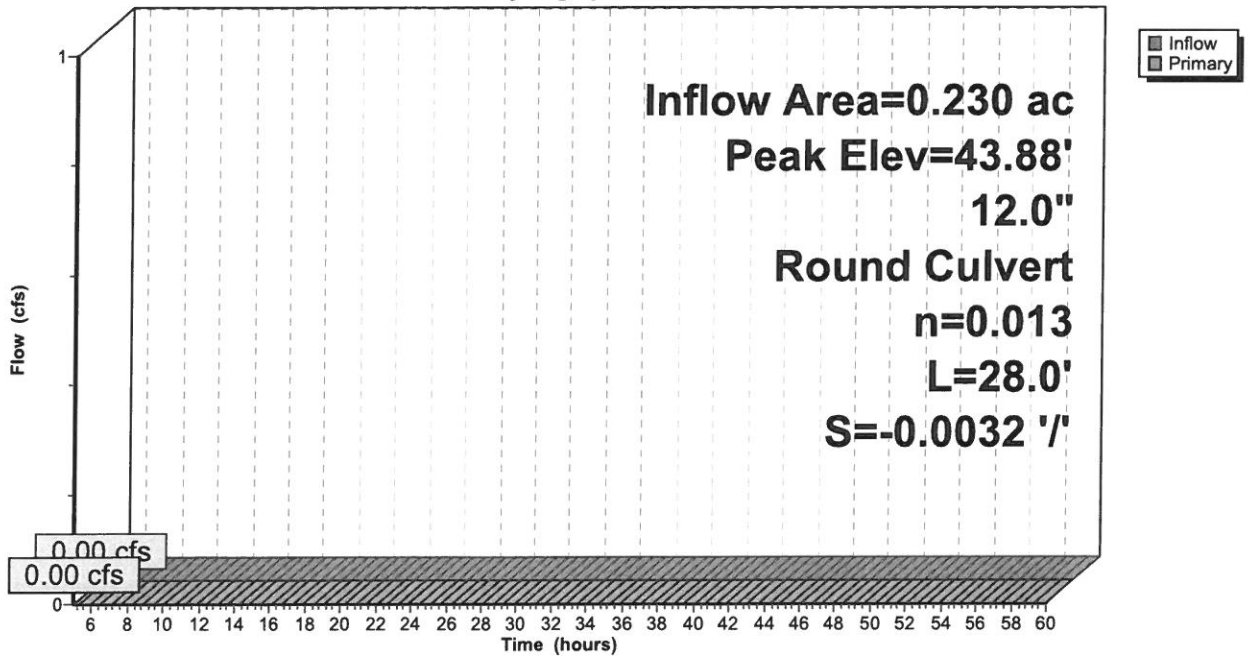
Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 43.88' @ 5.00 hrs  
 Flood Elev= 48.09'

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 43.88' | <b>12.0" Round Culvert</b> L= 28.0' Ke= 0.500<br>Inlet / Outlet Invert= 43.79' / 43.88' S= -0.0032 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=43.88' (Free Discharge)  
 ←1=Culvert ( Controls 0.00 cfs)

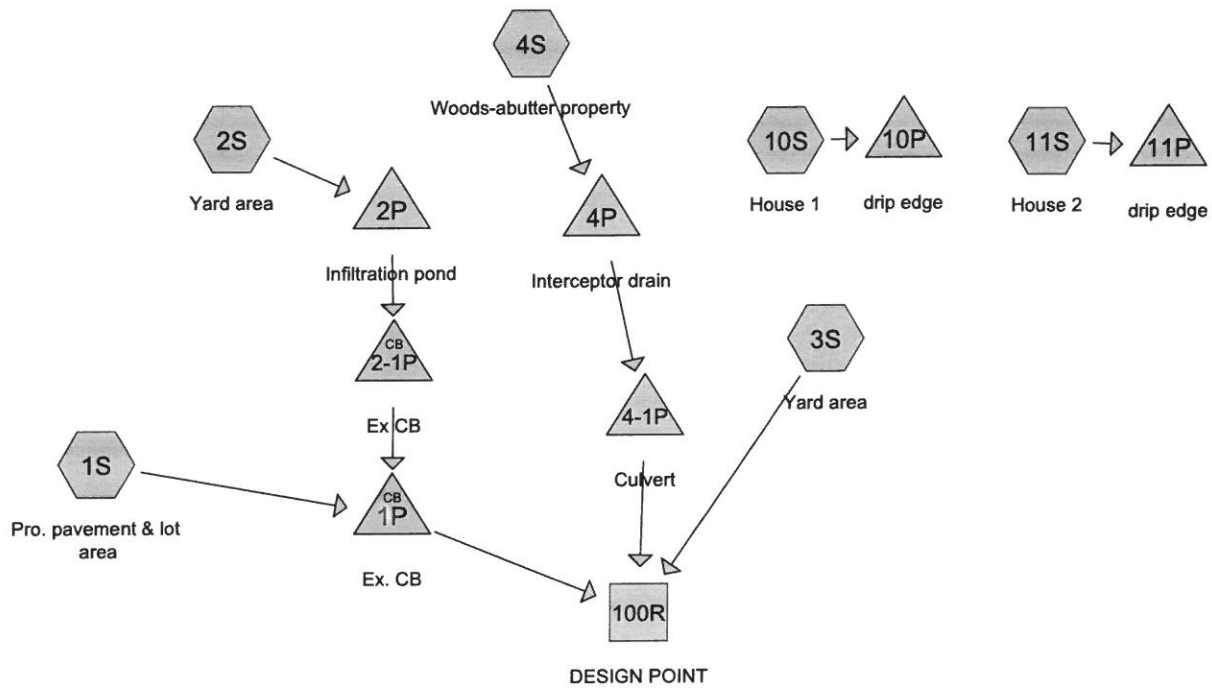
**Pond 2-1P: Ex CB**

Hydrograph



**Pro-Conditions Drainage Analysis**  
**Full summary**  
**50 YR – 24 HR rainfall = 7.48”**





**Routing Diagram for Pro drainage rev 7-5-21**  
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**Pro drainage rev 7-5-21**

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Page 2

**Area Listing (all nodes)**

| Area<br>(acres) | CN        | Description<br>(subcatchment-numbers)          |
|-----------------|-----------|--|
| 0.612           | 61        | >75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S) |
| 0.372           | 98        | Impervious (1S, 3S, 4S, 10S, 11S)              |
| 0.045           | 55        | Woods, Good, HSG B (3S)                        |
| <b>1.030</b>    | <b>74</b> | <b>TOTAL AREA</b>                              |



**Pro drainage rev 7-5-21**

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**Soil Listing (all nodes)**

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>Numbers |
|-----------------|---------------|-------------------------|
| 0.000           | HSG A         |                         |
| 0.658           | HSG B         | 1S, 2S, 3S, 4S          |
| 0.000           | HSG C         |                         |
| 0.000           | HSG D         |                         |
| 0.372           | Other         | 1S, 3S, 4S, 10S, 11S    |
| <b>1.030</b>    |               | <b>TOTAL AREA</b>       |

**Pro drainage rev 7-5-21**

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**Ground Covers (all nodes)**

| HSG-A<br>(acres) | HSG-B<br>(acres) | HSG-C<br>(acres) | HSG-D<br>(acres) | Other<br>(acres) | Total<br>(acres) | Ground<br>Cover        | Subcatchment<br>Numbers    |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------------|----------------------------|
| 0.000            | 0.612            | 0.000            | 0.000            | 0.000            | 0.612            | >75% Grass cover, Good | 1S, 2S,<br>3S, 4S          |
| 0.000            | 0.000            | 0.000            | 0.000            | 0.372            | 0.372            | Impervious             | 1S, 3S,<br>4S, 10S,<br>11S |
| 0.000            | 0.045            | 0.000            | 0.000            | 0.000            | 0.045            | Woods, Good            | 3S                         |
| <b>0.000</b>     | <b>0.658</b>     | <b>0.000</b>     | <b>0.000</b>     | <b>0.372</b>     | <b>1.030</b>     | <b>TOTAL AREA</b>      |                            |



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**Pipe Listing (all nodes)**

| Line# | Node Number | In-Invert (feet) | Out-Invert (feet) | Length (feet) | Slope (ft/ft) | n     | Diam/Width (inches) | Height (inches) | Inside-Fill (inches) |
|-------|-------------|------------------|-------------------|---------------|---------------|-------|---------------------|-----------------|----------------------|
| 1     | 1P          | 43.86            | 43.54             | 25.0          | 0.0128        | 0.013 | 8.0                 | 0.0             | 0.0                  |
| 2     | 2-1P        | 43.79            | 43.88             | 28.0          | -0.0032       | 0.013 | 12.0                | 0.0             | 0.0                  |
| 3     | 2P          | 45.34            | 44.00             | 28.0          | 0.0479        | 0.012 | 4.0                 | 0.0             | 0.0                  |
| 4     | 4-1P        | 53.30            | 52.80             | 19.0          | 0.0263        | 0.012 | 12.0                | 0.0             | 0.0                  |
| 5     | 4P          | 54.84            | 54.00             | 7.0           | 0.1200        | 0.012 | 12.0                | 0.0             | 0.0                  |

Time span=5.00-60.00 hrs, dt=0.05 hrs, 1101 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: Pro. pavement & lot area** Runoff Area=14,639 sf 76.60% Impervious Runoff Depth>3.69"  
Tc=5.0 min CN=89 Runoff=1.42 cfs 0.103 af

**Subcatchment 2S: Yard area** Runoff Area=2,923 sf 0.00% Impervious Runoff Depth=1.32"  
Tc=5.0 min CN=61 Runoff=0.10 cfs 0.007 af

**Subcatchment 3S: Yard area** Runoff Area=5,765 sf 0.95% Impervious Runoff Depth=1.19"  
Tc=5.0 min CN=59 Runoff=0.16 cfs 0.013 af

**Subcatchment 4S: Woods-abutter property** Runoff Area=18,317 sf 9.43% Impervious Runoff Depth=1.53"  
Tc=5.0 min CN=64 Runoff=0.71 cfs 0.054 af

**Subcatchment 10S: House 1** Runoff Area=1,680 sf 100.00% Impervious Runoff Depth>4.56"  
Tc=5.0 min CN=98 Runoff=0.19 cfs 0.015 af

**Subcatchment 11S: House 2** Runoff Area=1,524 sf 100.00% Impervious Runoff Depth>4.56"  
Tc=5.0 min CN=98 Runoff=0.17 cfs 0.013 af

**Reach 100R: DESIGN POINT** Inflow=2.20 cfs 0.151 af  
Outflow=2.20 cfs 0.151 af

**Pond 1P: Ex. CB** Peak Elev=44.94' Inflow=1.43 cfs 0.111 af  
8.0" Round Culvert n=0.013 L=25.0' S=0.0128 '/' Outflow=1.43 cfs 0.111 af

**Pond 2-1P: Ex CB** Peak Elev=43.94' Inflow=0.02 cfs 0.007 af  
12.0" Round Culvert n=0.013 L=28.0' S=-0.0032 '/' Outflow=0.02 cfs 0.007 af

**Pond 2P: Infiltration pond** Peak Elev=45.42' Storage=113 cf Inflow=0.10 cfs 0.007 af  
4.0" Round Culvert n=0.012 L=28.0' S=0.0479 '/' Outflow=0.02 cfs 0.007 af

**Pond 4-1P: Culvert** Peak Elev=53.71' Storage=8 cf Inflow=0.66 cfs 0.027 af  
12.0" Round Culvert n=0.012 L=19.0' S=0.0263 '/' Outflow=0.66 cfs 0.027 af

**Pond 4P: Interceptor drain** Peak Elev=55.25' Storage=191 cf Inflow=0.71 cfs 0.054 af  
Discarded=0.03 cfs 0.027 af Primary=0.66 cfs 0.027 af Outflow=0.69 cfs 0.054 af

**Pond 10P: drip edge** Peak Elev=55.45' Storage=208 cf Inflow=0.19 cfs 0.015 af  
Outflow=0.02 cfs 0.015 af

**Pond 11P: drip edge** Peak Elev=58.37' Storage=114 cf Inflow=0.17 cfs 0.013 af  
Outflow=0.04 cfs 0.013 af

**Total Runoff Area = 1.030 ac Runoff Volume = 0.206 af Average Runoff Depth = 2.40"**  
**63.88% Pervious = 0.658 ac 36.12% Impervious = 0.372 ac**



**Summary for Subcatchment 1S: Pro. pavement & lot area**

[49] Hint:  $T_c < 2dt$  may require smaller dt

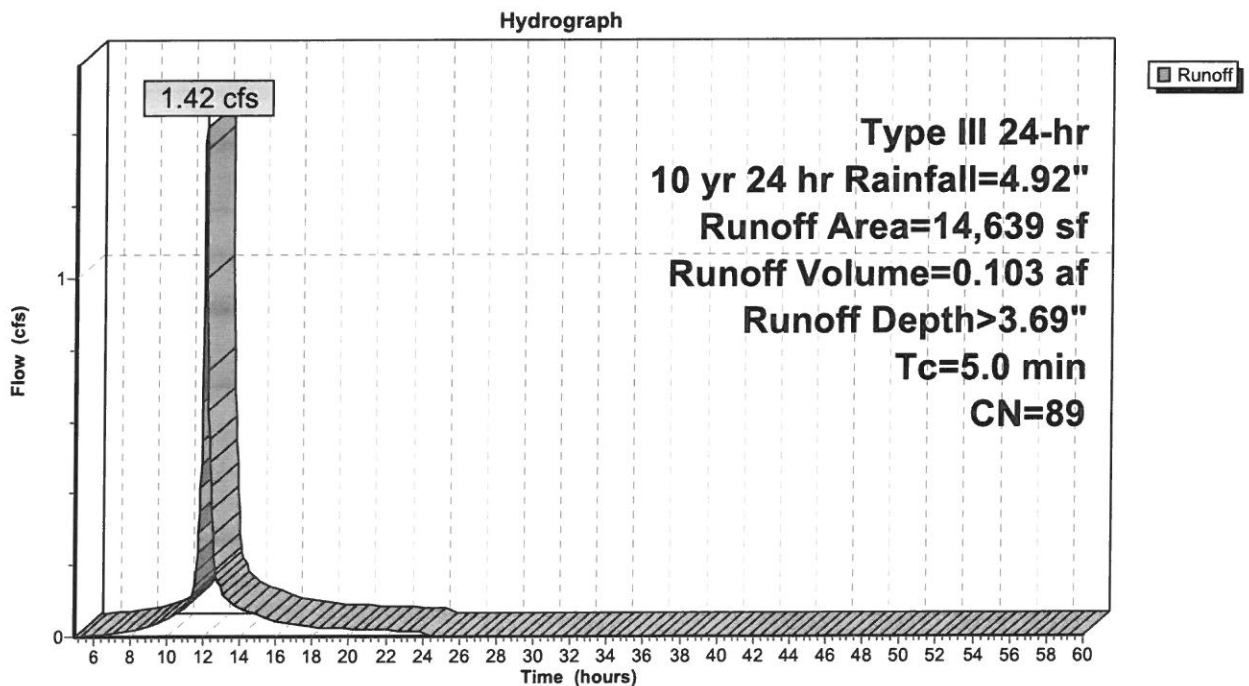
Runoff = 1.42 cfs @ 12.07 hrs, Volume= 0.103 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 yr 24 hr Rainfall=4.92"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| * 11,213  | 98 | Impervious                    |
| 3,426     | 61 | >75% Grass cover, Good, HSG B |
| 14,639    | 89 | Weighted Average              |
| 3,426     |    | 23.40% Pervious Area          |
| 11,213    |    | 76.60% Impervious Area        |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description     |
|----------|---------------|---------------|-------------------|----------------|-----------------|
| 5.0      |               |               |                   |                | Direct Entry, 1 |

**Subcatchment 1S: Pro. pavement & lot area**



**Summary for Subcatchment 2S: Yard area**

[49] Hint:  $T_c < 2dt$  may require smaller dt

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Depth= 1.32"

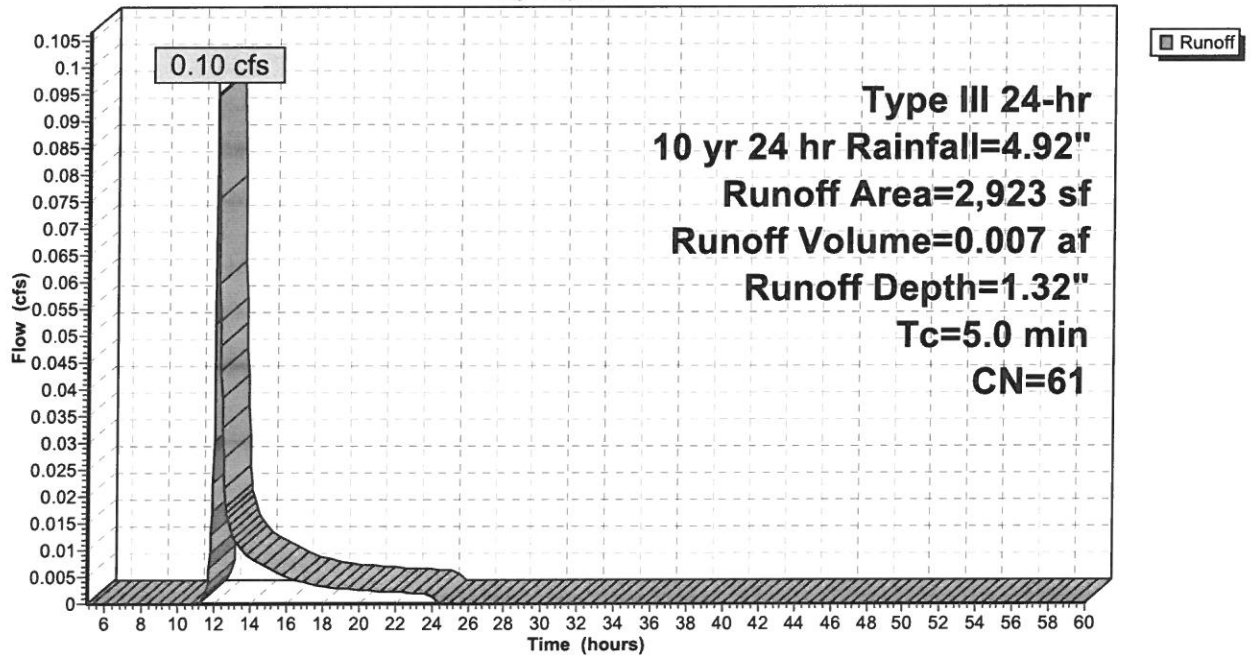
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 yr 24 hr Rainfall=4.92"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 2,923     | 61 | >75% Grass cover, Good, HSG B |
| 2,923     |    | 100.00% Pervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description     |
|----------|---------------|---------------|-------------------|----------------|-----------------|
| 5.0      |               |               |                   |                | Direct Entry, 1 |

**Subcatchment 2S: Yard area**

Hydrograph





### Summary for Subcatchment 3S: Yard area

[49] Hint:  $T_c < 2dt$  may require smaller  $dt$

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.013 af, Depth= 1.19"

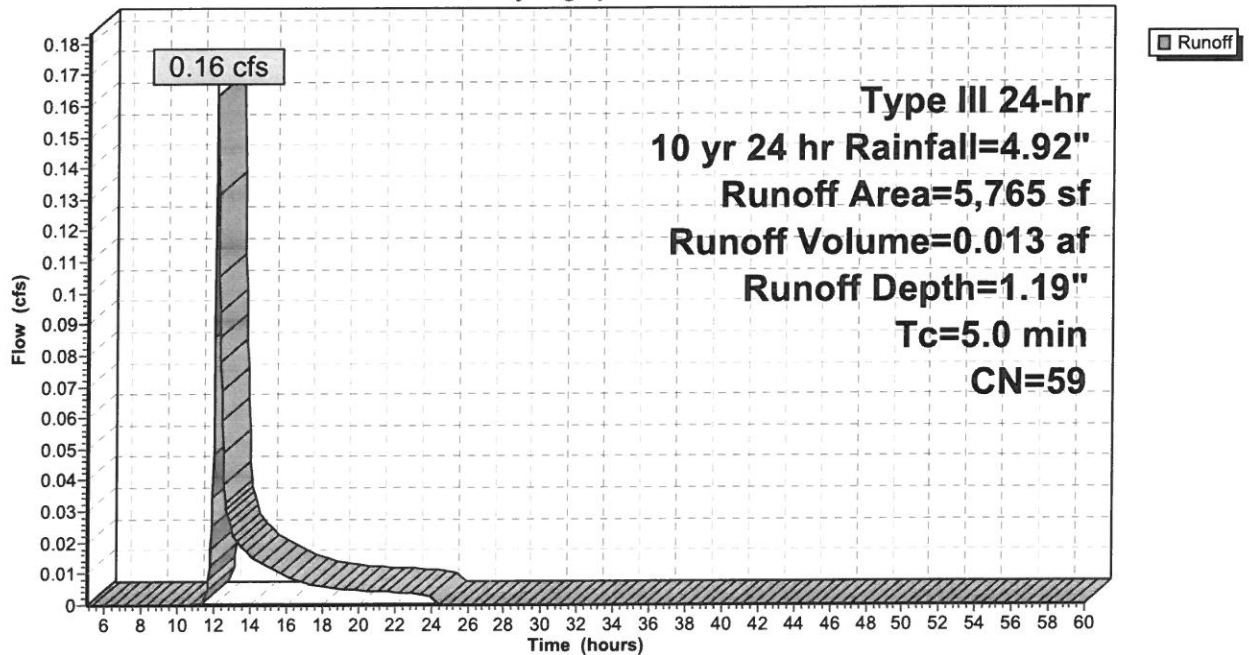
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs,  $dt= 0.05$  hrs  
 Type III 24-hr 10 yr 24 hr Rainfall=4.92"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 1,970     | 55 | Woods, Good, HSG B            |
| 3,740     | 61 | >75% Grass cover, Good, HSG B |
| * 55      | 98 | Impervious                    |
| 5,765     | 59 | Weighted Average              |
| 5,710     |    | 99.05% Pervious Area          |
| 55        |    | 0.95% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description     |
|----------|---------------|---------------|-------------------|----------------|-----------------|
| 5.0      |               |               |                   |                | Direct Entry, 1 |

### Subcatchment 3S: Yard area

Hydrograph



**Summary for Subcatchment 4S: Woods-abutter property**

[49] Hint:  $T_c < 2dt$  may require smaller dt

Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.054 af, Depth= 1.53"

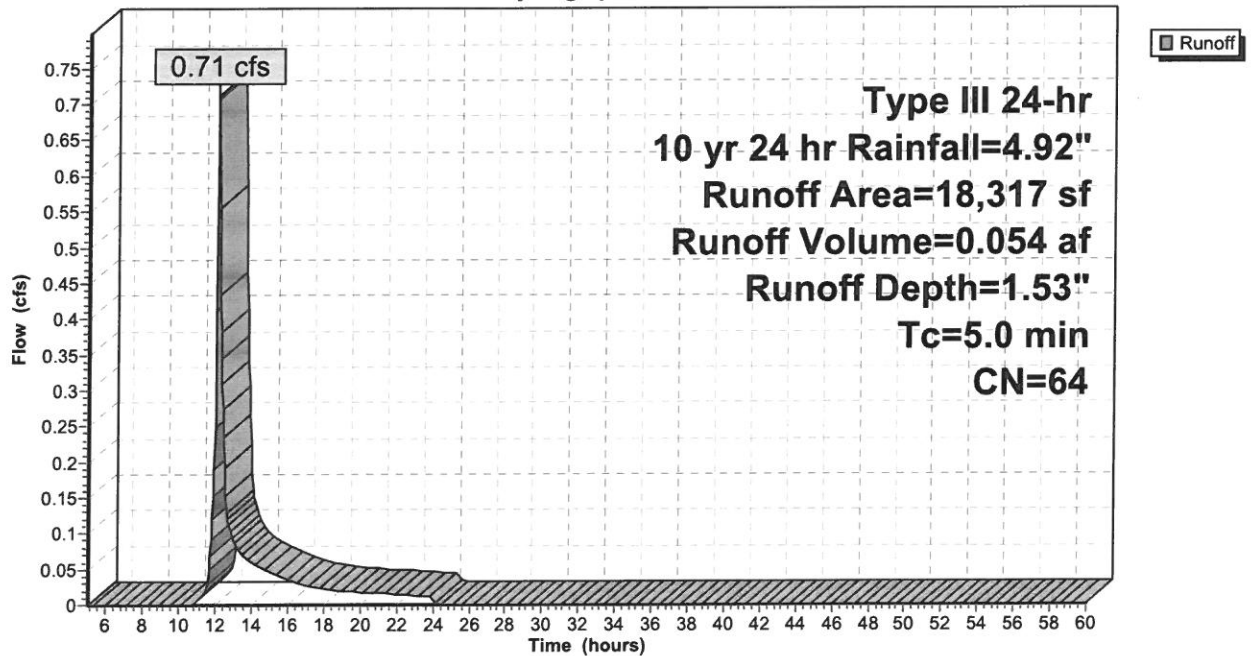
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 yr 24 hr Rainfall=4.92"

| Area (sf) | CN | Description                   |
|-----------|----|-------------------------------|
| 16,590    | 61 | >75% Grass cover, Good, HSG B |
| * 1,727   | 98 | Impervious                    |
| 18,317    | 64 | Weighted Average              |
| 16,590    |    | 90.57% Pervious Area          |
| 1,727     |    | 9.43% Impervious Area         |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---------------|
| 5.0      |               |               |                   |                | Direct Entry, |

**Subcatchment 4S: Woods-abutter property**

Hydrograph





**Summary for Subcatchment 10S: House 1**

[49] Hint:  $T_c < 2dt$  may require smaller dt

Runoff = 0.19 cfs @ 12.07 hrs, Volume= 0.015 af, Depth > 4.56"

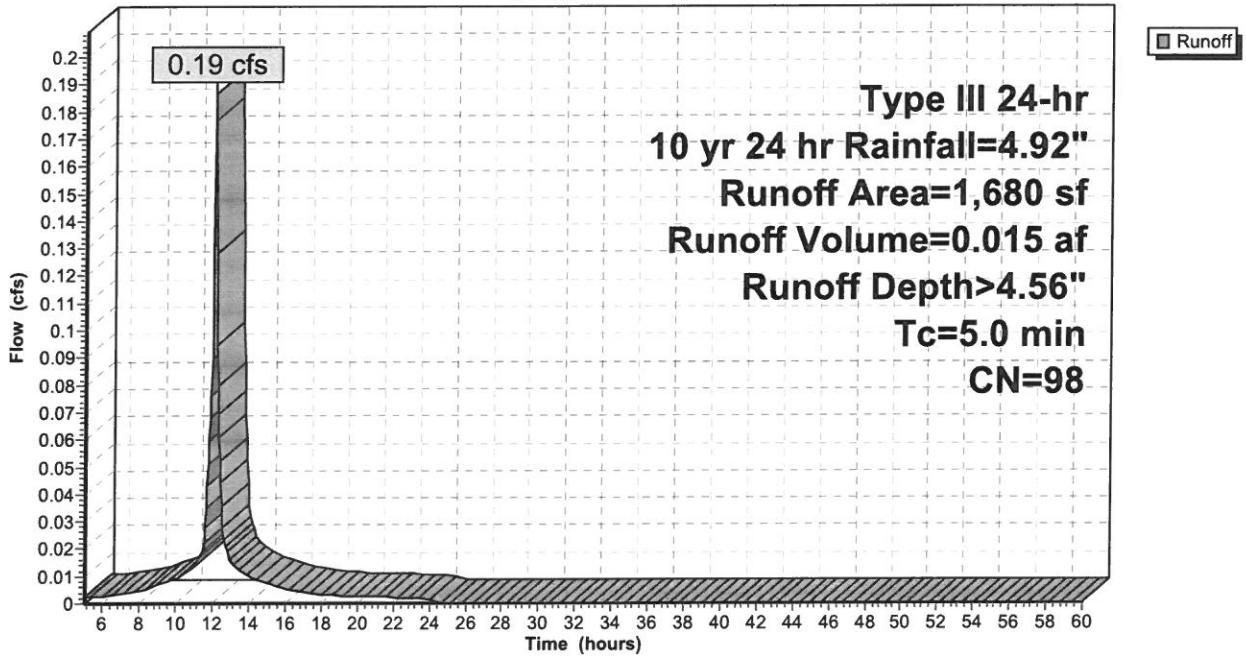
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 yr 24 hr Rainfall=4.92"

| Area (sf) | CN | Description             |
|-----------|----|-------------------------|
| * 1,680   | 98 | Impervious              |
| 1,680     |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description     |
|----------|---------------|---------------|-------------------|----------------|-----------------|
| 5.0      |               |               |                   |                | Direct Entry, 1 |

**Subcatchment 10S: House 1**

Hydrograph



**Summary for Subcatchment 11S: House 2**

[49] Hint:  $T_c < 2dt$  may require smaller dt

Runoff = 0.17 cfs @ 12.07 hrs, Volume= 0.013 af, Depth > 4.56"

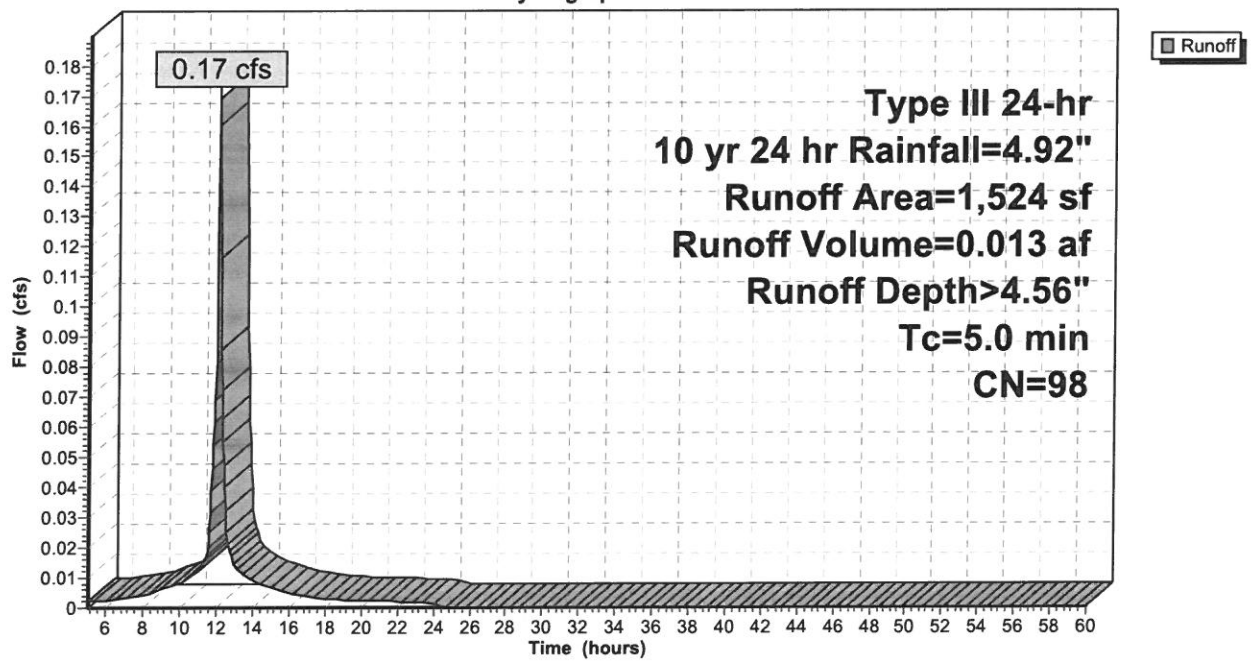
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 yr 24 hr Rainfall=4.92"

|   | Area (sf) | CN | Description             |
|---|-----------|----|-------------------------|
| * | 1,524     | 98 | Impervious              |
|   | 1,524     |    | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description     |
|----------|---------------|---------------|-------------------|----------------|-----------------|
| 5.0      |               |               |                   |                | Direct Entry, 1 |

**Subcatchment 11S: House 2**

Hydrograph





### Summary for Reach 100R: DESIGN POINT

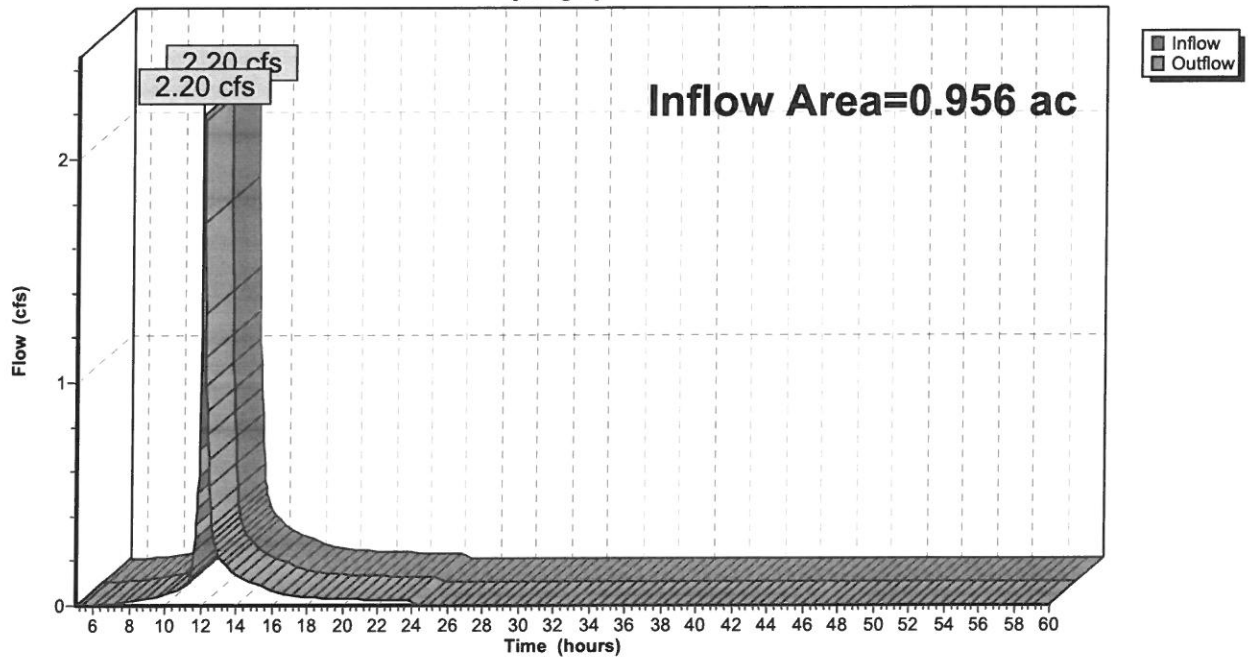
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.956 ac, 31.20% Impervious, Inflow Depth > 1.90" for 10 yr 24 hr event  
Inflow = 2.20 cfs @ 12.09 hrs, Volume= 0.151 af  
Outflow = 2.20 cfs @ 12.09 hrs, Volume= 0.151 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs

### Reach 100R: DESIGN POINT

Hydrograph



**Summary for Pond 1P: Ex. CB**

[81] Warning: Exceeded Pond 2-1P by 1.01' @ 12.05 hrs

Inflow Area = 0.403 ac, 63.85% Impervious, Inflow Depth > 3.30" for 10 yr 24 hr event  
 Inflow = 1.43 cfs @ 12.07 hrs, Volume= 0.111 af  
 Outflow = 1.43 cfs @ 12.07 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.43 cfs @ 12.07 hrs, Volume= 0.111 af

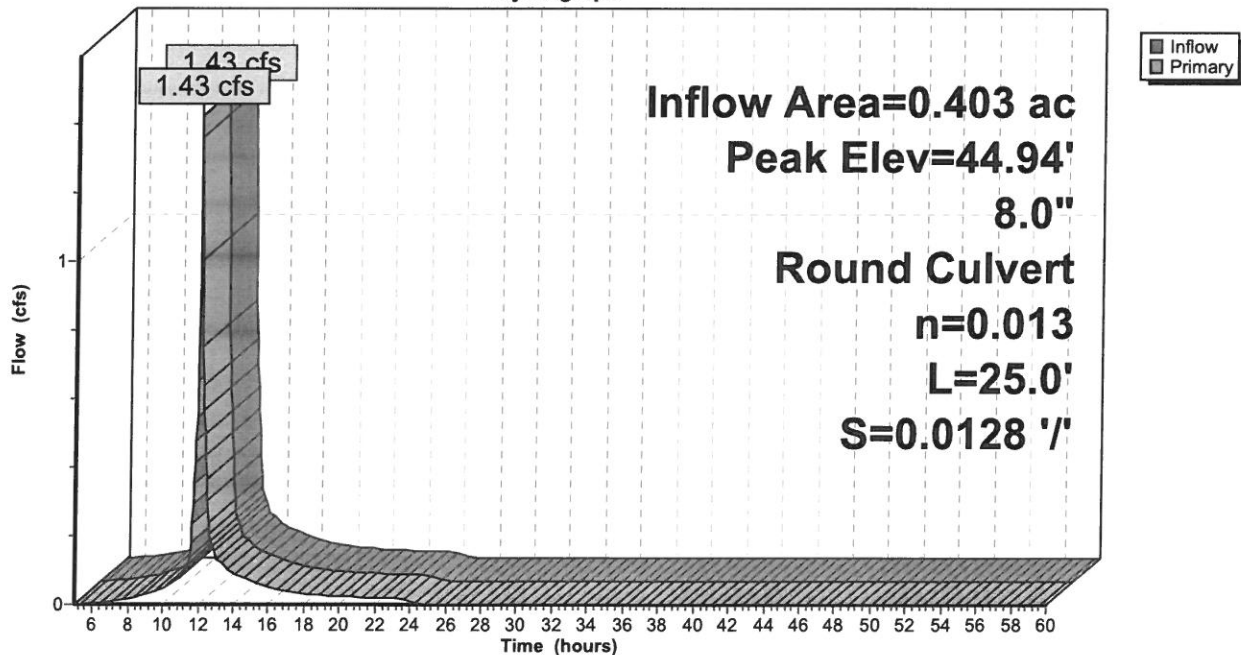
Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 44.94' @ 12.07 hrs  
 Flood Elev= 47.82'

| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 43.86' | <b>8.0" Round Culvert</b> L= 25.0' Ke= 0.500<br>Inlet / Outlet Invert= 43.86' / 43.54' S= 0.0128 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.35 sf |

**Primary OutFlow** Max=1.37 cfs @ 12.07 hrs HW=44.89' (Free Discharge)  
 1=Culvert (Barrel Controls 1.37 cfs @ 3.93 fps)

**Pond 1P: Ex. CB**

Hydrograph





**Summary for Pond 2-1P: Ex CB**

Inflow Area = 0.067 ac, 0.00% Impervious, Inflow Depth > 1.32" for 10 yr 24 hr event  
 Inflow = 0.02 cfs @ 12.67 hrs, Volume= 0.007 af  
 Outflow = 0.02 cfs @ 12.67 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.02 cfs @ 12.67 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 43.94' @ 12.67 hrs

Flood Elev= 48.09'

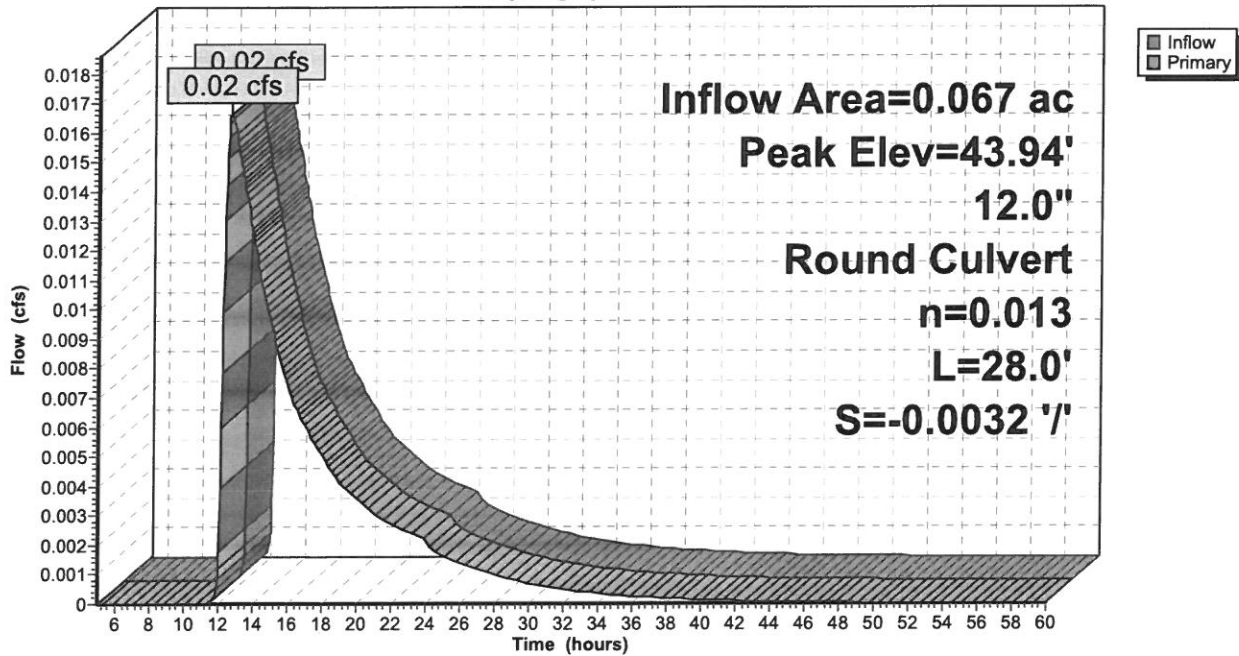
| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 43.88' | <b>12.0" Round Culvert</b> L= 28.0' Ke= 0.500<br>Inlet / Outlet Invert= 43.79' / 43.88' S= -0.0032 ' / Cc= 0.900<br>n= 0.013, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.01 cfs @ 12.67 hrs HW=43.94' (Free Discharge)

←1=Culvert (Inlet Controls 0.01 cfs @ 0.82 fps)

**Pond 2-1P: Ex CB**

Hydrograph



**Summary for Pond 2P: Infiltration pond**

Inflow Area = 0.067 ac, 0.00% Impervious, Inflow Depth = 1.32" for 10 yr 24 hr event  
 Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af  
 Outflow = 0.02 cfs @ 12.67 hrs, Volume= 0.007 af, Atten= 83%, Lag= 35.0 min  
 Primary = 0.02 cfs @ 12.67 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 45.42' @ 12.67 hrs Surf.Area= 3,214 sf Storage= 113 cf  
 Flood Elev= 48.00' Surf.Area= 327 sf Storage= 851 cf

Plug-Flow detention time= 190.5 min calculated for 0.007 af (100% of inflow)  
 Center-of-Mass det. time= 191.8 min ( 1,064.4 - 872.6 )

| Volume | Invert | Avail.Storage | Storage Description  |
|--------|--------|---------------|--|
| #1     | 45.34' | 849 cf        | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| #2     | 45.84' | 2 cf          | <b>4.0" Round Pipe Storage</b><br>L= 26.0'                 |
|        |        | 851 cf        | Total Available Storage                                    |

| Elevation (feet) | Surf.Area (sq-ft) | Voids (%) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|-----------|------------------------|------------------------|
| 45.34            | 3,627             | 0.0       | 0                      | 0                      |
| 46.00            | 327               | 40.0      | 522                    | 522                    |
| 47.00            | 327               | 100.0     | 327                    | 849                    |

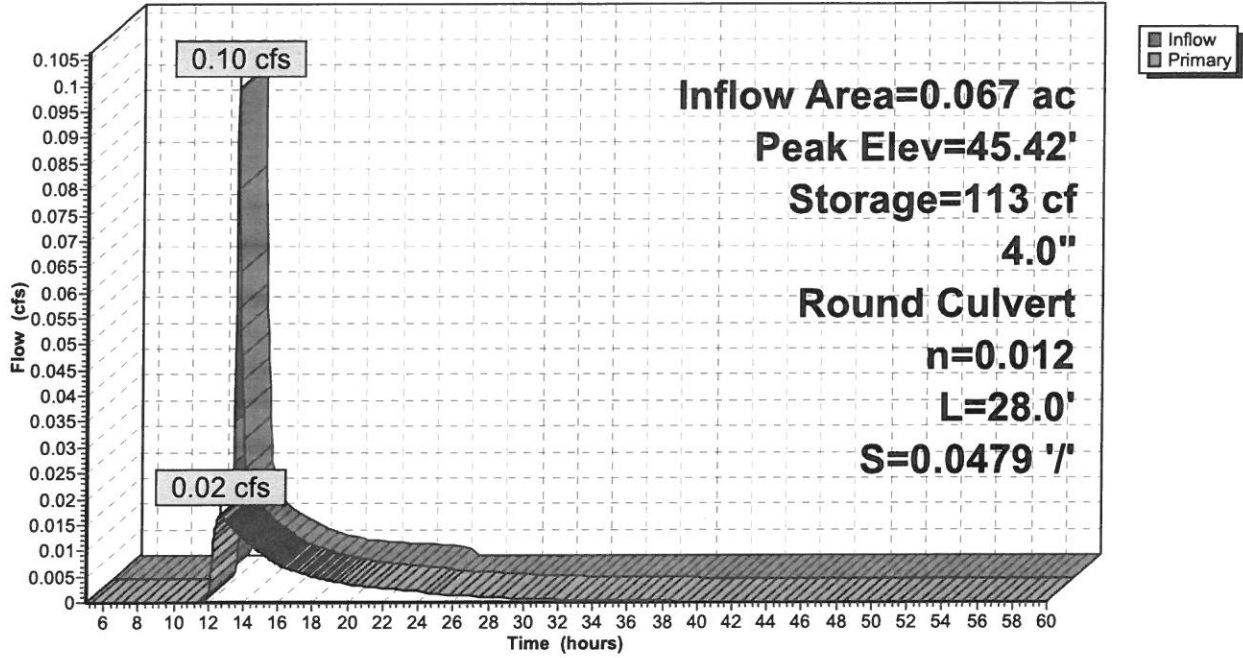
| Device | Routing | Invert | Outlet Devices   |
|--------|---------|--------|--|
| #1     | Primary | 45.34' | <b>4.0" Round Culvert</b> L= 28.0' Ke= 0.500<br>Inlet / Outlet Invert= 45.34' / 44.00' S= 0.0479 ' / Cc= 0.900<br>n= 0.012, Flow Area= 0.09 sf |

**Primary OutFlow** Max=0.02 cfs @ 12.67 hrs HW=45.42' (Free Discharge)  
 ←1=Culvert (Inlet Controls 0.02 cfs @ 0.98 fps)



### Pond 2P: Infiltration pond

Hydrograph



**Summary for Pond 4-1P: Culvert**

Inflow Area = 0.421 ac, 9.43% Impervious, Inflow Depth = 0.77" for 10 yr 24 hr event  
 Inflow = 0.66 cfs @ 12.11 hrs, Volume= 0.027 af  
 Outflow = 0.66 cfs @ 12.11 hrs, Volume= 0.027 af, Atten= 1%, Lag= 0.2 min  
 Primary = 0.66 cfs @ 12.11 hrs, Volume= 0.027 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 53.71' @ 12.11 hrs Surf.Area= 29 sf Storage= 8 cf  
 Flood Elev= 55.00' Surf.Area= 42 sf Storage= 18 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.3 min ( 765.5 - 765.2 )

| Volume           | Invert            | Avail.Storage          | Storage Description  |
|------------------|-------------------|------------------------|--|
| #1               | 53.30'            | 18 cf                  | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet)                                     |
| 53.30            | 10                | 0                      | 0  |
| 54.00            | 42                | 18                     | 18   |

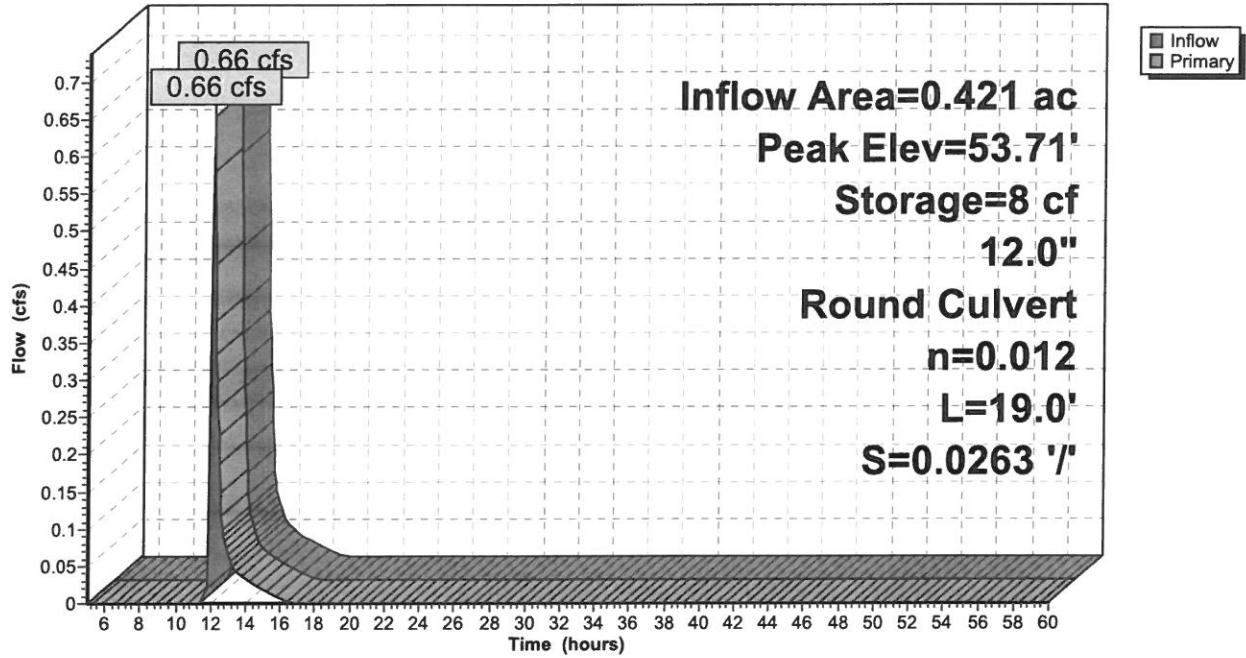
| Device | Routing | Invert | Outlet Devices  |
|--------|---------|--------|---|
| #1     | Primary | 53.30' | <b>12.0" Round Culvert</b> L= 19.0' Ke= 0.500<br>Inlet / Outlet Invert= 53.30' / 52.80' S= 0.0263 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |

**Primary OutFlow** Max=0.64 cfs @ 12.11 hrs HW=53.70' (Free Discharge)  
 ↑1=Culvert (Inlet Controls 0.64 cfs @ 2.16 fps)



### Pond 4-1P: Culvert

#### Hydrograph



**Summary for Pond 4P: Interceptor drain**

Inflow Area = 0.421 ac, 9.43% Impervious, Inflow Depth = 1.53" for 10 yr 24 hr event  
 Inflow = 0.71 cfs @ 12.09 hrs, Volume= 0.054 af  
 Outflow = 0.69 cfs @ 12.11 hrs, Volume= 0.054 af, Atten= 3%, Lag= 1.1 min  
 Discarded = 0.03 cfs @ 11.60 hrs, Volume= 0.027 af  
 Primary = 0.66 cfs @ 12.11 hrs, Volume= 0.027 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 55.25' @ 12.11 hrs Surf.Area= 425 sf Storage= 191 cf  
 Flood Elev= 56.00' Surf.Area= 425 sf Storage= 318 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 24.6 min ( 888.3 - 863.7 )

| Volume | Invert | Avail.Storage | Storage Description  |
|--------|--------|---------------|--|
| #1     | 54.24' | 286 cf        | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)<br>748 cf Overall - 32 cf Embedded = 716 cf x 40.0% Voids |
| #2     | 54.50' | 32 cf         | <b>4.0" Round Pipe Storage</b> Inside #1<br>L= 366.0'  |
|        |        | 318 cf        | Total Available Storage  |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 54.24            | 425               | 0                      | 0                      |
| 56.00            | 425               | 748                    | 748                    |

| Device | Routing   | Invert | Outlet Devices  |
|--------|-----------|--------|---|
| #1     | Primary   | 54.84' | <b>12.0" Round Culvert</b> L= 7.0' Ke= 0.500<br>Inlet / Outlet Invert= 54.84' / 54.00' S= 0.1200 '/ Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #2     | Discarded | 54.24' | <b>3.000 in/hr Exfiltration over Surface area</b>   |

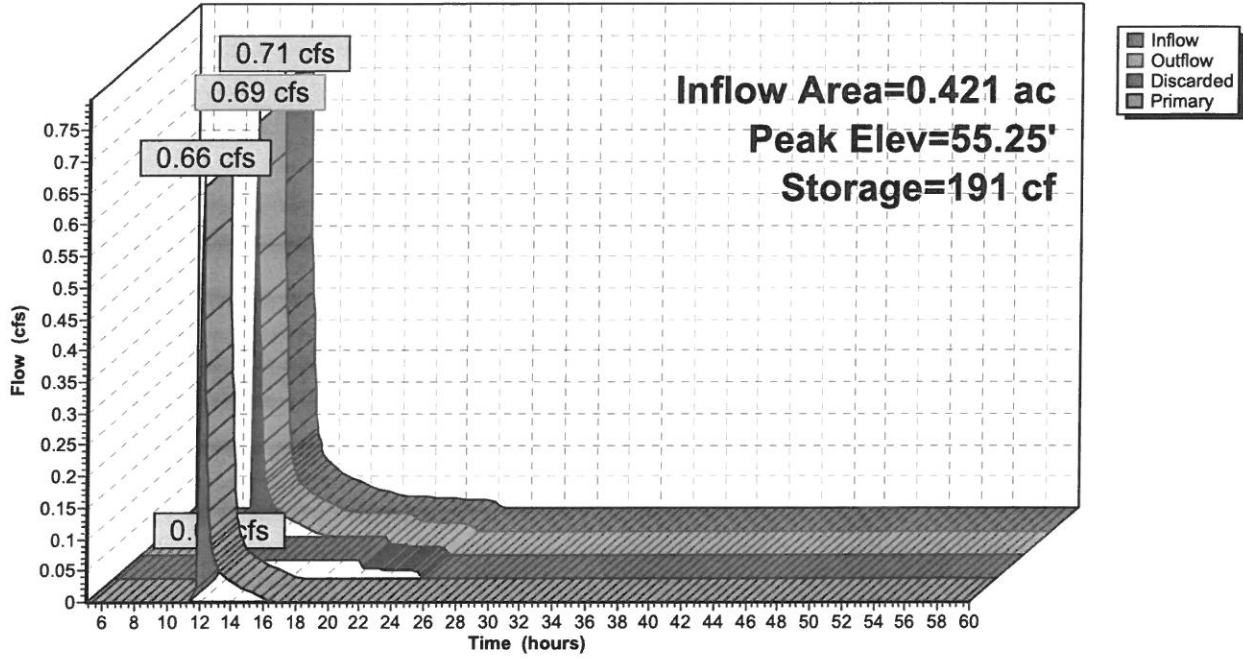
**Discarded OutFlow** Max=0.03 cfs @ 11.60 hrs HW=54.26' (Free Discharge)  
 ↳2=Exfiltration (Exfiltration Controls 0.03 cfs)

**Primary OutFlow** Max=0.65 cfs @ 12.11 hrs HW=55.25' (Free Discharge)  
 ↳1=Culvert (Inlet Controls 0.65 cfs @ 2.17 fps)



### Pond 4P: Interceptor drain

Hydrograph



**Summary for Pond 10P: drip edge**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.039 ac, 100.00% Impervious, Inflow Depth > 4.56" for 10 yr 24 hr event  
 Inflow = 0.19 cfs @ 12.07 hrs, Volume= 0.015 af  
 Outflow = 0.02 cfs @ 11.50 hrs, Volume= 0.015 af, Atten= 89%, Lag= 0.0 min  
 Discarded = 0.02 cfs @ 11.50 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 55.45' @ 12.73 hrs Surf.Area= 144 sf Storage= 208 cf  
 Flood Elev= 56.00' Surf.Area= 144 sf Storage= 288 cf

Plug-Flow detention time= 69.2 min calculated for 0.015 af (100% of inflow)  
 Center-of-Mass det. time= 68.7 min ( 830.5 - 761.8 )

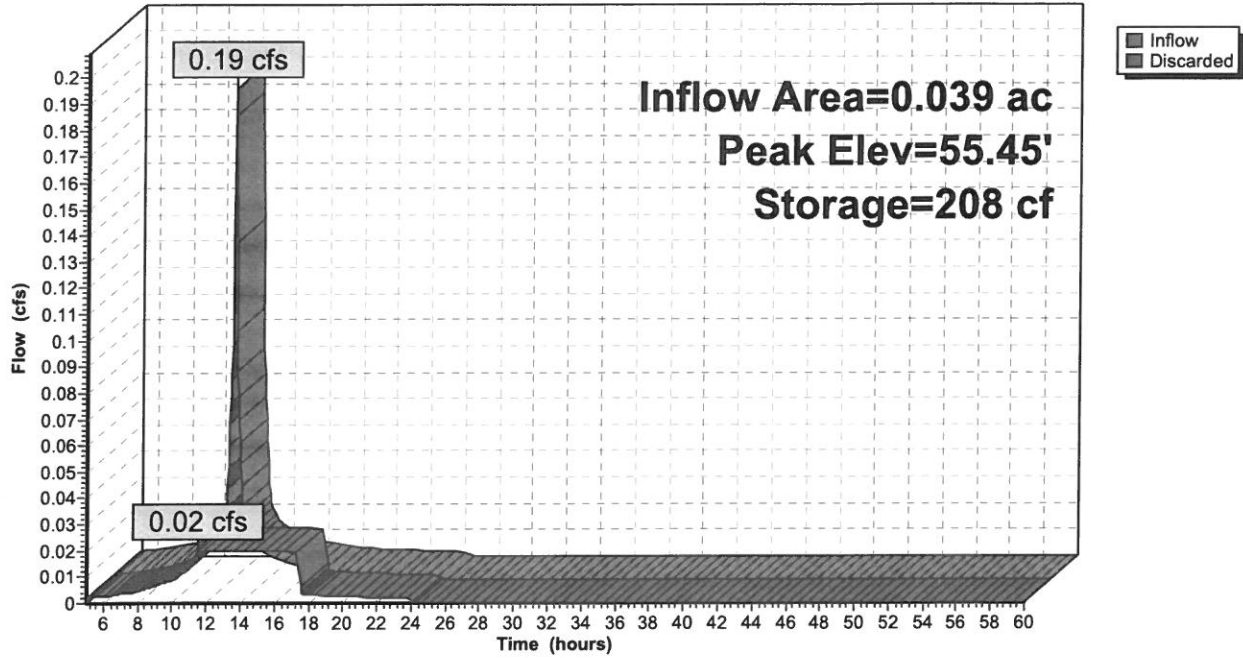
| Volume           | Invert            | Avail.Storage          | Storage Description  |
|------------------|-------------------|------------------------|--|
| #1               | 54.00'            | 288 cf                 | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet)                                     |
| 54.00            | 144               | 0                      | 0  |
| 56.00            | 144               | 288                    | 288  |

| Device | Routing   | Invert | Outlet Devices                                    |
|--------|-----------|--------|---|
| #1     | Discarded | 54.00' | <b>6.000 in/hr Exfiltration over Surface area</b> |

**Discarded OutFlow** Max=0.02 cfs @ 11.50 hrs HW=54.02' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

### Pond 10P: drip edge

#### Hydrograph





**Summary for Pond 11P: drip edge**

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.035 ac, 100.00% Impervious, Inflow Depth > 4.56" for 10 yr 24 hr event  
 Inflow = 0.17 cfs @ 12.07 hrs, Volume= 0.013 af  
 Outflow = 0.04 cfs @ 11.80 hrs, Volume= 0.013 af, Atten= 75%, Lag= 0.0 min  
 Discarded = 0.04 cfs @ 11.80 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 5.00-60.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 58.37' @ 12.43 hrs Surf.Area= 306 sf Storage= 114 cf  
 Flood Elev= 60.00' Surf.Area= 306 sf Storage= 612 cf

Plug-Flow detention time= 14.3 min calculated for 0.013 af (100% of inflow)  
 Center-of-Mass det. time= 13.6 min ( 775.4 - 761.8 )

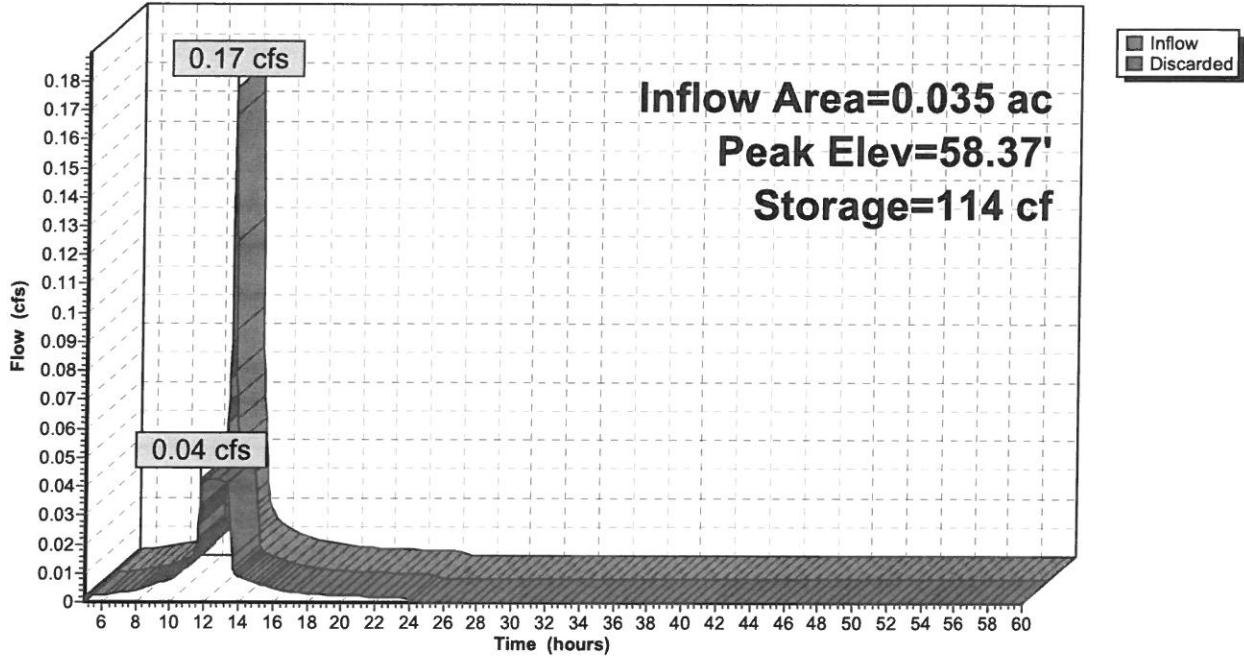
| Volume              | Invert               | Avail.Storage             | Storage Description  |
|---------------------|----------------------|---------------------------|--|
| #1                  | 58.00'               | 612 cf                    | <b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) |
| Elevation<br>(feet) | Surf.Area<br>(sq-ft) | Inc.Store<br>(cubic-feet) | Cum.Store<br>(cubic-feet)                                  |
| 58.00               | 306                  | 0                         | 0  |
| 60.00               | 306                  | 612                       | 612  |

| Device | Routing   | Invert | Outlet Devices                                    |
|--------|-----------|--------|---|
| #1     | Discarded | 58.00' | <b>6.000 in/hr Exfiltration over Surface area</b> |

**Discarded OutFlow** Max=0.04 cfs @ 11.80 hrs HW=58.02' (Free Discharge)  
 ↳ **1=Exfiltration** (Exfiltration Controls 0.04 cfs)

### Pond 11P: drip edge

#### Hydrograph



**INSPECTION AND MAINTENANCE MANUAL**



### **RAINFALL CHARACTERISTICS**

This drainage report includes proposed conditions analysis for the site. The model was constructed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas. A Type III SCS 24-hour rainfall distribution was utilized in analyzing the data for a 50 Yr – 24 Hr (7.48”) storm-event, to assure the adequacy of the proposed structure.

### **RAINFALL CHARACTERISTICS**

This drainage report includes proposed conditions analysis for the site. The model was constructed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas.

### **SEDIMENT & EROSION CONTROL PLANS BEST MANAGEMENT PRACTICES (BMP's)**

**Reference: Sheet - Proposed Conditions Plan  
General Details**

The proposed site development is protected from erosion and the roadways and abutting properties are protected from sediment by the use of Best Management Practices as outlined in the Stormwater Management & Erosion & Sediment Control Handbook for Urban & Developing Areas in New Hampshire. Any area disturbed by construction will be re-stabilized within 45 days and abutting properties and wetlands will not be adversely affected by this development. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them.

#### **1 Filtrexx sock/Construction Fence**

The plan set demonstrates the location of filtrex sock for sediment control. In areas where the limits of construction need to be emphasized to operators, construction fence for added visibility will be installed. The Erosion and Sediment Control Details, has the specifications for installation and maintenance of the silt fence. Orange construction fence will be VISI Perimeter Fence by Conwed Plastic Fencing, or equal. The four-foot fencing is to be installed using six-foot posts at least two feet in the ground with six to eight feet spacing.

#### **2 Drainage Swales / Stormwater Conveyance Channels**

Drainage swales will be stabilized with vegetation for long term cover as outlined below, and using seed mixture C. As a general rule, velocities in the swale should not exceed 3.0 feet per second for a vegetated swale although velocities as high as 4.5 FPS are allowed under certain soil conditions. The use of jute matting will aid in the stabilization of vegetation.

### 3 Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 45 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-1 using seeding mixture C, as follows:

| Mixture             | Pounds<br>per Acre | Pounds per<br>1,000 Sq. Ft. |
|---------------------|--------------------|-----------------------------|
| Tall Fescue         | 20                 | 0.45                        |
| Creeping Red Fescue | 20                 | 0.45                        |
| Birdsfoot Trefoil   | <u>8</u>           | <u>0.20</u>                 |
| Total               | 48                 | 1.10                        |

### 4 Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 1 and 2-inch coarse aggregate, and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E1 - Sediment and Erosion Control Detail Plan.

### 5 Environmental Dust Control

Dust will be controlled on the site by the use of multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

### 7 Construction Sequence

1. Cut and remove trees and pavement in construction areas as directed or required.
2. Construct and/or install temporary and permanent sediment erosion and detention control facilities, as required (swales, berms, level spreaders, etc. Erosion, sediment and detention control facilities shall be installed and stabilized prior to any earth moving operation, and prior to directing run-off to them.
3. Clear, cut, grub, and dispose of debris in approved facilities.
4. Excavate and stockpile topsoil / loam. All disturbed areas shall be stabilized immediately after grading.
5. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded and mulched as required, or directed.

6. 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 or property.
7. Inspect and maintain all erosion and sediment control measures during construction.
8. Complete permanent seeding and landscaping.
9. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete. Smooth and re-vegetate all disturbed areas.
10. All drainage structures will be constructed and stabilized prior to having run-off being directed to them.

## **9 Temporary Erosion Control Measures**

1. The smallest practical area of land shall be exposed at any one time.
2. Erosion, sediment and detention measures shall be installed as shown on the plans and at locations as required, or directed by the engineer.
3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4" of loam and seeded with not less than 1.10 pound of seed per 1,000 square feet (48 pounds per acre) of area.
4. Silt fences and other barriers shall be inspected periodically and after every rainstorm during the life of the project. All damaged areas shall be repaired, sediment deposits shall periodically be removed and properly disposed of.
5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and revegetated.
6. Areas must be seeded and mulched within 5 days of final grading, permanently stabilized within 15 days of final grading, or temporarily stabilized within 45 days of initial disturbance of soil.

## **10 Inspection and Maintenance Schedule**

Fencing will be inspected during and after storm events to ensure that the fence still has integrity and is not allowing sediment to pass. Sediment build-up will be removed if it is deeper than six inches.



**CONCLUSION**

**Pre vs Pro comparison  
Discharge Point 1R**

| Storm Yr/24 hr | Existing CFS | Proposed CFS | Difference |
|----------------|--------------|--------------|------------|
| 50             | 4.36         | 4.30         | -0.06      |

**Conclusion**

The intent of this report is to evaluate the re-construction of Patricia Drive and the improvement to two proposed parcels. We have evaluated the watershed areas on the property. We have determined the best course of action would be to leave the existing two catch basins in place and add a stormwater treatment insert into the catch basin further downstream in the drainage system. These two catch basins would catch all of the road and driveway run-off. In addition to improving the two catch basins we plan on adding an inceptor swale with an underdrain along the slope to divert the overland runoff away from the road run-off and an infiltration pond at the bottom of the slope to collect the small amount of overland flow that was not collected in the interceptor swale. The infiltration pond will be equipped with an underdrain to remove any water that is not infiltrated.

A Site Specific, Terrain Alteration Permit (RSA 485: A-17) is **not** required for this site plan due to the area of disturbance is less than 100,000 square feet for AOT and a SWPPP is **not** required as the disturbance is less than 1 acre.

Respectfully Submitted,

New Hampshire Land Consultants, PLLC

Scott R Frankiewicz, LLS  
Project Manager

Jeff Burd, PE  
Project Engineer

## **PRE & POST WATERSHED PLANS**



| NO. | DATE | DESCRIPTION | BY |
|-----|------|-------------|----|
|     |      |             |    |
|     |      |             |    |
|     |      |             |    |
|     |      |             |    |

GRAPHIC SCALE  
1" = 50'

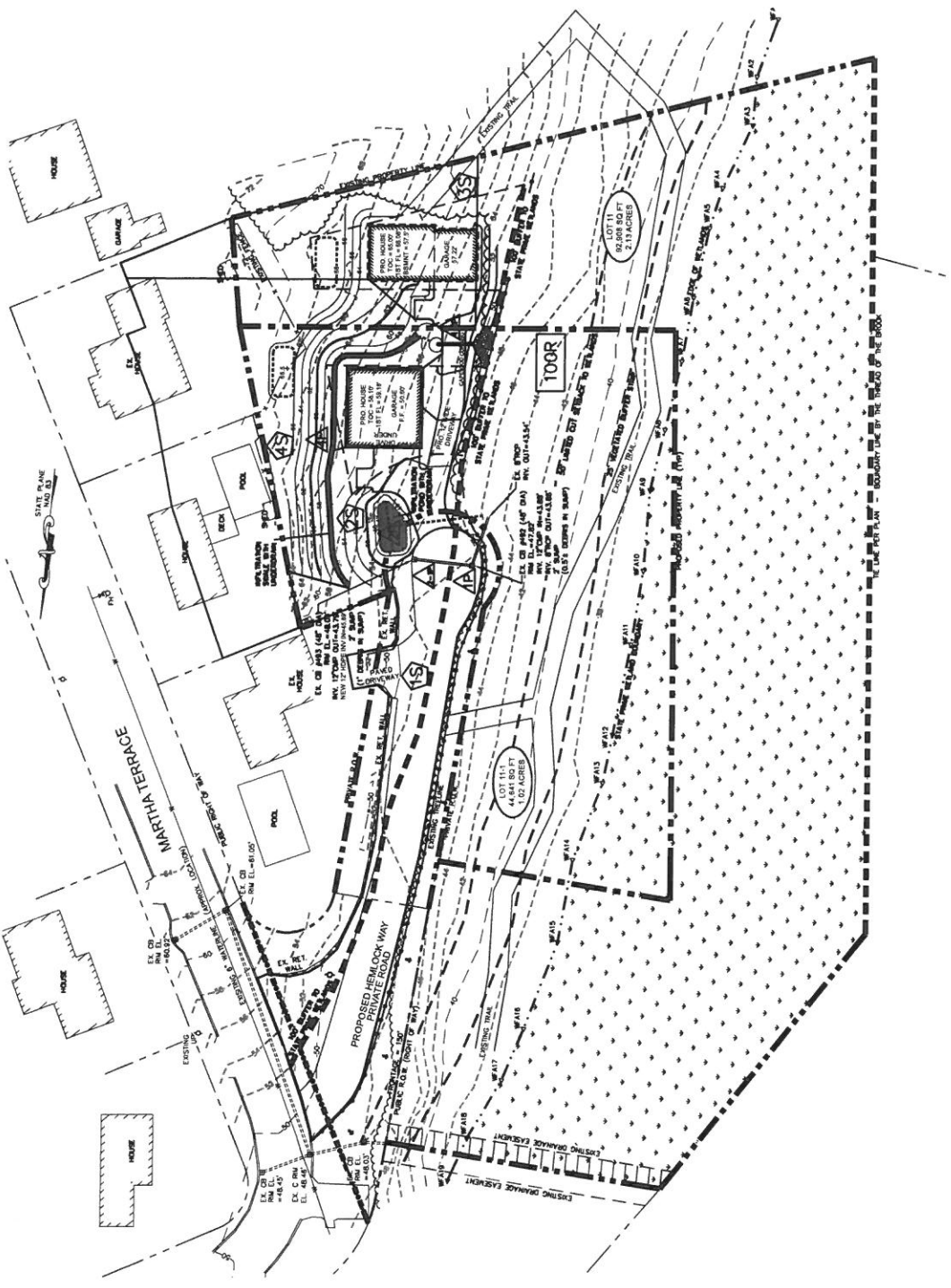
**N.H. LAND Consultants**  
A Wetland Owned Company  
SURVEYING-LAND PLANNING-REAL ESTATE

**PROPOSED WATERSHED PLAN**  
DUBE PLUS CONSTRUCTION  
TAX MAP 283 LOT 11  
FRITZ FAMILY REVOC LIV TRUST  
EDGAR H FRITZ TRUSTEE  
PATRICIA DRIVE, PORTSMOUTH NH 03801  
OWNED BY  
ROCKINGHAM CO  
JOB NO. - 258.00  
DATE - JUNE 22, 2001

**PWP**  
SHT. 1 of 1

**DRAINAGE LEGEND**

- SUBCATCHMENT
- POND
- REACH
- DESIGN POINT



| NO. | DATE | DESCRIPTION | BY |
|-----|------|-------------|----|
|     |      |             |    |
|     |      |             |    |
|     |      |             |    |
|     |      |             |    |

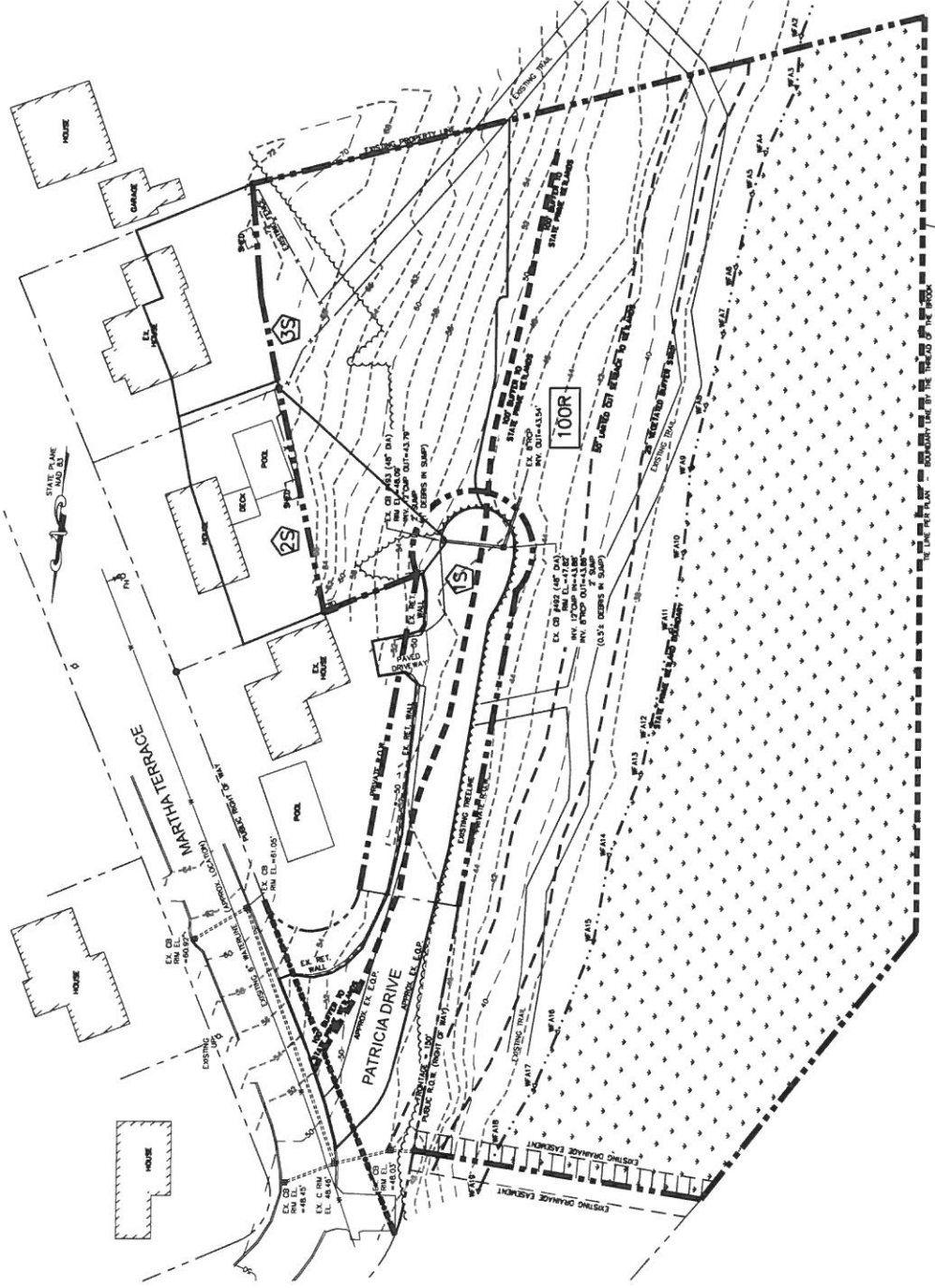
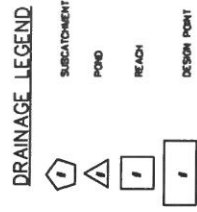
GRAPHIC SCALE  
 1" = 30'  
 SCALE: 1"=30'



EXISTING WATERSHED PLAN  
 TAX MAP 283 LOT 11  
 DUBE PLUS CONSTRUCTION  
 OWNED BY  
 PATRICIA DRIVE, PORTSMOUTH NH 03801  
 FRITZ FAMILY REVOC LIV TRUST,  
 EDGAR H FRITZ, TRUSTEE  
 100 BOX 824, SO SHORE DR., NORTHWOOD NH, 03261  
 BOOK 3238 PAGE 0173

ROCKINGHAM CO.  
 JOB NO.: 2838.00  
 DATE: JUNE 22, 2021

EWP  
 SHT. 1 OF 2



APPLICANTS' NARRATIVE  
LOT UNMERGER REQUEST  
VINCENT AND MONICA ZINGANELLO  
135 THAXTER ROAD

The property located at 135 Thaxter Road was originally Lots 52 and 53 as shown on the Westfield Park Plan recorded as Plan 0643 in the Registry of Deeds in 1929 (plan attached).

In 1933, Lot #53 was conveyed to Harry F. Downing (Bk 888 Pg 410, deed attached).

In 1936, Lot #52 was conveyed to Harry F. Downing (Bk 920, Pg 365, deed attached).

After the death of Harry F. Downing, his wife Bernice conveyed the two lots to a trust in December of 1980 (Bk 2379, Pg 328, deed attached).

Bernice Downing's son, Harry f. Downing, Jr., as Trustee of the trust conveyed the property as two lots to Dale and Nicholas Genimatases in 1989 (Bk 2802, Page 921, deed attached).

In January 1990, the Rockingham Superior Court in Docket 89-E-553 issued a decree that the Genimatases were the owners of two lots, being Lots 52 and 53 on the Westfield Park Plan. (Decree recorded at Bk 2824, Pg 2237 attached.)

The Genimatases conveyed the two lots to the applicants on July 26, 1999. (Deed attached, Bk 3410, Pg 726.)

None of the applicants' predecessors in title voluntarily merged the two lots and the property has always been conveyed as two lots, Lots 52 and 53 as shown on the Westfield Park Plan.

The applicants' have not voluntarily merged the two lots and Lot #53 has remained a vacant lot since 1933, and has no structures or improvements associated with Lot #52 thereon.

The two lots were involuntarily merged by the City Assessor's Office subsequent to 1983 when the tax card showed two separate lots.

  
Bernie W. Pelech, Esq.  
Attorney for Applicants



0643

*Revised and Replotted  
Dec. 3, 1924  
John W. Dunsen, C.E.*

# PLAN OF WESTFIELD PARK

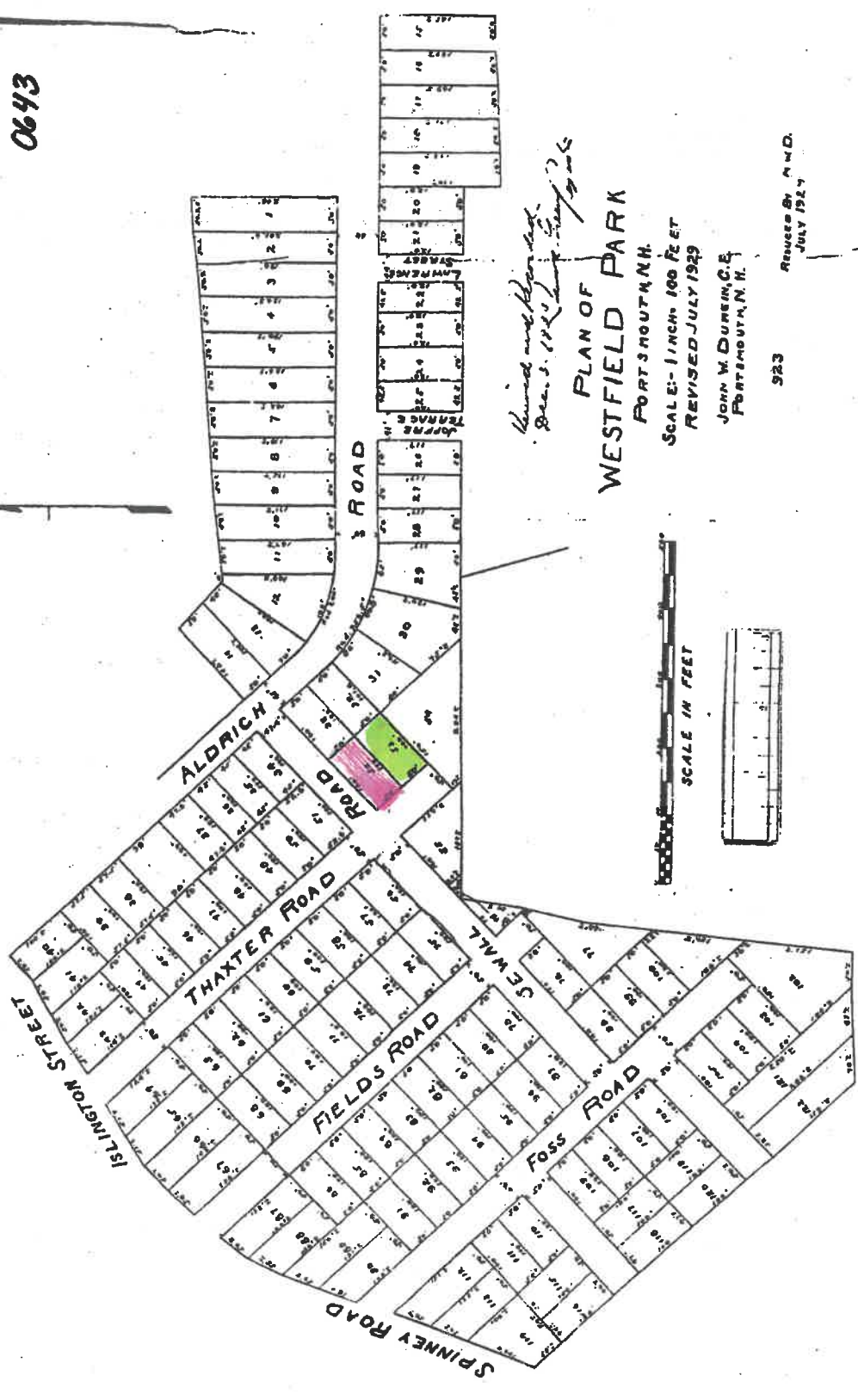
PORTSMOUTH, N.H.

SCALE - 1 INCH = 100 FEET  
REVISED JULY 1929

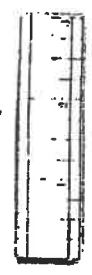
JOHN W. DUNSEN, C.E.  
PORTSMOUTH, N. H.

323

REVISED BY A.M.D.  
JULY 1927



SCALE IN FEET



*See Book 20 Plat 4*

# 135 THAXTER RD.



**MAP FOR REFERENCE ONLY  
NOT A LEGAL DOCUMENT**

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 4/1/2019  
Data updated 7/17/2019





Running Southwesterly by Sewall Road One Hundred (100) feet to the point of beginning.

Meaning and intending to describe and convey the same premises conveyed to Dale T. Genimatas and Nicholas W. Genimatas by deed of Harry F. Downing, Jr., Trustee, dated July 27, 1989 and recorded in the Rockingham County Registry of Deeds at Book 2802, Page 0921.

Signed this July 26, 1999.

*Dale T. Genimatas*  
 DALE T. GENIMATAS

*Nicholas W. Genimatas*  
 NICHOLAS W. GENIMATAS

STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM

The foregoing instrument was acknowledged before me this 26th day of July, 1999 by DALE T. GENIMATAS and NICHOLAS W. GENIMATAS.

*[Signature]*  
 Notary Public/Justice of the Peace

N:\data\5\59497\mcb\DEED.DOC  
July 23, 1999

STATE OF NEW HAMPSHIRE

DEPARTMENT OF REVENUE ADMINISTRATION

REAL ESTATE TRANSFER TAX

3 THOUSAND 7 HUNDRED AND 50 DOLLARS

072199 389318 \$3750.00

VOID IF ALTERED

2924 P2737

THE STATE OF NEW HAMPSHIRE

ROCKINGHAM, SS.

SUPERIOR COURT  
DOCKET #9-E-553

IN EQUITY

Nicholas W. Genimatas and Dale T. Genimatas

V.

Portsmouth Building Trust a/k/a Portsmouth Building Association  
its trustees, beneficiaries, successors and/or assigns  
and  
whom it may concern

DECREE

After hearing petitioners in the above entitled matter, and on the report of the Guardian Ad Litem, the Petitionees, being Portsmouth Building Trust a/k/a Portsmouth Building Association, its trustees, beneficiaries, successors and/or assigns and/or any other entity or unknown person who claims or may claim any interest or estate in and to the subject matter of this action, there having been no appearance filed by any such person, it is hereby Ordered, Adjudged and Decreed as follows:

1. The Petitioners, Nicholas W. Genimatas and Dale T. Genimatas, are the owners in fee simple of land located in the City of Portsmouth, County of Rockingham, State of New Hampshire, and being shown as lots numbered 52 and 53 on a plan entitled "Plan of Westfield Park, Portsmouth, New Hampshire, revised July 1929, by John W. Durgin, C. E. and recorded in the Rockingham County Registry of Deeds"; and being the same premises acquired by your petitioners by warranty deed from the Bernice M. Downing Trust, dated July 27, 1989, recorded in the Rockingham County Registry of Deeds at Book 2802, Page 921, to which deed reference is made for a more particular description as follows:

A certain parcel of land with the buildings thereon situate in said Portsmouth on the Northeastly side of Thaxter Road and known as Lot Number Fifty-Three (53) as shown on a plan entitled "Plan of Westfield Park, Portsmouth, New Hampshire, revised July 1929 by John W. Durgin, C. E. and recorded in Rockingham Registry of Deeds." said parcel is bounded and described as follows:

Beginning on Thaxter Road at the corner of Lot Number Fifty-Two (52) as shown on said plan, and running thence Northeastly by said Lot Number Fifty-Two (52) one hundred feet (100) to Lot Number Thirty-Two, as shown on said Plan; thence turning and running Southeastly by said Lot Number (52) Fifty-Two, as shown on said Plan, fifty feet (50) to Lot Number Fifty-Four (54); thence turning and running Southwestly by said Lot Number Fifty-Four (54) one hundred feet (100) to said Thaxter Road; thence turning and running Northwestly by said Thaxter Road fifty feet (50) to the point of beginning.

63571

JUN 29 10 14 AM '90

ROCKINGHAM COUNTY  
REGISTRY OF DEEDS

02824 P2738

And a certain lot or parcel of land situate in said Portsmouth and known as Lot Number Fifty-Two on a plan entitled "Plan of Westfield Park, Portsmouth, New Hampshire" and drawn by John W. Durgin, C. E. and recorded in Rockingham County Registry of Deeds. Said parcel is bounded and described as follows:

Beginning at the Westerly corner of the lot on the corner of Thaxter and Sewall Roads thence running Southeasterly by Thaxter Road Fifty (50) feet to Lot number Fifty-Three as shown on said plan; thence running Northeasterly by Lot Number Fifty-Three (53) as shown on said plan One Hundred (100) feet to a common corner with Lots Number Thirty-Two (32) and Number Thirty-Three (33) as shown on said plan; thence running Northwesterly by Lot Number Thirty-Three (33) as shown on said plan Fifty (50) feet to Sewall Road; thence running Southwesterly by Sewall Road One Hundred (100) feet to the point of beginning.

And the said Nicholas W. Genimatas and Dale T. Genimatas hold the same free and clear of all claims of Portsmouth Building Trust a/k/a Portsmouth Building Association, its trustees, beneficiaries, successors and/or assigns and/or any unknown other entity or unknown persons who claim or may claim any interest or estate in and to the subject matter of this action.

2. That title to the said real estate of said petitioner, Nicholas W. Genimatas and Dale T. Genimatas, as held and claimed by them as aforesaid is hereby ordered and decreed to be the sole and exclusive possession of said Petitioners, Nicholas W. Genimatas and Dale T. Genimatas, in fee simple, free and clear of all claims or rights of Portsmouth Building Trust a/k/a Portsmouth Building Association and/or any other person or entities who may claim an interest adverse to the Petitioners.

3. That a copy of this Decree be ordered recorded in the Rockingham County Registry of Deeds as evidence of the title of your Petitioners, Nicholas W. Genimatas and Dale T. Genimatas as against any interest of Portsmouth Building Trust a/k/a Portsmouth Building Association, its trustees, beneficiaries, successors and/or assigns, and/or any other entity or unknown persons who claim or may claim any interest in and to the subject matter of this action.

Date

1-22-90

  
Presiding Justice

A TRUE COPY ATTEST  
CLERK 



W2802 P0921

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS

THAT I, Harry F. Downing, Jr., Trustee of trust dated December 8, 1980 recorded in the Rockingham County Registry of Deeds at Book 2379, Page 325 of 135 Thaxter Road, Portsmouth, County of Rockingham and State of New Hampshire, for consideration paid, grant to Dale T. Genimatas and Nicholas W. Genimatas, being husband and wife of 1 Pickernell Lane, Kittery, County of York and State of Maine with WARRANTY COVENANTS, as joint tenants with the rights of survivorship the following described premises.

Two certain lots or parcels of land with the buildings thereon situated in said Portsmouth, County of Rockingham and State of New Hampshire on the Northeastly side of Thaxter Road and known as Lot Number fifty-three (53) as shown on a plan entitled "Plan of Westfield Park, Portsmouth, New Hampshire, revised July 1929 by John W. Durgin, C.E. and Lot Number Fifty-two (52) on a plan entitled "Plan of Westfield Park, Portsmouth, New Hampshire" and drawn by John W. Durgin, C.E. both being recorded in Rockingham County Registry of Deeds. Said parcels being bounded and described as follows:

Parcel 1. Beginning on Thaxter Road at the corner of Lot Number Fifty-two (52), as shown on said Plan, and running thence Northeastly by said Lot Number Fifty-two (52) one hundred feet (100) to Lot Number Thirty-two, as shown on said Plan; thence turning and running Southeastly by said Lot Number (52) Fifty-two, as shown on said Plan, fifty feet (50) to Lot Number Fifty-four (54); thence turning and running Southwestly by said lot Number Fifty-four (54); one hundred feet (100) to said Thaxter Road; thence turning and running Northwestly by said Thaxter Road fifty feet (50) to the point of beginning.

Parcel 2. Beginning at the Westerly corner of the lot on the corner of Thaxter and Sewall Roads thence running Southeastly by Thaxter Road Fifty (50) feet to Lot number fifty-three (53) as shown on said Plan; thence running Northeastly by Lot Number Fifty-three (53) as shown on said Plan One hundred (100) feet to a common corner with Lots Number thirty-two (32) and Number thirty-three (33) as shown on said plan; thence running Northwestly by Lot Number thirty-three (33) as shown on said plan Fifty (50) feet to Sewall Road; thence running Southwestly by Sewall Road One Hundred (100) feet to the point of beginning.

Meaning and intending to describe and convey the premises set forth in deed of Bernice M. Downing to Bernice M. Downing, Trustee dated December 8, 1980 and recorded in the Rockingham County Registry of Deeds at Book 2379, Page 328. Harry F.

32614

JUL 31 9 19 AM '88

ROCKINGHAM COUNTY  
REGISTRY OF DEEDS

STATE OF NEW HAMPSHIRE  
TAX ON TRANSFER  
OF REAL PROPERTY  
JUL 31 '88  
999.00

STATE OF NEW HAMPSHIRE  
TAX ON TRANSFER  
OF REAL PROPERTY  
JUL 31 '88  
618.00

#2802 P0922

Downing, Jr. is Successor Trustee of the trust a declaration and memorandum of which dated December 8, 1980 and recorded in said registry at Book 2379, Page 325.


Both of the above parcels are subject to the following conditions:

No dwelling house shall be erected on said land to cost less than \$3,000.00. No dwelling house or other building shall be erected nearer than twenty-five feet fronting to said road; any garage or other out-buildings erected on said lot shall not be erected or maintained in front of the rear lines of any dwelling house erected on said lot; its grantors, successors, or assigns hereby reserve the right as against the grantee and his heirs and assigns to enter on conditions broken if and in the event that he or they shall violate any of the said conditions and it is hereby agreed that by said re-entry the grantor, its successors or assigns shall terminate the estate of said grantee or his heirs or assigns in said granted premises. (Note is made of the fact that the term grantor used in the above stated condition makes references to Charolette M. Paterson as to Lot 53 and the Portsmouth Building Association as to Lot 52).

WITNESS our hands and seals this 27th day of July, 1989.

WITNESS:

JULY 27, 1989

  
Harry F. Downing, Jr. Trustee  
pursuant to Trust dated  
December 8, 1980 and recorded  
at the Rockingham County  
Registry of Deeds at Book 2379  
Page 325

STATE OF NEW HAMPSHIRE  
Rockingham, ss.

Personally appeared Harry F. Downing, Trustee, known to me, or satisfactorily proven to be the person whose name is subscribed to the foregoing instrument and acknowledged that he executed the same for the purposes therein contained.

Before me,

  
Justice of the Peace/Notary Public

QUIT-CLAIM DEED

KNOW ALL MEN BY THESE PRESENTS, That I, BERNICE M. DOWNING of the City of Portsmouth, County of Rockingham and State of New Hampshire

for consideration paid, grant to BERNICE M. DOWNING, TRUSTEE under Declaration of Trust dated this date and recorded herewith

with QUITCLAIM COVENANTS A certain parcel of land with the buildings thereon situate in said Portsmouth on the Northeasterly side of Thaxter Road and known as Lot Number Fifty-three (53) as shown on a plan entitled "Plan of Westfield Park, Portsmouth, New Hampshire, revised July 1929 by John W. Durgin, C. E. and recorded in Rockingham Registry of Deeds." Said parcel is bounded and described as follows: Beginning on Thaxter Road at the corner of Lot Number Fifty-two (52), as shown on said Plan, and running thence Northeasterly by said Lot Number Fifty-two (52) one hundred feet (100) to Lot Number Thirty-two, as shown on said Plan; thence turning and running Southeasterly by said Lot Number (52) Fifty-two, as shown on said Plan, fifty feet (50) to Lot Number Fifty-four (54); thence turning and running Southwesterly by said Lot Number Fifty-four (54) one hundred feet (100) to said Thaxter Road; thence turning and running Northwesterly by said Thaxter Road fifty feet (50) to the point of beginning.

No dwelling house shall be erected on said land to cost less than \$3,000.00. No dwelling house or other building shall be erected nearer than twenty-five feet fronting to said road; any garage or other out-buildings erected on said lot shall not be erected or maintained in front of the rear lines of any dwelling house erected on said lot; its grantors, successors, or assigns hereby reserve the right as against the grantee and his heirs and assigns to enter on conditions broken if and in the event that he or they shall violate any of the said conditions and it is hereby agreed that by said re-entry the grantor, its successors or assigns shall terminate the estate of said grantee or his heirs or assigns in said granted premises.

Meaning and intending hereby to describe all and the same premises conveyed by Charlotte M. Paterson to Harry F. Downing dated November 29, 1933 and recorded in Rockingham County Records in Book 888 Page 410. My title is derived under the will of the late Harry F. Downing, deceased filed in the Rockingham County Registry of Probate.

And, a certain lot or parcel of land situate in said Portsmouth and known as Lot Number fifty-two (52) on a plan entitled "Plan of Westfield Park, Portsmouth, New Hampshire" and drawn by John W. Durgin, C. E. and recorded in Rockingham County Registry of Deeds. Said parcel is bounded and described as follows: Beginning at the Westerly corner of the lot on the corner of Thaxter and Sewall Roads thence running Southeasterly by Thaxter Road Fifty (50) feet to Lot number fifty-three (53) as shown on said Plan; thence running Northeasterly by Lot Number Fifty-three (53) as shown on said Plan One hundred (100) feet to a common corner with Lots Number thirty-two (32) and Number thirty-three (33) as shown on said plan; thence running Northwesterly by Lot Number thirty-three (33) as shown on said plan Fifty (50) feet to Sewall Road; thence running Southwesterly by Sewall Road One hundred (100) feet to the point of beginning.

Said premises are conveyed, however, under and subject to the following conditions and restrictions, viz; no dwelling house shall be erected on said land to cost less than Three Thousand (\$3,000) Dollars. No dwelling house or other buildings shall be erected nearer than Twenty-five (25)

DEC 9 9 55 AM '00 25900



feet to said Thaxter Road fronting on said road. No garage or other out building erected on said Lot shall be erected or maintained in front of the rear lines of any dwelling house erected on said Lot and the grantee hereby covenants and agrees to and with said Grantors that all deeds and conveyances of other lots of land shall be subject thereto. The grantors, and its successors and assigns, do hereby reserve the right as against the grantee and his heirs and assigns to enter on conditions broken if and in the event that he or they shall violate any of the said conditions. And it is hereby agreed that by said re-entry said grantors, its successors and assigns shall terminate the estate of said grantee and his heirs or assigns in said granted premises.

Meaning and intending hereby to describe and convey all and the same premises conveyed by the Portsmouth Building Association to Harry F. Downing by deed dated July 15, 1936 and recorded Rockingham County Records in Book 920 Page 365. My title is derived under the will of the late Harry F. Downing deceased filed in the Rockingham County Registry of Probate.

And I, Bernice M. Downing, as a widow,

WITNESS my hand and seal this <sup>(No Federal Revenue Stamps required)</sup> 27<sup>th</sup> day of December, 1980.

*Bernice M. Downing*  
Bernice M. Downing

WITNESS:

*Margaret F. Windille*  
*Margaret M. Downing*

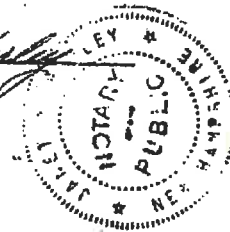
STATE OF NEW HAMPSHIRE

Rockingham, ss:

On the 27<sup>th</sup> day of December, 1980 personally appeared Bernice M. Downing known to me, or satisfactorily proven to be the person whose name is subscribed to the foregoing instrument and acknowledged that she executed the same for the purposes therein contained.

Before me,

*Just M. [Signature]*  
Notary Public



My Commission expires: MY COMMISSION EXPIRES MARCH 24, 1983

STATE OF NEW HAMPSHIRE  
TAX ON TRANSFER  
OF REAL PROPERTY  
DEC-1980  
1.000





\$1.00 Rev.

# Know all Men by these Presents,

THAT we, R. Clyde Margeson, Richman P. Margeson, Edward Seybolt, Henry B. Tilton and Fred A. Gray, all of Portsmouth in the County of Rockingham and State of New Hampshire, as trustees of the Portsmouth Building Association of said Portsmouth, are empowered to make conveyances of real estate owned by the said Association by virtue of powers conferred upon them as Trustees under a certain declaration of trust dated April 8, 1913 and recorded in Rockingham Registry of Deeds Book 674, Page 269,

for and in consideration of the sum of One Dollar and other valuable considerations to us in hand, before the delivery hereof well and truly paid by Harry F. Downing of said Portsmouth

Margeson et als to Downing

the receipt whereof We do hereby acknowledge, have given, granted, bargained and sold, and by these presents do give, grant, bargain, sell, alien, enfeoff, convey and confirm unto the said Harry F. Downing and his heirs and assigns forever,

del. to grantees

A certain lot or parcel of land situate in said Portsmouth and known as Lot Number fifty two (52) on a plan entitled "Plan of Westfield Park, Portsmouth, New Hampshire" and drawn by John W. Durgin, C. E. and recorded in Rockingham Registry of Deeds.

Said parcel is bounded and described as follows; Beginning at the Westerly corner of the lot on the corner of Thaxter and Sewall Roads thence running Southeasterly by Thaxter Road fifty (50) feet to Lot number fifty three (53) as shown on said Plan; thence running Northeasterly by Lot Number fifty three (53) as shown on said Plan One hundred (100) feet to a common corner with Lots Number thirty two (32) and Number thirty three (33) as shown on said plan; thence running Northwesterly by Lot Number thirty three (33) as shown on said plan Fifty (50) feet to Sewall Road; thence running Southwesterly by Sewall Road One Hundred (100) feet to the point of beginning.

Said premises are conveyed, however, under and subject to the following conditions and restrictions, viz; No dwelling house shall be erected on said land to cost less than Three Thousand (\$3,000) Dollars. No Dwelling house or other buildings shall be erected nearer than Twenty-five (25) feet to said Thaxter Road fronting on said road.

No garage or other out building erected on said Lot shall be erected or maintained in front of the rear lines of any dwelling house erected on said Lot and the grantee hereby covenants and agrees to and with said Grantors that all deeds and conveyances of other lots of land shown on said plan as fronting upon Thaxter Road shall contain the same conditions and restrictions and that the said other lots of land shall be subject thereto. The grantors, and its successors and assigns, do hereby reserve the right as against the grantee and his heirs and assigns to enter on conditions broken if and in the event that he or they shall violate any of the said conditions. And it is hereby agreed that by said rec<sup>d</sup> by said grantors, its successors and assigns shall terminate the estate of said grantee and his heirs or assigns in said granted premises. Harry Downing do have and to hold the said granted premises, with all the privileges and appurtenances to the same belonging, to the said grantee and his heirs and assigns, to

And we the said grantors and our heirs, executors and administrators, do hereby covenant, grant and agree, to and with the said grantee and his heirs and assigns, that until the delivery hereof we are the lawful owner of the said premises, and we seized and possessed thereof in our own right and fee simple; and have full power and lawful authority to grant and convey the same in manner aforesaid; that the said premises are free and clear from all and every incumbrance whatsoever; And that we and our heirs, executors and administrators, shall and will warrant and defend the same to the said grantee and his heirs and assigns, against the lawful claims and demands of any person or persons whomsoever.

And I, ~~the said grantee~~ <sup>wife of the said</sup> in consideration aforesaid, do hereby release my right of dower in the above mentioned premises.

And we each of us do hereby release, discharge and waive all such rights of exemption from attachment and levy or sale on execution and such other rights whatsoever in said premises and in each and every part thereof, as our Family Homestead, as are reserved to us, or either of us, by the Statute of the State of New Hampshire, passed July 4, 1851, entitled "An Act to exempt the Homestead of Families from attachment and levy or sale on execution, or by any other Statute of the State of said State."

In Witness whereof we have hereunto set our hand and seals, this fifteenth day of July in the year of our Lord one thousand nine hundred and 1936

SIGNED, SEALED AND DELIVERED IN PRESENCE OF US:  
Jeremy R. Waldron R. Clyde Margeson (L.S.)  
Richman P. Margeson (L.S.)  
Edward Seybolt (L.S.)  
Henry B. Tilton (L.S.)  
Fred A. Gray (L.S.)

STATE OF NEW HAMPSHIRE, Rockingham, ss. July 21st A. D. 19 36.  
Personally appeared the above named R. Clyde Margeson, Richman P. Margeson, Edward Seybolt, Henry B. Tilton and Fred A. Gray, individuals, and in their said capacities as trustees, and acknowledged the foregoing instrument to be their voluntary act and deed.

BEFORE ME,

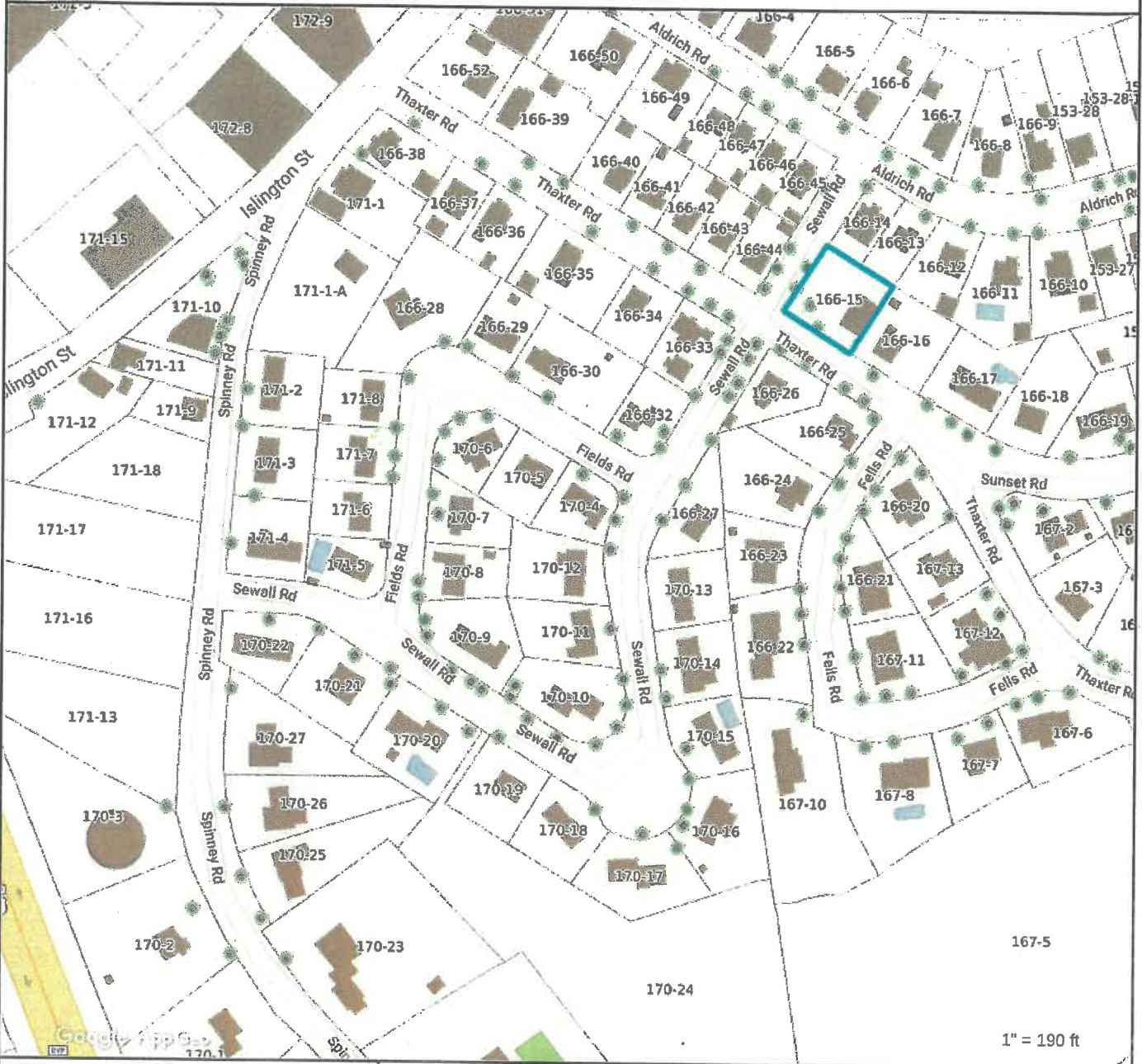
.....Jeremy R. Waldron.....Justice of the Peace.

Received and recorded August 3, 10 A.M. 19 36.


John H. C. [Signature] Register.



# 135 Thaxter Rd.



| Property Information |                     |
|----------------------|---------------------|
| Property ID          | 0166-0015-0000      |
| Location             | 135 THAXTER RD      |
| Owner                | ZINGARIELLO VINCENT |



**MAP FOR REFERENCE ONLY  
NOT A LEGAL DOCUMENT**

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 4/1/2019  
Data updated 7/17/2019

1" = 190 ft

CITY OF PORTSMOUTH, NH  
APPLICATION FOR RESTORATION OF INVOLUNTARILY MERGED LOTS  
PURSUANT TO RSA 674:39-aa

Name of Property Owner(s): VINCENT ZINGARIELLO and MONICA ABRUZZESE

Mailing Address: 135 THAXTER Rd. PORTSMOUTH, NH 03801

Telephone Number: 603 770 7999

Email Address: \_\_\_\_\_

Street Location of Parcels Affected by the Requested Restoration:

135 THAXTER Rd.

**Properties Requested to be Restored (attach additional sheet if needed):**

Parcel 1

Current Deed Reference: Book 340 Page 726 Date Recorded 7/26/1999

Tax Map 166 Lot Number 15

Parcel 2

Current Deed Reference: Book 340 Page 726 Date Recorded 7/26/99

Tax Map 166 Lot Number 15

Parcel 3

Current Deed Reference: Book \_\_\_\_\_ Page \_\_\_\_\_ Date Recorded \_\_\_\_\_

Tax Map \_\_\_\_\_ Lot Number \_\_\_\_\_

Please state when you believe the involuntary merger took place:

SUBSEQUENT TO 1983 WHEN THE TAX CARD SHOWED 2 LOTS

Signature(s) of Property Owner(s):

Signature: [Signature] Name: Vincent Zingariello Date: 2.26.2021

Signature: [Signature] Name: Monica Zingariello Date: 2.26.2021  
Monica Abruzzese Monica Abruzzese

## Bernie Pelech

---

**From:** Bernie Pelech  
**Sent:** Wednesday, March 10, 2021 1:16 PM  
**To:** Bernie Pelech









Sent from my iPhone



# CITY OF PORTSMOUTH

## Assessors Office

---

Municipal Complex  
1 Junkins Avenue  
Portsmouth, New Hampshire 03801  
Tel: (603) 610-7249 – Fax: (603) 427-1579

To: Dexter Legg, Chair Planning Board  
Cc: Karen S. Conard, City Manager  
From: Rosann Lentz, City Assessor, *Rosann Lentz*  
Date: May 27, 2021  
RE: City Council Referral- Request of Restoration of Involuntarily Merged Lots to pre-merger status at 135 Thaxter Road – RIML-21-2

---

At its meeting May 17, 2021, the City Council considered a request from Bernie W. Pelech, Esq., on behalf of the property owners Vincent and Monica Zinganello, requesting the restoration of involuntarily merged lots at 135 Thaxter Road to their pre-merger status pursuant to NH RSA 674:39-aa. These lots are represented as Map 166 Lot 15 and historical Plan 46A Lots 52 and 53. The Council voted to refer to the Planning Board and Assessor for report back.

### **Description**

Current assessment records identify the parcel as having .23 +/- acres with a 3 bedroom 1.5 bath single family dwelling built around 1930 located on the parcel.

### **History**

Deeds: Older assessment records dating back to the 50's identified the parcel as 2 separate lots until 1983. According to the deeds researched back to 1930, book 920 page 365 and 1934 book 888 page 410, identified two vacant lots (lot 52 and lot 53) and were deeded individually to Harry F. Downing. In 1989, these two lots were transferred to Dale T. and Nicholas W. Genimatas on one deed and identified as two individual lots.

Property Assessment Records: Between 1953 and 1972 property assessment records show Plan 46A Lots 52 and 53 separately assessed. Assessment records for Tax Year 1983 show one assessment for both lots.

### **Building Inspection/Planning Records/Ariel Records**

2020 Ariel views of the lots show the driveway to the dwelling straddles the property line of lots 52 and 53 of the requested un-merger. Additionally, in 2011 Vincent Zingariello applied for and was granted a driveway permit to expand the frontage of the driveway located at 135 Thaxter Road by 10 to 12 feet. This expansion again straddled the property lines of the requested un-merger of lots 52 & 53.



### **Court Decisions**

Upon review of various New Hampshire court decisions concerning the denial of restorations of lots, the courts have held that the conveyance of multiple lots in a single deed does not, standing alone, support a voluntary merger *Roberts v. Town of Windham*, 165 N.H. 186,192 (2013).

Additionally, court decisions also looked at the use of the property in its entirety by reviewing a lots physical characteristics and the overt actions that occurred over time to the placement of buildings, driveways, outbuildings etc. These decisions, citing totality of changes, can reasonably support that lots by predecessors or current owners were voluntarily merged when facts show the primary and accessory buildings, access, etc. work as a unit. *Robillard v. Town of Hudson*, 120 N.H. 477,416 (1980); *Town of Newbury v. Landrigan*, 165 N.H.236,241 (201); and *Roberts v. Town of Windham*, 165 N.H. 186 (2013).

Additionally, the New Hampshire Municipal Association has interpreted the above court decision to mean, "Governing bodies and zoning boards of adjustment now know they should review requests to unmerge lots based upon all of the circumstances of actual use of the property, and that the lack of a request to voluntarily merge the lots by the current or former owner will not, standing alone, support such a request").

### **Summary**

No written request for voluntary merger was found but the above court decision identifies that it is not only a formal request for un-merger that should be taken into consideration when approving or denying a request for restoration of involuntarily merged lots.

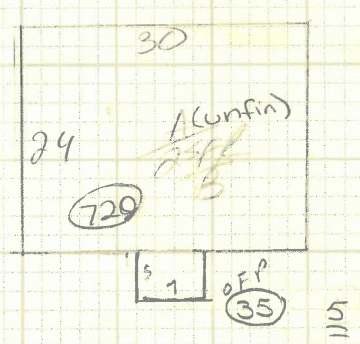
When reviewing the Ariel photos and looking at the request for expansion of frontage to the existing driveway by Mr. Zingariello in 2011, it is reasonable to support that the property was treated as a unit and voluntarily merged through an overt action by the current owner.

Cc: file

Attachments



| OCCUPANCY                       |            |            | INTERIOR FINISH           |                |           |              | COMMERCIAL COMPUTATIONS |                                  |            |         |          | OCCUPANCY    |              |               |        |
|---------------------------------|------------|------------|---------------------------|----------------|-----------|--------------|-------------------------|----------------------------------|------------|---------|----------|--------------|--------------|---------------|--------|
| 1 VAC. LOT                      | 2 DWELLING | 3 OTHER    | DRYWALL PLASTER           | B              | 1         | 2            | 3                       | EXTERIOR WALL CODES              | 1 BRICK    | 3 GLASS | 5 STUCCO | 7 STONE      | 9 CONCRETE   | SINGLE FAMILY | STORES |
|                                 |            |            | WOOD PANELING             |                |           |              |                         | 2 FRAME                          | 4 BLOCK    | 6 TILE  | 8 METAL  | 0 ENAM. STL. | MULTI FAMILY | OFFICES       |        |
| STORY HEIGHT                    |            |            | FIBERBOARD                | EXTERIOR WALLS |           |              |                         |                                  | APARTMENTS |         |          |              |              |               |        |
| 1.0                             | 1.5        | 2.0        | UNFINISHED                | EFF. PERIMETER |           |              |                         |                                  | L/F        |         |          |              |              |               |        |
| BASEMENT                        |            |            | LIVING ACCOMMODATIONS     |                |           |              |                         | PERIM. AREA RATIO %              |            |         |          |              |              |               |        |
| 1 NONE                          | 2 CRAWL    | 3 PART     | NO. OF UNITS              | TOTAL ROOMS    | BED ROOMS | FAMILY ROOMS | NO. OF UNITS            |                                  |            |         |          |              |              |               |        |
|                                 |            | 4 FULL     | 001                       | 06             | 03        | 02           | AVG. UNIT SIZE          |                                  |            |         |          |              |              |               |        |
| HEATING                         |            |            | OTHER FEATURES            |                |           |              |                         | BASEMENT SIZE                    |            |         |          |              |              |               |        |
| 1 NONE                          | 2 BASE     | 3 AIR CON  | PART MASONRY WALLS        |                |           |              |                         | SCHEDULE                         |            |         |          |              |              |               |        |
| WARM AIR - F OR G               |            |            | FIREPLACE                 |                |           |              |                         | HT.                              |            |         |          |              |              |               |        |
| HOT WATER / STEAM               |            |            | BASEMENT REC. ROOM        |                |           |              |                         | BASEMENT                         |            |         |          |              |              |               |        |
| ELECTRIC                        |            |            | FIN. BASEMENT LIVING AREA |                |           |              |                         | FIRST                            |            |         |          |              |              |               |        |
| FLOOR/WALL FURNACE              |            |            | BASEMENT GARAGE           |                |           |              |                         | SECOND                           |            |         |          |              |              |               |        |
| UNIT HEATERS                    |            |            | MODERNIZED KITCHEN        |                |           |              |                         | BASE PRICE                       |            |         |          |              |              |               |        |
| PLUMBING                        |            |            | REMODELING DATA           |                |           |              |                         | B. P. A.                         |            |         |          |              |              |               |        |
| PLUMBING POINTS                 |            |            | KITCHEN                   |                |           |              |                         | SUBTOTAL                         |            |         |          |              |              |               |        |
| STANDARD                        |            |            | HEATING                   |                |           |              |                         | LIGHTING                         |            |         |          |              |              |               |        |
| BATHROOM                        |            |            | GENERAL                   |                |           |              |                         | HTG./AIR CON.                    |            |         |          |              |              |               |        |
| HALF BATH                       |            |            | ERECTED                   |                |           |              |                         | SPRINKLER                        |            |         |          |              |              |               |        |
| SINK/LAVATORY                   |            |            | AGE                       |                |           |              |                         | PARTITIONS                       |            |         |          |              |              |               |        |
| WATER CLOSET/URINAL             |            |            | CDU RATING                |                |           |              |                         | INTERIOR FINISH                  |            |         |          |              |              |               |        |
| NO PLUMBING                     |            |            | DWELLING COMPUTATIONS     |                |           |              |                         | SF/CF PRICE                      |            |         |          |              |              |               |        |
| ATTIC                           |            |            | 2.0 STORY                 |                |           |              |                         | AREA CUBE                        |            |         |          |              |              |               |        |
| 1 NONE                          | 2 UNFIN    | 3 PT. FIN  | 0.720 S.F.                |                |           |              |                         | SUBTOTAL                         |            |         |          |              |              |               |        |
|                                 |            | 4 FULL FIN | 48,640                    |                |           |              |                         | SPECIAL FEATURES*                |            |         |          |              |              |               |        |
| ROOF                            |            |            | HEATING                   |                |           |              |                         | ADDITIONS                        |            |         |          |              |              |               |        |
| SHINGLE-ASP./ASB./WOOD          |            |            | PLUMBING                  |                |           |              |                         | TOTAL BASE                       |            |         |          |              |              |               |        |
| SLATE/TILE/METAL                |            |            | ATTIC                     |                |           |              |                         | GRADE FACTOR                     |            |         |          |              |              |               |        |
| COMP. ON WOOD FRAME             |            |            | ADDNS. & PCHS.            |                |           |              |                         | REPLACEMENT COST                 |            |         |          |              |              |               |        |
| COMP. ON STEEL FRAME            |            |            | TOTAL                     |                |           |              |                         | FUNCTIONAL DEPRECIATIONS FACTORS |            |         |          |              |              |               |        |
| WALLS                           |            |            | TOTAL                     |                |           |              |                         | SURPLUS CAP                      |            |         |          |              |              |               |        |
| FRAME SIDING ALUM./VINYL/STUCCO |            |            | 51,790                    |                |           |              |                         | ENCROACHMENTS                    |            |         |          |              |              |               |        |
| SHINGLE-ASP./ASB./WOOD          |            |            | O.F. POINTS               |                |           |              |                         | OBSOLESCENCE                     |            |         |          |              |              |               |        |
| CONCRETE BLOCK                  |            |            | +2,100                    |                |           |              |                         | BLIGHTED AREA                    |            |         |          |              |              |               |        |
| BRICK VENEER/STONE              |            |            | TOTAL                     |                |           |              |                         | COMM. LOCATION                   |            |         |          |              |              |               |        |
| PLATE GLASS FRONT               |            |            | 53,890                    |                |           |              |                         | ECONOMIC                         |            |         |          |              |              |               |        |
| FLOORS                          |            |            | GRADE                     |                |           |              |                         | TOTAL SPECIAL FEATURES*          |            |         |          |              |              |               |        |
| CONCRETE                        |            |            | TOTAL                     |                |           |              |                         | SUMMARY OF OTHER BUILDINGS       |            |         |          |              |              |               |        |
| WOOD                            |            |            | 63,050                    |                |           |              |                         | TYPE                             |            |         |          |              |              |               |        |
| TILE                            |            |            | C & D FACT. %             |                |           |              |                         | NO.                              |            |         |          |              |              |               |        |
| CARPET                          |            |            | REPL. COST                |                |           |              |                         | CONSTRUCTION                     |            |         |          |              |              |               |        |
| WD./STL. FRAME                  |            |            | DEPR.                     |                |           |              |                         | SIZE                             |            |         |          |              |              |               |        |
| REINF. CONC.                    |            |            | 47,300                    |                |           |              |                         | RATE                             |            |         |          |              |              |               |        |
|                                 |            |            |                           |                |           |              |                         | GRADE                            |            |         |          |              |              |               |        |
|                                 |            |            |                           |                |           |              |                         | ERECTED                          |            |         |          |              |              |               |        |
|                                 |            |            |                           |                |           |              |                         | CDU                              |            |         |          |              |              |               |        |
|                                 |            |            |                           |                |           |              |                         | REPLACEMENT COST                 |            |         |          |              |              |               |        |
|                                 |            |            |                           |                |           |              |                         | DEPR.                            |            |         |          |              |              |               |        |
|                                 |            |            |                           |                |           |              |                         | TRUE VALUE                       |            |         |          |              |              |               |        |



GRADE DENOTES QUALITY OF CONSTRUCTION: A—EXCELLENT; B—GOOD; C—AVERAGE; D—CHEAP; E—VERY CHEAP  
 CDU FACTOR REFERS TO THE CONDITION, DESIRABILITY, AND USEFULNESS OF THE BUILDING

TLA 1440

TOTAL OF CARDS THRU 2000  
 TOTAL VALUE ALL BUILDINGS 49300



DOWNING BERNICE M TRSTEE  
135 THAXTER ROAD  
PORTSMOUTH NH 03801

|  |              |      |               |         |                                 |        |
|--|--------------|------|---------------|---------|---------------------------------|--------|
| PROPERTY LOCATION                                      |              | SIDE | LOCATION CODE |         | PLAN LOT<br>046A 053<br>U66 015 |        |
| 135  | THAXTER ROAD | E    | /             | /       |                                 |        |
| CITY OF PORTSMOUTH N.H.<br>JOHN B. PETTY CAE, ASSESSOR |              |      | TYPE          | PROJECT | CONTROL NO                      | CARD   |
|  |              |      | RESD          | 31001   | 1803461005300                   | 1 OF 1 |

| RECORD OF TRANSFER  | DATE    | BOOK | PAGE | AMOUNT | MORTGAGE |
|---------------------|---------|------|------|--------|----------|
| 1 DOWNING/HARRY F   | 122749  | N/A  | N/A  |        |          |
| 2 Downing Bernice M | 12/8/80 | 2379 | 328  |        |          |
| 3                   |         |      |      |        |          |
| 4                   |         |      |      |        |          |
| 5                   |         |      |      |        |          |
| 6                   |         |      |      |        |          |
| 7                   |         |      |      |        |          |

| LAND FACTORS         |              |        | LAND IMPROVEMENTS |    |            | SUMMARY |       |
|----------------------|--------------|--------|-------------------|----|------------|---------|-------|
| TOPOGRAPHY-1 LEVEL   | LOCATION     | FAIR + |                   |    |            | 19 72   |       |
| IMPROVEMTS-1 C WATER | DRAINAGE     | GOOD   |                   |    |            | LAND    | 3300  |
| -2 SEWER             | ZONING       | 02     |                   |    |            | BLDGS   | 17300 |
| -3 ELEC              | NEIGHBORHOOD | STATIC |                   |    |            | TOTAL   | 20600 |
|                      | SOIL-1       | SANDY  |                   |    |            |         |       |
|                      | -2           | LOAM   |                   |    |            |         |       |
| STREET/RD-2 IMPROVE  |              |        | VALUE             | EQ | ASSESSMENT | 19      |       |
|                      |              |        |                   |    |            | LAND    |       |
|                      |              |        |                   |    |            | BLDGS   |       |
|                      |              |        |                   |    |            | TOTAL   |       |

| ACREAGE COMPUTATION |       |       |               |      |       |     |            |
|---------------------|-------|-------|---------------|------|-------|-----|------------|
| TYPE                | ACRES | PRICE | TOTAL         | DEPR | VALUE | EQ  | ASSESSMENT |
| 1 H-LOT 33 A        | .110  | 10000 | 3300          |      | 3300  | 100 | 3300       |
| 2                   |       |       |               |      |       |     |            |
| 3                   |       |       |               |      |       |     |            |
| 4                   |       |       |               |      |       |     |            |
| 5                   |       |       |               |      |       |     |            |
| 6                   |       |       |               |      |       |     |            |
|                     | .110  |       | ACREAGE TOTAL |      | 3300  | 100 | 3300       |

| LOT COMPUTATION |      |          |       |              |         |           |       |              |        |       |     |            |
|-----------------|------|----------|-------|--------------|---------|-----------|-------|--------------|--------|-------|-----|------------|
| FRONT           | REAR | FRONTAGE | DEPTH | STREET PRICE | DEPTH % | ADJ FR PR | TOTAL | DEPRECIATION | CORNER | VALUE | EQ  | ASSESSMENT |
| 1               |      |          |       |              |         |           |       |              |        |       |     |            |
| 2               |      |          |       |              |         |           |       |              |        |       |     |            |
| 3               |      |          |       |              |         |           |       |              |        |       |     |            |
| 4               |      |          |       |              |         |           |       |              |        |       |     |            |
| LOT TOTAL       |      |          |       |              |         |           |       |              |        |       |     |            |
| LAND TOTAL      |      |          |       |              |         |           |       |              |        | 3300  | 100 | 3300       |

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| CONTROL NO.              | STRUCTURE VALUE          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
|--------------------------|--------------------------|--------|--------------|-------|--------|-------------------|-----------|----------------|-----------|--------------|------------|--------------|------------|------------|
| 180<br>3461005300        | STRUCTURAL ELEMENTS      |        |              |       |        | PRICE             |           |                |           |              |            |              |            |            |
| OUT BUILDINGS            | BASE. A                  |        |              |       |        | 744SF             | 19320     |                |           |              |            |              |            |            |
| ITEM                     | 1                        | 2      | 3            | 4     | 5      | 6                 |           |                |           |              |            |              |            |            |
| FOUNDATION               | X                        |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| WALL FOUND               |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| SKIDS                    |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| SGLE SDG                 |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| DBL SDG                  | X                        |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| SHING WALLS              |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| CONC BLOCK               |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| BRICK                    |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| STONE                    |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| FLOOR                    |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| INT FINISH               |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| PLUMB                    |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| ELEC                     |                          |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| SIZE                     | 1- 11X 18                |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| AREA                     | 1- 198 SF                |        |              |       |        |                   |           |                |           |              |            |              |            |            |
| SUB TOTAL FACTOR         |                          |        |              |       |        | 23497             |           |                |           |              |            |              |            |            |
| OCCUPANCY                | CONSTRUCTION             | CLASS  | AGE          | REMOD | COND   | REPLACEMENT VALUE | PHYS DEPR | PHYSICAL VALUE | FUNC DEPR | ACTUAL VALUE | EQ         | ASSESSMENT   | SALE PRICE | DATE MO/YR |
| DWLG 1 FAM<br>1-DT GAR33 | 2.0S FR B A<br>1.0S FR 2 | 3<br>3 | 1930±<br>OLD | NO    | G<br>F | 23497<br>1168     | 30<br>25  | 16448<br>876   |           | 16448<br>876 | 100<br>100 | 16400<br>900 |            |            |
| BUILDING TOTAL           |                          |        |              |       |        |                   |           |                |           |              | 17324      | 100          | 17300      |            |

1

SCALE = 20 FT./IN.

| A 24-31-24-31 |      |      |      |       |            |
|---------------|------|------|------|-------|------------|
| SEG           | TYPE | STOR | CONS | CLASS | DIMENSIONS |
| B             | 30   | 1.0  | FRAM | 3     | 4-6-4-6    |
| C             | 01   | 1.0  | FRAM | 3     | 2-7-2-7    |
| D             | 30   | 1.0  | FRAM | 3     | 5-7-5-7    |

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DOWNING BERNICE M TRSTEE  
135 THAXTER ROAD  
PORTSMOUTH NH 03801

|  |  |      |               |         |                                    |        |
|--|--|------|---------------|---------|------------------------------------|--------|
| PROPERTY LOCATION                                      |  | SIDE | LOCATION CODE |         | PLAN LOT<br>046A 052 //<br>466 015 |        |
| 135 THAXTER ROAD                                       |  | E    | / / / /       |         |                                    |        |
| CITY OF PORTSMOUTH N.H.<br>JOHN B. PETTY CAE, ASSESSOR |  |      | TYPE          | PROJECT | CONTROL NO                         | CARD   |
|  |  |      | RES D         | 31001   | 1803461005200                      | 1 OF 1 |

LAND DEPRECIATION CODES  
3-VACANCY

| RECORD OF TRANSFER  | DATE    | BOOK | PAGE | AMOUNT | MORTGAGE |
|---------------------|---------|------|------|--------|----------|
| 1 DOWNING/HARRY F   | 80336   | 0920 | 365  |        |          |
| 2 Downing Bernice M | 12/8/80 | 2379 | 328  |        |          |
| 3                   |         |      |      |        |          |
| 4                   |         |      |      |        |          |
| 5                   |         |      |      |        |          |
| 6                   |         |      |      |        |          |
| 7                   |         |      |      |        |          |

| LAND FACTORS        |   | LAND IMPROVEMENTS |                   |       | SUMMARY |                             |
|---------------------|---|-------------------|-------------------|-------|---------|-----------------------------|
| TOPOGRAPHY-1 LEVEL  | LOCATION DRAINAGE ZONING NEIGHBORHOOD SOIL-1 -2 | FAIR + GOOD 02    | STATIC SANDY LOAM | VALUE | EQ      | ASSESSMENT                  |
|                     |   |                   |                   |       |         | 19 72 LAND BLDGS TOTAL 2500 |
| STREET/RD-2 IMPROVE |   |                   |                   |       |         | 19 LAND BLDGS TOTAL         |

| ACREAGE COMPUTATION |       |       |               |      |       |     |            |
|---------------------|-------|-------|---------------|------|-------|-----|------------|
| TYPE                | ACRES | PRICE | TOTAL         | DEPR | VALUE | EQ  | ASSESSMENT |
| 1 H-LOT 33 A        | .110  | 10000 | 3300          | 25   | 2475  | 100 | 2500       |
| 2                   |       |       |               |      |       |     |            |
| 3                   |       |       |               |      |       |     |            |
| 4                   |       |       |               |      |       |     |            |
| 5                   |       |       |               |      |       |     |            |
| 6                   |       |       |               |      |       |     |            |
|                     |       | .110  | ACREAGE TOTAL |      | 2475  | 100 | 2500       |

| LOT COMPUTATION |      |          |       |              |         |           |       |              |        |       |     |            |
|-----------------|------|----------|-------|--------------|---------|-----------|-------|--------------|--------|-------|-----|------------|
| FRONT           | REAR | FRONTAGE | DEPTH | STREET PRICE | DEPTH % | ADJ FR PR | TOTAL | DEPRECIATION | CORNER | VALUE | EQ  | ASSESSMENT |
| 1               |      |          |       |              |         |           |       |              |        |       |     |            |
| 2               |      |          |       |              |         |           |       |              |        |       |     |            |
| 3               |      |          |       |              |         |           |       |              |        |       |     |            |
| 4               |      |          |       |              |         |           |       |              |        |       |     |            |
| LOT TOTAL       |      |          |       |              |         |           |       |              |        |       |     |            |
| LAND TOTAL      |      |          |       |              |         |           |       |              |        | 2475  | 100 | 2500       |

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| CONTROL NO.       |              | STRUCTURE VALUE     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
|-------------------|--------------|---------------------|-----|-------|------|-------------------|-----------|----------------|-----------|--------------|----|------------|-------------|------------|--|--|--|--|--|--|--|
| 180<br>3461005200 |              | STRUCTURAL ELEMENTS |     |       |      | PRICE             |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| OUT BUILDINGS     |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| ITEM              | 1            | 2                   | 3   | 4     | 5    | 6                 |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| PIER FOUND        |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| WALL FOUND        |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| SKIDS             |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| SGLE SDG          |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| DBL SDG           |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| SHING WALLS       |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| CONC BLOCK        |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| BRICK             |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| STONE             |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| FLOOR             |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| INT FINISH        |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| PLUMB             |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| ELEC              |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| SIZE              |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| AREA              |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| SUB TOTAL FACTOR  |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
| OCCUPANCY         | CONSTRUCTION | CLASS               | AGE | REMOD | COND | REPLACEMENT VALUE | PHYS DEPR | PHYSICAL VALUE | FUNC DEPR | ACTUAL VALUE | EQ | ASSESSMENT | SALE PRICE  | DATE MO/YR |  |  |  |  |  |  |  |
|                   |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |
|                   |              |                     |     |       |      |                   |           |                |           |              |    |            | LISTED DATE | LISTER     |  |  |  |  |  |  |  |
|                   |              |                     |     |       |      |                   |           |                |           |              |    |            |             | 3416       |  |  |  |  |  |  |  |
|                   |              |                     |     |       |      |                   |           |                |           |              |    |            | SIGNATURE   | REVIEW     |  |  |  |  |  |  |  |
|                   |              |                     |     |       |      |                   |           |                |           |              |    |            | 0 LAND      | 2735       |  |  |  |  |  |  |  |
| BUILDING TOTAL    |              |                     |     |       |      |                   |           |                |           |              |    |            |             |            |  |  |  |  |  |  |  |

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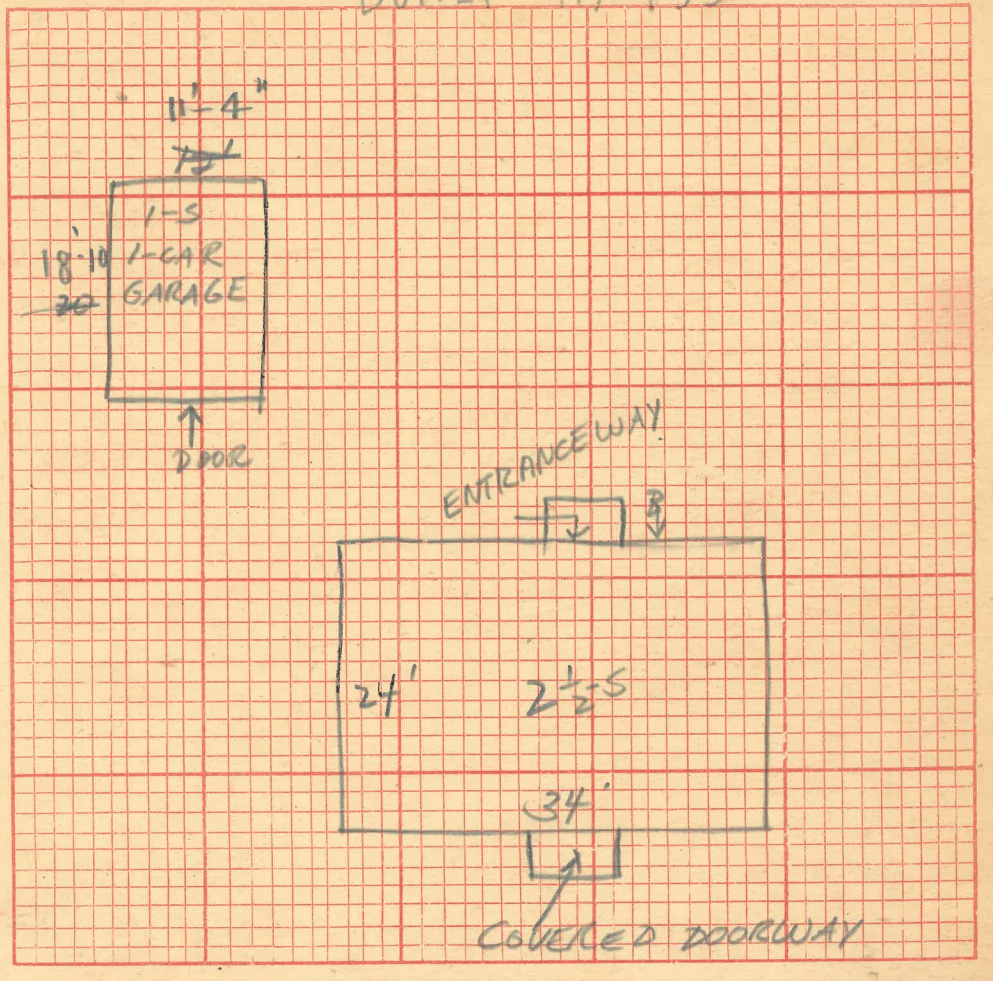




RECORD OF BUILDINGS

Gar. should be 11'4" inches by 18'10" inches  
 BUILT 10/1933

| CONSTRUCTION       |                     | FLOORS           |      | COMPUTATIONS |  |
|--------------------|---------------------|------------------|------|--------------|--|
| OCCUPANCY          | FLOORS              | UNIT             | 1951 |              |  |
| SINGLE FAMILY ✓    | G. B. 1 2 3         | 1ST 810 S.F. @ 4 | 3200 |              |  |
| TWO FAMILY         | CEMENT ✓            | 2ND 810 S.F. @ 4 | 3200 |              |  |
| APARTMENT          | EARTH ✓             | 415 S.F. @ 2     | 800  |              |  |
| STORE              | PINE ✓              | Covered Doorway  | 200  |              |  |
| THEATRE            | HARDWOOD ✓          | Rear Entry       | 100  |              |  |
| HOTEL              | ATTIC FL. & STRS. ✓ | Gar.             | 500  | 300          |  |
| OFFICES            | INTERIOR FINISH     |                  |      |              |  |
| WAREHOUSE          | B 1 2 3             |                  |      |              |  |
| COMM. GARAGE       |                     |                  |      |              |  |
| GAS STATION        |                     |                  |      |              |  |
| FOUNDATION         |                     |                  |      |              |  |
| CONCRETE ✓         | PINE                |                  |      |              |  |
| CONCRETE BLOCK     | HARDWOOD            |                  |      |              |  |
| BRICK OR STONE     | PLASTER             |                  |      |              |  |
| PIERS              | UNFINISHED ✓        |                  |      |              |  |
| CELLAR AREA FULL   | METAL CLG.          |                  |      |              |  |
| 1/4 1/2 3/4        | RECREAT. ROOM       |                  |      |              |  |
| NO. CELLAR         | FINISHED ATTIC ✓    |                  |      |              |  |
| EXTERIOR WALLS     | FIREPLACE           |                  |      |              |  |
| CLAPBOARDS         |                     |                  |      |              |  |
| WIDE SIDING ✓      | HEATING             |                  |      |              |  |
| DROP SIDING        | PIPELESS FURNACE    |                  |      |              |  |
| NO SHEATHING       | HOT AIR FURNACE     |                  |      |              |  |
| WOOD SHINGLES      | FORCED AIR FURN.    |                  |      |              |  |
| ASBES. SHINGLES    | STEAM ✓             |                  |      |              |  |
| STUCCO ON FRAME    | HOT WAT. OR VAPOR   |                  |      |              |  |
| STUCCO ON TILE     | NO HEATING          |                  |      |              |  |
| BRICK VENEER       |                     |                  |      |              |  |
| BRICK ON TILE      | GAS BURNER          |                  |      |              |  |
| SOLID BRICK        | OIL BURNER          |                  |      |              |  |
| STONE VENEER       | STOKER              |                  |      |              |  |
| CONC. OR CIND. BL. | PLUMBING            |                  |      |              |  |
| TERRA COTTA        | BATHROOM ✓          |                  |      |              |  |
| VITROLITE          | TOILET ROOM         |                  |      |              |  |
| PLATE GLASS        | WATER CLOSET        |                  |      |              |  |
| INSULATION         | KITCHEN SINK ✓      |                  |      |              |  |
| WEATHERSTRIP       | STD. WAT. HEAT      |                  |      |              |  |
|                    | AUTO. WAT. HEAT     |                  |      |              |  |
|                    | ELECT. WAT. SYST.   |                  |      |              |  |
|                    | LAUNDRY TUBS ✓      |                  |      |              |  |
|                    | NO PLUMBING         |                  |      |              |  |
| ROOFING            |                     |                  |      |              |  |
| ASPH. SHINGLES ✓   |                     |                  |      |              |  |
| WOOD SHINGLES      | TILING              |                  |      |              |  |
| ASBES. SHINGLES    | BATH FL. & WCOT.    |                  |      |              |  |
| SLATE              | TOILET FL. & WCOT.  |                  |      |              |  |
| TILE               | LIGHTING            |                  |      |              |  |
| METAL              | ELECTRIC ✓          |                  |      |              |  |
| COMPOSITION        | NO LIGHTING         |                  |      |              |  |
| ROLL ROOFING       |                     |                  |      |              |  |
| INSULATION         | NO. OF ROOMS        |                  |      |              |  |
|                    | BSMT. 1             |                  |      |              |  |
|                    | 1ST. 3              |                  |      |              |  |
|                    | 2ND. 3              |                  |      |              |  |
|                    | 3RD. —              |                  |      |              |  |

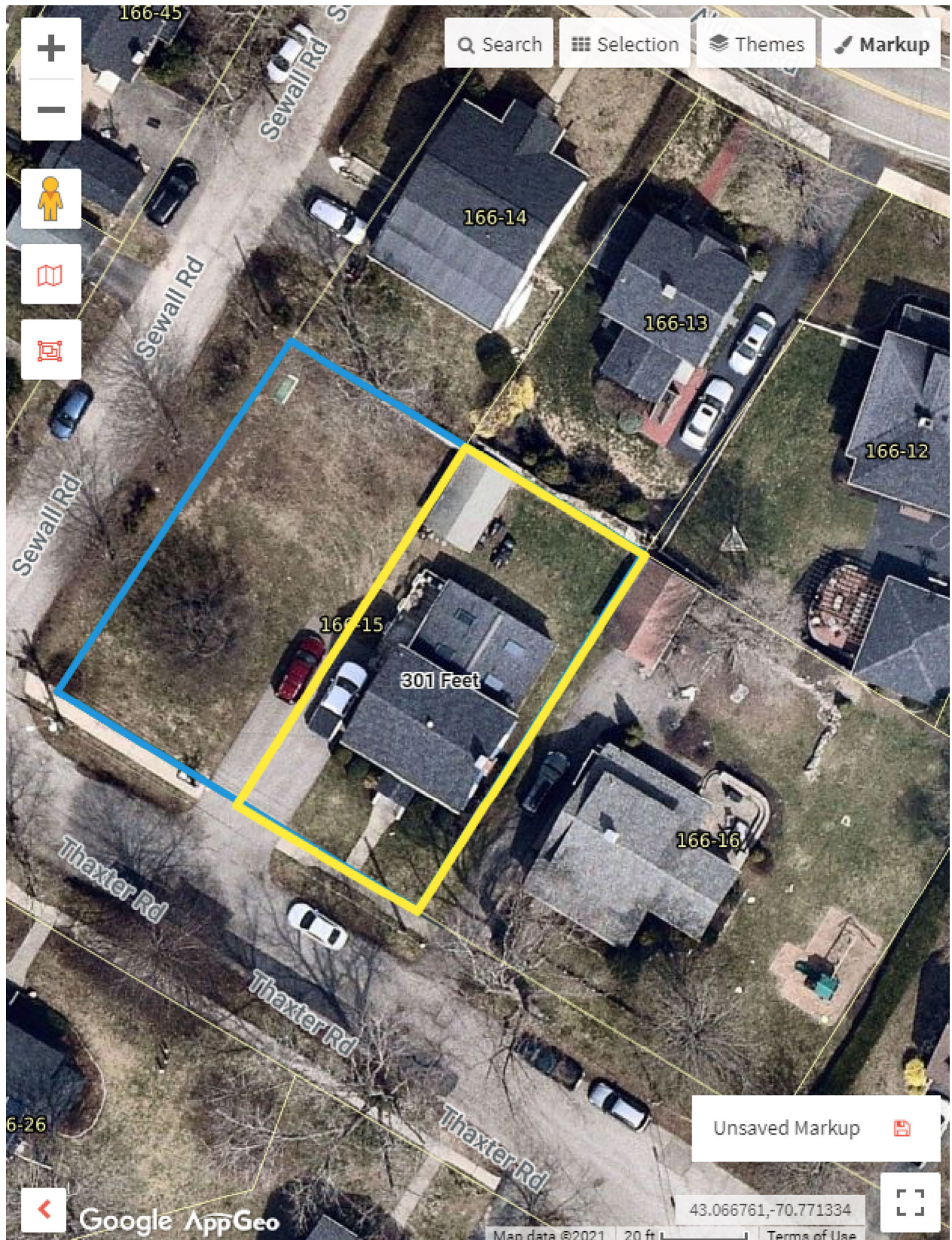


SUMMARY OF BUILDINGS

| OCCUPANCY | TYPE | GRADE | AGE                   | DATE REMOD. | COND. | REPL. VAL. | PHYS. DEPR. | PHYS. VALUE | FUNCT. DEPR. * | SOUND VALUE |
|-----------|------|-------|-----------------------|-------------|-------|------------|-------------|-------------|----------------|-------------|
|           |      |       | 18                    |             |       | 7800       | 30%         | 5400        | 10%            | 4900        |
|           |      | 19    | TOTAL VALUE BUILDINGS |             |       |            |             |             |                |             |
|           |      | 19    | TOTAL VALUE BUILDINGS |             |       |            |             |             |                |             |

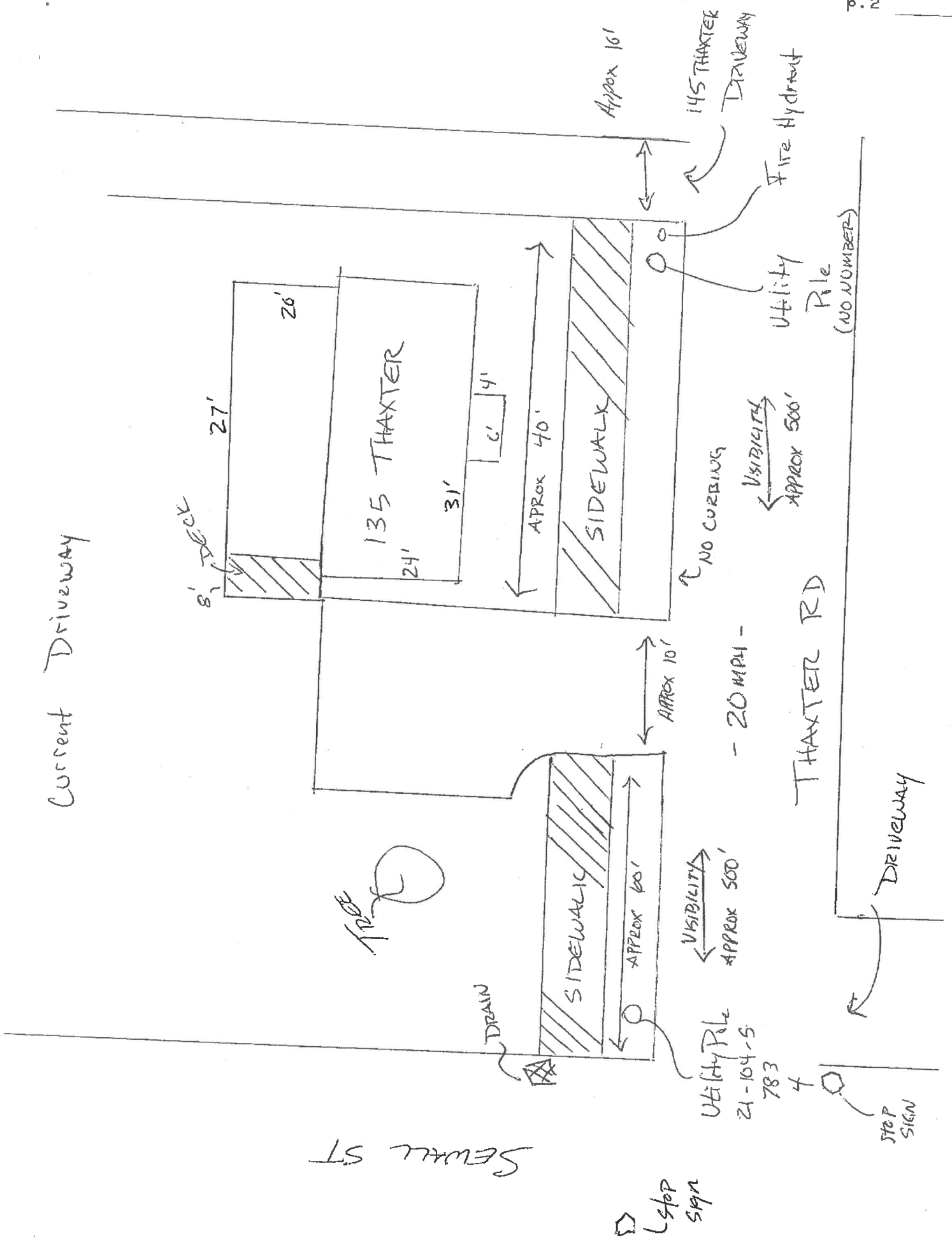
\* Obsolete Kitchen etc.







Current Driveway



STOP SIGN

STOP SIGN

UTILITY POLE  
21-104-5  
783  
4

VISIBILITY  
APPROX 500'

APPROX 10'

- 20 MPH -

THAXTER RD

DRIVEWAY

NO CURBING  
VISIBILITY  
APPROX 500'

UTILITY  
POLE  
(NO NUMBER)

FIRE HYDRANT

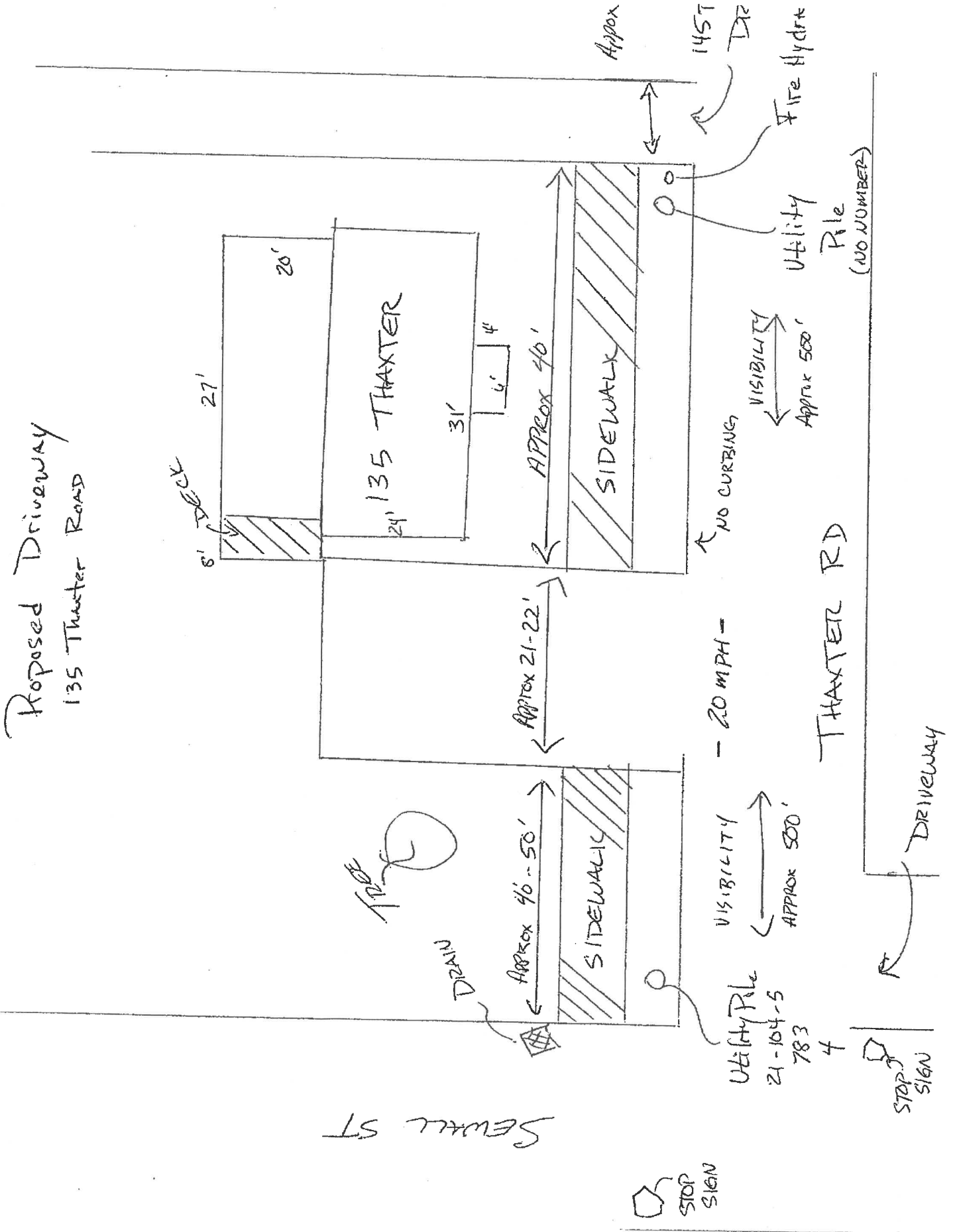
145 THAXTER  
DRIVEWAY

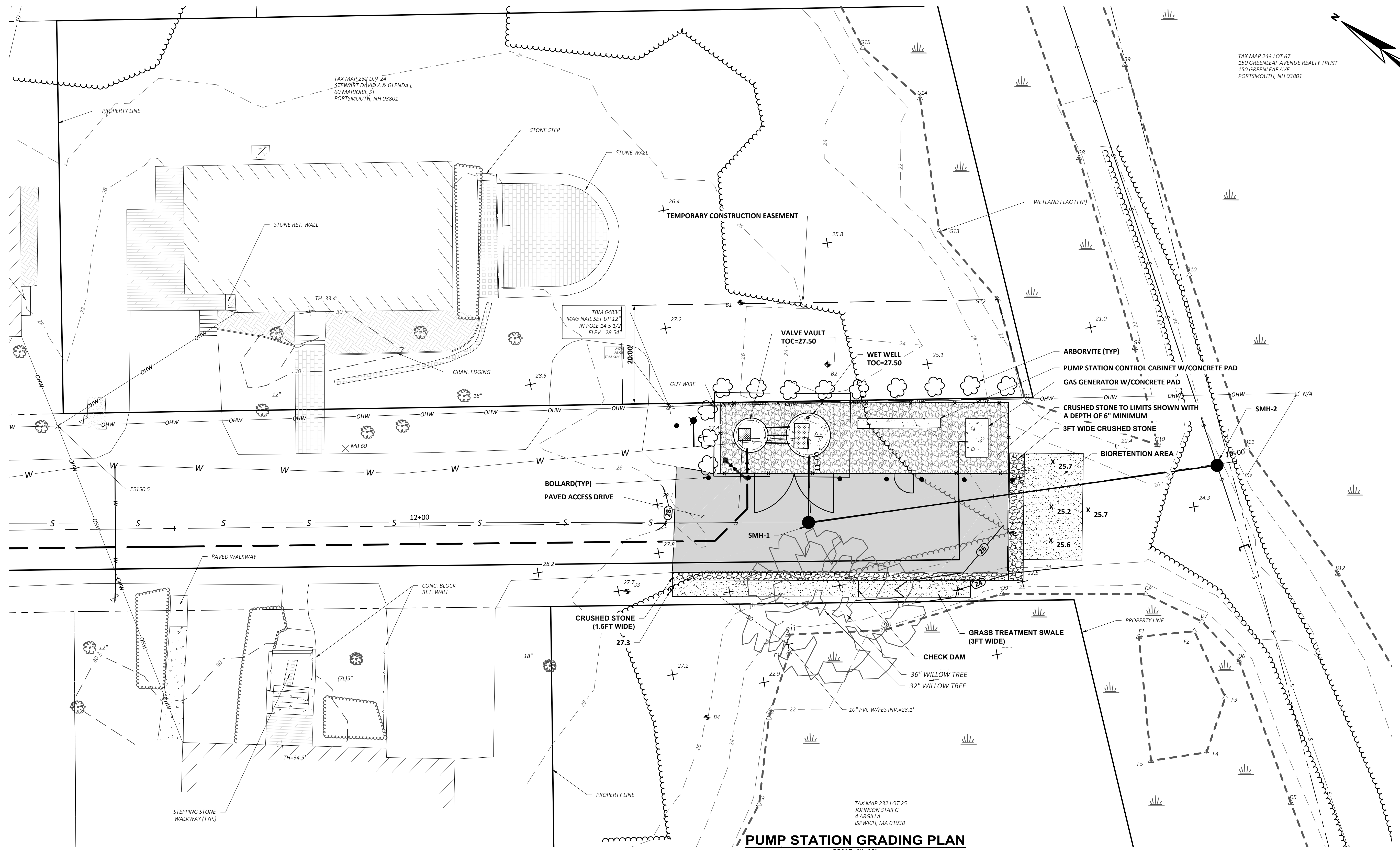
APPROX 16'

SEWELL ST

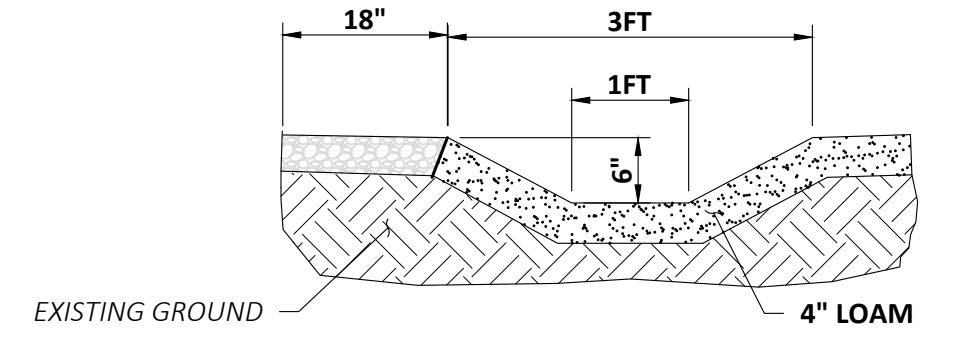


# Proposed Driveway 135 Thaxter Road

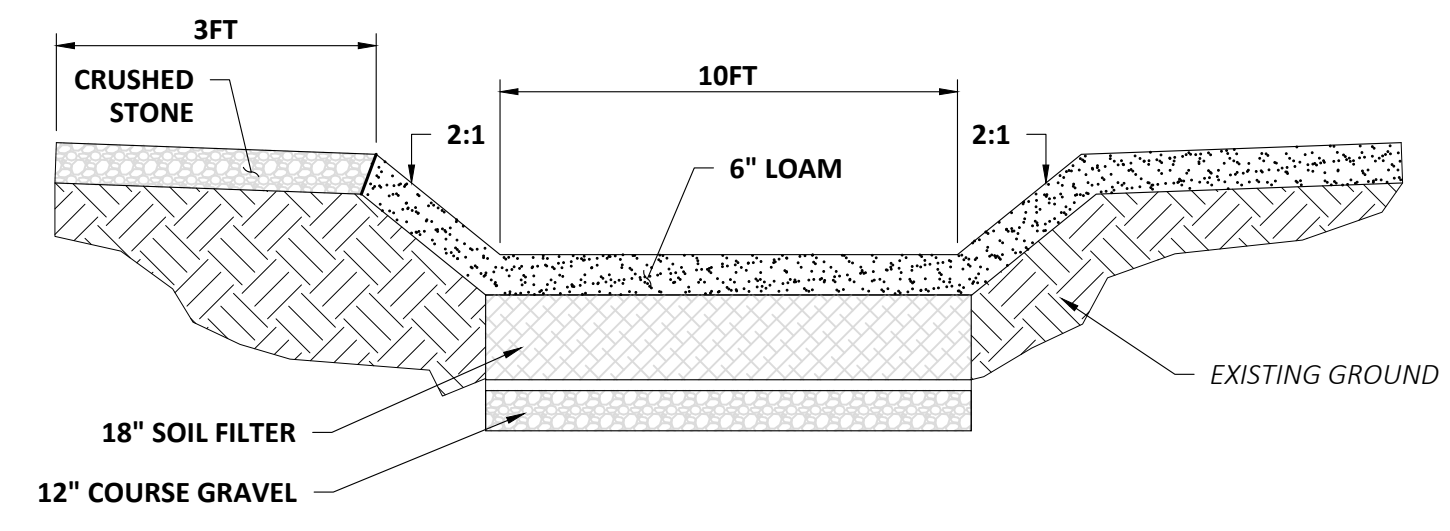




**PUMP STATION GRADING PLAN**  
SCALE: 1"=10'

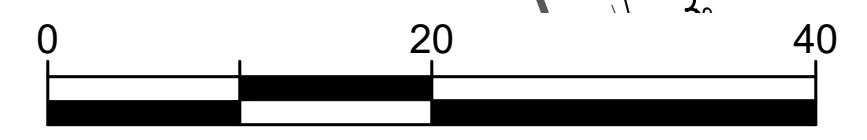


**GRASS TREATMENT SWALE**  
SCALE: NTS



**BIORETENTION AREA SECTION**  
SCALE: NTS

NOTE:  
1. BIORETENTION AREA TO BE PLANTED WITH NEW ENGLAND WETLAND SEED MIX.



TAX MAP 243 LOT 67  
150 GREENLEAF AVENUE REALTY TRUST  
150 GREENLEAF AVE  
PORTSMOUTH, NH 03801

TAX MAP 232 LOT 24  
STEWART DAVID A & GLENDA L  
60 MARJORIE ST  
PORTSMOUTH, NH 03801

TAX MAP 232 LOT 25  
JOHNSON STAR C  
4 ARGILLA  
ISPWICH, MA 01938

| NO | REVISIONS | APPD | DATE |
|----|-----------|------|------|
| 1  |           |      |      |
| 2  |           |      |      |
| 3  |           |      |      |
| 4  |           |      |      |
| 5  |           |      |      |

PROJECT NO: 20374  
 DESIGNED: D.SAV  
 CAD: D.SAV  
 CHECKED: DATE:  
 APPROVED: DATE:  
 SUBMISSION: 90% SUBMITTAL

**WRIGHT-PIERCE**  
 603.430.3728 | www.wright-pierce.com  
 230 COMMERCE WAY, SUITE 302, PORTSMOUTH, NH 03801

CITY OF PORTSMOUTH, NEW HAMPSHIRE  
 MARJORIE STREET PUMP STATION  
 REPLACEMENT  
 PUMP STATION GRADING PLAN

## **Narrative for City Land Use Application 3 Curriers Cove Pool & Pool House**

My wife & I purchased the property located at 3 Curriers Cove in 2013. We started major renovations in 2017 and part of the renovation plan was to remove the current pool which was structurally compromised, and the pool house that was built in the early 1980s and update them. The general contractor at that time received a land use and building permit (#8543) to remove the pool and pool house and build new ones. The pool and house were removed in early 2018. Due to some major issues with the general contractor the pool and pool house were removed, but no progress was made on the installation of the new pool.

In 2019, we assembled a new team to install the pool, etc. Due to financial issues with the General Contractor, we had to delay through the summer into the spring of 2020. Of course, then COVID. The team held together and we are planning to do the work in 2021.

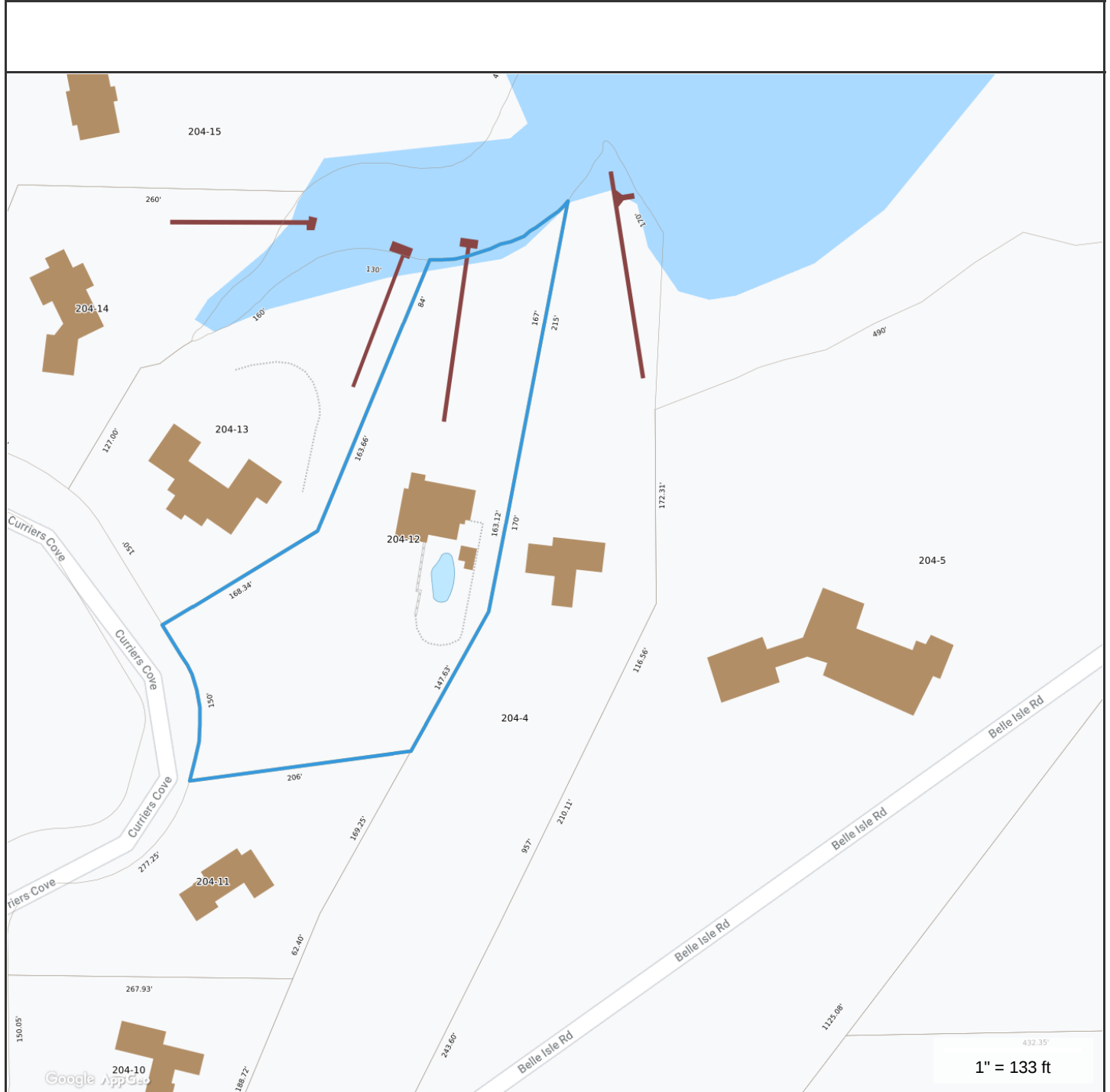
The City rules required that we start a new application for the Land Use and Building permits. We started the process in April and are in that process.

The layout and plans for the pool and pool house have not changed since 2018. We did add more landscaping to the east side of the pool and property. We are required to add a fence for the pool area for safety reasons and in addition we are adding new plantings.

There is a 40' buffer to the west of our property line which we will adhere to in this new installation and renovation. When we purchased the property in 2013 there was nothing about this buffer in the title deed with the City. We were informed of this buffer in 2017 from various people including Jones & Beach, our surveyors. This buffer was never included or mentioned in the title deed of the property, but was found in some obscure documents. The original pool and pool house, built in the 80s were well inside that 40' buffer and had been for decades. We want to adhere to the 40' buffer for the benefit of the natural beauty of the area and also for our neighbor that borders that property; plus there is no reason to build anything in the buffer. The pool and pool house fit well within the boundary.

Custom Pools will be installing the pool and Triad Associates will be doing the hardscaping work and wall maintenance and drainage. IKON Construction will manage the Pool House construction.





**Property Information**

**Property ID** 0204-0012-0000  
**Location** 3 CURRIERS CV  
**Owner** BAILEY CHASE B



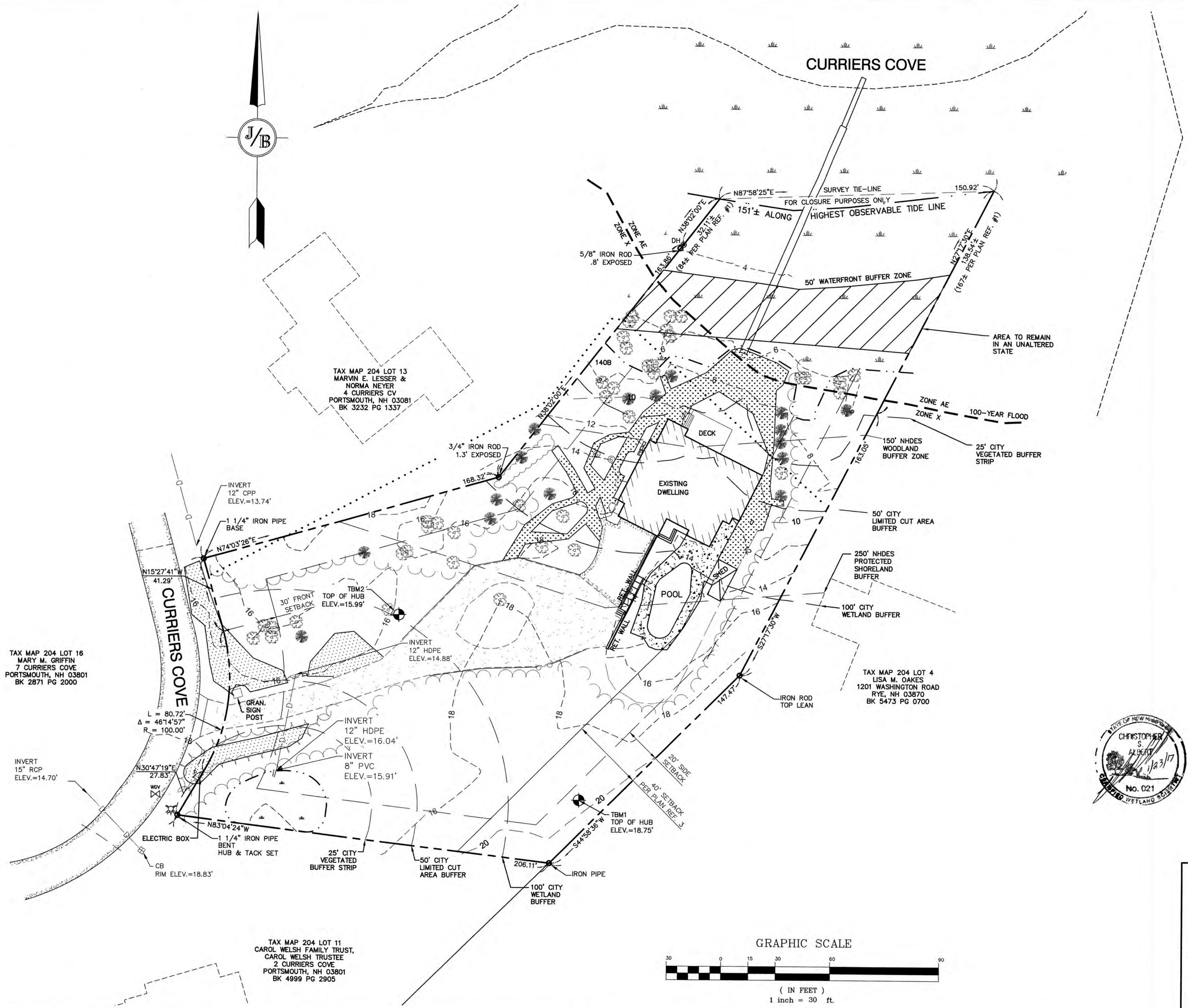
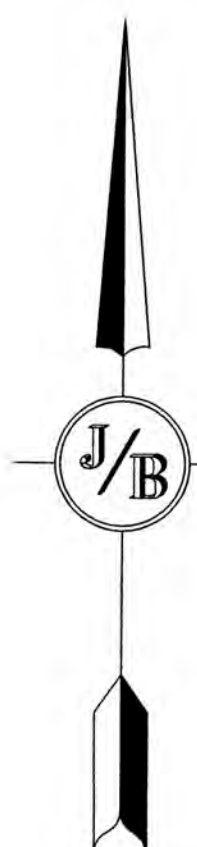
**MAP FOR REFERENCE ONLY  
NOT A LEGAL DOCUMENT**

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 4/1/2019  
Data updated 7/17/2019

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.





- EXISTING CONDITIONS NOTES:**
1. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS OF TAX MAP 204, LOT 12.
  2. 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 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 1-888-DIG-SAFE (1-888-344-7233).
  3. VERTICAL DATUM: NGVD 29. HORIZONTAL DATUM: MAGNETIC.
  4. BASE ELEVATION WAS ESTABLISHED THROUGH MULTIPLE GPS POST PROCESS OBSERVATIONS AND WAS REDUCED TO THE NGVD 29 DATUM BY THE NATIONAL GEODETIC SURVEY OPUS SOFTWARE.
  5. SUBJECT PROPERTY IS PARTIALLY LOCATED WITHIN 3 FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONES, REFERENCE FEMA COMMUNITY PANEL NO. 330139 0269 E, DATED MAY 17, 2005. ZONE AE - BASE FLOOD ELEVATIONS DETERMINED AS EL. 9. ZONE X (SHADED) - AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD. ZONE X (UNSHADED) - AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. FEMA LINES SHOWN HEREON HAVE BEEN DIGITIZED DIRECTLY FROM THE ABOVE REFERENCED PANEL.
  6. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY CHRISTOPHER ALBERT OF JONES & BEACH ENGINEERS DURING SUMMER 2016, USING HAND AUGERS AND 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.

- PLAN REFERENCES:**
1. "LOT LINE VERIFICATION PLAN FOR J.P. GRIFFIN CURRIERS COVE COUNTY OF ROCKINGHAM PORTSMOUTH NH"; BY RICHARD P. MILLETTE AND ASSOCIATES CIVIL ENGINEERS AND LAND SURVEYORS; DATED 9/26/95. RECORDED AT R.C.R.D. AS PLAN D-24212.
  2. "ALLOWABLE BUILDING LOCATION PLAN FOR J.P. GRIFFIN LITTLE HARBOR DRIVE COUNTY OF ROCKINGHAM PORTSMOUTH NH"; BY RICHARD P. MILLETTE AND ASSOCIATES CIVIL ENGINEERS AND LAND SURVEYORS; DATED 4/15/85. RECORDED AT R.C.R.D. AS PLAN D-13486.
  3. "SUBDIVISION PLAN FOR J.P. GRIFFIN OFF LITTLE HARBOR DRIVE COUNTY OF ROCKINGHAM PORTSMOUTH NH"; BY RICHARD P. MILLETTE AND ASSOCIATES CIVIL ENGINEERS AND LAND SURVEYORS; DATED 12/21/81. RECORDED AT R.C.R.D. AS PLAN D-10554.

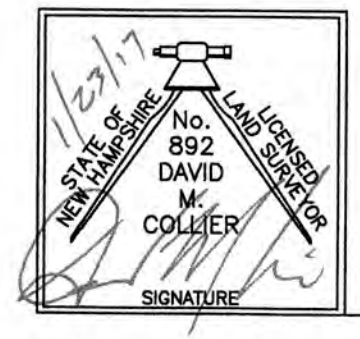
**CERTIFICATION:**

PURSUANT TO RSA 676:18-III AND RSA 672:14

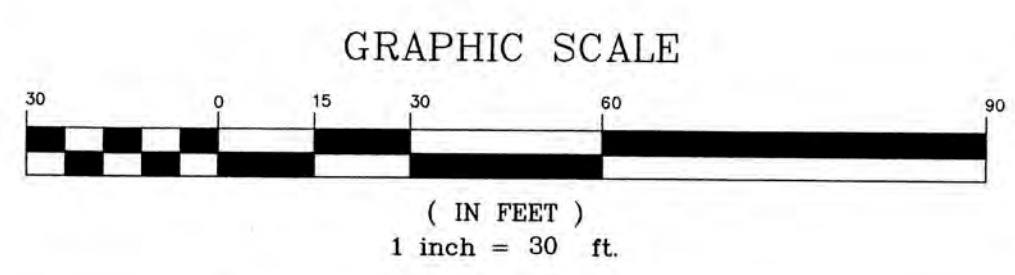
I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

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 EXCEEDS 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.



DAVID M. COLLIER, LLS 892 DATE: 1/23/17  
ON BEHALF OF JONES & BEACH ENGINEERS, INC.



|   |               |                    |
|---|---------------|--------------------|
| Design: JAC   | Draft: PLB    | Date: 1/23/17      |
| Checked: JAC  | Scale: 1"=30' | Project No.: 13184 |
| Drawing Name: 13184-CURRIER-COVE.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. |               |                    |

| REV. | DATE     | REVISION                       | BY  |
|------|----------|--------------------------------|-----|
| 4    | 1/23/17  | REVISED PER SHORELAND APPROVAL | PLB |
| 3    | 1/3/17   | REVISED PER SHORELAND COMMENTS | PLB |
| 2    | 11/17/16 | REVISED PER CLIENT DIRECTION   | PLB |
| 1    | 10/25/16 | REVISED BOUNDARY AND NOTES     | MJS |
| 0    | 10/17/16 | ISSUED FOR REVIEW              | PLB |

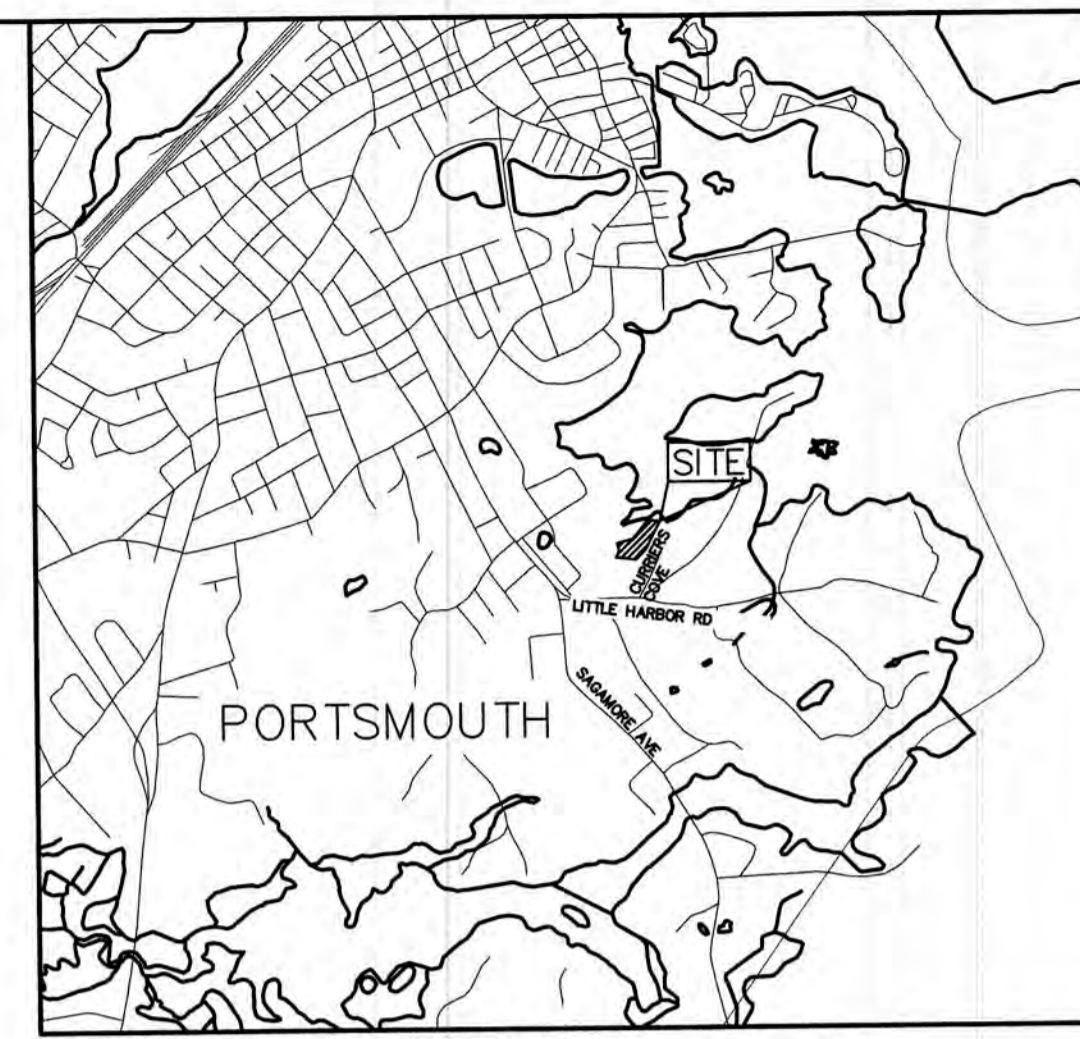
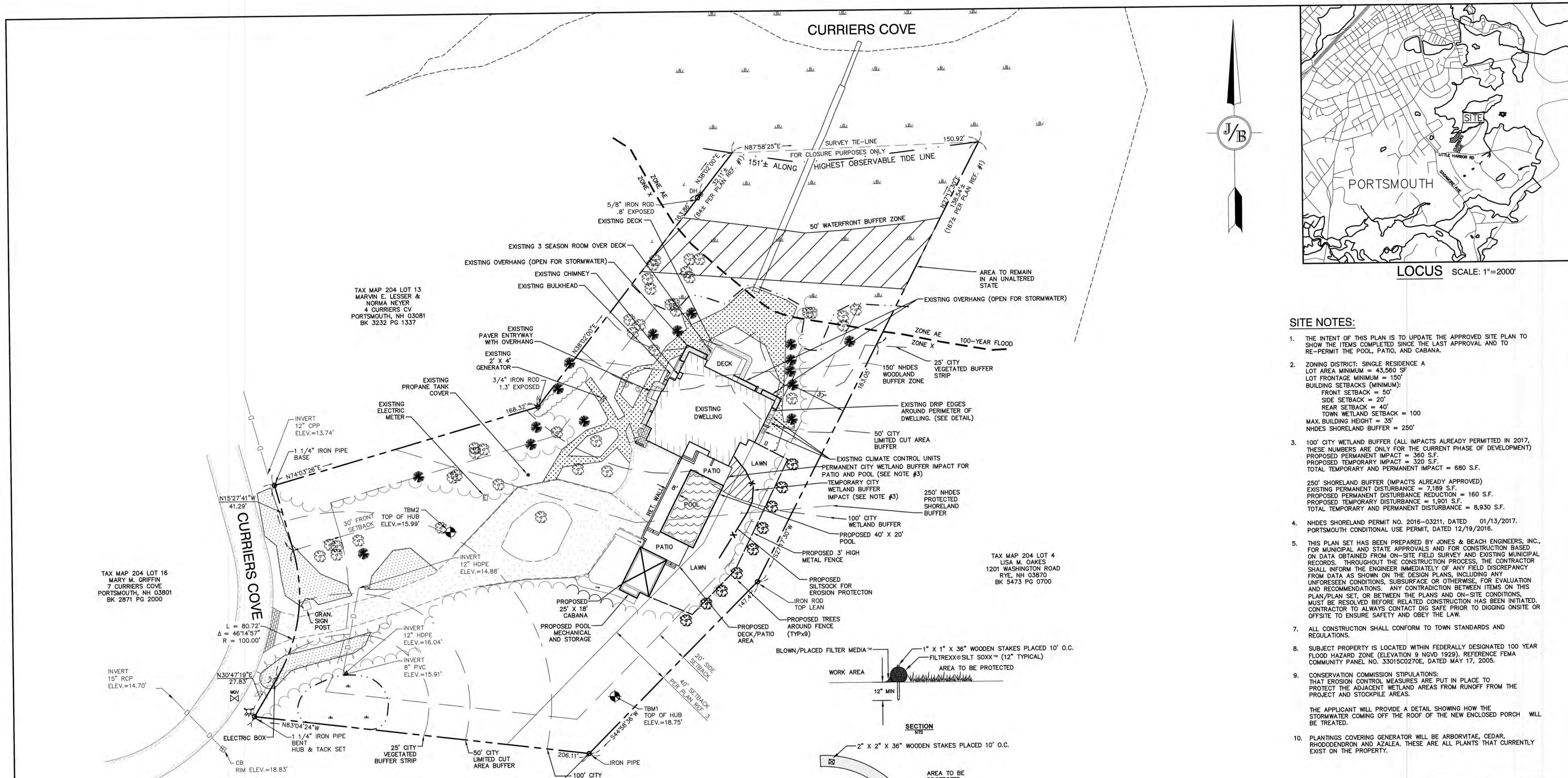
**J/B Jones & Beach Engineers, Inc.**  
 Designed and Produced in NH  
 85 Portsmouth Ave. Civil Engineering Services 603-772-4746  
 PO Box 219 Stratham, NH 03885 FAX: 603-772-0227  
 E-MAIL: JBE@JONESANDBEACH.COM

|                  |   |
|------------------|---|
| Plan Name:       | <b>EXISTING CONDITION PLAN</b>                              |
| Project:         | <b>3 CURRIERS COVE<br/>PORTSMOUTH, NH 03801</b>             |
| Owner of Record: | <b>KIT SOAVE-BAILEY<br/>3 CURRIERS COVE, PORTSMOUTH, NH</b> |

|  |   |
|--|---|
| APPROVED - TOWN, STATE<br>PLANNING BOARD                                       | PROJECT PARCEL<br>TOWN OF PORTSMOUTH<br>TAX MAP 204, LOT 12 |
| APPLICANT/OWNER<br>KIT SOAVE-BAILEY<br>3 CURRIERS COVE<br>PORTSMOUTH NH, 03801 | TOTAL LOT AREA<br>79,250± SQ. FT.<br>1.8± ACRES             |

DRAWING No.  
**C1**  
SHEET 1 OF 3  
JBE PROJECT NO. 13184





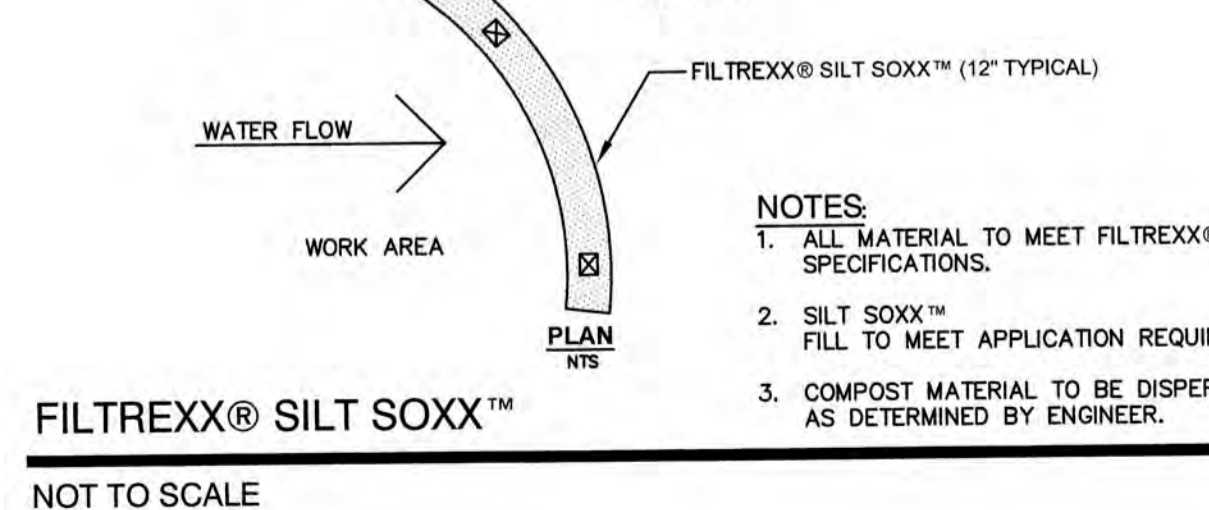
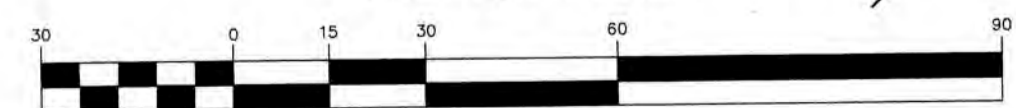
- SITE NOTES:**
- THE INTENT OF THIS PLAN IS TO UPDATE THE APPROVED SITE PLAN TO SHOW THE ITEMS COMPLETED SINCE THE LAST APPROVAL AND TO RE-PERMIT THE POOL, PATIO, AND CABANA.
  - ZONING DISTRICT: SINGLE RESIDENCE A  
 LOT AREA MINIMUM = 43,560 SF  
 LOT FRONTAGE MINIMUM = 150'  
 BUILDING SETBACKS (MINIMUM):  
 FRONT SETBACK = 50'  
 SIDE SETBACK = 20'  
 REAR SETBACK = 40'  
 TOWN WETLAND SETBACK = 100'  
 MAX. BUILDING HEIGHT = 35'  
 NHDES SHORELAND BUFFER = 250'
  - 100' CITY WETLAND BUFFER (ALL IMPACTS ALREADY PERMITTED IN 2017, THESE NUMBERS ARE ONLY FOR THE CURRENT PHASE OF DEVELOPMENT)  
 PROPOSED PERMANENT IMPACT = 360 S.F.  
 PROPOSED TEMPORARY IMPACT = 320 S.F.  
 TOTAL TEMPORARY AND PERMANENT IMPACT = 680 S.F.  
 250' SHORELAND BUFFER (IMPACTS ALREADY APPROVED)  
 EXISTING PERMANENT DISTURBANCE = 7,189 S.F.  
 PROPOSED PERMANENT DISTURBANCE REDUCTION = 160 S.F.  
 PROPOSED TEMPORARY DISTURBANCE = 1,901 S.F.  
 TOTAL TEMPORARY AND PERMANENT DISTURBANCE = 8,930 S.F.
  - NHDES SHORELAND PERMIT NO. 2016-03211, DATED 01/13/2017. PORTSMOUTH CONDITIONAL USE PERMIT, DATED 12/19/2016.
  - 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 ON-SITE OR OFF-SITE TO ENSURE SAFETY AND OBEY THE LAW.
  - ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS.
  - SUBJECT PROPERTY IS LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE (ELEVATION 9 NGVD 1929). REFERENCE FEMA COMMUNITY PANEL NO. 3301SC0270E, DATED MAY 17, 2005.
  - CONSERVATION COMMISSION STIPULATIONS:  
 THAT EROSION CONTROL MEASURES ARE PUT IN PLACE TO PROTECT THE ADJACENT WETLAND AREAS FROM RUNOFF FROM THE PROJECT AND STOCKPILE AREAS.  
 THE APPLICANT WILL PROVIDE A DETAIL SHOWING HOW THE STORMWATER COMING OFF THE ROOF OF THE NEW ENCLOSED PORCH WILL BE TREATED.
  - PLANTINGS COVERING GENERATOR WILL BE ARBORVITAE, CEDAR, RHODODENDRON AND AZALEA. THESE ARE ALL PLANTS THAT CURRENTLY EXIST ON THE PROPERTY.

APPROVED - PORTSMOUTH, NH  
PLANNING BOARD

DATE: \_\_\_\_\_

TAX MAP 204 LOT 11  
CAROL WELSH FAMILY TRUST,  
CAROL WELSH TRUSTEE  
2 CURRIERS COVE  
PORTSMOUTH, NH 03801  
BK 4999 PG 2905

GRAPHIC SCALE



- NOTES:**
- ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
  - SILT SOXX™ FILL TO MEET APPLICATION REQUIREMENTS.
  - COMPOST MATERIAL TO BE DISPersed ON SITE, AS DETERMINED BY ENGINEER.

FILTREXX® SILT SOXX™

NOT TO SCALE

|   |               |                    |
|---|---------------|--------------------|
| Design: JAC   | Draft: PLB    | Date: 1/23/17      |
| Checked: JAC  | Scale: 1"=30' | Project No.: 13184 |
| Drawing Name: 13184-CURRIER-COVE-5-21-21.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. |               |                    |



| REV. | DATE     | REVISION                                   | BY  |
|------|----------|--|-----|
| 9    | 05/26/21 | ADDED PROPOSED FENCE AND TREES             | JAC |
| 8    | 05/24/21 | MINOR REVISIONS                            | DJM |
| 7    | 05/21/21 | UPDATE SITE PLAN                           | EAK |
| 6    | 12/7/17  | TRENCH DETAILS ADDED                       | PLB |
| 5    | 11/22/17 | REVISED POOL DESIGN AND GENERATOR ADDITION | PLB |
| 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:       | <b>UPDATED SITE PLAN</b>                            |
| Project:         | 3 CURRIERS COVE<br>PORTSMOUTH, NH 03801             |
| Owner of Record: | KIT SOAVE-BAILEY<br>3 CURRIERS COVE, PORTSMOUTH, NH |

|              |                       |
|--------------|-----------------------|
| DRAWING No.  | C2                    |
| SHEET 1 OF 2 | JBE PROJECT NO. 13184 |

|  |
|--|
| PROJECT PARCEL<br>TOWN OF PORTSMOUTH<br>TAX MAP 204, LOT 12                    |
| APPLICANT/OWNER<br>KIT SOAVE-BAILEY<br>3 CURRIERS COVE<br>PORTSMOUTH NH, 03801 |
| TOTAL LOT AREA<br>79,250± SQ. FT.<br>1.8± ACRES                                |



L-0700-021  
July 8, 2021

Mr. Dexter Legg, Chair  
City of Portsmouth Planning Board  
1 Junkins Avenue  
Portsmouth, New Hampshire 03801

Re: **Site Review Permit & Lot Line Revision Applications  
Lonza Biologics, Lynx Project– Proposed Parking Expansion**

Dear Chairman Legg:

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 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, last revised July 8, 2021;
- One (1) copy of the TAC Stipulation Report, dated July 8, 2021;
- One (1) copy of the Drainage Analysis, last revised July 8, 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) copy of the Fire Truck Turning Exhibit, dated July 8, 2021

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.

On May 20, 2021 and June 17, 2021, the PDA Board granted conceptual approval for these improvements. The project also received a recommendation for approval from the Technical Advisory Committee (TAC) at their July 6, 2021 meeting. We respectfully request to be placed on the Planning Board (PB) meeting agenda for July 15, 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](mailto: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



**Application for Site Review**

|                             |                         |             |                |
|-----------------------------|-------------------------|-------------|----------------|
| <b>For PDA Use Only</b>     |                         |             |                |
| 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<br>Portsmouth, NH 03801 | Address: 177 Corporate Drive<br>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**

|   |  |
|---|--|
| <b>Change of Use:</b> Yes [ ] No [X]  | Existing Use: <u>Office/Research/Manufacturing</u> |
|   | Proposed Use: <u>Office/Research/Manufacturing</u> |
| Description of Project:<br>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. |  |
| <i>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.</i>  |  |

**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. |                          |
| <br>_____<br>Signature of Applicant  | 6/21/21<br>_____<br>Date |
| _____<br>Patrick Crimmins<br>_____<br>Printed Name  |                          |

N:\Engineer\ ApplicationforSiteReview.xlsx



**Pease Development Authority**  
**55 International Drive, Portsmouth, NH 03801, (603) 433-6088**



**Subdivision Application**

|                             |                         |             |                |
|-----------------------------|-------------------------|-------------|----------------|
| <b>For PDA Use Only</b>     |                         |             |                |
| Date Submitted: _____       | Municipal Review: _____ | Fee: _____  |                |
| Application Complete: _____ | Date Forwarded: _____   | Paid: _____ | Check #: _____ |

**Applicant Information**


|  |  |
|--|--|
| Applicant: <b>Lonza Biologics, Inc.</b>                          | Agent: <b>Tighe &amp; Bond, Inc.</b>                         |
| Address: <b>101 International Drive<br/>Portsmouth, NH 03801</b> | Address: <b>177 Corporate Drive<br/>Portsmouth, NH 03801</b> |
| Business Phone: <b>603-570-3625</b>                              | Business Phone: <b>603-433-8818</b>                          |
| Mobile Phone: _____  | Mobile Phone: _____  |
| Fax: _____   | Fax: _____   |

**Site Information**

|   |  |  |              |
|---|--|--|--------------|
| Address / Location of Original Lot:   | <u>55 &amp; 101 International Drive, Portsmouth, NH 03801</u>                      |  |              |
| Portsmouth Tax Map: <u>305</u>  | Lot #: <u>006 &amp; 007</u>  | Zone: <u>Airport, Business, Commercial</u> |              |
| Proposed Activity (check one)   | Subdivision _____  | Lot Line Adjustment                        | <u>X</u>     |
| <b>Existing Lot</b>   | Total # of Existing Lot(s)   |  |              |
|   | Existing Lot Area  | <u>43.37 acres</u>                         |              |
| <b>Created Lot</b>  | Total # of Proposed Lot(s)   |  |              |
|   | Area of Proposed Lot(s)  | <u>46.02 acres</u>                         |              |
| <i>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</i> |  |  |              |
| <b>Checklist:</b>   | 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

  
 \_\_\_\_\_  
 Signature of Applicant

6/21/21  
 \_\_\_\_\_  
 Date

Patrick Crimmins  
 \_\_\_\_\_  
 Printed Name

N:\Engineer\Subdivision Application.xlsx



# LYNX PARKING EXPANSION

## LONZA BIOLOGICS

### 101 INTERNATIONAL DRIVE

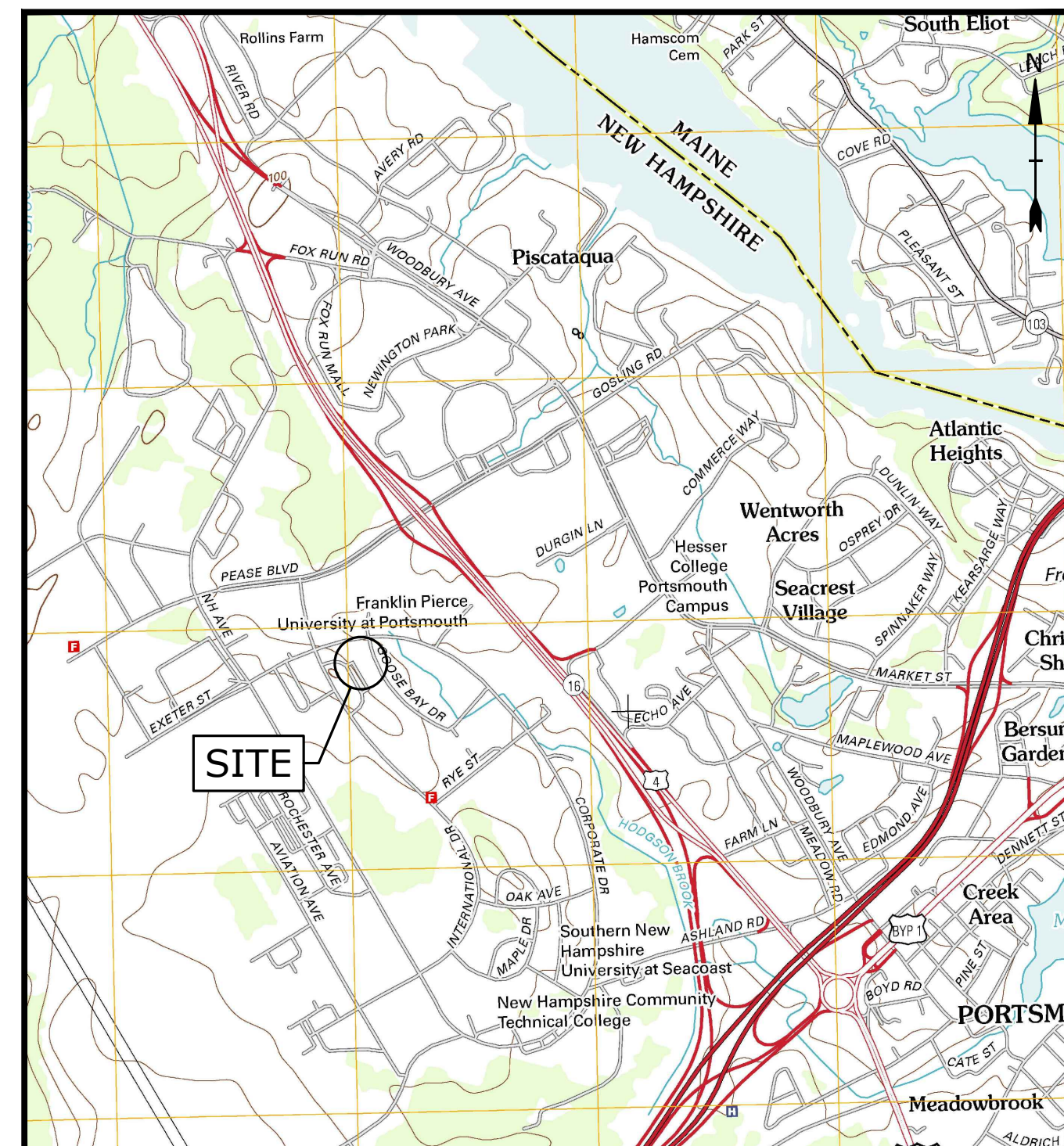
### PORTSMOUTH, NEW HAMPSHIRE

JUNE 21, 2021

LAST REVISED JULY 8, 2021

| LIST OF DRAWINGS |   |              |
|------------------|---|--------------|
| SHEET NO.        | SHEET TITLE                                 | LAST REVISED |
|                  | COVER SHEET                                 | 07/08/2021   |
| 1 of 2           | SUBDIVISION PLAN                            | 06/21/2021   |
| 2 of 2           | SUBDIVISION PLAN                            | 6/21/2021    |
| C-101            | OVERALL EXISTING CONDITIONS PLAN            | 07/08/2021   |
| C-101.1          | DEMOLITION PLAN                             | 07/08/2021   |
| C-102            | OVERALL SITE PLAN                           | 07/08/2021   |
| C-102.1          | SITE PLAN                                   | 07/08/2021   |
| C-103            | GRADING, DRAINAGE, AND EROSION CONTROL PLAN | 07/08/2021   |
| C-104            | UTILITIES PLAN                              | 07/08/2021   |
| C-105            | LANDSCAPE PLAN                              | 07/08/2021   |
| C-106            | PHOTOMETRIC PLAN                            | 07/08/2021   |
| C-201            | GENERATOR PAD PLAN                          | 07/08/2021   |
| C-501            | EROSION CONTROL NOTES AND DETAILS SHEET     | 07/08/2021   |
| C-502            | DETAILS SHEET                               | 07/08/2021   |
| C-503            | DETAILS SHEET                               | 07/08/2021   |
| C-504            | DETAILS SHEET                               | 07/08/2021   |
| C-505            | DETAILS SHEET                               | 07/08/2021   |
| C-506            | DETAILS SHEET                               | 07/08/2021   |
| C-507            | DETAILS SHEET                               | 07/08/2021   |

| 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:

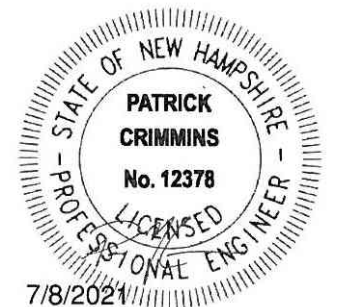
LONZA BIOLOGICS  
101 INTERNATIONAL DRIVE  
PORTSMOUTH, NH 03801

CIVIL ENGINEER:

**Tighe&Bond**  
177 CORPORATE DRIVE  
PORTSMOUTH, NEW HAMPSHIRE 03801

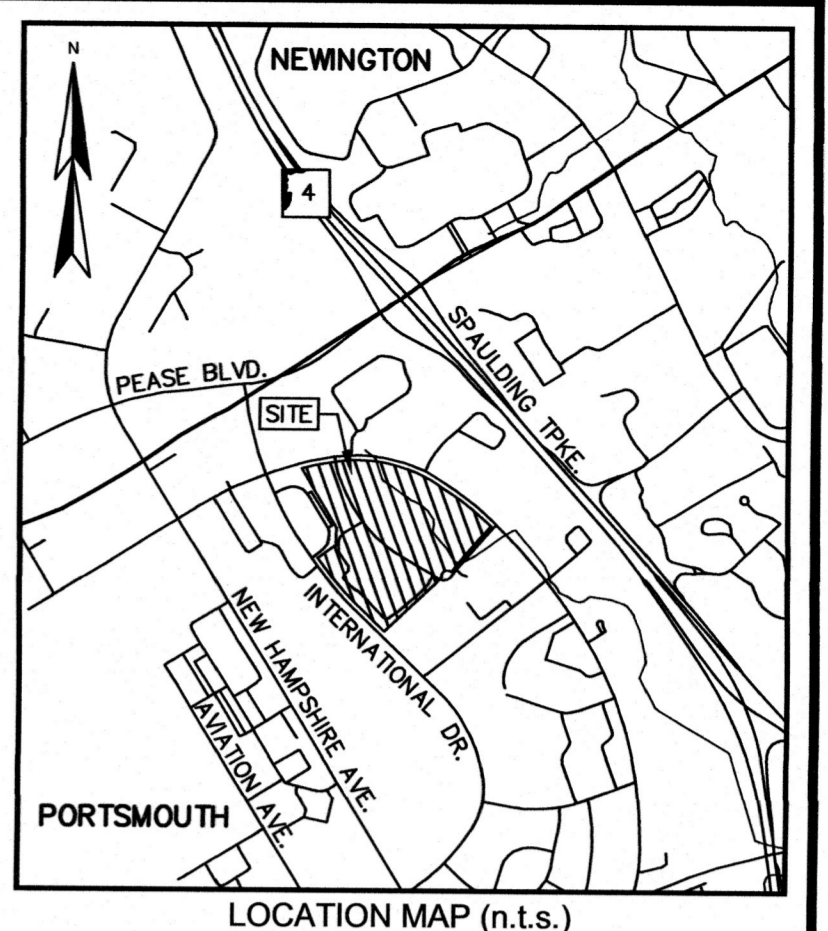
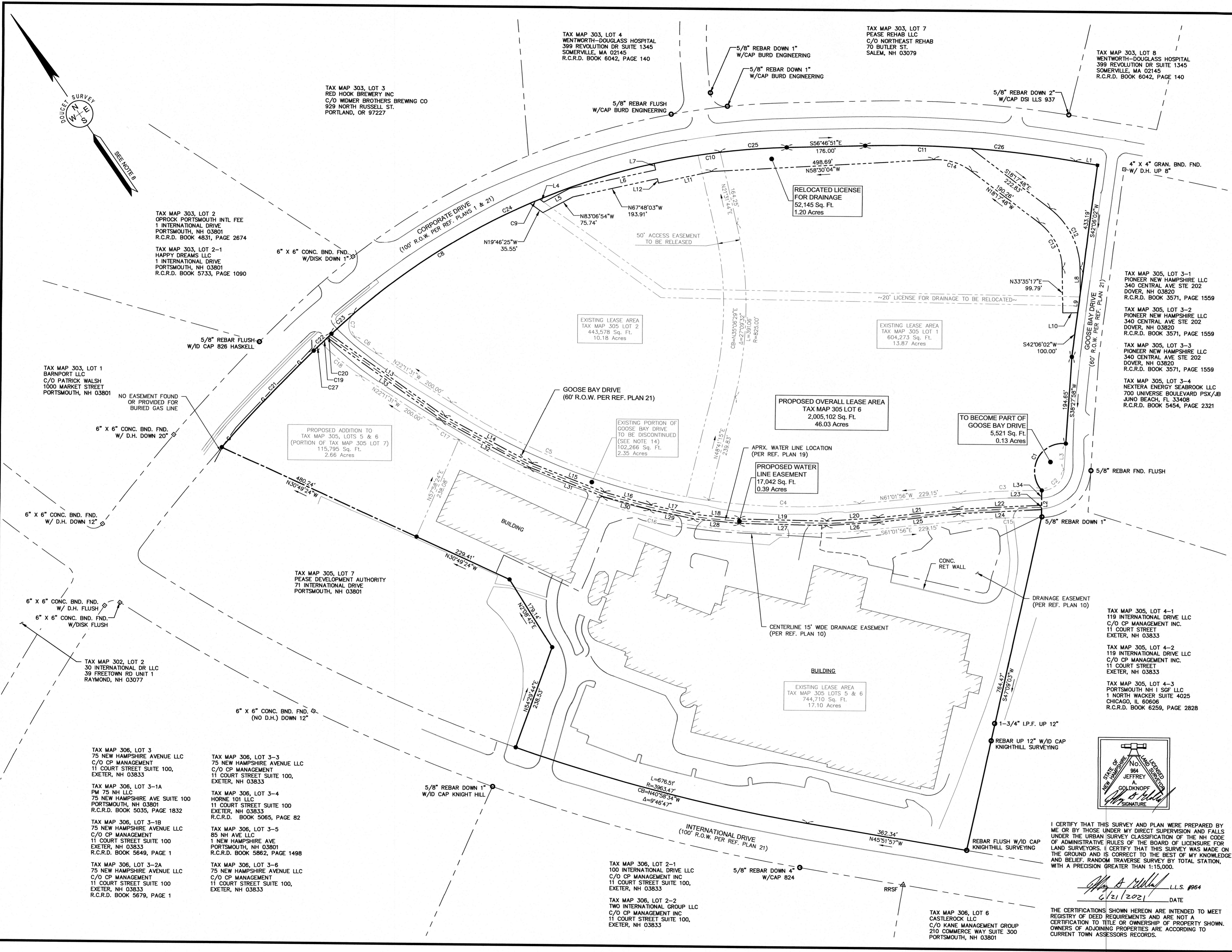
SURVEYOR:

DOUCET SURVEY, INC.  
102 KENT PLACE  
NEWMARKET, NEW HAMPSHIRE 03857

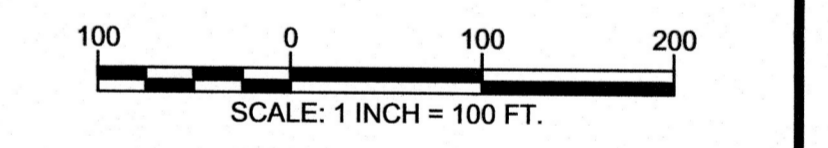


**PLANNING BOARD SUBMISSION  
COMPLETE SET 19 SHEETS**





- 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



**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  
REGISTERED PROFESSIONAL SURVEYOR  
NO. 98  
JEFFREY A. GOLDKNOFF  
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. Goldknoff*  
L.L.S. #984  
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.

FILE NAME: C:\DATA\30 SUBDIVISION\305\305 SUBDIVISION PLAN (SHEET 1).PLOTTER: Monday, June 21, 2021 - 2:07PM



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 #3301500260F, 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.3.1. CUL-DE-SACS:  
15.A. MAXIMUM LENGTH OF CUL-DE-SAC OF 50'  
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 STRATEGIC 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 | 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'   |

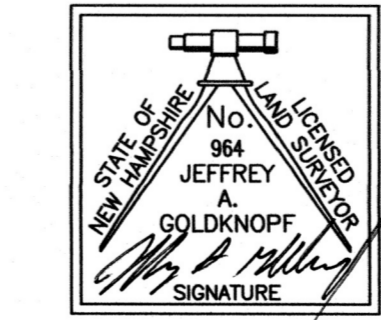
| LINE | BEARING     | DISTANCE |
|------|-------------|----------|
| L18  | N49°42'47"W | 102.16'  |
| L19  | N54°07'45"W | 195.64'  |
| L20  | N59°11'41"W | 116.15'  |
| L21  | N61°40'21"W | 179.46'  |
| L22  | N58°20'21"W | 187.76'  |
| L23  | S34°54'07"W | 10.02'   |
| L24  | N58°20'21"W | 186.91'  |
| 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 | 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"   | N161°7'50"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'       |

**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        |



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. Goldkorn* 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.

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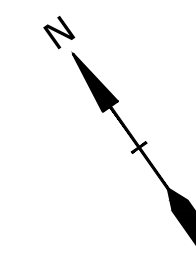












**SITE DATA BLOCK**

LESSOR: PEASE DEVELOPMENT AUTHORITY  
 55 INTERNATIONAL DRIVE  
 PORTSMOUTH NH, 03801

APPLICANT: LONZA BIOLOGICS, INC.  
 101 INTERNATIONAL DRIVE  
 PORTSMOUTH NH, 03801

LOCATION: 101 INTERNATIONAL DRIVE 55 INTERNATIONAL DRIVE 70 & 80 CORPORATE DRIVE  
 PORTSMOUTH NH, 03801 PORTSMOUTH NH, 03801 PORTSMOUTH NH, 03801  
 MAP 305 LOT 6 MAP 305 LOT 7 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:**

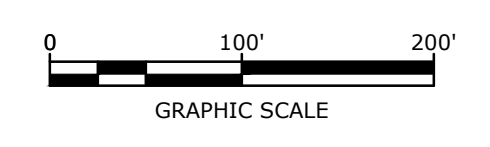
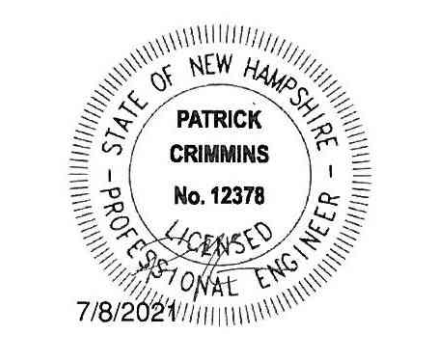
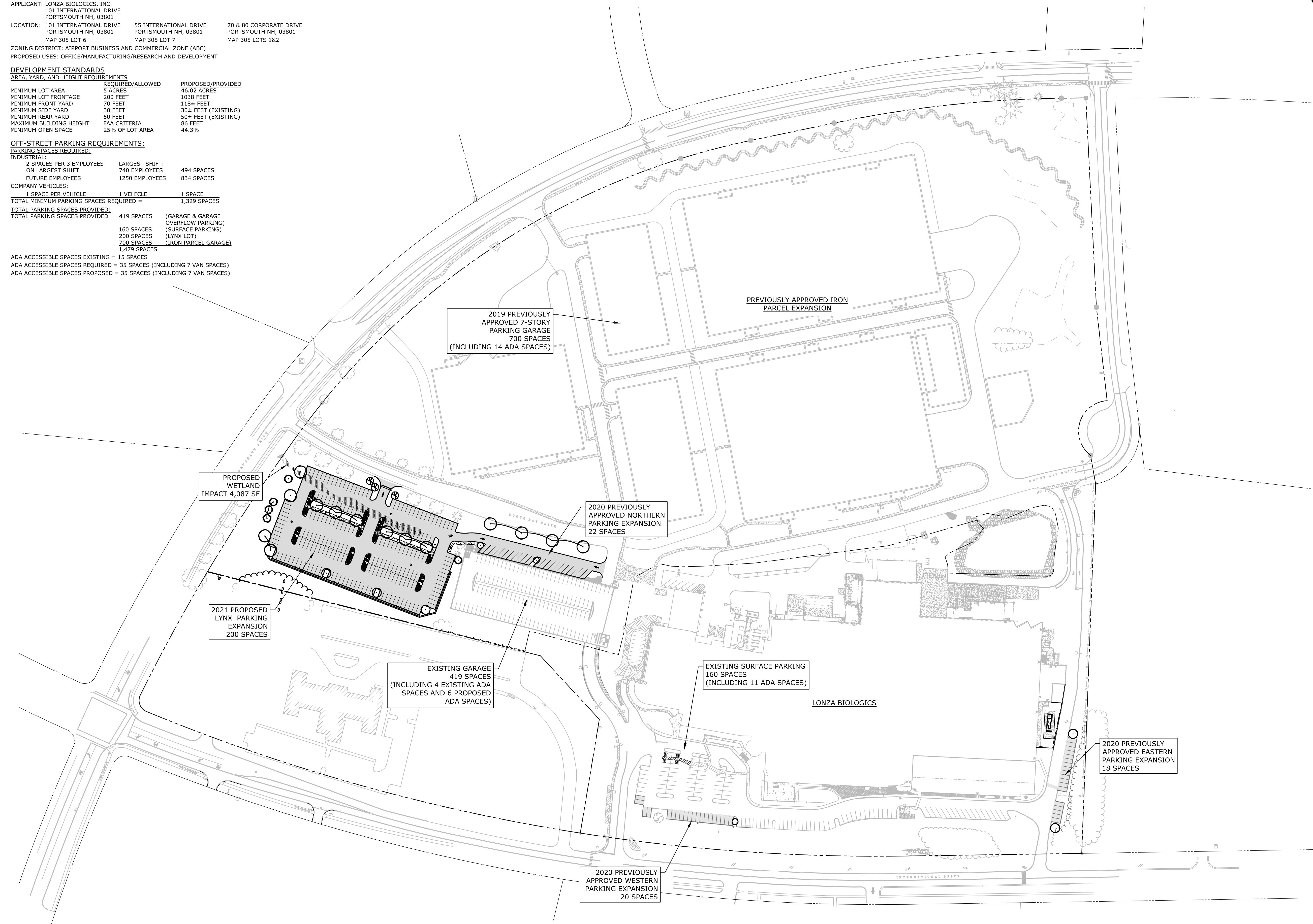
**PARKING SPACES REQUIRED:**

| INDUSTRIAL:              | LARGEST SHIFT: |            |
|--------------------------|----------------|------------|
| 2 SPACES PER 3 EMPLOYEES | 740 EMPLOYEES  | 494 SPACES |
| ON LARGEST SHIFT         |                |            |
| 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)



**Lynx Parking Expansion**

Lonza Biologics

Portsmouth, New Hampshire

| MARK | DATE      | DESCRIPTION    |
|------|-----------|----------------|
| B    | 7/8/2021  | PB SUBMISSION  |
| 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 SITE PLAN

SCALE: AS SHOWN

Last Saved: 7/7/2021 11:49am By: JWinston  
 Project: 07/07/2021 11:49am By: JWinston  
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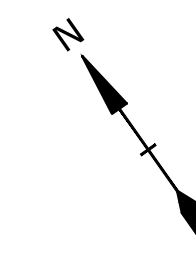










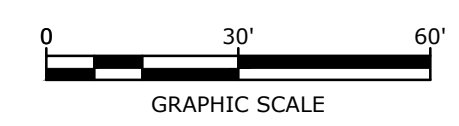
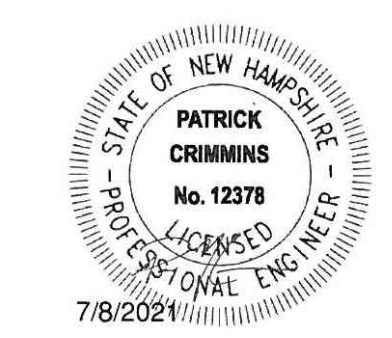
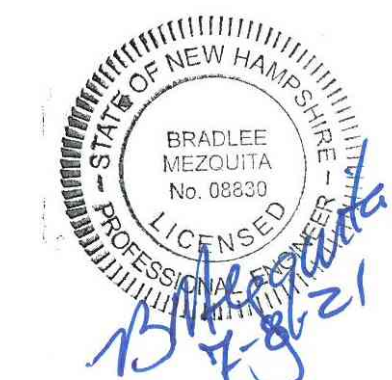
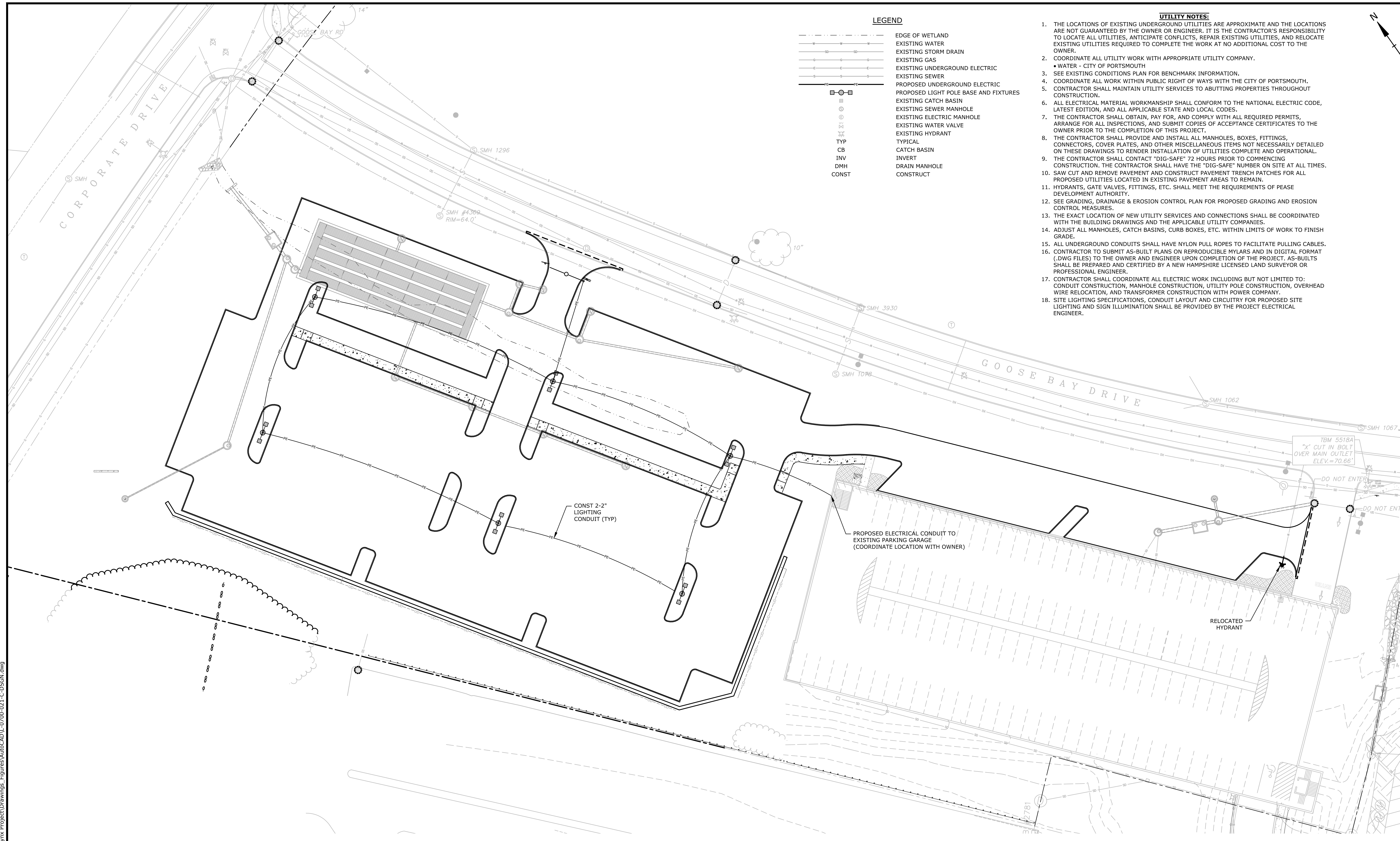


**LEGEND**

- EDGE OF WETLAND
- EXISTING WATER
- EXISTING STORM DRAIN
- EXISTING GAS
- EXISTING UNDERGROUND ELECTRIC
- EXISTING SEWER
- PROPOSED UNDERGROUND ELECTRIC
- PROPOSED LIGHT POLE BASE AND FIXTURES
- EXISTING CATCH BASIN
- EXISTING SEWER MANHOLE
- EXISTING ELECTRIC MANHOLE
- EXISTING WATER VALVE
- EXISTING HYDRANT
- TYP
- CB
- INV
- DMH
- CONST

**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.
3. WATER - CITY OF PORTSMOUTH
4. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
5. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
6. CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ADJACENT PROPERTIES THROUGHOUT CONSTRUCTION.
7. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
8. 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.
9. 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.
10. 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.
11. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCHES FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
12. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF PEASE DEVELOPMENT AUTHORITY.
13. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
14. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES.
15. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
16. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
17. 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.
18. 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.
19. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.



**Lynx Parking Expansion**

Lonza Biologics

Portsmouth,  
New Hampshire

| MARK | DATE      | DESCRIPTION    |
|------|-----------|----------------|
| B    | 7/8/2021  | PB SUBMISSION  |
| 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

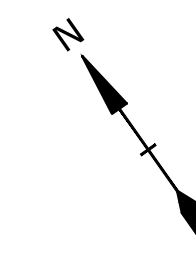
C-104

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| 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

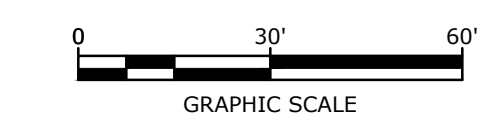
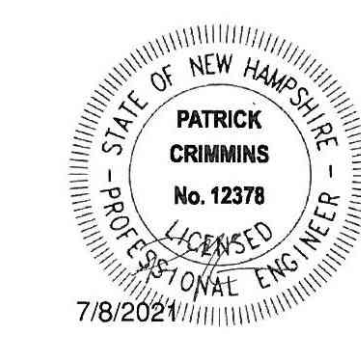
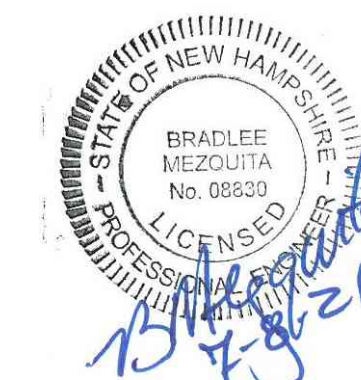
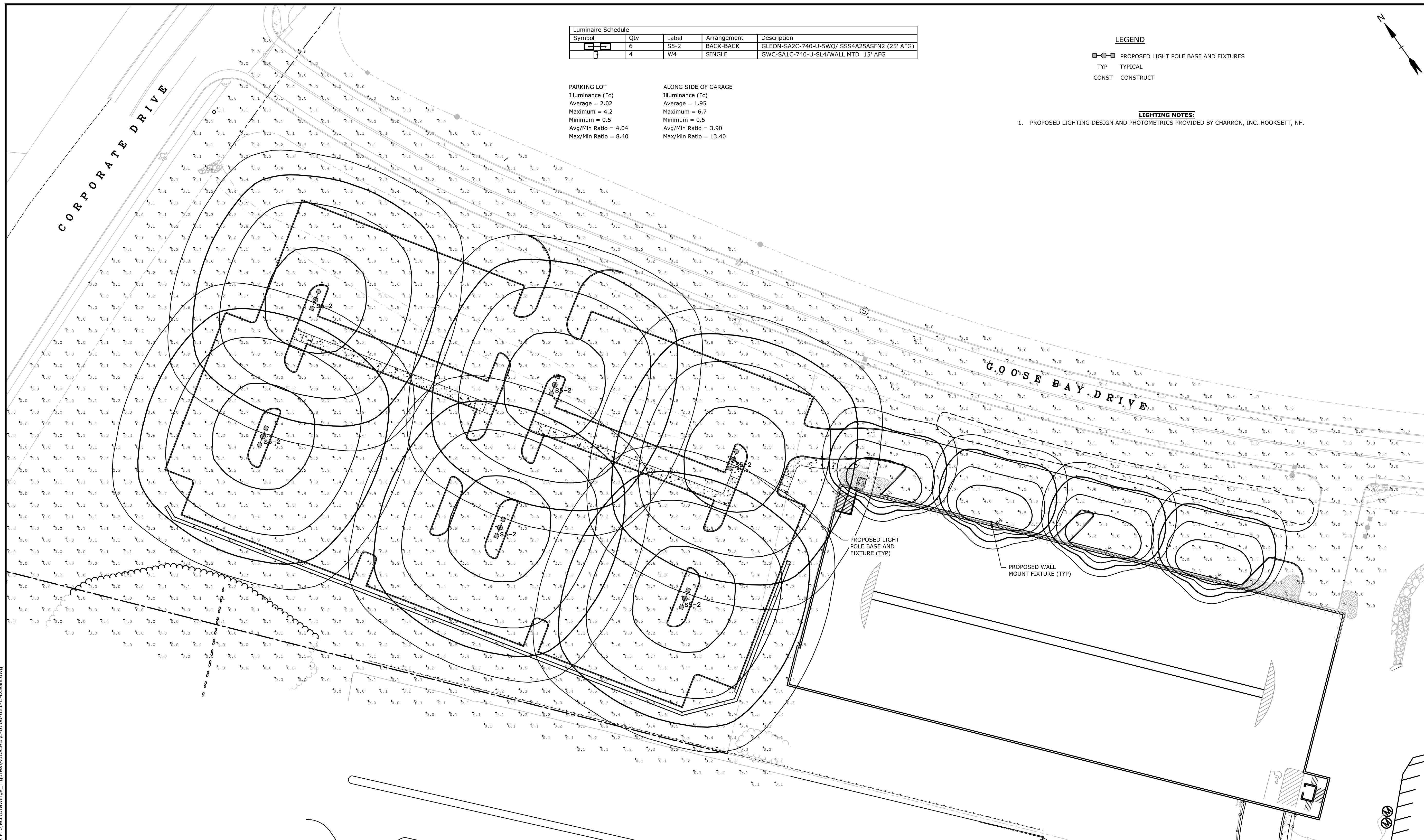
ALONG SIDE OF GARAGE  
Illuminance (Fc)  
Average = 1.95  
Maximum = 6.7  
Minimum = 0.5  
Avg/Min Ratio = 3.90  
Max/Min Ratio = 13.40

**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.



**Lynx Parking Expansion**

Lonza Biologics

Portsmouth,  
New Hampshire

| MARK | DATE      | DESCRIPTION    |
|------|-----------|----------------|
| B    | 7/8/2021  | PB SUBMISSION  |
| 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                   |

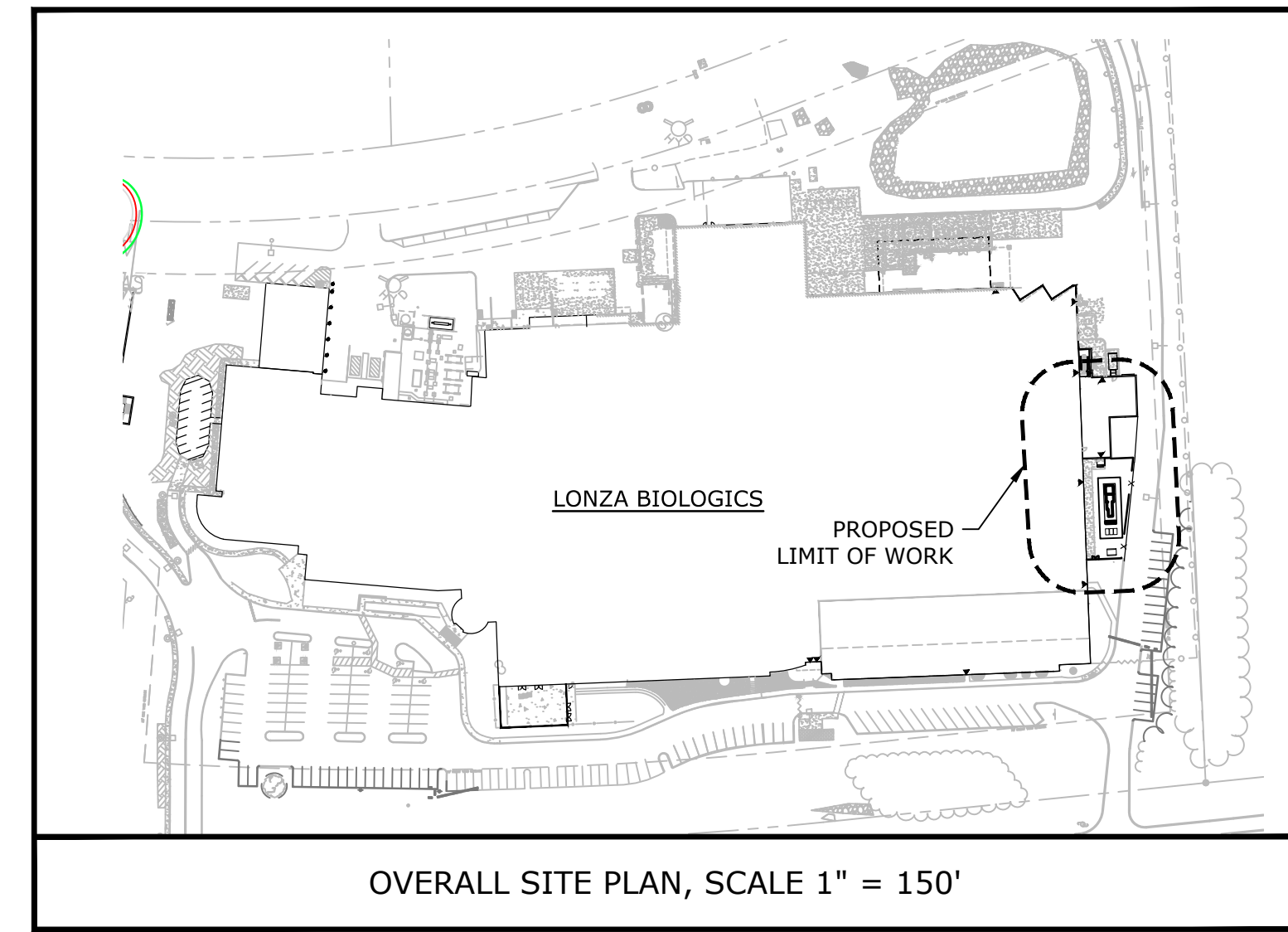
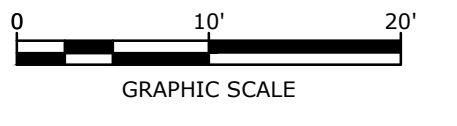
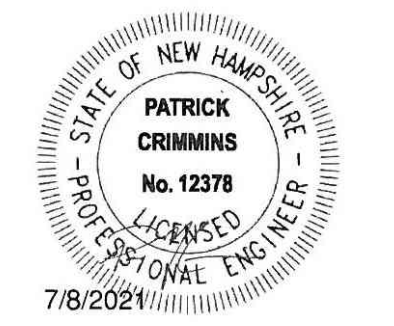
**PHOTOMETRIC LIGHTING PLAN**

SCALE: AS SHOWN

**C-106**

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 Title: Lynx Parking Expansion was 15766f021\_Lynx\_ParkingExpansion\_FiguresAutoCAD\_L-0700-021-C-DSGN.dwg





- 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
  - TYP BUILDING
  - COORD TYPICAL
  - 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

**Proposed Generator**

Lonza Biologics

Portsmouth,  
New Hampshire

|  |  |  |
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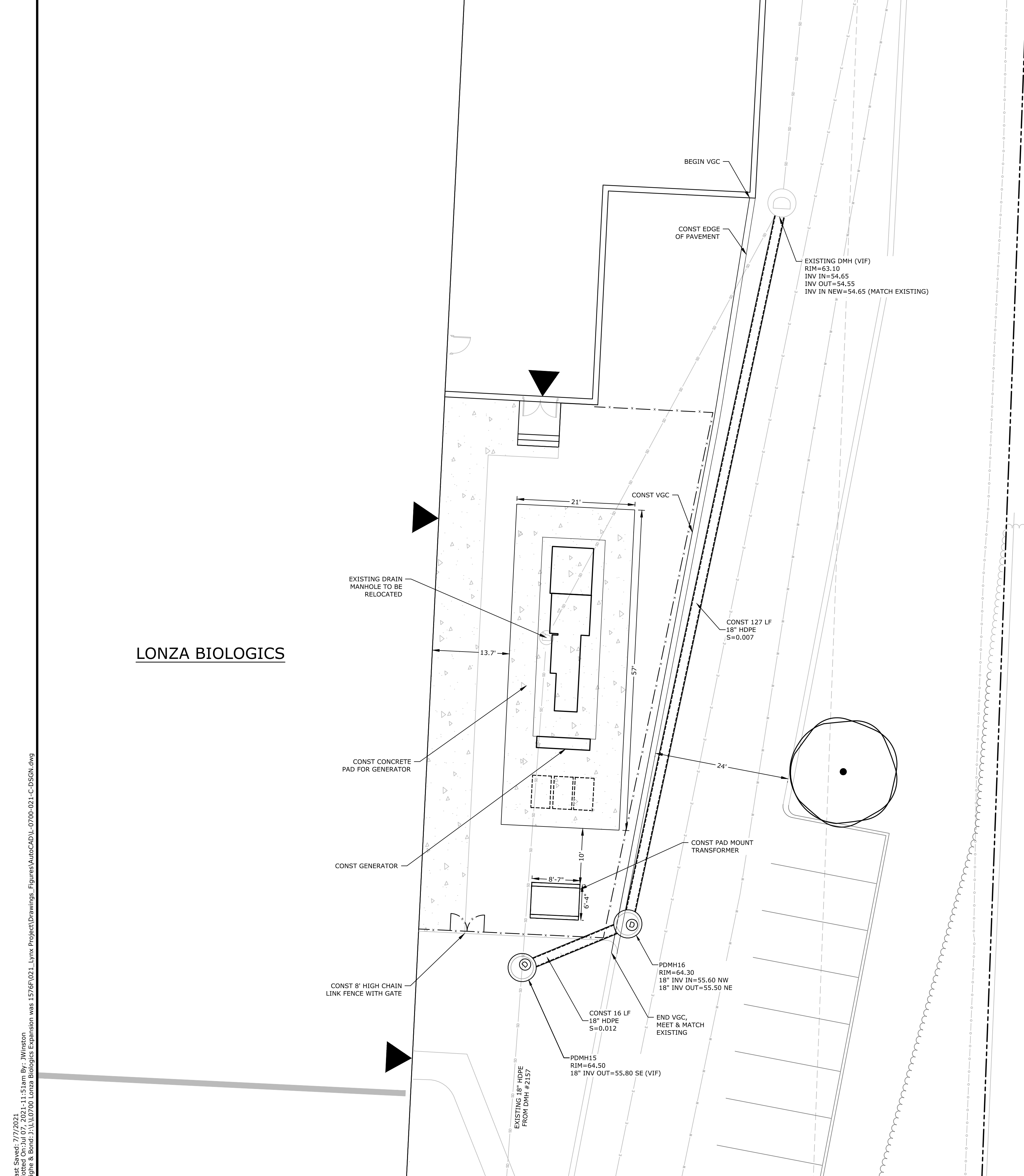
| MARK | DATE      | TAC SUBMISSION | DESCRIPTION |
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| A    | 6/21/2021 |                |             |

PROJECT NO: L-0700-021  
 DATE: June 21, 2021  
 FILE: L-0700-021-C-DSGN.DWG  
 DRAWN BY: JRW  
 CHECKED BY: NAH/PMC  
 APPROVED BY: BLM

**GENERATOR PAD PLAN**

SCALE: AS SHOWN

SEE SHEETS C-101, C-102.1, C-103 & C-104 FOR DEMOLITION, SITE, GRADING, DRAINAGE AND EROSION CONTROL, AND UTILITY NOTES



Last Saved: 7/7/2021 11:51:15 AM By: JWINSTON  
 Project: L-0700-021-C-DSGN.DWG  
 Title: Generator Pad Plan  
 Figure & Legend: L-0700-021-C-DSGN.DWG



**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. 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 SOCKS 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 ADJUTING 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). HYDROSEEDING, 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:**

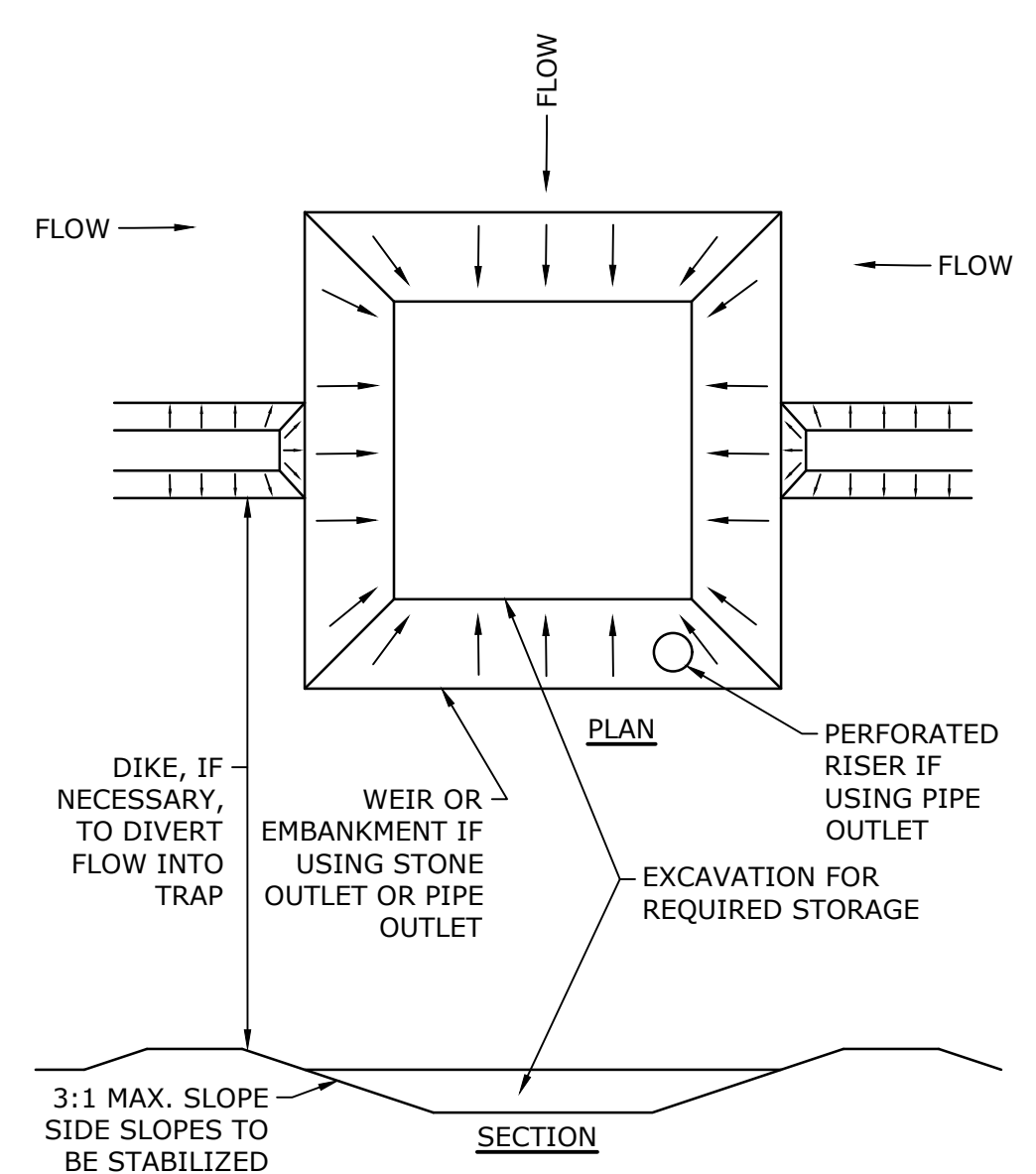
- 1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
- 2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE 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:

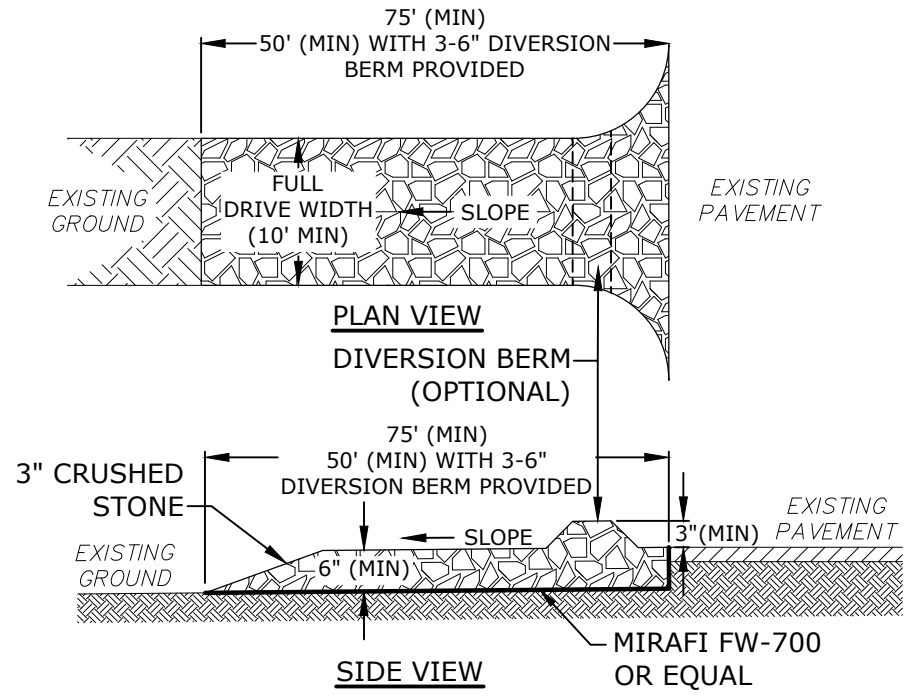
- 1. OBSERVATIONS OF THE PROJECT FOR COMPLIANCE WITH THE SWPPP SHALL BE MADE BY THE CONTRACTOR AT LEAST ONCE A WEEK OR WITHIN 24 HOURS OF A STORM 0.25 INCHES OR GREATER;
- 2. AN OBSERVATION REPORT SHALL BE MADE AFTER EACH OBSERVATION AND DISTRIBUTED TO THE ENGINEER, THE OWNER, AND THE CONTRACTOR;
- 3. 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.

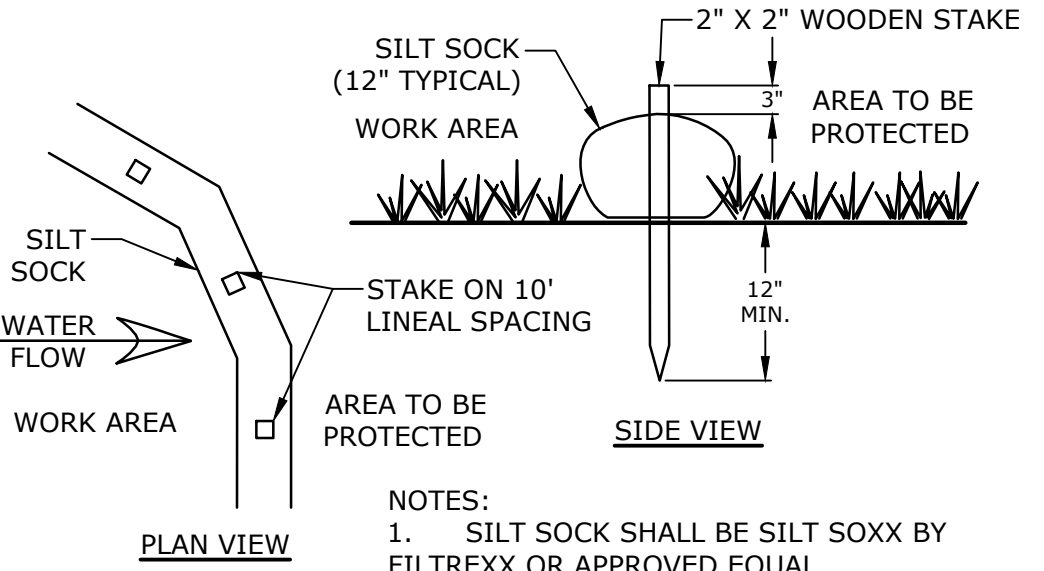
**SEDIMENT TRAP**  
NO SCALE



**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

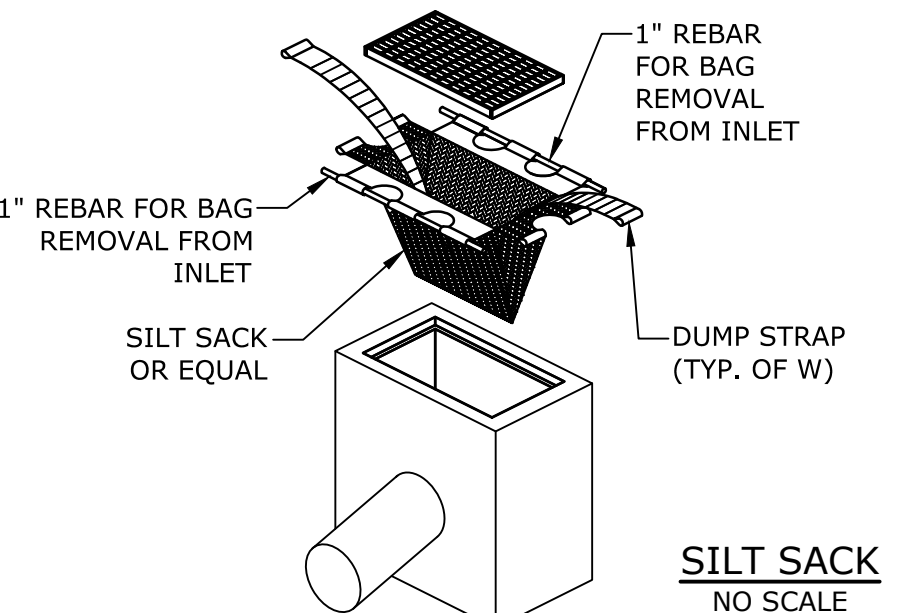
**STABILIZED CONSTRUCTION ENTRANCE**  
NO SCALE



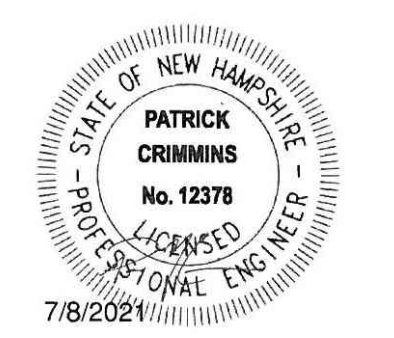
**NOTES:**

- 1. SILT SOCK SHALL BE SILT SOCK BY FILTREXX OR APPROVED EQUAL
- 2. INSTALL SILT SOCK IN ACCORDANCE WITH...

**SILT SOCK**  
NO SCALE



**SILT SACK**  
NO SCALE



**Lynx Parking Expansion**

**Lonza Biologics**

**Portsmouth, New Hampshire**

|      |           |                |
|------|-----------|----------------|
| B    | 7/8/2021  | PB SUBMISSION  |
| A    | 6/21/2021 | TAC SUBMISSION |
| MARK | DATE      | DESCRIPTION    |

|              |                       |
|--------------|-----------------------|
| PROJECT NO:  | L-0700-021            |
| DATE:        | June 21, 2021         |
| FILE:        | L-0700-021-C-DTLS.DWG |
| DRAWN BY:    | JW/CIK                |
| CHECKED BY:  | NAH/PMC               |
| APPROVED BY: | BLM                   |

**EROSION CONTROL NOTES & DETAILS**

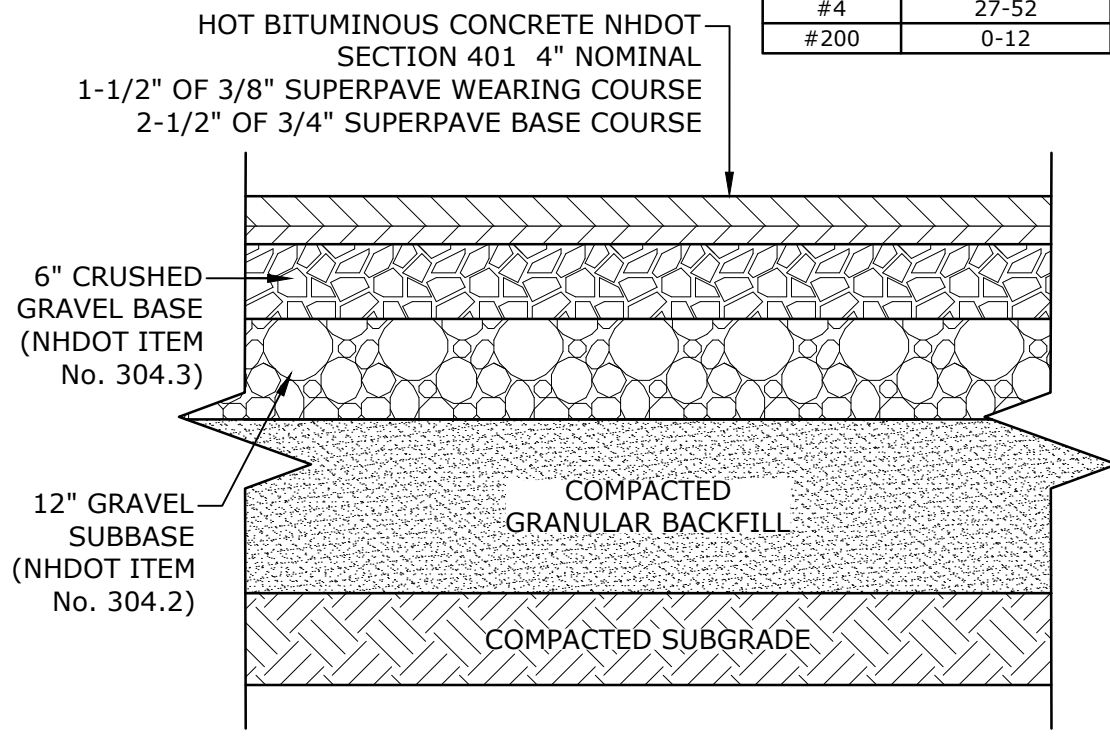
SCALE: AS SHOWN

**C-501**

Last Saved: 6/21/2021, 0:48am By: J.Wilson  
Project: 07-01-2021  
Title: & Bond 21-1000 Lonza Biologics Expansion  
Figures: AutoCAD, L-0700-021-C-DTLS.dwg

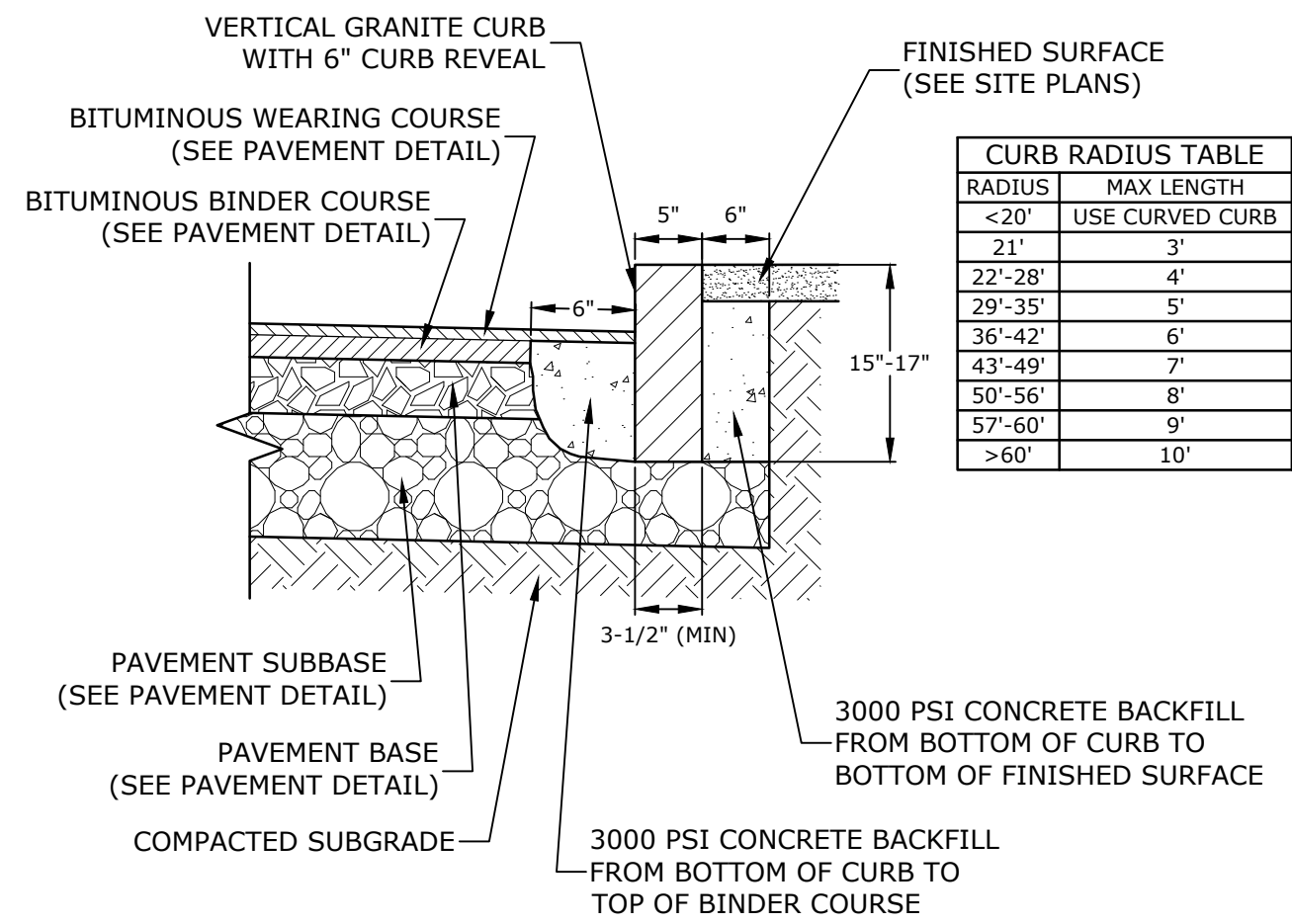


| NHDOT ITEM No. 304.2 (GRAVEL) |           | NHDOT ITEM No. 304.3 (CRUSHED GRAVEL) |           |
|-------------------------------|-----------|---------------------------------------|-----------|
| SIEVE SIZE                    | % PASSING | SIEVE SIZE                            | % PASSING |
| 6"                            | 100       | 3"                                    | 100       |
| #4                            | 25-70     | 2"                                    | 95-100    |
| #200                          | 0-12      | 1"                                    | 55-85     |
|                               |           | #4                                    | 27-52     |
|                               |           | #200                                  | 0-12      |



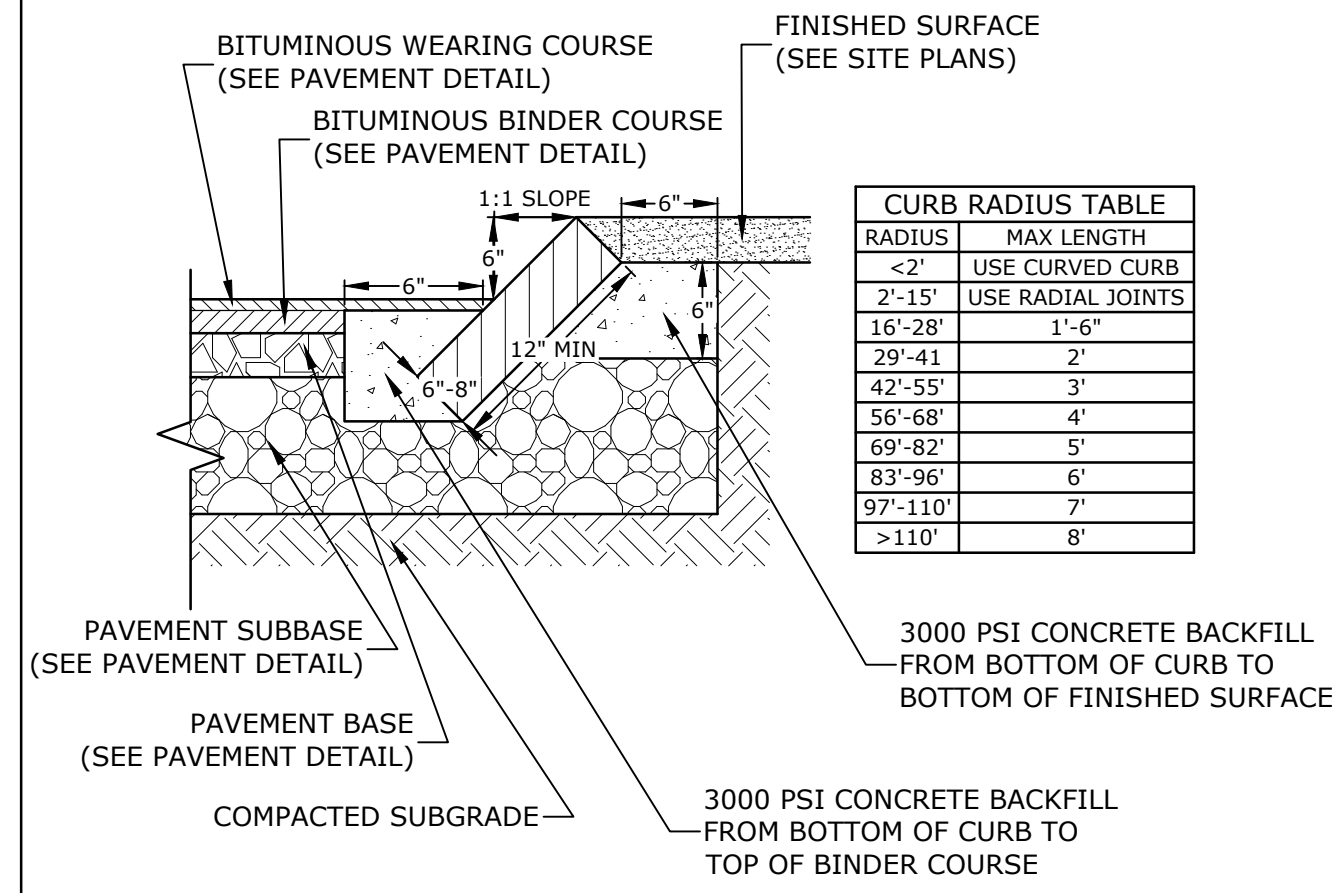
- NOTES:
- SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
  - SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
  - A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.
  - FINAL PAVEMENT DESIGN TO BE DETERMINED BY GEOTECHNICAL ENGINEER

**TYPICAL PAVEMENT SECTION**  
NO SCALE



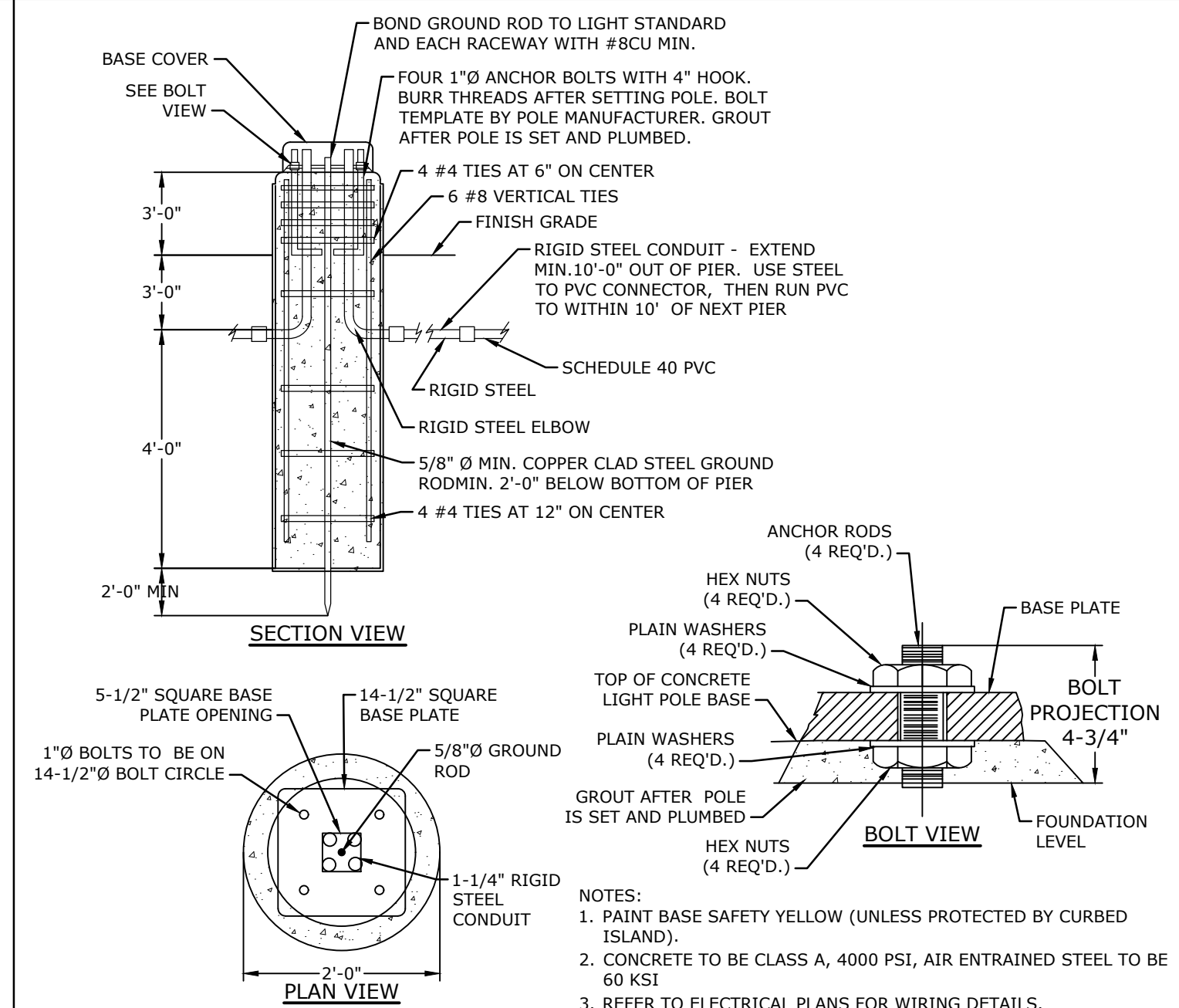
- NOTES:
- SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
  - ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
  - MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
  - MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
  - MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
  - ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
  - JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

**VERTICAL GRANITE CURB**  
NO SCALE



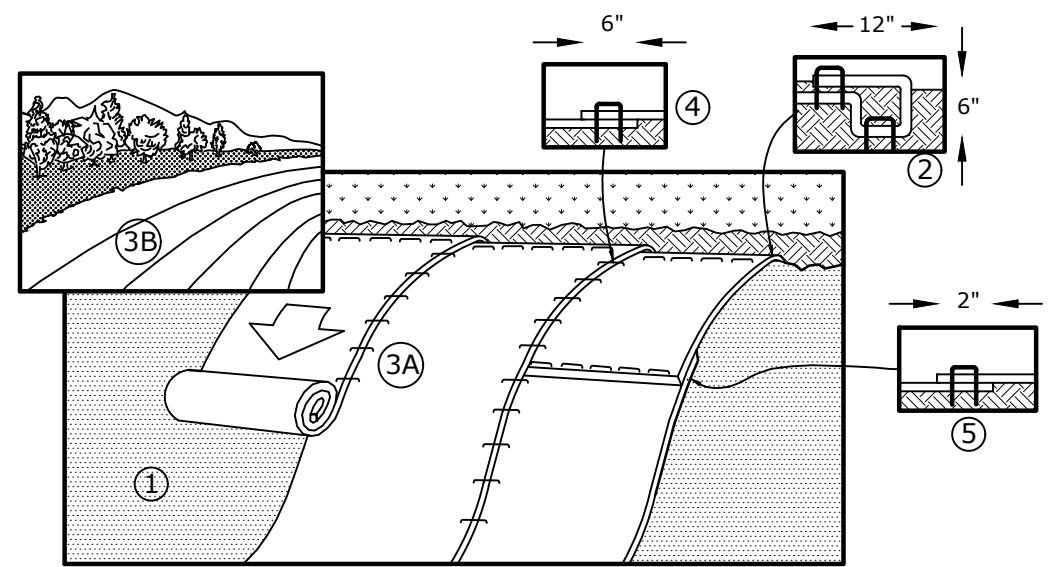
- NOTES:
- SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
  - ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
  - MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
  - MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
  - MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
  - JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

**SLOPED GRANITE CURB**  
NO SCALE



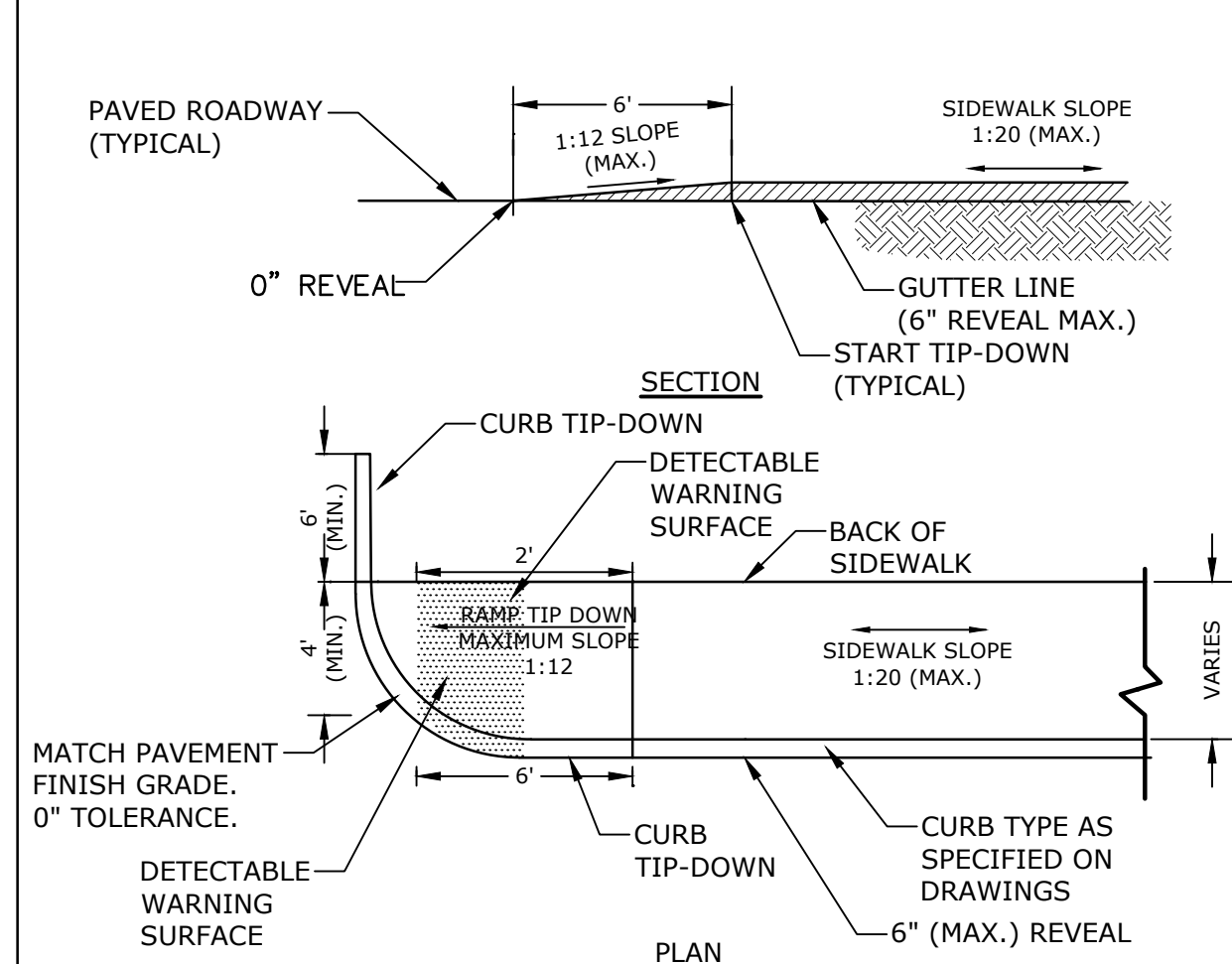
- NOTES:
- PAINT BASE SAFETY YELLOW (UNLESS PROTECTED BY CURBED ISLAND).
  - CONCRETE TO BE CLASS A, 4000 PSI, AIR ENTRAINED STEEL TO BE 60 KSI
  - REFER TO ELECTRICAL PLANS FOR WIRING DETAILS.
  - LIGHT POLE BASE DETAIL FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL, TO INCLUDE PERFORMANCE SPECIFICATIONS, CALCULATIONS AND NH LICENSED STRUCTURAL ENGINEER'S STAMP FOR LIGHT POLE FOUNDATION.

**TYPICAL LIGHT POLE BASE**  
NO SCALE



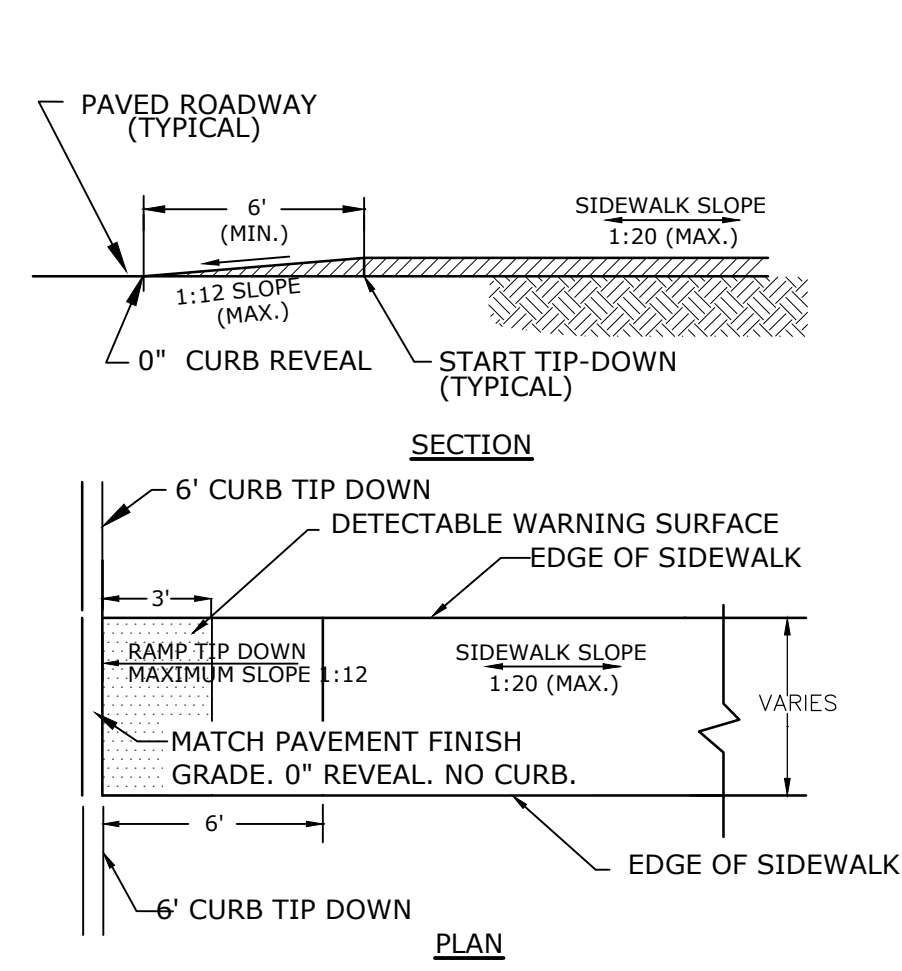
- NOTES:
- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
  - BEGIN AT THE TOP OF THE SLOPE, 36" OVER THE GRADE BREAK, BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UPSLOPE PORTION 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.
  - 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.
  - STAPLE LENGTHS SHALL BE A MINIMUM OF 8 INCHES.
  - EROSION CONTROL BLANKET SHALL BE INSTALLED WHERE SHOWN ON PLANS AND WHERE SLOPES EXCEED 3:1.

**EROSION CONTROL BLANKET FOR SLOPE PROTECTION**  
NO SCALE



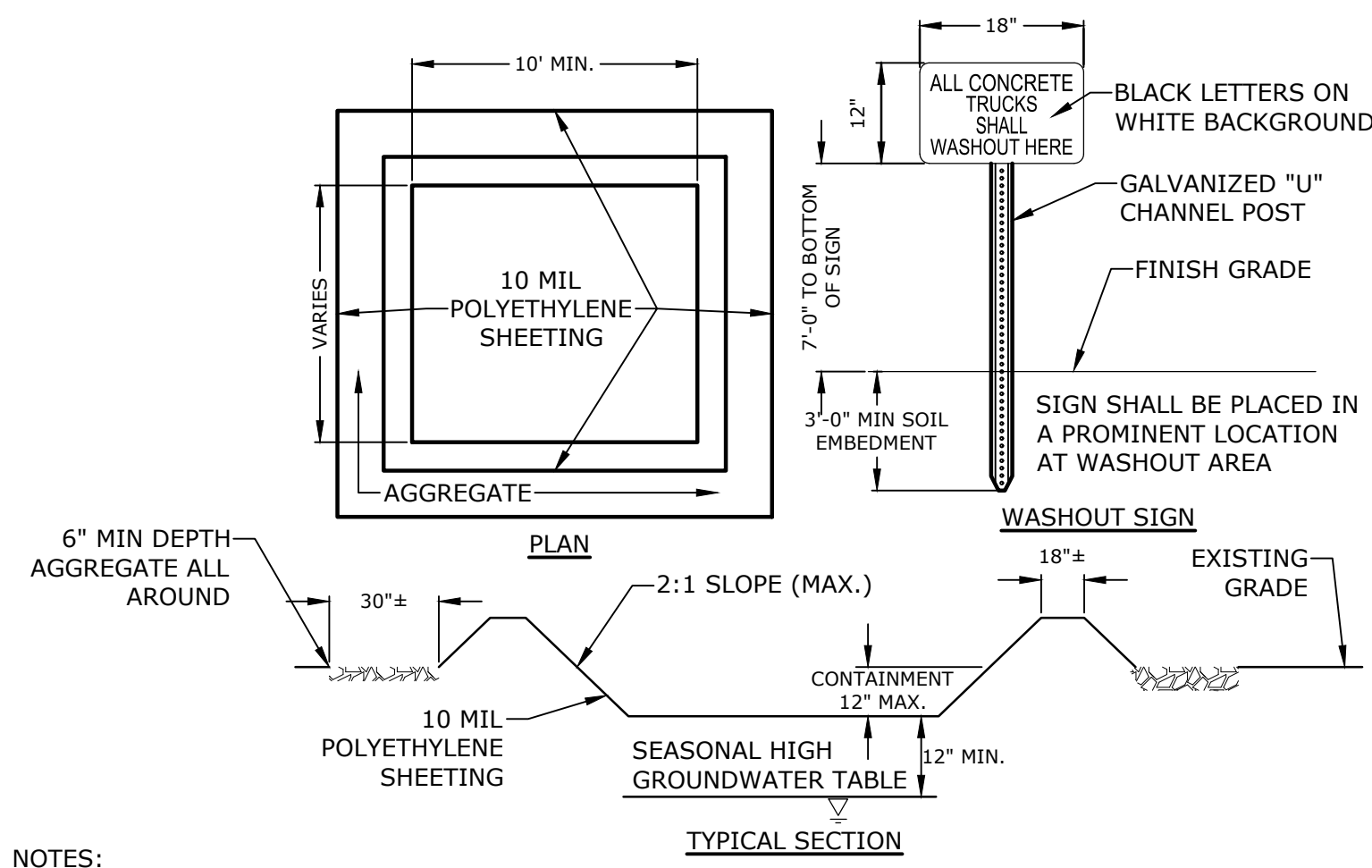
- NOTES:
- RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS
  - PROVIDE 6" COMPACTED CRUSHED GRAVEL BASE BENEATH RAMPS.
  - DETECTABLE WARNING STRIP SHALL BE ADA SOLUTIONS, INC. CAST IN PLACE RAMP. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

**CORNER TIP DOWN RAMP**  
NO SCALE



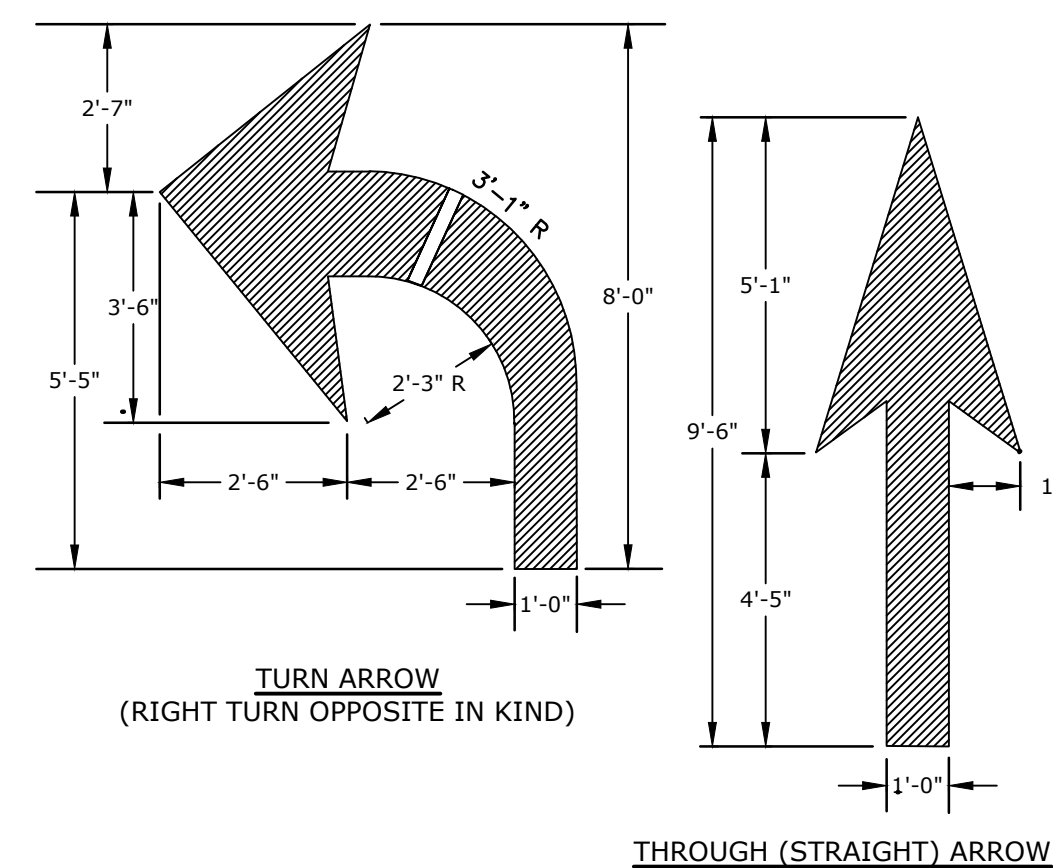
- NOTES:
- RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS
  - PROVIDE 6" COMPACTED CRUSHED GRAVEL BASE BENEATH RAMPS.
  - DETECTABLE WARNING STRIP SHALL BE ADA SOLUTIONS, INC. CAST IN PLACE RAMP. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

**SIDEWALK TIP-DOWN RAMP**  
NO SCALE



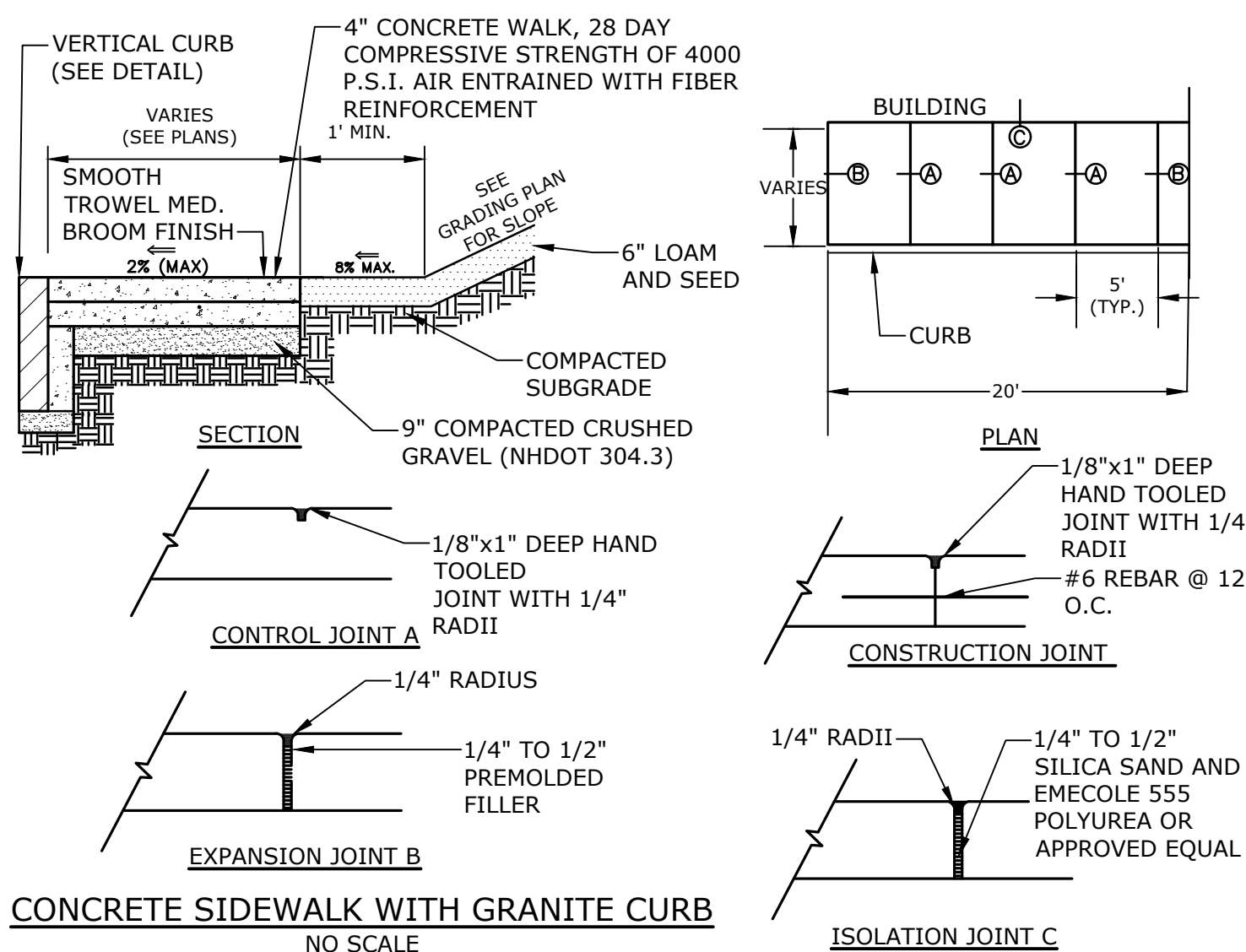
- NOTES:
- CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
  - CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
  - WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
  - WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
  - ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
  - AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

**CONCRETE WASHOUT AREA**  
NO SCALE

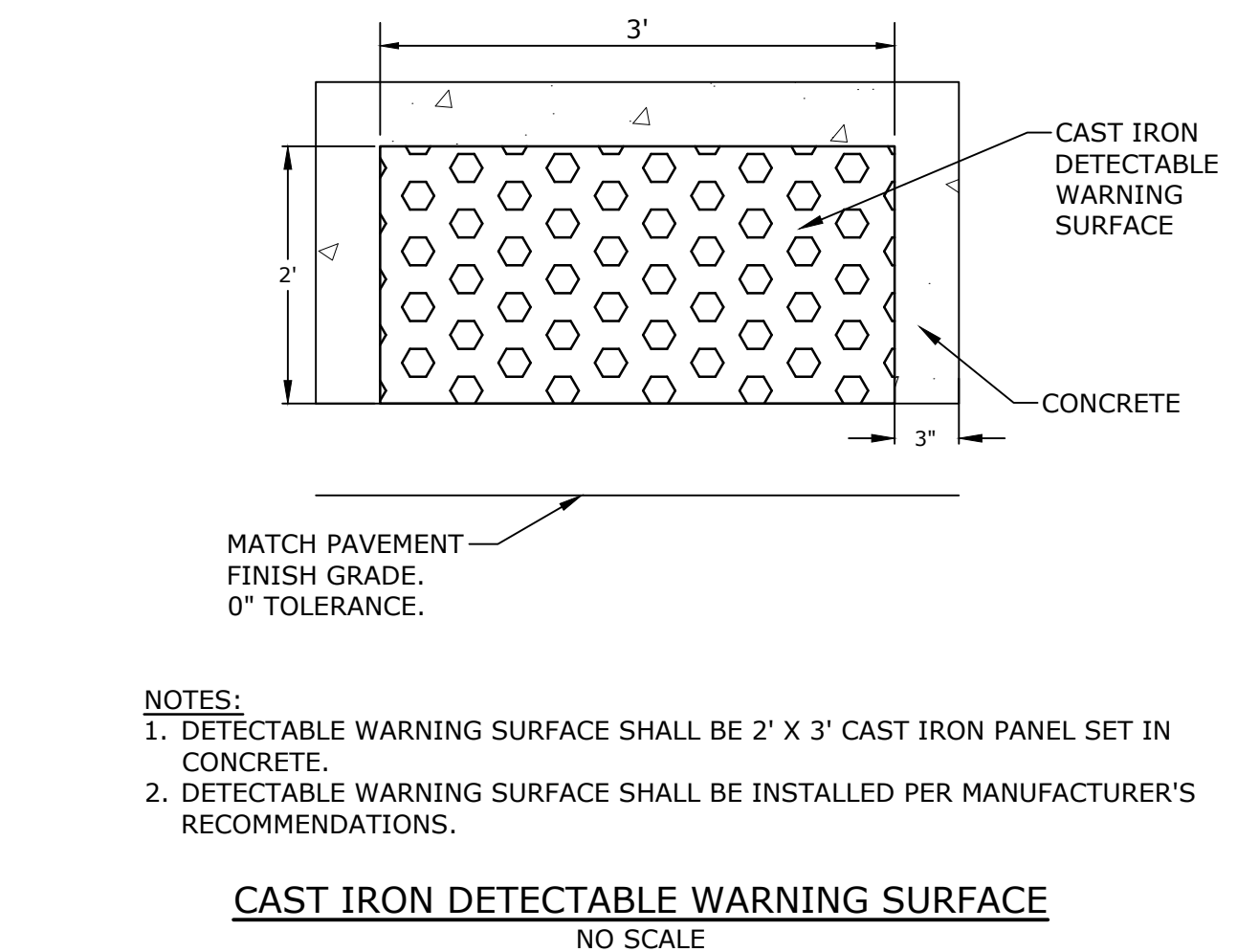


**PAVEMENT MARKING NOTES:**

- ALL WORDS AND SYMBOLS SHALL BE RETROREFLECTIVE WHITE AND SHALL CONFORM TO THE LATEST VERSION OF THE MUTCD.
- 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.
- PREFORMED SYMBOLS SHALL BE PRE-CUT BY THE MANUFACTURER.
- WRONG-WAY ARROWS SHALL NOT BE SUBSTITUTED FOR THROUGH ARROWS.
- 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.

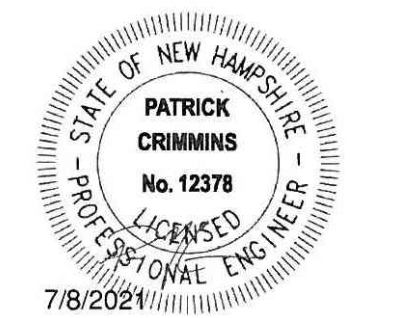


**CONCRETE SIDEWALK WITH GRANITE CURB**  
NO SCALE



- NOTES:
- DETECTABLE WARNING SURFACE SHALL BE 2' X 3' CAST IRON PANEL SET IN CONCRETE.
  - DETECTABLE WARNING SURFACE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

**CAST IRON DETECTABLE WARNING SURFACE**  
NO SCALE



| MARK | DATE      | DESCRIPTION    |
|------|-----------|----------------|
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|              |                       |
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| DRAWN BY:    | JW/CJK                |
| CHECKED BY:  | NAH/PMC               |
| APPROVED BY: | BLM                   |

**DETAILS**

SCALE: AS SHOWN



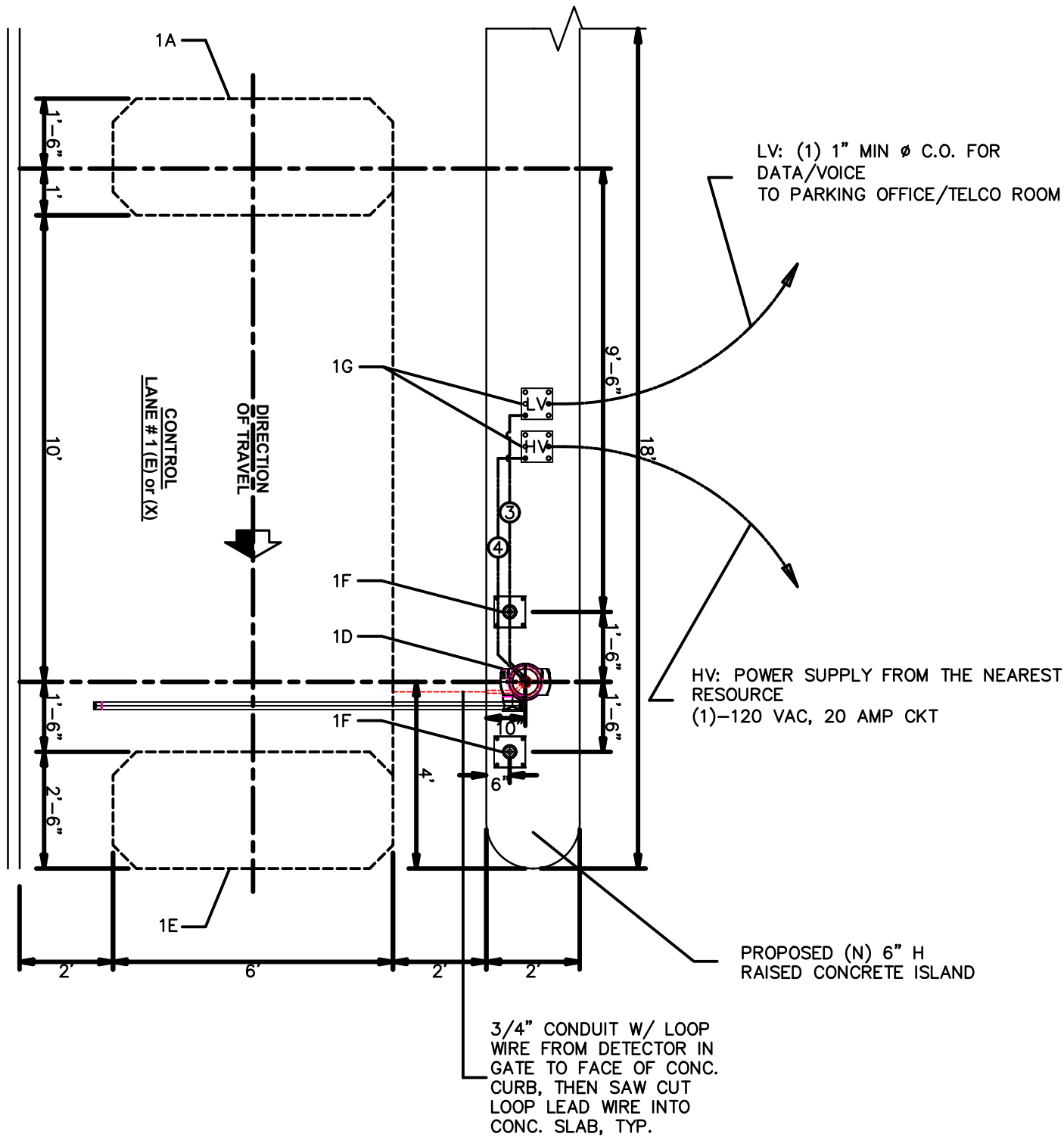
- LEGEND**
- ① 1" Ø C.O., ARCNET CABLE (DATA)
  - ② 22/4 CAT3, PVC (VOICE)
  - ③ 3/4" Ø C.O., 22/8 CABLE O.S., PVC (DATA)
  - ④ ONE (1) 115VAC, 20AMP CIRCUIT (POWER)

**CONTROL LANE GENERAL NOTES:**

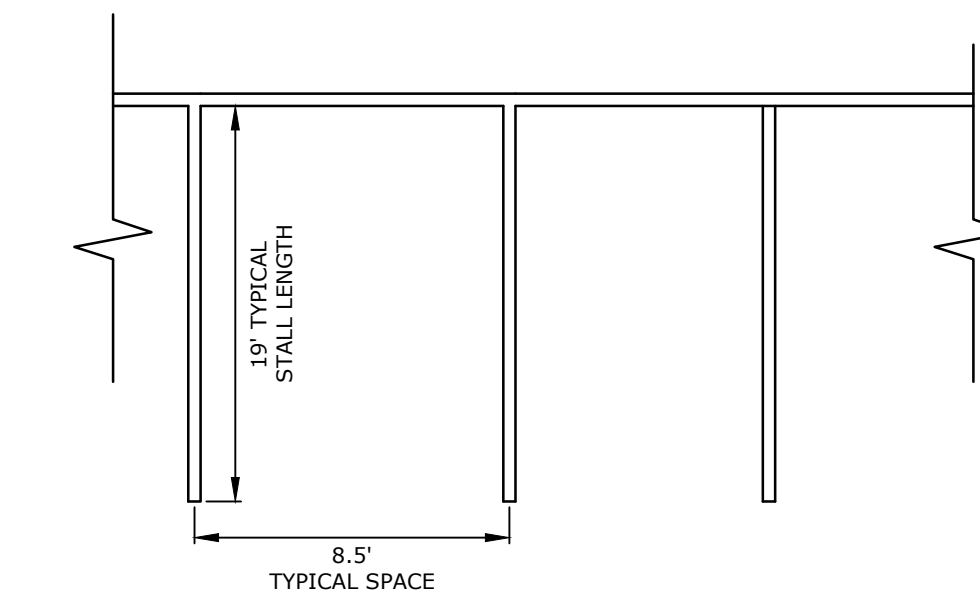
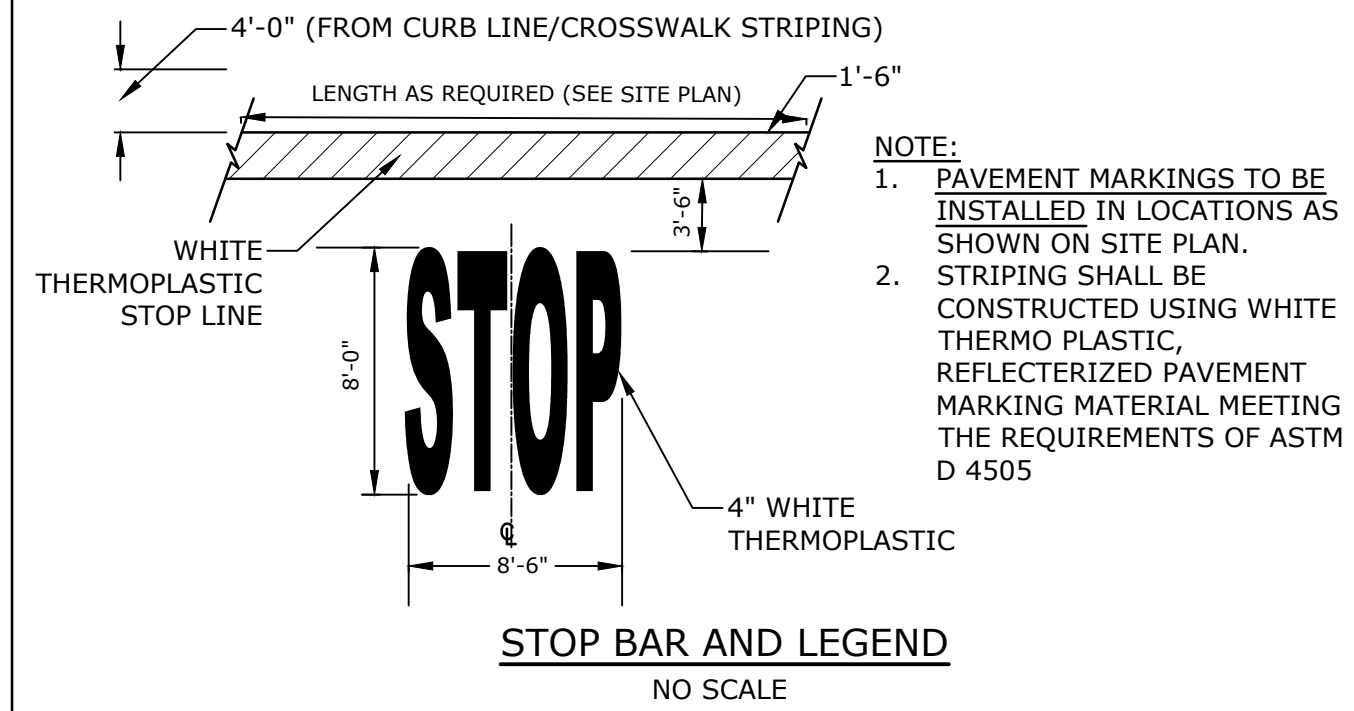
1. THIS DRAWING IS NOT TO BE USED FOR ELECTRICAL CIRCUITRY, REFER TO ELECTRICAL DRAWINGS.
2. \_\_\_\_\_ DENOTES CONDUIT AND WIRE FOR POWER OR PULL WIRE FOR CONTROLS BY ELECTRICAL CONTRACTOR.
3. \_\_\_\_\_ DENOTES CONDUIT AND WIRE BY ELECTRICAL CONTRACTOR.
4. C.O. (CONDUIT ONLY) DENOTES CONDUIT AND PULL 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:**

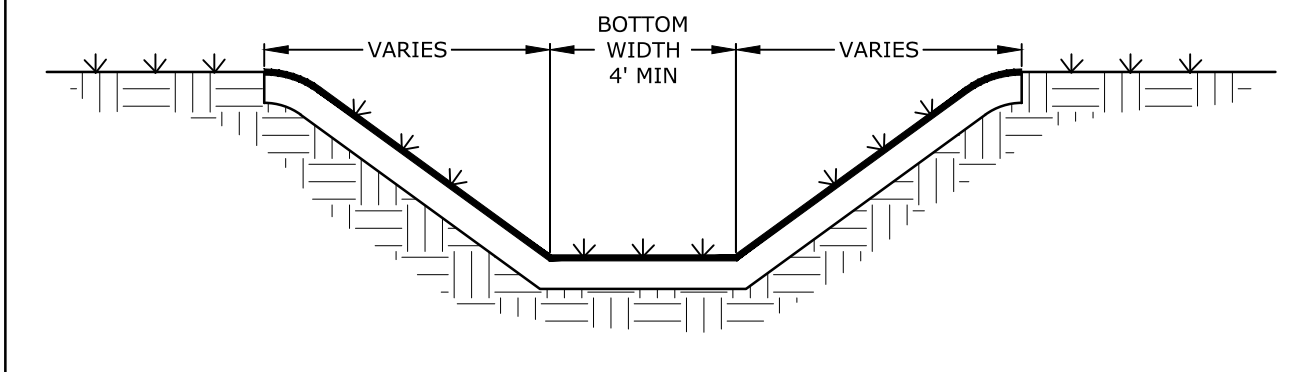
- CONTROL LANE # 1 (E) or (X)
- 1A - ARMING LOOP DETECTOR ASSEMBLY
- 1B - SKIDATA ENTRY/EXIT COLUMN UNLIMITED (See Detail)
- 1C - TWO-WAY INTERCOM UNIT
- 1D - SKIDATA BARRIER GATE (See Detail)
- 1E - CLOSING LOOP DETECTOR ASSEMBLY
- 1F - PROTECTION POST
- 1G - INGROUND JUNCTION BOXES (8"x8"x4") FOR POWER & DATA



**TYPICAL PARKING EQUIPMENT DETAILS**  
NO SCALE

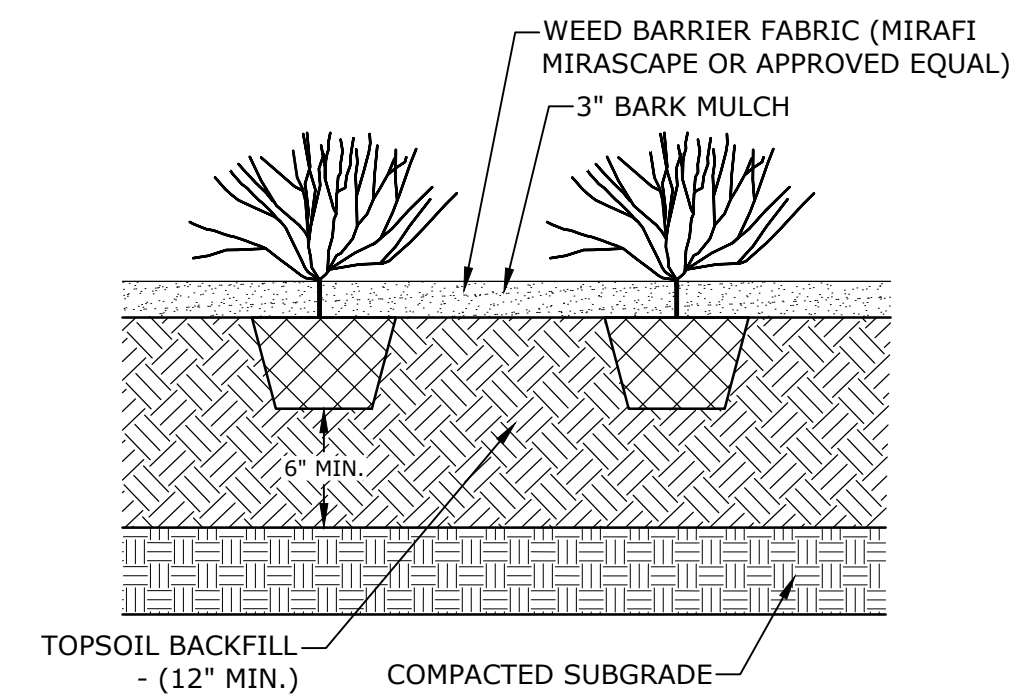


**STALL STRIPING-SINGLE STRIPE**  
NO SCALE

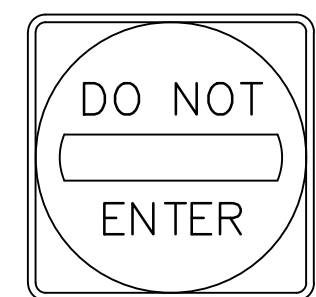


- NOTES:**
1. THE FOUNDATION AREA OF THE WATERWAY SHALL BE CLEARED AND GRUBBED OF ALL OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE WATERWAY.
  2. THE WATERWAY SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND 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



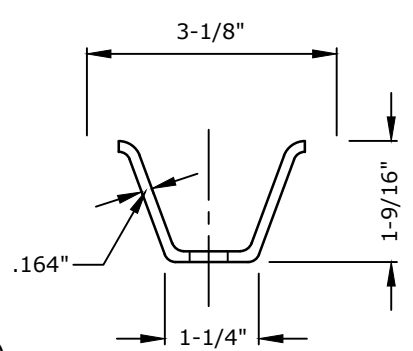
**PERENNIAL PLANTING**  
NO SCALE



R5-1  
30"x30"  
WHITE ON RED



R1-1  
30"x30"  
WHITE ON RED

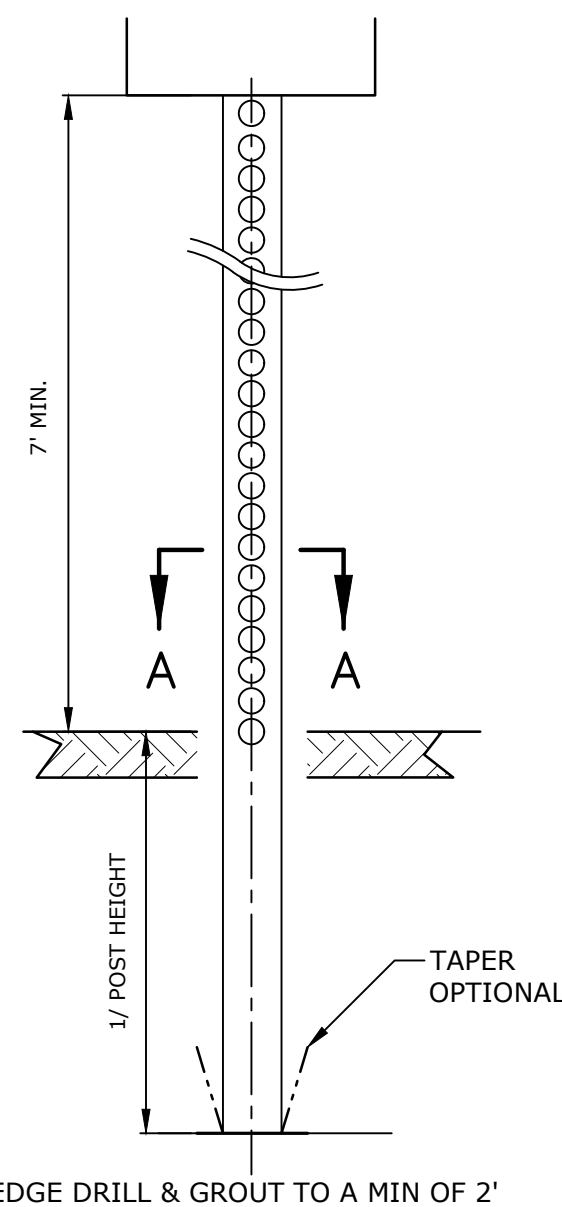


LENGTH: AS REQUIRED  
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)  
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH  
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 - 1080)

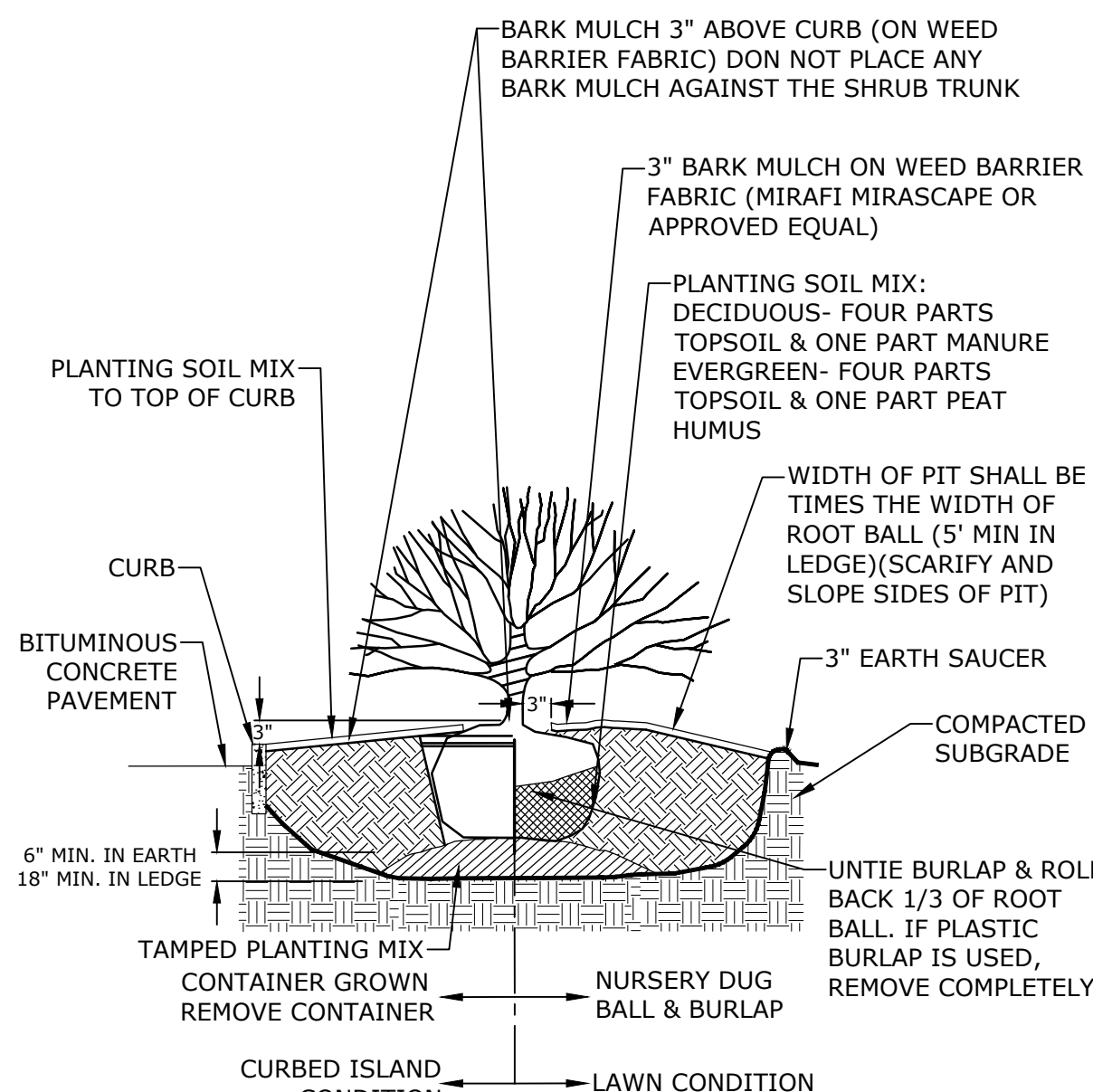
FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED MEDIUM GREEN BAKED ON OR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

NOTE:  
ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

**SIGN LEGEND & SIGN POST**  
NO SCALE

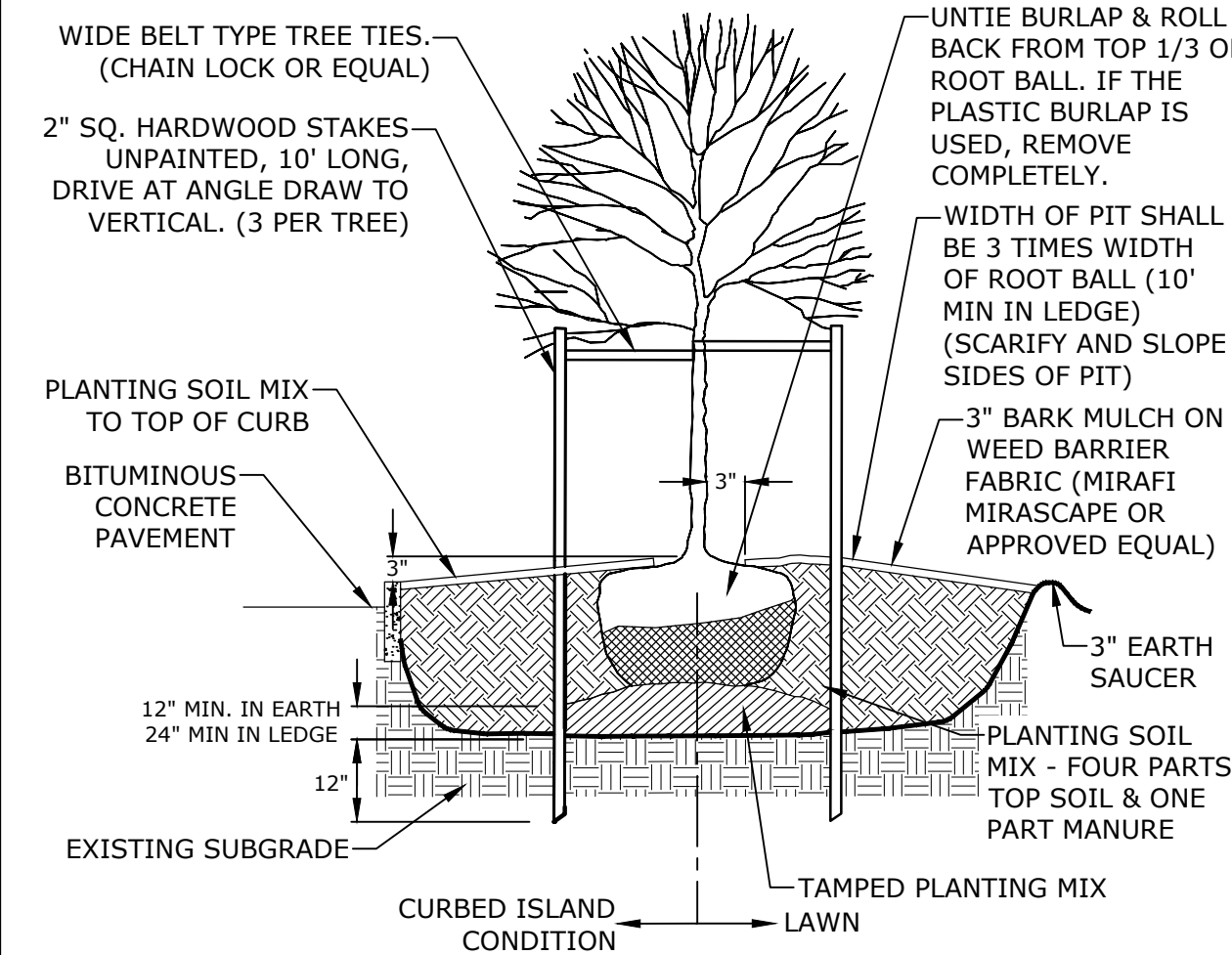


\* IN LEDGE DRILL & GROUT TO A MIN OF 2'



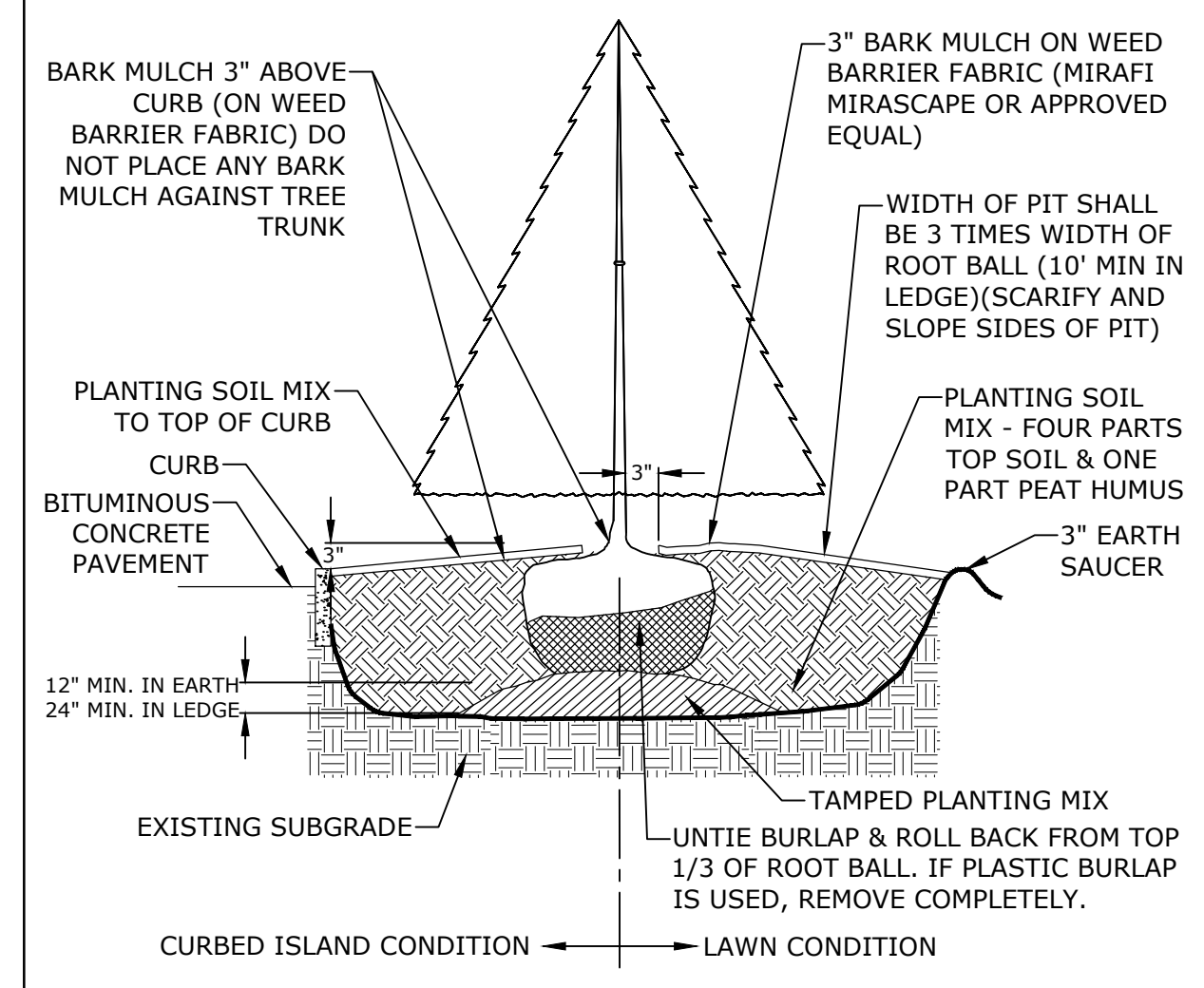
**SHRUB PLANTING**  
NO SCALE

NOTE:  
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED, OR WITHIN 2" ABOVE.



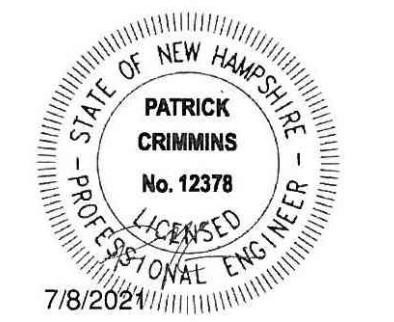
**DECIDUOUS TREE PLANTING**  
NO SCALE

NOTE:  
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED OR WITHIN 2" ABOVE.



**EVERGREEN TREE PLANTING**  
NO SCALE

NOTE:  
PLANT AT SAME DEPTH AS PREVIOUSLY PLANTED IN NURSERY, OR WITHIN 2" ABOVE.



**Lynx Parking Expansion**

**Lonza Biologics**

**Portsmouth, New Hampshire**

| MARK | DATE      | DESCRIPTION    |
|------|-----------|----------------|
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| DRAWN BY:    | JW/CJK                |
| CHECKED BY:  | NAH/PMC               |
| APPROVED BY: | BLM                   |

**DETAILS**

SCALE: AS SHOWN

**C-503**

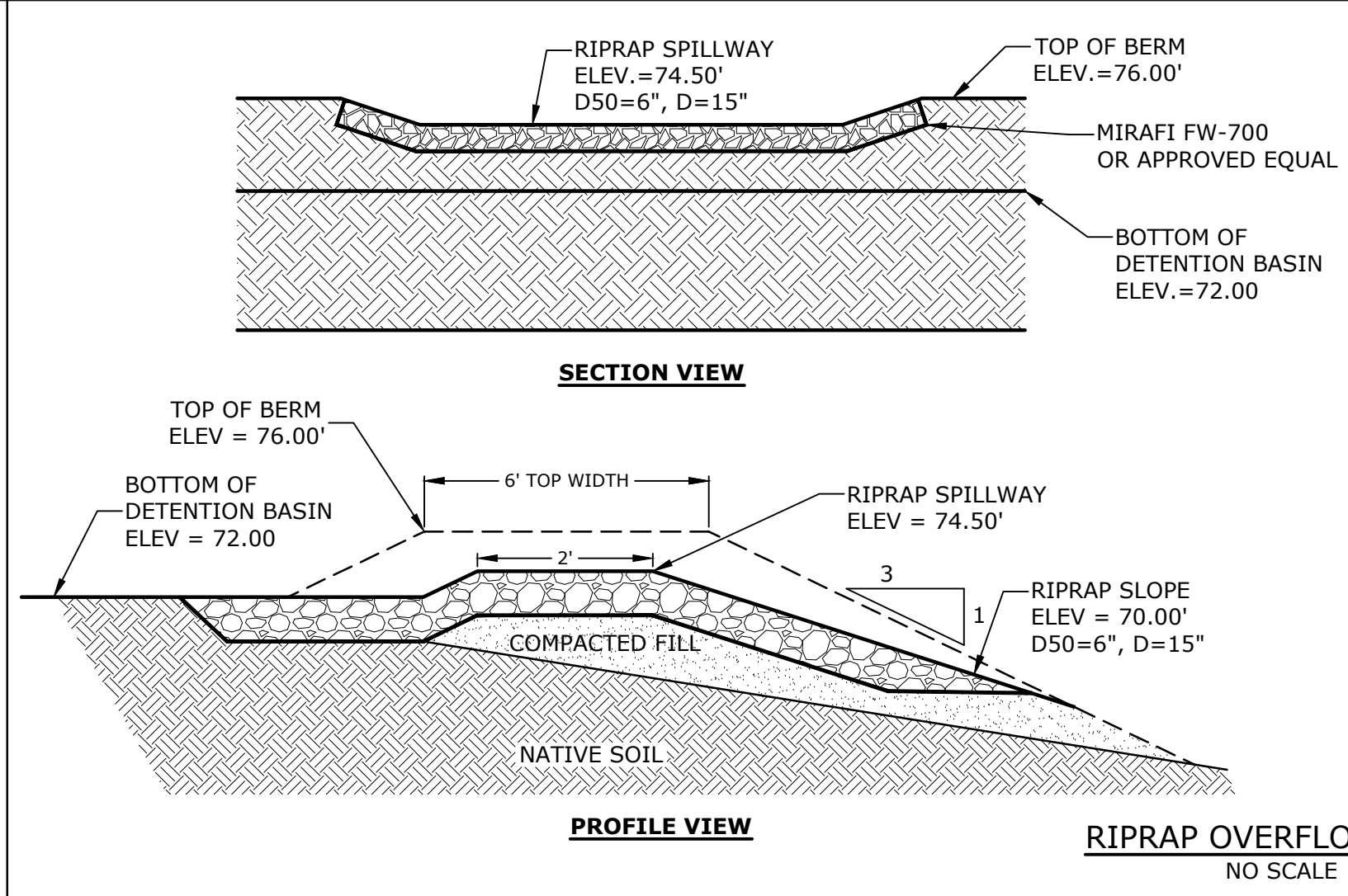
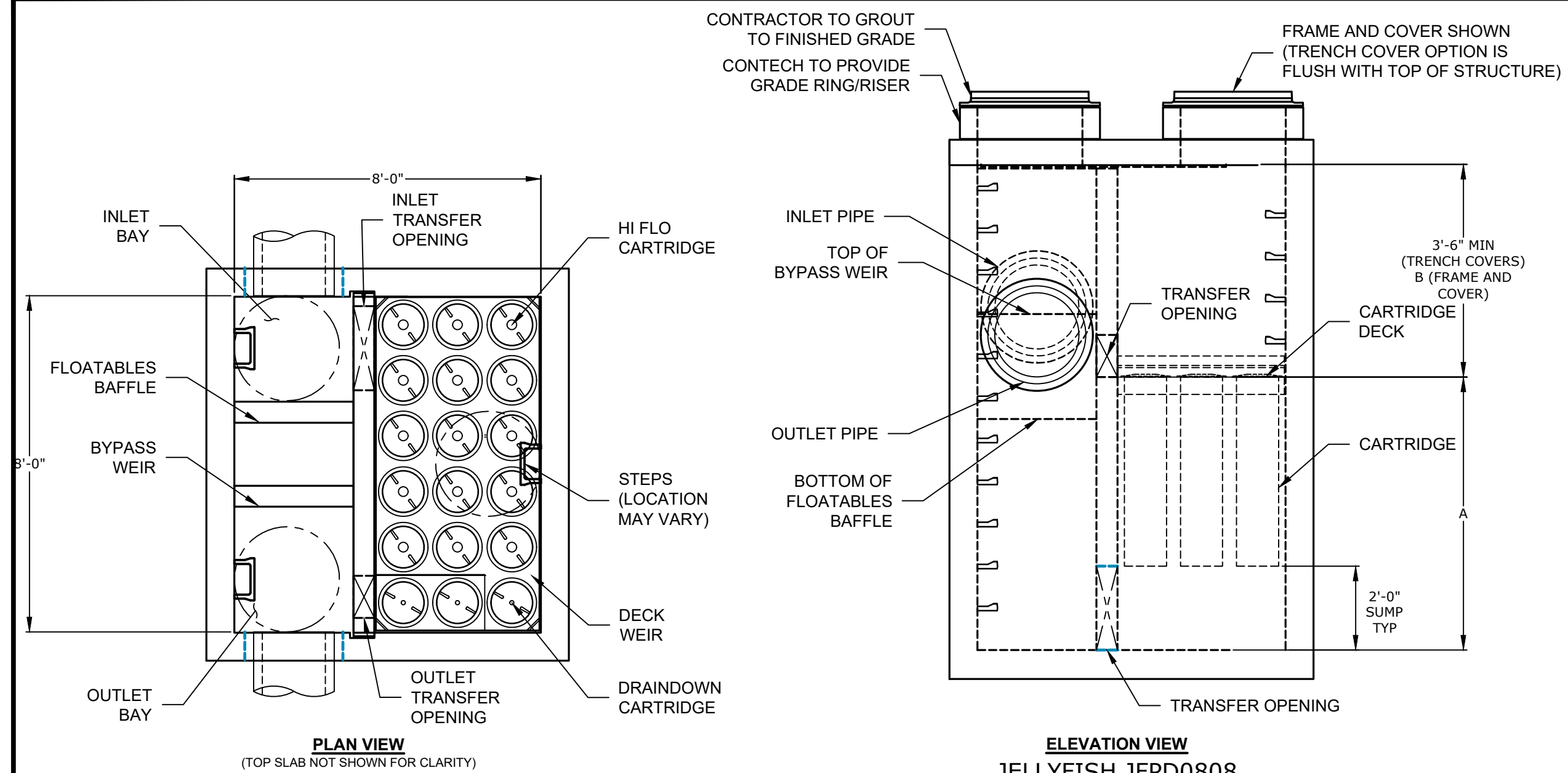




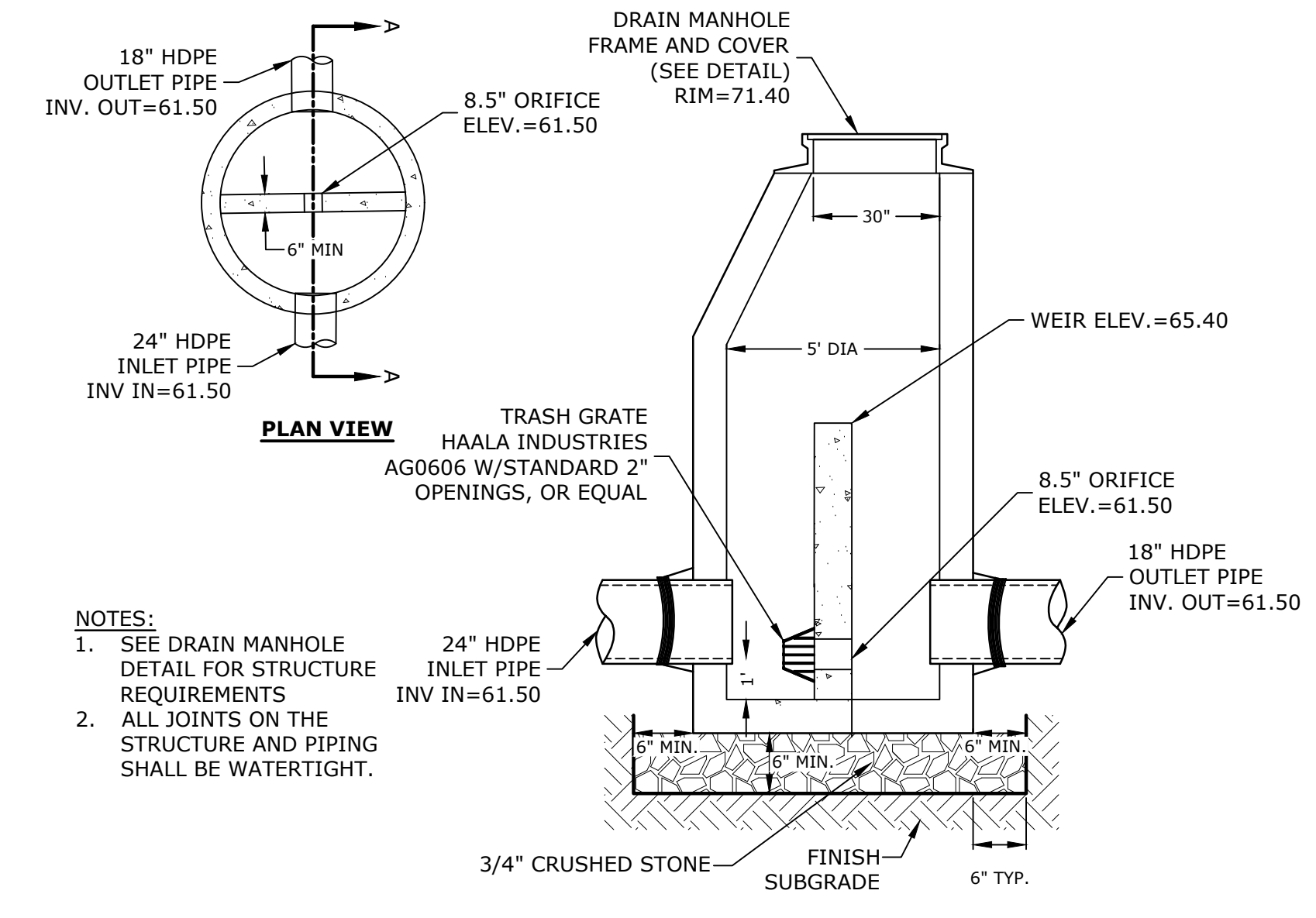
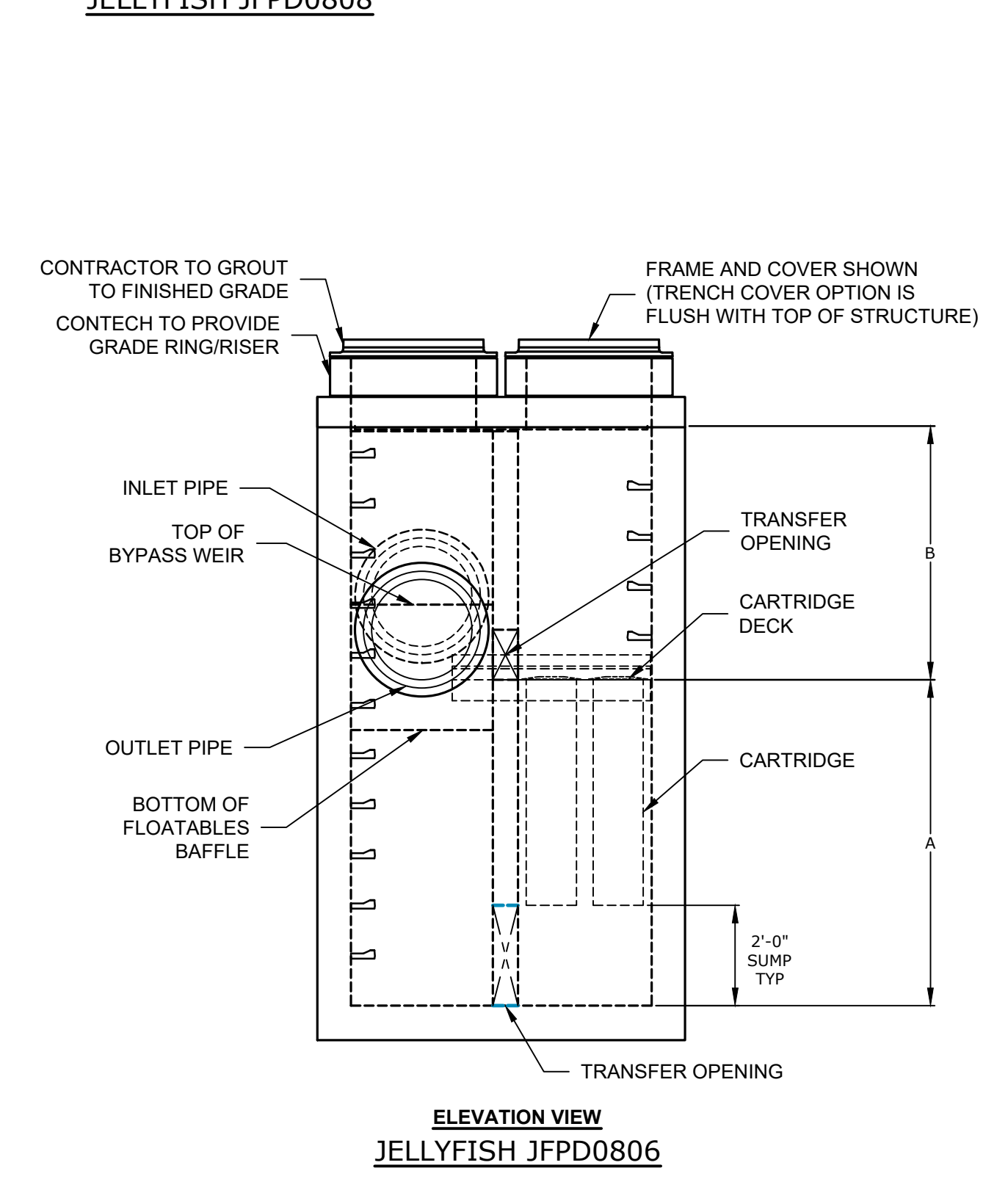




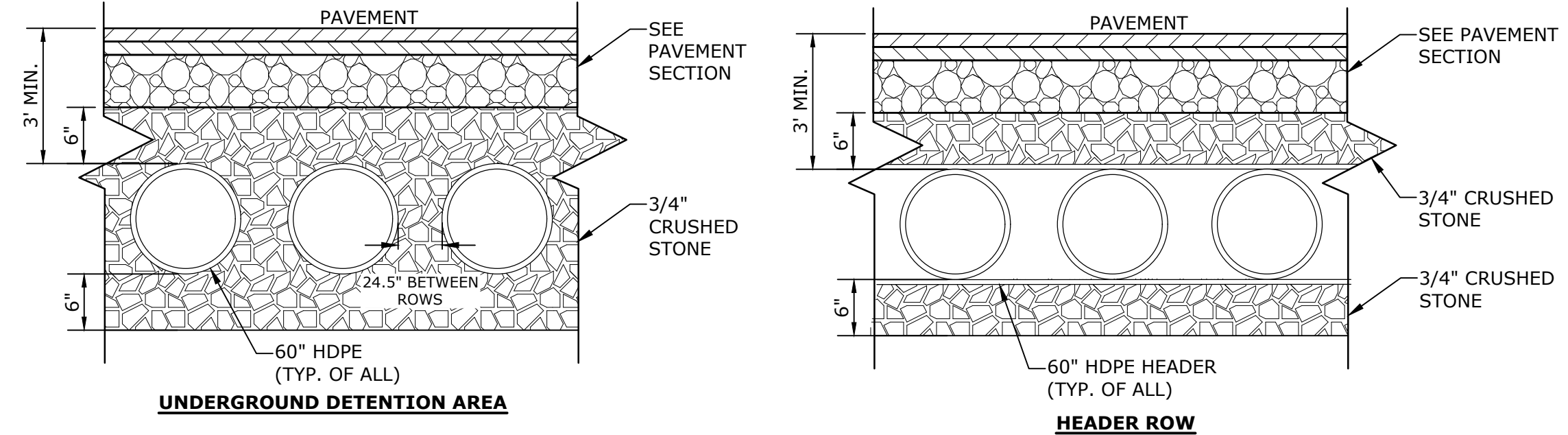




- NOTES:
- SEE GRADING, DRAINAGE & EROSION CONTROL PLANS, SHEET C-103, FOR LOCATIONS AND ELEVATIONS.
  - THE FOUNDATION AREA OF THE SPILLWAY SHALL BE CLEARED AND GRUBBED OF ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL. MATERIALS REMOVED SHALL BE DISPOSED OF SO THEY WILL NOT INTERFERE WITH THE CONSTRUCTION OR PROPER FUNCTIONING OF THE SPILLWAY.
  - 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.
  - RIP-RAP SHALL BE PLACED IN THE SPILLWAY PRIOR TO ALLOWING STORMWATER RUNOFF TO FLOW OVER THE WEIR.
  - 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.
  - 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.
  - 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.
  - 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.
  - VOIDS IN THE ROCK RIPRAP SHALL BE FILLED WITH SPALLS AND SMALLER ROCKS.
  - 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.
  - WOODY VEGETATION SHALL NOT BE ALLOWED TO BECOME ESTABLISHED IN THE ROCK RIPRAP, AND DEBRIS SHALL NOT BE ALLOWED TO ACCUMULATE IN THE CHANNEL.



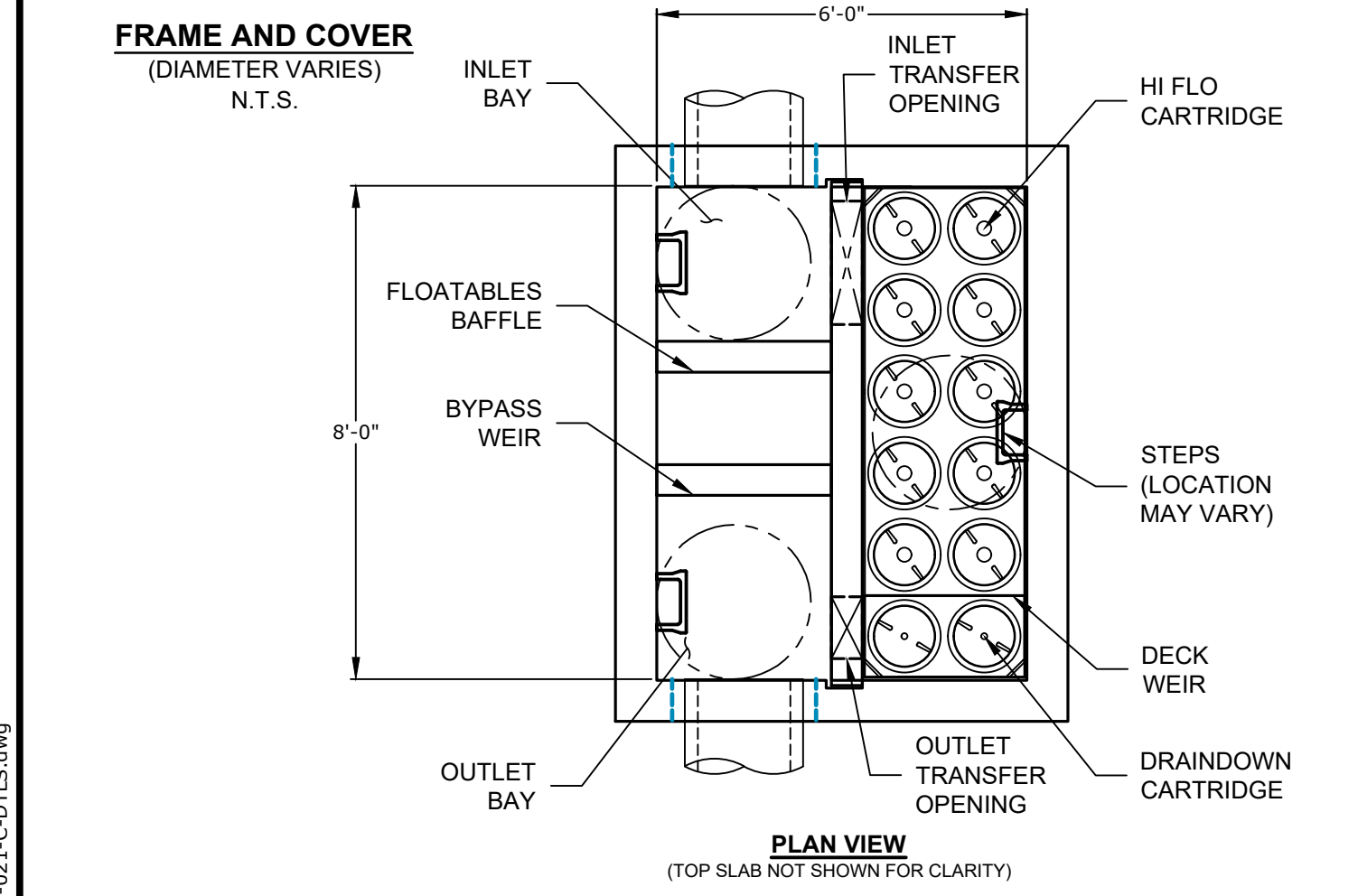
- NOTES:
- SEE DRAIN MANHOLE DETAIL FOR STRUCTURE REQUIREMENTS
  - ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.



| FIELD ELEVATIONS |                   |                  |                      |
|------------------|-------------------|------------------|----------------------|
|                  | TOP OF STONE ELEV | TOP OF PIPE ELEV | BOTTOM OF STONE ELEV |
| UDB              | 67.00'            | 66.50'           | 61.50'               |
|                  |                   |                  | 61.00'               |

- NOTES:
- UNDERGROUND DETENTION SYSTEM TO BE 60" HDPE PIPE DESIGNED FOR H-20 LOADING. CONTRACTOR TO SUBMIT PIPE SPECIFICATIONS AND FINAL MANUFACTURERS DESIGN TO ENGINEER FOR APPROVAL.
  - MANUFACTURER TO SUBMIT PLANS STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.
  - THE DESIGN ENGINEER SHALL PROVIDE SUFFICIENT INSPECTION TO CERTIFY THAT THE SYSTEM HAS BEEN INSTALLED PER THE APPROVED DESIGN PLAN.
  - REFER TO STANDARD DUTY PAVEMENT SECTION DETAIL FOR PAVEMENT SECTION.

**UNDERGROUND DETENTION SYSTEM DETAIL**  
NO SCALE



**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                           | 54"           | 40"           | 27"           | 15"           |
|---|---------------|---------------|---------------|---------------|
| 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**

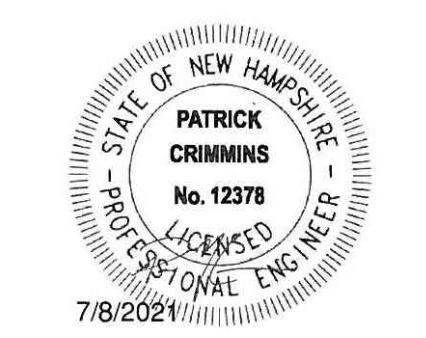
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.

| CARTRIDGE SELECTION                           | 54"           | 40"           | 27"           | 15"           |
|---|---------------|---------------|---------------|---------------|
| 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                         | JFPD0808 | JFPD0806 | JFPD0806 |
| WATER QUALITY FLOW RATE (cfs)      | 2.304    | 0.804    | 0.585    |
| PEAK FLOW RATE (cfs)               | 8.02     | 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"      |

**JELLYFISH® FILTER DETAIL**  
NO SCALE



**Lynx Parking Expansion**

**Lonza Biologics**

**Portsmouth, New Hampshire**

| MARK | DATE      | DESCRIPTION    |
|------|-----------|----------------|
| B    | 7/8/2021  | PB SUBMISSION  |
| A    | 6/21/2021 | TAC SUBMISSION |

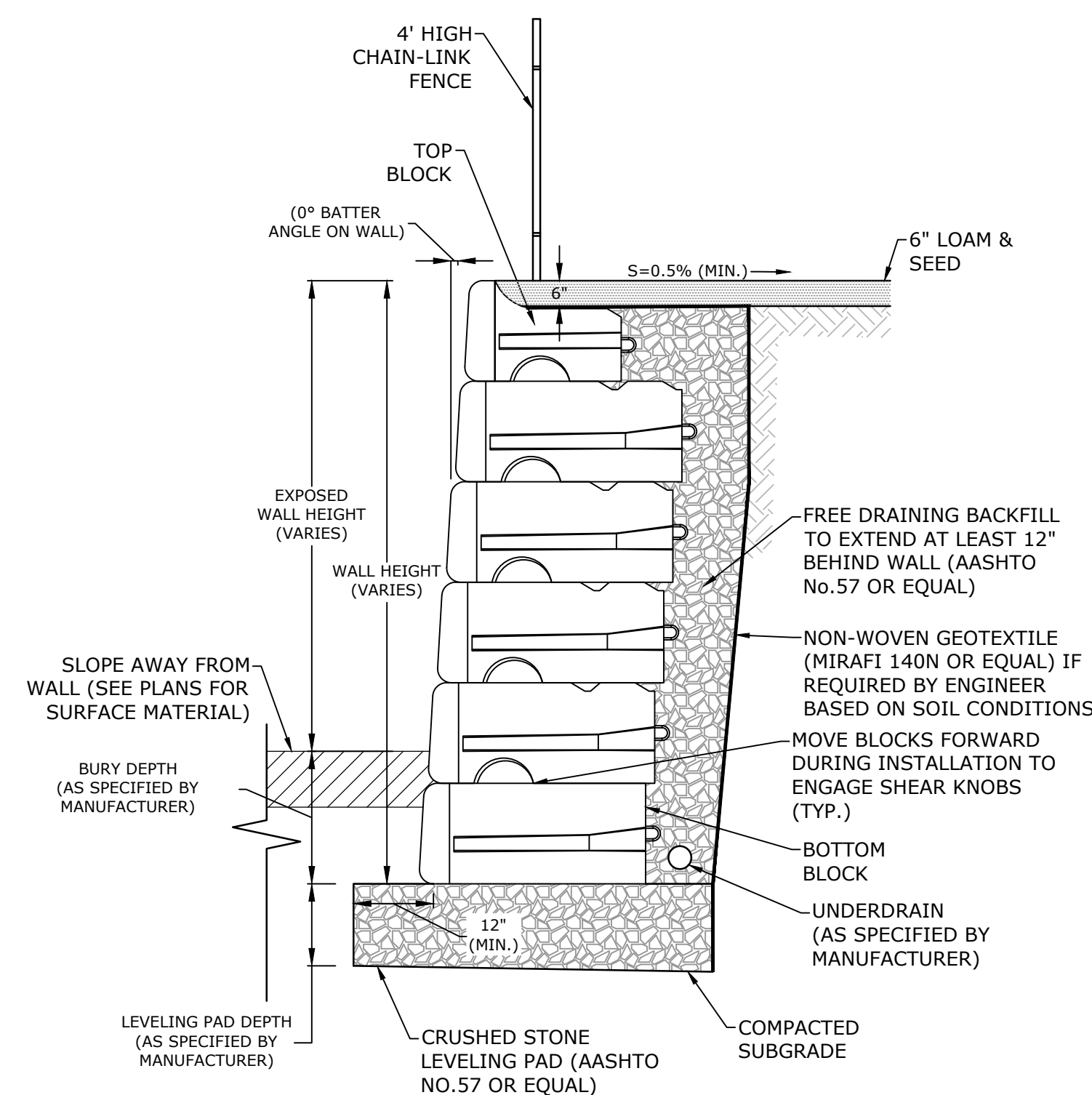
PROJECT NO: L-0700-021  
DATE: June 21, 2021  
FILE: L-0700-021-C-DTLS.DWG  
DRAWN BY: JW/CJK  
CHECKED BY: NAH/PMC  
APPROVED BY: BLM

**DETAILS**

SCALE: AS SHOWN

Linc. Sheet: 7/7/2021  
 Print: 07/21/2021 10:07 AM  
 Tighe & Bond: 3:\V\0700 Lonza Biologics Expansion was 1578F021\_Lynx Project Drawings - Figures\AutoCAD\L-0700-021-C-DTLS.dwg



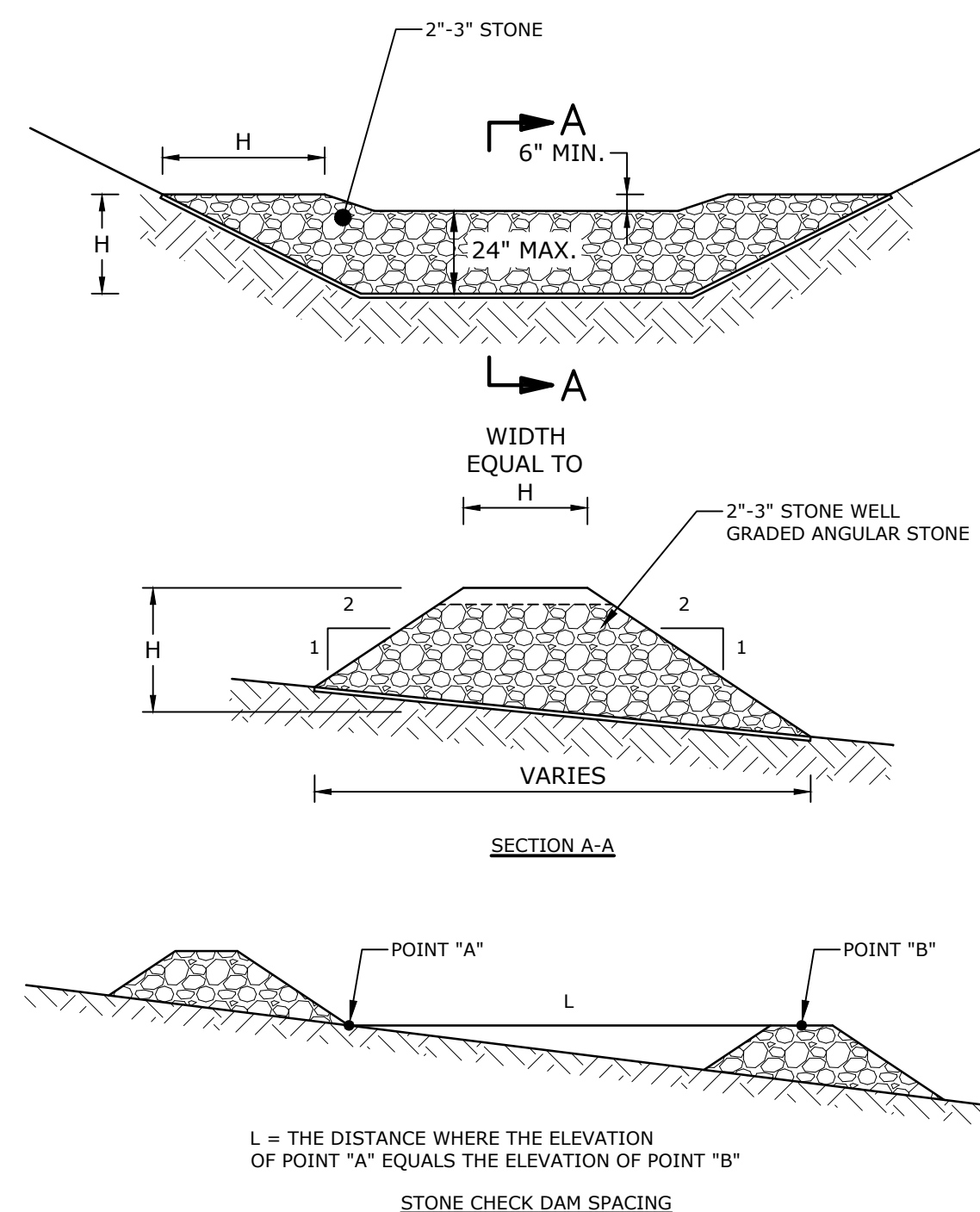


**NOTES:**

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



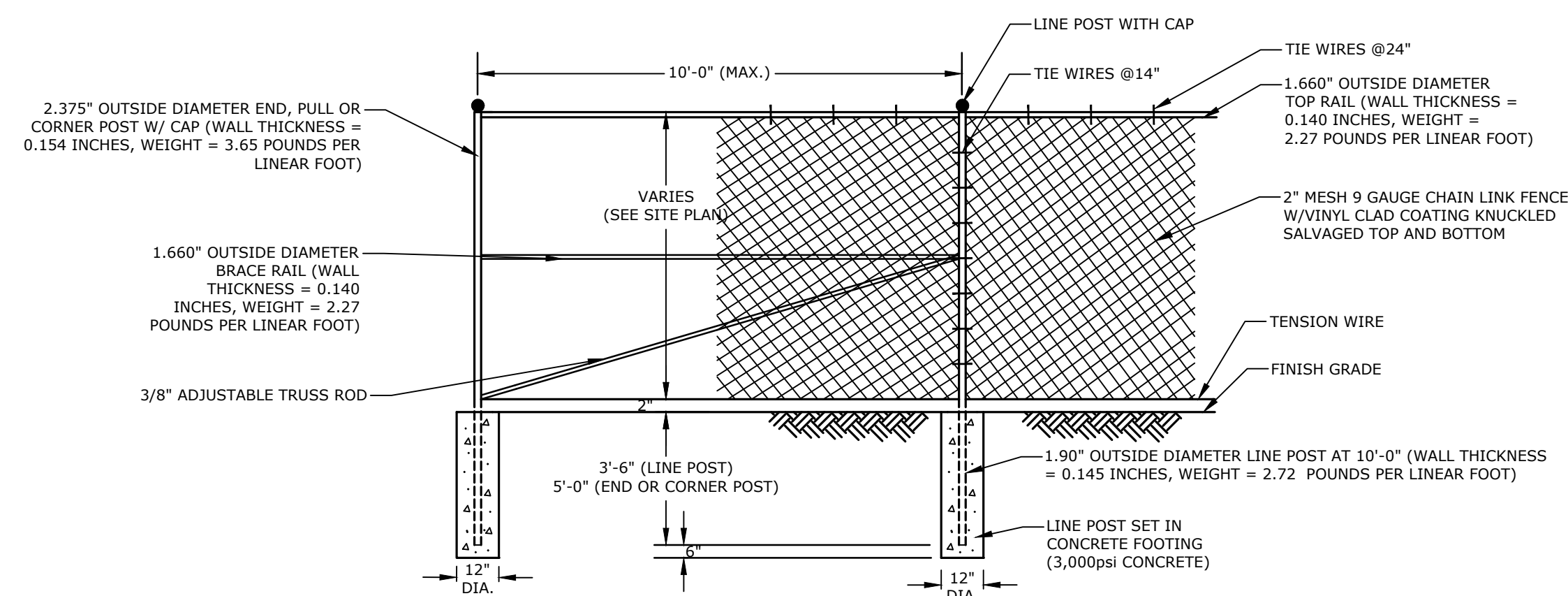
| BERM STONE SIZE                  |  |
|----------------------------------|--|
| SIEVE DESIGNATION (US CUSTOMARY) | PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES |
| 12 IN                            | 100  |
| 6 IN                             | 84-100                                       |
| 3 IN                             | 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

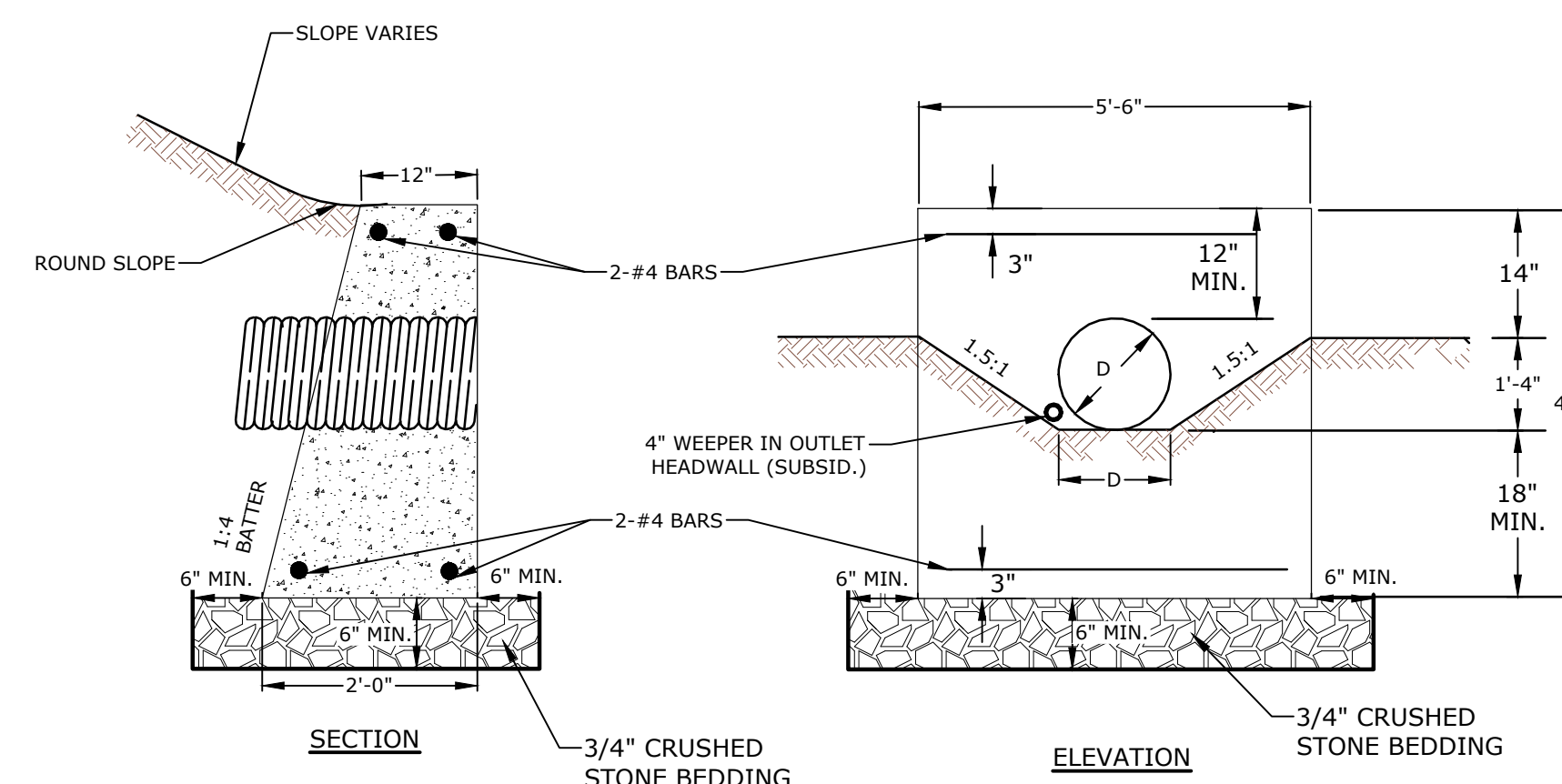


**NOTES:**

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 1, 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.

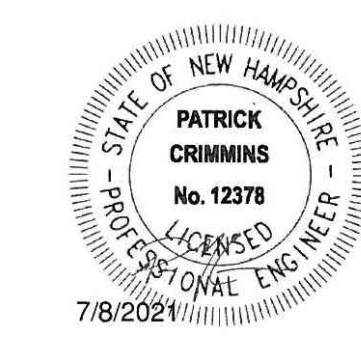
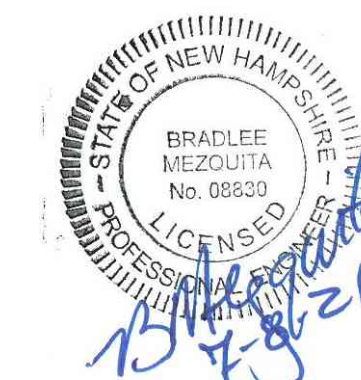
**CHAIN LINK FENCE**

NO SCALE



**PRECAST CONCRETE HEADWALL**

NO SCALE



**Lynx Parking Expansion**

**Lonza Biologics**

**Portsmouth, New Hampshire**

| MARK | DATE      | DESCRIPTION    |
|------|-----------|----------------|
| B    | 7/8/2021  | PB SUBMISSION  |
| A    | 6/21/2021 | TAC SUBMISSION |
| MARK | DATE      | DESCRIPTION    |

|              |                       |
|--------------|-----------------------|
| PROJECT NO:  | L-0700-021            |
| DATE:        | June 21, 2021         |
| FILE:        | L-0700-021-C-DTLS.DWG |
| DRAWN BY:    | JW/CIK                |
| CHECKED BY:  | NAH/PMC               |
| APPROVED BY: | BLM                   |

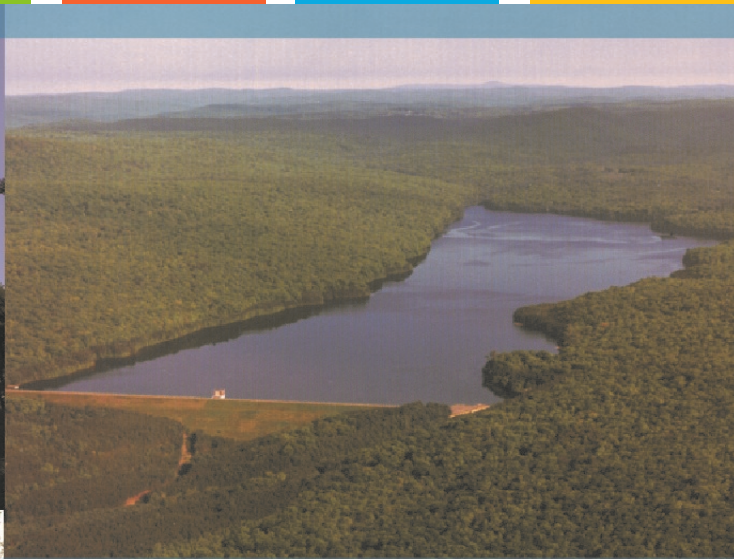
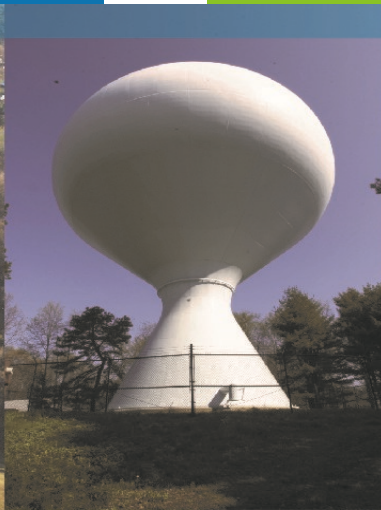
**DETAILS**

SCALE: AS SHOWN

**C-507**



| City of Portsmouth TAC, July 6, 2021:                |  |  |                           |
|--|--|--|---------------------------|
|  | TAC Stipulation  | Applicant Response   | Sheet                     |
| <b>TAC Stipulations from 7/7 Letter of Decision:</b> |  |  |                           |
| 1  | Add an underdrain system at the proposed wall and account for groundwater at this location in the drainage calculations                                    | An underdrain has been added to the retaining wall and accounted for in the drainage calculations. | C-103 & Drainage Analysis |
| 2  | HW1 shall be correct to read Inv. Out  | Both HW1 and HW2 have been corrected to read Inv Out.  | C-103                     |
| 3  | Add Knox key switch in parking gate  | Note 17 has been added to specific Knox key switch   | C-102.1                   |
| 4  | Confirm that the parking gate measures at least 20' when open  | Note 17 has been added and references the gate opening to be 20' when open                         | C-102.1                   |
| 5  | Provide truck turning templates to verify truck access through the parking lot aisles to be reviewed by the Fire Department prior to Planning Board review | A truck turning exhibit has been included  | 1 of 1                    |



Lynx Parking Expansion at Lonza Biologics, Inc.

City of Portsmouth, NH

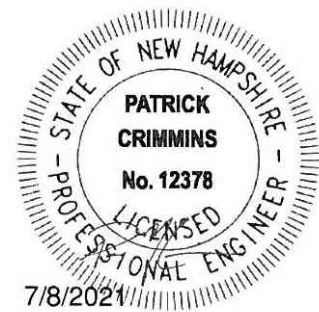
# Drainage Analysis

Prepared For:

**Lonza Biologics, Inc.**

**101 International Drive**

**Portsmouth, New Hampshire 03801**



June 21, 2021

Revised July 8, 2021





**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(I).



**Table 1.2****Comparison of Pre- and Post-Development Flows (CFS)**

|                                   | <b>2-Year<br/>Storm</b> | <b>10-Year<br/>Storm</b> | <b>25-Year<br/>Storm</b> | <b>50-Year<br/>Storm</b> |
|-----------------------------------|-------------------------|--------------------------|--------------------------|--------------------------|
| <b>Pre-Development Watershed</b>  |                         |                          |                          |                          |
| PA-1                              | 6.98                    | 14.26                    | 20.20                    | 25.90                    |
| PA-2                              | 7.38                    | 12.91                    | 17.32                    | 21.50                    |
| <b>Post-Development Watershed</b> |                         |                          |                          |                          |
| PA-1                              | 5.23                    | 14.20                    | 16.32                    | 25.45                    |
| 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**











CONTECH Stormwater Solutions Inc. Engineer  
Date Prepared:

JBS  
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 <sup>3</sup> |
| 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 |







CONTECH Stormwater Solutions Inc. Engineer  
Date Prepared:

JBS  
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 <sup>3</sup> |
| 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 |







CONTECH Stormwater Solutions Inc. Engineer  
Date Prepared:

JBS  
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 <sup>3</sup> |
| 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 |



## 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 <sub>I</sub> = 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 <sub>SED</sub> = Sediment forebay volume, if used for pretreatment  | ≥ 25%WQV                  |
| <b>Calculate time to drain if system IS NOT underdrained:</b>           |          |   |                           |
|   | sf       | A <sub>SA</sub> = Surface area of the practice  |                           |
|   | iph      | K <sub>sat</sub> <sub>DESIGN</sub> = Design infiltration rate <sup>1</sup>  |                           |
|   | Yes/No   | If K <sub>sat</sub> (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?<br>(Use the calculations below) |                           |
| -   | hours    | T <sub>DRAIN</sub> = Drain time = V / (A <sub>SA</sub> * I <sub>DESIGN</sub> )  | ≤ 72-hrs                  |
| <b>Calculate time to drain if system IS underdrained:</b>               |          |   |                           |
|   | ft       | E <sub>WQV</sub> = Elevation of WQV (attach stage-storage table)  |                           |
|   | cfs      | Q <sub>WQV</sub> = Discharge at the E <sub>WQV</sub> (attach stage-discharge table)   |                           |
| -   | hours    | T <sub>DRAIN</sub> = Drain time = 2WQV/Q <sub>WQV</sub>   | ≤ 72-hrs                  |
|   | feet     | E <sub>FC</sub> = Elevation of the bottom of the filter course material <sup>2</sup>  |                           |
|   | feet     | E <sub>UD</sub> = Invert elevation of the underdrain (UD), if applicable  |                           |
|   | feet     | E <sub>SHWT</sub> = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)                               |                           |
|   | feet     | E <sub>ROCK</sub> = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)                            |                           |
| -   | feet     | D <sub>FC to UD</sub> = Depth to UD from the bottom of the filter course  | ≥ 1'                      |
| -   | feet     | D <sub>FC to ROCK</sub> = Depth to bedrock from the bottom of the filter course   | ≥ 1'                      |
| -   | feet     | D <sub>FC to SHWT</sub> = 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                     |
| <b>If a surface sand filter or underground sand filter is proposed:</b> |          |   |                           |
| YES   | ac       | Drainage Area check.  | < 10 ac                   |
|   | cf       | V = Volume of storage <sup>3</sup> (attach a stage-storage table)   | ≥ 75%WQV                  |
|   | inches   | D <sub>FC</sub> = 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                     |











---

## 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*/<br>DISTURBED SOIL NUMERATOR** | SOIL TYPE            | HSG |
|--|----------------------|-----|
| 29C  | WOODBIDGE            | C   |
| 299A/dcccc                                 | UDORTHERTS, SMOOTHED | C   |
| 500E/dcccc                                 | UDORTHERTS, LOAMY    | C   |
| 600A/fcccc                                 | ENDOQUENTS, 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

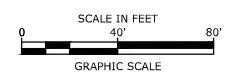
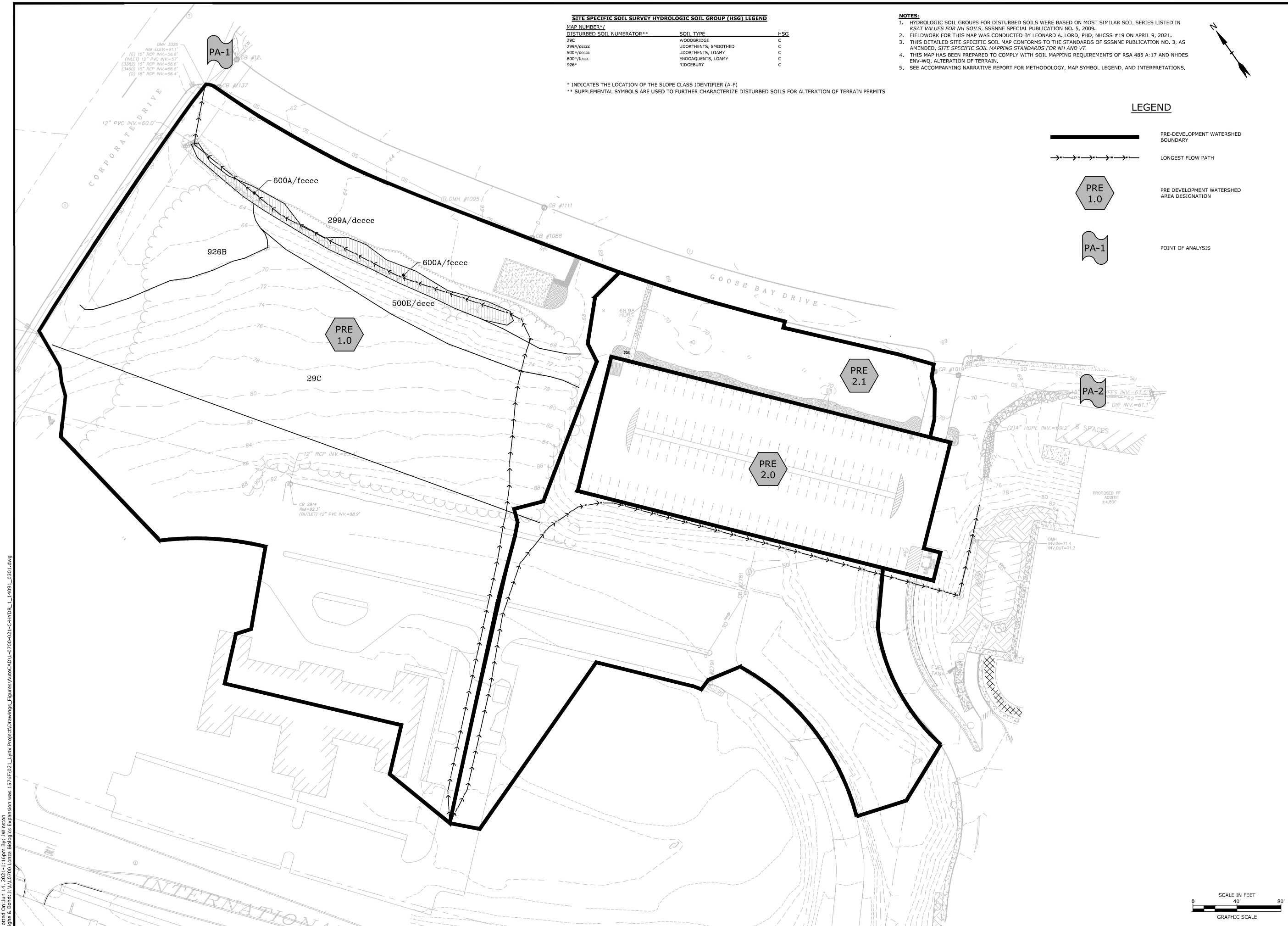
**NOTES:**

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.



**LEGEND**

- PRE-DEVELOPMENT WATERSHED BOUNDARY
- LONGEST FLOW PATH
- PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- POINT OF ANALYSIS



**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 11:16pm By: Wriston  
 Printed On: Jun 14, 2021 11:16am  
 File: C:\Users\jlord\OneDrive\Documents\Projects\Drawings\_Figures\AutoCAD\1-0700-021-C-HYDR\_1\_14091\_0301.dwg

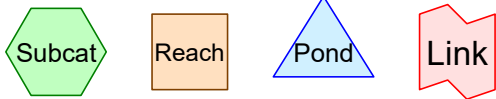
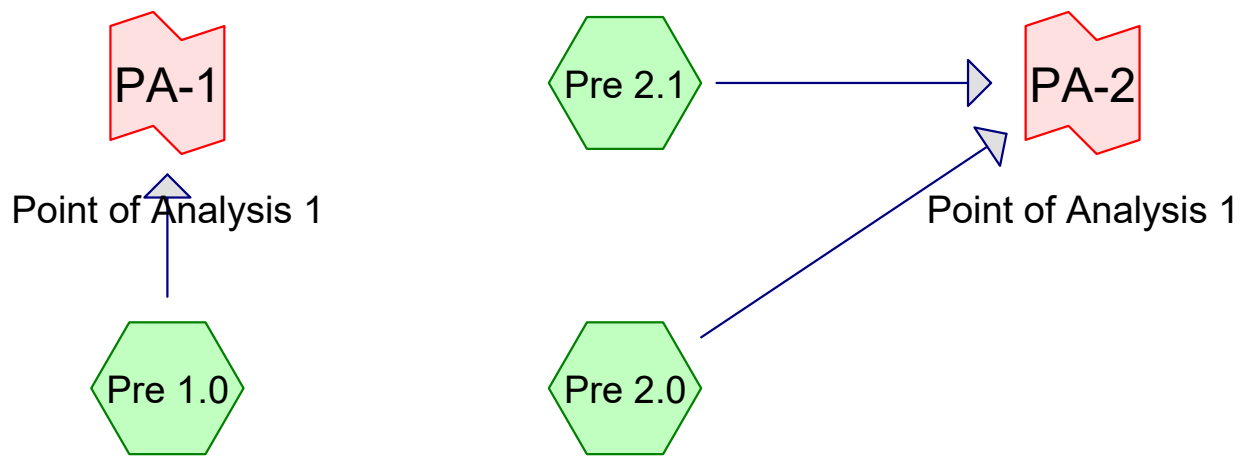
















**L-0700-021-PRE**

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Page 2

**Area Listing (all nodes)**

| Area<br>(acres) | CN        | Description<br>(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)                     |
| <b>7.317</b>    | <b>80</b> | <b>TOTAL AREA</b>                                |



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**Soil Listing (all nodes)**

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>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         |                           |
| <b>7.317</b>    |               | <b>TOTAL AREA</b>         |

**L-0700-021-PRE**

Type III 24-hr 2 Year Storm Rainfall=3.68"

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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 Analysis 1** Inflow=6.98 cfs 0.560 af  
Primary=6.98 cfs 0.560 af

**Link PA-2: Point of Analysis 1** 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**



**L-0700-021-PRE**

Type III 24-hr 10 Year Storm Rainfall=5.59"

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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 Analysis 1** Inflow=14.26 cfs 1.118 af  
Primary=14.26 cfs 1.118 af

**Link PA-2: Point of Analysis 1** 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              |                | <b>Sheet Flow,</b><br>Smooth surfaces n= 0.011 P2= 3.68"   |
| 0.7      | 168           | 0.0357        | 3.84              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps  |
| 0.1      | 18            | 0.0417        | 3.29              |                | <b>Shallow Concentrated Flow,</b><br>Unpaved Kv= 16.1 fps  |
| 3.9      | 208           | 0.1260        | 0.89              |                | <b>Shallow Concentrated Flow,</b><br>Forest w/Heavy Litter Kv= 2.5 fps   |
| 2.6      | 313           | 0.0184        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Grassed Waterway Kv= 15.0 fps   |
| 0.1      | 55            | 0.0545        | 10.59             | 8.32           | <b>Pipe Channel,</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>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<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description          |
|-------------|------------------|------------------|----------------------|-------------------|----------------------|
| 5.0         |                  |                  |                      |                   | <b>Direct Entry,</b> |

**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<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 1.1         | 100              | 0.0225           | 1.55                 |                   | <b>Sheet Flow,</b><br>Smooth surfaces n= 0.011 P2= 3.68"                          |
| 0.7         | 170              | 0.0353           | 3.81                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps                           |
| 0.2         | 82               | 0.1620           | 6.48                 |                   | <b>Shallow Concentrated Flow,</b><br>Unpaved Kv= 16.1 fps                         |
| 4.8         | 410              | 0.0010           | 1.43                 | 1.13              | <b>Pipe Channel,</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>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

**L-0700-021-PRE***Type III 24-hr 25 Year Storm Rainfall=7.08"*

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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 Analysis 1** Inflow=20.20 cfs 1.589 af  
Primary=20.20 cfs 1.589 af

**Link PA-2: Point of Analysis 1** 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**



**L-0700-021-PRE**

*Type III 24-hr 50 Year Storm Rainfall=8.49"*

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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 Analysis 1** Inflow=25.90 cfs 2.050 af  
Primary=25.90 cfs 2.050 af

**Link PA-2: Point of Analysis 1** 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*/<br>DISTURBED SOIL NUMERATOR** | SOIL TYPE            | HSG |
|--|----------------------|-----|
| 29C  | WOODBIDGE            | C   |
| 299A/dcccc                                 | UDORTHERTS, SMOOTHED | C   |
| 500E/ccccc                                 | UDORTHERTS, LOAMY    | C   |
| 600F/fccccc                                | ENDOQUENTS, 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

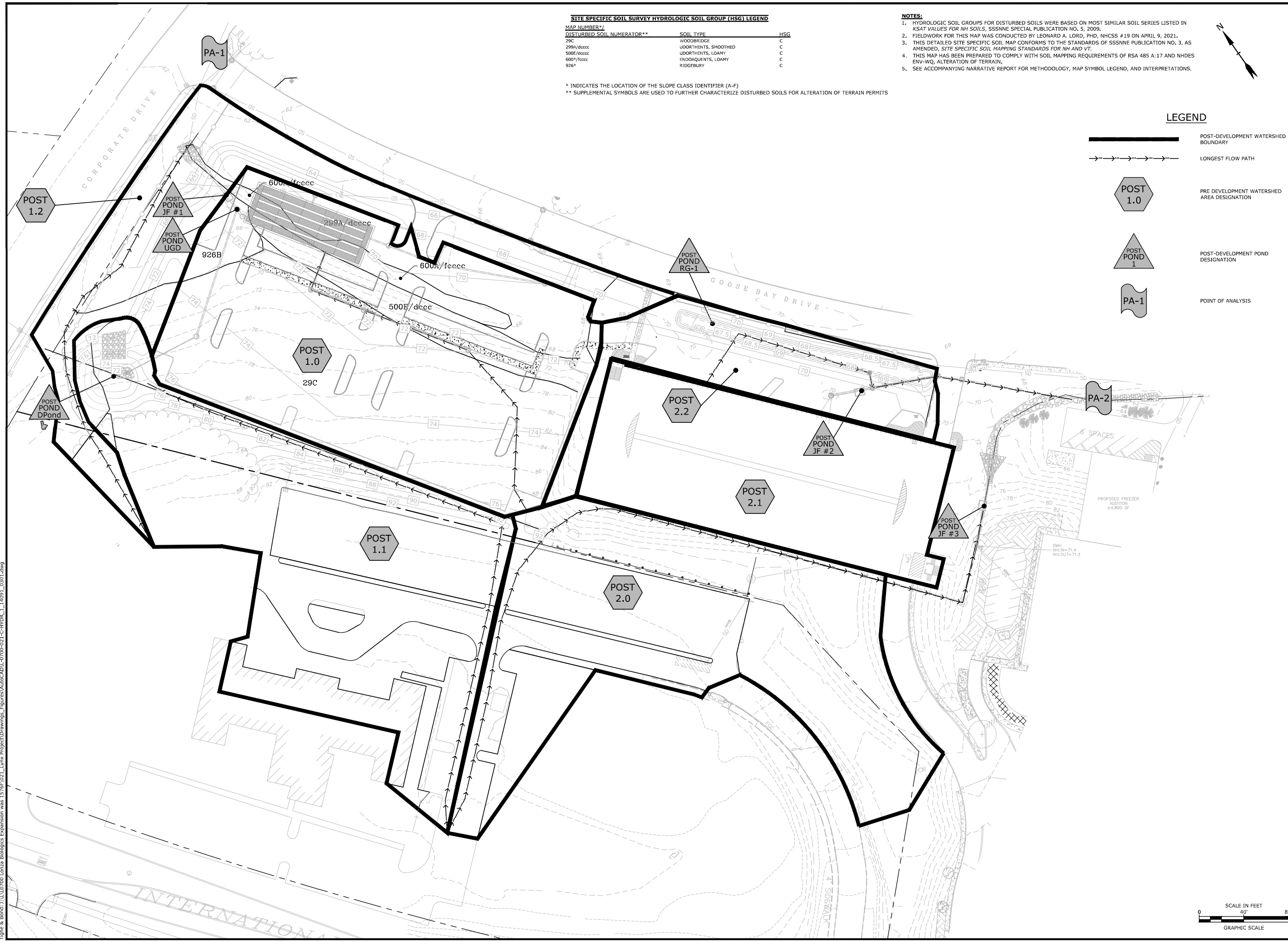
**NOTES:**

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.



**LEGEND**

- POST-DEVELOPMENT WATERSHED BOUNDARY
- LONGEST FLOW PATH
- PRE DEVELOPMENT WATERSHED AREA DESIGNATION
- POST-DEVELOPMENT POND DESIGNATION
- POINT OF ANALYSIS



**Lynx Parking Expansion**

Lonza Biologics

Portsmouth,  
New Hampshire

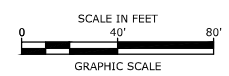
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|------|-----------|----------------|
| A    | 6/21/2021 | TAC SUBMISSION |

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 11:15pm By: JWhiston  
 Plotted On: Jun 14, 2021 11:15am  
 Figure & Symbol: L:\C\000\_Lonza Biologics Expansion was 1576f021\_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*/<br>DISTURBED SOIL NUMERATOR** | SOIL TYPE            | HSG |
|--|----------------------|-----|
| 29C  | WOODBIDGE            | C   |
| 299A/dcccc                                 | UDORTHERTS, SMOOTHED | C   |
| 500E/dcccc                                 | UDORTHERTS, LOAMY    | C   |
| 600*/fcccc                                 | ENDOACQUENTS, 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

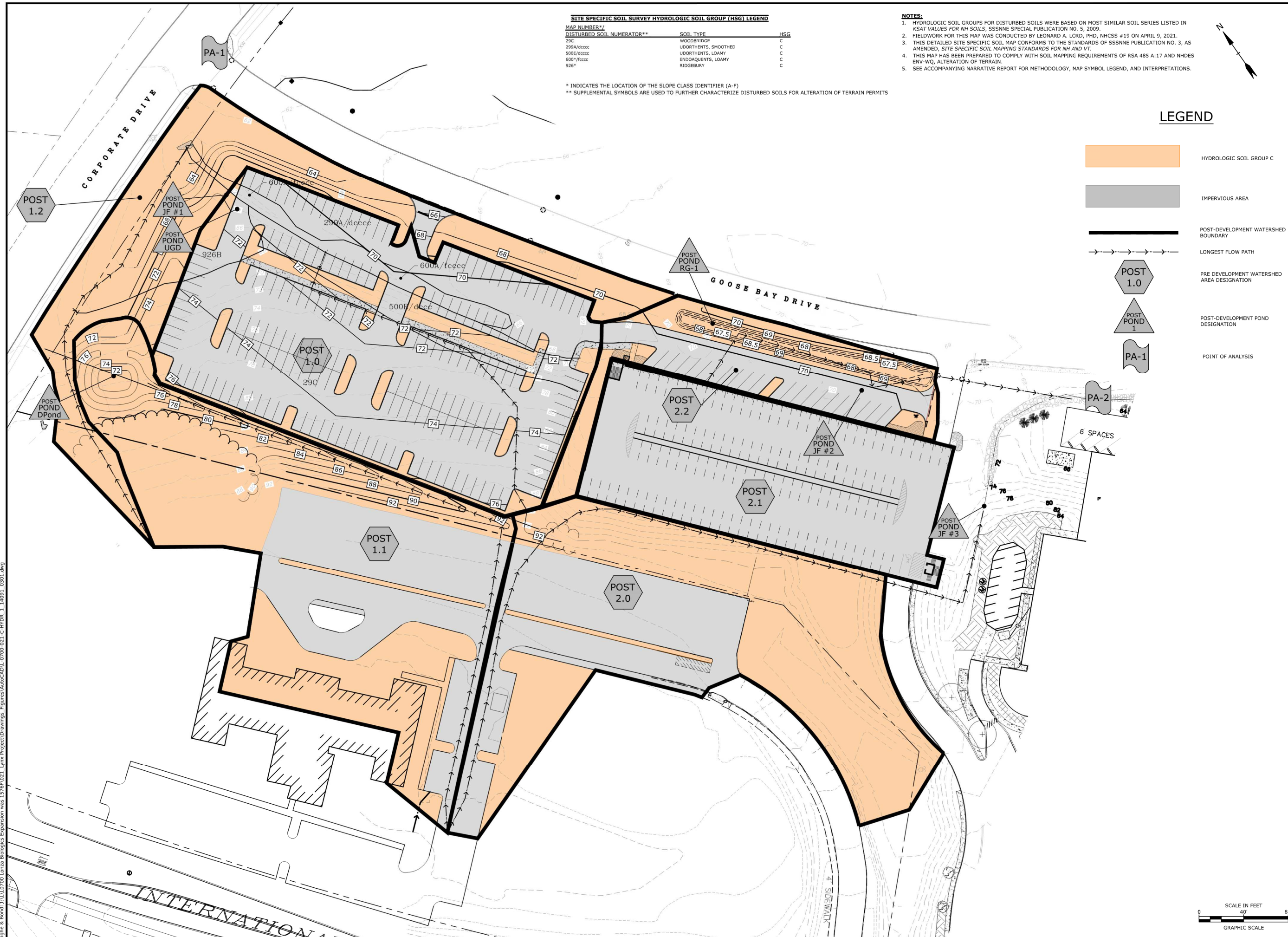
**NOTES:**

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.



**LEGEND**

-  HYDROLOGIC SOIL GROUP C
-  IMPERVIOUS AREA
-  POST-DEVELOPMENT WATERSHED BOUNDARY
-  LONGEST FLOW PATH
-  PRE DEVELOPMENT WATERSHED AREA DESIGNATION
-  POST-DEVELOPMENT POND DESIGNATION
-  POINT OF ANALYSIS



**Lynx Parking Expansion**

Lonza Biologics

Portsmouth,  
New Hampshire

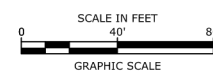
| MARK | DATE      | DESCRIPTION    |
|------|-----------|----------------|
| A    | 6/21/2021 | TAC SUBMISSION |

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

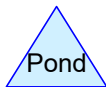
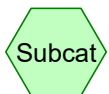
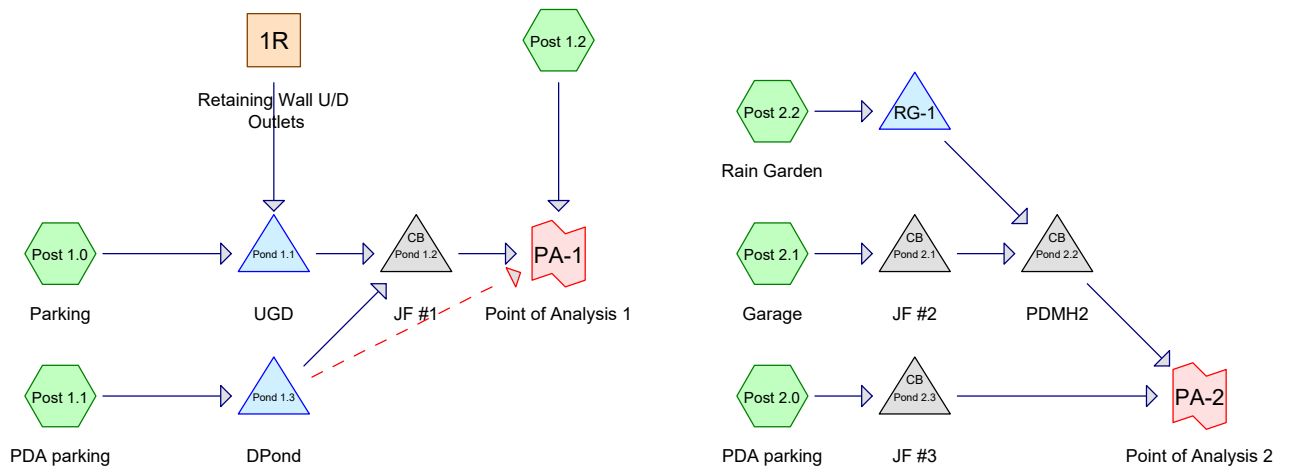
**C-804**



Last Saved: 6/14/2021 5:28pm By: JWINSTON  
 Printed On: Jun 14, 2021 5:28pm  
 Tighe & Bond 231 North Main Street, Portsmouth, NH 03801  
 Figure 8: 6/21/2021 L-0700-021-C-HYDR\_1\_14091\_0301.dwg











# L-0700-021-POST

Prepared by Tighe & Bond

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## Area Listing (all nodes)

| Area<br>(acres) | CN        | Description<br>(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)   |
| <b>7.317</b>    | <b>87</b> | <b>TOTAL AREA</b>   |



**L-0700-021-POST**

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**Soil Listing (all nodes)**

| Area<br>(acres) | Soil<br>Group | Subcatchment<br>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         |  |
| <b>7.317</b>    |               | <b>TOTAL AREA</b>  |

**L-0700-021-POST**

Type III 24-hr 2 Year Storm Rainfall=3.68"

Prepared by Tighe &amp; Bond

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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

|   |   |
|---|---|
| <b>SubcatchmentPost 1.0: Parking</b>        | Runoff Area=76,655 sf 87.15% Impervious Runoff Depth>3.11"<br>Flow Length=337' Tc=6.0 min CN=95 Runoff=5.88 cfs 0.457 af  |
| <b>SubcatchmentPost 1.1: PDA parking</b>    | Runoff Area=73,330 sf 46.11% Impervious Runoff Depth>2.17"<br>Flow Length=625' Tc=5.0 min CN=85 Runoff=4.29 cfs 0.305 af  |
| <b>SubcatchmentPost 1.2:</b>                | Runoff Area=39,267 sf 2.61% Impervious Runoff Depth>1.36"<br>Flow Length=469' Tc=11.4 min CN=74 Runoff=1.16 cfs 0.102 af  |
| <b>SubcatchmentPost 2.0: PDA parking</b>    | Runoff Area=66,913 sf 36.11% Impervious Runoff Depth>2.01"<br>Flow Length=352' Tc=5.0 min CN=83 Runoff=3.63 cfs 0.257 af  |
| <b>SubcatchmentPost 2.1: Garage</b>         | Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>3.44"<br>Tc=5.0 min CN=98 Runoff=3.36 cfs 0.267 af  |
| <b>SubcatchmentPost 2.2: Rain Garden</b>    | Runoff Area=21,982 sf 48.49% Impervious Runoff Depth>2.26"<br>Flow Length=235' Tc=5.0 min CN=86 Runoff=1.33 cfs 0.095 af  |
| <b>Reach 1R: Retaining Wall U/D Outlets</b> | Avg. Flow Depth=0.27' Max Vel=2.49 fps Inflow=0.57 cfs 1.133 af<br>4.0" Round Pipe x 3.00 n=0.013 L=1.0' S=0.0100 '/' Capacity=0.57 cfs Outflow=0.57 cfs 1.133 af |
| <b>Pond Pond 1.1: UGD</b>                   | Peak Elev=63.87' Storage=0.099 af Inflow=6.45 cfs 1.590 af<br>Outflow=2.69 cfs 1.587 af   |
| <b>Pond Pond 1.2: JF #1</b>                 | Peak Elev=61.57' Inflow=4.21 cfs 1.892 af<br>18.0" Round Culvert n=0.013 L=44.0' S=0.0091 '/' Outflow=4.21 cfs 1.892 af   |
| <b>Pond Pond 1.3: DPond</b>                 | Peak Elev=74.38' Storage=2,158 cf Inflow=4.29 cfs 0.305 af<br>Primary=1.51 cfs 0.304 af Secondary=0.00 cfs 0.000 af Outflow=1.51 cfs 0.304 af                     |
| <b>Pond Pond 2.1: JF #2</b>                 | Peak Elev=66.34' Inflow=3.36 cfs 0.267 af<br>18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=3.36 cfs 0.267 af  |
| <b>Pond Pond 2.2: PDMH2</b>                 | Peak Elev=66.15' Inflow=3.36 cfs 0.283 af<br>18.0" Round Culvert n=0.013 L=56.0' S=0.0018 '/' Outflow=3.36 cfs 0.283 af   |
| <b>Pond Pond 2.3: JF #3</b>                 | Peak Elev=71.78' Inflow=3.63 cfs 0.257 af<br>18.0" Round Culvert n=0.013 L=17.0' S=0.0206 '/' Outflow=3.63 cfs 0.257 af   |
| <b>Pond RG-1:</b>                           | Peak Elev=68.30' Storage=2,563 cf Inflow=1.33 cfs 0.095 af<br>Discarded=0.02 cfs 0.021 af Primary=0.10 cfs 0.015 af Outflow=0.12 cfs 0.036 af                     |
| <b>Link PA-1: Point of Analysis 1</b>       | Inflow=5.23 cfs 1.994 af<br>Primary=5.23 cfs 1.994 af   |
| <b>Link PA-2: Point of Analysis 2</b>       | Inflow=7.00 cfs 0.540 af<br>Primary=7.00 cfs 0.540 af   |

**L-0700-021-POST**

*Type III 24-hr 2 Year Storm Rainfall=3.68"*

Prepared by Tighe & Bond

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**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**



**L-0700-021-POST**

Type III 24-hr 10 Year Storm Rainfall=5.59"

Prepared by Tighe &amp; Bond

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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

|   |   |
|---|---|
| <b>SubcatchmentPost 1.0: Parking</b>        | Runoff Area=76,655 sf 87.15% Impervious Runoff Depth>5.00"<br>Flow Length=337' Tc=6.0 min CN=95 Runoff=9.20 cfs 0.733 af  |
| <b>SubcatchmentPost 1.1: PDA parking</b>    | Runoff Area=73,330 sf 46.11% Impervious Runoff Depth>3.91"<br>Flow Length=625' Tc=5.0 min CN=85 Runoff=7.66 cfs 0.549 af  |
| <b>SubcatchmentPost 1.2:</b>                | Runoff Area=39,267 sf 2.61% Impervious Runoff Depth>2.84"<br>Flow Length=469' Tc=11.4 min CN=74 Runoff=2.49 cfs 0.213 af  |
| <b>SubcatchmentPost 2.0: PDA parking</b>    | Runoff Area=66,913 sf 36.11% Impervious Runoff Depth>3.71"<br>Flow Length=352' Tc=5.0 min CN=83 Runoff=6.66 cfs 0.475 af  |
| <b>SubcatchmentPost 2.1: Garage</b>         | Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>5.35"<br>Tc=5.0 min CN=98 Runoff=5.14 cfs 0.415 af  |
| <b>SubcatchmentPost 2.2: Rain Garden</b>    | Runoff Area=21,982 sf 48.49% Impervious Runoff Depth>4.02"<br>Flow Length=235' Tc=5.0 min CN=86 Runoff=2.35 cfs 0.169 af  |
| <b>Reach 1R: Retaining Wall U/D Outlets</b> | Avg. Flow Depth=0.27' Max Vel=2.49 fps Inflow=0.57 cfs 1.133 af<br>4.0" Round Pipe x 3.00 n=0.013 L=1.0' S=0.0100 '/' Capacity=0.57 cfs Outflow=0.57 cfs 1.133 af |
| <b>Pond Pond 1.1: UGD</b>                   | Peak Elev=65.10' Storage=0.178 af Inflow=9.77 cfs 1.866 af<br>Outflow=3.42 cfs 1.864 af   |
| <b>Pond Pond 1.2: JF #1</b>                 | Peak Elev=61.69' Inflow=4.96 cfs 2.323 af<br>18.0" Round Culvert n=0.013 L=44.0' S=0.0091 '/' Outflow=4.96 cfs 2.323 af   |
| <b>Pond Pond 1.3: DPond</b>                 | Peak Elev=74.79' Storage=2,728 cf Inflow=7.66 cfs 0.549 af<br>Primary=1.56 cfs 0.459 af Secondary=7.44 cfs 0.089 af Outflow=9.00 cfs 0.549 af                     |
| <b>Pond Pond 2.1: JF #2</b>                 | Peak Elev=66.81' Inflow=5.14 cfs 0.415 af<br>18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=5.14 cfs 0.415 af  |
| <b>Pond Pond 2.2: PDMH2</b>                 | Peak Elev=66.58' Inflow=5.58 cfs 0.502 af<br>18.0" Round Culvert n=0.013 L=56.0' S=0.0018 '/' Outflow=5.58 cfs 0.502 af   |
| <b>Pond Pond 2.3: JF #3</b>                 | Peak Elev=72.24' Inflow=6.66 cfs 0.475 af<br>18.0" Round Culvert n=0.013 L=17.0' S=0.0206 '/' Outflow=6.66 cfs 0.475 af   |
| <b>Pond RG-1:</b>                           | Peak Elev=68.40' Storage=2,840 cf Inflow=2.35 cfs 0.169 af<br>Discarded=0.02 cfs 0.023 af Primary=1.31 cfs 0.087 af Outflow=1.33 cfs 0.110 af                     |
| <b>Link PA-1: Point of Analysis 1</b>       | Inflow=14.20 cfs 2.626 af<br>Primary=14.20 cfs 2.626 af   |
| <b>Link PA-2: Point of Analysis 2</b>       | Inflow=12.14 cfs 0.977 af<br>Primary=12.14 cfs 0.977 af   |

**L-0700-021-POST**

*Type III 24-hr 10 Year Storm Rainfall=5.59"*

Prepared by Tighe & Bond

Printed 7/7/2021

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**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              |                | <b>Sheet Flow,</b><br>Grass: Dense n= 0.240 P2= 3.68"                             |
| 0.7      | 141           | 0.0255        | 3.24              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps                           |
| 2.4      | 50            | 0.0060        | 0.35              | 0.28           | <b>Pipe Channel,</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.130 |
| 0.2      | 42            | 0.0050        | 3.21              | 2.52           | <b>Pipe Channel,</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 0.2      | 47            | 0.0050        | 3.21              | 2.52           | <b>Pipe Channel,</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 |
| 0.1      | 35            | 0.0460        | 9.73              | 7.64           | <b>Pipe Channel,</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>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        |



**L-0700-021-POST**

Type III 24-hr 10 Year Storm Rainfall=5.59"

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| Tc (min) | Length (feet) | Slope (ft/ft)                            | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|--|-------------------|----------------|--|
| 1.1      | 100           | 0.0225                                   | 1.55              |                | <b>Sheet Flow,</b><br>Smooth surfaces n= 0.011 P2= 3.68"           |
| 0.7      | 168           | 0.0357                                   | 3.84              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps            |
| 1.8      | 357           | 0.0500                                   | 3.35              |                | <b>Shallow Concentrated Flow,</b><br>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&gt; 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              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.68"                                       |
| 1.7      | 329           | 0.0480        | 3.29              |                | <b>Shallow Concentrated Flow,</b><br>Grassed Waterway Kv= 15.0 fps                                     |
| 0.1      | 55            | 0.0548        | 13.80             | 10.84          | <b>Pipe Channel,</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.010 PVC, smooth interior |
| 11.4     | 469           | Total         |                   |                |  |

**Summary for Subcatchment Post 2.0: PDA parking**

[49] Hint: Tc&lt;2dt may require smaller dt

Runoff = 6.66 cfs @ 12.07 hrs, Volume= 0.475 af, Depth&gt; 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"

**L-0700-021-POST**

Type III 24-hr 10 Year Storm Rainfall=5.59"

Prepared by Tighe &amp; Bond

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| 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              |                | <b>Sheet Flow,</b><br>Smooth surfaces n= 0.011 P2= 3.68"           |
| 0.7      | 170           | 0.0353                                   | 3.81              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps            |
| 0.2      | 82            | 0.1620                                   | 6.04              |                | <b>Shallow Concentrated Flow,</b><br>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&lt;2dt may require smaller dt

Runoff = 5.14 cfs @ 12.07 hrs, Volume= 0.415 af, Depth&gt; 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      |               |               |                   |                | <b>Direct Entry,</b> |

**Summary for Subcatchment Post 2.2: Rain Garden**

[49] Hint: Tc&lt;2dt may require smaller dt

Runoff = 2.35 cfs @ 12.07 hrs, Volume= 0.169 af, Depth&gt; 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        |

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Type III 24-hr 10 Year Storm Rainfall=5.59"

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| Tc (min) | Length (feet) | Slope (ft/ft)                            | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|--|-------------------|----------------|--|
| 0.3      | 34            | 0.0440                                   | 1.63              |                | <b>Sheet Flow,</b><br>Smooth surfaces n= 0.011 P2= 3.68"   |
| 1.6      | 135           | 0.0090                                   | 1.42              |                | <b>Shallow Concentrated Flow,</b><br>Grassed Waterway Kv= 15.0 fps   |
| 0.1      | 10            | 0.0050                                   | 3.21              | 2.52           | <b>Pipe Channel,</b><br>12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Corrugated PE, smooth interior |
| 0.4      | 56            | 0.0020                                   | 2.66              | 4.70           | <b>Pipe Channel,</b><br>18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38'<br>n= 0.013 Corrugated PE, smooth interior |
| 2.4      | 235           | Total, Increased to minimum Tc = 5.0 min |                   |                |  |

**Summary for Reach 1R: Retaining Wall U/D Outlets**

[52] Hint: Inlet/Outlet conditions not evaluated

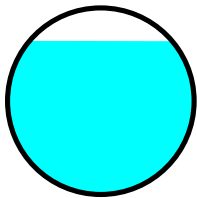
[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow = 0.57 cfs @ 0.00 hrs, Volume= 1.133 af, Incl. 0.57 cfs Base Flow  
 Outflow = 0.57 cfs @ 0.05 hrs, Volume= 1.133 af, Atten= 0%, Lag= 3.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.49 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 2.49 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.05 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 0.33' Flow Area= 0.3 sf, Capacity= 0.57 cfs

A factor of 3.00 has been applied to the storage and discharge capacity  
 4.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 1.0' Slope= 0.0100 '/  
 Inlet Invert= 2.01', Outlet Invert= 2.00'



**Summary for Pond Pond 1.1: UGD**

[63] Warning: Exceeded Reach 1R INLET depth by 62.82' @ 12.40 hrs

Inflow Area = 1.760 ac, 87.15% Impervious, Inflow Depth > 12.73" for 10 Year Storm event  
 Inflow = 9.77 cfs @ 12.09 hrs, Volume= 1.866 af  
 Outflow = 3.42 cfs @ 12.40 hrs, Volume= 1.864 af, Atten= 65%, Lag= 18.6 min  
 Primary = 3.42 cfs @ 12.40 hrs, Volume= 1.864 af



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Type III 24-hr 10 Year Storm Rainfall=5.59"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 65.10' @ 12.40 hrs Surf.Area= 0.101 ac Storage= 0.178 af  
 Flood Elev= 66.50' Surf.Area= 0.101 ac Storage= 0.248 af

Plug-Flow detention time= 10.4 min calculated for 1.860 af (100% of inflow)  
 Center-of-Mass det. time= 9.2 min ( 746.9 - 737.7 )

| Volume | Invert | Avail.Storage | Storage Description   |
|--------|--------|---------------|---|
| #1A    | 61.00' | 0.000 af      | <b>38.59'W x 114.17'L x 6.58'H Field A</b><br>0.666 af Overall - 0.301 af Embedded = 0.365 af x 0.0% Voids  |
| #2A    | 61.50' | 0.253 af      | <b>ADS N-12 60" x 25 Inside #1</b><br>Inside= 59.5"W x 59.5"H => 19.30 sf x 20.00'L = 386.0 cf<br>Outside= 67.0"W x 67.0"H => 22.91 sf x 20.00'L = 458.2 cf<br>5 Rows of 5 Chambers<br>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' | <b>18.0" Round Culvert</b> L= 44.0' Ke= 0.500<br>Inlet / Outlet Invert= 61.50' / 61.00' S= 0.0114 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.77 sf |
| #2     | Device 1 | 61.50' | <b>8.5" Vert. Orifice/Grate</b> C= 0.600  |
| #3     | Device 1 | 65.40' | <b>5.0' long x 5.90' rise Sharp-Crested Rectangular Weir</b><br>2 End Contraction(s)  |

**Primary OutFlow** Max=3.42 cfs @ 12.40 hrs HW=65.10' TW=61.69' (Dynamic Tailwater)

- ↑ 1=Culvert (Passes 3.42 cfs of 14.37 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 3.42 cfs @ 8.68 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 > 8.10" for 10 Year Storm event  
 Inflow = 4.96 cfs @ 12.39 hrs, Volume= 2.323 af  
 Outflow = 4.96 cfs @ 12.39 hrs, Volume= 2.323 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.96 cfs @ 12.39 hrs, Volume= 2.323 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 61.69' @ 12.39 hrs  
 Flood Elev= 65.50'

| Device | Routing | Invert | Outlet Devices  |
|--------|---------|--------|---|
| #1     | Primary | 60.50' | <b>18.0" Round Culvert</b> L= 44.0' Ke= 0.500<br>Inlet / Outlet Invert= 60.50' / 60.10' S= 0.0091 '/' Cc= 0.900<br>n= 0.013, Flow Area= 1.77 sf |

**Primary OutFlow** Max=4.96 cfs @ 12.39 hrs HW=61.69' TW=0.00' (Dynamic Tailwater)

- ↑ 1=Culvert (Barrel Controls 4.96 cfs @ 4.52 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               | <b>Custom Stage Data (Prismatic)</b> 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' | <b>6.0" Round Culvert</b><br>L= 67.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 68.00' / 67.60' S= 0.0060 '/' Cc= 0.900<br>n= 0.013, Flow Area= 0.20 sf |
| #2     | Device 1  | 72.00' | <b>11.1" x 11.1" Horiz. Orifice/Grate</b> C= 0.600<br>Limited to weir flow at low heads  |
| #3     | Secondary | 74.50' | <b>15.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)  |

**Primary OutFlow** Max=1.56 cfs @ 12.11 hrs HW=74.76' TW=61.62' (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

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Peak Elev= 66.81' @ 12.12 hrs

Flood Elev= 70.00'

| Device | Routing | Invert | Outlet Devices  |
|--------|---------|--------|---|
| #1     | Primary | 65.15' | <b>18.0" Round Culvert</b> L= 5.0' Ke= 0.500<br>Inlet / Outlet Invert= 65.15' / 65.10' S= 0.0100 '/' Cc= 0.900<br>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 &gt; 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' | <b>18.0" Round Culvert</b> L= 56.0' Ke= 0.500<br>Inlet / Outlet Invert= 65.00' / 64.90' S= 0.0018 '/' Cc= 0.900<br>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 &gt; 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' | <b>18.0" Round Culvert</b> L= 17.0' Ke= 0.500<br>Inlet / Outlet Invert= 70.85' / 70.50' S= 0.0206 '/' Cc= 0.900<br>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      | <b>Custom Stage Data (Prismatic)</b> 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' | <b>0.300 in/hr Exfiltration over Surface area</b>  |
| #2     | Primary   | 65.35' | <b>12.0" Round Culvert</b><br>L= 10.0' CPP, square edge headwall, Ke= 0.500<br>Inlet / Outlet Invert= 65.35' / 65.30' S= 0.0050 '/' Cc= 0.900<br>n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #3     | Device 2  | 68.30' | <b>11.1" x 11.1" Horiz. Orifice/Grate</b> 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 > 7.25" for 10 Year Storm event  
 Inflow = 14.20 cfs @ 12.11 hrs, Volume= 2.626 af  
 Primary = 14.20 cfs @ 12.11 hrs, Volume= 2.626 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

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Type III 24-hr 25 Year Storm Rainfall=7.08"

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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

|   |   |
|---|---|
| <b>SubcatchmentPost 1.0: Parking</b>        | Runoff Area=76,655 sf 87.15% Impervious Runoff Depth>6.48"<br>Flow Length=337' Tc=6.0 min CN=95 Runoff=11.76 cfs 0.950 af   |
| <b>SubcatchmentPost 1.1: PDA parking</b>    | Runoff Area=73,330 sf 46.11% Impervious Runoff Depth>5.33"<br>Flow Length=625' Tc=5.0 min CN=85 Runoff=10.28 cfs 0.747 af   |
| <b>SubcatchmentPost 1.2:</b>                | Runoff Area=39,267 sf 2.61% Impervious Runoff Depth>4.10"<br>Flow Length=469' Tc=11.4 min CN=74 Runoff=3.61 cfs 0.308 af  |
| <b>SubcatchmentPost 2.0: PDA parking</b>    | Runoff Area=66,913 sf 36.11% Impervious Runoff Depth>5.10"<br>Flow Length=352' Tc=5.0 min CN=83 Runoff=9.06 cfs 0.653 af  |
| <b>SubcatchmentPost 2.1: Garage</b>         | Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>6.84"<br>Tc=5.0 min CN=98 Runoff=6.52 cfs 0.531 af  |
| <b>SubcatchmentPost 2.2: Rain Garden</b>    | Runoff Area=21,982 sf 48.49% Impervious Runoff Depth>5.44"<br>Flow Length=235' Tc=5.0 min CN=86 Runoff=3.13 cfs 0.229 af  |
| <b>Reach 1R: Retaining Wall U/D Outlets</b> | Avg. Flow Depth=0.27' Max Vel=2.49 fps Inflow=0.57 cfs 1.133 af<br>4.0" Round Pipe x 3.00 n=0.013 L=1.0' S=0.0100 '/' Capacity=0.57 cfs Outflow=0.57 cfs 1.133 af |
| <b>Pond Pond 1.1: UGD</b>                   | Peak Elev=65.72' Storage=0.214 af Inflow=12.33 cfs 2.083 af<br>Outflow=6.47 cfs 2.081 af  |
| <b>Pond Pond 1.2: JF #1</b>                 | Peak Elev=62.20' Inflow=8.02 cfs 2.654 af<br>18.0" Round Culvert n=0.013 L=44.0' S=0.0091 '/' Outflow=8.02 cfs 2.654 af   |
| <b>Pond Pond 1.3: DPond</b>                 | Peak Elev=74.83' Storage=2,790 cf Inflow=10.28 cfs 0.747 af<br>Primary=1.57 cfs 0.574 af Secondary=9.06 cfs 0.173 af Outflow=10.63 cfs 0.747 af                   |
| <b>Pond Pond 2.1: JF #2</b>                 | Peak Elev=67.74' Inflow=6.52 cfs 0.531 af<br>18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=6.52 cfs 0.531 af  |
| <b>Pond Pond 2.2: PDMH2</b>                 | Peak Elev=67.27' Inflow=8.26 cfs 0.677 af<br>18.0" Round Culvert n=0.013 L=56.0' S=0.0018 '/' Outflow=8.26 cfs 0.677 af   |
| <b>Pond Pond 2.3: JF #3</b>                 | Peak Elev=72.72' Inflow=9.06 cfs 0.653 af<br>18.0" Round Culvert n=0.013 L=17.0' S=0.0206 '/' Outflow=9.06 cfs 0.653 af   |
| <b>Pond RG-1:</b>                           | Peak Elev=68.56' Storage=3,304 cf Inflow=3.13 cfs 0.229 af<br>Discarded=0.02 cfs 0.024 af Primary=2.10 cfs 0.146 af Outflow=2.12 cfs 0.170 af                     |
| <b>Link PA-1: Point of Analysis 1</b>       | Inflow=16.32 cfs 3.136 af<br>Primary=16.32 cfs 3.136 af   |
| <b>Link PA-2: Point of Analysis 2</b>       | Inflow=17.25 cfs 1.329 af<br>Primary=17.25 cfs 1.329 af   |



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*Type III 24-hr 25 Year Storm Rainfall=7.08"*

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**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**

**L-0700-021-POST**

Type III 24-hr 50 Year Storm Rainfall=8.49"

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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

|   |   |
|---|---|
| <b>SubcatchmentPost 1.0: Parking</b>        | Runoff Area=76,655 sf 87.15% Impervious Runoff Depth>7.88"<br>Flow Length=337' Tc=6.0 min CN=95 Runoff=14.17 cfs 1.156 af   |
| <b>SubcatchmentPost 1.1: PDA parking</b>    | Runoff Area=73,330 sf 46.11% Impervious Runoff Depth>6.68"<br>Flow Length=625' Tc=5.0 min CN=85 Runoff=12.75 cfs 0.938 af   |
| <b>SubcatchmentPost 1.2:</b>                | Runoff Area=39,267 sf 2.61% Impervious Runoff Depth>5.36"<br>Flow Length=469' Tc=11.4 min CN=74 Runoff=4.70 cfs 0.402 af  |
| <b>SubcatchmentPost 2.0: PDA parking</b>    | Runoff Area=66,913 sf 36.11% Impervious Runoff Depth>6.44"<br>Flow Length=352' Tc=5.0 min CN=83 Runoff=11.32 cfs 0.825 af   |
| <b>SubcatchmentPost 2.1: Garage</b>         | Runoff Area=40,595 sf 100.00% Impervious Runoff Depth>8.25"<br>Tc=5.0 min CN=98 Runoff=7.82 cfs 0.640 af  |
| <b>SubcatchmentPost 2.2: Rain Garden</b>    | Runoff Area=21,982 sf 48.49% Impervious Runoff Depth>6.80"<br>Flow Length=235' Tc=5.0 min CN=86 Runoff=3.87 cfs 0.286 af  |
| <b>Reach 1R: Retaining Wall U/D Outlets</b> | Avg. Flow Depth=0.27' Max Vel=2.49 fps Inflow=0.57 cfs 1.133 af<br>4.0" Round Pipe x 3.00 n=0.013 L=1.0' S=0.0100 '/' Capacity=0.57 cfs Outflow=0.57 cfs 1.133 af |
| <b>Pond Pond 1.1: UGD</b>                   | Peak Elev=66.03' Storage=0.230 af Inflow=14.74 cfs 2.289 af<br>Outflow=11.49 cfs 2.286 af   |
| <b>Pond Pond 1.2: JF #1</b>                 | Peak Elev=63.55' Inflow=13.05 cfs 2.967 af<br>18.0" Round Culvert n=0.013 L=44.0' S=0.0091 '/' Outflow=13.05 cfs 2.967 af   |
| <b>Pond Pond 1.3: DPond</b>                 | Peak Elev=74.87' Storage=2,858 cf Inflow=12.75 cfs 0.938 af<br>Primary=1.57 cfs 0.680 af Secondary=11.10 cfs 0.257 af Outflow=12.67 cfs 0.937 af                  |
| <b>Pond Pond 2.1: JF #2</b>                 | Peak Elev=68.32' Inflow=7.82 cfs 0.640 af<br>18.0" Round Culvert n=0.013 L=5.0' S=0.0100 '/' Outflow=7.82 cfs 0.640 af  |
| <b>Pond Pond 2.2: PDMH2</b>                 | Peak Elev=67.63' Inflow=9.94 cfs 0.842 af<br>18.0" Round Culvert n=0.013 L=56.0' S=0.0018 '/' Outflow=9.94 cfs 0.842 af   |
| <b>Pond Pond 2.3: JF #3</b>                 | Peak Elev=73.35' Inflow=11.32 cfs 0.825 af<br>18.0" Round Culvert n=0.013 L=17.0' S=0.0206 '/' Outflow=11.32 cfs 0.825 af   |
| <b>Pond RG-1:</b>                           | Peak Elev=68.67' Storage=3,650 cf Inflow=3.87 cfs 0.286 af<br>Discarded=0.02 cfs 0.025 af Primary=2.50 cfs 0.202 af Outflow=2.53 cfs 0.227 af                     |
| <b>Link PA-1: Point of Analysis 1</b>       | Inflow=25.45 cfs 3.626 af<br>Primary=25.45 cfs 3.626 af   |
| <b>Link PA-2: Point of Analysis 2</b>       | Inflow=21.31 cfs 1.667 af<br>Primary=21.31 cfs 1.667 af   |

**L-0700-021-POST**

*Type III 24-hr 50 Year Storm Rainfall=8.49"*

Prepared by Tighe & Bond

Printed 7/7/2021

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**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)**

|                                   | <b>2-Year Storm</b> | <b>10-Year Storm</b> | <b>25-Year Storm</b> | <b>50-Year Storm</b> |
|-----------------------------------|---------------------|----------------------|----------------------|----------------------|
| <b>Pre-Development Watershed</b>  |                     |                      |                      |                      |
| PA-1                              | 6.98                | 14.26                | 20.20                | 25.90                |
| PA-2                              | 7.38                | 12.91                | 17.32                | 21.50                |
| <b>Post-Development Watershed</b> |                     |                      |                      |                      |
| PA-1                              | 5.23                | 14.20                | 16.32                | 25.45                |
| 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:

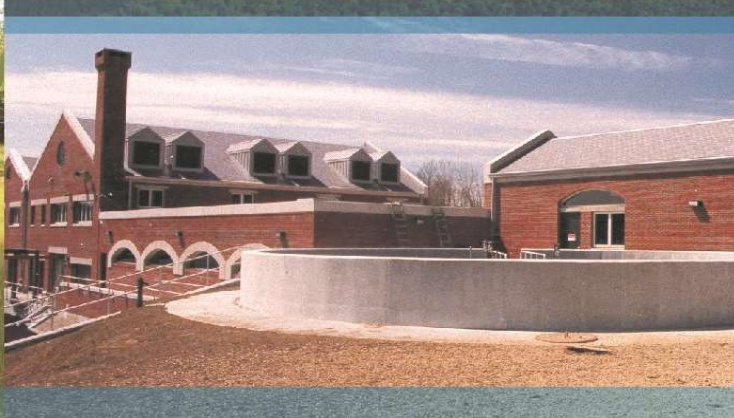
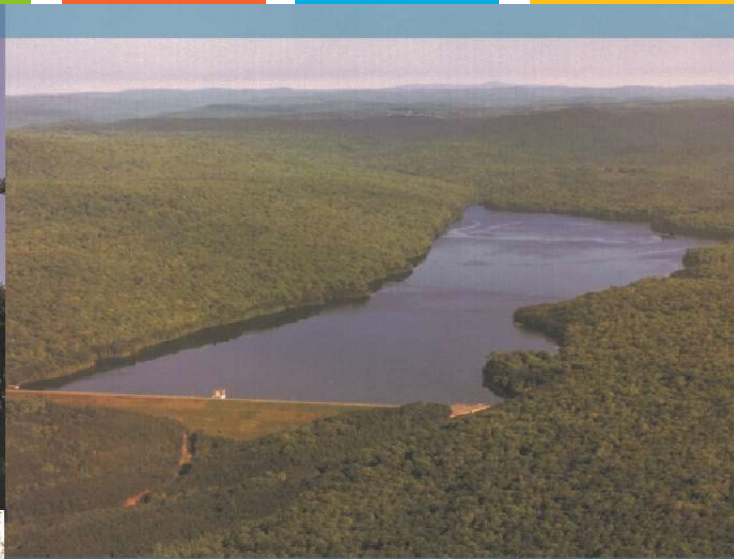
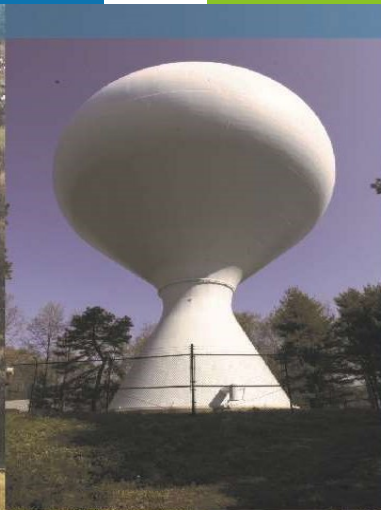
Length of Apron ( $L_a$ )  
 when  $T_w < .5 * Do$   $L_a = \frac{1.8(Q)}{Do^{(3/2)}} + 7Do$   
 when  $T_w \geq .5 * Do$   $L_a = \frac{3(Q)}{Do^{(3/2)}} + 7Do$   
 Width of Apron ( $W1$ )  
 $W1 = 3Do$   
 Width of Apron ( $W2$ )  
 when  $T_w < .5 * Do$   $W2 = 3Do + La$   
 when  $T_w \geq .5 * Do$   $W2 = 3Do + 0.4La$   
 Median Diameter  $d_{50} = \frac{0.02 * Q^{(1.3)}}{(T_w * Do)}$

| <b>Input:</b>             |  |      |     |
|---------------------------|--|------|-----|
| Q (cfs)                   |  | 9.06 | cfs |
| Do (ft.)                  |  | 1.50 | ft  |
| $T_w$ (ft.)               |  | 0.60 | ft  |
| <b>Output:</b>            |  |      |     |
| 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





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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<br>- Sweep impervious areas to remove sand and litter.                           | Annually  |
| Landscaping<br>- Landscaped islands to be maintained and mulched.                                  | Maintained as required and mulched each Spring                                      |
| Catch Basin (CB) Cleaning<br>- CB to be cleaned of solids and oils.                                | Annually  |
| Rain Garden<br>- Trash and debris to be removed.<br>- Any required maintenance shall be addressed. | Two (2) times annually<br>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<br>- Visual observation of sediment levels within system               | Annually  |
| Porous Pavement<br>- 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

| <b>Underground Detention System Inspection/Maintenance Requirements</b> |                        |   |
|---|------------------------|---|
| <b>Inspection/<br/>Maintenance</b>                                      | <b>Frequency</b>       | <b>Action</b>   |
| Monitor inlet and outlet structures for sediment accumulation           | Two (2) times annually | <ul style="list-style-type: none"> <li>- Trash, debris and sediment to be removed</li> <li>- Any required maintenance shall be addressed</li> </ul> |
| Deep Sump Catchbasins   | Two (2) times annually | <ul style="list-style-type: none"> <li>- Removal of sediment as warranted by inspection</li> <li>- No less than once annually</li> </ul>            |
| Monitor detention system for sediment accumulation                      | Two (2) times annually | <ul style="list-style-type: none"> <li>- Trash, debris and sediment to be removed</li> <li>- Any required maintenance shall be addressed</li> </ul> |

### 1.5 Detention Basin Maintenance Requirements

| <b>Detention Basin Inspection/Maintenance Requirements</b> |   |  |
|--|---|--|
| <b>Inspection/<br/>Maintenance</b>                         | <b>Frequency</b>                                  | <b>Action</b>  |
| Monitor Sediment Accumulation                              | Annually  | <ul style="list-style-type: none"> <li>- Install and maintain a staff gage or other measuring devise, to indicate depth of sediment accumulation and level at which clean-out is required</li> </ul> |
| Visual inspection  | Annually  | <ul style="list-style-type: none"> <li>- Remove trash and debris as needed</li> <li>- Remove any woody vegetation</li> <li>- Inspect and repair embankments</li> <li>- Inspect check dam</li> </ul>  |
| Mowing   | Periodically<br>(At least two (2) times annually) | <ul style="list-style-type: none"> <li>- Embankments shall be mowed</li> </ul>   |

## 1.6 Rain Garden Maintenance Requirements

| Rain Garden Inspection/Maintenance Requirements  |  |  |
|--|--|--|
| Inspection/<br>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 | <ul style="list-style-type: none"> <li>- Trash and debris to be removed</li> <li>- Any required maintenance shall be addressed</li> </ul>  |
| Inspect Vegetation   | Annually   | <ul style="list-style-type: none"> <li>- Inspect the condition of all Rain Garden vegetation</li> <li>- Prune back overgrowth</li> <li>- Replace dead vegetation</li> <li>- Remove any invasive species</li> </ul>   |
| Inspect Drawdown Time<br>- The system shall drawdown within 48-hours following a rainfall event. | Annually   | <ul style="list-style-type: none"> <li>- 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.</li> </ul> |



## 1.7 Contech Jellyfish Filter System Maintenance Requirements

| <b>Contech Jellyfish Filter System Inspection/Maintenance Requirements</b>            |   |  |
|---|---|--|
| <b>Inspection/<br/>Maintenance</b>  | <b>Frequency</b>  | <b>Action</b>  |
| 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:<br>- >4" of sediment on the vault floor<br>- >1/4" of sediment on top of the cartridge<br>- .4" of static water above the cartridge bottom more than 24 hours after a rain event<br>- If pore space between media is absent.<br>- 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.<br>- Vacuum sediment from vault.<br>- Install new cartridges per manufacturer methods   |



**Jellyfish<sup>®</sup> Filter  
Owner's Manual**





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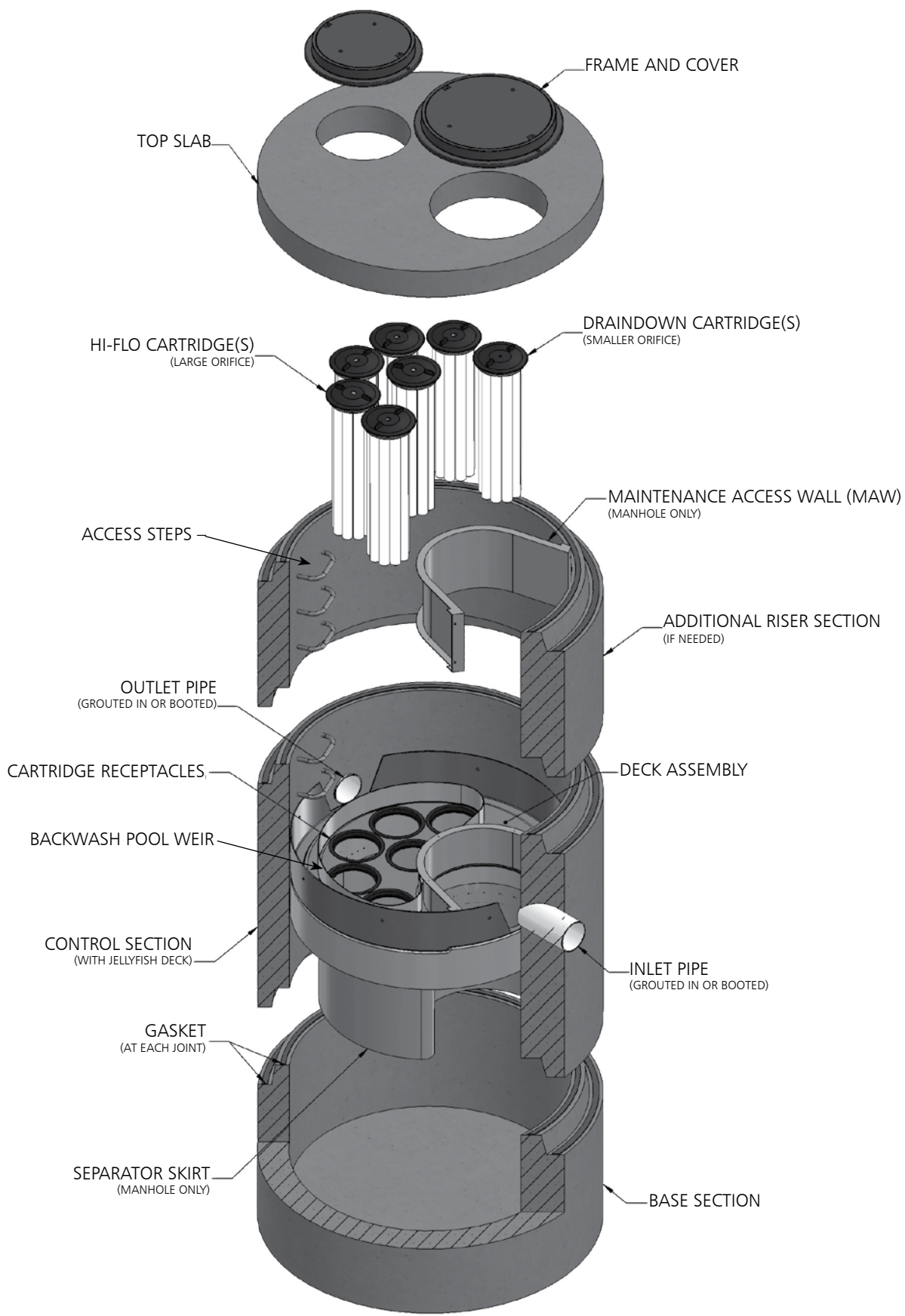
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## THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

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](http://www.ContechES.com)  
[info@conteches.com](mailto:info@conteches.com)



## 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:

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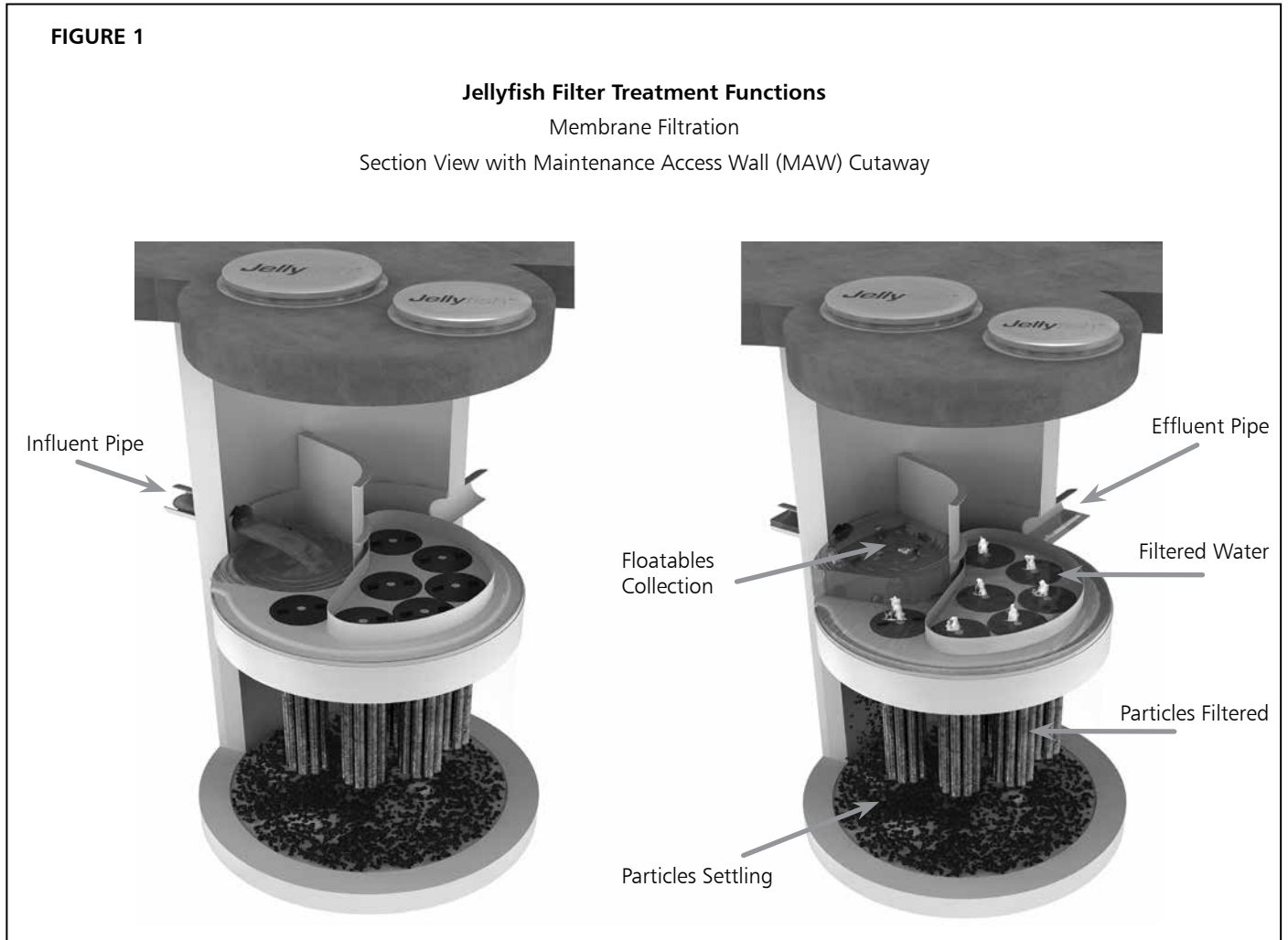


## Chapter 2

### 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.



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.

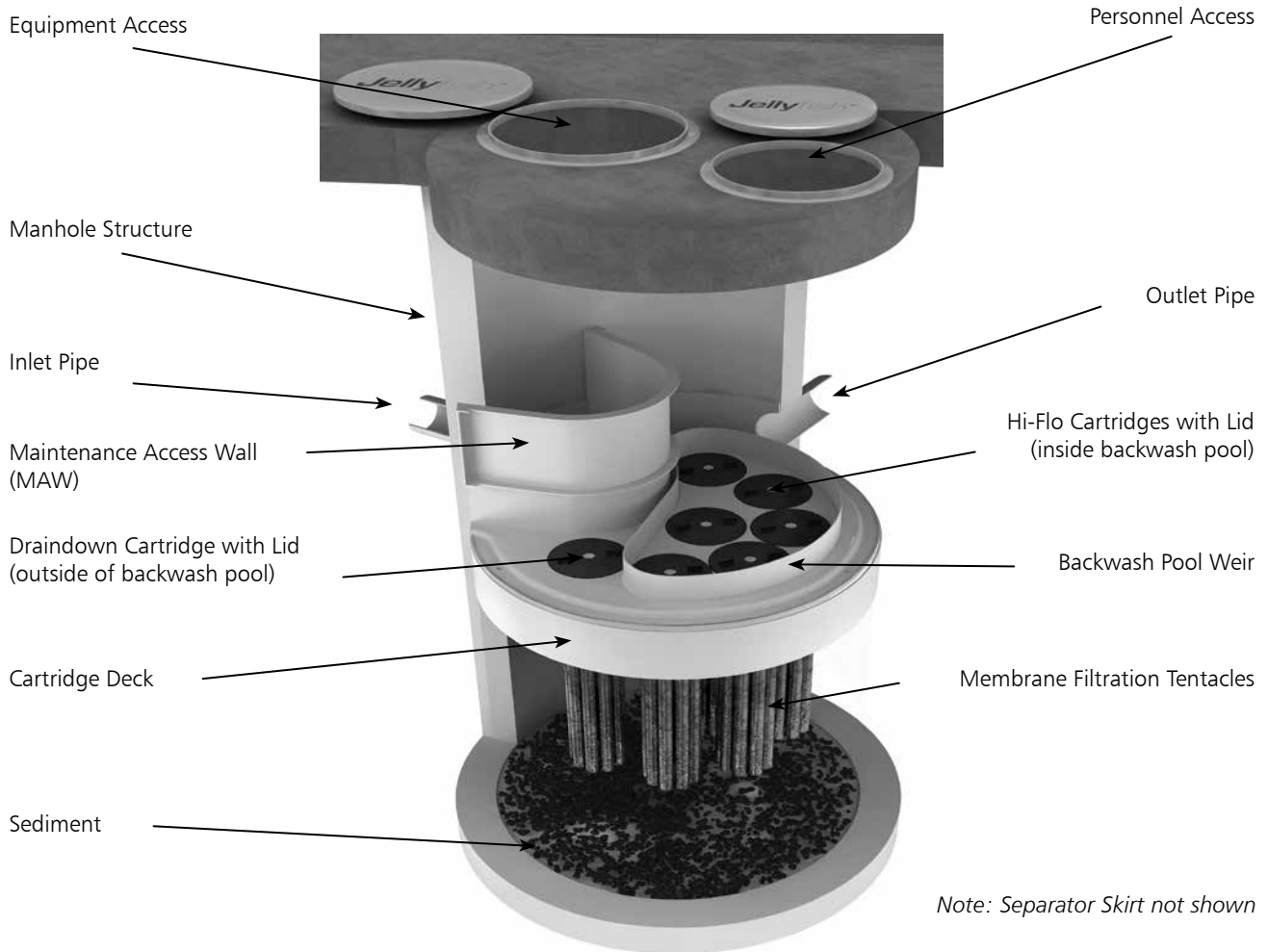
For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at [www.ContechES.com](http://www.ContechES.com).

## 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:

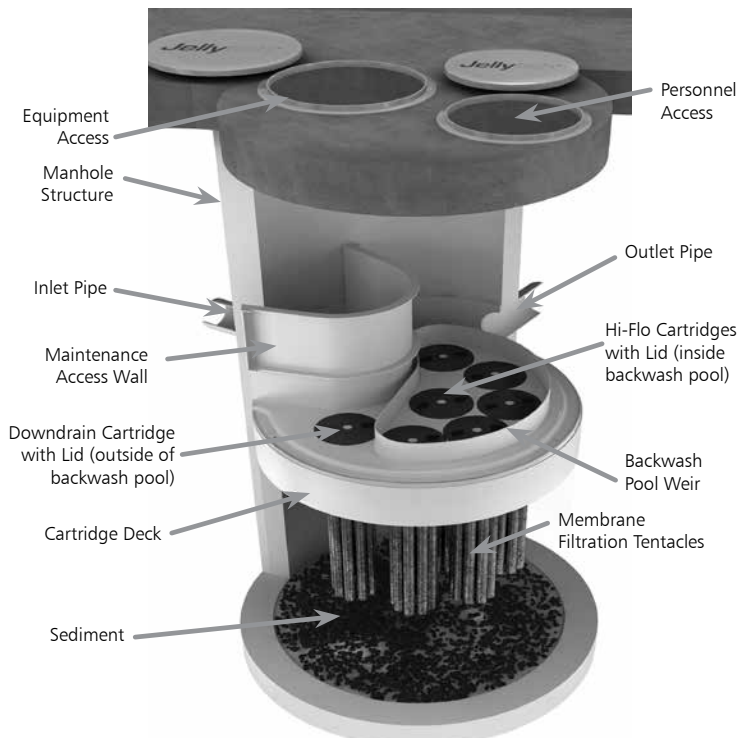
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

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 ( $\geq 1/16''$ ) 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



Cartridge Removal & Lifting Device



threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.

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 Floatables 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 ( $\geq 8$ -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

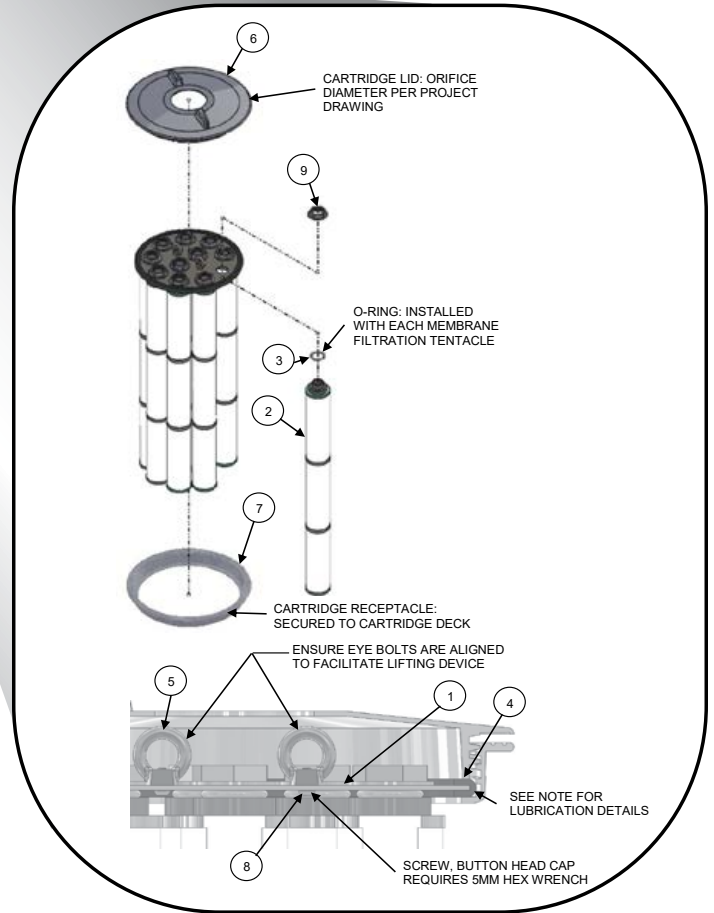
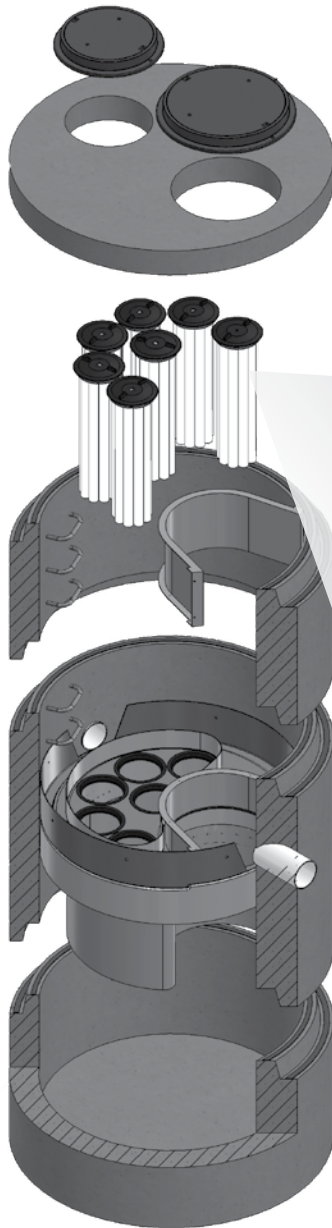


TABLE 1: BOM

| 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

| <b>Contech Cascade Separator® Inspection/Maintenance Requirements</b> |  |  |
|---|--|--|
| <b>Inspection/<br/>Maintenance</b>                                    | <b>Frequency</b>                                 | <b>Action</b>  |
| Visual Inspection   | Twice per year at a minimum<br>(spring and fall) | -Visually inspect for blockages or obstruction in the inlet chamber, flumes or outlet channel<br><br>- Sediment removal once 50% of maximum storage has been reached |





## Cascade Separator<sup>®</sup> Inspection and Maintenance Guide



## 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.

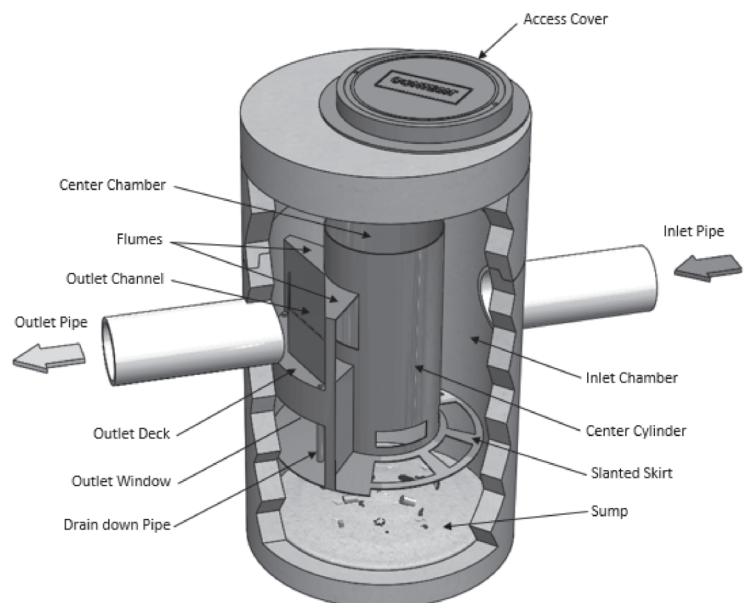
The Cascade Separator system should be cleaned before the level of sediment in the sump reaches the maximum sediment depth and/or when an appreciable level of hydrocarbons and trash has accumulated. If sorbent material is used, it must be replaced when significant discoloration has occurred. Performance 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 <sup>3</sup>            | m <sup>3</sup> |
| 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.



### 1.9 Rip Rap Maintenance Requirements

| Rip Rap Inspection/Maintenance Requirements |           |   |
|---|-----------|---|
| Inspection/<br>Maintenance                  | Frequency | Action  |
| Visual Inspection                           | Annually  | <ul style="list-style-type: none"> <li>- Visually inspect for damage and deterioration</li> <li>- Repair damages immediately</li> </ul> |

### 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 (typical 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.

| Pavement Temp. (°F) and Trend (↑↓) | Weather Condition     | Maintenance Actions                           | Pounds per two-lane mile                    |   |                 |                                    |
|------------------------------------|-----------------------|---|---|---|-----------------|------------------------------------|
|                                    |                       |   | 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<sub>2</sub> or CaCl<sub>2</sub> 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**

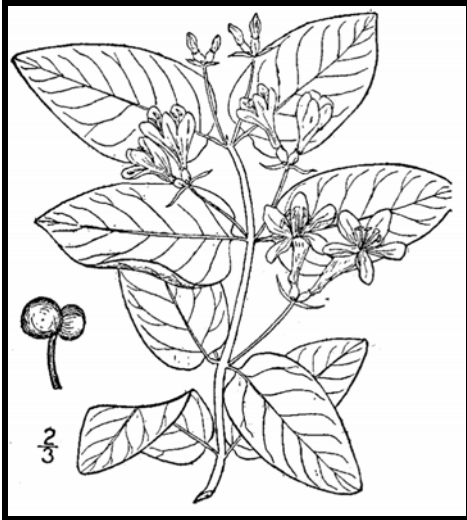
With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem is classified as an invasive species. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.







*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](http://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.

**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.





**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.


**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.

| Woody Plants   | Method of Reproducing   | Methods of Disposal  |
|--|---|--|
| Norway maple<br><i>(Acer platanoides)</i><br>European barberry<br><i>(Berberis vulgaris)</i><br>Japanese barberry<br><i>(Berberis thunbergii)</i><br>autumn olive<br><i>(Elaeagnus umbellata)</i><br>burning bush<br><i>(Euonymus alatus)</i><br>Morrow's honeysuckle<br><i>(Lonicera morrowii)</i><br>Tatarian honeysuckle<br><i>(Lonicera tatarica)</i><br>showy bush honeysuckle<br><i>(Lonicera x bella)</i><br>common buckthorn<br><i>(Rhamnus cathartica)</i><br>glossy buckthorn<br><i>(Frangula alnus)</i> |   | <p><b>Prior to fruit/seed ripening</b></p> <p>Seedlings and small plants</p> <ul style="list-style-type: none"> <li>▪ Pull or cut and leave on site with roots exposed. No special care needed.</li> </ul> <p>Larger plants</p> <ul style="list-style-type: none"> <li>▪ Use as firewood.</li> <li>▪ Make a brush pile.</li> <li>▪ Chip.</li> <li>▪ Burn.</li> </ul> |
|  |   | <p><b>After fruit/seed is ripe</b></p> <p>Don't remove from site.</p> <ul style="list-style-type: none"> <li>▪ Burn.</li> <li>▪ Make a covered brush pile.</li> <li>▪ Chip once all fruit has dropped from branches.</li> <li>▪ Leave resulting chips on site and monitor.</li> </ul>  |
| oriental bittersweet<br><i>(Celastrus orbiculatus)</i><br>multiflora rose<br><i>(Rosa multiflora)</i>  |  | <p><b>Prior to fruit/seed ripening</b></p> <p>Seedlings and small plants</p> <ul style="list-style-type: none"> <li>▪ Pull or cut and leave on site with roots exposed. No special care needed.</li> </ul> <p>Larger plants</p> <ul style="list-style-type: none"> <li>▪ Make a brush pile.</li> <li>▪ Burn.</li> </ul>  |
|  |   | <p><b>After fruit/seed is ripe</b></p> <p>Don't remove from site.</p> <ul style="list-style-type: none"> <li>▪ Burn.</li> <li>▪ Make a covered brush pile.</li> <li>▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</li> </ul>   |



| Non-Woody Plants   | Method of Reproducing   | Methods of Disposal   |
|--|---|---|
| <p>garlic mustard<br/>(<i>Alliaria petiolata</i>)</p> <p>spotted knapweed<br/>(<i>Centaurea maculosa</i>)</p> <ul style="list-style-type: none"> <li>▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.</li> </ul> <p>black swallow-wort<br/>(<i>Cynanchum nigrum</i>)</p> <ul style="list-style-type: none"> <li>▪ May cause skin rash. Wear gloves and long sleeves when handling.</li> </ul> <p>pale swallow-wort<br/>(<i>Cynanchum rossicum</i>)</p> <p>giant hogweed<br/>(<i>Heracleum mantegazzianum</i>)</p> <ul style="list-style-type: none"> <li>▪ Can cause major skin rash. Wear gloves and long sleeves when handling.</li> </ul> <p>dame's rocket<br/>(<i>Hesperis matronalis</i>)</p> <p>perennial pepperweed<br/>(<i>Lepidium latifolium</i>)</p> <p>purple loosestrife<br/>(<i>Lythrum salicaria</i>)</p> <p>Japanese stilt grass<br/>(<i>Microstegium vimineum</i>)</p> <p>mile-a-minute weed<br/>(<i>Polygonum perfoliatum</i>)</p> | <p><b>Fruits and Seeds</b></p>    | <p><b>Prior to flowering</b></p> <p>Depends on scale of infestation</p> <p>Small infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and leave on site with roots exposed.</li> </ul> <p>Large infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).</li> <li>▪ Monitor. Remove any re-sprouting material.</li> </ul> <hr/> <p><b>During and following flowering</b></p> <p>Do nothing until the following year or remove flowering heads and bag and let rot.</p> <p>Small infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and leave on site with roots exposed.</li> </ul> <p>Large infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).</li> <li>▪ Monitor. Remove any re-sprouting material.</li> </ul> |
| <p>common reed<br/>(<i>Phragmites australis</i>)</p> <p>Japanese knotweed<br/>(<i>Polygonum cuspidatum</i>)</p> <p>Bohemian knotweed<br/>(<i>Polygonum x bohemicum</i>)</p>  | <p><b>Fruits, Seeds, Plant Fragments</b></p> <p>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.</p> | <p><b>Small infestation</b></p> <ul style="list-style-type: none"> <li>▪ Bag all plant material and let rot.</li> <li>▪ Never pile and use resulting material as compost.</li> <li>▪ Burn.</li> </ul> <p><b>Large infestation</b></p> <ul style="list-style-type: none"> <li>▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.</li> <li>▪ Monitor and remove any sprouting material.</li> <li>▪ Pile, let dry, and burn.</li> </ul>  |

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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



Spraying chemicals to control invasive plants.

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.

### 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](http://tncweeds.ucdavis.edu)). An upcoming posting on the Invasive Plant Atlas of New England ([www.ipane.org](http://www.ipane.org)) and the New England Wild Flower Society ([www.newfs.org](http://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](http://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/nrapage.htm](http://www.state.me.us/dep/blwq/docstand/nrapage.htm)

**NH:** Department of Environmental Services  
[www.des.state.nh.us/wetlands/](http://www.des.state.nh.us/wetlands/)

**VT:** Department of Environmental Conservation  
[www.anr.state.vt.us/dec/waterq/permits/htm/pm\\_cud.htm](http://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](http://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.





| <b>Stormwater Management Report</b> |                           |                  |  |  |                                  |                     |
|-------------------------------------|---------------------------|------------------|--|--|----------------------------------|---------------------|
| <b>Lynx Parking Expansion</b>       |                           |                  | <b>101 International Drive</b>                           |  |                                  |                     |
| <b>BMP Description</b>              | <b>Date of Inspection</b> | <b>Inspector</b> | <b>BMP Installed and Operating Properly?</b>             | <b>Cleaning / Corrective Action Needed</b> | <b>Date of Cleaning / Repair</b> | <b>Performed By</b> |
| Deep Sump CB's                      |                           |                  | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |                                  |                     |
| Underground Detention               |                           |                  | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |                                  |                     |
| Jellyfish Filter 1                  |                           |                  | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |                                  |                     |
| Jellyfish Filter 2                  |                           |                  | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |                                  |                     |
| Jellyfish Filter 3                  |                           |                  | <input type="checkbox"/> Yes <input type="checkbox"/> No |  |                                  |                     |
| Rain Garden                         |                           |                  | <input type="checkbox"/> Yes <input type="checkbox"/> 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](http://www.eaton.com/lighting) for available options, accessories and ordering information.

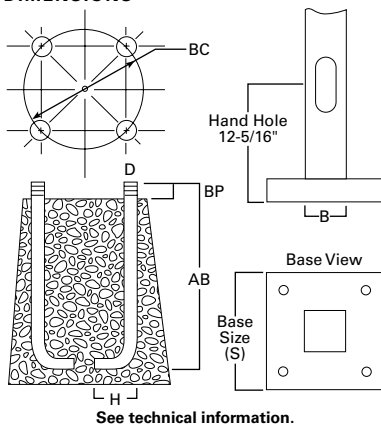
### ORDERING INFORMATION

SAMPLE NUMBER: SSA5A20SFM1XG

| Product Family            | Shaft Size (Inches) <sup>1</sup> | 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"<br>5=5"<br>6=6"             | A=0.120"<br>M=0.188"<br>X=0.250" | 10=10'<br>15=15'<br>20=20'<br>25=25'<br>30=30'<br>35=35'<br>39=39' | S=Square Steel Base | F=Dark Bronze<br>G=Galvanized Steel<br>J=Summit White<br>K=Carbon Bronze<br>L=Dark Platinum<br>R=Hartford Green<br>S=Silver<br>T=Graphite Metallic<br>V=Grey<br>W=White<br>X=Custom Color<br>Y=Black | 2=2-3/8" O.D. Tenon (4" Long)<br>3=3-1/2" O.D. Tenon (5" Long)<br>4=4" O.D. Tenon (6" Long)<br>9=3" O.D. Tenon (4" Long)<br>6=2-3/8" O.D. Tenon (6" Long)<br>7=4" O.D. Tenon (10" Long)<br>A=Type A Drilling<br>C=Type C Drilling<br>E=Type E Drilling<br>F=Type F Drilling<br>G=Type G Drilling<br>J=Type J Drilling<br>K=Type K Drilling<br>M=Type M Drilling<br>N=Type N Drilling<br>R=Type R Drilling<br>S=Standard Upsweep Arm<br>Z=Type Z Drilling | 1=Single<br>2=2 at 180°<br>3=Triple <sup>2</sup><br>4=4 at 90°<br>5=2 at 90°<br>X=None | X=None<br>2=2'<br>3=2.5'<br>4=4'<br>6=6'<br>8=8' | A=1/2" Tapped Hub <sup>3</sup><br>B=3/4" Tapped Hub <sup>3</sup><br>C=Convenience Outlet <sup>4</sup><br>E=GFCI Convenience Outlet <sup>4</sup><br>G=Ground Lug<br>H=Additional Hand Hole <sup>5</sup><br>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





**Effective Projected Area (At Pole Top)**

| Mounting Height (Feet) | Catalog Number <sup>1,2</sup> | Wall Thickness (Inches) | Base Square <sup>3</sup> (Inches) | Bolt Circle Diameter (Inches) | Anchor Bolt Projection <sup>3</sup> (Inches) | Shaft Size <sup>3</sup> (Inches) | Anchor Bolt Diameter x Length x Hook (Inches) | Net Weight (Pounds) | Maximum Effective Projected Area (Square Feet) <sup>4</sup> |        |         |         | Max. Fixture Load - Includes Bracket (Pounds) |
|------------------------|-------------------------------|-------------------------|-----------------------------------|-------------------------------|--|----------------------------------|---|---------------------|---|--------|---------|---------|---|
|                        |                               |                         |                                   |                               |  |                                  |   |                     | 80 mph  | 90 mph | 100 mph | 110 mph |   |
| MH                     |                               |                         | S                                 | BC                            | BP   | B                                | D x AB x H                                    |                     |   |        |         |         |   |
| 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 <sup>1,2</sup> | Wall Thickness (Inches) | Base Square <sup>3</sup> (Inches) | Bolt Circle Diameter (Inches) | Anchor Bolt Projection <sup>3</sup> (Inches) | Shaft Size <sup>3</sup> (Inches) | Anchor Bolt Diameter x Length x Hook (Inches) | Net Weight (Pounds) | Maximum Effective Projected Area (Square Feet) <sup>4</sup> |        |         |         | Max. Fixture Load - Includes Bracket (Pounds) |
|------------------------|-------------------------------|-------------------------|-----------------------------------|-------------------------------|--|----------------------------------|---|---------------------|---|--------|---------|---------|---|
|                        |                               |                         |                                   |                               |  |                                  |   |                     | 80 mph  | 90 mph | 100 mph | 110 mph |   |
| MH                     |                               |                         | S                                 | BC                            | BP   | B                                | D x AB x H                                    |                     |   |        |         |         |   |
| 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.

|             |  |           |  |      |  |
|-------------|--|-----------|--|------|--|
| Project     |  | Catalog # |  | Type |  |
| Prepared by |  | Notes     |  | Date |  |



# McGraw-Edison

## GLEON Galleon

Area / Site Luminaire

### Typical Applications

Outdoor • Parking Lots • Walkways • Roadways • Building Areas

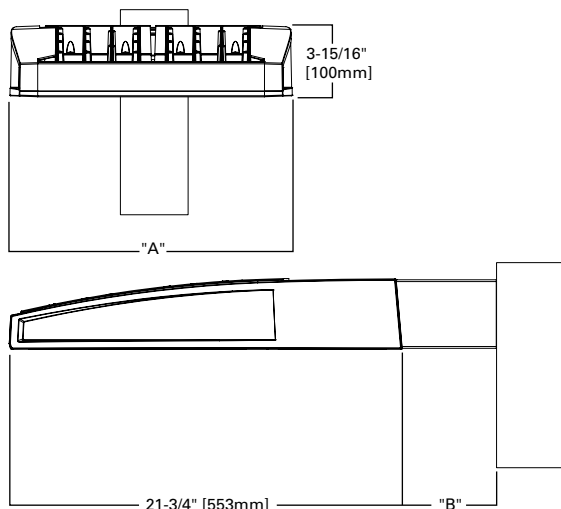
### Interactive Menu

- 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](#)

### Quick Facts

- Lumen packages range from 4,200 - 80,800 (34W - 640W)
- Efficacy up to 156 lumens per watt

### Dimensional Details



### Product Certifications



### Product Features



### Connected Systems

- WaveLinx
- Enlighted

| Number of Light Squares | "A" Width | "B" Standard Arm Length | "B" Extended Arm Length <sup>1</sup> | "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 <sup>1,2</sup> | Light Engine  |  | Color Temperature   | Voltage  | Distribution  | Mounting   | Finish   |
|-------------------------------|---|--|---|--|---|--|--|
|                               | Configuration   | Drive Current  |   |  |   |  |  |
| GLEON=Galleon                 | SA1=1 Square<br>SA2=2 Squares<br>SA3=3 Squares<br>SA4=4 Squares<br>SA5=5 Squares <sup>4</sup><br>SA6=6 Squares<br>SA7=7 Squares <sup>5</sup><br>SA8=8 Squares <sup>5</sup><br>SA9=9 Squares <sup>6</sup><br>SA0=10 Squares <sup>6</sup> | A=600mA<br>B=800mA<br>C=1000mA<br>D=1200mA <sup>16</sup> | 722=70CRI, 2200K<br>727=70CRI, 2700K<br>730=70CRI, 3000K<br>735=70CRI, 3500K<br>740=70CRI, 4000K<br>750=70CRI, 5000K<br>760=70CRI, 6000K<br>827=80CRI, 2700K<br>830=80CRI, 3000K<br>AMB=Amber, 590nm <sup>14,16</sup> | U=120-277V<br>1=120V<br>2=208V<br>3=240V<br>4=277V<br>8=480V <sup>7,8</sup><br>9=347V <sup>7</sup> | T2=Type II<br>T2R=Type II Roadway<br>T3=Type III<br>T3R=Type III Roadway<br>T4T=Type IV Forward Throw<br>T4W=Type IV Wide<br>5NQ=Type V Narrow<br>5MQ=Type V Square Medium<br>5WQ=Type V Square Wide<br>SL2=Type II w/Spill Control<br>SL3=Type III w/Spill Control<br>SL4=Type IV w/Spill Control<br>SLL=90° Spill Light Eliminator Left<br>SLR=90° Spill Light Eliminator Right<br>RW=Rectangular Wide Type I<br>AFL=Automotive Frontline | [Blank]=Arm for Round or Square Pole<br>EA=Extended Arm <sup>9</sup><br>MA=Mast Arm Adapter <sup>10</sup><br>WM=Wall Mount<br>QM=Quick Mount Arm (Standard Length) <sup>11</sup><br>QMEA=Quick Mount Arm (Extended Length) <sup>12</sup> | AP=Grey<br>BZ=Bronze<br>BK=Black<br>DP=Dark Platinum<br>GM=Graphite Metallic<br>WH=White |

| Options (Add as Suffix)  | Controls and Systems Options (Add as Suffix)  | Accessories (Order Separately)   |
|--|---|--|
| <p>DIM=External 0-10V Dimming Leads<sup>19,20</sup><br/>F=Single Fuse (120, 277 or 347V Specify Voltage)<br/>FF=Double Fuse (208, 240 or 480V Specify Voltage)<br/>20K=Series 20kV UL 1449 Surge Protective Device<br/>2L=Two Circuits<sup>17,18</sup><br/>HA=50°C High Ambient<br/>HSS=Installed House Side Shield<sup>28</sup><br/>GRSBK=Glare Reducing Shield, Black<sup>23</sup><br/>GRSWH=Glare Reducing Shield, White<sup>23</sup><br/>LCF=Light Square Trim Painted to Match Housing<sup>27</sup><br/>MT=Installed Mesh Top<br/>TH=Tool-less Door Hardware<br/>CC=Coastal Construction finish<sup>3</sup><br/>L90=Optics Rotated 90° Left<br/>R90=Optics Rotated 90° Right<br/>CE=CE Marking<sup>29</sup><br/>AHD145=After Hours Dim, 5 Hours<sup>22</sup><br/>AHD245=After Hours Dim, 6 Hours<sup>22</sup><br/>AHD255=After Hours Dim, 7 Hours<sup>22</sup><br/>AHD355=After Hours Dim, 8 Hours<sup>22</sup><br/>DALI=DALI Drivers</p> | <p>BPC=Button Type Photocontrol<br/>PR=NEMA 3-PIN Photocontrol Receptacle<br/>PR7=NEMA 7-PIN Photocontrol Receptacle<sup>21</sup><br/>SPB2=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting<sup>34</sup><br/>SPB4=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting<sup>34</sup><br/>MS-L20=Motion Sensor for ON/OFF Operation, 9' - 20' Mounting Height<sup>24</sup><br/>MS-L40W=Motion Sensor for ON/OFF Operation, 21' - 40' Mounting Height<sup>24</sup><br/>MS/X-L20=Bi-Level Motion Sensor, 9' - 20' Mounting Height<sup>24,25</sup><br/>MS/X-L40W=Bi-Level Motion Sensor, 21' - 40' Mounting Height<sup>24,25</sup><br/>MS/DIM-L20=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height<sup>24</sup><br/>MS/DIM-L40W=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height<sup>24</sup><br/>ZW=WaveLinX Module and 4-PIN Receptacle<br/>ZD=WaveLinX Module with DALI driver and 4-PIN Receptacle<br/>SWPD4XX=WaveLinX Sensor Only, 15'-40'<sup>13,32,33</sup><br/>SWPD5XX=WaveLinX Sensor Only, 15'-40'<sup>13,32,33</sup><br/>WOBXX=WaveLinX Sensor with Bluetooth, 7'-15'<sup>13,32</sup><br/>WOFXX=WaveLinX Sensor with Bluetooth, 15'-40'<sup>13,32</sup><br/>LWR-LW=Enlightened Sensor, 8'-16' Mounting Height<sup>26</sup><br/>LWR-LN=Enlightened Sensor, 16'-40' Mounting Height<sup>25</sup><br/>DIM10-MS/DIM-L08=Synapse Occupancy Sensor (&lt;8' Mounting)<sup>19</sup><br/>DIM10-MS/DIM-L20=Synapse Occupancy Sensor (9'-20' Mounting)<sup>19</sup><br/>DIM10-MS/DIM-L40=Synapse Occupancy Sensor (21'-40' Mounting)<sup>19</sup></p> | <p>OA/RA1016=NEMA Photocontrol Multi-Tap - 105-285V<br/>OA/RA1027=NEMA Photocontrol - 480V<br/>OA/RA1201=NEMA Photocontrol - 347V<br/>OA/RA1013=Photocontrol Shorting Cap<br/>OA/RA1014=120V Photocontrol<br/>MA1252=10kV Surge Module Replacement<br/>MA1036-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon<br/>MA1037-XX=2@180° Tenon Adapter for 2-3/8" O.D. Tenon<br/>MA1197-XX=3@120° Tenon Adapter for 2-3/8" O.D. Tenon<br/>MA1188-XX=4@90° Tenon Adapter for 2-3/8" O.D. Tenon<br/>MA1189-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon<br/>MA1190-XX=3@90° Tenon Adapter for 2-3/8" O.D. Tenon<br/>MA1191-XX=2@120° Tenon Adapter for 2-3/8" O.D. Tenon<br/>MA1038-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon<br/>MA1039-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon<br/>MA1192-XX=3@120° Tenon Adapter for 3-1/2" O.D. Tenon<br/>MA1193-XX=4@90° Tenon Adapter for 3-1/2" O.D. Tenon<br/>MA1194-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon<br/>MA1195-XX=3@90° Tenon Adapter for 3-1/2" O.D. Tenon<br/>FSIR-100=Wireless Configuration Tool for Occupancy Sensor<sup>24</sup><br/>GLEON-MT1=Field Installed Mesh Top for 1-4 Light Squares<br/>GLEON-MT2=Field Installed Mesh Top for 5-6 Light Squares<br/>GLEON-MT3=Field Installed Mesh Top for 7-8 Light Squares<br/>GLEON-MT4=Field Installed Mesh Top for 9-10 Light Squares<br/>GLEON-QM=Quick Mount Arm Kit<sup>11</sup><br/>GLEON-QMEA=Quick Mount Extended Arm Kit<sup>12</sup><br/>LS/HSS=Field Installed House Side Shield<sup>28,30</sup><br/>LS/GRSBK=Glare Reducing Shield, Black<sup>23,30</sup><br/>LS/GRSWH=Glare Reducing Shield, White<sup>23,30</sup><br/>LS/PFS=Perimeter Shield, Black<sup>15</sup><br/>WOLC-7P-10A=WaveLinX Outdoor Control Module<sup>18,31</sup><br/>SWPD4-XX=WaveLinX Wireless Sensor, 7'-15' Mounting Height<sup>13,19,22,33</sup><br/>SWPD5-XX=WaveLinX Wireless Sensor, 15'-40' Mounting Height<sup>13,19,22,33</sup></p> |

NOTES:

- 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.
- DesignLights Consortium® Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
- 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.
- Not compatible with MS/4-LXX or MS/1-LXX sensors.
- Not compatible with extended quick mount arm (QMEA).
- Not compatible with standard quick mount arm (QM) or extended quick mount arm (QMEA).
- 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.
- 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.)
- May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table.
- Factory installed.
- Maximum 3 light squares.
- Maximum 6 light squares.
- Requires ZW or ZD receptacle.
- 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.
- Set of 4 pcs. One set required per Light Square.
- Not available with HA option.
- 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.
- Not available with Enlightened wireless sensors.
- Cannot be used with other control options.
- Low voltage control lead brought out 18" outside fixture.
- Not available if any "MS" sensor is selected. Motion sensor has an integral photocell.
- 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.
- Not for use with T4FT, T4W or SL4 optics. See IES files for details.
- 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.
- Replace X with number of Light Squares operating in low output mode.
- Enlightened wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1 and LWP-PoE8 in appropriate quantities.
- Not available with house side shield (HSS).
- Not for use with 5NQ, 5MQ, 5WQ or RW optics. A black trim plate is used when HSS is selected.
- CE is not available with the LWR, MS, MS/X, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.
- One required for each Light Square.
- Requires PR7.
- Replace XX with sensor color (WH, BZ or BK.)
- WAC Gateway required to enable field-configurability. Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.
- Smart device with mobile application required to change system defaults. See controls section for details.

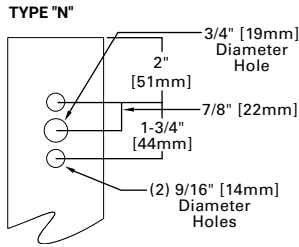
LumenSafe Integrated Network Security Camera Technology Options (Add as Suffix)

| Product Family   | Camera Type   | Data Backhaul  |
|--|---|--|
| L=LumenSafe Technology  | D=Standard Dome Camera<br>H=Hi-Res Dome Camera<br>Z=Remote PTZ Camera | C=Cellular, No SIM<br>A=Cellular, AT&T<br>V=Cellular, Verizon<br>S=Cellular, Sprint<br><br>R=Cellular, Rogers<br>W=Wi-Fi Networking w/ Omni-Directional Antenna<br>E=Ethernet Networking |

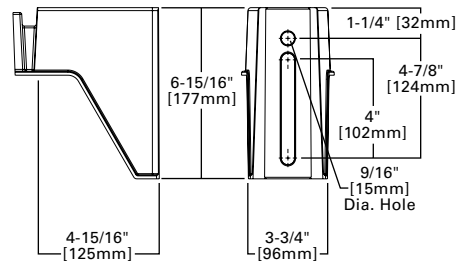
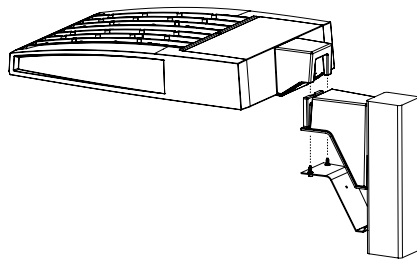


Mounting Details

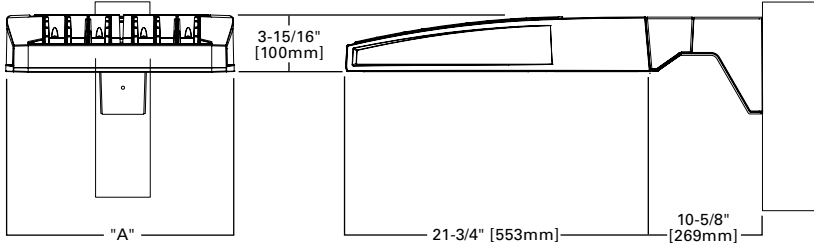
Standard Arm (Drilling Pattern)



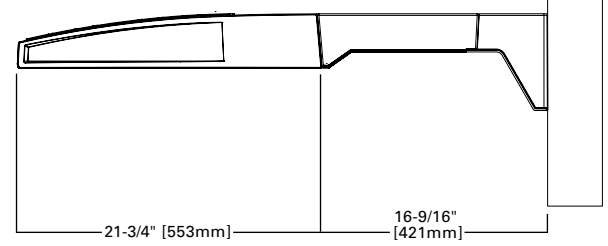
Quick Mount Arm (Includes fixture adapter)



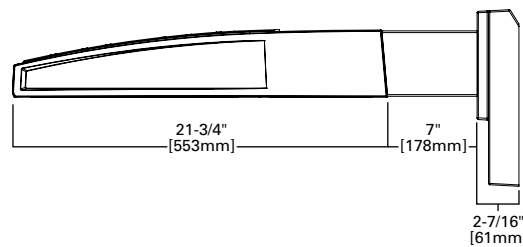
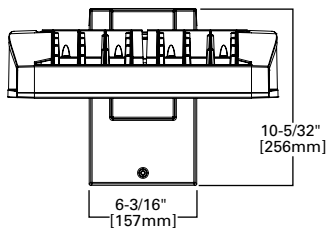
QM Quick Mount Arm (Standard)



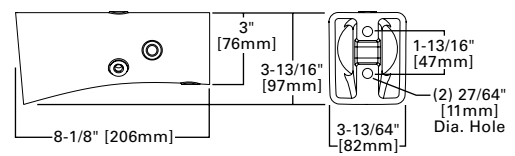
QMEA Quick Mount Arm (Extended)



Standard Wall Mount

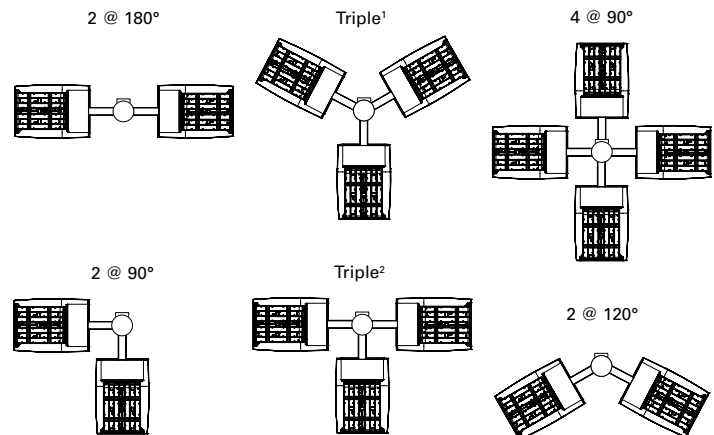


Mast Arm Mount



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                  | --                          | --                           |

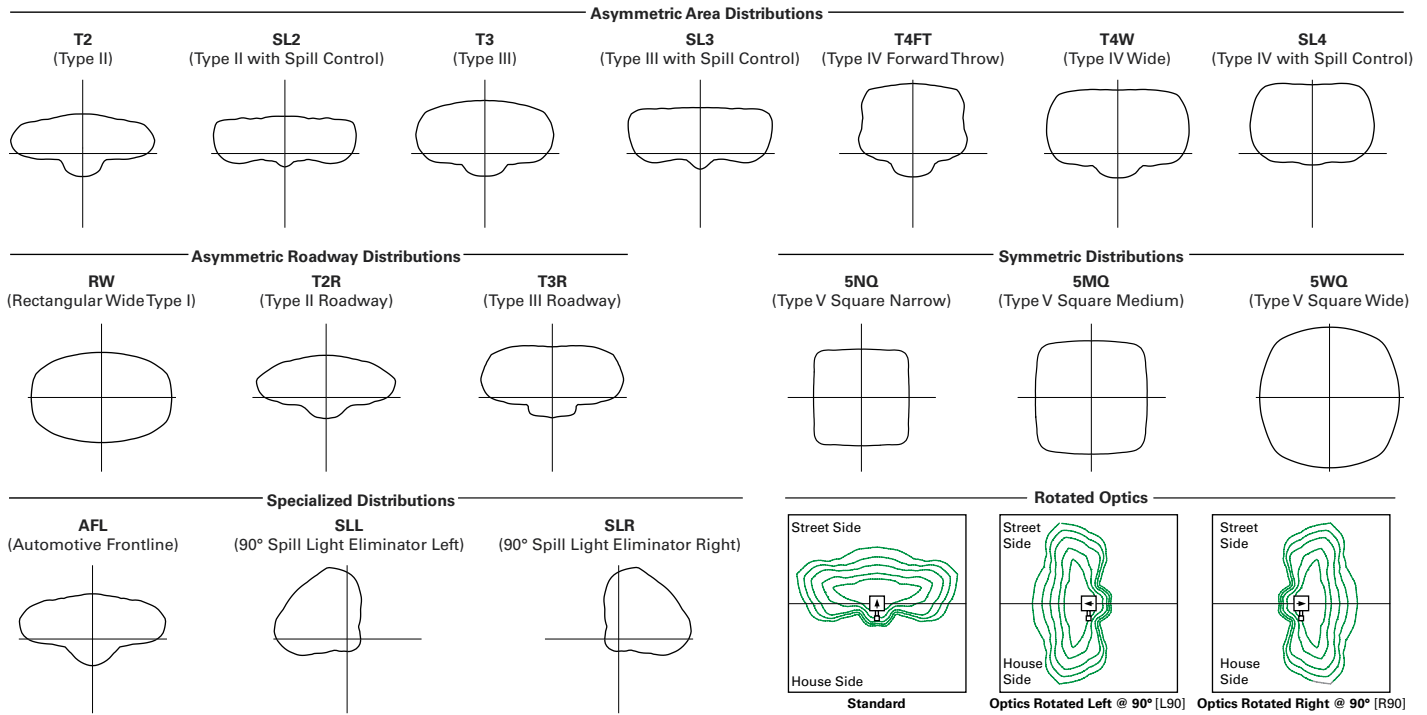


NOTES: 1 Round poles are 3 @ 120°. Square poles are 3 @ 90°. 2 Round poles are 3 @ 90°.

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



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                  |

Lumen Multiplier

| Ambient Temperature | Lumen Multiplier |
|---------------------|------------------|
| 0°C                 | 1.02             |
| 10°C                | 1.01             |
| 25°C                | 1.00             |
| 40°C                | 0.99             |
| 50°C                | 0.97             |

\* 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.

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Nominal Power Lumens (1.2A)

 Supplemental Performance Guide™

| Number of Light Squares         | 1               | 2        | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       |          |
|---------------------------------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Nominal Power (Watts)</b>    | 67              | 129      | 191      | 258      | 320      | 382      | 448      | 511      | 575      | 640      |          |
| <b>Input Current @ 120V (A)</b> | 0.58            | 1.16     | 1.78     | 2.31     | 2.94     | 3.56     | 4.09     | 4.71     | 5.34     | 5.87     |          |
| <b>Input Current @ 208V (A)</b> | 0.33            | 0.63     | 0.93     | 1.27     | 1.57     | 1.87     | 2.22     | 2.52     | 2.8      | 3.14     |          |
| <b>Input Current @ 240V (A)</b> | 0.29            | 0.55     | 0.80     | 1.10     | 1.35     | 1.61     | 1.93     | 2.18     | 2.41     | 2.71     |          |
| <b>Input Current @ 277V (A)</b> | 0.25            | 0.48     | 0.70     | 0.96     | 1.18     | 1.39     | 1.69     | 1.90     | 2.09     | 2.36     |          |
| <b>Input Current @ 347V (A)</b> | 0.20            | 0.39     | 0.57     | 0.78     | 0.96     | 1.15     | 1.36     | 1.54     | 1.72     | 1.92     |          |
| <b>Input Current @ 480V (A)</b> | 0.15            | 0.30     | 0.43     | 0.60     | 0.73     | 0.85     | 1.03     | 1.16     | 1.28     | 1.45     |          |
| <b>Optics</b>                   |                 |          |          |          |          |          |          |          |          |          |          |
| <b>T2</b>                       | 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      |
| <b>T2R</b>                      | 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      |
| <b>T3</b>                       | 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      |
| <b>T3R</b>                      | 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      |
| <b>T4FT</b>                     | 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      |
| <b>T4W</b>                      | 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      |
| <b>SL2</b>                      | 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      |
| <b>SL3</b>                      | 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      |
| <b>SL4</b>                      | 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      |
| <b>5NQ</b>                      | 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      |
| <b>5MQ</b>                      | 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      |
| <b>5WQ</b>                      | 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      |
| <b>SLL/SLR</b>                  | 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      |
| <b>RW</b>                       | 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      |
| <b>AFL</b>                      | 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       |
|---------------------------------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Nominal Power (Watts)</b>    |                 | 59       | 113      | 166      | 225      | 279      | 333      | 391      | 445      | 501      | 558      |
| <b>Input Current @ 120V (A)</b> |                 | 0.51     | 1.02     | 1.53     | 2.03     | 2.55     | 3.06     | 3.56     | 4.08     | 4.60     | 5.07     |
| <b>Input Current @ 208V (A)</b> |                 | 0.29     | 0.56     | 0.82     | 1.11     | 1.37     | 1.64     | 1.93     | 2.19     | 2.46     | 2.75     |
| <b>Input Current @ 240V (A)</b> |                 | 0.26     | 0.48     | 0.71     | 0.96     | 1.19     | 0.41     | 1.67     | 1.89     | 2.12     | 2.39     |
| <b>Input Current @ 277V (A)</b> |                 | 0.23     | 0.42     | 0.61     | 0.83     | 1.03     | 1.23     | 1.45     | 1.65     | 1.84     | 2.09     |
| <b>Input Current @ 347V (A)</b> |                 | 0.17     | 0.32     | 0.50     | 0.64     | 0.82     | 1.00     | 1.14     | 1.32     | 1.50     | 1.68     |
| <b>Input Current @ 480V (A)</b> |                 | 0.14     | 0.24     | 0.37     | 0.48     | 0.61     | 0.75     | 0.91     | 0.99     | 1.12     | 1.28     |
| <b>Optics</b>                   |                 |          |          |          |          |          |          |          |          |          |          |
| <b>T2</b>                       | 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      |
| <b>T2R</b>                      | 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      |
| <b>T3</b>                       | 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      |
| <b>T3R</b>                      | 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      |
| <b>T4FT</b>                     | 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      |
| <b>T4W</b>                      | 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      |
| <b>SL2</b>                      | 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      |
| <b>SL3</b>                      | 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      |
| <b>SL4</b>                      | 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      |
| <b>5NQ</b>                      | 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      |
| <b>5MQ</b>                      | 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      |
| <b>5WQ</b>                      | 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      |
| <b>SLL/SLR</b>                  | 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      |
| <b>RW</b>                       | 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      |
| <b>AFL</b>                      | 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       |
|---------------------------------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Nominal Power (Watts)</b>    |                 | 44       | 85       | 124      | 171      | 210      | 249      | 295      | 334      | 374      | 419      |
| <b>Input Current @ 120V (A)</b> |                 | 0.39     | 0.77     | 1.13     | 1.54     | 1.90     | 2.26     | 2.67     | 3.03     | 3.39     | 3.80     |
| <b>Input Current @ 208V (A)</b> |                 | 0.22     | 0.44     | 0.62     | 0.88     | 1.06     | 1.24     | 1.50     | 1.68     | 1.87     | 2.12     |
| <b>Input Current @ 240V (A)</b> |                 | 0.19     | 0.38     | 0.54     | 0.76     | 0.92     | 1.08     | 1.30     | 1.46     | 1.62     | 1.84     |
| <b>Input Current @ 277V (A)</b> |                 | 0.17     | 0.36     | 0.47     | 0.72     | 0.83     | 0.95     | 1.19     | 1.31     | 1.42     | 1.67     |
| <b>Input Current @ 347V (A)</b> |                 | 0.15     | 0.24     | 0.38     | 0.49     | 0.63     | 0.77     | 0.87     | 1.01     | 1.15     | 1.52     |
| <b>Input Current @ 480V (A)</b> |                 | 0.11     | 0.18     | 0.29     | 0.37     | 0.48     | 0.59     | 0.66     | 0.77     | 0.88     | 0.96     |
| <b>Optics</b>                   |                 |          |          |          |          |          |          |          |          |          |          |
| <b>T2</b>                       | 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      |
| <b>T2R</b>                      | 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      |
| <b>T3</b>                       | 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      |
| <b>T3R</b>                      | 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      |
| <b>T4FT</b>                     | 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      |
| <b>T4W</b>                      | 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      |
| <b>SL2</b>                      | 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      |
| <b>SL3</b>                      | 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      |
| <b>SL4</b>                      | 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      |
| <b>5NQ</b>                      | 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      |
| <b>5MQ</b>                      | 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      |
| <b>5WQ</b>                      | 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      |
| <b>SLL/SLR</b>                  | 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      |
| <b>RW</b>                       | 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      |
| <b>AFL</b>                      | 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       |          |
|---------------------------------|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Nominal Power (Watts)</b>    | 34              | 66       | 96       | 129      | 162      | 193      | 226      | 257      | 290      | 323      |          |
| <b>Input Current @ 120V (A)</b> | 0.30            | 0.58     | 0.86     | 1.16     | 1.44     | 1.73     | 2.03     | 2.33     | 2.59     | 2.89     |          |
| <b>Input Current @ 208V (A)</b> | 0.17            | 0.34     | 0.49     | 0.65     | 0.84     | 0.99     | 1.14     | 1.30     | 1.48     | 1.63     |          |
| <b>Input Current @ 240V (A)</b> | 0.15            | 0.30     | 0.43     | 0.56     | 0.74     | 0.87     | 1.00     | 1.13     | 1.30     | 1.43     |          |
| <b>Input Current @ 277V (A)</b> | 0.14            | 0.28     | 0.41     | 0.52     | 0.69     | 0.81     | 0.93     | 1.04     | 1.22     | 1.33     |          |
| <b>Input Current @ 347V (A)</b> | 0.11            | 0.19     | 0.30     | 0.39     | 0.49     | 0.60     | 0.69     | 0.77     | 0.90     | 0.99     |          |
| <b>Input Current @ 480V (A)</b> | 0.08            | 0.15     | 0.24     | 0.30     | 0.38     | 0.48     | 0.53     | 0.59     | 0.71     | 0.77     |          |
| <b>Optics</b>                   |                 |          |          |          |          |          |          |          |          |          |          |
| <b>T2</b>                       | 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      |
| <b>T2R</b>                      | 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      |
| <b>T3</b>                       | 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      |
| <b>T3R</b>                      | 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      |
| <b>T4FT</b>                     | 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      |
| <b>T4W</b>                      | 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      |
| <b>SL2</b>                      | 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      |
| <b>SL3</b>                      | 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      |
| <b>SL4</b>                      | 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      |
| <b>5NQ</b>                      | 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      |
| <b>5MQ</b>                      | 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      |
| <b>5WQ</b>                      | 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      |
| <b>SLL/SLR</b>                  | 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      |
| <b>RW</b>                       | 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      |
| <b>AFL</b>                      | 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)

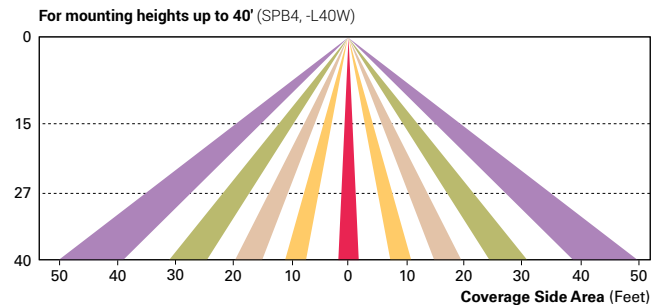
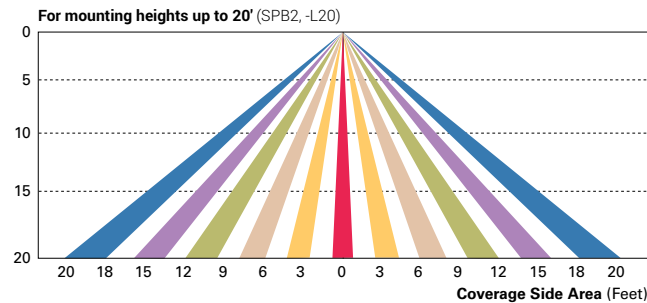
Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) provide a flexible solution to enable “dusk-to-dawn” lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PR7 receptacle.

### 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.

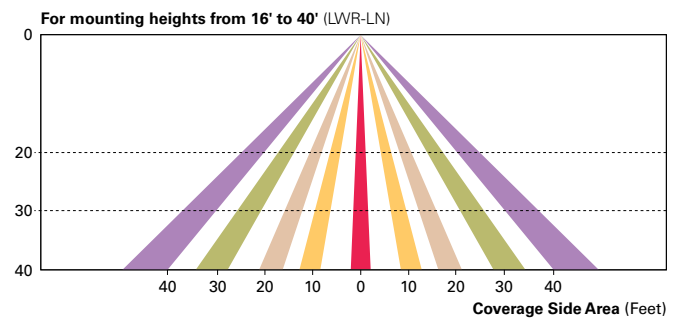
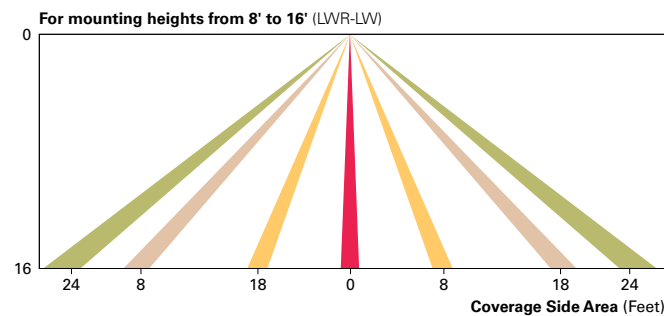
### Dimming Occupancy Sensor (SPB, MS/DIM-LXX, MS/X-LXX and MS-LXX)

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.



### 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.



### 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](http://www.synapsewireless.com) for product support, warranty and terms and conditions.

|             |  |           |  |      |  |
|-------------|--|-----------|--|------|--|
| 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



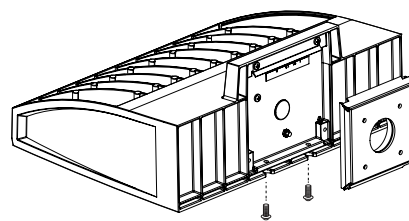
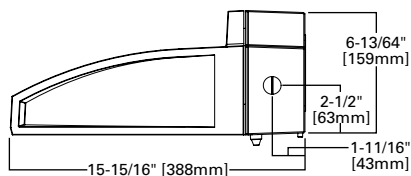
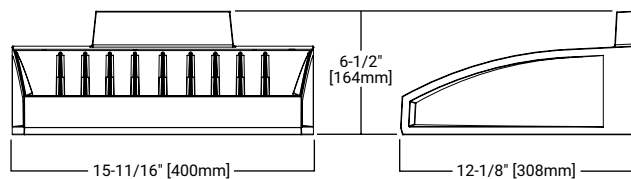
### Quick Facts

- 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 <sup>1</sup>   | Light Engine                               |   | Color Temperature   | Voltage  | Distribution   | Finish   |
|---|--|---|---|--|--|--|
|   | Configuration                              | Drive Current   |   |  |  |  |
| GWC=Galleon Wall  | SA1=1 Square<br>SA2=2 Squares <sup>2</sup> | A=615mA<br>B=800mA<br>C=1000mA<br>D=1200mA <sup>4</sup> | 722=70CRI, 2200K<br>727=70CRI, 2700K<br>730=70CRI, 3000K<br>735=70CRI, 3500K<br>740=70CRI, 4000K<br>750=70CRI, 5000K<br>760=70CRI, 6000K<br>827=80CRI, 2700K<br>830=80CRI, 3000K<br>AMB=Amber, 590nm <sup>3,4</sup>   | U=120-277V<br>1=120V<br>2=208V<br>3=240V<br>4=277V<br>8=480V <sup>6,7</sup><br>9=347V <sup>6</sup> | T2=Type II<br>T3=Type III<br>T4F=Type IV Forward Throw<br>T4W=Type IV Wide<br>SL2=Type II w/Spill Control<br>SL3=Type III w/Spill Control<br>SL4=Type IV w/Spill Control<br>SLL=90° Spill Light Eliminator Left<br>SLR=90° Spill Light Eliminator Right<br>RW=Rectangular Wide Type I<br>5NQ=Type V Square Narrow<br>5MQ=Type V Square Medium<br>5WQ=Type V Square Wide  | AP=Grey<br>BZ=Bronze<br>BK=Black<br>DP=Dark Platinum<br>GM=Graphite Metallic<br>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)<br>FF=Double Fused (208, 240 or 480V. Must Specify Voltage)<br>10K=10kV Surge Module<br>20K=Series 20kV UL 1449 Surge Protective Device<br>DIM=External 0-10V Dimming Leads <sup>9,10</sup><br>CBP=Battery Pack with Back Box, Cold Weather Rated <sup>2,4,14,33</sup><br>CBP-CEC=Battery Pack with Back Box, Cold Weather Rated, CEC compliant <sup>2,4,14</sup><br>L90=Optics Rotated 90° Left<br>R90=Optics Rotated 90° Right<br>HSS=Factory Installed House Side Shield <sup>23</sup><br>GRSBK=Factory Installed Glare Shield, BK <sup>4,27</sup><br>GRSWH=Factory Installed Glare Shield, WH <sup>4,27</sup><br>UPL=Uplight Housing <sup>13</sup><br>HA=50°C High Ambient <sup>12</sup><br>LCF=Light Square Trim Plate Painted to Match Housing <sup>22</sup><br>MT=Factory Installed Mesh Top<br>CC=Coastal Construction finish <sup>5</sup><br>CE=CE Marking and Small Terminal Block <sup>24</sup><br>AHD145=After Hours Dim, 5 Hours <sup>16</sup><br>AHD245=After Hours Dim, 6 Hours <sup>16</sup><br>AHD255=After Hours Dim, 7 Hours <sup>16</sup><br>AHD355=After Hours Dim, 8 Hours <sup>16</sup><br>DALI=DALI Driver <sup>11</sup>  |  |   | BPC=Button Type Photocontrol (120, 208, 240 or 277V. Must Specify Voltage)<br>PR=NEMA 3-PIN Twistlock Photocontrol Receptacle<br>PR7=NEMA 7-PIN Twistlock Photocontrol Receptacle <sup>15</sup><br>SPB1=Dimming Occupancy Sensor with Bluetooth Interface, <8' Mounting <sup>19,34</sup><br>SPB2=Dimming Occupancy Sensor with Bluetooth Interface, 8' - 20' Mounting <sup>19,34</sup><br>SPB4=Dimming Occupancy Sensor with Bluetooth Interface, 21' - 40' Mounting <sup>19,34</sup><br>MS-LXX=Motion Sensor for On/Off Operation <sup>17,18,19</sup><br>MS/DIM-LXX=Motion Sensor for Dimming Operation <sup>17,18,19</sup><br>ZW=WaveLinX-enabled 4-PIN Twistlock Receptacle <sup>29,30</sup><br>ZD=WaveLinX Module with DALI driver and 4-PIN Receptacle <sup>29,30</sup><br>SWPD4XX=WaveLinX Sensor Only, 7'-15' <sup>31,32</sup><br>SWPD5XX=WaveLinX Sensor Only, 15'-40' <sup>31,32</sup><br>WOBXX=WaveLinX Sensor with Bluetooth, 7'-15' <sup>31,32</sup><br>WOFXX=WaveLinX Sensor with Bluetooth, 15'-40' <sup>31,32</sup><br>LWR-LW=Enlighted Wireless Sensor, Wide Lens for 8'-16' Mounting Height <sup>19,20,21</sup><br>LWR-LN=Enlighted Wireless Sensor, Narrow Lens for 16'-40' Mounting Height <sup>19,20,21</sup> |  | OA/RA1013=Photocontrol Shorting Cap <sup>28</sup><br>OA/RA1016=NEMA Photocontrol - Multi-Tap 105-285V <sup>28</sup><br>OA/RA1201=NEMA Photocontrol - 347V <sup>28</sup><br>OA/RA1027=NEMA Photocontrol - 480V <sup>28</sup><br>MA1252=10kV Circuit Module Replacement<br>MA1059XX=Thru-branch Back Box (Must Specify Color)<br>LS/HSS=Field Installed House Side Shield <sup>23,25</sup><br>LS/GRSBK=Glare Shield, Black <sup>8,25,27</sup><br>LS/GRSWH=Glare Shield, White <sup>8,25,27</sup><br>LS/PFS=Perimeter Shield, Black<br>FSIR-100=Wireless Configuration Tool for Occupancy Sensor <sup>17</sup><br>WOLC-7P-10A=WaveLinX Outdoor Control Module (7-pin) <sup>26,29</sup><br>SWPD4-XX=WaveLinX Wireless Sensor, 7' - 15' Mounting Height <sup>29,30,31,32</sup><br>SWPD5-XX=WaveLinX Wireless Sensor, 15' - 40' Mounting Height <sup>29,30,31,32</sup> |  |
| <p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>DesignLight Consortium® Qualified. Refer to <a href="http://www.designlights.org">www.designlights.org</a>, Qualified Products List under Family Models for details.</li> <li>Two light squares with CBP options limited to 25°C. Not available in combination with sensor options at 1200mA.</li> <li>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.</li> <li>Not available with HA option.</li> <li>Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654.</li> <li>Require the use of a step down transformer. Not available in combination with sensor options at 1200mA.</li> <li>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).</li> <li>Reserved.</li> <li>Cannot be used with other control options.</li> <li>Low voltage control leads extended 18" from fixture.</li> <li>Not available in 1200mA. When used with CBP or HA options, only available with single light square.</li> <li>Not available in 1200mA, UPL or CBP options. Available with single light square.</li> <li>Not available with SL2, SL3, SL4, HA, CBP, PR or PR7 options.</li> <li>Operates a single light square only. Operates at -20°C to +40°C. Backbox is non-IP rated. Control option limited to BPC.</li> <li>Compatible with standard 3-PIN photocontrols, 5-PIN or 7-PIN ANSI controls.</li> <li>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.</li> <li>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.</li> <li>Replace LXX with L08 (&lt;8' mounting), L20 (8'-20' mounting) or L40W (21'-40' mounting.)</li> <li>Includes integral photosensor.</li> <li>Enlighted wireless sensors are factory installed requiring network components in appropriate quantities.</li> <li>White sensor shipped on all housing color options.</li> <li>Not available with HSS or GRS options.</li> <li>Not for use with 5NQ, 5MQ, 5WQ or RW optics. The light square trim plate is painted black when the HSS option is selected.</li> <li>CE is not available with the 1200, DALI, LWR, MS, MS/DIM, BPC, PR or PR7 options. Available in 120-277V only.</li> <li>One required for each light square.</li> <li>Requires PR7.</li> <li>Not for use with T4FT, T4W or SL4 optics.</li> <li>Cannot be used in conjunction with additional photocontrol or other controls systems (BPC, PR, PR7, MS, LWR).</li> <li>WAC Gateway required to enable field-configurability: Order WAC-PoE and WPOE-120 (10V to PoE injector) power supply if needed.</li> <li>Requires ZW or ZD receptacle.</li> <li>Replace XX with sensor color (WH, BZ, or BK).</li> <li>Specify 120V or 277V.</li> <li>Smart device with mobile application required to change system defaults. See controls section for details.</li> </ol> |  |   |   |  |  |  |

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

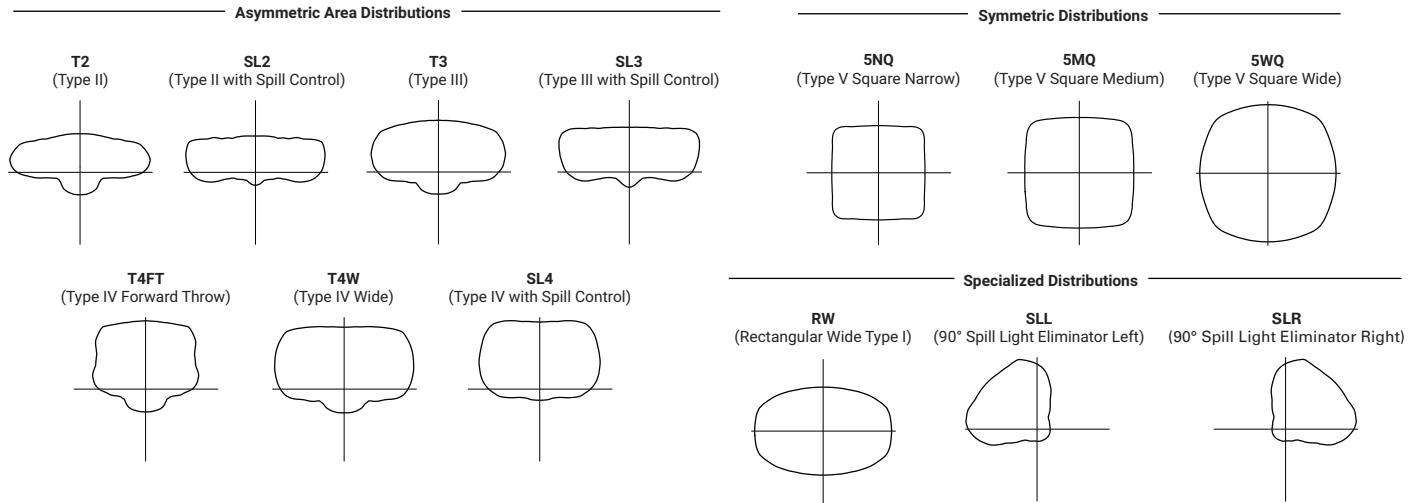
- Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Heat sink is powder coated black
- RAL and custom color matches available
- Coastal Construction (CC) option available

Warranty

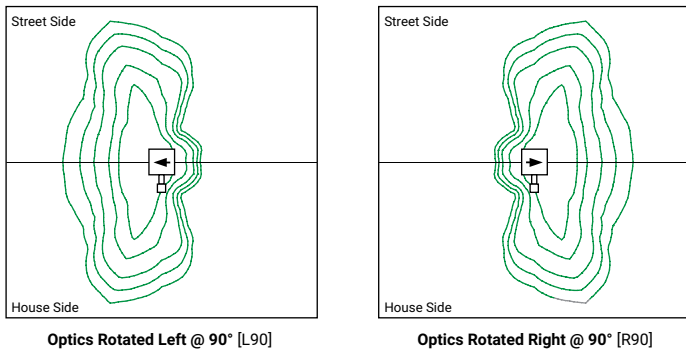
- Five-year warranty



Optical Distributions



Optic Orientation



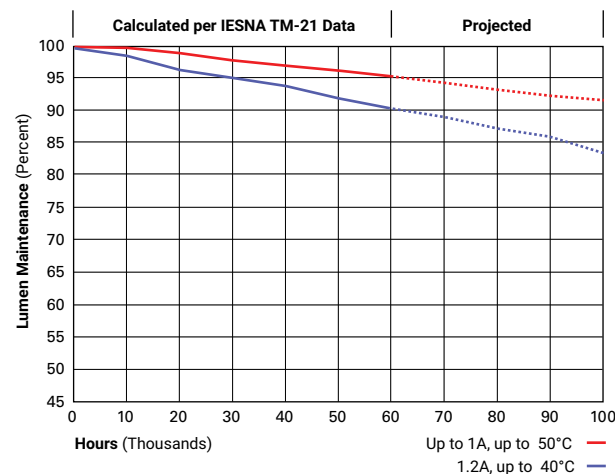
Energy and Performance Data

Lumen Multiplier

| Ambient Temperature | Lumen Multiplier |
|---------------------|------------------|
| 0°C                 | 1.02             |
| 10°C                | 1.01             |
| 25°C                | 1.00             |
| 40°C                | 0.99             |
| 50°C                | 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     |
| <b>Optics</b>            |                 |          |          |          |          |          |          |          |          |
| 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        |          |          |          |
|---------------------------------|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>Drive Current</b>            |                        | 615mA    | 800mA    | 1050mA   | 1.2A     | 615mA    | 800mA    | 1050mA   | 1.2A     |
| <b>Nominal Power (Watts)</b>    |                        | 34       | 44       | 59       | 67       | 66       | 86       | 113      | 129      |
| <b>Input Current @ 120V (A)</b> |                        | 0.30     | 0.39     | 0.51     | 0.58     | 0.58     | 0.77     | 1.02     | 1.16     |
| <b>Input Current @ 208V (A)</b> |                        | 0.17     | 0.22     | 0.29     | 0.33     | 0.34     | 0.44     | 0.56     | 0.63     |
| <b>Input Current @ 240V (A)</b> |                        | 0.15     | 0.19     | 0.26     | 0.29     | 0.30     | 0.38     | 0.48     | 0.55     |
| <b>Input Current @ 277V (A)</b> |                        | 0.14     | 0.17     | 0.23     | 0.25     | 0.28     | 0.36     | 0.42     | 0.48     |
| <b>Input Current @ 347V (A)</b> |                        | 0.11     | 0.15     | 0.17     | 0.20     | 0.19     | 0.24     | 0.32     | 0.39     |
| <b>Input Current @ 480V (A)</b> |                        | 0.08     | 0.11     | 0.14     | 0.15     | 0.15     | 0.18     | 0.24     | 0.30     |
| <b>Optics</b>                   |                        |          |          |          |          |          |          |          |          |
| <b>T2</b>                       | <b>Lumens</b>          | 3,880    | 4,759    | 5,890    | 6,461    | 7,583    | 9,300    | 11,510   | 12,628   |
|                                 | <b>BUG Rating</b>      | B1-U0-G1 | B1-U0-G1 | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B2-U0-G2 | B2-U0-G3 |
|                                 | <b>Lumens per Watt</b> | 114      | 108      | 100      | 96       | 115      | 108      | 102      | 98       |
| <b>T3</b>                       | <b>Lumens</b>          | 3,956    | 4,851    | 6,004    | 6,586    | 7,731    | 9,479    | 11,732   | 12,870   |
|                                 | <b>BUG Rating</b>      | B1-U0-G1 | B1-U0-G1 | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B2-U0-G2 | B2-U0-G2 | B2-U0-G2 |
|                                 | <b>Lumens per Watt</b> | 116      | 110      | 102      | 98       | 117      | 110      | 104      | 100      |
| <b>T4FT</b>                     | <b>Lumens</b>          | 3,980    | 4,879    | 6,038    | 6,625    | 7,774    | 9,534    | 11,800   | 12,945   |
|                                 | <b>BUG Rating</b>      | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G3 | B2-U0-G3 | B2-U0-G3 | B2-U0-G3 |
|                                 | <b>Lumens per Watt</b> | 117      | 111      | 102      | 99       | 118      | 111      | 104      | 100      |
| <b>T4W</b>                      | <b>Lumens</b>          | 3,927    | 4,816    | 5,961    | 6,539    | 7,675    | 9,411    | 11,648   | 12,778   |
|                                 | <b>BUG Rating</b>      | B1-U0-G1 | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B2-U0-G2 | B2-U0-G2 | B2-U0-G2 | B2-U0-G3 |
|                                 | <b>Lumens per Watt</b> | 116      | 109      | 101      | 98       | 116      | 109      | 103      | 99       |
| <b>SL2</b>                      | <b>Lumens</b>          | 3,873    | 4,751    | 5,880    | 6,450    | 7,571    | 9,285    | 11,491   | 12,605   |
|                                 | <b>BUG Rating</b>      | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G3 | B2-U0-G3 | B2-U0-G3 | B2-U0-G3 |
|                                 | <b>Lumens per Watt</b> | 114      | 108      | 100      | 96       | 115      | 108      | 102      | 98       |
| <b>SL3</b>                      | <b>Lumens</b>          | 3,954    | 4,851    | 6,004    | 6,585    | 7,729    | 9,478    | 11,731   | 12,868   |
|                                 | <b>BUG Rating</b>      | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G3 | B2-U0-G3 | B2-U0-G3 |
|                                 | <b>Lumens per Watt</b> | 116      | 110      | 102      | 98       | 117      | 110      | 104      | 100      |
| <b>SL4</b>                      | <b>Lumens</b>          | 3,758    | 4,608    | 5,704    | 6,256    | 7,342    | 9,006    | 11,145   | 12,227   |
|                                 | <b>BUG Rating</b>      | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G3 | B1-U0-G3 | B1-U0-G3 | B1-U0-G3 | B1-U0-G3 |
|                                 | <b>Lumens per Watt</b> | 111      | 105      | 97       | 93       | 111      | 105      | 99       | 95       |
| <b>5NQ</b>                      | <b>Lumens</b>          | 4,080    | 5,003    | 6,193    | 6,792    | 7,973    | 9,776    | 12,099   | 13,274   |
|                                 | <b>BUG Rating</b>      | B2-U0-G0 | B2-U0-G1 | B2-U0-G1 | B2-U0-G1 | B3-U0-G1 | B3-U0-G1 | B3-U0-G1 | B3-U0-G2 |
|                                 | <b>Lumens per Watt</b> | 120      | 114      | 105      | 101      | 121      | 114      | 107      | 103      |
| <b>5MQ</b>                      | <b>Lumens</b>          | 4,154    | 5,095    | 6,305    | 6,917    | 8,118    | 9,956    | 12,323   | 13,518   |
|                                 | <b>BUG Rating</b>      | B2-U0-G1 | B3-U0-G1 | B3-U0-G1 | B3-U0-G1 | B3-U0-G2 | B3-U0-G2 | B4-U0-G2 | B4-U0-G2 |
|                                 | <b>Lumens per Watt</b> | 122      | 116      | 107      | 103      | 123      | 116      | 109      | 105      |
| <b>5WQ</b>                      | <b>Lumens</b>          | 4,166    | 5,108    | 6,322    | 6,936    | 8,140    | 9,983    | 12,355   | 13,553   |
|                                 | <b>BUG Rating</b>      | B3-U0-G1 | B3-U0-G1 | B3-U0-G1 | B3-U0-G2 | B3-U0-G2 | B4-U0-G2 | B4-U0-G2 | B4-U0-G2 |
|                                 | <b>Lumens per Watt</b> | 123      | 116      | 107      | 104      | 123      | 116      | 109      | 105      |
| <b>SLL/SLR</b>                  | <b>Lumens</b>          | 3,475    | 4,263    | 5,276    | 5,787    | 6,792    | 8,329    | 10,309   | 11,309   |
|                                 | <b>BUG Rating</b>      | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G2 | B1-U0-G3 | B1-U0-G3 | B2-U0-G3 | B2-U0-G3 |
|                                 | <b>Lumens per Watt</b> | 102      | 97       | 89       | 86       | 103      | 97       | 91       | 88       |
| <b>RW</b>                       | <b>Lumens</b>          | 4,042    | 4,957    | 6,135    | 6,732    | 7,900    | 9,687    | 11,990   | 13,154   |
|                                 | <b>BUG Rating</b>      | B2-U0-G1 | B2-U0-G1 | B3-U0-G1 | B3-U0-G1 | B3-U0-G1 | B3-U0-G1 | B3-U0-G2 | B3-U0-G2 |
|                                 | <b>Lumens per Watt</b> | 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.



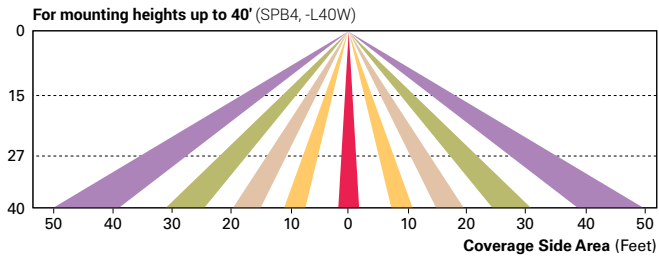
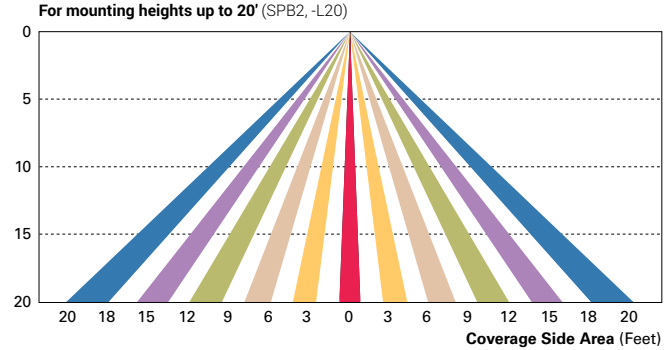
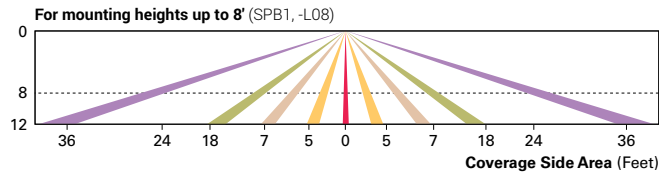
### Control Options

**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.

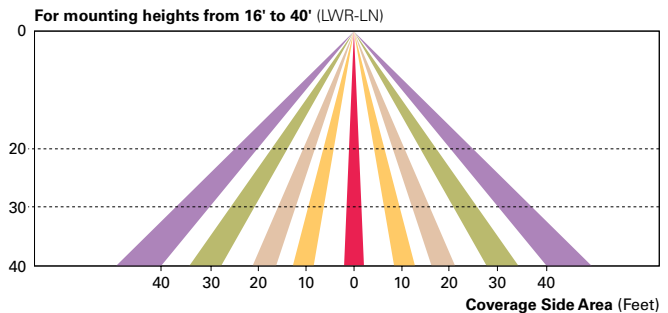
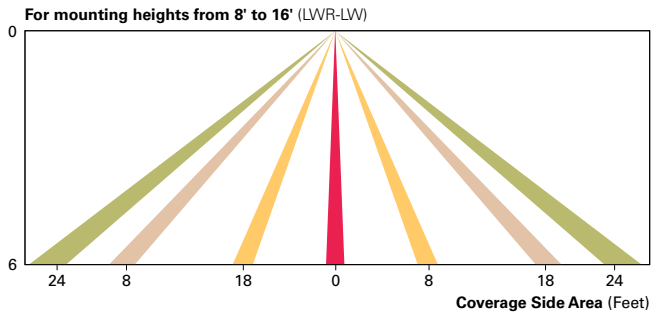
**Photocontrol** (BPC, PR, and PR7) Optional button-type photocontrol (BPC) and photocontrol receptacles (PR and PR7) provide a flexible solution to enable “dusk-to-dawn” lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PR7 receptacle.

**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.

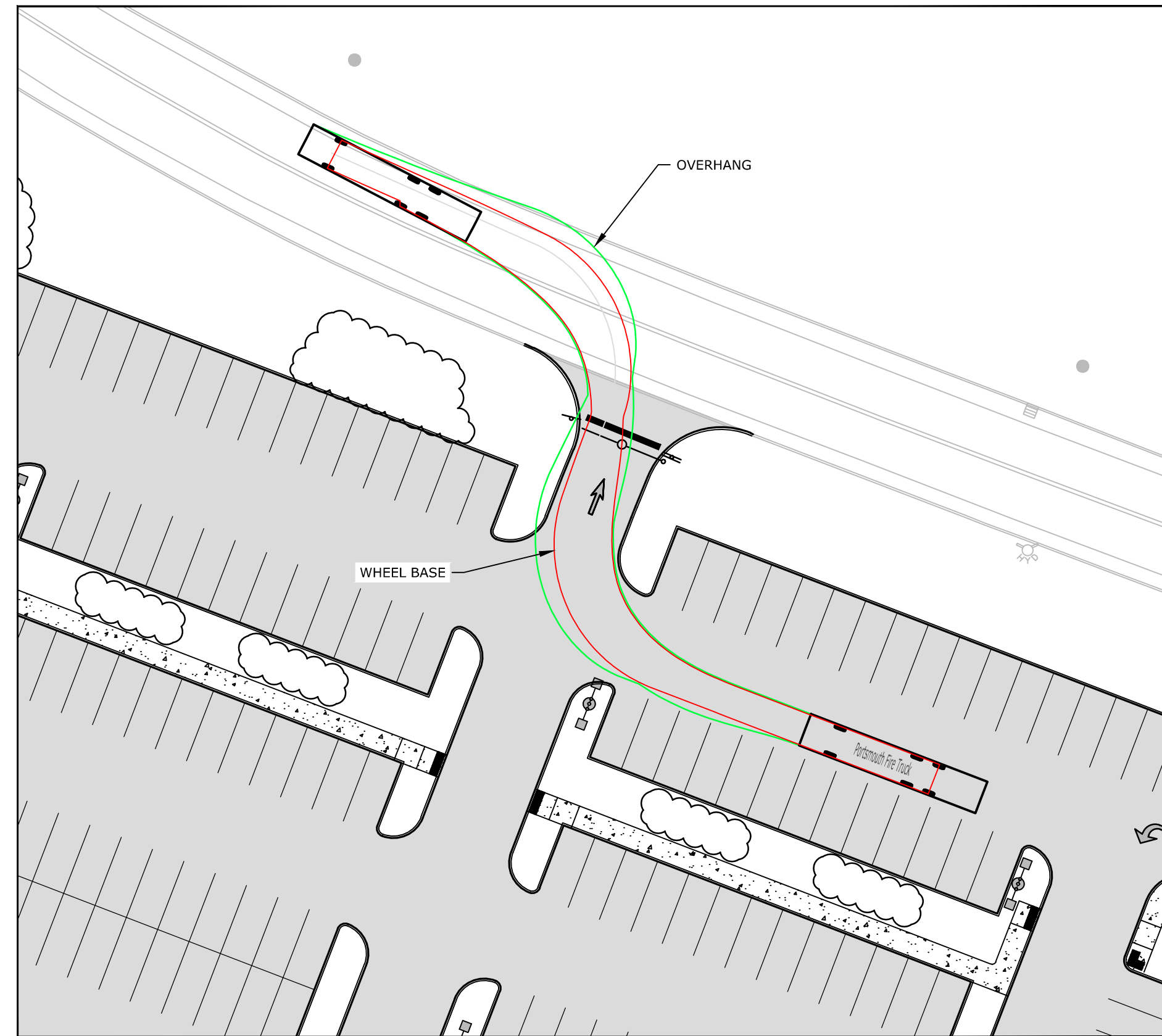
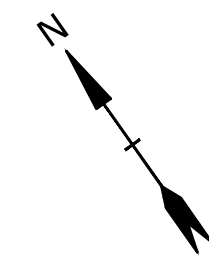
**Dimming Occupancy Sensor** (SPB, MS/DIM-LXX and MS-LXX) These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity 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.



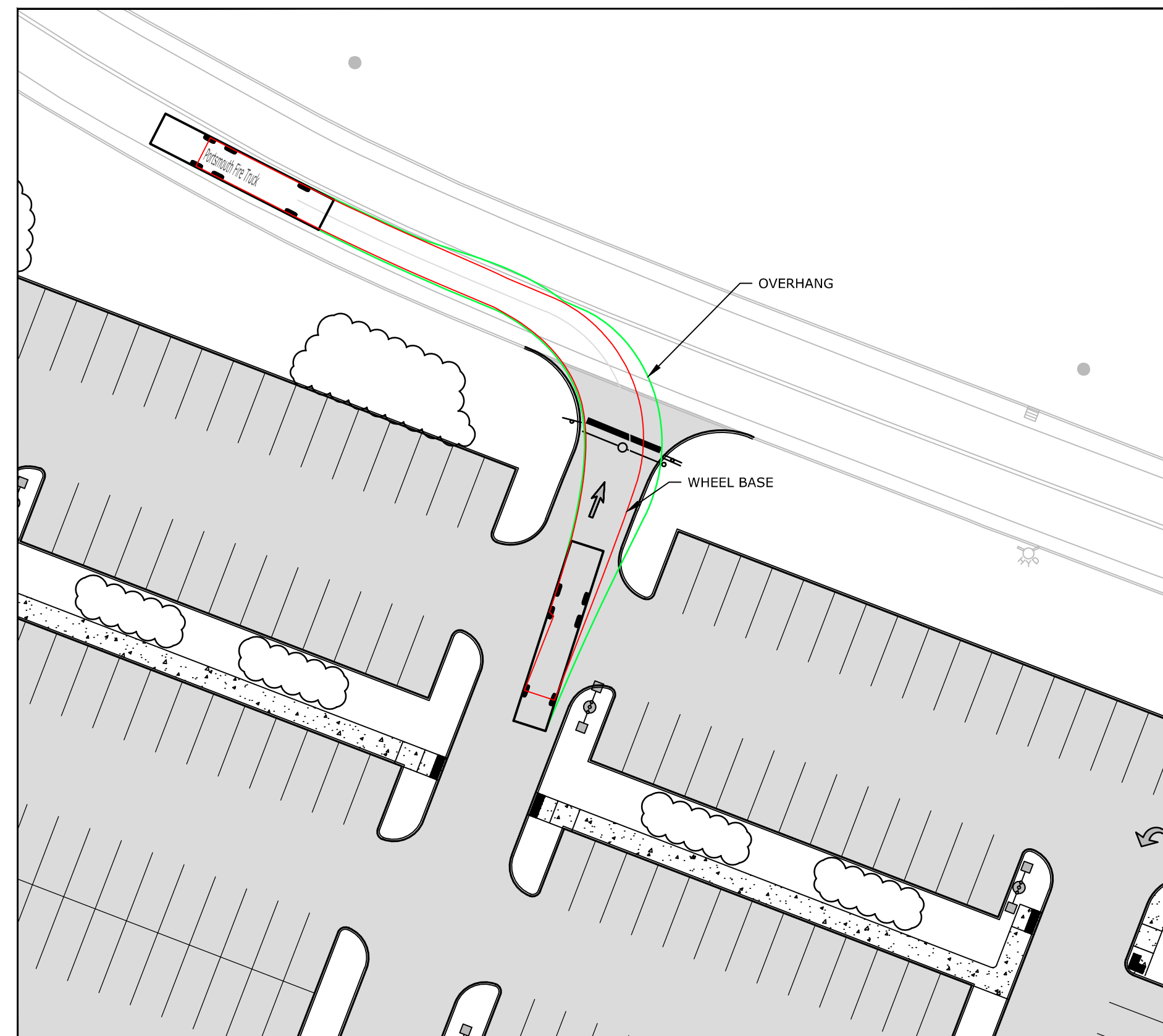
**Enlighted Wireless Control and Monitoring System** (LWR-LW and LWR-LN) The Enlighted control system is a connected lighting solution, combining LED luminaires with an integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes while collecting 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.



**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.

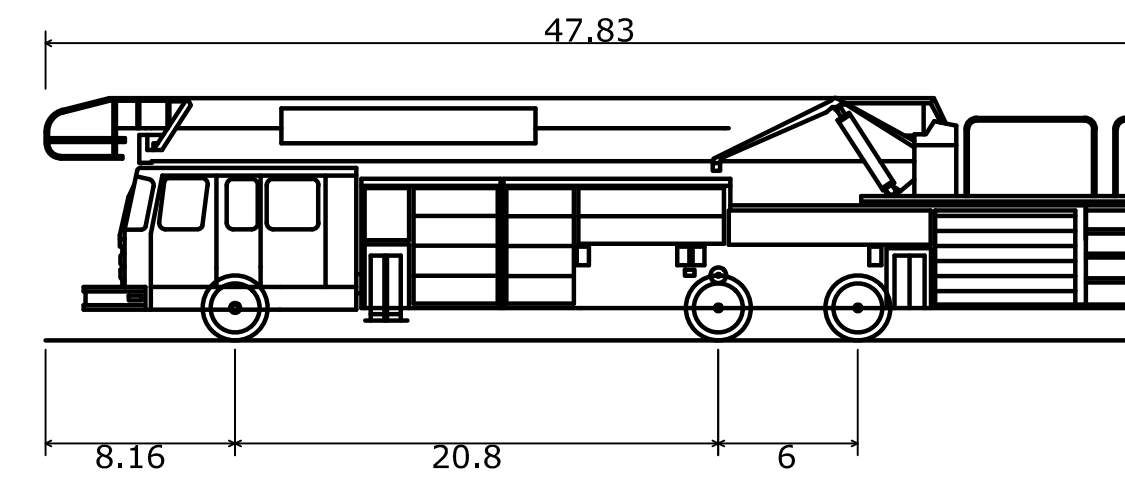


FIRE TRUCK PATH  
(LEFT OUT AT PROPOSED EXIT TO GOOSE BAY DRIVE)  
SCALE 1"=30'

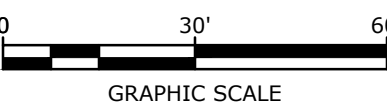
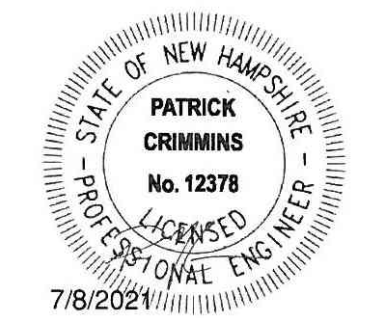


FIRE TRUCK PATH  
(RIGHT IN AT PROPOSED EXIT TO GOOSE BAY DRIVE)  
SCALE 1"=30'

**LEGEND**  
 — VEHICLE WHEEL BASE  
 — VEHICLE OVERHANG



Portsmouth Fire Truck  
 Overall Length 47.830ft  
 Overall Width 8.500ft  
 Overall Body Height 10.432ft  
 Min Body Ground Clearance 0.862ft  
 Track Width 8.000ft  
 Lock-to-lock time 6.00s  
 Max Steering Angle (Virtual) 38.00°



**Lynx Parking Expansion**

Lonza Biologics

Portsmouth,  
New Hampshire

| MARK | DATE      | DESCRIPTION    |
|------|-----------|----------------|
| B    | 7/8/2021  | PB SUBMISSION  |
| 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

FIRE TRUCK TURNING EXHIBIT

SCALE: AS SHOWN

Last Saved: 7/7/2021 3:57 pm By: JMiner  
 Project: Lynx Parking Expansion was 157661021.Lynx Project Drawings - Figures AutoCAD L-0700-021-C-DSGN.dwg  
 Figure 8: 6/21/2021 11:00:00 AM



# HOEFLE, PHOENIX, GORMLEY & ROBERTS, PLLC

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ATTORNEYS AT LAW

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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

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|                     |                            |                      |                 |
|---------------------|----------------------------|----------------------|-----------------|
| DANIEL C. HOEFLE    | R. PETER TAYLOR            | GREGORY D. ROBBINS   | DUNCAN A. EDGAR |
| R. TIMOTHY PHOENIX  | JOHN AHLGREN               | MONICA F. KIESER     | OF COUNSEL:     |
| LAWRENCE B. GORMLEY | KIMBERLY J.H. MEMMESHEIMER | SAMUEL HARKINSON     | SAMUEL R. REID  |
| STEPHEN H. ROBERTS  | KEVIN M. BAUM              | JACOB J.B. MARVELLEY |                 |



## Monica Kieser

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**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.

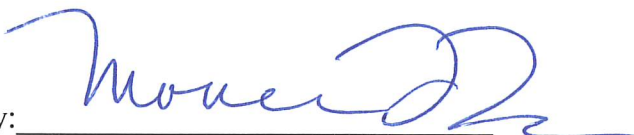
**PZO §10.1112.144: At its discretion, the Planning Board may require more off street parking spaces than the minimum number requested by the Applicant, or may allow fewer spaces than the maximum number requested by the Applicant.**

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.

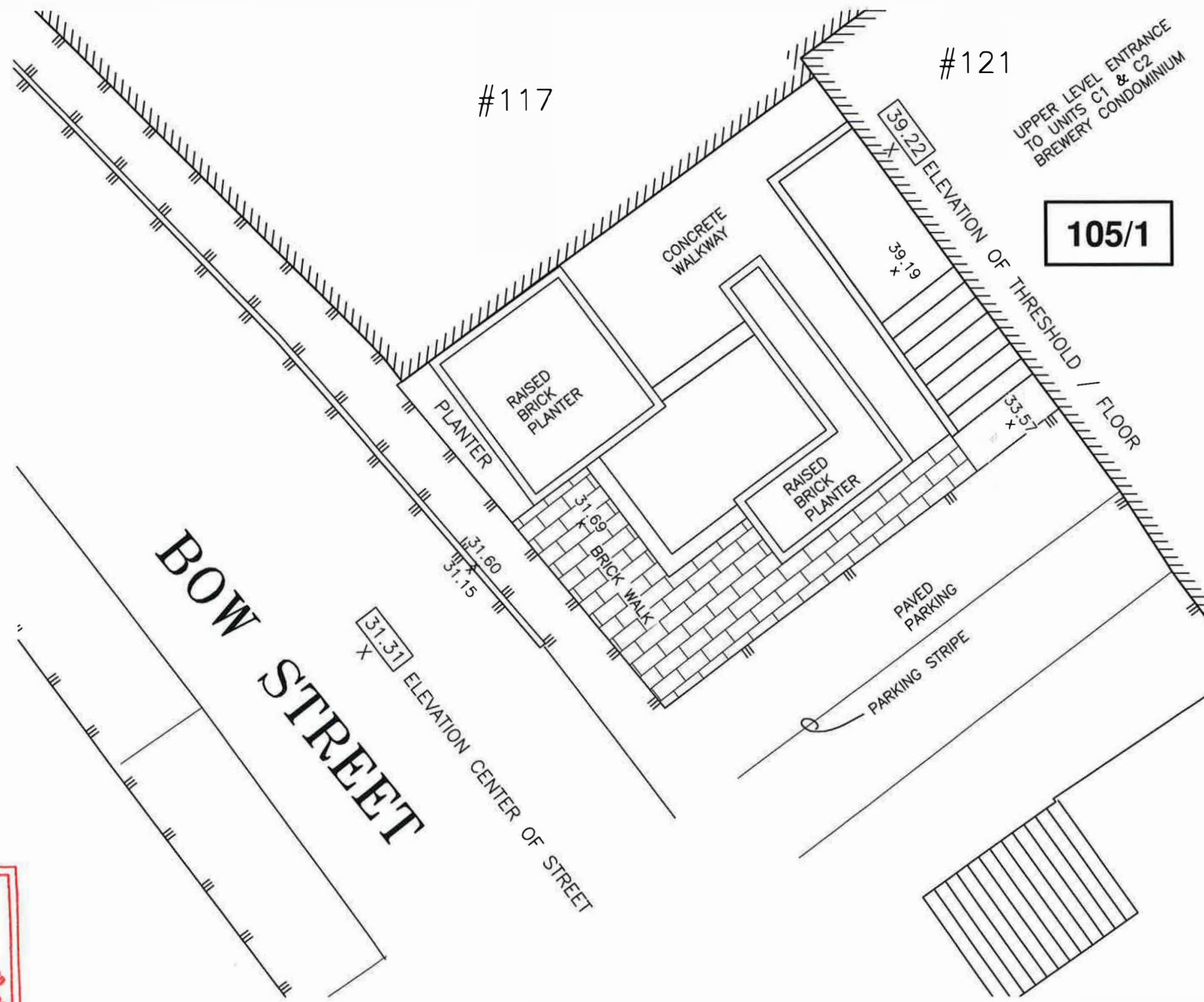
Respectfully submitted,  
BOW STREET BREW

By: 

R. Timothy Phoenix  
Monica F. Kieser

# ELEVATION STUDY

PROPERTY LOCATION: 121 BOW STREET  
 CITY OF PORTSMOUTH  
 COUNTY OF ROCKINGHAM  
 STATE OF NEW HAMPSHIRE



**105/1**

## 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



J:\0553\N 3300\3300\3309\Project Year - Extension\Plans & Specs\Site\3309 Survey 2021.dwg, SKETCH w DYN TITLE



# 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

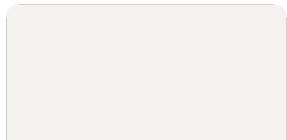


Image capture: Sep 2019 © 2021 Google

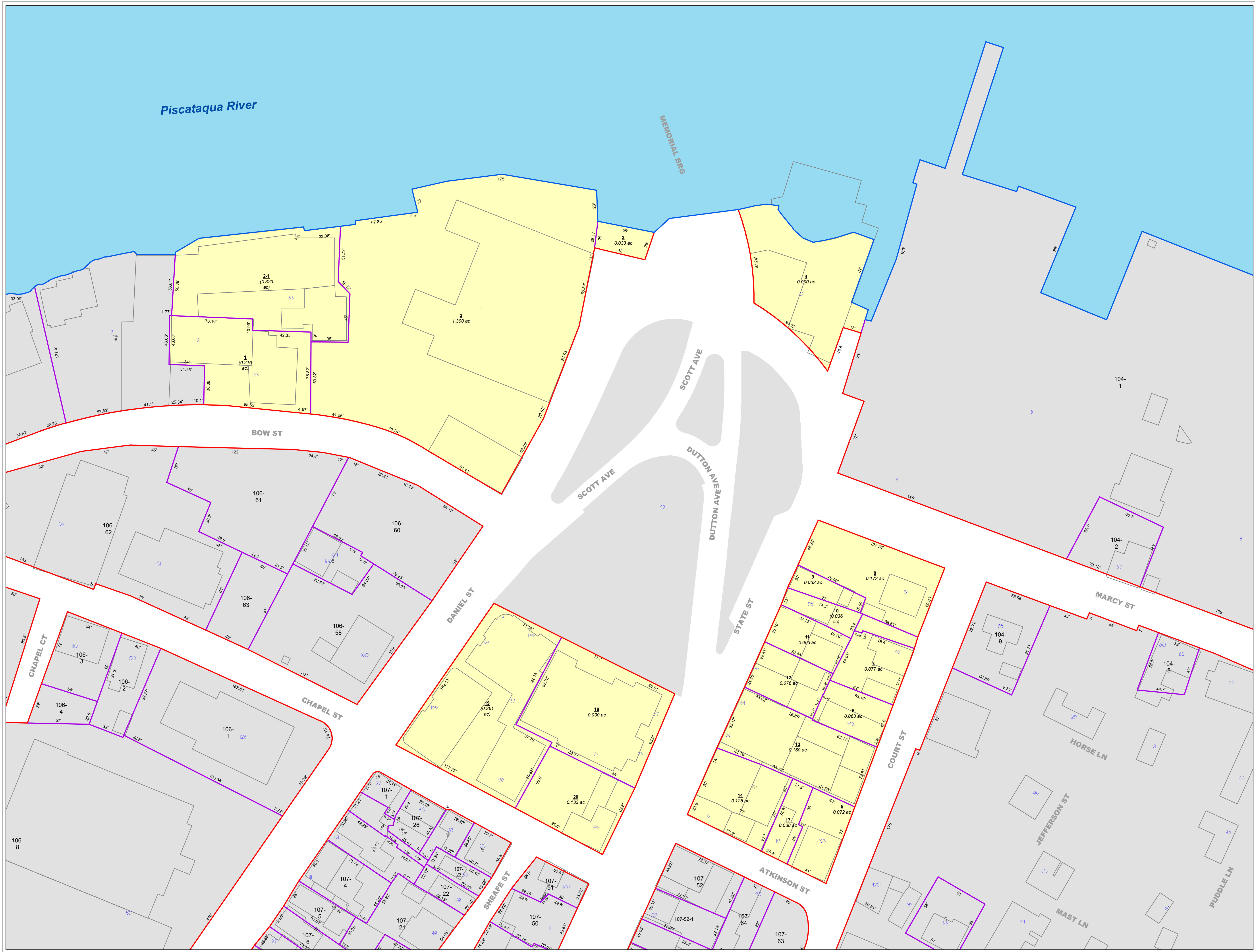
Portsmouth, New Hampshire



Street View





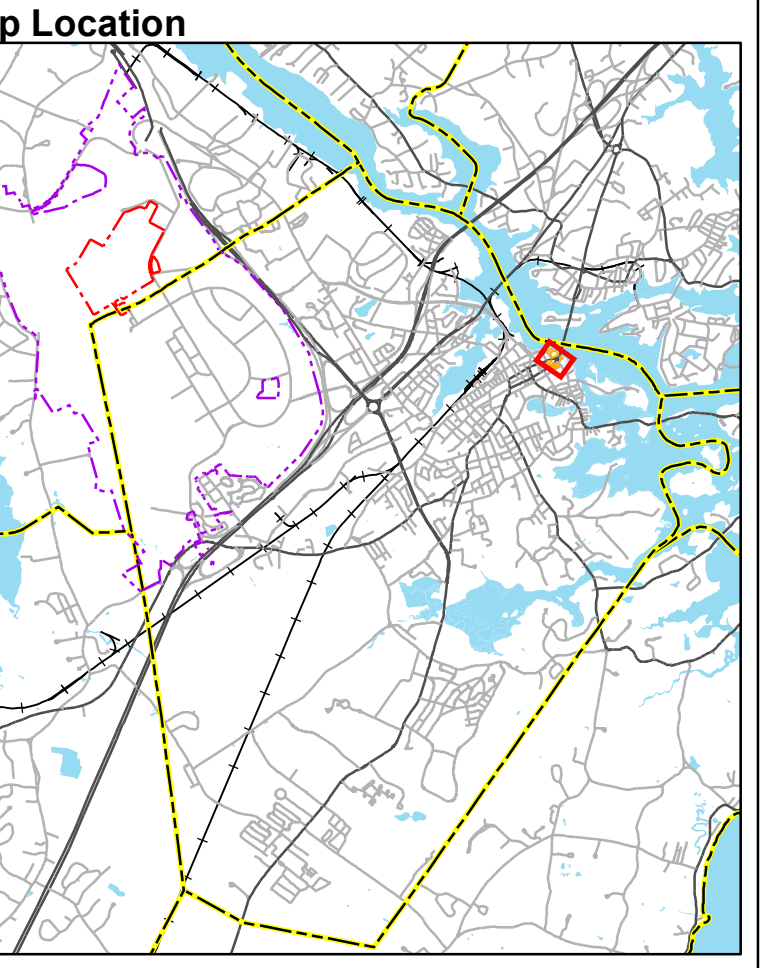
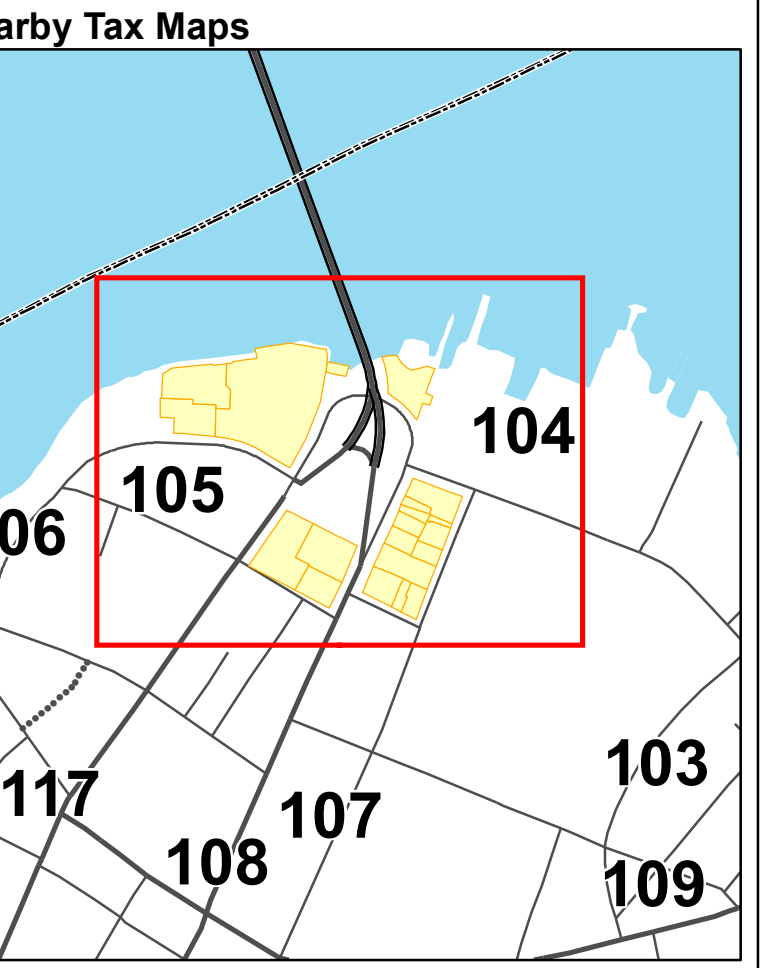


- Partial Legend**  
 See the cover sheet for the complete legend.
- 7-5A** Lot or lot-unit number
  - 2.56 ac Parcel area in acres (ac) or square feet (sf)
  - 75 Address number
  - 233-137 Parcel number from a neighboring map
  - 68' Parcel line dimension
  - SIMS AVE** Street name
  - Parcel/Parcel 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**



*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.*



Portsmouth, New Hampshire  
 2020  
**Tax Map 105**





## **Land Use Application: Garden Cottage**

315 Wibird St, Portsmouth NH, 03801

June 21, 2021

Contact:  
Kaarin Milne, Property Owner  
603-817-3345  
Kaarin.om@gmail.com

## Index

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| Project Narrative .....                   | 3-4 |
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| Floor Plans (existing) .....              | 9   |
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# Project Narrative

## Conditional Land Use Application- Garden Cottage

### 06/21/2021

Submitted by: Todd & Kaarin Milne, Property owners (10/17/2011–present)  
315 Wibird St., Portsmouth NH 03801  
Abutting streets: Willard, Hawthorne, Union, South

#### Accessory Building History

When we purchased this property, the accessory building was listed on the tax card as a studio. It included a narrow one-car garage, semi-enclosed screen porch, and a second floor finished studio. A previous owner, a contractor, had upgraded the building for use as a home office. It was wired for electricity, utilizing a gas furnace with a forced hot air heating system. Entry to the studio was through exterior stairs on the back of the building.

In 2017, we renovated the building to meet the needs of our growing family of five:

- Enclosed the stairs to make year-round use more appealing
- Moved the entrance to the first floor, facing our home, for safety
- Added a bathroom & electric water heater to create opportunity for self-contained use
- Ran water-lines to second floor for an art/utility sink (did not install)
- Installed a mini-split heater in the studio for efficiency, electric baseboard in hall, and electric heat fan in the bathroom for comfort
- Removed the furnace & ductwork to widen and increase usability of the garage space
- Capped the natural gas line at the front of the building for safety
- Sheetrocked the garage to make it clean & in keeping with the rest of the studio
- Added fireproof, spring-hinge door leading to garage (now yard tool/bike storage)
- Covered the right-exterior siding with intumescent paint for fire safety

**Since 2011, the studio has been used flexibly as:** a family room, home office, art studio & maker-space, virtual learning schoolhouse for our three kids (ages 13, 12 & 12), game room, and as a guest powder room for small outdoor gatherings during the pandemic.

**We'd like to preserve and increase the flexibility of the studio's use** to meet our family's ever-changing needs, which the garden cottage designation will support.

**Two examples of anticipated use are:** as a guest room for family visits (dad from Alaska, siblings from New Mexico & California) or as a guest-room/in-law studio for my mom who lives in Newmarket. My stepdad passed away last summer and it would be nice for her to stay with us during winter storms and, if the need and/or desire arise, to live in that space.

**At this time, we are not committing to specific construction,** unless any are deemed necessary to meet conditional use permit requirements for a garden cottage. In the near term, adding a futon, microwave and coffee pot would meet our guest room needs.



**Project Narrative (Continued)**  
**Conditional Land Use Application- Garden Cottage**  
**06/21/2021**

**Proposed possible uses will support the required findings:**

- The principal and accessory dwelling units will remain under common ownership.
- Our family occupies the primary dwelling and plans to reside here for the long term.
- Neither the principal or accessory dwelling will be used for prohibited business purposes. (i.e. We have zero interest in short-term tourism rental)
- The change in use will not result in excessive noise, traffic, or parking congestion.
  - The designation would not cause an increase in noise.
  - The designation would cause no increase in traffic.
  - Five 9'x16' off-street parking spaces (including garage) plus ample on-street parking exceed every-day & snow ban parking capacity
- The new use will not impact any neighbors.
  - The left side is 25' from the left property line, parallel to the neighboring yard.
  - The back is 43' from the property line, facing the open landscape area of the South/ Union condos.
  - The right side of the building abuts a neighbor's property and sits 6' within setback, with no windows on the second floor. The one window in the garage (fixed 20"x26") looks at the fence. Enclosing the stairs eliminated our view of the adjacent property from the studio, making their yard more private.
- No exterior changes are proposed.
  - The studio sits atop the driveway on the right property line, facing our house
  - To the left is a lawn and a flower, herb and vegetable garden.
  - To the rear is a A 50'x43' lawn with shrubs and plantings around the edges
  - Current lot coverage is 1,694 sq', representing 23.2% coverage
- The building currently "complies with the prescription for habitability provided in RSA 155 A:10 and is safe for use as a single occupancy dwelling as is." (see enclosed occupancy affidavit p. 8) No construction is currently planned.
- As allowed under Section 10.815.60, the Planning Board may modify a specific dimensional standard. We are requesting modification to the maximum allowed square footage, to be increased to 904 sq', the gross living area of the studio including halls, walls, stairs & garage.



ARCHITECTURE | ENGINEERING | PLANNING

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# 315 WIBIRD GARDEN COTTAGE

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Occupancy Affidavit

JUNE 18, 2021

SPITBANK DESIGN

601 Islington Street, Suite 202; Portsmouth, NH 03801

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June 18<sup>th</sup>, 2021

Todd and Kaarin Milne  
315 Wibird Street  
Portsmouth, NH 03801

RE: 315 WIBIRD GARDEN COTTAGE OCCUPANCY AFFIDAVIT

Kaarin,

Herein is a summary of my review of the conditions of occupancy for the proposed garden cottage on your property. In developing this affidavit, I relied on my 20+ years of experience in the industry in which I am educated and licensed both as a Registered Architect (NH Lic.# 4382), and a Professional Engineer (NH Lic.# 12207). In addition, and specific to this matter, I relied on my knowledge and experience with standards for habitability prescribed by the International Residential Code (IRC), as modified and enacted under RSA 155 A:10, and enforced by the City of Portsmouth.

#### SCOPE

This occupancy assessment is provided in support of your conditional use permit application for a Garden Cottage on your property at 315 Wibird Street. Specifically, the existing, detached accessory building on the property was assessed for use as a habitable structure. The standard of review was based on the 2015 IRC provisions for habitability.

#### DESCRIPTION

The existing accessory building is a two-story, wood-framed structure with wood shake siding, and an asphalt-shingled gabled roof. The first floor is 445 square feet (sq.-ft.) in area, and the second floor, inclusive of the stairway, is 459 sq.-ft. Of note, 240 sq.-ft. of the first floor is a finished garage/ storage space. The structure was modified and added onto as part of a renovation project in 2017. The addition was framed with engineered wood on an engineered frost-protected shallow foundation (FPSF) and included the construction of a full bathroom; installation of a potable hot water heater; and construction of an internal stairway system. Service to the building include electrical (with independent service breaker and panel), potable water service, sanitary sewer service, and natural gas.

#### PROPOSED USE

Proposed use of the building includes a combination of both continued use as an accessory structure, and as a single tenant occupied dwelling.





## ASSESSMENT

The structure, including the framing and foundation system were assessed for safe residential occupancy. The following sections of the code are specifically applicable to this matter:

- IRC R301.2; Wind, snow and seismic loading criteria
- IRC R301.4-301.5; Structural loading criteria
- IRC R321.1; Elevators
- IRC 602.10; Wall bracing/ lateral bracing

In addition, this analysis considered ASCE 7-10, *Minimum Design Loads for Buildings and Other Structures*, as prescribed by RSA 155 A:10.

Based on inspection of the existing building and review of the property information, the structural framing is sufficient to accommodate the anticipated lateral forces developed in the 115 VMPH wind zone (R301.2), and Seismic Design Category B, Site Class D (R301.2). In addition, the framing is sufficient so as to resist vertical (gravity) loads of 50 psf (snow), and the live loads and dead loads prescribed in R301.5/ TBL 301.5, as well as ASCE 7-10. Analysis of the adequacy and performance of the new framing system was based on deflection criteria prescribed in TBL R301.7.

The building has an intact envelope, consisting of insulated FPSF, walls and roof. There are 4 double hung windows on the first level and 12 double hung windows on the second level. All glazing meets the requirements of R308. In addition, there are two doors located on the first level, one on the west side and the other on the east side of the building, and an overhead garage door on the west side. The roof is a 6:12 pitch gabled roof with 3 inch (in.) rakes and 10 in. eaves. The exterior of the envelope is treated and protected from insect damage and decay in customary fashion commensurate with R317 and AWP A UI. Of note, the south side of the building encroaches into the established side-yard property line setback prescribed the City of Portsmouth (pre-existing condition). The south elevation of the building has no windows or doors, and the entire façade has been treated with intumescent paint of a Class A fire rating to mitigate fire spread.

Conditions of habitability include minimum room areas, heating, sanitation and egress. The building is configured with an open second floor which is currently being utilized as a studio space. The second floor is generally 20 feet (ft.) 6 in. x 22 ft. with vaulted ceilings in excess of 6 ft. – 8 in. in height, and in excess of the minimum room area and ceiling height requirements stipulated in R304. There is a full bath on the first floor with potable water supply and sanitary tie-in to the municipal sanitary system, and there is an electric hot water heater adjacent to the bathroom to supply heated potable water for sink and shower in accordance with R306 and R307. The interior of the building is equipped with installed lighting throughout, and also equipped with both an electric baseboard heating system and an air-to-air heat pump system (a.k.a. *mini-split*) which provides both heat and air conditioning commensurate with R303. Lastly, the building is equipped with two means of egress from both levels; two doors exiting on the first level, and an egress stairway and egress windows on the second floor. Additionally, the building is equipped with smoke alarms on both levels. The egress systems comply with R314 and R315.

The building is not equipped with a kitchen. Facilities are in place to readily accommodate a kitchenette on the second level. In addition, the services to the building are adequate to support the construction of a kitchen on the second floor without restriction.



The existing garage is 12 ft. x 20 ft. with finished walls and a concrete slab-on-grade (SOG) floor. The building is above the established FEMA flood plain (100 year storm) and the concrete SOG is in excellent condition. There are no restrictions to conversion of this space to a habitable space, as it meets all criteria for room size, configuration, and egress. Any renovations to this space for the purposes of habitability need only consider replacement of the garage door to enclose the envelope, and installation of habitability systems including heat supply and smoke alarms.

### CONCLUSION

The building complies with the prescription for habitability provided in RSA 155 A:10, and is safe for use as a single-occupancy dwelling, as is. Future considerations for the installation of a kitchen, and/or conversion of the garage to habitable space must consider heat, ventilation, smoke alarms, carbon monoxide alarms (if natural gas service is activated). All building services have excess capacity to support the construction of a kitchen on the second level, and the existing air-to-air heat pump heating system has more than enough excess capacity to support the conversion of the garage to a habitable space. As is, the second level is a safe, habitable space for dwelling; and the entire 904 sq.-ft. building is suitable for safe occupancy without need for improvement or repair.

If you have any questions or concerns regarding the content contained herein, or any other aspects of your project, please feel free to contact me at your convenience to discuss. Meanwhile, good luck and thank you for the opportunity to assist you on your project!

Sincerely,

A handwritten signature in black ink, appearing to read 'George W. Melchior', written in a cursive style.

George W. Melchior, RA, PE, LEED AP BD+C

**MILNE**  
**SEQUENCE**  
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 1000 10th Avenue  
 Suite 100  
 Denver, CO 80202  
 Phone: 303.733.1111  
 Email: info@milne-architects.com



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 Phone: 303.733.1111  
 Email: info@milne-architects.com



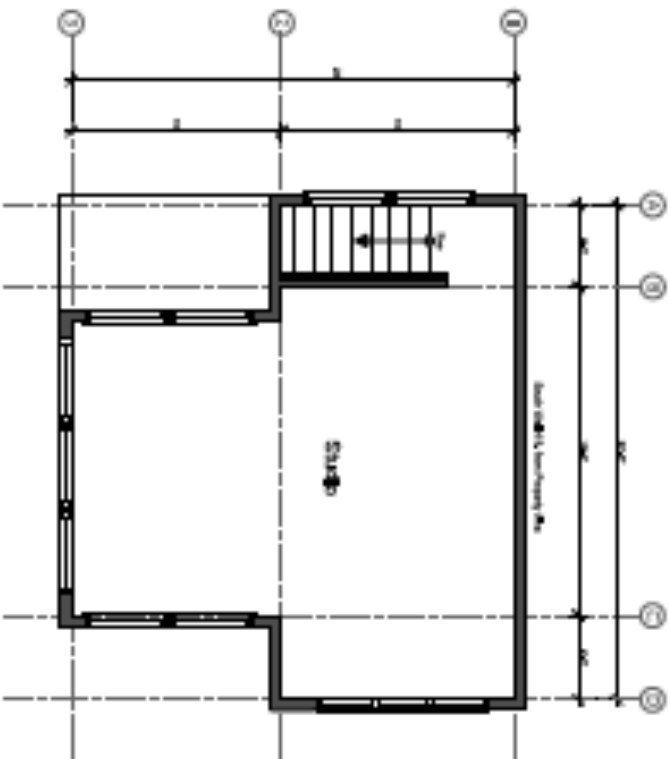
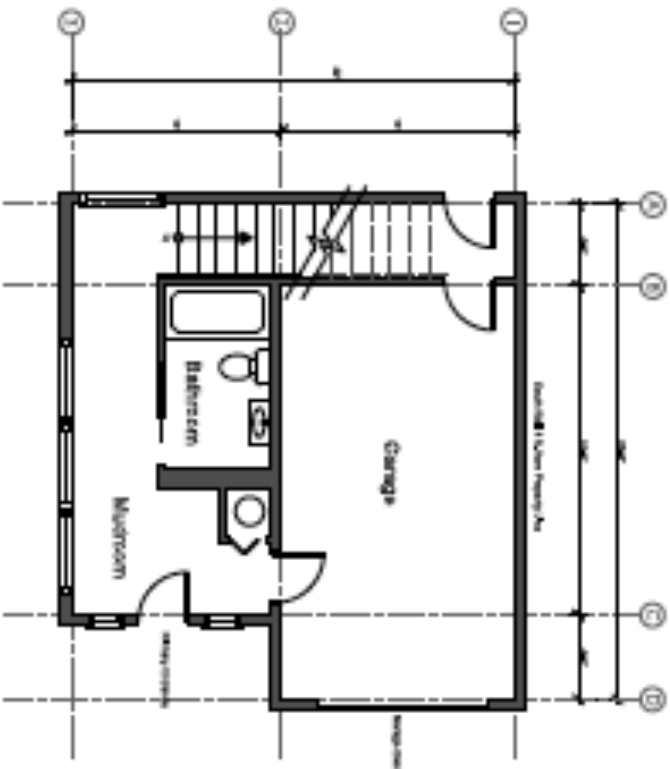
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| 223. 55 1/2" = 1'-0" |
| 224. 55 3/4" = 1'-0" |
| 225. 56" = 1'-0"     |
| 226. 56 1/4" = 1'-0" |
| 227. 56 1/2" = 1'-0" |
| 228. 56 3/4" = 1'-0" |
| 229. 57" = 1'-0"     |
| 230. 57 1/4" = 1'-0" |
| 231. 57 1/2" = 1'-0" |
| 232. 57 3/4" = 1'-0" |
| 233. 58" = 1'-0"     |
| 234. 58 1/4" = 1'-0" |
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| 237. 59" = 1'-0"     |
| 238. 59 1/4" = 1'-0" |
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| 245. 61" = 1'-0"     |
| 246. 61 1/4" = 1'-0" |
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| 249. 62" = 1'-0"     |
| 250. 62 1/4" = 1'-0" |
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| 261. 65" = 1'-0"     |
| 262. 65 1/4" = 1'-0" |
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| 264. 65 3/4" = 1'-0" |
| 265. 66" = 1'-0"     |
| 266. 66 1/4" = 1'-0" |
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| 268. 66 3/4" = 1'-0" |
| 269. 67" = 1'-0"     |
| 270. 67 1/4" = 1'-0" |
| 271. 67 1/2" = 1'-0" |
| 272. 67 3/4" = 1'-0" |
| 273. 68" = 1'-0"     |
| 274. 68 1/4" = 1'-0" |
| 275. 68 1/2" = 1'-0" |
| 276. 68 3/4" = 1'-0" |
| 277. 69" = 1'-0"     |
| 278. 69 1/4" = 1'-0" |
| 279. 69 1/2" = 1'-0" |
| 280. 69 3/4" = 1'-0" |
| 281. 70" = 1'-0"     |
| 282. 70 1/4" = 1'-0" |
| 283. 70 1/2" = 1'-0" |
| 284. 70 3/4" = 1'-0" |
| 285. 71" = 1'-0"     |
| 286. 71 1/4" = 1'-0" |
| 287. 71 1/2" = 1'-0" |
| 288. 71 3/4" = 1'-0" |
| 289. 72" = 1'-0"     |
| 290. 72 1/4" = 1'-0" |
| 291. 72 1/2" = 1'-0" |
| 292. 72 3/4" = 1'-0" |
| 293. 73" = 1'-0"     |
| 294. 73 1/4" = 1'-0" |
| 295. 73 1/2" = 1'-0" |
| 296. 73 3/4" = 1'-0" |
| 297. 74" = 1'-0"     |
| 298. 74 1/4" = 1'-0" |
| 299. 74 1/2" = 1'-0" |
| 300. 74 3/4" = 1'-0" |
| 301. 75" = 1'-0"     |
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| 304. 75 3/4" = 1'-0" |
| 305. 76" = 1'-0"     |
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| 309. 77" = 1'-0"     |
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| 317. 79" = 1'-0"     |
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| 325. 81" = 1'-0"     |
| 326. 81 1/4" = 1'-0" |
| 327. 81 1/2" = 1'-0" |
| 328. 81 3/4" = 1'-0" |
| 329. 82" = 1'-0"     |
| 330. 82 1/4" = 1'-0" |
| 331. 82 1/2" = 1'-0" |
| 332. 82 3/4" = 1'-0" |
| 333. 83" = 1'-0"     |
| 334. 83 1/4" = 1'-0" |
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| 337. 84" = 1'-0"     |
| 338. 84 1/4" = 1'-0" |
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| 342. 85 1/4" = 1'-0" |
| 343. 85 1/2" = 1'-0" |
| 344. 85 3/4" = 1'-0" |
| 345. 86" = 1'-0"     |
| 346. 86 1/4" = 1'-0" |
| 347. 86 1/2" = 1'-0" |
| 348. 86 3/4" = 1'-0" |
| 349. 87" = 1'-0"     |
| 350. 87 1/4" = 1'-0" |
| 351. 87 1/2" = 1'-0" |
| 352. 87 3/4" = 1'-0" |
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| 355. 88 1/2" = 1'-0" |
| 356. 88 3/4" = 1'-0" |
| 357. 89" = 1'-0"     |
| 358. 89 1/4" = 1'-0" |
| 359. 89 1/2" = 1'-0" |
| 360. 89 3/4" = 1'-0" |
| 361. 90" = 1'-0"     |
| 362. 90 1/4" = 1'-0" |
| 363. 90 1/2" = 1'-0" |
| 364. 90 3/4" = 1'-0" |
| 365. 91" = 1'-0"     |
| 366. 91 1/4" = 1'-0" |
| 367. 91 1/2" = 1'-0" |
| 368. 91 3/4" = 1'-0" |
| 369. 92" = 1'-0"     |
| 370. 92 1/4" = 1'-0" |
| 371. 92 1/2" = 1'-0" |
| 372. 92 3/4" = 1'-0" |
| 373. 93" = 1'-0"     |
| 374. 93 1/4" = 1'-0" |
| 375. 93 1/2" = 1'-0" |
| 376. 93 3/4" = 1'-0" |
| 377. 94" = 1'-0"     |
| 378. 94 1/4" = 1'-0" |
| 379. 94 1/2" = 1'-0" |
| 380. 94 3/4" = 1'-0" |
| 381. 95" = 1'-0"     |
| 382. 95 1/4" = 1'-0" |
| 383. 95 1/2" = 1'-0" |
| 384. 95 3/4" = 1'-0" |
| 385. 96" = 1'-0"     |
| 386. 96 1/4" = 1'-0" |
| 387. 96 1/2" = 1'-0" |
| 388. 96 3/4" = 1'-0" |
| 389. 97" = 1'-0"     |
| 390. 97 1/4" = 1'-0" |
| 391. 97 1/2" = 1'-0" |
| 392. 97 3/4" = 1'-0" |
| 393. 98" = 1'-0"     |
| 394. 98 1/4" = 1'-0" |
| 395. 98 1/2" = 1'-0" |
| 396. 98 3/4" = 1'-0" |
| 397. 99" = 1'-0"     |
| 398. 99 1/4" = 1'-0" |
| 399. 99 1/2" = 1'-0" |
| 400. 99 3/4" = 1'-0" |
| 401. 100" = 1'-0"    |

# A1.0

Floor Plans  
 (Existing)

1 Existing Ground Floor Plan

2 Existing Second Floor Plan





City of Portsmouth, NH

Property

315 Wibird St.

Print

Share

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Search

Advanced Search

Download Results

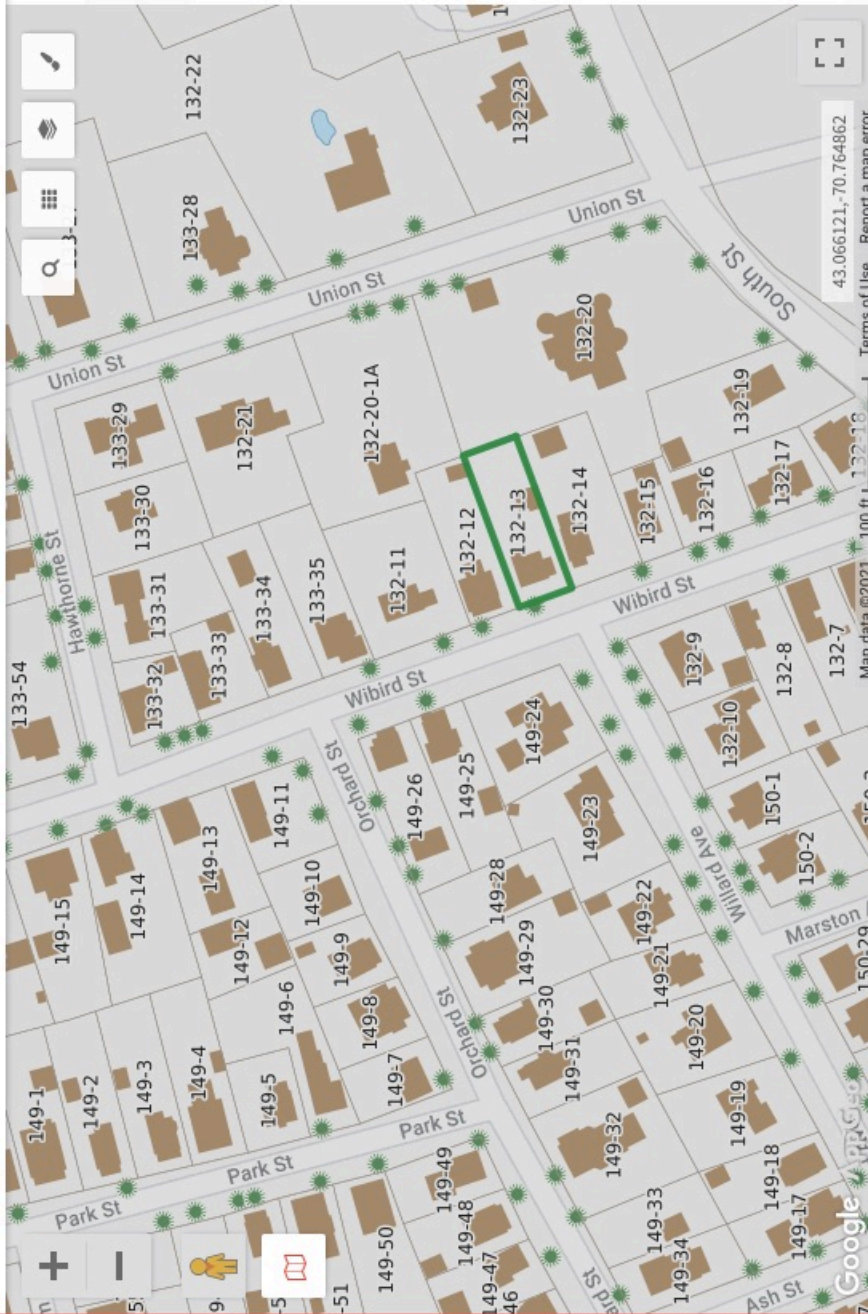
More

Showing 1-1 results. Scroll to see more.

315 WIBIRD ST

MILNE TODD A REVO TRUST (50% INT)

0132-0013-0000

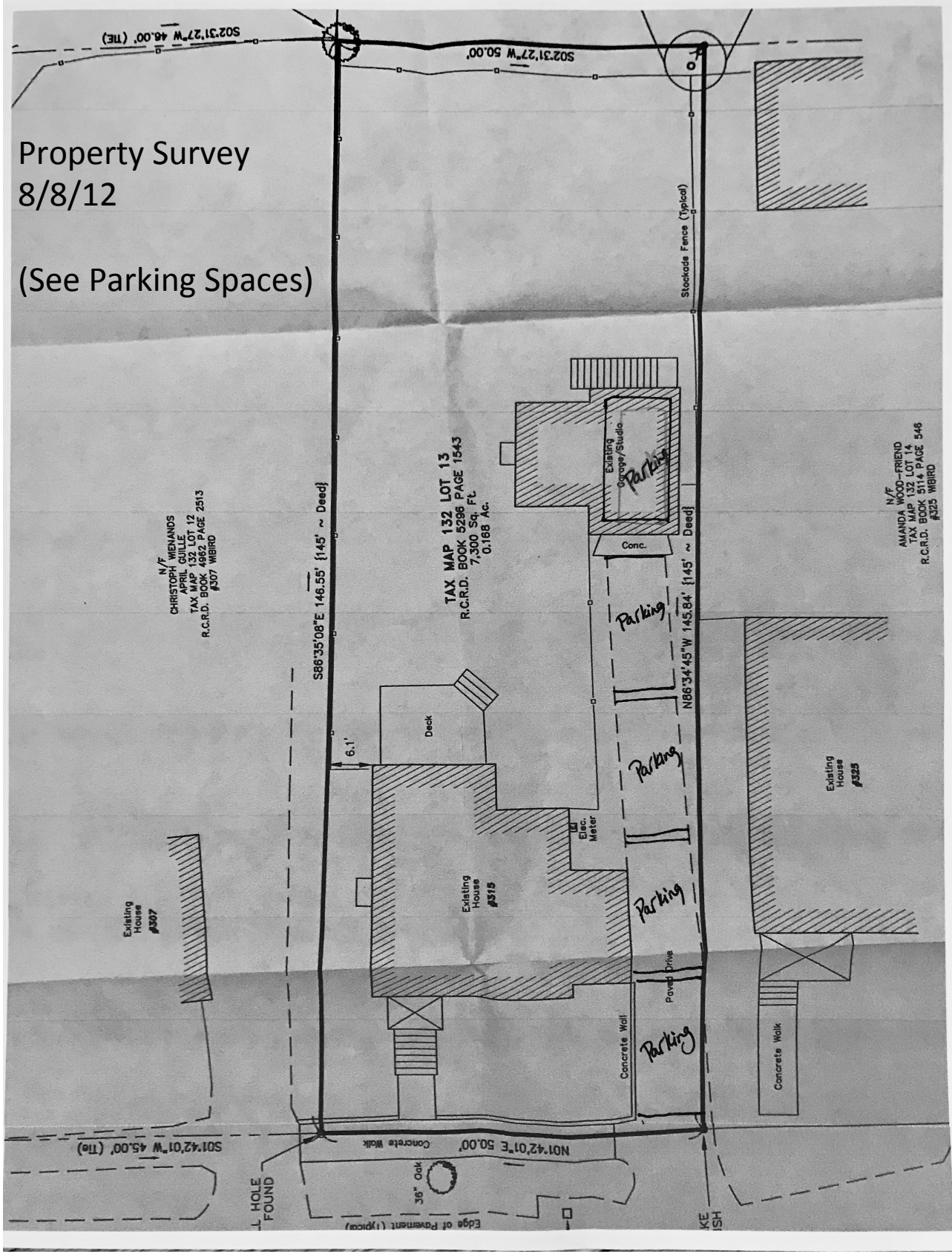


43.066121, -70.764862

Google

Property Survey  
8/8/12

(See Parking Spaces)



N/F  
CHRISTOPH WIENANDS  
APRIL, GUILLE  
TAX MAP 132 LOT 12  
R.C.R.D. BOOK 4862, PAGE 2513  
#307 WBIRO

TAX MAP 132 LOT 13  
R.C.R.D. BOOK 5296 PAGE 1543  
7,300 Sq. Ft.  
0.168 Ac.

N/F  
AMANDA WOOD-FRIEND  
TAX MAP 132 LOT 14  
R.C.R.D. BOOK 5114, PAGE 546  
#325 WBIRO

Existing House #307

Existing House #315

Existing House #325

L HOLE FOUND

36" Oak

KE ISH



**Exterior Photos  
315 Wibird St.  
Studio**

Street View



Front



Rear



Left Side



Right Side





# Interior Photos 315 Wibird St. Studio

Entry



Bathroom



Stairs



Studio



Garage



Under Stair Storage



# MDB DESIGN, LLC

Residential Design Services and Construction Consulting

City of Portsmouth  
Planning Department

## ACCESSORY DWELLING NARRATIVE

Regarding the proposal to create an "Accessory Dwelling" in an existing garage structure located at 50 Mt. Vernon Street, Portsmouth, NH.

- The principal residence at 50 Mt. Vernon Street is a single-family dwelling owned by the Susan Alex and is occupied by the owner. The dwelling will remain under her ownership. The accessory dwelling would be located in the existing garage structure, in which the second floor would be converted to living space. The garage is detached from the single family dwelling.

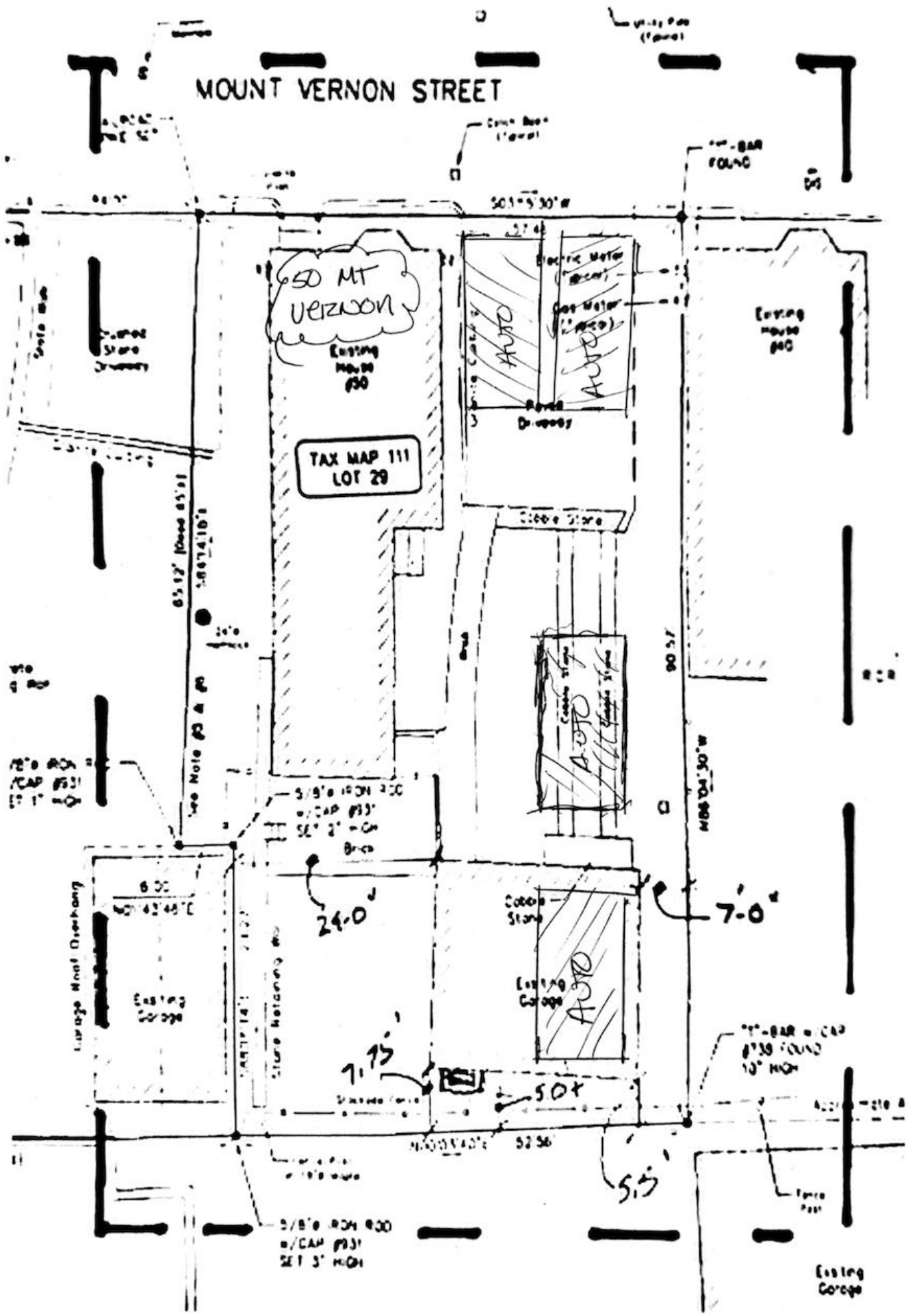
- The principal dwelling will remain occupied by the owner, Susan Alex.  
A copy of the city tax card proving ownership and residency will be included in the application.

- The proposal is for an accessory dwelling unit. No structure will be used for business, other than home occupations as permitted by the zoning ordinance.

- There is room for (4) parking spaces on the property as indicated in the site/parking plan. Therefore, no additional traffic or parking congestion would be created by the approval of the application.

- The applicants request a dimensional modification from Article 10.815.33 where no windows are allowed that exceed 8'-0" above grade. In this instance, the building proposed for conversion to an accessory dwelling would have (3) dormer windows in the elevation that face the adjacent property (the Beer property). There is a small barn structure on the adjacent lot that will provide screening and privacy from the view from these windows. The applicant ask that those windows be allowed to remain as designed in the interest of light and air and egress for the accessory dwelling.

MOUNT VERNON STREET



50 MT  
VERIZON  
Existing House #30

TAX MAP 111  
LOT 29

Auto  
Auto  
Auto  
Electric Meter  
Gas Meter  
Paved Driveway

Existing House #40

Auto  
Coke Store

Existing Garage  
Auto  
Coke Store

Existing Garage  
Large Metal Driveway

65' 12" (Road 85' 2")  
3,897.18'

50' 5' 30" W

90' 57"  
1,888' 04" 30" W

24'-0"

7'-0"

7'-7 1/2"

50' 4"

1,600' 14" 0"

52' 56"

5' 5"

5/8" RCH #00  
#/CAP #31  
SET 3" HIGH

7'-8" BAR # 200  
#30 FOUND  
10" HIGH

Force Post

Existing Garage

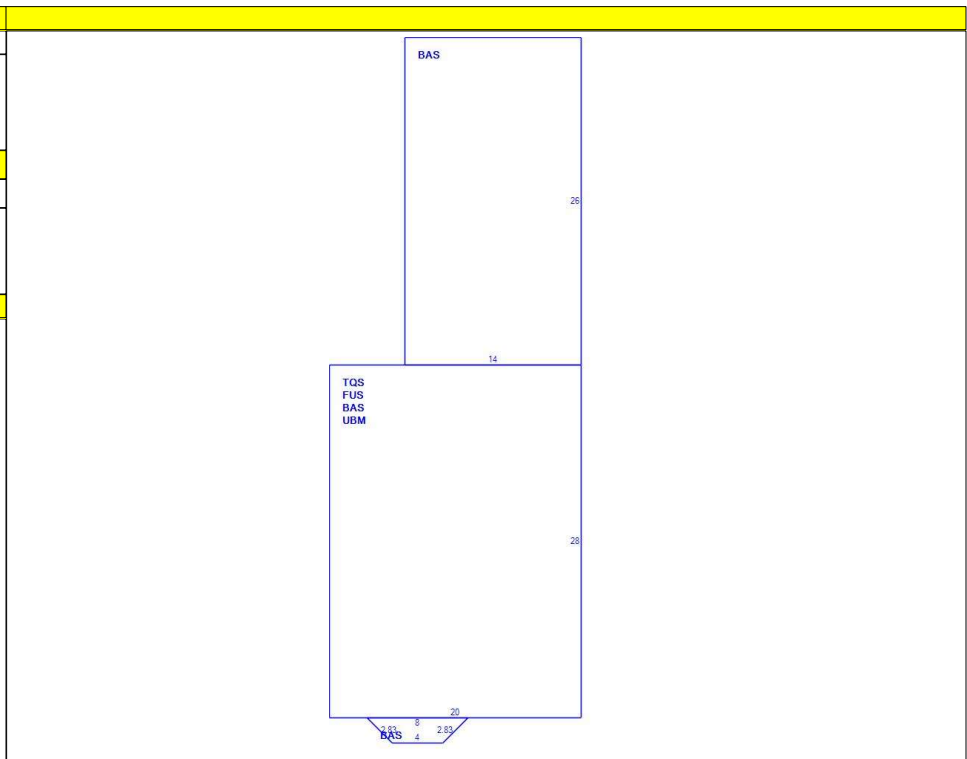


| CURRENT OWNER               |            | TOPO                            | UTILITIES         | STRT / ROAD     | LOCATION    | CURRENT ASSESSMENT |                        |   |          | 2229<br><br>PORTSMOUTH, NH<br><br><b>VISION</b> |        |           |                  |       |                          |            |            |         |
|-----------------------------|------------|---------------------------------|-------------------|-----------------|-------------|--------------------|------------------------|---|----------|---|--------|-----------|------------------|-------|--------------------------|------------|------------|---------|
| ALEX SUSAN LIVING TRUST     |            | 1 Level                         | 0 All Public      | 1 Paved         |             | Description        | Code                   | Assessed  | Assessed |   |        |           |                  |       |                          |            |            |         |
| ALEX SUSAN TRUSTEE          |            |                                 |                   | 8 2+ Off-St PKG |             | RESIDNTL           | 1010                   | 256,800   | 256,800  |   |        |           |                  |       |                          |            |            |         |
| 50 MT VERNON ST             |            |                                 |                   |                 |             | RES LAND           | 1010                   | 345,700   | 345,700  |   |        |           |                  |       |                          |            |            |         |
| PORTSMOUTH NH 03801         |            | <b>SUPPLEMENTAL DATA</b>        |                   |                 |             | RESIDNTL           | 1010                   | 12,200  | 12,200   |   |        |           |                  |       |                          |            |            |         |
|                             |            | Alt Prcl ID 0111-0029-0000-0000 |                   | CONDO C         |             |                    |                        |   |          |   |        |           |                  |       |                          |            |            |         |
|                             |            | OLDACTN 40090                   |                   | INLAW Y/        |             |                    |                        |   |          |   |        |           |                  |       |                          |            |            |         |
|                             |            | PHOTO                           |                   | LOT SPLIT       |             |                    |                        |   |          |   |        |           |                  |       |                          |            |            |         |
|                             |            | WARD                            |                   | 2015 Reva JM    |             |                    |                        |   |          |   |        |           |                  |       |                          |            |            |         |
|                             |            | PREC.                           |                   | Ex/Cr Appli     |             |                    |                        |   |          |   |        |           |                  |       |                          |            |            |         |
|                             |            | 1/2 HSE                         |                   |                 |             |                    |                        |   |          |   |        |           |                  |       |                          |            |            |         |
|                             |            | GIS ID 33264                    |                   | Assoc Pid#      |             |                    |                        |   |          |   |        |           |                  |       |                          |            |            |         |
|                             |            |                                 |                   |                 |             | Total              |                        | 614,700   | 614,700  |   |        |           |                  |       |                          |            |            |         |
| RECORD OF OWNERSHIP         |            | BK-VOL/PAGE                     | SALE DATE         | Q/U             | V/I         | SALE PRICE         | VC                     | PREVIOUS ASSESSMENTS (HISTORY)                                      |          |   |        |           |                  |       |                          |            |            |         |
| ALEX SUSAN LIVING TRUST     |            | 5865 2136                       | 10-26-2017        | U               | I           | 0                  | 38                     | Year  | Code     | Assessed  | Year   | Code      | Assessed         | Year  | Code                     | Assessed   |            |         |
| ALEX SUSAN                  |            | 5865 2134                       | 10-26-2017        | U               | I           | 0                  | 38                     | 2020  | 1010     | 256,800   | 2019   | 1010      | 256,800          | 2019  | 1010                     | 256,800    |            |         |
| ALEX SUSAN LIVING TRUST     |            | 5457 2307                       | 07-08-2013        | U               | I           | 0                  |                        |   | 1010     | 345,700   |        | 1010      | 345,700          |       | 1010                     | 345,700    |            |         |
| ALEX SUSAN L                |            | 5441 2018                       | 05-23-2013        | U               | I           | 0                  |                        |   | 1010     | 12,200  |        | 1010      | 12,200           |       | 1010                     | 12,200     |            |         |
| ALEX TED W                  |            | 2938 2570                       | 08-14-1992        |                 | I           | 116,000            | 0                      |   |          |   |        |           |                  |       |                          |            |            |         |
|                             |            | Total                           |                   |                 |             |                    |                        | 614700  |          | Total   |        | 614700    |                  | Total |                          | 614700     |            |         |
| EXEMPTIONS                  |            |                                 | OTHER ASSESSMENTS |                 |             |                    |                        | This signature acknowledges a visit by a Data Collector or Assessor |          |   |        |           |                  |       |                          |            |            |         |
| Year                        | Code       | Description                     | Amount            | Code            | Description | Number             | Amount                 | Comm  | Int      |   |        |           |                  |       |                          |            |            |         |
|                             |            | Total                           |                   |                 |             | 0.00               |                        |   |          |   |        |           |                  |       |                          |            |            |         |
| ASSESSING NEIGHBORHOOD      |            |                                 |                   |                 |             |                    |                        |   |          | <b>APPRAISED VALUE SUMMARY</b>                  |        |           |                  |       |                          |            |            |         |
| Nbhd                        | Nbhd Name  |                                 | B                 |                 | Tracing     |                    | Batch                  |   |          | Appraised Bldg. Value (Card)                    |        |           |                  |       | 256,800                  |            |            |         |
| 103B                        |            |                                 |                   |                 |             |                    |                        |   |          | Appraised Xf (B) Value (Bldg)                   |        |           |                  |       | 0                        |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | Appraised Ob (B) Value (Bldg)                   |        |           |                  |       | 12,200                   |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | Appraised Land Value (Bldg)                     |        |           |                  |       | 345,700                  |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | Special Land Value                              |        |           |                  |       | 0                        |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | Total Appraised Parcel Value                    |        |           |                  |       | 614,700                  |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | Valuation Method                                |        |           |                  |       | C                        |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | Total Appraised Parcel Value                    |        |           |                  |       | 614,700                  |            |            |         |
| BUILDING PERMIT RECORD      |            |                                 |                   |                 |             |                    |                        |   |          | VISIT / CHANGE HISTORY                          |        |           |                  |       |                          |            |            |         |
| Permit Id                   | Issue Date | Type                            | Description       | Amount          | Insp Date   | % Comp             | Date Comp              | Comments  |          | Date  | Id     | Type      | Is               | Cd    | Purpost/Result           |            |            |         |
| 26211                       | 11-27-2017 | EL                              | Electric          | 500             | 01-24-2018  | 100                |                        | 2ND FLOOR BEDROOM REM   |          | 08-14-2018                                      | EH     |           |                  | FR    | Field Review Stat Update |            |            |         |
| 25886                       | 11-06-2017 | BP                              |                   | 8,500           | 01-24-2018  | 100                |                        | RESIDENTIAL ALTER: SECO   |          | 01-24-2018                                      | BH     | 02        |                  | 50    | Building Permit          |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | 09-06-2017                                      | PM     |           |                  | 39    | Appointment - no-show    |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | 07-07-2017                                      | PM     |           |                  | FR    | Field Review Stat Update |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | 02-05-2015                                      | RT     |           |                  | FR    | Field Review Stat Update |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | 03-20-2013                                      | JM     |           |                  | 00    | Measur+Listed            |            |            |         |
|                             |            |                                 |                   |                 |             |                    |                        |   |          | 10-20-2010                                      | GO     | 03        | 1                | HC    | HEARING CHANGE           |            |            |         |
| LAND LINE VALUATION SECTION |            |                                 |                   |                 |             |                    |                        |   |          |   |        |           |                  |       |                          |            |            |         |
| B                           | Use Code   | Description                     | Zone              | Frontage        | Depth       | Land Units         | Unit Price             | Size Ad   | Site     | Cond.   | ST Idx | S.I. Adj. | Notes- Adj       |       | Special Pricing          | Adj Unit P | Land Value |         |
| 1                           | 1010       | SINGLE FAM M                    | GRB               |                 |             | 4,330 SF           | 31.94                  | 1.0000  | 1        | 1.00  | 103B   | 2.500     | 0                |       | 1.0000                   | 79.84      | 345,700    |         |
| Total Card Land Units       |            |                                 |                   |                 | 0.099       | AC                 | Parcel Total Land Area |   |          |   |        | 0.0994    | Total Land Value |       |                          |            |            | 345,700 |

| CONSTRUCTION DETAIL |     |                | CONSTRUCTION DETAIL (CONTINUED) |    |             |
|---------------------|-----|----------------|---------------------------------|----|-------------|
| Element             | Cd  | Description    | Element                         | Cd | Description |
| Style:              | 06  | Conventional   |                                 |    |             |
| Model               | 01  | Residential    |                                 |    |             |
| Grade:              | B   | B              |                                 |    |             |
| Stories:            | 2.5 |                |                                 |    |             |
| Occupancy           | 1   |                |                                 |    |             |
| Exterior Wall 1     | 11  | Clapboard      |                                 |    |             |
| Exterior Wall 2     |     |                |                                 |    |             |
| Roof Structure:     | 03  | Gable/Hip      |                                 |    |             |
| Roof Cover          | 03  | Asph/F Gls/Cmp |                                 |    |             |
| Interior Wall 1     | 03  | Plastered      |                                 |    |             |
| Interior Wall 2     | 05  | Drywall/Sheet  |                                 |    |             |
| Interior Flr 1      | 09  | Pine/Soft Wood |                                 |    |             |
| Interior Flr 2      | 12  | Hardwood       |                                 |    |             |
| Heat Fuel           | 03  | Gas            |                                 |    |             |
| Heat Type:          | 05  | Steam          |                                 |    |             |
| AC Type:            | 01  | None           |                                 |    |             |
| Total Bedrooms      | 03  | 3 Bedrooms     |                                 |    |             |
| Total Bthrms:       | 2   |                |                                 |    |             |
| Total Half Baths    | 0   |                |                                 |    |             |
| Total Xtra Fixtrs   | 2   |                |                                 |    |             |
| Total Rooms:        | 7   |                |                                 |    |             |
| Bath Style:         | 1   | Avg Quality    |                                 |    |             |
| Kitchen Style:      | 1   | Avg Quality    |                                 |    |             |
| Kitchen Gr          |     |                |                                 |    |             |
| WB Fireplaces       | 0   |                |                                 |    |             |
| Extra Openings      | 0   |                |                                 |    |             |
| Metal Fireplace     | 0   |                |                                 |    |             |
| Extra Openings      | 0   |                |                                 |    |             |
| Bsmt Garage         |     |                |                                 |    |             |

| OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B) |             |     |       |            |        |          |      |       |            |             |
|--|-------------|-----|-------|------------|--------|----------|------|-------|------------|-------------|
| Code   | Description | L/B | Units | Unit Price | Yr Blt | Cond. Cd | % Gd | Grade | Grade Adj. | Appr. Value |
| SHP5   | W/IMPROV G  | L   | 480   | 34.00      | 1998   | G        | 75   | C     | 1.00       | 12,200      |

| BUILDING SUB-AREA SUMMARY SECTION |                       |             |            |          |           |                |
|-----------------------------------|-----------------------|-------------|------------|----------|-----------|----------------|
| Code                              | Description           | Living Area | Floor Area | Eff Area | Unit Cost | Undeprec Value |
| BAS                               | First Floor           | 936         | 936        | 936      | 178.37    | 166,956        |
| FUS                               | Upper Story, Finished | 560         | 560        | 560      | 178.37    | 99,888         |
| TQS                               | Three Quarter Story   | 420         | 560        | 420      | 133.78    | 74,916         |
| UBM                               | Basement, Unfinished  | 0           | 560        | 112      | 35.67     | 19,978         |
| Ttl Gross Liv / Lease Area        |                       | 1,916       | 2,616      | 2,028    |           | 361,738        |



MDB DESIGN/BUILD LLC  
 Construction Consulting  
 Residential Design  
 81 Lincoln Ave. Portsmouth, N.H. 03801  
 603-234-7398

CONSULTANTS

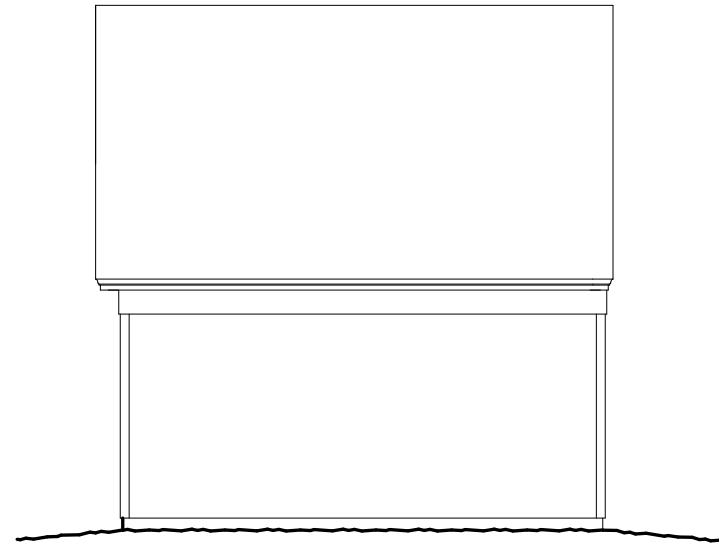
ALEX RESIDENCE  
 ADU PROPOSAL  
 50 MT. VERNON STREET  
 PORTSMOUTH, NH 03801

|         |                  |
|---------|------------------|
| 4/13/21 | PRELIM. DRAWINGS |
| DATE    | DESCRIPTION      |

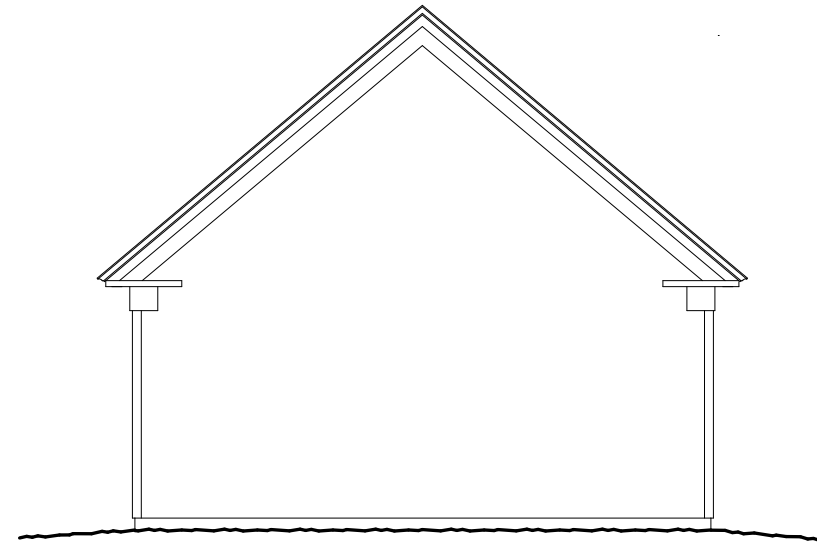
SHEET TITLE

EXISTING  
 ELEVATIONS

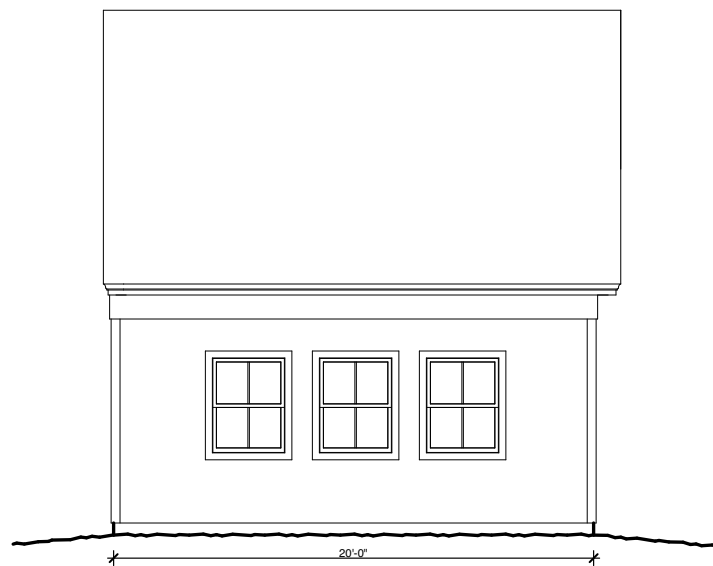
EX1



**3** *SIDE ELEVATION* 1/8" = 1'-0"



**4** *REAR ELEVATION* 1/8" = 1'-0"



**2** *SIDE ELEVATION* 1/8" = 1'-0"



**1** *FRONT ELEVATION* 1/8" = 1'-0"

















MDB DESIGN/BUILD LLC  
 Construction Consulting  
 Residential Design  
 81 Lincoln Ave. Portsmouth, N.H. 03801  
 603-234-7398

CONSULTANTS

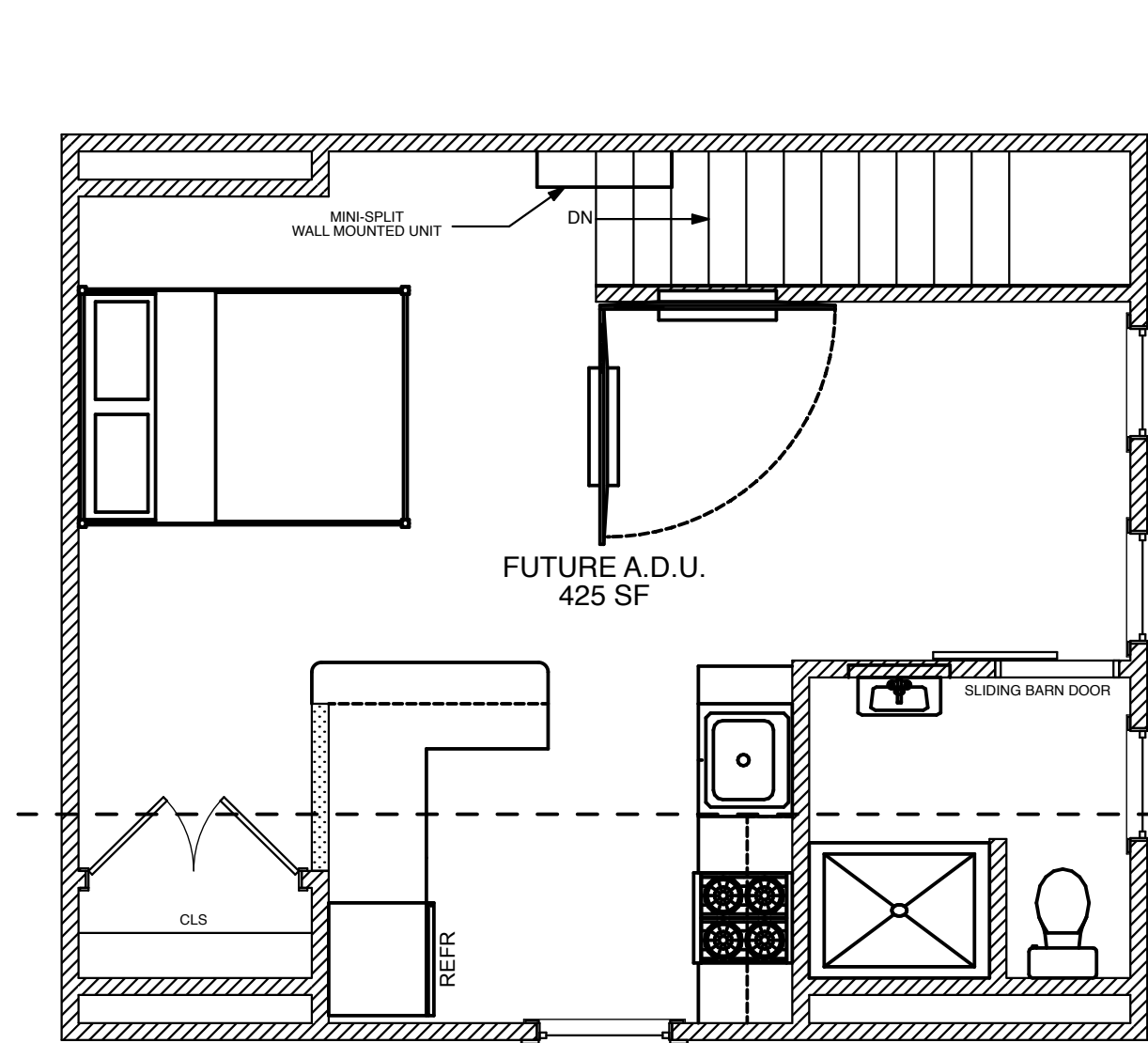
ALEX RESIDENCE  
 ADU PROPOSAL  
 50 MT. VERNON STREET  
 PORTSMOUTH, NH 03801

|         |                  |
|---------|------------------|
| 4/13/21 | PRELIM. DRAWINGS |
| DATE    | DESCRIPTION      |

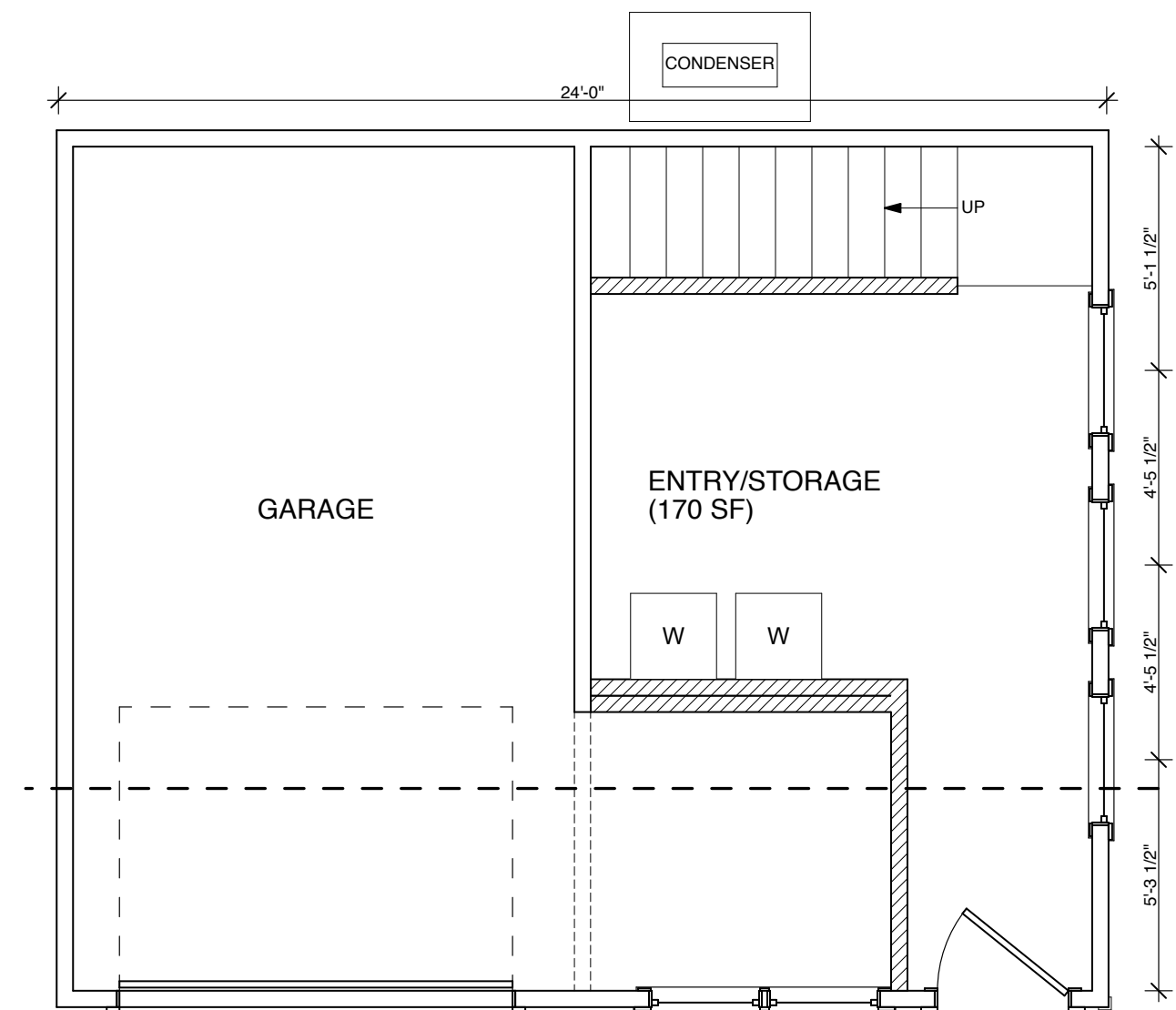
SHEET TITLE

PROPOSED  
 FLOOR PLANS

A1



2 SECOND FLOOR PLAN 1/4" = 1'-0"



1 FIRST FLOOR PLAN 1/4" = 1'-0"

CONSULTANTS

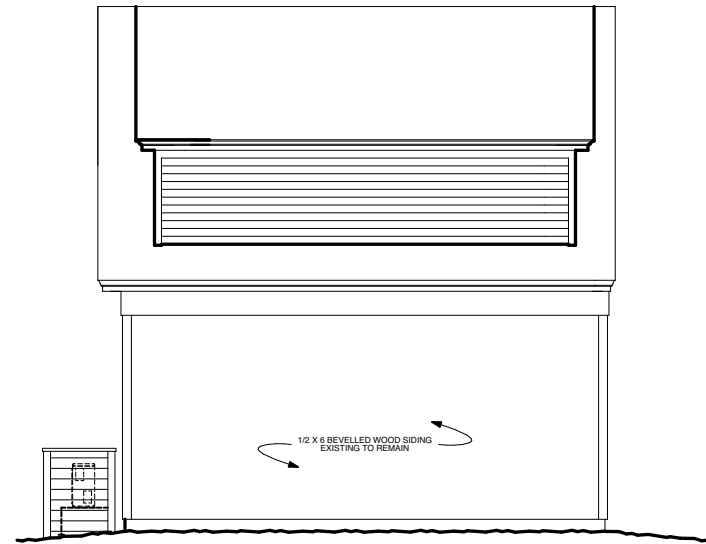
ALEX RESIDENCE  
 ADU PROPOSAL  
 50 MT. VERNON STREET  
 PORTSMOUTH, NH 03801

|         |                  |
|---------|------------------|
| 4/13/21 | PRELIM. DRAWINGS |
| DATE    | DESCRIPTION      |

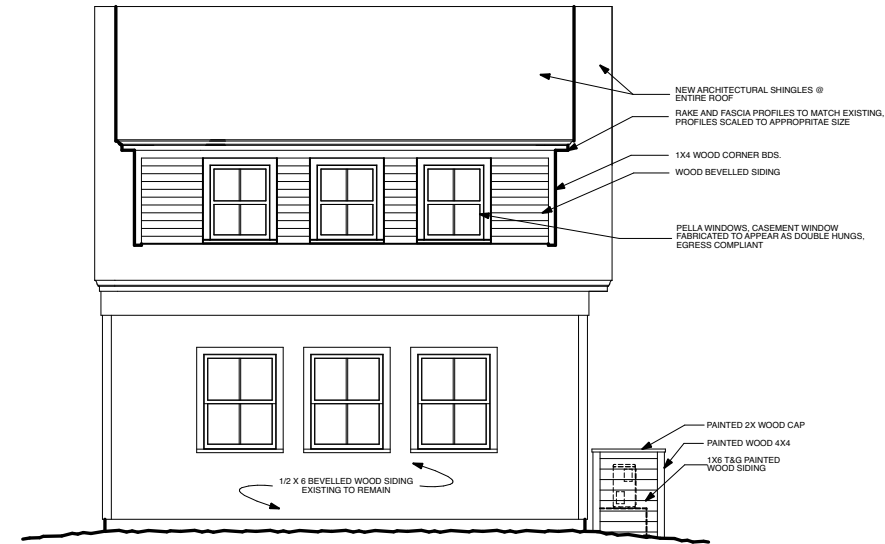
SHEET TITLE

PROPOSED  
 ELEVATIONS

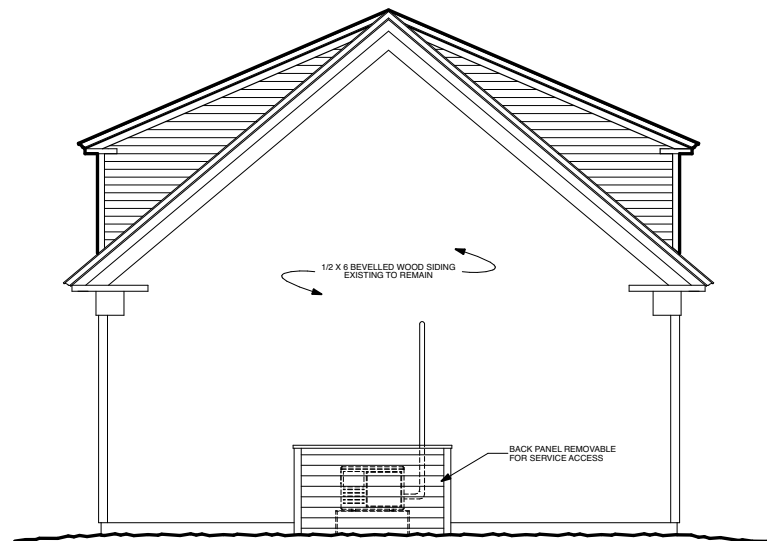
A2



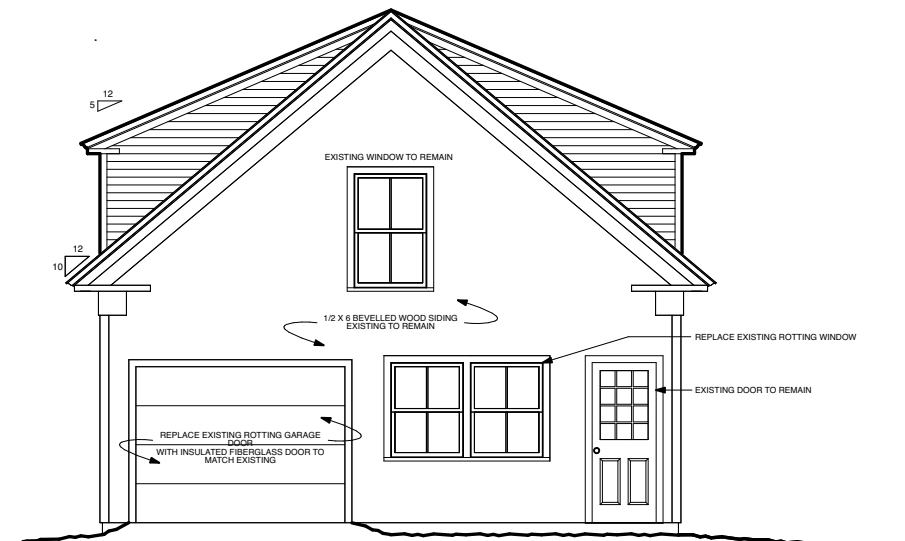
**4** NORTH ELEVATION 1/8" = 1'-0"



**3** SOUTH ELEVATION 1/8" = 1'-0"



**2** EAST ELEVATION 1/8" = 1'-0"



**1** WEST ELEVATION 1/8" = 1'-0"



# 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 3<sup>rd</sup> Floor  
Portsmouth, NH 03801

**RE: Conceptual Application  
1169 & 1171 Sagamore Avenue, Portsmouth, NH  
Tax Map 224, Lots 4 & 15  
JBE Project No. 21047**

Dear Mr. Legg,

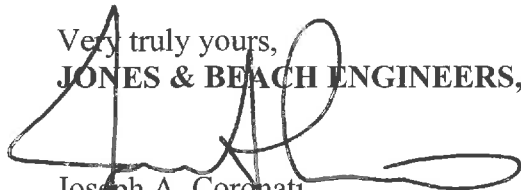
Jones & Beach Engineers, Inc., respectfully submits a Conceptual Application on behalf of the applicant, The Sagamore Group, LLC. The intent of this application is to remove existing structures as shown on Sheet C1 and construct a 10-unit condominium complex. The units are 2 duplex style homes with 6 single-family homes. All units will have a 2-car garage with space for 2 cars in the driveways. The private driveway is proposed as one-way traffic and will be 20' wide. This project to be served by electric, gas, municipal water & sewer.

The following items are provided in support of this Application:

1. Completed Conceptual Application (submitted online).
2. Letters of Authorization.
3. Test Pits.
4. Current Deeds.
5. Architectural Plans.
6. Two (2) Full Size Plan Sets Folded.
7. One (1) Half Size Plan Set Folded.

If you have any questions or need any additional information, please feel free to contact our office. Thank you very much for your time.

Very truly yours,  
**JONES & BEACH ENGINEERS, INC.**



Joseph A. Coronati  
Vice President

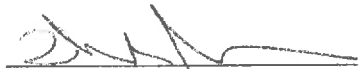
cc: Michael Garrepy, (via email)  
Mick Khavari (via email)  
Michael Fecteau (via email)  
Tim Phoenix, Hoefle, Phoenix & Gormley & Roberts (via email)

**Letter of Authorization**

The Sagamore Group, LLC, 4 Merrill Industrial Drive, Hampton, NH, 03842, USA, developer of property located in Portsmouth, NH, known as Tax Map 224, Lots 14 & 15, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on our behalf concerning the subject properties. The parcels are located at 1169 & 1171 Sagamore Avenue in Portsmouth, NH.

We hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

The Sagamore Group, LLC

  
Daniel Jackson, Member  
Duly authorized



5/4/21  
Date



### Letter of Authorization

We, John & Colleen Hebert, 54 Pioneer Road, Rye, NH 03870, owners of property located in Portsmouth, NH, known as Tax Map 224, Lot 15, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on 1169 Sagamore Avenue in Portsmouth, NH.

We hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

|         |  |      |
|---------|--|------|
| Witness | <br>dotloop verified<br>05/04/21 2:47 PM EDT<br>SE1G-MUAR-1SWP-P2NG | Date |
| Witness | <br>dotloop verified<br>05/04/21 2:49 PM EDT<br>Q1BG-ZMLM-FJPK-BAFX | Date |

### Letter of Authorization

I, Colleen Hebert, 54 Pioneer Road, Rye, NH 03870, owner of property located in Portsmouth, NH, known as Tax Map 224, Lot 14, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on 1171 Sagamore Avenue in Portsmouth, NH.

I hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.

\_\_\_\_\_  
Witness

*Colleen Hebert* dotloop verified  
05/04/21 2:49 PM EDT  
RL55-SIAZ-YME-YU8D

\_\_\_\_\_  
Colleen Hebert

\_\_\_\_\_  
Date

KNOW ALL MEN BY THESE PRESENTS, That Norman J. Smith, of P.O. Box 95, Portsmouth, County of Rockingham and State of New Hampshire,

BK2418 P0173

for consideration paid, grant to Colleen M. Hebert of 1169 Sagamore Avenue, Portsmouth, County of Rockingham and State of New Hampshire,

with warranty covenants

A certain parcel of land, together with the buildings thereon, situate on the Westerly side of Sagamore Avenue, so-called, in Portsmouth in the County of Rockingham and State of New Hampshire, more particularly bounded and described as follows:

Beginning in the Westerly sideline of the Avenue at land now or formerly of Haven L. Joy; thence running Westerly by other land of Joy, Two Hundred Ninety-three and Five Tenths (293.5) feet to land now or formerly of Ralph W. Junkins Est. et als; thence turning and running Northerly by other land of Junkins et als One Hundred Twenty-six and Thirty-two Hundredths (126.32) feet to a point at other land now or formerly of John J. and Harriet Scammon; thence turning and running Easterly by other land of Scammon Three Hundred (300) feet, more or less, to the Westerly sideline of the Avenue, thence running Southerly by the sideline Forty-seven and Sixty-five Hundredths (47.65) feet to a point, thence running Southeasterly by the sideline Forty-nine and Eight Hundredths (49.08) feet to land of Joy which is the point of beginning.

Being the same premises conveyed to Norman J. Smith and Janet S. Smith by deed of John J. Scammon et al dated July 24, 1954 and recorded in the Rockingham County Registry of Deeds in Book 1323 Page 324.



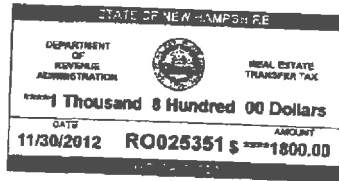
Norman J. Smith, being single ~~husband~~ ~~XXXXXXXXXXXXXXXXXXXX~~ ~~and grants~~ all rights of ~~curtesy~~ ~~dower~~ and ~~homestead~~ and other interests therein  
Witness, my hand ~~XXXXXXXX~~ this 29th day of July 1982.

Witness  
*Judith A. Gile* *Norman J. Smith*  
Norman J. Smith  
L.S.  
L.S.  
L.S.

State of New Hampshire  
Rockingham ss: July 29 A.D. 1982  
Personally appeared Norman J. Smith,  
known to me, or satisfactorily proven to be the person whose name  
subscribed to the foregoing instrument and acknowledged that he executed the same  
for the purposes therein contained  
Before me, *Judith A. Gile*  
Notary Public

14391  
JUL 29 2 56 PM '82





061594

**WARRANTY DEED**

**KNOW ALL PERSONS BY THESE PRESENTS THAT I, ROBERT F. SCAMMON, JR.**, single and not a party to a civil union, of 1169 Sagamore Avenue, Portsmouth, New Hampshire, 03801

For consideration paid, grant to **JOHN J. HEBERT AND COLLEEN HEBERT**, husband and wife, of 54 Pioneer Road, Rye, New Hampshire, 03870, as joint tenants with rights of survivorship,

With Warranty Covenants, the following described premises situate in Portsmouth, Rockingham County, New Hampshire:

A certain lot or parcel of land with the buildings thereon situate on Sagamore Avenue, City of Portsmouth, County Rockingham and State of New Hampshire, bounded and described as follows:

Beginning at the concrete bound at the Northeasterly corner of the within described lot, the said bound being Four Hundred Seventy-nine (479) feet southerly along said Sagamore Avenue from the southeasterly corner of land now or formerly of Charles F. Moody; thence running Southerly twenty-four (24) degrees thirty-four (34) minutes west along said Sagamore Avenue one hundred (100) feet to a stake in the stone wall at other land now or formerly of Allen B. Keen; thence turning and running N 83° 43' W by other land of said Keen 300 feet to a stake; thence turning and running N 24° 30' E 100 feet by land now or formerly of Frank E. Brooks, etals; thence turning and running S 83° 43' E by land of said Brooks and other 300 feet to Sagamore Avenue and being the point of beginning.

Also a parcel of land situated on Sagamore Avenue in said Portsmouth adjoining and lying on the northerly side of the above described parcel and bounded and described as follows:

Beginning at a concrete bound at the southeasterly corner of these premises at land described above, said bound being 479 feet southerly along said Sagamore Avenue from the southeasterly corner of land now or formerly of Charles F. Moody; thence running N 83° 43' W by the above described parcel 300 feet to a point of land now or formerly of Frank E Brooks et als; thence turning and running N 24° 30' E by other land of said Brooks and others 300 feet, more or less to

2012 NOV 30 PM 1:45

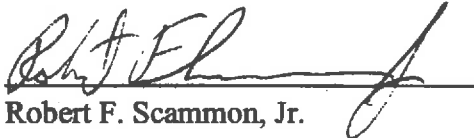
ROCKINGHAM COUNTY  
 REGISTRY OF DEEDS

said Sagamore Avenue; thence turning and running southerly along said Sagamore Avenue 50 feet to said concrete bound and being the point of beginning.

Also a parcel of land situated on Sagamore Avenue in said Portsmouth and bounded and described as follows: Beginning at the northeasterly corner of the herein described parcel at the intersection of the westerly sideline of said Sagamore Avenue and land now or formerly of Allen B. Keen, said point being 100 feet S 24° 34' W along said Sagamore Avenue from the concrete bound aforementioned; thence running southerly along said Avenue 25 feet to land now or formerly of Frank E. Brooks, et als; thence turning and running N 83° 43' W by land now or formerly Frank E. Brooks, et als 300 feet, more or less, to a point; thence turning and running N 24° 30' E 25 feet by land of said Brooks, et als, to a stake at other land now or formerly of Allen B. Keen; thence turning and running Southeast 83° 43' E by other land of said Keen 300 feet to Sagamore Avenue and being the point of beginning. This parcel adjoining and lying on the southerly side of the first described parcel herein.

Being the same premises conveyed to the within Grantor by deed of Barbara Scammon dated April 25, 1995, recorded in Rockingham County Registry of Deeds, Book 3097, Page 1715.

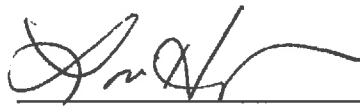
Signed this 30<sup>th</sup> day of November, 2012.

  
Robert F. Scammon, Jr.

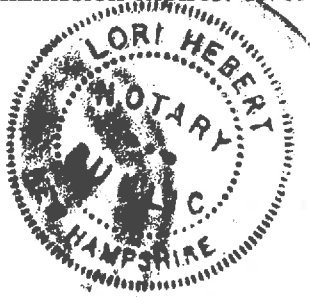
STATE OF NEW HAMPSHIRE  
ROCKINGHAM COUNTY

Personally appeared this 30<sup>th</sup> day of November \_\_\_\_\_, 2012, \_\_\_\_\_ Robert F. Scammon, Jr. \_\_\_\_\_, who acknowledged that he/she/they executed the foregoing instrument as his/her/their free act and deed for the purposes contained herein.

Before me,

  
Lori Hebert, Notary Public

My commission expires: 05/09/2017

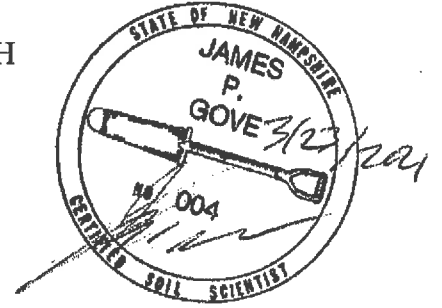




GOVE ENVIRONMENTAL SERVICES, INC.

TEST PIT DATA

Project 1169 & 1171 Sagamore Avenue, Portsmouth, NH  
 Client Garrepy Planning Consultants, LLC  
 GES Project No. 2021039  
 MM/DD/YY Staff 03-23-2021 JP Gove, CSS # 004



**Test Pit No.** 1 **Lot No.:**  
**ESHWT:** None Observed **WSPCD Group:**  
**Termination @** 60" **Roots to:**  
**Refusal:** Yes **SCS Soil:**  
**Obs. Water:** none **HIS Type:**

| Depth         | Color   | Texture | Structure | Consistence | Redox |
|---------------|---------|---------|-----------|-------------|-------|
| Fill - 0-12"  | 10YR3/2 | SL      | Gr        | Fr          | None  |
| Fill - 12-35" | 10YR3/3 | SL      | Gr        | Fr          | None  |
| Apb - 35-45"  | 10YR3/2 | SL      | Gr        | Fr          | None  |
| Bwb - 45-60"  | 10YR4/3 | SL      | Om        | Fr          | None  |
| Bedrock - 60" |         |         |           |             |       |

**Test Pit No.** 2 **Lot No.:**  
**ESHWT:** None Observed **WSPCD Group:**  
**Termination @** 55" **Roots to:**  
**Refusal:** Yes **SCS Soil:**  
**Obs. Water:** none **HIS Type:**

| Depth                  | Color    | Texture | Structure | Consistence | Redox |
|------------------------|----------|---------|-----------|-------------|-------|
| Ap - 0-10"             | 10YR3/2  | SL      | Gr        | Fr          | None  |
| Bw - 10-55"            | 7.5YR3/4 | SL      | Gr        | Fr          | None  |
| Rippable Bedrock - 55" |          |         |           |             |       |

**Test Pit No.** 3 **Lot No.:**  
**ESHWT:** 31" **WSPCD Group:**  
**Termination @** 51" **Roots to:**  
**Refusal:** Yes **SCS Soil:**  
**Obs. Water:** none **HIS Type:**

| Depth                  | Color    | Texture | Structure | Consistence | Redox |
|------------------------|----------|---------|-----------|-------------|-------|
| Ap - 0-11"             | 10YR3/3  | SL      | Gr        | Fr          | None  |
| Bw - 11-31"            | 10YR4/4  | GRLS    | Gr        | Fr          | None  |
| Bw2 - 31-51"           | 7.5YR5/4 | CBSL    | Om        | Fr          | Yes   |
| Rippable Bedrock - 51" |          |         |           |             |       |



**Test Pit No.** 4  
 ESHWT: None Observed  
 Termination @ 33"  
 Refusal: Yes  
 Obs. Water: none

Lot No.:  
 WSPCD Group:  
 Roots to:  
 SCS Soil:  
 HIS Type:

| Depth         | Color   | Texture | Structure | Consistence | Redox |
|---------------|---------|---------|-----------|-------------|-------|
| Ap - 0-11"    | 10YR3/2 | SL      | Gr        | Fr          | None  |
| Bw - 11-33"   | 10YR4/4 | CBSL    | Gr        | Fr          | None  |
| Bedrock - 33" |         |         |           |             |       |

**Test Pit No.** 5  
 ESHWT: None Observed  
 Termination @ 22"  
 Refusal: Yes  
 Obs. Water: none

Lot No.:  
 WSPCD Group:  
 Roots to:  
 SCS Soil:  
 HIS Type:

| Depth         | Color   | Texture | Structure | Consistence | Redox |
|---------------|---------|---------|-----------|-------------|-------|
| Ap - 0-10"    | 10YR3/3 | SL      | Gr        | Fr          | None  |
| Bw - 10-22"   | 10YR4/4 | CBSL    | Gr        | Fr          | None  |
| Bedrock - 22" |         |         |           |             |       |

**Test Pit No.** 6  
 ESHWT: None Observed  
 Termination @ 2"  
 Refusal: Yes  
 Obs. Water: none

Lot No.:  
 WSPCD Group:  
 Roots to:  
 SCS Soil:  
 HIS Type:

| Depth      | Color   | Texture | Structure | Consistence | Redox |
|------------|---------|---------|-----------|-------------|-------|
| A - 0-2"   | 10YR3/2 | CBSL    | Gr        | Fr          | None  |
| Bedrock 2" |         |         |           |             |       |

**Test Pit No.** 7  
 ESHWT: None Observed  
 Termination @ 21"  
 Refusal: Yes  
 Obs. Water: none

Lot No.:  
 WSPCD Group:  
 Roots to:  
 SCS Soil:  
 HIS Type:

| Depth         | Color   | Texture | Structure | Consistence | Redox |
|---------------|---------|---------|-----------|-------------|-------|
| A - 0-21"     | 10YR3/3 | CBSL    | Gr        | Fr          | None  |
| Bedrock - 21" |         |         |           |             |       |

|                      |               |                     |
|----------------------|---------------|---------------------|
| <b>Test Pit No.</b>  | <b>8</b>      | <b>Lot No.:</b>     |
| <b>ESHWT:</b>        | None Observed | <b>WSPCD Group:</b> |
| <b>Termination @</b> | 31"           | <b>Roots to:</b>    |
| <b>Refusal:</b>      | Yes           | <b>SCS Soil:</b>    |
| <b>Obs. Water:</b>   | none          | <b>HIS Type:</b>    |

| Depth         | Color   | Texture | Structure | Consistence | Redox |
|---------------|---------|---------|-----------|-------------|-------|
| Ap – 0-10"    | 10YR3/2 | SL      | Gr        | Fr          | None  |
| Bw – 10-31"   | 10YR4/6 | CBSL    | Gr        | Fr          | None  |
| Bedrock – 31" |         |         |           |             |       |

**Legend:**

GRLS = gravelly loamy sand  
 CBSL = cobbly sandy loam  
 SL = sandy loam  
 Gr = granular  
 Fr = friable  
 Om = massive  
 Ap = top soil  
 Bw = subsoil  
 Apb = buried topsoil  
 Bwb = buried subsoil





**1** EXTERIOR PERSPECTIVE  
EXAMPLE SINGLE UNIT

**2** EXTERIOR PERSPECTIVE  
EXAMPLE DUPLEX UNIT

PRELIMINARY  
**UNIT CONCEPT PLANS**

**1169 & 1171 SAGAMORE RD**  
PORTSMOUTH, NH 03801

ISSUE:

|            |            |
|------------|------------|
| FOR REVIEW | 06.23.2021 |
|            |            |
|            |            |
|            |            |

EXTERIOR PERSPECTIVE -  
EXAMPLE SINGLE &  
EXAMPLE DUPLEX

**CONCEPT**

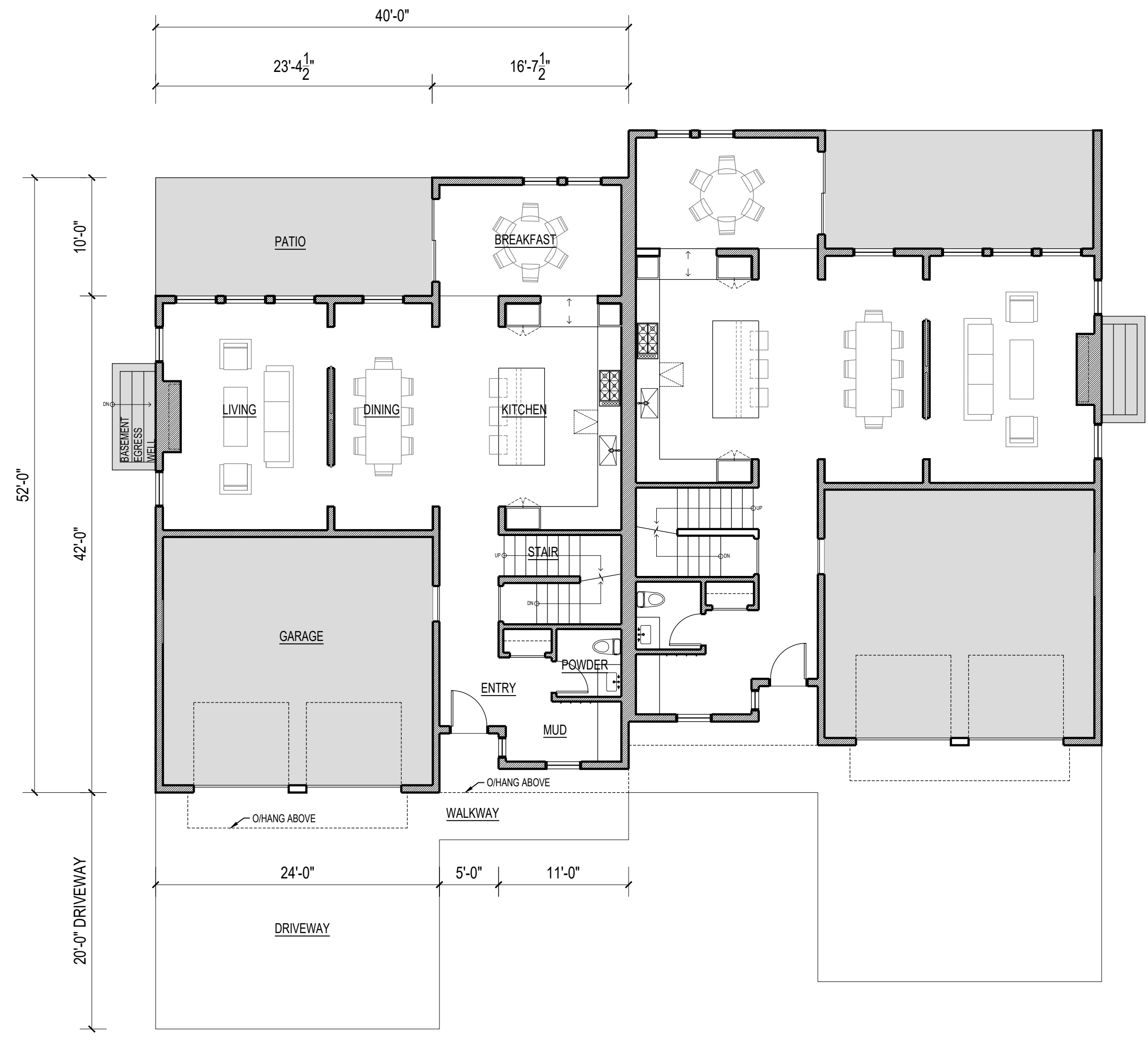


PRELIMINARY  
**UNIT CONCEPT PLANS**  
1169 & 1171 SAGAMORE RD  
PORTSMOUTH, NH 03801

ISSUE:  
FOR REVIEW ..... 06.23.2021  
.....  
.....  
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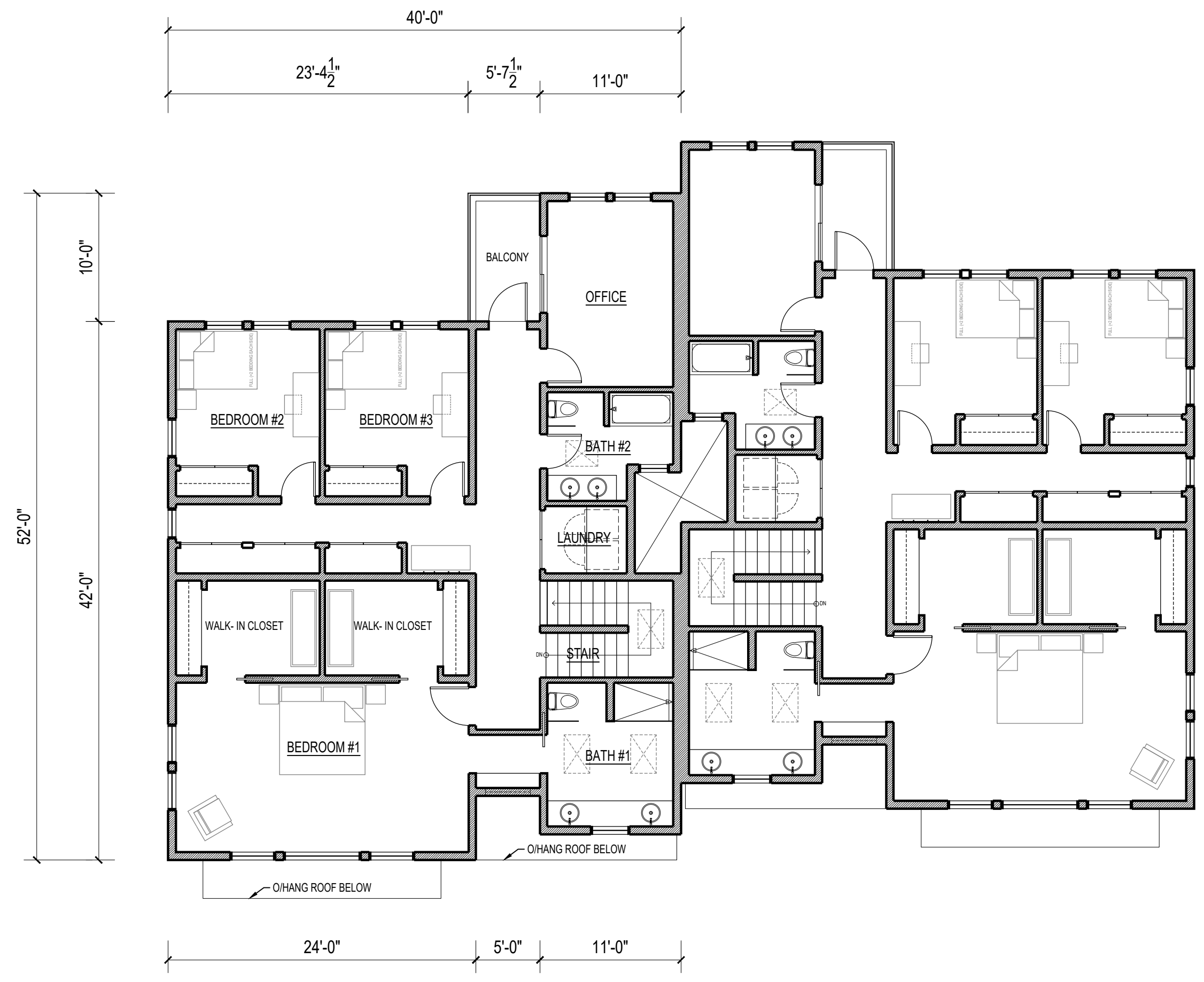
FLOOR PLANS -  
TWO ADJACENT UNITS  
FIRST & SECOND FLOOR  
(BASEMENT UNFINISHED/ NOT SHOWN)

**DUPLEX**  
**CONCEPT**



**1** FIRST FLOOR CONCEPT PLAN  
1/8" = 1'-0"  
EXAMPLE UNIT

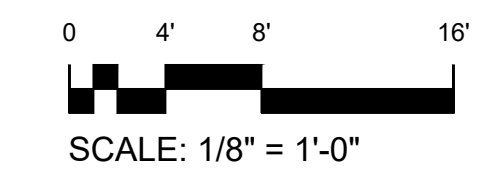
FIRST FLOOR CONCEPT PLAN  
1/8" = 1'-0"  
MIRRORED ADJ. UNIT



**2** SECOND FLOOR CONCEPT PLAN  
1/8" = 1'-0"  
EXAMPLE UNIT

SECOND FLOOR CONCEPT PLAN  
1/8" = 1'-0"  
MIRRORED ADJ. UNIT

| EXAMPLE UNIT GROSS FLOOR AREA |          |
|-------------------------------|----------|
| FIRST FLOOR:                  | 1,246 SF |
| SECOND FLOOR:                 | 1,673 SF |
| TOTAL                         | 2,919 SF |



PRELIMINARY  
**UNIT CONCEPT PLANS**

**1169 & 1171 SAGAMORE RD**  
PORTSMOUTH, NH 03801

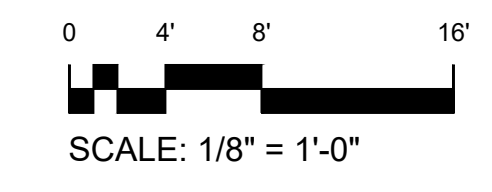


**1** FIRST FLOOR CONCEPT PLAN  
1/8" = 1'-0" EXAMPLE UNIT



**2** SECOND FLOOR CONCEPT PLAN  
1/8" = 1'-0" EXAMPLE UNIT

| EXAMPLE UNIT GROSS FLOOR AREA |                 |
|-------------------------------|-----------------|
| FIRST FLOOR:                  | 1,246 SF        |
| SECOND FLOOR:                 | 1,673 SF        |
| <b>TOTAL</b>                  | <b>2,919 SF</b> |



ISSUE:

|            |            |
|------------|------------|
| FOR REVIEW | 06.23.2021 |
| .....      | .....      |
| .....      | .....      |
| .....      | .....      |

FLOOR PLANS -  
SINGLE DETACHED UNIT  
FIRST & SECOND FLOOR  
(BASEMENT UNFINISHED/ NOT SHOWN)

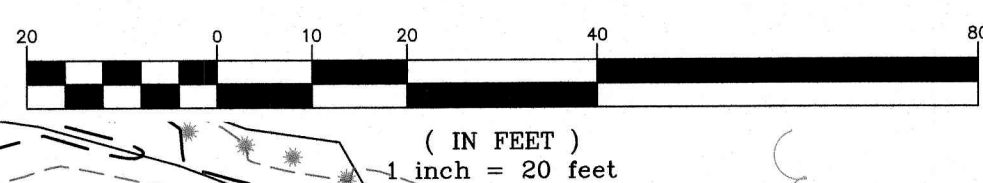
**SINGLE CONCEPT**



**PLAN REFERENCES:**

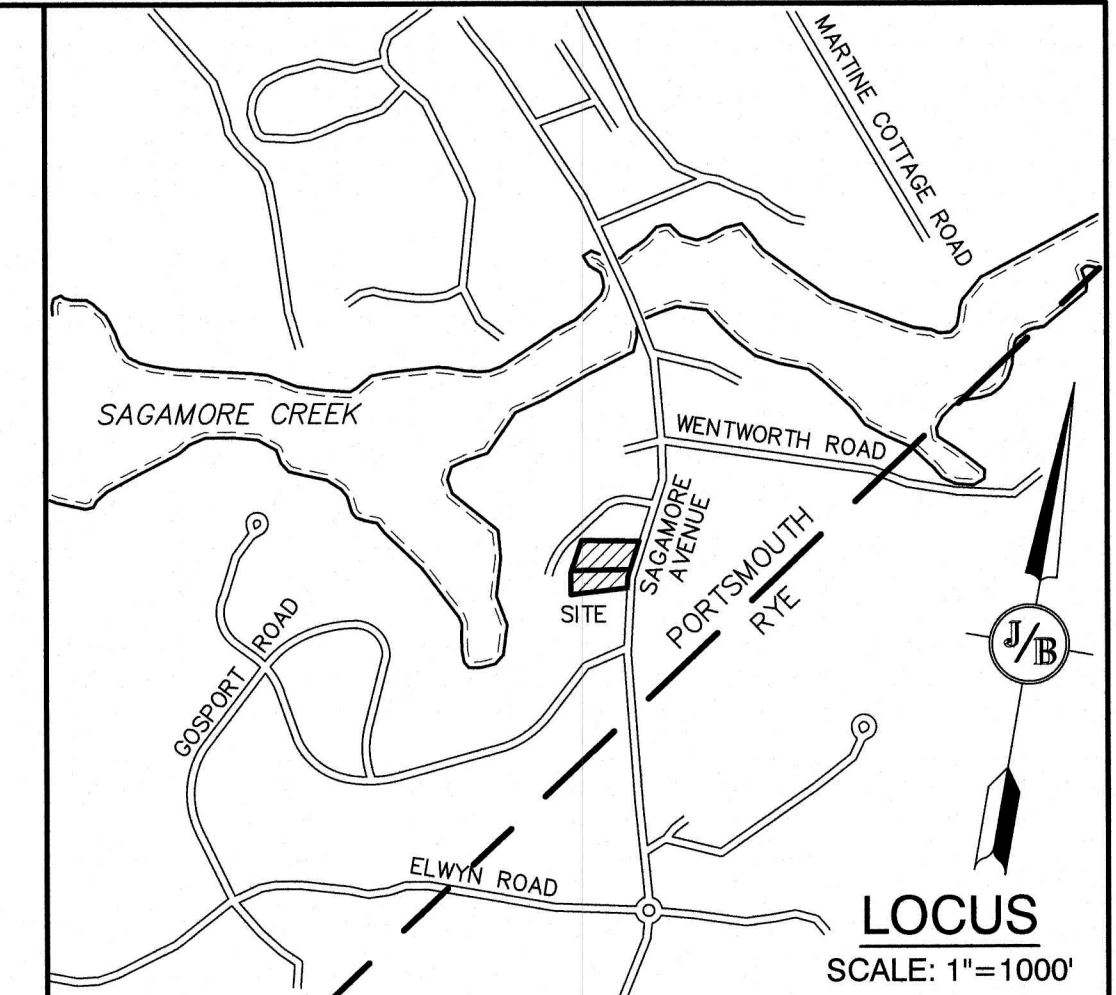
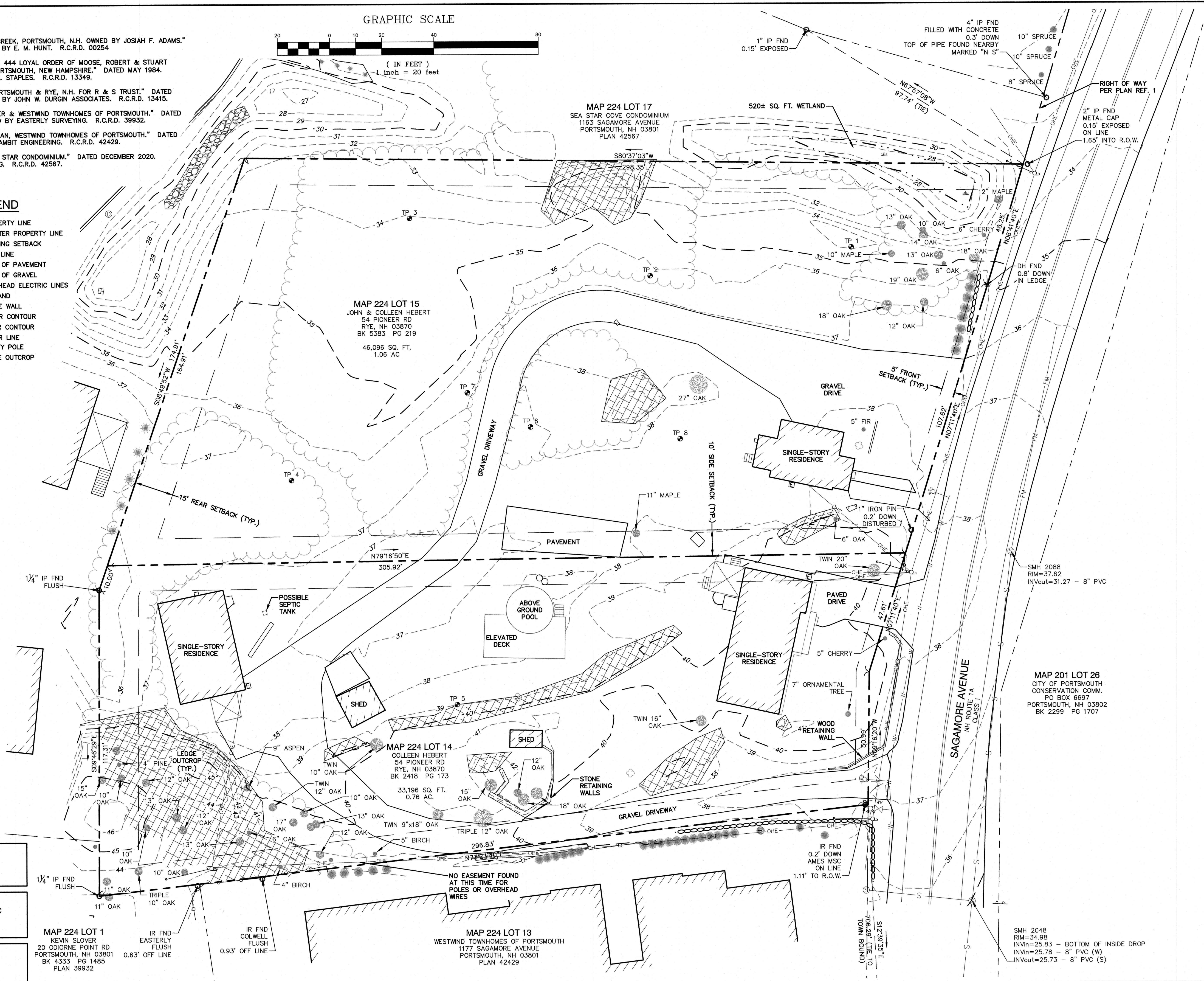
- "PLAN OF LAND ON SAGAMORE CREEK, PORTSMOUTH, N.H. OWNED BY JOSIAH F. ADAMS." DATED MARCH 1908. PREPARED BY E. M. HUNT. R.C.R.D. 00254
- "BOUNDARY LINE CHANGE, LODGE 444 LOYAL ORDER OF MOOSE, ROBERT & STUART SHAINES, SAGAMORE AVENUE, PORTSMOUTH, NEW HAMPSHIRE." DATED MAY 1984. PREPARED BY K.E. MOORE & B.G. STAPLES. R.C.R.D. 13349.
- "SUBDIVISION PLAN OF LAND, PORTSMOUTH & RYE, N.H. FOR R & S TRUST." DATED DECEMBER 13, 1984. PREPARED BY JOHN W. DURGIN ASSOCIATES. R.C.R.D. 39932.
- "LOT LINE REVISION, KEVIN SLOVER & WESTWIND TOWNHOMES OF PORTSMOUTH." DATED SEPTEMBER 16, 2011. PREPARED BY EASTERLY SURVEYING. R.C.R.D. 42429.
- "AS-BUILT CONDOMINIUM SITE PLAN, WESTWIND TOWNHOMES OF PORTSMOUTH." DATED JANUARY 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42429.
- "AMENDED EASEMENT PLAN, SEA STAR CONDOMINIUM." DATED DECEMBER 2020. PREPARED BY AMBIT ENGINEERING. R.C.R.D. 42567.

**GRAPHIC SCALE**



**GENERAL LEGEND**

- PROPERTY LINE
- ABUTTER PROPERTY LINE
- BUILDING SETBACK
- TREE LINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- OHE --- OVERHEAD ELECTRIC LINES
- WETLAND
- STONE WALL
- MAJOR CONTOUR
- MINOR CONTOUR
- S --- SEWER LINE
- U --- UTILITY POLE
- LEDGE OUTCROP



**NOTES:**

- THE INTENT OF THIS PLAN IS TO SHOW THE BOUNDARY AND EXISTING CONDITIONS OF LOTS 14 AND 15 AS SHOWN ON PORTSMOUTH TAX MAP 224.
- ZONING DISTRICT: MIXED RESIDENTIAL OFFICE  
LOT AREA MINIMUM = 7,500 SF  
LOT FRONTAGE MINIMUM = 100'  
BUILDING SETBACKS (MINIMUM):  
FRONT SETBACK = 5'  
SIDE SETBACK = 10'  
REAR SETBACK = 15'  
MAX. BUILDING HEIGHT = 35'  
MIN. OPEN SPACE = 25%
- 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.
- THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD ZONE DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0286F, WITH EFFECTIVE DATE OF JANUARY 29, 2021.
- BASIS OF BEARING: HORIZONTAL - NAD83 NH STATE PLAN.  
VERTICAL - NAVD88.
- CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
- ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
- THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
- RESEARCH WAS PERFORMED THROUGH THE CITY OF PORTSMOUTH GIS DATABASE AND AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
- 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.
- 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.
- THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES IN MARCH 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.
- THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
- 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.

**PROJECT PARCEL**  
CITY OF PORTSMOUTH  
TAX MAP 224, LOTS 14 & 15

**APPLICANT**  
THE SAGAMORE GROUP, LLC  
PO BOX 430  
HAMPTON, NH 03842

**TOTAL LOT AREA**  
79,292 SQ. FT.  
1.83 ACRES

MAP 224 LOT 1  
KEVIN SLOVER  
20 ODORNE POINT RD  
PORTSMOUTH, NH 03801  
BK 4333 PG 1485  
PLAN 39932

MAP 224 LOT 13  
WESTWIND TOWNHOMES OF PORTSMOUTH  
1177 SAGAMORE AVENUE  
PORTSMOUTH, NH 03801  
PLAN 42429

MAP 224 LOT 14  
COLLEEN HEBERT  
54 PIONEER RD  
RYE, NH 03870  
BK 2418 PG 173

MAP 224 LOT 15  
JOHN & COLLEEN HEBERT  
54 PIONEER RD  
RYE, NH 03870  
BK 5383 PG 219

MAP 224 LOT 17  
SEA STAR COVE CONDOMINIUM  
1163 SAGAMORE AVENUE  
PORTSMOUTH, NH 03801  
PLAN 42567

MAP 201 LOT 26  
CITY OF PORTSMOUTH  
CONSERVATION COMM.  
PO BOX 6697  
PORTSMOUTH, NH 03802  
BK 2299 PG 1707

SMH 2048  
RIM=34.98  
INVin=25.83 - BOTTOM OF INSIDE DROP  
INVin=25.78 - 8" PVC (W)  
INVout=25.73 - 8" PVC (S)

|   |                 |                    |
|---|-----------------|--------------------|
| Design: JAC   | Draft: DJM      | Date: 3/25/21      |
| Checked: JAC  | Scale: 1" = 20' | Project No.: 21047 |
| Drawing Name: 21047-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. |                 |                    |

| REV. | DATE    | REVISION                 | BY  |
|------|---------|--------------------------|-----|
| 3    | 6/23/21 | ISSUED FOR REVIEW        | DJM |
| 3    | 6/1/21  | REVISED BUILDING LAYOUT  | AJB |
| 2    | 4/28/21 | MINOR REVISION           | DJM |
| 1    | 4/20/21 | REVISED LAYOUT           | DJM |
| 0    | 4/8/21  | ISSUED FOR CLIENT REVIEW | DJM |

Designed and Produced in NH

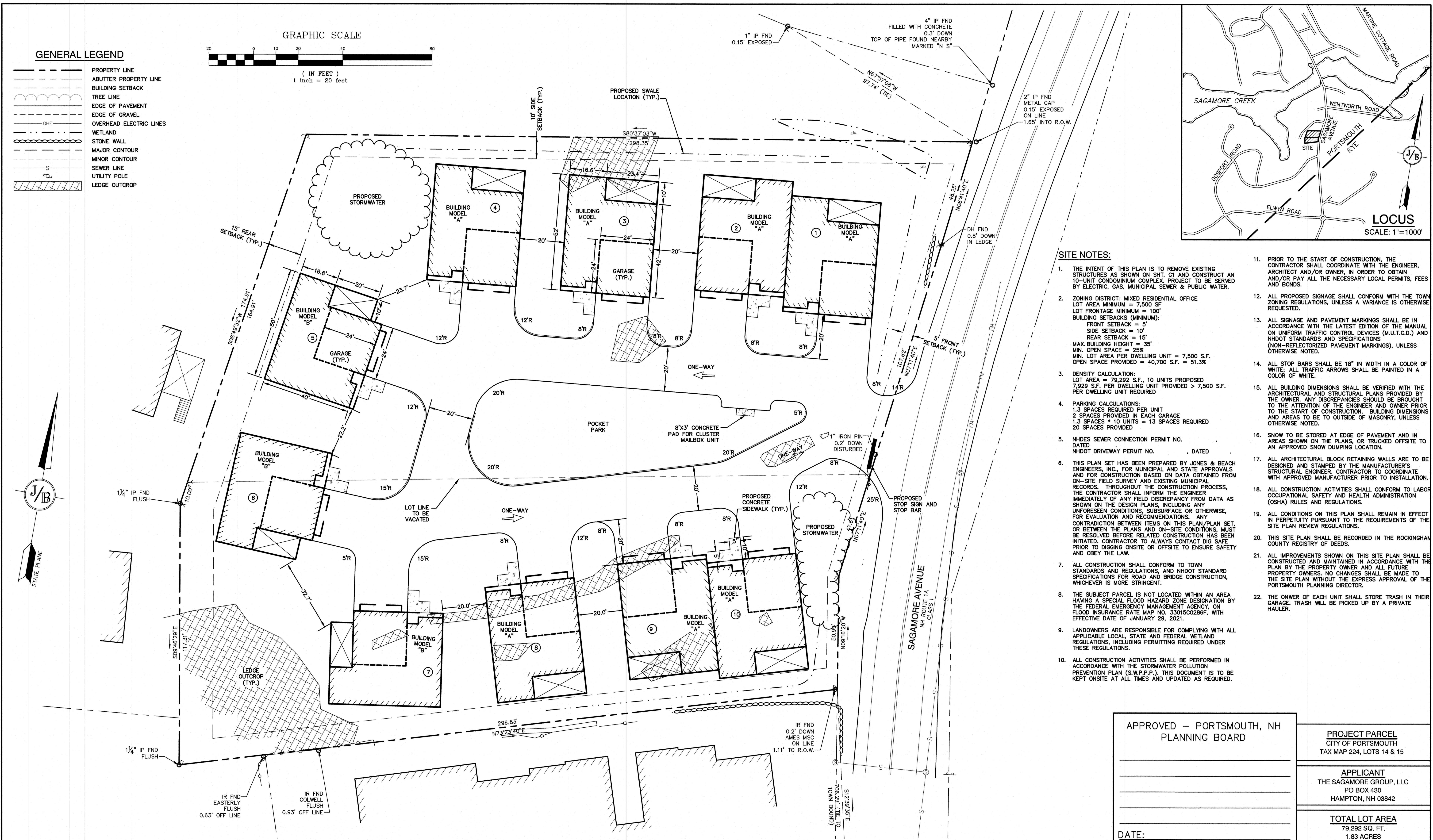
**J/B Jones & Beach Engineers, Inc.**

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

|                  |   |
|------------------|---|
| Plan Name:       | <b>EXISTING CONDITIONS PLAN</b>   |
| Project:         | <b>1169 &amp; 1171 SAGAMORE AVENUE<br/>PORTSMOUTH, NEW HAMPSHIRE</b>  |
| Owner of Record: | LOT 14: COLLEEN HEBERT<br>54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173<br>LOT 15: JOHN & COLLEEN HEBERT<br>54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219 |

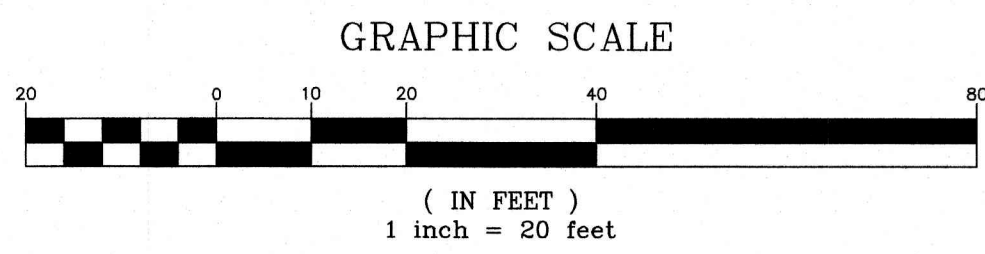
|              |                       |
|--------------|-----------------------|
| DRAWING No.  | <b>C1</b>             |
| SHEET 1 OF 3 | JBE PROJECT NO. 21047 |





**GENERAL LEGEND**

- PROPERTY LINE
- - - ABUTTER PROPERTY LINE
- - - BUILDING SETBACK
- ~ ~ ~ TREE LINE
- - - EDGE OF PAVEMENT
- - - EDGE OF GRAVEL
- - - O.H.E. OVERHEAD ELECTRIC LINES
- WETLAND
- STONE WALL
- MAJOR CONTOUR
- MINOR CONTOUR
- SEWER LINE
- UTILITY POLE
- LEDGE OUTCROP



**SITE NOTES:**

1. THE INTENT OF THIS PLAN IS TO REMOVE EXISTING STRUCTURES AS SHOWN ON SHT. C1 AND CONSTRUCT AN 10-UNIT CONDOMINIUM COMPLEX. PROJECT TO BE SERVED BY ELECTRIC, GAS, MUNICIPAL SEWER & PUBLIC WATER.
2. ZONING DISTRICT: MIXED RESIDENTIAL OFFICE  
LOT AREA MINIMUM = 7,500 SF  
LOT FRONTAGE MINIMUM = 100'  
BUILDING SETBACKS (MINIMUM):  
FRONT SETBACK = 5'  
SIDE SETBACK = 10'  
REAR SETBACK = 15'  
MAX. BUILDING HEIGHT = 35'  
MIN. OPEN SPACE = 25%  
MIN. LOT AREA PER DWELLING UNIT = 7,500 S.F.  
OPEN SPACE PROVIDED = 40,700 S.F. = 51.3%
3. DENSITY CALCULATION:  
LOT AREA = 79,292 S.F., 10 UNITS PROPOSED  
7,929 S.F. PER DWELLING UNIT PROVIDED > 7,500 S.F. PER DWELLING UNIT REQUIRED
4. PARKING CALCULATIONS:  
1.3 SPACES REQUIRED PER UNIT  
2 SPACES PROVIDED IN EACH GARAGE  
1.3 SPACES \* 10 UNITS = 13 SPACES REQUIRED  
20 SPACES PROVIDED
5. NHDES SEWER CONNECTION PERMIT NO. \_\_\_\_\_, DATED \_\_\_\_\_  
NHDOT DRIVEWAY PERMIT NO. \_\_\_\_\_, DATED \_\_\_\_\_
6. 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 DIO SAFE PRIOR TO DIGGING ONSITE OR OFFSITE TO ENSURE SAFETY AND OBEY THE LAW.
7. ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
8. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD ZONE DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33018C0286F, WITH EFFECTIVE DATE OF JANUARY 29, 2021.
9. LANDOWNERS ARE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING PERMITTING REQUIRED UNDER THESE REGULATIONS.
10. 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.
11. 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.
12. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
13. 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.
14. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
15. 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.
16. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
17. ALL ARCHITECTURAL BLOCK RETAINING WALLS ARE TO BE DESIGNED AND STAMPED BY THE MANUFACTURER'S STRUCTURAL ENGINEER. CONTRACTOR TO COORDINATE WITH APPROVED MANUFACTURER PRIOR TO INSTALLATION.
18. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
19. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
20. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
21. 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.
22. THE OWNER OF EACH UNIT SHALL STORE TRASH IN THEIR GARAGE. TRASH WILL BE PICKED UP BY A PRIVATE HAULER.

APPROVED - PORTSMOUTH, NH  
PLANNING BOARD

DATE: \_\_\_\_\_

PROJECT PARCEL  
CITY OF PORTSMOUTH  
TAX MAP 224, LOTS 14 & 15

APPLICANT  
THE SAGAMORE GROUP, LLC  
PO BOX 430  
HAMPTON, NH 03842

TOTAL LOT AREA  
79,292 SQ. FT.  
1.83 ACRES

Design: JAC | Draft: DJM | Date: 3/25/21  
Checked: JAC | Scale: 1" = 20' | Project No.: 21047  
Drawing Name: 21047-PLAN.dwg

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| REV. | DATE    | REVISION                 | BY  |
|------|---------|--------------------------|-----|
| 3    | 6/23/21 | ISSUED FOR REVIEW        | DJM |
| 3    | 6/1/21  | REVISED BUILDING LAYOUT  | AJB |
| 2    | 4/28/21 | MINOR REVISION           | DJM |
| 1    | 4/20/21 | REVISED LAYOUT           | DJM |
| 0    | 4/8/21  | ISSUED FOR CLIENT REVIEW | DJM |

Designed and Produced in NH

**J/B Jones & Beach Engineers, Inc.**

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

Plan Name: **PRELIMINARY SITE PLAN**

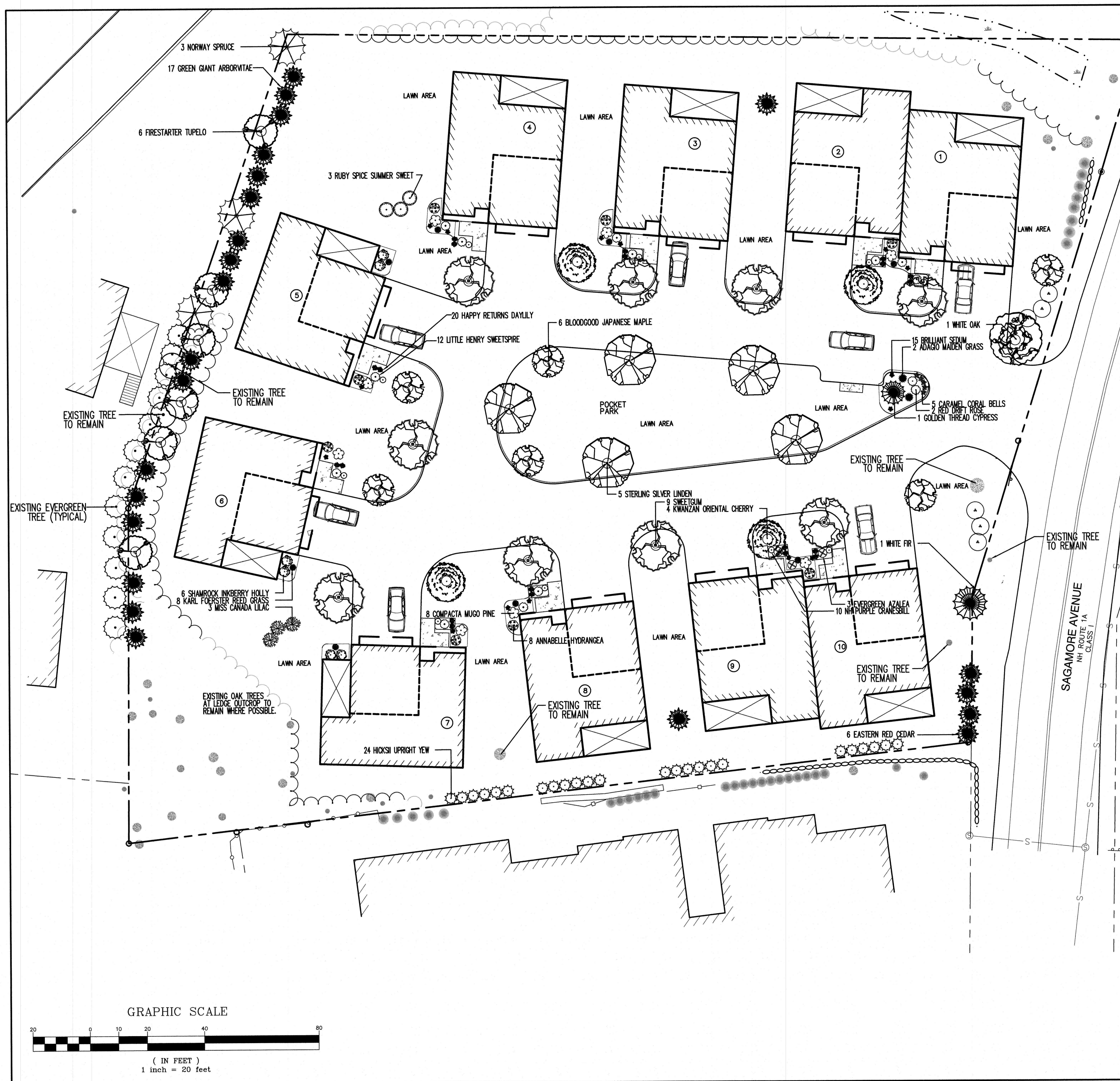
Project: **1169 & 171 SAGAMORE AVENUE  
PORTSMOUTH, NEW HAMPSHIRE**

Owner of Record: LOT 14: COLLEEN HEBERT | LOT 15: JOHN J. & COLLEEN HEBERT  
54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173 | 54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219

DRAWING No.  
**C2**

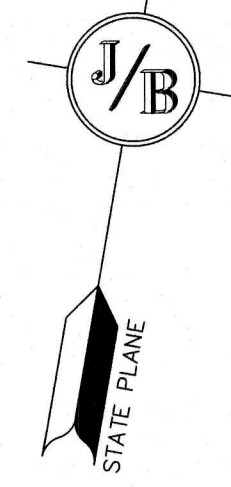
SHEET 2 OF 3  
JBE PROJECT NO. 21047





**LANDSCAPE NOTES:**

- THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
- THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
- ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERMEN.
- 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.
- 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.
- ALL WORK AND PLANTS SHALL BE DONE, INSTALLED AND DETAILED IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
- 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.
- ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION, EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS SPECIFIED.
- ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS WITH EDGE STRIPS TO SEPARATE TURF GRASS AREAS.
- 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.
- FINISHED GRADES IN LANDSCAPED ISLANDS SHALL BE INSTALLED SO THAT THEY ARE 1" HIGHER THAN THE TOP OF THE SURROUNDING CURB.
- ALL LANDSCAPING SHALL MEET THE CITY OF PORTSMOUTH STANDARDS AND REGULATIONS.
- EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE DRILLPIE 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.
- 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.
- 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.
- THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.
- IRRIGATION PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY OWNER AND ENGINEER PRIOR TO INSTALLATION.
- THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS.
- 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.
- 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.
- SEE TREE PLANTING AND SHRUB PLANTING DETAILS ON SHEET D2.



**PLANTING LIST**

| Trees             | Quantity | Botanical Name                             | Common Name              | Size          |
|-------------------|----------|--|--------------------------|---------------|
|                   | 1        | Abies concolor                             | WHITE FIR                | 7-8 ft. ht.   |
|                   | 6        | Acer palmatum 'Bloodgood'                  | BLOODGOOD JAPANESE MAPLE | 15 Gallon     |
|                   | 6        | Juniperus virginiana                       | EASTERN RED CEDAR        | 7-8 ft. ht.   |
|                   | 9        | Liquidambar styraciflua                    | SWEETGUM                 | 2.5" Caliper  |
|                   | 6        | Nyssa sylvatica 'Firestarter'              | FIRESTARTER TUPELO       | 4.5" Caliper  |
|                   | 3        | Picea abies                                | NORWAY SPRUCE            | 10-12 ft. ht. |
|                   | 4        | Prunus serrulata 'Kwanzan'                 | KWANZAN ORIENTAL CHERRY  | 2" Caliper    |
|                   | 1        | Quercus alba                               | WHITE OAK                | 3" Caliper    |
|                   | 24       | Taxus x media 'Hicksii'                    | HICKSII UPRIGHT YEW      | 6-7 ft. ht.   |
|                   | 17       | Thuja plicata 'Green Giant'                | GREEN GIANT ARBORVITAE   | 10-12 ft. ht. |
|                   | 5        | Tilia tomentosa 'Sterling'                 | STERLING SILVER LINDEN   | 3" Caliper    |
| <b>Shrubs</b>     |          |  |                          |               |
|                   | 3        | Azalea indicum                             | EVERGREEN AZALEA         | 3 Gallon      |
|                   | 1        | Chamaecyparis pisifera 'Aurea'             | GOLDEN THREAD CYPRESS    | 7 Gallon      |
|                   | 3        | Clethra alnifolia 'Ruby Spice'             | RUBY SPICE SUMMER SWEET  | 5 Gallon      |
|                   | 8        | Hydrangea arborescens 'Annabelle'          | ANNABELLE HYDRANGEA      | 5 Gallon      |
|                   | 6        | Ilex glabra 'Shamrock'                     | SHAMROCK INKBERRY HOLLY  | 5 Gallon      |
|                   | 12       | Itea virginica 'Sprich Little Henry'       | LITTLE HENRY SWEETSPIRE  | 3 Gallon      |
|                   | 8        | Pinus mugo 'Compacta'                      | COMPACTA MUGO PINE       | 5 Gallon      |
|                   | 2        | Rosa 'Red Drift'                           | RED DRIFT ROSE           | 3 Gallon      |
|                   | 3        | Syringa x prestoniae 'Miss Canada'         | MISS CANADA LILAC        | 5 Gallon      |
|                   | 6        | Viburnum dentatum 'Christom'               | BLUE MUFFIN VIBURNUM     | 5 Gallon      |
| <b>Perennials</b> |          |  |                          |               |
|                   | 8        | Calamagrostis x acutiflora 'Karl Foerster' | KARL FOERSTER REED GRASS | 2 Gallon      |
|                   | 10       | Geranium sanguineum 'New Hampshire Purple' | NH PURPLE CRANESBILL     | 1 Gallon      |
|                   | 20       | Heemerocallis 'Happy Returns'              | HAPPY RETURNS DAYLILY    | 1 Gallon      |
|                   | 5        | Heuchera micrantha 'Caramel'               | CAMEL CORALBELLS         | 1 Gallon      |
|                   | 2        | Miscanthus sinensis 'Adagio'               | ADAGIO MAIDEN GRASS      | 2 Gallon      |
|                   | 15       | Sedum spectabile 'Brilliant'               | BRILLIANT SEDUM          | 1 Gallon      |

|  |
|--|
| <b>PROJECT PARCEL</b><br>CITY OF PORTSMOUTH<br>TAX MAP 224, LOTS 14 & 15       |
| <b>APPLICANT</b><br>THE SAGAMORE GROUP, LLC<br>PO BOX 430<br>HAMPTON, NH 03842 |
| <b>TOTAL LOT AREA</b><br>79,292 SQ. FT.<br>1.83 ACRES                          |

Design: JAC    Draft: DJM    Date: 3/25/21  
 Checked: JAC    Scale: 1" = 20'    Project No.: 21047  
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| 0    | 4/8/21  | ISSUED FOR CLIENT REVIEW | DJM |

Designed and Produced in NH  
**J/B Jones & Beach Engineers, Inc.**  
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|                  |  |
|------------------|--|
| Plan Name:       | <b>LANDSCAPE PLAN</b>  |
| Project:         | <b>1169 &amp; 1171 SAGAMORE AVENUE<br/>PORTSMOUTH, NEW HAMPSHIRE</b>   |
| Owner of Record: | LOT 14: COLLEEN HEBERT    LOT 15: JOHN J. & COLLEEN HEBERT<br>54 PIONEER RD, RYE, NH 03870 BK 2418 PG 173    54 PIONEER RD, RYE, NH 03870 BK 5383 PG 219 |

DRAWING No.  
**L1**  
 SHEET 3 OF 3  
 JBE PROJECT NO. 21047



**Planning Department**  
**Proposed Zoning and Land Use Regulation Amendments**  
**DRAFT Priorities for 2021**

- 1) Hanover St/Foundry Place/CD4-L Map Amendments and Revisions to Character District Incentive Requirements (Section 10.5A46)
  - Draft amendments have already been started on these and have gone through an initial public review (see [www.cityofportsmouth.com/planportsmouth/current-zoning-amendments](http://www.cityofportsmouth.com/planportsmouth/current-zoning-amendments)):
    - Down-zoning the property fronting on Hanover Street from Character District 5 to Character District 4-L1 and the properties on the southeast side of Foundry Place from Character District 5 to Character District 4;
    - Establishing a new building height maximum for Foundry Place of 3 stories (40') and reducing the maximum building height along Hill Street from 4 stories (50') to 3 stories (40'); and
    - Requiring that any additional height and building coverage allowed in the Incentive Overlay Districts be subject to a conditional use permit by the Planning Board.
  - In addition, staff is recommending changing the requirements for the Character District Incentive Overlay Districts to require workforce housing in order to receive incentives (remove option to do EITHER community space OR workforce housing)
- 2) Building Height and Grade Plane Definitions (Article 15)
  - Specify that building height shall be calculated using existing grade not finished grade
- 3) Wetlands Protection (10.1010) – should be done in consultation with Conservation Commission
  - Revise Permitted Uses and Uses requiring a CUP
  - Consider revise wetland buffer areas
  - Clarify criteria for approval of a CUP
  - Make wetland boundary marker requirement optional, to be determined by the Planning Board in granting of a Wetland CUP
- 4) Murals (Article 12 Signs)
  - Exempt public art murals from sign requirements
- 5) Density (various sections) – should be done in consultation with Conservation Commission



- Revise lot area used to calculate allowed density to include only developable area (exclude wetlands and water bodies, conservation land, floodplains, and steep slopes)

6) Open Space Planned Unit Development

- Revise calculation of base density
- Clarify permitted uses
- Require completion of a conventional subdivision plan

To: Planning Board  
From: Rick Chellman

June 15, 2021

Re: Waterfront and building siting

I have perceived some confusion in the interpretation of the City's zoning as pertains to waterfront parcels and the related relationships between buildings and the waterfront. Since formal meetings obviously deal with particular applications and are times in which our focus must necessarily be on the applications at hand, I thought it might be helpful to prepare this discussion document outlining how I think the zoning applies in different and theoretical circumstances.

There is no particular "scale" to the diagrams that follow, they are shown simply to illustrate the topics being discussed. This memo is also only focused on the waterfront buffer, so the myriad other criteria that impact development such as setbacks, building orientation, parking supply and other important aspects are NOT a part of this discussion.

Terminology is, in my opinion, very important, especially when reviewing a zoning ordinance with defined terms as is the case here. To somewhat simplify this discussion, I will focus on a theoretical parcel on the "tidal wetland" (a defined term) adjacent to North Mill Pond.

Beginning with a simple example, a parcel fronting the North Mill pond without any manmade improvements could appear as below- the waterfront at the high tide line in blue, the lot lines outlined in dashed black. Parallel with the high tide line, I have added 3 lines described in the zoning, with references to those areas. The most important one of these, as relates to buildings, is the "wetland buffer" (a defined term) 100' from the high tide. The vegetated and limited cut buffers are also shown for reference, but the wetland buffer is the important line as relates to buildings.

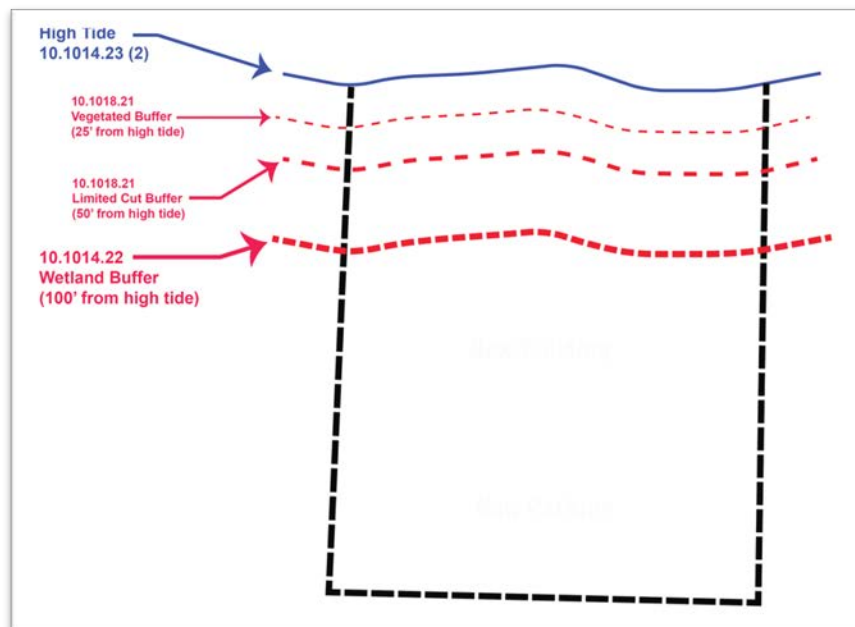


Figure 1: Theoretical vacant Lot on North Mill Pond

For this theoretical vacant lot, the general permitted uses are listed elsewhere in the zoning ordinance, but as relates to the **wetland buffer**, 10.1016.10 sets forth the permitted uses within

the **wetland buffer** area itself. These permitted uses are few and exclude any structure or impervious surface unless related to a minor expansion of a lawfully pre-existing one or two-family dwelling. Other uses are also listed, but these restrictions I believe establish the intent of the ordinance which is to preserve the **wetland buffer** area. In fact, 10.1016.20 prohibits other uses without a conditional use permit.

Returning to Figure 1's theoretical vacant lot, a proposed building and parking area (an impervious surface) could be sited as shown in Figure 2<sup>1</sup>, since the proposal is outside the **wetland buffer** area.

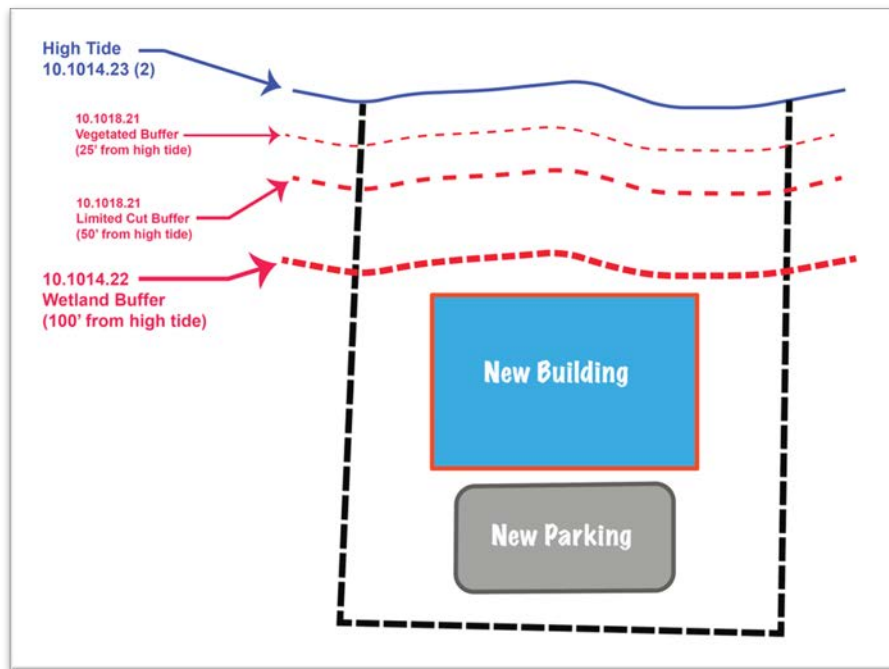


Figure 2: Possible Building on Previously Vacant Lot

Any other use proposed to impact the **wetland buffer** area not specifically listed as permitted requires a conditional use permit from the Planning Board under 10.1017.

Below, for discussion, I have moved the possible new commercial building in Figure 3 closer to the high tide line so it would partially extend into the **wetland buffer** area.

This then results in a theoretical proposal that would require a conditional use permit (CUP) application.

I know everyone has the zoning ordinance, but I have added relevant sections of it to this memo for ease of reference. Where I have done that, I have used images of the ordinance to avoid typos in transposing from one to the other.

Following under Figure 3, the general provisions for a CUP process are listed.

<sup>1</sup> Again, ONLY as relates to the wetland buffer being discussed in this memo. The proposal may have other problems with other sections of the ordinance.



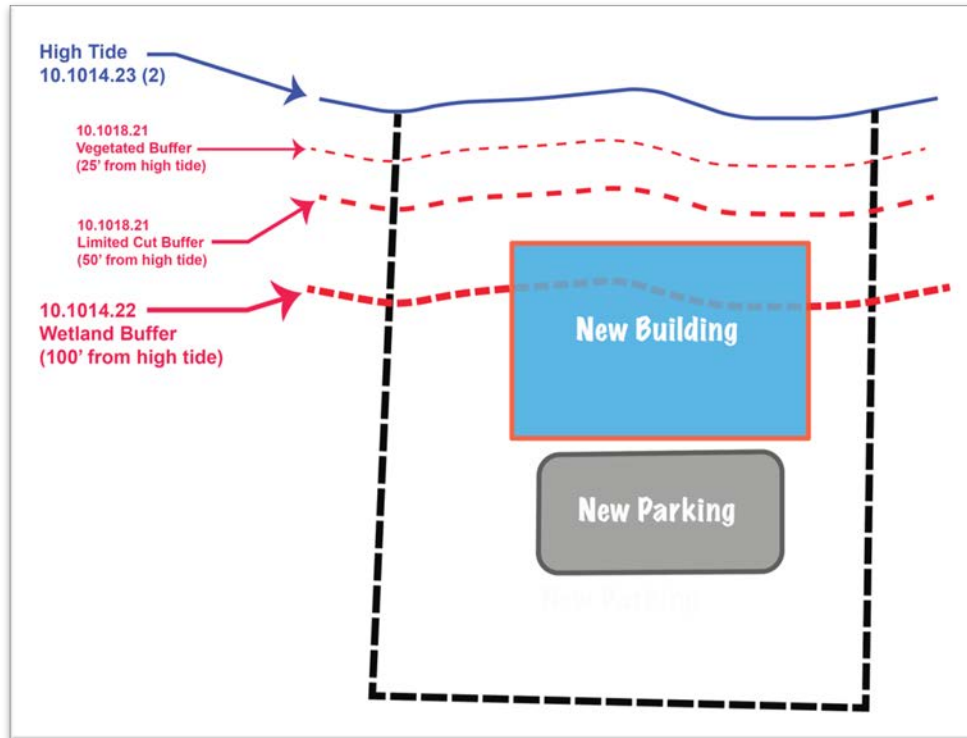


Figure 3: Possible Commercial Building Partially in Wetland Buffer

**10.1017.40 Conditional Use Approval**

- 10.1017.41 The Planning Board shall grant a conditional use permit provided that it finds that all other restrictions of this Ordinance are met and that proposed **development** meets all the criteria set forth in section 10.1017.50 or 10.1017.60, as applicable.
- 10.1017.42 The Planning Board shall evaluate an application for a conditional use permit in accordance with *The Highway Methodology Workbook Supplement – Wetland Functions and Values: A Descriptive Approach*, NAEPP-360-1-30a, US Army Corps of Engineers, New England Division, September 1999, as amended.
- 10.1017.43 The burden of proof that the criteria required for approval of the conditional use permit exist or are met shall be the responsibility of the applicant.
- 10.1017.44 Economic considerations alone are not sufficient reason for granting a conditional use permit.
- 10.1017.45 Where new **impervious surface** is proposed in a **wetland** or **wetland buffer**, the submission of a plan to compensate for such new **impervious surface** does not guarantee that a conditional use permit will be granted.

Note that 10.1017.41 requires a proposal to meet “all the criteria” of 10.1017.50 but in turn obligates the Planning Board to grant a CUP if it does.

10.1017.44 states explicitly that economic considerations alone are **not** sufficient to grant a CUP and 10.1017.45 states that a proposal to compensate for impervious surface in a **wetland buffer** does **not** guarantee the granting of a CUP.

The criteria used to determine compliance with the ordinance are listed under 10.1017.50 (10.1017.60 pertains to utilities).

### **10.1017.50 Criteria for Approval**

Any proposed **development**, other than installation of utilities within a right-of-way, shall comply with all of the following criteria:

- (1) The land is reasonably suited to the **use**, activity or **alteration**.
- (2) There is no alternative location outside the **wetland buffer** that is feasible and reasonable for the proposed **use**, activity or **alteration**.
- (3) There will be no adverse impact on the **wetland** functional values of the site or surrounding properties;
- (4) **Alteration** of the natural vegetative state or managed woodland will occur only to the extent necessary to achieve construction goals; and
- (5) The proposal is the alternative with the least adverse impact to areas and environments under the jurisdiction of this Section.
- (6) Any area within the **vegetated buffer strip** will be returned to a natural state to the extent feasible.

Returning to the example in Figure 3, above, I think that simple example would likely fail to satisfy 10.1017.50 (2) as Figure 2 shows that the simple proposal could fit outside of the **wetland buffer**. This is not to minimize any other possible problems with a proposal such as Figure 3: such a proposal would also likely fail to meet the criteria of 10.1017.50 (3) and/or 10.1017.50 (4) and possibly other criteria depending on details not relevant to this memo.

A “Figure 3 proposal”, in my opinion, should therefore fail in a request to have a CUP granted based on the plain language of the ordinance.

Since there are many parcels around the North Mill Pond that are improved in various ways, this then raises the related question of how the ordinance pertains to a previously improved parcel.

Figure 4 shows such a possibility, with an existing commercial building and some of its parking inside the **wetland buffer** area.

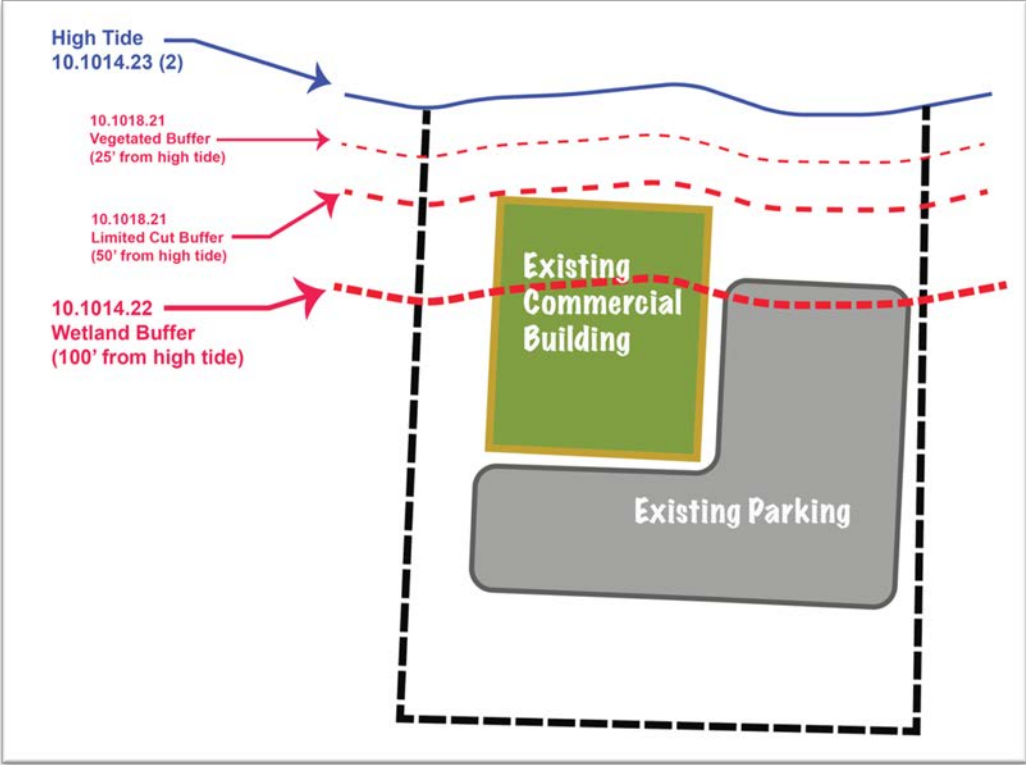


Figure 4: Theoretical Existing Improved Parcel on North Mill Pond

Using the same base in Figure 4, Figure 5 depicts a possible proposal to redevelop the site with new construction in a way that reduces wetland buffer impacts.

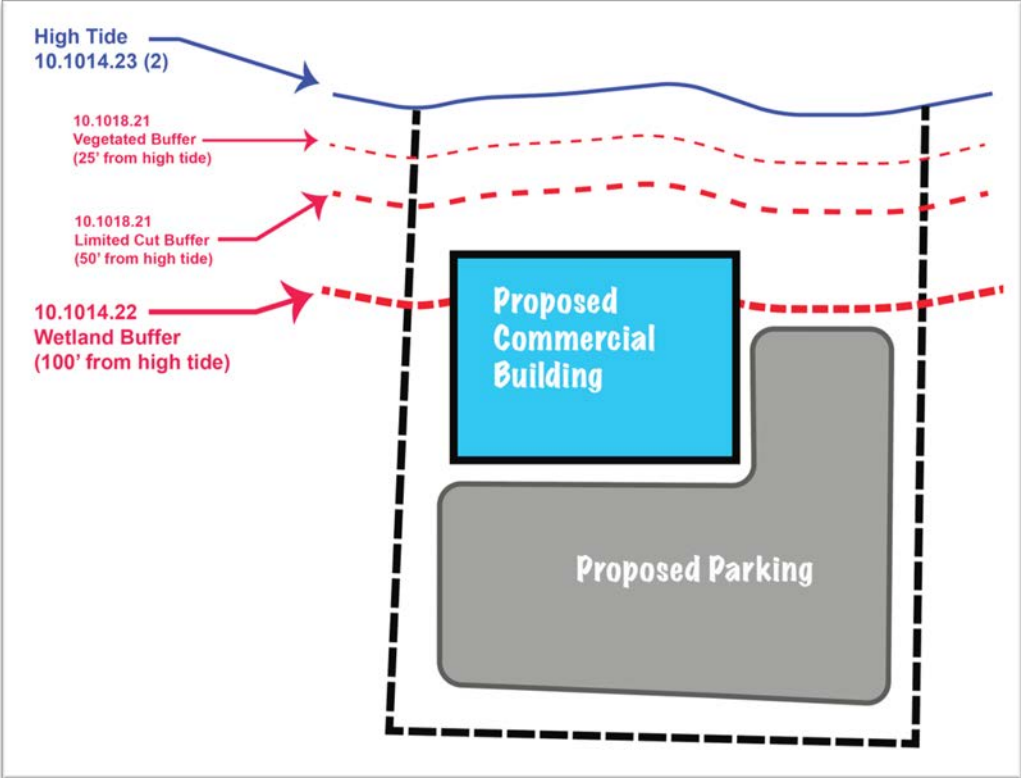


Figure 5: Possible New Project on Figure 4 Base



To further detail Figure 5, I have made it into an overlay onto Figure 4 (the pre-existing condition) and added some transparency to make Figure 6. This shows, and for sake of this discussion we may assume, an overall reduction in impact to the wetland buffer (reductions in blue), with 2 new areas of impact to the wetland buffer (in red). As noted above, the uses permitted in 10.1016.10 do not include commercial uses and there are

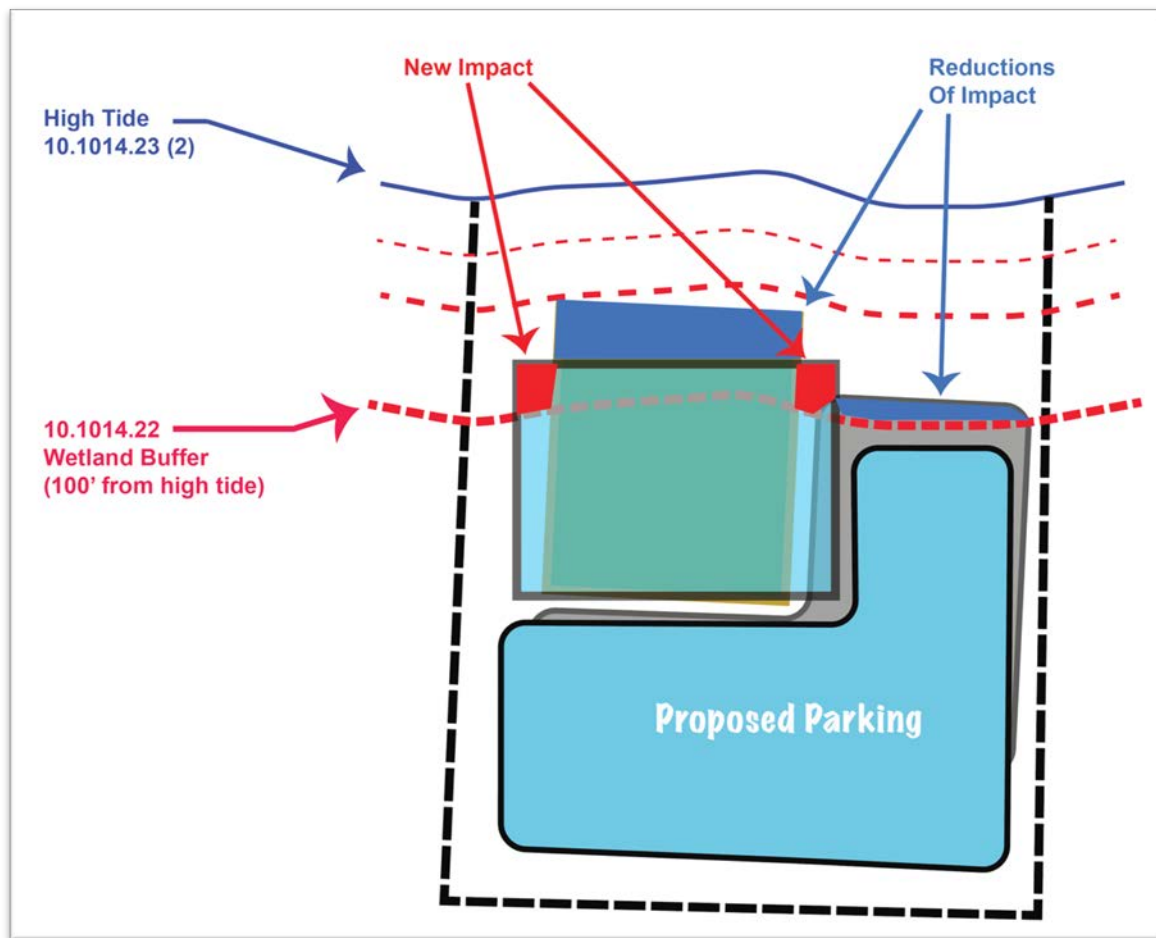


Figure 6: Figure 5 Overlay onto Figure 4

no provisions to change or extend a pre-existing commercial building or use. This is to distinguish such a proposal from the limited extension or expansion of certain one and two-family dwellings which is a permitted use.

This leads back to 10.1016.20 which states:

10.1016.20 Any **use**, activity or **alteration** not specifically permitted by Section 10.1016.10 above is prohibited unless authorized by the Planning Board through the grant of a conditional use permit.

Figure 7: 10.1016.20

Therefore, without a CUP, the proposal of Figure 5 is prohibited.

The same general provisions and criteria of 10.1017.40 and 10.1017.50, respectively, noted above pertain to a review of Figure 5.

From what I have seen in my limited time on this Board, it seems some are under the impression that the ordinance allows a proposal such as shown in Figure 5 specifically because it proposes a reduction in impact to the **wetland buffer**.

I believe this idea flows from section 10.1017.24 of the ordinance:

10.1017.24 Where feasible, the application shall include removal of **impervious surfaces** at least equal in area to the area of **impervious surface** impact. The intent of this provision is that the project will not result in a net loss of pervious surface within a jurisdictional wetland buffer. If it is not feasible to remove **impervious surfaces** from the wetland buffer at least equal in area to the area of new **impervious surface** impact, the application shall include a **wetland buffer** enhancement plan that describes how the wetland functions and values will be enhanced to offset the proposed impact.

However, that section of the ordinance is not a part of the criteria which are used to evaluate a CUP application- rather, it is under the application requirements. In addition, the prior section notes (below) as additional application requirements:

10.1017.23 The application shall describe the impact of the proposed project with specific reference to the criteria for approval set forth in Section 10.1017.50 (or Section 10.1017.60 in the case of utility installation in a right-of-way), and shall demonstrate that the proposed site **alteration** is the alternative with the least adverse impact to areas and environments under the jurisdiction of this Ordinance.

Again, the application requirements: direct applicants to the “criteria for approval” in 10.1017.50; and, require them to demonstrate that the proposal is “the alternative with the least impact”. The “least adverse impact” is a recurrent phrase in the ordinance.

For 10.1017.24 to come under consideration, a proposal must therefore first satisfy the criteria of 10.1017.50 and only then, would the provisions of demonstrating a reduction in impervious area under 10.1017.24 become relevant. For a previously vacant lot proposal, 10.1017.24 of course would also not be relevant.

Note too that the requirements of 10.1017.45 (above) which are specifically under the provisions relating to CUPs note that any plan to compensate for new impervious surfaces in a **wetland buffer** does not guarantee the granting of a CUP.

## CUP Criteria

The criteria under 10.1017.50 establish relatively high thresholds to allow **any** development within the **wetland buffer**. This is evident in the criteria themselves and in the very limited uses allowed without a CUP.

None of the six criteria for approval of a CUP relate to a reduction in impervious area nor do they establish any criteria by which to judge such a proposal. The ordinance does not even acknowledge previously existing buildings except certain residential ones. Structures and impervious surfaces are not allowed in the wetland buffer (10.1016.10 (1)) unless all six criteria for approval of a CUP are met.

This may first be viewed an oversight in the ordinance, but actually this is consistent with the prohibitions throughout the ordinance of allowing development in the wetland buffer.

For new development and redevelopment of sites, two of the review criteria provisions impose especially high or strict standards, and extracting those from 10.1017.50 (2) and (5), they state (emphasis added):

- There is **no alternative location outside the wetland buffer**; and
- The proposal is the alternative with the **least adverse impact** to areas...under jurisdiction.

Clearly, and much like the first simple example above, a proposal for development in the **wetland buffer** is likely required to move outside the **wetland buffer** unless it can be shown that the six criteria for approval have been satisfied. Returning to the hypothetical diagram in Figures 5 and 6, it would likely need to be modified as below to satisfy the ordinance.

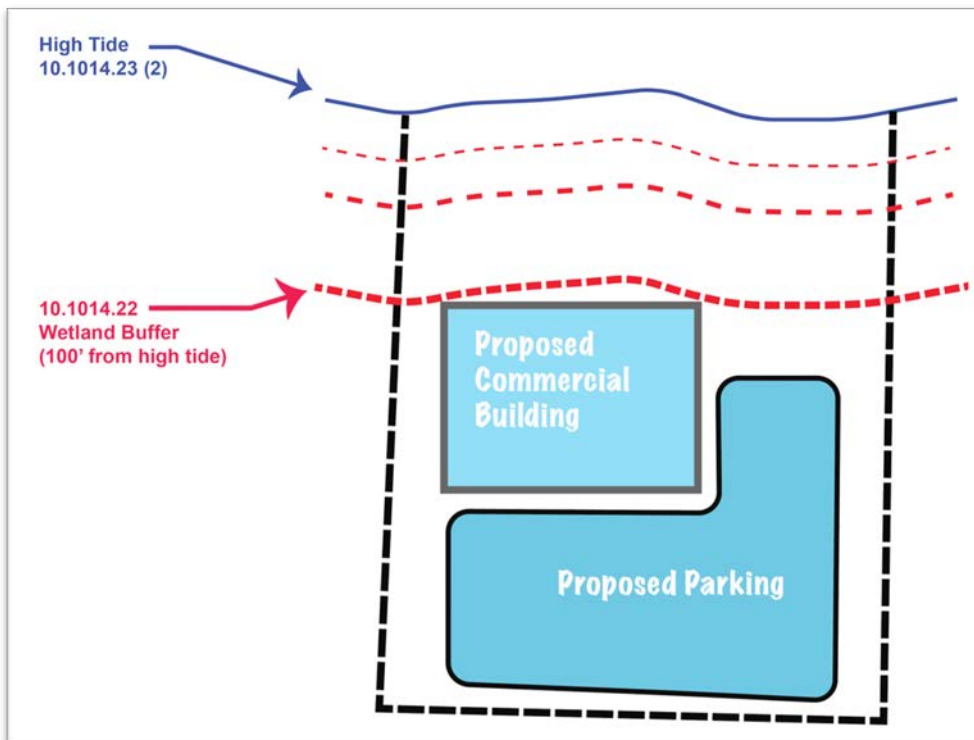


Figure 8: Revised Proposal Outside wetland buffer



Figure 8 represents a reduction of approximately 10% in the footprint of the building shown in Figures 5 and 6. It seems apparent that a reduction in the scale of development is effectively required as the alternative to have the least adverse impact and to stay outside the wetland buffer.

A possible counter argument to this is perhaps that smaller buildings, which are perhaps less costly to build, generate less income potential for the developer. However, such considerations are not sufficient to justify granting a CUP and this is explicit in the ordinance.

10.1017.44 Economic considerations alone are not sufficient reason for granting a conditional use permit.

10.1017.44, like 10.1017.45, is within the specific CUP section of the Ordinance.

Related to this discussion of the **wetland buffer** section of the ordinance are the Article 3 provisions pertaining to nonconforming buildings, such as an existing building encroaching on the wetland buffer. 10.321 is quite specific in not allowing the example building changes depicted in Figure 6 in the **wetland buffer** area because they would not conform with the **wetland buffer** requirements.

10.321 A **lawful nonconforming building** or **structure** may continue and be maintained or repaired, but may not be extended, reconstructed or enlarged unless such extension, reconstruction or enlargement conforms to all the regulations of the district in which it is located.

Allowing new development that simply reduces impervious impact without specifically satisfying all of the other six CUP criteria would allow new development or reinvestment/reconstruction and new construction of buildings and other improvements into the protected **wetland buffer** area. This interpretation essentially guarantees the ongoing and possibly perpetual encroachment into the **wetland buffer**. That defeats the purpose of the **wetland buffer**.

This also cannot be an essentially circular argument such as “this is the least adverse impact because it reduces the existing impervious coverages”.

I welcome discussion on this important topic.