

**SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE  
PORTSMOUTH, NEW HAMPSHIRE**

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

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

**2:00 PM**

**January 4, 2022**

**AGENDA**

**I. APPROVAL OF MINUTES**

- A. Approval of minutes from the December 7, 2021 Site Plan Review Technical Advisory Committee Meeting.

**II. OLD BUSINESS**

- A. **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 (LU-20-259)**
  
- B. **REQUEST TO POSTPONE** The request of **The Sagamore Group, LLC, (Owner)** for properties located at **1169 Sagamore Avenue and 1171 Sagamore Avenue** requesting Site Plan Review approval for the demolition of 3 existing principal structures (3 single family units) and 3 existing accessory structures to be replaced with 6 single family structures and 2 2 family structures to total 10 living units and 22 parking spaces where 15 is required. Said properties are shown on Assessor Map 224 Lot 14 and Assessor Map 224 Lot 15 and lie within the Mixed Residential Office (MRO) District. **REQUEST TO POSTPONE (LU-21-167)**

**III. NEW BUSINESS**

- A. The request of **Elizabeth B. Larsen Trust of 2012 (Owner)**, for property located at **668 Middle Street** requesting Site Plan Review approval for the construction of two two-unit structures and improvement to the existing structures to create a total of eight units on

three lots with associated utilities, connections and site improvements. Said property is shown on Assessor Map 147 Lot 18 and lies within the Historic and General Residence A (GRA) Districts. (LU-21-23)

- B.** The request of **Cate Street Development (Owner)**, for property located at **428 US Route 1 Bypass** requesting amended Site Plan Review approval to provide 56 additional parking spaces, revised stormwater collection and treatment system, and the reconfiguration of an existing structure for a proposed commercial use. Said property is shown on Assessor Map 172 Lot 1 and lies within the Gateway Corridor (G1) District. (LU-19-18)
- C.** The request of **Cate Street Development LLC (Owner), and Boston and Maine Corp (Owner)**, for properties located at **428 US Route 1 Bypass, 406 US Route 1 Bypass, and 55 Cate St** requesting Preliminary and Final Subdivision approval (Lot Line Revision) to convey 31,187 square feet from Map 165 Lot 14 to Map 172 Lot 2, Map 172 Lot 1 and Map 165 Lot 2 which will result in a total of 52,820 square feet lot area for Map 172 Lot 2, 126,500 square feet lot area for Map 172 Lot 1, and 260,789 square feet lot area for Map 165 Lot 2. Said properties are shown on Assessor Map 172 Lot 1, Map 172 Lot 2, Map 165 Lot 2, and Map 165 Lot 14 and lie within the Transportation Corridor (TC) and the Gateway Corridor (G1) District. (LU-19-18)

#### **IV. 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://us06web.zoom.us/webinar/register/WN\\_\\_T9XD82rT-aM-SMGVx-XSA](https://us06web.zoom.us/webinar/register/WN__T9XD82rT-aM-SMGVx-XSA)

**SITE PLAN REVIEW TECHNICAL ADVISORY COMMITTEE  
PORTSMOUTH, NEW HAMPSHIRE**

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

**2:00 PM**

**December 7, 2021**

**MINUTES**

**MEMBERS PRESENT:** Peter Britz, Interim Planning Director, Environmental Planner; Peter Stith, Chairperson, Principle Planner; David Desfosses, Construction Technician Supervisor; Patrick Howe, Deputy Fire Chief; Shanti Wolph, Chief Building Inspector; Darrin Sargent, Police Captain; Nicholas Cracknell, Principal Planner; Zachary Cronin, Assistant City Engineer

**MEMBERS ABSENT:** Stefanie Casella, Planner 1;

**ADDITIONAL  
STAFF PRESENT:**

**I. APPROVAL OF MINUTES**

- A.** Approval of minutes from the November 2, 2021, Site Plan Review Technical Advisory Committee Meeting.

Mr. Britz moved to approve the minutes from the November 2, 2021, Site Plan Review Technical Advisory Committee Meeting, seconded by Mr. Cracknell. The motion passed unanimously.

**II. OLD BUSINESS**

- A. 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**

**DISCUSSION AND DECISION OF THE BOARD**

Chairman Peter Stith noted that this would be carried over to the January 4, 2021, Technical Advisory Meeting.

- B.** The application of **Monarch Village, LLC (Applicant)**, on behalf of **Neveesha Hospitality, LLC (Owner)** for property located at **3548 Lafayette Road** requesting Site Plan Review and a Conditional Use Permit as permitted under 10.5B41.10 of the Zoning Ordinance to allow for the demolition of 6 structures; the redevelopment of 6 existing structures to create 6 units in building 8, 15 units in building 2, 5 units in building 4, 2 units in building 5, 9 units in building 7; the construction of 4 new structures to create 12 units in building 3 with a 4,303 square foot footprint, 24 units in building 6 with a 7,048 square foot footprint, a 250 square foot storage structure and an 825 square foot storage structure; creating a total of seventy-five (75) residential units with 123 parking spaces where 113 spaces are required. Said property is shown on Assessor Map 297 Lot 6 and lies within the Gateway Corridor (G1) District. (LU-21-90)

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

Eric Saari from Altus Engineering and Attorney Kevin Baum spoke to the application. Mr. Saari reviewed what has changed. The covered parking structures have been removed and it was modified to include an 8-foot walkway. The sidewalk was moved out of the right of way on Route 1 and an easement was created. They responded to the comments from the traffic review and the drainage review. Comment number 5 on the drainage review was about maintenance. This is an infiltration base system with pretreatment and catch basins. The area will be landscaped so there will not be a high sediment load. The applicant has committed to not using sand in their snow maintenance. That will significantly help toward lessening the sediment. The system that is there now has been working for decades and this will be an improvement. There should not be any long-term problems.

Mr. Britz commented that reducing the sand may mean an increase in the use of salt. The people in charge of snow maintenance should go through the snow pro certification program. Mr. Saari agreed that could be a condition. The other comment was about the frost slope and dry well. It's 4.14% from building to infiltration area. It should not be an issue at all. Mr. Desfosses agreed. The last comment related to the foundation drains. Those will be empty unless there is a major storm event.

#### **TAC Comments:**

- The sewer laterals for buildings 6 and 7 seem to be in conflict with the water mains that are shown on the sewer profile.
  - Mr. Saari responded that this would be fixed.
- The new sewer line should enter manhole 5158 at least a few inches above the main sewer run. This will help with construction and in keeping the new main from backing up when the main sewer is running fuller.
  - Mr. Saari confirmed that would be updated.
- Install water mains about a foot above the sewer on a more or less constant grade.
  - Mr. Saari responded that they were trying to maintain 5 feet of cover. It would be a smoother run but there would only be 4 feet of cover with insulation. Mr. Desfosses confirmed that was fine.



- Provide hydraulic Ripley Dam on the proposed sewer main at Station 3+00 to prevent spring condition backed up water in the drainage infiltration system from chasing the sewer installation stone toward the City's sewer main in Lafayette. This dam installation is to be witnessed by DPW during construction.
  - Mr. Saari responded that note would be added.
- What are the Yard Drain structures? No detail provided. Are they Neoplast?
  - Mr. Saari responded that would be updated.
- The easement required for the front drainage system should be a condition of approval.
  - Mr. Saari responded that Mr. Baum would address all easement comments at the end.
- The 12" FES from the CPP leaving outlet structure 1 should be at least elev. 49.00 to prevent future clogging.
  - Mr. Saari responded that it was already 3 inches above existing grade. They can raise it more.
- Does the applicant have the right to upgrade and receive power from the adjacent lot? It seems as though the power should come from Rt1 directly to avoid future issues should the adjacent lot be developed. Provide documentation of any easements.
  - Mr. Saari responded that Mr. Baum would address all easement comments at the end.
- The 4" proposed water will also have a tapping saddle and valve, the shut off valve shown on the property line is redundant.
  - Mr. Saari responded that would be changed.
- The water shut off heads for the buildings will be painted blue if domestic and red if for fire with permanent paint.
  - Mr. Saari responded that a note would be added.
- Inside building 8, provide shut off valves on both the incoming and outgoing mains to facilitate meter changing. Also provide 4" backflow device and bypass metering as desired by Portsmouth Water. Portsmouth water to review plans for this area prior to construction.
  - Mr. Saari responded that right now there is a separate domestic and fire service. The meter is in the front of the building. They will add a note that the DPW will review the plumbing plan.
- Applicant will hire a 3rd party company to identify areas of ground water infiltration that can be eliminated from the local municipal sewer collection system. After agreement from the City on the targeted areas, the developer will need to permit and construct via whatever means are approved (repair/replace/reline) areas of the sewer successfully in order to create capacity for this development in the sewer system. The amount of infiltration to be removed must be a value equal or greater to two times the amount of waste predicted from the development.
  - Mr. Saari responded that there was already a report done. It looked like they could do a manhole or two. Mr. Cronin noted that this could be a separate conversation. Mr. Saari confirmed that he would follow up.
- Install second hydrant at beginning of water main near Lafayette Road.
  - Mr. Saari confirmed that plan would be updated.
- Document easement/right to flow across neighboring property.

- Mr. Saari responded that Mr. Baum would address all easement comments at the end.
- Community space must be identified as one of the defined spaces.
  - Mr. Saari commented that they called it out as a park. They would like to put in a dog park. Installing a playground won't happen because it's too big of a liability. Trails may not be possible because of the property lines and the wetland buffer. There are trails off site close by. Mr. Cracknell commented that they should show it on the plan and add signage if they are public trails. The dog park and a trail makes sense for that many people living there. A playground should not add that much liability. Mr. Saari responded that playground equipment would be too much of a liability. Mr. Cracknell commented that there should be more active community space in addition to the dog park. Right now, the proposed community space seems pretty weak.
- Community space should be redesigned for more functional uses.
  - Suggested additions as follows:
    - Playground in the 13,716 square feet of park area.
    - Dog park in the northern corner of the parcel.
    - Loop trail around the perimeter of the site.
- Remove 8 parking spaces adjacent to the 13,716 square feet of park area.
  - Mr. Saari responded that they can commit to removing the parking. It will help with drainage. They will move the curbing for parking. The new drainage design is a closed system. The existing system has a lot of homemade structures but surprisingly does work fine. It discharges to the abutting land. Everything dumps out through an 8-inch pipe.

Mr. Baum commented that the easements could be a condition of approval. These current conditions have existed for a long time. Their position is that they have rights by prescription to continue the flow over that lot. That's before all the work gone on in this lot to improve it. The owner of the abutting lot is an absentee landlord. It is an LLC out of NJ, and they have not been responsive. The applicant's position is that they have the right to continue to flow. An easement would be ideal, but there are real concerns that a stipulation for an easement will kill the project. There has been over 20 years of flow so there are prescription rights.

Mr. Saari commented that they were expanding the electrical in the same location and would put a new pole on the property. Eversource maintains an easement from what they can tell. It is possible to come in from the street, but it would be complex. Mr. Desfosses commented that they would need to see the Eversource easement that allows them to service this lot from there. Mr. Saari responded that this would be prescription rights as well because it was existing. Mr. Desfosses noted that it was being changed because they were upgrading it. They should submit something in writing to have the City's legal department review it. Mr. Britz noted that it did not make sense to approve a new pipe on their property unless the City's legal department agreed with their prescription rights position. Mr. Baum confirmed that he would coordinate with the legal department. Ultimately, it's a private issue between two properties. Mr. Britz agreed, however, if the Planning Board provides an approval, then the city is involved. This should be resolved

before it goes to the Planning Board because if something has to change it would need to come to TAC.

The owner (name inaudible) requested that they have the option to resolve the legal issue and then proceed to the Planning Board with the understanding if something had to change, they would come back to TAC. Mr. Britz responded that if the legal department sees the plan as sufficient, then that is fine. Mr. Saari commented that they would be sending less to the drainage than what goes through it today. The existing pipe will work up to a 10-year storm. Another option is to leave the pipe in place. If it's captured in the condition it should work. Mr. Desfosses confirmed that would work.

Mr. Britz questioned how they would build the retaining wall without disturbing the buffer. Mr. Saari responded that there was a foot between the base of the wall and the buffer. The wall is only 3 feet high. Mr. Britz questioned if the snow storage would be on the edge of the property. Mr. Saari responded that it would be pushed off all edges.

Mr. Britz commented that the "remove by hand" note for the open space beyond wall should be included in the site plan as well to ensure no equipment is used. Mr. Saari confirmed that would be added.

Mr. Cracknell provided more community space suggestions. There needs to be more active use areas. They could do a playground, half basketball court, or pickle ball court. There needs to be an amenity in there that will support the project. They have the space to do it. It would have been good to have a trail behind the storage area. Mr. Cracknell questioned if they would need a CUP for a trail behind the 3-foot wall to connect the sidewalk. Mr. Saari responded that they can put in a crosswalk to provide access.

Mr. Howe commented that he did not see fire service for building 2 on the plan. Mr. Saari responded that they will make sure it is on the plan. Mr. Howe questioned if building 8 had just 2 residential units. Mr. Saari confirmed that was correct. Mr. Howe noted that buildings 8 and 5 did not need fire service because they only had 2 residential units in them. The rest of the buildings need it.

Mr. Saari questioned if there was a specific location for the second hydrant. Mr. Cronin responded that it should be somewhere along Lafayette Rd. Mr. Howe requested that they coordinate the location with the fire department and DPW.

Mr. Howe questioned if there would be enough water without a pump. Mr. Saari responded that they were still awaiting a response from the mechanical engineer. Mr. Howe commented that it would have been nice to have that answer because they may need a second structure. If it is in one of the buildings, they need direct access to the outside and it needs to be separate from the remainder of the building. Mr. Saari confirmed that they should be able to put it in a basement.

## **PUBLIC HEARING**

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

### **DISCUSSION AND DECISION OF THE BOARD**

The owner (name inaudible) commented that they would come back to TAC if they had to build a separate pump building or if the plan needed to change for drainage.

Mr. Britz moved to recommend approval to the Planning Board, seconded by Mr. Cracknell with the following stipulations:

1. That the applicant use only Sno-pro certified contractors to conduct snow removal on the property.
2. Hydrant location reviewed by DPW
3. Provide easement or rationale for prescriptive easement to the Legal department for drainage and electrical service coming from the abutting property.
4. Show a note on the site plan that the area proposed for cleanup in the wetland exclude heavy equipment and earth disturbance.
5. Plan showing revised community space areas including design details for an enclosed dog park, playground and/or other active recreation (e.g. half-court basketball or a pickleball courts)
6. Remove 8 parking spaces along the proposed community space adjacent building #7
7. Update utility plan showing fire service to each building on the site.
8. Provide colored shutoff's for both domestic and fire water supply valves.
9. The sewer laterals for building 6 and 7 are revised so as to not conflict with the water mains.
10. The new sewer is to enter manhole 5158 at least a few inches above the main sewer run.
11. Sewer mains are installed about 1 foot above sewer on a constant grade.
12. Provide a hydraulic Ripley Dam on the proposed sewer main at Station 3+00.
13. A yard drain detail is added to the plan set.
14. The 12' FES from the CPP leaving outlet structure 1 should be at least elev. 49.00.
15. The 4" proposed water will have a tapping saddle and valve.
16. The water shut off heads for the buildings will be permanently painted blue if domestic and red if for fire service.
17. Add a note to plan that building 8 is to provide shot off valves on both the incoming and outgoing mains to facilitate meter changing. 4" backflow

device and bypass metering required. Portsmouth DPW to review plans prior to construction.

18. Applicant will hire a 3<sup>rd</sup> party company to identify areas of groundwater infiltration and create capacity within the sewer system for this project. The City must agree on the targeted areas and the applicant will construct the system to create capacity. The amount of infiltration to be removed must be a value equal or greater to two times the amount of waste predicted from the development.
19. A second fire hydrant will be installed at the beginning of the water main near Lafayette Road.

The motion passed unanimously.

- C. REQUEST TO POSTPONE** The request of **The Sagamore Group, LLC, (Owner)** for properties located at **1169 Sagamore Avenue and 1171 Sagamore Avenue** requesting Site Plan Review approval for the demolition of 3 existing principal structures (3 single family units) and 3 existing accessory structures to be replaced with 6 single family structures and 2 2 family structures to total 10 living units and 22 parking spaces where 15 is required. Said properties are shown on Assessor Map 224 Lot 14 and Assessor Map 224 Lot 15 and lie within the Mixed Residential Office (MRO) District. **REQUEST TO POSTPONE (LU-21-167)**

#### **DISCUSSION AND DECISION OF THE BOARD**

Chairman Peter Stith noted that this would be carried over to the January 4, 2021, Technical Advisory Meeting.

- D. WITHDRAWN AT THE REQUEST OF THE APPLICANT** The request of **Dagny Taggart, LLC, (Owner)**, for property located at **93 Pleasant Street** requesting a Conditional Use Permit as permitted by section 10.1112.62 of the Zoning Ordinance and according to the requirements of Section 10.1112.14 to allow 18 off-street parking spaces where 35 are required. Said property is shown on Assessor Map 107 Lot 74 and lies within the Historic, Downtown Overlay, and CD4 Districts. **WITHDRAWN AT THE REQUEST OF THE APPLICANT (LU-21-183)**

#### **DISCUSSION AND DECISION OF THE BOARD**

Chairman Peter Stith noted that this has been withdrawn.

E. The request of **Dagny Taggart, LLC, (Owner)**, for property located at **93 Pleasant Street** requesting Site Plan Review approval for the redevelopment of the existing 4 story structure and the construction of a new structure totaling 52 living units and 18 parking spaces. Said property is shown on Assessor Map 107 Lot 74 and lies within the Historic, Downtown Overlay, and CD4 Districts. (LU-21-183)

- a. Please note this item is now being considered for 34,266 feet of commercial space with no residential use.

### **SPEAKING TO THE APPLICATION**

John Chagnon from Ambit Engineering, Rebecca Brown, and Mark McNabb spoke to the application. Mr. Chagnon commented that they presented this last month and have since made some changes to the plan as a result.

#### **TAC Comments:**

- Remove all references to mixed use or residential as project is now 100% commercial.
  - Mr. Chagnon responded that this proposal was for a building that was 100% commercial now. The sheets will be updated accordingly.
- Provide easement for Way-finding sign and relocate off the sidewalk.
  - Mr. Chagnon responded that a note was added to sheet C3.
- Provide storm drainage connection for existing downspout on east corner of building.
  - Mr. Chagnon responded that they would reroute into the basement area and attach to interior roof drain connections.
- The note on C6 'Downspout w UG Drain Pipe to street' needs to be removed. Connect downspout to drainage system.
  - Mr. Chagnon responded that they removed that note and will be relocating the drainpipe connection.
- Detail H on D2 should note that the pavers used in the driveway are 1) 80mm thick and 2) Require a driveway permit and responsibility of maintenance in perpetuity. The regular sidewalk brick should be noted to be 60mm.
  - Mr. Chagnon responded that has been updated.
- Hatch 'tip downs' denoted on plan so that it is clear that they are brick.
  - Mr. Chagnon responded that the plan was updated.
- Reason for additional power pole to be provided.
  - Mr. Chagnon responded that Eversource was looking to loop the power. The power feeds from the pole on Court St. to the transformer then back to Court St. and down to a proposed pole. That way if one wire cuts out, there is still a way to feed it. The pole was located for future connectivity. In the initial discussions with Eversource they wanted a second transformer placed near the property line and then overhead service to the buildings on State St. Essentially this pole location allows for future expansion. Mr. Desfosses commented that they would need to apply for a license for the new pole. They may not get it.

- Court St to be milled and overlaid 1.5” after construction is complete per DPW regulations from Washington to Court St.
  - Mr. Chagnon responded that they added note 10 on sheet C3.
- Detail ‘T’ on D4 references flexible connector couplings. Couplings are to be rigid gasketed SDR 35 couplings.
  - Mr. Chagnon responded that they changed that detail on sheet 4.
- The building drain should tie into the 15” pipe downstream of CB4629 with an inserta-tee and not into the basin directly in accordance with BMP.
  - Mr. Chagnon responded that they revised this on sheet C6.
- Please draw a profile of the drainage system so we can see how it will work.
  - Mr. Chagnon responded that they did a profile on sheet 4. They are working with ACF Environmental to get revised drawings. Mr. Desfosses confirmed that it could be a condition of approval.
- Repairs to the sidewalk across Court St that occur will be repaired to the satisfaction of the DPW.
  - Mr. Chagnon responded that they added note 15 on sheet C3.
- Detail I does not apply and should be removed from the plan set. Do not install CI truncated domes on either side of the driveway.
  - Mr. Chagnon confirmed this was completed.
- Width of garage opening should be wide enough to allow for cars to enter and exit at the same time to prevent cueing in roadway. Provide documentation of adequate width.
  - Ms. Brown responded that they provided a memo that summarized a response to this comment. As well as the comment from TEC on the sight distances. They could implement an alert system used by pedestrians and motorists. The exit ramp is operated by a garage door, so when that is activated to open an alert system would be activated. There would be two black poles 3.5 feet up off the road that would illuminate with the words “car coming” and 4 yellow bars flashing on top. The one to the west would be located near the wayfinding signage. The one to the east would be in line with the existing light poles. It would be visible to cars and pedestrians from either direction. There can be a similar system at the bottom of the ramp for incoming cars.
  - Mr. Desfosses commented that the signs could not be in the right of way. Ms. Brown responded that the pole to the west can be located out of the right of way. The eastern pole would be more difficult because of the historic wall. It would be preferable to have one on each side of the wall. They could put it on top of the wall.
  - Mr. Desfosses noted that DPW was concerned about cars queuing on Court St. However, now that it will be for business use most of the traffic will go in at one time and out at another time. Ms. Brown confirmed that was correct. 80% of the traffic will be entering in the morning and exiting in the afternoon. It is highly unlikely there will be much conflict at all. On the rare occasion there is a conflict, then the alert system will be triggered. Mr. Desfosses questioned if they had done a queuing analysis. Ms. Brown responded that they had not prepared a queuing analysis but did do a trip generation estimate. Mr. Desfosses commented that it would be helpful to see a memo on that subject. Mr. McNabb confirmed they would prepare a memo.

- Continue discussions with Eversource on transformer location.
  - Mr. Chagnon confirmed that they would.
- Tree plantings must follow City Arborist Standards.
  - Mr. Chagnon confirmed that they added the standards to the plan.
- Consider adding more scooter parking inside the garage area.
  - Mr. Chagnon commented that a certain number of bike spaces were required due to regulations. The preference would be to keep it how it is and flip some bike spaces to scooter spaces if needed.

Mr. Cracknell questioned if the parking would be restricted to the tenants of building. Mr. McNabb confirmed that was correct. Mr. Cracknell questioned if they should consider a stipulation that any future change of use of the garage would be revisited by a traffic study reviewed by the city. Mr. McNabb agreed that was reasonable.

Mr. Cronin commented that the sewer should be updated from 6 inches to 8 inches on the plan. Mr. Chagnon confirmed that would be updated.

### **PUBLIC HEARING**

Elizabeth Bratter of 159 McDonough St. noted that there was no loading zone proposed with this project. Court St. is so small and there is no street level parking. This application should not move forward until there is a safe and reasonable loading zone located. TAC members should consider if all the standards in the regulations are in compliance with all city ordinances and codes. Sometimes things like parking are moved on to the Planning Board for them to address. However, they don't have the same expertise on traffic or how it impacts police and fire safety. This should not move to the Planning Board until parking availability has been clearly demonstrated.

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

### **DISCUSSION AND DECISION OF THE BOARD**

Mr. Cracknell responded to the letter they received in public comment regarding the downtown overlay district. If a property is in the downtown overlay district and is only commercial use, then there are no off-street parking requirements. There is a presumption and recognition that there is available municipal parking regardless of distribution in the district. There are some areas in the district that has less than others. TAC does not have the jurisdiction to peel back the layers and require studies over the district. There may be a point in time where the city wants to look at the district especially with the new Foundry Garage to consider. There is no jurisdiction at this level or the Planning Board to require off street parking for this development at all. Mr. Desfosses noted that there was a loading zone across the street on Pleasant St.



Mr. Desfosses moved to recommend approval to the Planning Board, seconded by Mr. Cracknell with the following stipulations:

1. Applicant is to provide a complete drainage system plan prior to the building permit issuance.
2. Applicant will provide a memo from GPI speaking to the new traffic flow in and out of the parking garage.
3. Applicant is to continue discussion with Eversource to relocate the proposed transformer.
4. Sidewalk ramps are to be hatched on plan to show they are brick.
5. The HDC should administratively approve the proposed pedestrian alert signs.
6. The basement level parking shall only be used for tenants in the building and not be open for public use.
7. Any future change of use for the property shall require subsequent traffic study and approval by City.
8. Correct the Court Street sewer pipe size to show 8" on Court Street from 6" shown on plan.
9. Change landscape stone shown on the plan to river stone.
10. Pedestrian and vehicle alert system is to be located on private property.

The motion passed unanimously.

**F. The request of 238 Deer Street, LLC, (Owner), for property located at 238 Deer Street, requesting Site Plan Review approval for demolition of the existing structure and the construction of a new 3-4 story mixed-use building with 21 residential units with a footprint of 5,286 s.f. and 19,190 s.f. gross floor area with associated site improvements. Said property is shown on Assessor Map 125 as Lot 3 and lies within the Character District 4 (CD4), Downtown Overlay, and Historic Districts. (LU-20-238)**

### **SPEAKING TO THE APPLICATION**

John Chagnon from Ambit Engineering spoke to the application.

TAC Comments:

- Use granite steps instead of concrete
  - Mr. Chagnon agreed.
- Show existing utilities on existing features plan and note any utility disruptions or removals on demolition plan. Note any changes in existing utilities with bold lines so that it is clear what the intent is.
  - Mr. Chagnon confirmed that would be updated.
- Reuse existing sewer connection to the degree possible. Separate water and sewer connections by at least 3'.
  - Mr. Chagnon agreed.
- Do not show **proposed** grading on land of others unless the applicant is proposing to re-grade with temporary construction easements.
  - Mr. Chagnon responded that they have been in discussion with 30 Maplewood Condo Association and added to the plan a proposed easement. It is mutually

beneficial to both property owners. They are still working on the written language of the easement. It would allow for 30 Maplewood Ave. to have access to the land between the buildings and reserve a 2 foot landscape area easement for 238 Deer St. to put in plantings. There will be a no build access easement to the right of it. That will allow the building to be to code for window openings and provide space for future maintenance of the area. The grading on sheet C5 of the plan has been updated to clarify it. They will match the brick sidewalk that was constructed with 46 Maplewood Ave. The easements will be obtained prior to construction.

- We are still waiting on answers from the Architect and Eversource regarding power.
  - Mr. Chagnon responded that they were working through this and had meetings scheduled this week.
- Provide documentation of easements to work on adjacent lots.
  - Mr. Chagnon responded that they added the easement plan, and it can be a condition of approval to finalize them.
- Identify proposed staging areas.
  - Mr. Chagnon responded that the hope would be that they could go through approval process and identify staging areas.
- Move curb 3 feet off the left side of the building to protect the vegetation.
  - Mr. Chagnon responded that they can do that, but they are in process with the easement negotiations.
- Consider adding scooter parking to bike parking area, possibly as spilt parking area.
  - Mr. Chagnon responded that they were concerned about complying with the amount of bike racks required by the ordinance and scooters between the buildings.

Mr. Cracknell commented that he did not like the 4 bikes in front of the commercial space on the corner. They should be moved to somewhere in the back of the building. It would be messy on the corner with 7-8 bikes. Scooters could park there. Mr. Chagnon commented that was part of Steve Kelm's property. Mr. Cracknell commented that they should replace the bikes on the corner with scooter parking. It should not be posted as bike or scooter parking but that's likely where they will go. The 2-foot landscaping will not provide any protection. It's good you got an agreement for that side of the building with an easement. It is important to protect the building especially with all that glass. The landscaping will not stop the vehicle. A decorative metal screen could be a better option. Mr. Chagnon commented that a 3-foot fence would be at the height of a bumper. That would be more damaging than pushing into a bush. Mr. Cracknell noted that there was a lot of glass on the first floor. They should take another pass on the screening there.

## **PUBLIC HEARING**

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

## **DISCUSSION AND DECISION OF THE BOARD**

Mr. Desfosses moved to recommend approval to the Planning Board, seconded by Mr. Cracknell with the following stipulations:

1. Show existing utilities on existing features plan and note any utility disruptions or removals on the demolition plan.
2. Easements shall be provided for all proposed work (grading, access, etc.) that is to occur on land other than the applicant's.
3. Proposed staging areas shall be identified during the CMMP development stage.
4. Applicant shall coordinate with abutting property owners to relocate the first 4 bike racks adjacent the commercial storefront windows.
5. Easements shall be provided to the City for the pedestrian alleyway access to the abutting public walkways.
6. A decorative metal screen should be added along the proposed curb line in the abutting parking lot in order to provide better protection to the building.

The motion passed unanimously.

- G.** The request of **Torrington Properties Inc. (Applicant)**, on behalf of 2422 Lafayette Road Associates, LLC (Owner), for property located at **2454 Lafayette Road** requesting to amend a previously granted Conditional Use Permit to provide less than required parking in accordance with Section 10.1112.14 of the Zoning Ordinance and Conditional Use Permits for increased housing density and for increased building height as allowed by Section 10.5B72.10 and Section 105B72.20 of the Zoning Ordinance, and development within the Gateway Neighborhood Mixed Use District in accordance with Section 10.5B40 of the Zoning Ordinance; and for Site Plan Review to demolish the existing structure and construct a five (5) story structure with 95 condominium units with 20% designated as workforce housing units and provide 21,896 square feet of community space. Said property is shown on Assessor Map 273 Lot 3 and lies within the Gateway Neighborhood Mixed Use Corridor (G1) District. (LU-21-192)

### **SPEAKING TO THE APPLICATION**

Neil Hanson from Tighe and Bond and Rob DiSalvo spoke to the application. Mr. Hanson commented that they submitted the revised plans and a response sheet to the comments they received from the previous month's TAC meeting.

#### **TAC Comments:**

- Entire Drainage system to be cleaned after construction is complete. Please provide a photo and description log for our review once complete.
  - Mr. Hanson agreed.
- There are manholes evident in the parking lot that have been paved over that should be brought up to grade to facilitate cleaning.
  - Mr. Hanson agreed.
- Please show us calculations regarding parking that there are enough spaces remaining to support the other Plaza uses during construction.

- Mr. Hanson responded that they did a parking analysis, and the peak day is on Saturday. The demand is for 406 spaces. The area of construction will take over 210 spaces and leave 454 spaces available for parking.
- Verify that one 6" connection is sufficient to sewer the structure.
  - Mr. Hanson responded that they did a pipe analysis for peak demand, and it is sufficient. They will need a sewer connection permit as well. There will be plenty of space
- Remove existing permanent striping and replace with temporary striping in Constitution before removal of pavement begins for multi-use path extension.
  - Mr. Hanson responded that they would add a note.
- All structures in Constitution in the area of construction (both sides of street) are to be reset and fitted with catch basin liners prior to overlay.
  - Mr. Hanson responded that they would add a detail to the plan.
- There is no sump shown on the catch basin detail. Please provide.
  - Mr. Hanson responded that the detail would be revised.
- Please note the Constitution Ave work will be to DPW standards and that pavement mix designs will need to be approved through the DPW prior to paving.
  - Mr. Hanson responded that a note would be added.

Mr. Howe commented that they discussed the dead-end corridors on the second floor a little bit. Mr. DiSalvo added that the left-hand side of corridor is 49.6 from the cross corridor to the end wall. It meets the dead-end corridor requirements. Mr. Howe commented that the dead-end corridor requirements for assembly areas is 20 feet. Mr. DiSalvo responded that they have not defined the clubhouse layout, but it will likely have 3 doors out to the corridor. The program is not fully designed yet. Mr. Howe agreed that they can meet the clubhouse egress requirements, but the floor in general cannot have dead-end corridors of over 20 feet. That would affect at least 2 maybe 3 of the corridors. Mr. DiSalvo confirmed that they would look at it.

Mr. Cracknell commented that they may want to rethink the trees in the 15 wide strip if they are pines because the understory would die off. A spruce tree would provide better screening. The textured mountable apron should be as wide possible.

## **PUBLIC HEARING**

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

## **DISCUSSION AND DECISION OF THE BOARD**

Mr. Cracknell moved to recommend approval to the Planning Board, seconded by Mr. Britz with the following stipulations:

1. The applicant will clean out the drainage system on site upon completion of construction.
2. Locate manholes in parking lot that have been paved over and remove asphalt.
3. Insure sufficient lighting for dog park and pickle ball courts.
4. Add note to second floor plan about life safety that the interior floor plan will be amended to meet life safety code.

5. Remove existing permanent striping and replace with temporary striping in Constitution before removal of pavement begins for multi-use path extension.
6. All structures in Constitution in the area of construction (both sides of street) are to be reset and fitted with catch basin liners prior to overlay.
7. The sump is added to the catch basin detail.
8. The Constitution Ave work will be to DPW standards and that pavement mix designs will need to be approved through the DPW prior to paving.

The motion passed unanimously.

### III. NEW BUSINESS

- A. The request of **Austin Repair & Renovation LLC, (Owner)**, for the property located at **27 Shaw Road** requesting Preliminary and Final Subdivision approval to subdivide one existing lot with 57,354 square feet of lot area and 230 feet of street frontage on Shaw Road and 127 feet of street frontage on Walker Bungalow Road into 2 lots as follows: Proposed Lot 1 with 34,205 square feet of lot area and 230 feet of street frontage on Shaw Road; Proposed Lot 2 with 23,149 square feet of lot area and 127 feet of street frontage on Walker Bungalow Road. Said property is shown on Assessor Map 223 Lot 18 and is located in the Single Residence B (SRB) District. (LU-21-203)

#### SPEAKING TO THE APPLICATION

Joe Coranati and Joseph Onosko spoke to the application. The existing lot is on Shaw Rd., and it has frontage on Walker Bungalow Rd. They are looking to do a straightforward subdivision. One question they received was about the sewer. There is a sewer project coming into this area. They would like start construction prior to the start of the sewer project. Then they would have the opportunity to tie into the sewer system or potentially add a holding tank for the short term if needed.

Mr. Cronin commented that they have done that before, but it would be subject to DES approval. Mr. Coranati confirmed that they could add that as a stipulation. They could get the holding tank approval and only put it in if needed.

#### TAC Comments:

- There is currently no public sewer on Walker Bungalow or Shaw Roads but a low pressure sewer system will be bid in December of 2021. Applicant to coordinate any proposed connections to the new sewer with DPW. If sewer is not to be provided, please include needed on-site disposal system details.
- Please describe how lot 2 is to receive power and communication wires for further comment/approval.
  - Mr. Coranati responded that there were overhead lines all around. Given the area and potential for ledge it would be better to connect to those. Mr. Desfosses responded that the existing poles were out of the frontage, so they may be looking at adding a pole. Mr. Coranati commented that if they could not feed off the existing pole that's just off the frontage, then they would go through the pole

application process. Mr. Desfosses commented that they should show the proposed pole location and start the process.

- As a condition of approval, the front setback should be from the right of way line, not the street centerline.
  - Mr. Coranati confirmed that was revised.
- The area around the 20 contour on the edge of Shaw Road will receive more runoff once Lot 2 is constructed. Please show a rain garden in this spot with proper underdrainage to prevent damage to the roadway.
  - Mr. Coranati confirmed that would be added.
- Please provide information substantiating the viability of Walker Bungalow Road for legal access.
  - Mr. Coranati requested clarification on the comment. Mr. Britz responded that it was a private street, so just make sure the access would work.

Mr. Cracknell commented that he would prefer to see the front yard setback to stay in the middle of the street. That would minimize vegetation removal on the site. The house should be aligned with Walker Bungalow Rd. with the houses on each side of it. That would retain the trees on the back half of the lot. Mr. Britz confirmed that's how they showed it on the plan. Mr. Onosko agreed they wanted to save the trees. Mr. Cracknell commented that it should be a stipulation.

Mr. Cracknell questioned if they were going to save the stone wall. Mr. Onosko confirmed they would.

## **PUBLIC HEARING**

Paul Messier of 171 Walker Bungalow Rd. commented that he was in support of the project and suggested reorienting the driveway to avoid putting it on the hill.

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

## **DISCUSSION AND DECISION OF THE BOARD**

Mr. Onosko commented that they have not located the house yet and requested that they not include a stipulation about placement because that could limit options. Mr. Cracknell agreed, but noted future applications should show a proposed house location.

Mr. Cracknell moved to recommend approval to the Planning Board, seconded by Mr. Desfosses with the following stipulations:

1. Maintain front yard setback subject to zoning review.
2. Show detail of rain garden on lower lot (parent lot) including flowage rights and drainage easement.
3. Show how proposed lot 2 will get power and show pole if needed.
4. Show septic design/holding tank approved by DES.

The motion passed unanimously.

- B.** The request of **Sagamore Corner LLC, (Owner)**, for the property located at **960 Sagamore Avenue** requesting Site Plan Approval to demolish the existing mixed use structure and construct a 6-unit residential structure totaling 21,066 square feet of gross floor area, 21 parking spaces as well as associated utilities, lighting, landscaping, and site improvements. Said property is shown on Assessor Map 201 Lot 2 and is located in the Mixed Residential Business (MRB) District. (LU-21-204)

### **SPEAKING TO THE APPLICATION**

Corey Belden from Altus Engineering and Eric Cates spoke to the application. Mr. Belden commented that this was here in November to discuss the application for site plan improvements at 960 Sagamore Ave. The site is a little under an acre in size. There is a small wetland piece to the southwest corner of the property. All of the proposed improvements are outside the buffer except for a small patio. There is a 6-unit residential building with a 16 space garage and 5 exterior visitor parking spaces.

TAC Comments:

- Label the address in the title block of the CUP plan.
  - Mr. Belden confirmed that would be updated.
- The UG electrical service should be drawn to go from the pole to the building directly as it would be constructed.
  - Mr. Belden confirmed that would be updated.
- Water is dependent on the City constructing a new water main in Sagamore Grove, what is the backup plan for providing water if the main is not installed yet?
  - Mr. Belden responded that they could use the 6-inch line that services the hydrant. Mr. Desfosses responded that they could not. If the city doesn't build anything, then they will have to go across Sagamore Ave. for that. Mr. Belden confirmed they would coordinate with DPW.
- Installation of the proposed 10,000 gallon holding tank is subject to NHDES approval.
  - Mr. Belden agreed.
- Please use natural stone finish on stonewall.
  - Mr. Belden responded that they would work with the Planning Department on this.

Mr. Cracknell commented that they may want to make the community storage room a little bit more shallow to allow for better space in the parking area. Mr. Belden agreed.

### **PUBLIC HEARING**

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

### **DISCUSSION AND DECISION OF THE BOARD**

Mr. Cracknell moved to recommend approval to the Planning Board, seconded by Mr. Britz with the following stipulations:

1. Label address in the title block of the CUP plan.
2. The UG electrical service should be drawn to go from the pole to the building directly.
3. Applicant should coordinate with DPW on viable water source prior to building permit issuance.
4. DES approval of holding tank
5. Fire service plan
6. The natural stone finish of the proposed retaining wall shall be finalized and reviewed by the Planning Department prior to approval by the Planning Board.
7. The proposed community storage room in the basement level shall be reduced in size in order to support egress from parking space #10.

The motion passed unanimously.

- C. The request of **35 Pines LLC, (Owner)**, for the property located at **295 Maplewood, Unit 1** requesting a 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) spaces are required. Said property is shown on Assessor Map 141 Lot 35 and is located in the Character District 4-L2 (CD4-L2) and Historic District. (LU-21-207)

### **SPEAKING TO THE APPLICATION**

Patrick Lavoie and Lauren Green spoke to the application. Mr. Lavoie provided a copy of the condo approval. Mr. Britz noted that before it was a barber shop it was offices. They were required to have 4 parking spaces for that and had a variance. Mr. Britz questioned if they had any parking problems. Mr. Lavoie responded that they did not. There is one appointment an hour and they are all booked online ahead of time. There are only 2 cars at a time with maybe an overlap of 10 mins. Ms. Green added that a lot of clients walk or bike as well. There is a lot of public parking in the area. Mr. Cracknell questioned how many stools they had in the barber shop. Mr. Green responded just one. Mr. Cracknell responded that it made sense to move this forward.

TAC Comments:

- Please provide condo association authorization.

### **PUBLIC HEARING**

Bryce Caldwell of 315 Maplewood Ave. spoke in support of the project and noted that there had not been any parking issues.

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

### **DISCUSSION AND DECISION OF THE BOARD**



Mr. Britz moved to recommend approval to the Planning Board, seconded by Mr. Cracknell with the following stipulations:

1. If additional cutting chairs are added to the business the applicant shall resubmit for review and approval of any traffic- or parking-related impacts.

The motion passed unanimously.

#### **IV. ADJOURNMENT**

Mr. Cracknell moved to adjourn the meeting at 4:50 p.m., seconded by Mr. Desfossed. The motion passed unanimously.

Respectfully submitted,

Becky Frey  
Secretary for the Technical Advisory Committee

# JONES & BEACH ENGINEERS INC.

85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885  
603.772.4746 - JonesandBeach.com

December 20, 2021

Portsmouth Technical Advisory Committee  
Attn: Peter Stith  
1 Junkins Avenue, Suite 3<sup>rd</sup> Floor  
Portsmouth, NH 03801

**RE: Site Plan Application  
668 Middle Street, Portsmouth, NH  
Tax Map 147, Lot 18  
JBE Project No. 20686**

Dear Mr. Stith,

Jones & Beach Engineers, Inc., respectfully submits a Site Plan Application on behalf of the applicant, Tuck Realty Corporation. We have already submitted the subdivision application and attended a T.A.C. Meeting. At the meeting, our approval was conditioned that if we propose more than one unit per lot, we would have to submit for a Site Plan approval. Our client would like to build a two-family house on each lot with a common driveway and therefore we are submitting for a Site Plan approval.

The following items are provided in support of this Application:

1. Completed Site Plan Application (submitted online).
2. Site Plan Checklist.
3. TAC Approval Letter.
4. Letter of Authorization.
5. Current Deed.
6. Test Pits.
7. Architectural Plans.
8. Two (2) Drainage Analysis.
9. One (1) Full 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 Coronati*

Joseph A. Coronati  
Vice President

cc: Michael Garrepy, Tuck Realty Corporation (via email)  
Wendy Welton, ArtForm (via email)  
Timothy Phoenix, Hoefle, Phoenix & Gormley & Roberts P.A. (via email)



## 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: Tuck Realty Corp. Date Submitted: 12/20/21

Application # (in City's online permitting): \_\_\_\_\_

Site Address: 668 Middle Street, Portsmouth, NH Map: 147 Lot: 18

Application Requirements			
<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	Complete application form submitted via the City's web-based permitting program (2.5.2.1(2.5.2.3A))		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. (2.5.2.8)		N/A

Site Plan Review Application Required Information			
<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	Statement that lists and describes "green" building components and systems. (2.5.3.1B)	Drainage Report & C3	
<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. (2.5.3.1C)	Architectural Plans	N/A
<input checked="" type="checkbox"/>	Tax map and lot number, and current zoning of all parcels under Site Plan Review. (2.5.3.1D)	C2, Note 2	N/A

Site Plan Review Application Required Information			
<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. (2.5.3.1E)	LOA or Title Block	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. (2.5.3.1F)	C1	N/A
<input checked="" type="checkbox"/>	Names, addresses and telephone numbers of all professionals involved in the site plan design. (2.5.3.1G)	Cover Sheet	N/A
<input checked="" type="checkbox"/>	List of reference plans. (2.5.3.1H)	C1 Plan Reference Note	N/A
<input checked="" type="checkbox"/>	List of names and contact information of all public or private utilities servicing the site. (2.5.3.1I)	Cover Sheet	N/A

Site Plan Specifications			
<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<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.. (2.5.4.1A)	Required on all plan 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. (2.5.4.1B)	Required on all plan 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. (2.5.4.1C)	C1 Note 4	N/A
<input checked="" type="checkbox"/>	Plans shall be drawn to scale and stamped by a NH licensed civil engineer. (2.5.4.1D)	Required on all plan sheets	N/A
<input checked="" type="checkbox"/>	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. (2.5.4.1E)	N/A	N/A
<input checked="" type="checkbox"/>	Title (name of development project), north point, scale, legend. (2.5.4.2A)	Cover Sheet & C2	N/A
<input checked="" type="checkbox"/>	Date plans first submitted, date and explanation of revisions. (2.5.4.2B)	Revision Block, All Sheets	N/A
<input checked="" type="checkbox"/>	Individual plan sheet title that clearly describes the information that is displayed. (2.5.4.2C)	Required on all plan sheets	N/A
<input checked="" type="checkbox"/>	Source and date of data displayed on the plan. (2.5.4.2D)	Plan Reference C1, A1 & C2	N/A

### Site Plan Specifications – Required Exhibits and Data

<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	<b>1. Existing Conditions: (2.5.4.3A)</b> <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>	Architectural Plans & C1	
<input checked="" type="checkbox"/>	<b>2. Buildings and Structures: (2.5.4.3B)</b> <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>	Architectural Plans & C1	
<input checked="" type="checkbox"/>	<b>3. Access and Circulation: (2.5.4.3C)</b> <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>	C2	
<input checked="" type="checkbox"/>	<b>4. Parking and Loading: (2.5.4.3D)</b> <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>	C2	
<input checked="" type="checkbox"/>	<b>5. Water Infrastructure: (2.5.4.3E)</b> <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>	C1 & C4	
<input checked="" type="checkbox"/>	<b>6. Sewer Infrastructure: (2.5.4.3F)</b> <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>	C1 & C4	

<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>	C4	
<input checked="" type="checkbox"/>	<b>8. Solid Waste Facilities: (2.5.4.3H)</b> <ul style="list-style-type: none"> <li>The size, type and location of solid waste facilities.</li> </ul>	N/A	
<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>	C3 & Drainage report	
<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>	L1	
<input checked="" type="checkbox"/>	<b>11. Indicate where dark sky friendly lighting measures have been implemented. (10.1)</b>	L1	
<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>	L2	
<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>	C3	
<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>	C1 Note 2/	
<input checked="" type="checkbox"/>	<b>15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)</b>	A1	
<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>	C2	
<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>	C1 Note 3	

Other Required Information			
<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	Traffic Impact Study or Trip Generation Report, as required. (3.2.1-2)	N/A	
<input checked="" type="checkbox"/>	Indicate where Low Impact Development Design practices have been incorporated. (7.1)	C3 & Drainage Report	
<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. (7.3.1)	N/A	
<input checked="" type="checkbox"/>	Stormwater Management and Erosion Control Plan. (7.4)	Attached	
<input checked="" type="checkbox"/>	Inspection and Maintenance Plan (7.6.5)	N/A	

Final Site Plan Approval Required Information			
<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input 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> (2.5.3.2A)		
<input 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> (2.5.3.2B)		
<input 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. (2.5.3.2D)		



### Final Site Plan Approval Required Information

<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input type="checkbox"/>	A list of any required state and federal permit applications required for the project and the status of same. (2.5.3.2E)		
<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." (2.5.4.2E)		N/A
<input 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. (2.5.4.2F)		
<input checked="" type="checkbox"/>	Plan sheets submitted for recording shall include the following notes: <ul style="list-style-type: none"> <li>a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds."</li> <li>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."</li> </ul> (2.13.3)		N/A

Applicant's Signature: Joseph Coronati Date: 12/20/21



# CITY OF PORTSMOUTH

Planning Department  
1 Junkins Avenue  
Portsmouth, New  
Hampshire 03801  
(603) 610-7216

## TECHNICAL ADVISORY COMMITTEE

September 23, 2021

Elizabeth Larsen, Trustee  
Elizabeth Larsen Trust of 2012  
668 Middle Street  
Portsmouth, NH 03801

RE: Preliminary and Final Subdivision approval for property located at 668 Middle Street

Dear Ms. Larsen:

The Technical Advisory Committee, at its regularly scheduled meeting of Tuesday, September 7, 2021, considered your application for Elizabeth B Larsen Trust for property located at 668 Middle Street requesting Preliminary and Final Subdivision approval to subdivide 1 existing lot with 81,046 square feet of lot area, and 69.83 feet of street frontage into 3 lots as follows: Proposed Lot 1 with 18,646 square feet of lot area and no street frontage; Proposed Lot 2 with 18,756 square feet of lot area and no street frontage; Proposed Lot 3 with 43,644 square feet of lot area and 69.83 feet of street frontage. The existing buildings will remain and be on Proposed Lot 3. Said property is shown on Assessor Map 147 Lot 18 and lies within the General Residence A (GRA) and Historic Districts. Said property is shown on Assessor Map 147 Lot 18 and lies within the General Residence A (GRA) District. As a result of said consideration, the Committee voted to recommend approval to the Planning Board with the following stipulations:

- In order to prevent segmentation from the Site Plan Review requirements, construction of a structure on either lot that will contain more than one dwelling unit shall require site plan approval.
- Fee simple transfer of the exclusive use area is highly recommended in order to minimize future land use conflicts between the effected lots.
- The sewer line shall be reconfigured and approved by DPW (prior to Planning Board approval).
- The sewer profile shall be added to the plan set.
- The right of way and utility easement over Chevrolet Ave (approximately 6' off the edge of pavement) shall be provided.
- Milling and overlay of the full road width for length of the disturbance area shall be required and, the sidewalk shall be repaired or replaced (as needed and determined by the DPW).
- Subject to DPW review and approval temporary pavement shall be required at time of construction. Such paving shall be to the existing pavement depth and, after a winter season the street shall receive a full mill and overlay.

This matter will be placed on the agenda for the Planning Board meeting scheduled for **Thursday, October 21, 2021**. One (1) hard copy of all plans and supporting reports and exhibits as well as an updated electronic file (in a PDF format) must be filed in the Planning Department and uploaded to the online permit system no later than **Friday, October 1, 2021**.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Peter Britz". The signature is fluid and cursive, with a long horizontal stroke extending from the end.

Peter Britz  
Interim Planning Director

cc:

R. Timothy Phoenix, Esq.  
Mike Garrepy, Tuck Realty Group

## AUTHORIZATION

The undersigned, Elizabeth B. Larsen, Trustee of the Elizabeth B. Larsen Trust of 2012("Trust"), owner of the property located at 668Middle Street, Portsmouth, New Hampshire and further identified as Portsmouth Tax Map 147, Lot 18 (the "Property"), hereby authorize Tuck Realty Corporation ("Tuck") and its advisors Jones & Beach Engineers, Inc. and Hoefle, Phoenix, Gormley and Roberts, P.A., to file documents and appear before the Portsmouth Zoning Board of Adjustment, Planning Board, Technical Advisory Committee and/or Conservation Commission in all matters relating to applications by Tuck to the City of Portsmouth to permit the subdivision of and up to eight townhouses or similar structureson the Property.

Dated: January27, 2021

By:

<i>Elizabeth B. Larsen</i>	dotloop verified 01/27/21 2:40 PM EST TGOV-SMJF-LFZY-ERRP
----------------------------	---

Elizabeth B. Larsen, Trustee  
Elizabeth B. Larsen Trust of 2012

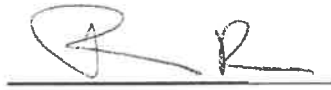
### Letter of Authorization

I, W. Turner Porter, Tuck Realty Corporation, PO Box 190, Exeter, NH 03833, developer of property located in Portsmouth, NH, known as Tax Map 147, Lot 18, 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 668 Middle Street 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



W. Turner Porter  
Tuck Realty Corporation

8/23/21  
Date

065834

**WARRANTY DEED**

KNOW ALL MEN BY THESE PRESENTS that I, **Elizabeth B. Larsen**, unmarried, of 668 Middle Street, Portsmouth, Rockingham County, New Hampshire, 03801,

for consideration paid, grant to **Elizabeth B. Larsen, Trustee of The Elizabeth B. Larsen Trust of 2012** u/d/t dated December 11, 2012, of 668 Middle Street, Portsmouth, Rockingham County, New Hampshire, 03801,

with **WARRANTY COVENANTS** the following described real estate:

**PARCEL I.** A certain parcel of land with the buildings thereon, situate on Middle Street, in said Portsmouth, bounded and described as follows:

BEGINNING on Middle Street at land now or formerly of Blanche B. Lovell and running northwesterly by said Lovell's land seven (7) feet to an angle in the division line; thence turning and running North Eighty (80) degrees West by said Lovell's land, land now or formerly of William Conlon and Annie F. Pierce, land now or formerly of the Heirs of Ellen G. Walsh, land now or formerly of the Heirs of Victor Goss, and land now or formerly of Maurice J. and Elizabeth T. Ham, four hundred sixty-two (462) feet to the center of a stone post; thence turning and running North twenty-six (26) degrees West by land of the City of Portsmouth, formerly of the Frank Jones Brewing Company, one hundred six feet and six inches (106.6") to the center of a stone post; thence turning and running North fifty-nine (59) degrees East by land now or formerly of Coleman and Taccetta, formerly of the Frank Jones Brewing Company, two hundred twenty-seven and one half (227 ½) feet to land now or formerly of Florence Loughton; thence turning and running Southeasterly in a direct line by said Loughton's land four hundred forty-two and one half (442 ½) feet, more or less, to Middle Street; thence turning and running Southwesterly by said Street sixty-nine feet and ten inches (69 ft. 10 in.) more or less, to the place of beginning.

Together with a right of way thirty (30) feet wide across the northwesterly side of land now or formerly of said Loughton, adjoining the land now or formerly of said Coleman and Taccetta, formerly of said Brewing Company, and subject to similar right of way in said Loughton, her heirs and assigns, thirty (30) feet wide across the northwesterly side of the land herein conveyed, adjoining land now or formerly of said Coleman and Taccetta. Said rights of way are more fully

2012 DEC 20 PM 12: 04

ROCKINGHAM COUNTY  
REGISTRY OF DEEDS

limited and defined in deed of William J. Moat to G. Ralph Loughton, dated 10 May, 1980, recorded in Rockingham Registry of Deeds, Book 512, Page 429, and an agreement of G. Ralph Loughton and Harry E. Boynton, dated May 31, 1913 and recorded in said Rockingham Registry of Deeds, Book 674, Page 341, to which reference is hereby made for a more complete description.

Also, those certain parcels of land located on Forest, Central and Elm Streets, Portsmouth, County of Rockingham, State of New Hampshire, bounded and described as follows:

PARCEL 1. BEGINNING at a point in the northeasterly sideline of Forest Street at the northwesterly corner of land now or formerly of DeCoff, being Lot No. 263 on Plan of Jackson Farm and Buckminster Field drawn by John W. Durgin, CE dated February 1955, recorded in Rockingham County Registry of Deeds and running northwesterly by the northeasterly sideline of Forest Street about 256 feet to the southerly corner of Lot No. 267 on said plan; thence turning and running southwesterly about one hundred feet to the point where the southeasterly sideline of Lot 216 on said plan is intersected by the easterly sideline of the property now or formerly of the State of New Hampshire and being the approach to the high level Piscataqua River Bridge; thence turning and running northerly along the easterly sideline of the said bridge approach land now or formerly of the State of New Hampshire to land now or formerly of the Boston & Maine Railroad; thence turning and running easterly by the right of way of the Boston & Maine Railroad to the northwesterly corner of Lot No. 263; thence turning and running southerly by the westerly line of Lot 263 to the point of beginning, said parcel comprising those portions of Lots 216 and 267 not taken by the State of New Hampshire for the approach to the Piscataqua Bridge, together with Lots 264, 265 and 266, and the stub of land on Forest Street westerly of the westerly sideline of Central Street and the stub of Central Street northerly of the northerly sideline of forest.

PARCEL 2. BEGINNING at a point in the northwesterly sideline of Elm Street at the southwesterly corner of Lot No. 237, the property now or formerly of Zamarchi, being the northeasterly corner of the parcel herein described and running southwesterly by said Elm Street 130 feet to a corner at Lot 234, the property now or formerly of the City of Portsmouth; thence turning and running northwesterly by said Lot 234 and Lot 221, the property now or formerly of the City of Portsmouth, 160 feet to the southeasterly side of Central Street; thence turning and running northeasterly by Central Street 101 feet to a corner at Lot No. 218, the property now or formerly of the City of Portsmouth, thence turning and running southeasterly by Lot 218 and Lot 237 to Elm Street and the point of beginning. Comprising Lots 219, 220, 235 and 236 on said Plan of Jackson Farm and Buckminster Field.

PARCEL 3. All my right, title and interest in and to the following streets or portions of streets, namely:

Central Street from the easterly sideline of the Piscataqua River Bridge approach to the southerly sideline of Forest Street.

That portion of Elm Street bounded northerly by Forest Street, southwesterly by land now or formerly of Zamarchi 200 feet, westerly by Elm Street, and northwesterly by Parcel 2 and land of Zamarchi 190 feet.

Forest Street from the westerly side of Cutts Street westerly to a line between the easterly corner of Lot 216 and the southeasterly corner of Lot 217.

These parcels are subject to such rights as the abutting owners and others may have the use thereof for access to their respective properties.

These parcels are also subject to an Easement to Northern Utilities, Inc. dated March 4, 2004, and recorded at Rockingham County Registry of Deeds in Book 4470, Page 2003.

Included in this conveyance is any and all personal property contents of the real estate.

Being the same premises conveyed to the Grantor by deed of The Wyman P. Boynton Revocable Trust of 1994 u/d/t dated September 1, 1994, recorded at Rockingham County Superior Court at Book 3980, Page 0209.

Dated this 11<sup>th</sup> day of December, 2012.

W. W. Woodman Jr.  
Witness

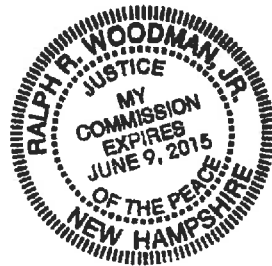
Elizabeth B. Larsen  
Elizabeth B. Larsen

State of New Hampshire  
Rockingham, SS.

December 11, 2012

Personally appeared, before me, the above-named Elizabeth B. Larsen, 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.

W. W. Woodman Jr.  
Notary Public/Justice of the Peace







36 Stage Rd, Nottingham NH 03290  
603.679.1866 C: 603.706.2521  
calbert.env@gmail.com

**TEST PITS**  
**668 MIDDLE ROAD**  
**PORTSMOUTH, NEW HAMPSHIRE**  
**JANUARY 14, 2021**

Performed by: Christopher Albert, SSD #1085

TEST PIT #1 – GRASS MAT

0" - 9"	10YR 3/4	dark yellowish brown fine sandy loam common roots
9" - 20"	10YR 5/6	yellowish brown fine sandy loam common roots
20" - 38"	2.5Y 6/4	Light yellowish brown fine sandy loam Few stones

No H2O observed  
SHWT: 28"  
Roots: 28"  
Refusal: 38"  
Perc Rate = 8 min/inch

TEST PIT #2 – GRASS MAT

0" - 7"	10YR 3/4	dark yellowish brown fine sandy loam to loamy sand many roots
7" - 20"	10YR 5/6	yellowish brown fine sandy loam few roots
20" - 46"	2.5Y 5/3	Light yellowish brown fine sandy loam, few stones





36 Stage Rd, Nottingham NH 03290

603.679.1866 C: 603.706.2521

calbert.env@gmail.com

No H2O observed

SHWT: 32"

Roots: 32"

Refusal: 46"

Perc Rate = 8 min/inch

TEST PIT #3 – GRASS MAT

Refusal: 12"

TEST PIT #4 – GRASS MAT

0" - 9"	10YR 3/4	dark yellowish brown fine sandy loam to loamy sand many roots
9" - 28"	10YR 5/6	yellowish brown fine sandy loam few roots
28" - 48"	2.5Y 5/3	Light yellowish brown fine sandy loam, few stones

No H2O observed

SHWT: 28"

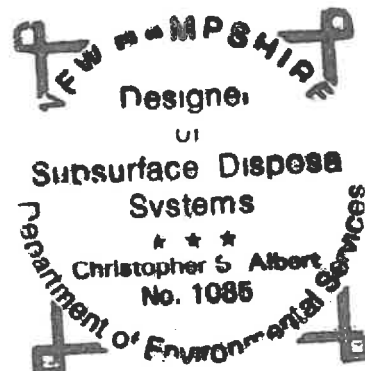
Roots: 28"

Refusal: 48"

Perc Rate = 8 min/inch

TEST PIT #5 – GRASS MAT

Refusal: 18"





36 Stage Rd, Nottingham NH 03290  
603.679.1866 C: 603.706.2521  
calbert.env@gmail.com

#### TEST PIT #6 – FOREST MAT

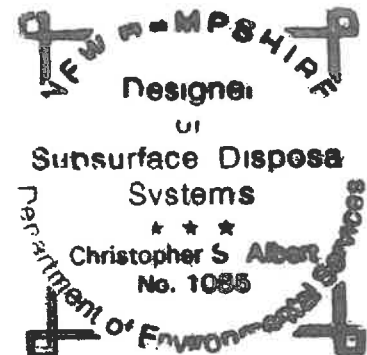
0" – 12"	10YR 3/3	dark brown fine sandy loam few roots
12" - 36"	10YR 4/6	yellowish brown fine sandy loam common roots
36" - 50"	2.5Y 6/4	Light yellowish brown fine sandy loam Few stones

No H2O observed  
SHWT: 40"  
Roots: 36"  
Refusal: 50"  
Perc Rate = 8 min/inch

#### Test Pit #7 – GRASS MAT

0" – 12"	10YR 3/3	dark brown fine sandy loam few roots
12" - 36"	10YR 4/6	yellowish brown fine sandy loam common roots
36" - 72"	2.5Y 5/4	Light Olive brown fine sandy loam Firm, Few stones

No H2O observed  
SHWT: 36"  
Roots: 36"  
Refusal: 72"  
Perc Rate = 8 min/inch





TEST PIT #8 – GRASS MAT

Refusal: 12"

TEST PIT #9 – GRASS MAT

Refusal: 24"

TEST PIT #10 – GRASS MAT

0" - 10"

Crushed Gravel (fill material)

Stabilization Fabric

10" - 24"

2.5Y 5/3

Light olive brown  
 Silty clay loam  
 Subangular blocky

Encountered 2" electrical  
 conduit

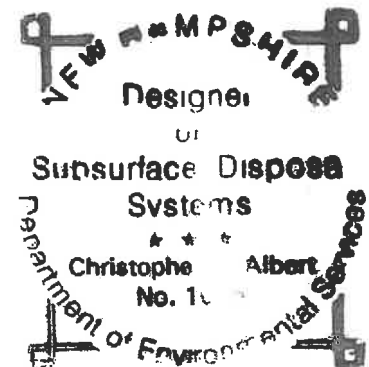
No H2O observed

SHWT: 10"

Roots: none

Refusal: none

Perc Rate = 20 min/inch



TEST PIT #11 – EDGE TREE LINE

0" – 20"

10YR 2/2

Very dark brown, FSL  
 Few roots

20" - 84"

2.5Y 3/4

Light olive brown  
 Silty clay loam  
 Subangular blocky



36 Stage Rd, Nottingham NH 03290

603.679.1866 C: 603.706.2521

calbert.env@gmail.com

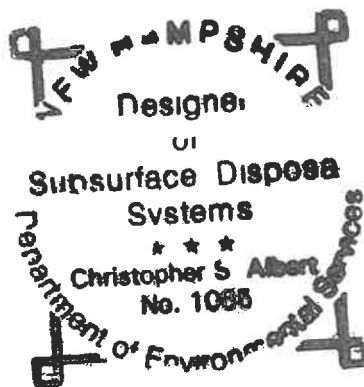
No H2O observed

SHWT: 20"

Roots: 20"

Refusal: none

Perc Rate = 20 min/inch



10/8/2021

# Plan Name TBD

Chevrolet Ave, Portsmouth NH (10/8/2021)



**Prelim / Work in Progress** 603-431-9559

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NOTE: To scale as noted only if printed on 11x17 paper with "no scaling" (do not "Fit").

**Dear Builders and Home Buyers,**

In addition to our Terms and Conditions (the "Terms"), please be aware of the following:

This design may not yet have Construction Drawings (as defined in the Terms), and is, therefore, only available as a Design Drawing (as defined in the Terms and together with Construction Drawings, "Drawings"). It is possible that during the conversion of a Design Drawing to a final Construction Drawing, changes may be necessary including, but not limited to, dimensional changes. Please see Plan Data Explained on [www.ArtformHomePlans.com](http://www.ArtformHomePlans.com) to understand room sizes, dimensions and other data provided. We are not responsible for typographical errors.

Artform Home Plans ("Artform") requires that our Drawings be built substantially as designed. Artform will not be obligated by or liable for use of this design with markups as part of any builder agreement. While we attempt to accommodate where possible and reasonable, and where the changes do not denigrate our design, any and all changes to Drawings must be approved in writing by Artform. It is recommended that you have your Drawing updated by Artform prior to attaching any Drawing to any builder agreement. Artform shall not be responsible for the misuse of or unauthorized alterations to any of its Drawings.

**Facade Changes:**

- To maintain design integrity, we pay particular attention to features on the front facade, including but not limited to door surrounds, window casings, finished porch column sizes, and roof friezes. While we may allow builders to add their own flare to aesthetic elements, we don't allow our designs to be stripped of critical details. Any such alterations require the express written consent of Artform.
- Increasing ceiling heights usually requires adjustments to window sizes and other exterior elements.

**Floor plan layout and/or Structural Changes:**

- Structural changes always require the express written consent of Artform
- If you wish to move or remove walls or structural elements (such as removal of posts, increases in house size, ceiling height changes, addition of dormers, etc), please do not assume it can be done without other additional changes (even if the builder or lumber yard says you can).





10/8/2021

# Plan Name TBD

Chevrolet Ave, Portsmouth NH (10/8/2021)



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10/8/2021

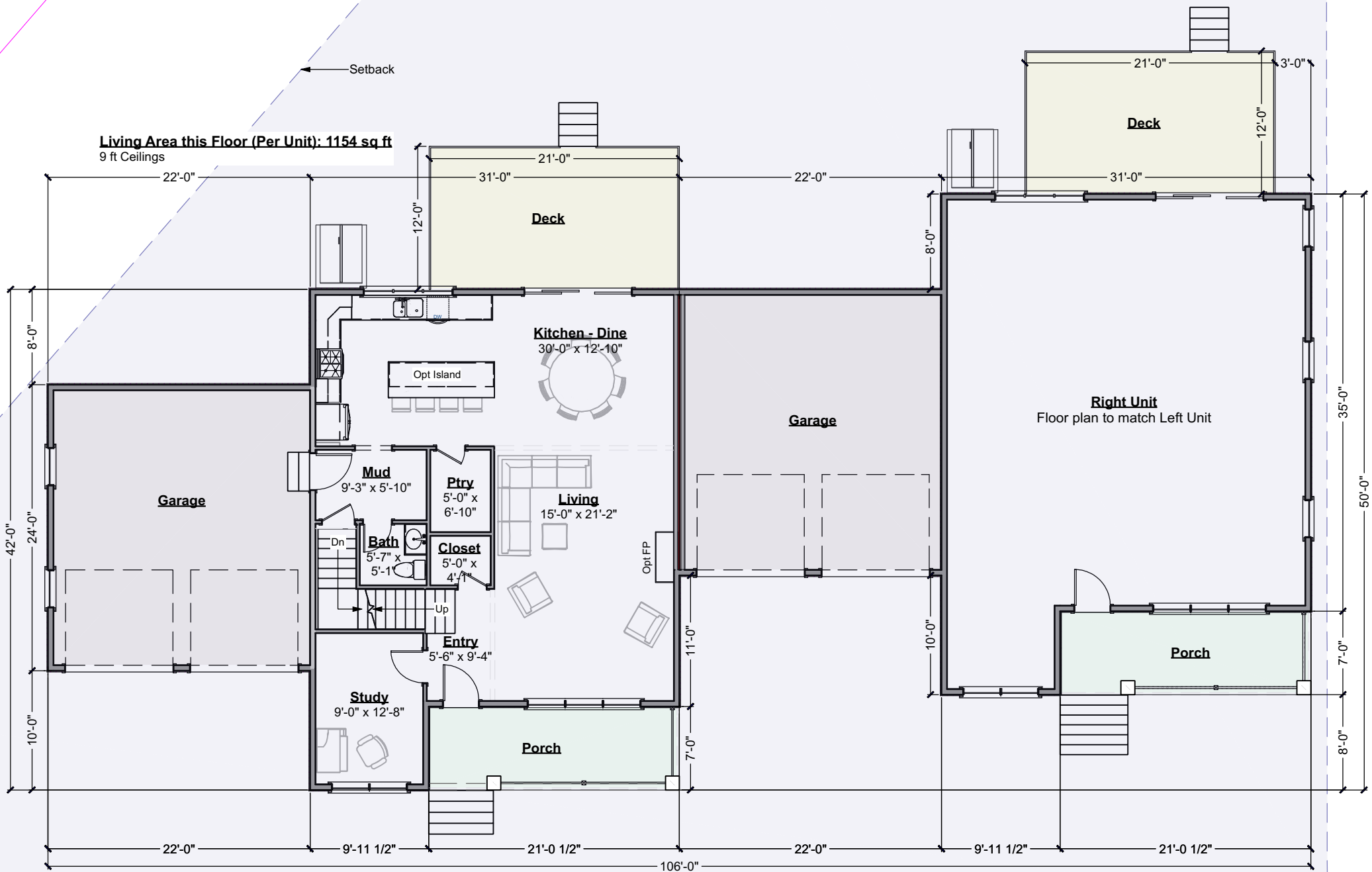
Plan Name TBD  
Chevrolet Ave, Portsmouth NH (10/8/2021)



Prelim / Work in Progress 603-431-9559

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First Floor Plan  
Scale: 3/32" = 1'-0"



10/8/2021

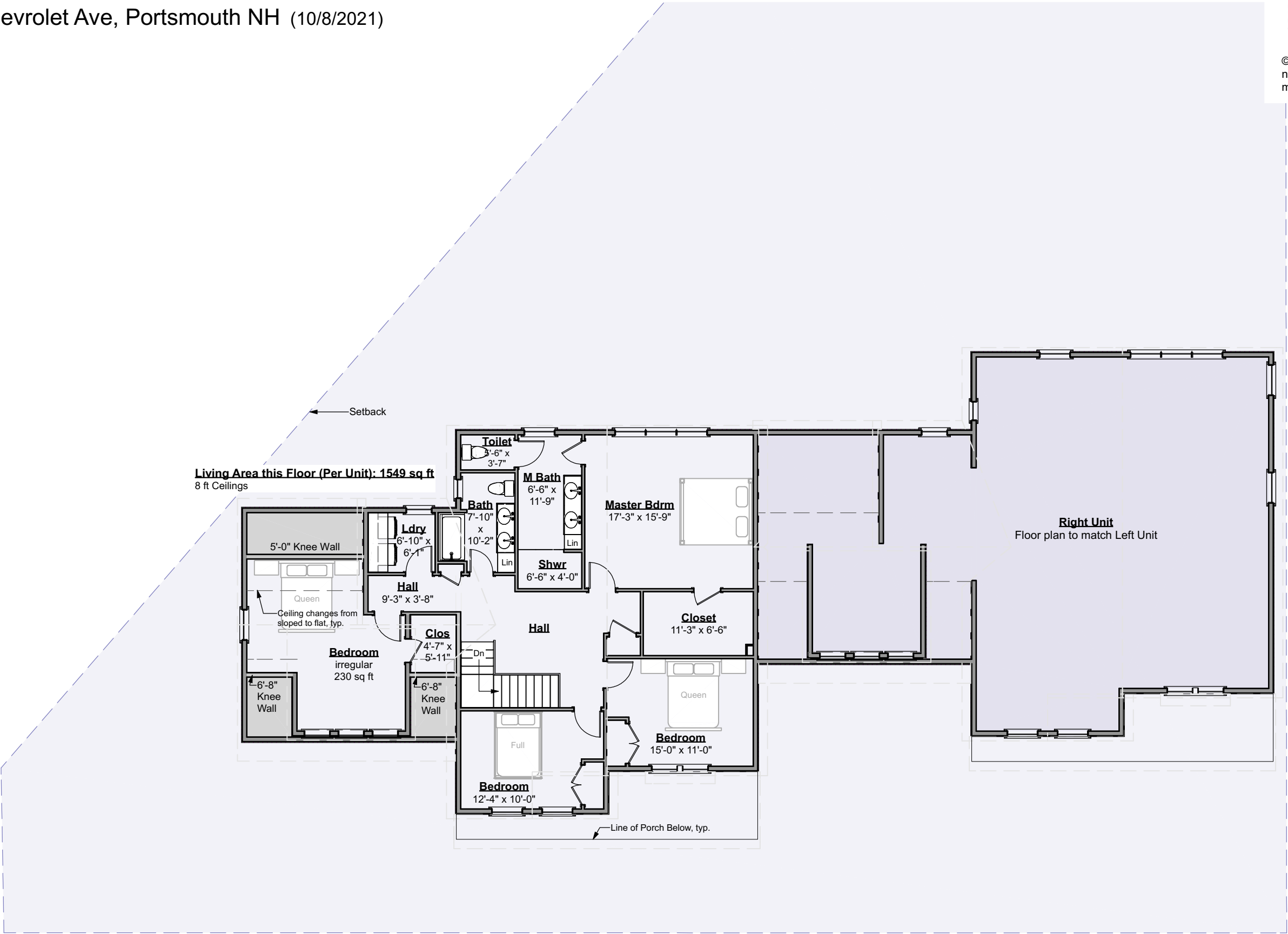
**Plan Name TBD**  
Chevrolet Ave, Portsmouth NH (10/8/2021)



**Prelim / Work in Progress** 603-431-9559

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**Second Floor Plan**  
Scale: 3/32" = 1'-0"

10/8/2021

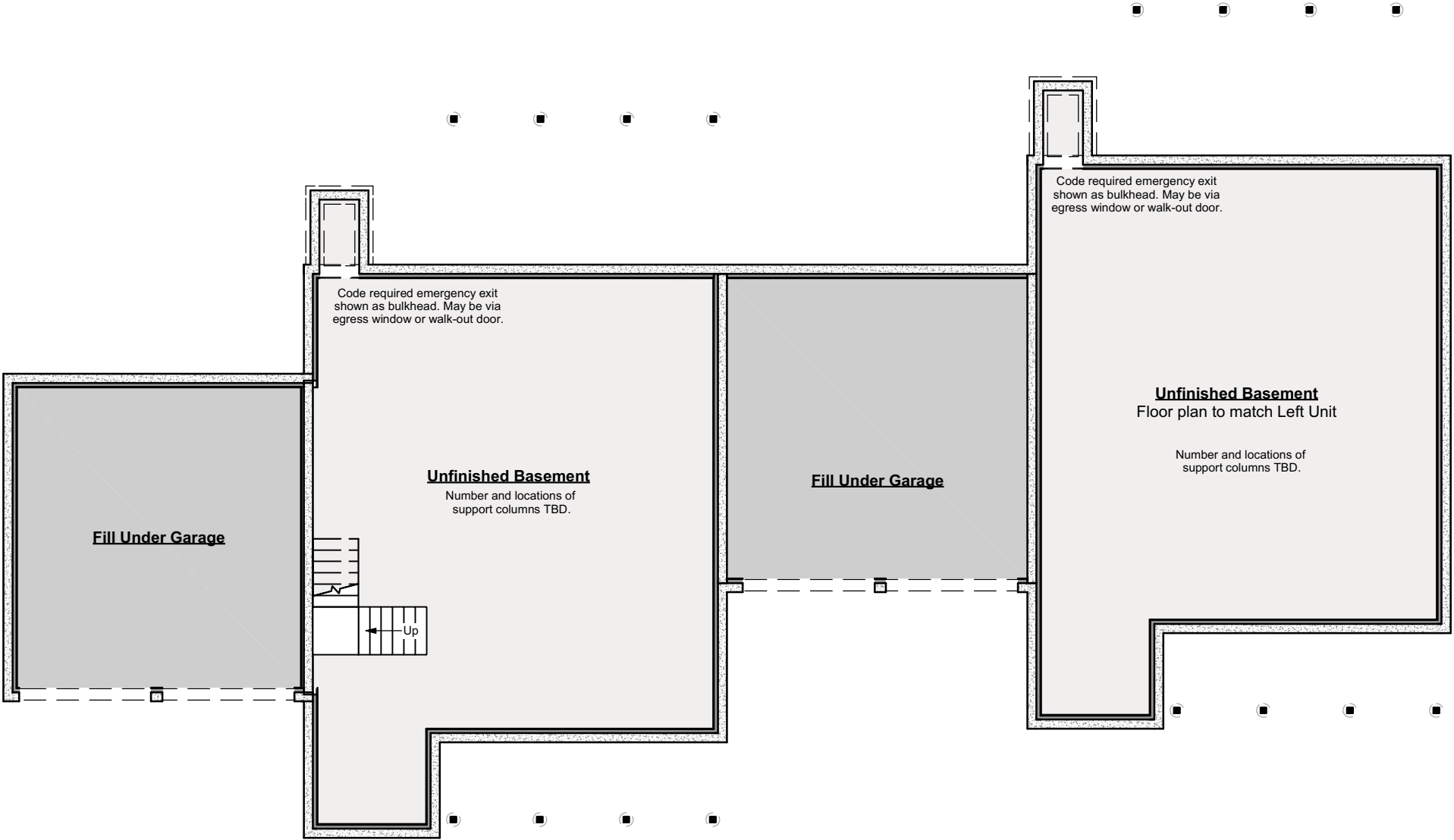
**Plan Name TBD**  
Chevrolet Ave, Portsmouth NH (10/8/2021)



**Prelim / Work in Progress** 603-431-9559

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**Foundation Plan**  
Scale: 3/32" = 1'-0"

10/8/2021

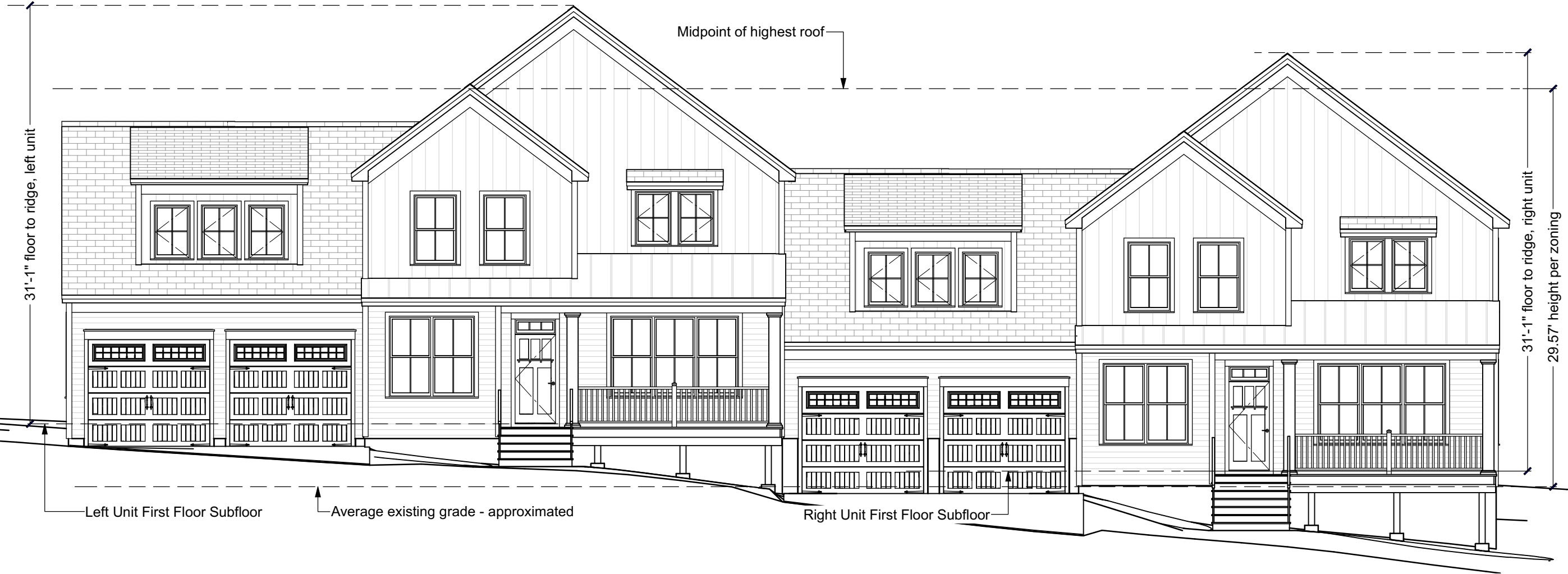
**Plan Name TBD**  
Chevrolet Ave, Portsmouth NH (10/8/2021)



**Prelim / Work in Progress** 603-431-9559

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**Front Elevation**  
Scale: 1/8" = 1'-0"

10/8/2021

**Plan Name TBD**  
Chevrolet Ave, Portsmouth NH (10/8/2021)



**Prelim / Work in Progress** 603-431-9559

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**Right Elevation**  
Scale: 1/8" = 1'-0"

10/8/2021

# Plan Name TBD

Chevrolet Ave, Portsmouth NH (10/8/2021)



**Prelim / Work in Progress** 603-431-9559

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**Rear Elevation**

Scale: 1/8" = 1'-0"

10/8/2021

**Plan Name TBD**  
Chevrolet Ave, Portsmouth NH (10/8/2021)



**Prelim / Work in Progress** 603-431-9559

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**Left Elevation**  
Scale: 1/8" = 1'-0"

**DRAINAGE ANALYSIS**  
**SEDIMENT AND EROSION CONTROL PLAN**

**“Chevrolet Avenue Duplexes”**  
**686 Middle Street**  
**Portsmouth, NH 03801**  
**Tax Map 147, Lots 18**

**Prepared for:**

**Tuck Realty Corporation**  
**P.O. Box 190**  
**Exeter, NH 03833**



**Prepared by:**  
**Jones & Beach Engineers, Inc.**  
**85 Portsmouth Avenue**  
**P.O. Box 219**  
**Stratham, NH 03885**  
**(603) 772-4746**  
**December 20, 2021**  
**JBE Project No. 20686**

## EXECUTIVE SUMMARY

Tuck Realty Corporation is proposing to subdivide the existing Map 147 Lot 18 at 668 Middle Street Portsmouth, creating two new lots with frontage on Chevrolet Avenue on which they propose to construct a total of 2 residential duplexes on the proposed parcels. The existing Map 147 Lot 18 has a 3-unit residential dwelling, a carriage house with a garage, and a barn. Much of the rear of the lot is wooded with some lawn area as well.

A drainage analysis of the entire site was conducted for the purpose of estimating the peak rate of stormwater runoff and to subsequently design adequate drainage structures. Two models were compiled, one for the area in its existing (pre-construction) condition, and a second for its proposed (post-construction) condition. The analysis was conducted using data for the 2 Year – 24 Hour (3.69"), 10 Year – 24 Hour (5.60"), 25 Year – 24 Hour (7.10"), and 50 Year – 24 Hour (8.50") storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region. A summary of the existing and proposed conditions peak rates of runoff in units of cubic feet per second (cfs) is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.01	0.00	0.32	0.00	0.99	0.10	1.88	1.56

A similar summary of the existing and proposed peak volumes in units of acre-feet is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.009	0.00	0.074	0.00	0.159	0.011	0.259	0.118

The subject parcel is located in the General Residence A District. The subject parcels currently consist of the aforementioned 3-unit residential dwelling, a carriage house with a garage, and a barn, all of which is proposed to remain, with the expectation of the existing barn which will be demolished. The topography on the site define one (1) subcatchment, which drain to one (1) analysis point at the north eastern corner of the site.

The proposed site development consists of the aforementioned two new lots with frontage on Chevrolet Avenue with the 2 residential duplexes with associated paved common driveway. The addition of the proposed impervious paved areas and buildings causes an increase in the curve number ( $C_n$ ) and a decrease in the time of concentration ( $T_c$ ), the net result being a potential increase in peak rates of runoff from the site. A stormwater management system was designed in order to mitigate this possibility. The proposed site development divides the site into seven (7) subcatchments. The proposed stormwater management system for the front of the site consists of two Shea Concrete Galley Tanks that will detain runoff and release it slowly into the bioretention system to filter runoff.

The other stormwater management BMP that was employed in this design are stone drip edges designed to infiltrate roof runoff. Stone drip edges are only employed in areas where the proposed roof



lines drain. The City of Portsmouth's only regulation concerning volume is that it shall be reduced to the maximum extent practicable, which this design achieves by reducing the peak volume of runoff toward all analysis point except for a slight increase in volume toward one analysis point during the 50-Year 24-Hour storm. Furthermore, although this project will not require an Alteration of Terrain Permit, it meets the Alteration of Terrain (AoT) Bureau's Channel Protection requirement, stipulating that volume may not increase toward any analysis point by more than 0.1 acre-foot during the 2-Year 24-Hour storm event. Additionally, the AoT Bureau's Groundwater Recharge requirement is met with this proposed development.

The use of Best Management Practices per the NHDES Stormwater Manual have been applied to the design of this drainage system and will be observed during all stages of construction. All land disturbed during construction will be stabilized within thirty days of groundbreaking and abutting property owners will suffer minimal adversity resultant of this development.

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## Appendix VI BMP Worksheet

## Appendix VII Pre- and Post-Construction Watershed Plans

## **1.0 RAINFALL CHARACTERISTICS**

This drainage report includes an existing conditions analysis of the area involved in the proposed development, as well as a proposed condition, or post-construction analysis, of the same location. These analyses were accomplished 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 the 2 Year – 24 Hour (3.69"), 10 Year – 24 Hour (5.60"), 25 Year – 24 Hour (7.10"), and 50 Year – 24 Hour (8.50") storm events. This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region.

The peak rates of runoff will be reduced from the existing condition, thereby minimizing any potential for a negative impact on abutting properties or erosion of the wetland system. This is accomplished through treatment of stormwater runoff and attenuation of peak flows resulting from storm events.

## **2.0 EXISTING CONDITIONS ANALYSIS**

Based on NRCS Web Soil Survey, the soil type for the entire studied area was found to consist of "Urban land – Canton complex" (Map unit symbol 799). This classifies the soils as Hydrologic Soil Groups (HSG) A.

The existing property feature a main house and a carriage house with porches, a garage, a barn, and two gravel driveways. The site is otherwise covered by both woods and grass. The majority of the site is sloped toward the northeastern corner of the lot. This point where the lot drains to have been designated Analysis Point #1 (AP1). The area draining toward the north to this point can be described as one subcatchment; Subcatchments 1S. Subcatchment 1S drains into an Analysis Point #1 (AP1). This subcatchment experiences noticeable grade change, with the highest elevations being roughly 12' higher than the lowest elevation at AP1.

## **3.0 PROPOSED CONDITIONS ANALYSIS**

The addition of the proposed impervious driveway and the buildings causes an increase in the curve number ( $C_n$ ) and a decrease in the time of concentration ( $T_c$ ), the result being a potential increase in peak rates of runoff from the site. The proposed development, consisting of the aforementioned two residential duplex units with associated paved driveways as well as stormwater management features divide the subject parcel into seven (7) subcatchments. Subcatchment 10S is comprised of the unchanged section of the lot, existing houses, gravel driveway, garage, etc. This runoff will be captured by a proposed yard drain and directed into proposed concrete Galley A (10P) and ultimately draining into the bioretention (rain garden) system (70P) for infiltration and treatment. Subcatchments 20S-50S are comprised of proposed roof areas and will drain directly into their respective drip edges, P20-P50, where they will infiltrate into the ground. Subcatchments 60S is comprised of proposed roof areas that will not be captured by the proposed drip edges as well as half of the proposed driveway. Subcatchment 60S is directed into the proposed beehive catch basin at the northwestern edge of the end of the driveway. Runoff is then routed into concrete Galley B (60P) for detention before being outleted into the bioretention system (70P) for treatment and infiltration. Subcatchment 70S is comprised of the other half of the common driveway and food area that was not captured by drip edges

and will drain directly into the bioretention system (70P) in the front of the site. After receiving treatment in the bioretention system, runoff will be infiltrated into the ground.

The site will be graded such that runoff from all the proposed impervious areas, will be treated, detained, infiltrated to groundwater, by way of bioretention system and drip edges.

Due to the generalization of the Urban Land classification, the infiltration rate of the soils was determined from the on site test pit data. After a factor of safety of two was applied, a Ksat of 3.75 in/hr was used for design.

According to the NH Stormwater Manual, bioretention systems provide a pollutant removal efficiency of 90% for TSS and 65% for nitrogen, and infiltration basins (including subsurface ones) provide a removal efficiency of 90% for TSS and 60% for nitrogen. Runoff from all impervious surfaces with the exception of roofs is being directed toward one of these two types of treatment systems. The City of Portsmouth Site Plan Review Regulations stipulate that stormwater BMPs should either be designed for 80% TSS removal and 50% nitrogen removal, OR to retain and treat the Water Quality Volume. This plan exceeds the requirements for pollutant removal because appropriate treatment / groundwater recharge systems are used and the Water Quality Volume is retained and treated.

## 5.0 CONCLUSION

This proposed site development will have minimal adverse effect on abutting infrastructures and properties by way of stormwater runoff or siltation. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of site grading, catch basins, stone drip edges, bioretention systems, concrete "Galley" chambers, and rip rap outlet protection as well as temporary erosion control measures including but not limited to silt fence and the use of a stabilized construction entrance. Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and their application will be enforced throughout the construction process. Peak rates of runoff from the site will be reduced toward the analysis point during all storms, as will peak volumes of runoff.

This project disturbs less than 100,000 S.F. and does not require a NHDES Alteration of Terrain Permit.

Respectfully Submitted,

**JONES & BEACH ENGINEERS, INC.**



Andrew Butler, E.I.T  
Project Engineer

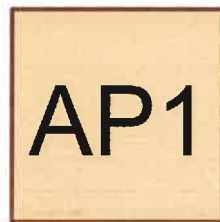
## APPENDIX I

### EXISTING CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR  
Complete 10 YEAR  
Summary 25 YEAR  
Complete 50 YEAR



Subcatchment 1S



Analysis Point 1



**Routing Diagram for 20686-EXISTING**

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## 20686-EXISTING

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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.679	39	>75% Grass cover, Good, HSG A (1S)
0.134	98	Paved parking, HSG A (1S)
0.116	98	Roofs, HSG A (1S)
0.931	30	Woods, Good, HSG A (1S)
<b>1.861</b>	<b>42</b>	<b>TOTAL AREA</b>

## 20686-EXISTING

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### Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
1.861	HSG A	1S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
<b>1.861</b>		<b>TOTAL AREA</b>



**20686-EXISTING***Type III 24-hr 2 Yr 24 Hr (+15%) Rainfall=3.70"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3

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 1S: Subcatchment 1S**

Runoff Area=81,046 sf 13.45% Impervious Runoff Depth&gt;0.06"

Flow Length=305' Tc=22.8 min CN=42 Runoff=0.01 cfs 0.009 af

**Reach AP1: Analysis Point 1**

Inflow=0.01 cfs 0.009 af

Outflow=0.01 cfs 0.009 af

**Total Runoff Area = 1.861 ac Runoff Volume = 0.009 af Average Runoff Depth = 0.06"**  
**86.55% Pervious = 1.610 ac 13.45% Impervious = 0.250 ac**



**20686-EXISTING***Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment1S: Subcatchment1S**Runoff Area=81,046 sf 13.45% Impervious Runoff Depth>0.48"  
Flow Length=305' Tc=22.8 min CN=42 Runoff=0.32 cfs 0.074 af**Reach AP1: Analysis Point 1**Inflow=0.32 cfs 0.074 af  
Outflow=0.32 cfs 0.074 af**Total Runoff Area = 1.861 ac Runoff Volume = 0.074 af Average Runoff Depth = 0.48"**  
**86.55% Pervious = 1.610 ac 13.45% Impervious = 0.250 ac**

**20686-EXISTING**

Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"

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**Summary for Subcatchment 1S: Subcatchment 1S**

Runoff = 0.32 cfs @ 12.56 hrs, Volume= 0.074 af, Depth&gt; 0.48"

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 Yr 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
5,073	98	Roofs, HSG A
5,825	98	Paved parking, HSG A
29,589	39	>75% Grass cover, Good, HSG A
40,559	30	Woods, Good, HSG A
81,046	42	Weighted Average
70,148		86.55% Pervious Area
10,898		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
22.8	305	Total			

**Summary for Reach AP1: Analysis Point 1**

Inflow Area = 1.861 ac, 13.45% Impervious, Inflow Depth &gt; 0.48" for 10 Yr 24 Hr(+15%) event

Inflow = 0.32 cfs @ 12.56 hrs, Volume= 0.074 af

Outflow = 0.32 cfs @ 12.56 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

## 20686-EXISTING

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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.679	39	>75% Grass cover, Good, HSG A (1S)
0.134	98	Paved parking, HSG A (1S)
0.116	98	Roofs, HSG A (1S)
0.931	30	Woods, Good, HSG A (1S)
<b>1.861</b>	<b>42</b>	<b>TOTAL AREA</b>

**20686-EXISTING**

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**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
1.861	HSG A	1S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
<b>1.861</b>		<b>TOTAL AREA</b>

**20686-EXISTING***Type III 24-hr 25 Yr 24 Hr(+15%) Rainfall=7.10"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment1S: Subcatchment1S**

Runoff Area=81,046 sf 13.45% Impervious Runoff Depth&gt;1.03"

Flow Length=305' Tc=22.8 min CN=42 Runoff=0.99 cfs 0.159 af

**Reach AP1: Analysis Point 1**

Inflow=0.99 cfs 0.159 af

Outflow=0.99 cfs 0.159 af

**Total Runoff Area = 1.861 ac Runoff Volume = 0.159 af Average Runoff Depth = 1.03"**  
**86.55% Pervious = 1.610 ac 13.45% Impervious = 0.250 ac**

**20686-EXISTING***Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3

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 1S: Subcatchment 1S**Runoff Area=81,046 sf 13.45% Impervious Runoff Depth>1.67"  
Flow Length=305' Tc=22.8 min CN=42 Runoff=1.88 cfs 0.259 af**Reach AP1: Analysis Point 1**Inflow=1.88 cfs 0.259 af  
Outflow=1.88 cfs 0.259 af**Total Runoff Area = 1.861 ac Runoff Volume = 0.259 af Average Runoff Depth = 1.67"**  
**86.55% Pervious = 1.610 ac 13.45% Impervious = 0.250 ac**

**20686-EXISTING**

Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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**Summary for Subcatchment 1S: Subcatchment 1S**

Runoff = 1.88 cfs @ 12.39 hrs, Volume= 0.259 af, Depth&gt; 1.67"

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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
5,073	98	Roofs, HSG A
5,825	98	Paved parking, HSG A
29,589	39	>75% Grass cover, Good, HSG A
40,559	30	Woods, Good, HSG A
81,046	42	Weighted Average
70,148		86.55% Pervious Area
10,898		13.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
22.8	305	Total			

**Summary for Reach AP1: Analysis Point 1**

Inflow Area = 1.861 ac, 13.45% Impervious, Inflow Depth &gt; 1.67" for 50 Yr 24 Hr(+15%) event

Inflow = 1.88 cfs @ 12.39 hrs, Volume= 0.259 af

Outflow = 1.88 cfs @ 12.39 hrs, Volume= 0.259 af, Atten= 0%, Lag= 0.0 min

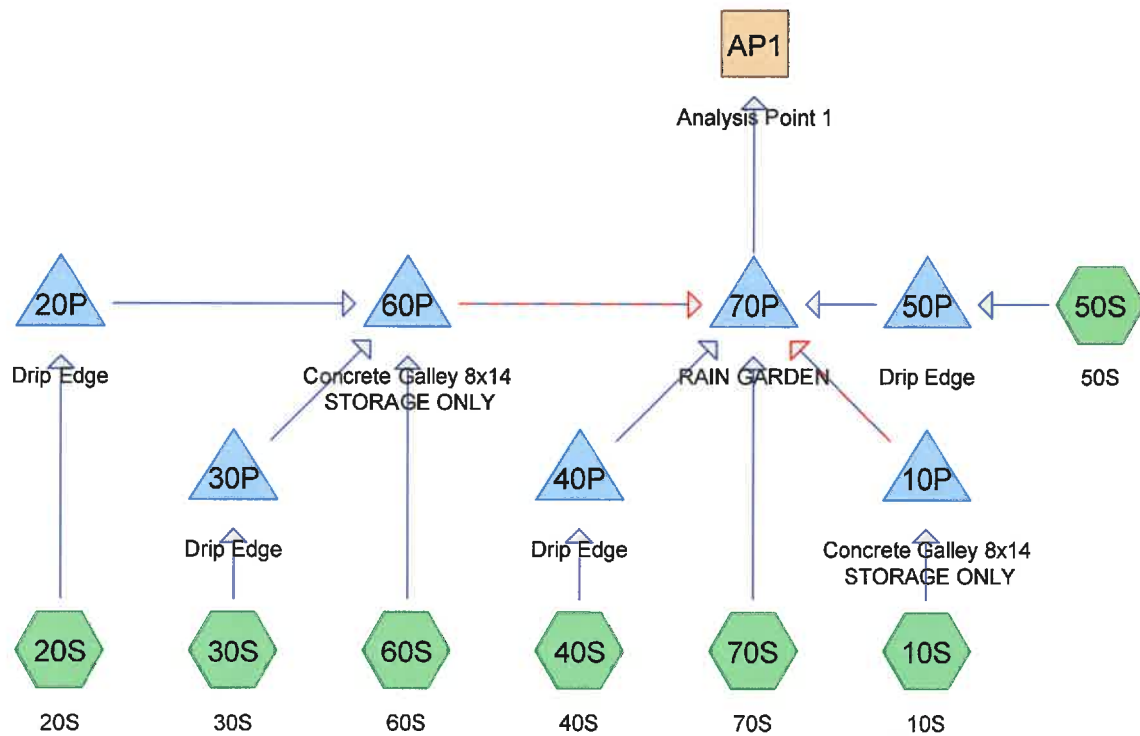
Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3



## APPENDIX II

### PROPOSED CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR  
Complete 10 YEAR  
Summary 25 YEAR  
Complete 50 YEAR



**Routing Diagram for 20686-PROPOSED\_working**  
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**20686-PROPOSED\_working**

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**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.806	39	>75% Grass cover, Good, HSG A (10S, 60S, 70S)
0.241	98	Paved parking, HSG A (10S, 60S, 70S)
0.320	98	Roofs, HSG A (10S, 20S, 30S, 40S, 50S, 60S, 70S)
0.494	30	Woods, Good, HSG A (10S, 60S, 70S)
<b>1.861</b>	<b>54</b>	<b>TOTAL AREA</b>

**20686-PROPOSED\_working**

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**Soil Listing (selected nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
1.861	HSG A	10S, 20S, 30S, 40S, 50S, 60S, 70S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
<b>1.861</b>		<b>TOTAL AREA</b>

**20686-PROPOSED\_working**

Type III 24-hr 2 Yr 24 Hr (+15%) Rainfall=3.69"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3  
 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>Subcatchment10S: 10S</b>	Runoff Area=44,620 sf 23.67% Impervious Runoff Depth>0.24" Flow Length=305' Tc=22.8 min CN=50 Runoff=0.07 cfs 0.021 af
<b>Subcatchment20S: 20S</b>	Runoff Area=998 sf 100.00% Impervious Runoff Depth>3.45" Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af
<b>Subcatchment30S: 30S</b>	Runoff Area=764 sf 100.00% Impervious Runoff Depth>3.45" Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af
<b>Subcatchment40S: 40S</b>	Runoff Area=713 sf 100.00% Impervious Runoff Depth>3.45" Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af
<b>Subcatchment50S: 50S</b>	Runoff Area=679 sf 100.00% Impervious Runoff Depth>3.45" Tc=6.0 min CN=98 Runoff=0.05 cfs 0.004 af
<b>Subcatchment60S: 60S</b>	Runoff Area=18,073 sf 28.61% Impervious Runoff Depth>0.37" Flow Length=190' Tc=6.0 min CN=54 Runoff=0.08 cfs 0.013 af
<b>Subcatchment70S: 70S</b>	Runoff Area=15,199 sf 36.39% Impervious Runoff Depth>0.61" Tc=6.0 min CN=60 Runoff=0.18 cfs 0.018 af
<b>Reach AP1: Analysis Point 1</b>	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
<b>Pond 10P: Concrete Galley 8x14 STORAGE</b>	Peak Elev=187.56' Storage=0.016 af Inflow=0.07 cfs 0.021 af Primary=0.01 cfs 0.004 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.004 af
<b>Pond 20P: Drip Edge</b>	Peak Elev=194.63' Storage=84 cf Inflow=0.08 cfs 0.007 af Discarded=0.01 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.007 af
<b>Pond 30P: Drip Edge</b>	Peak Elev=200.59' Storage=61 cf Inflow=0.06 cfs 0.005 af Discarded=0.01 cfs 0.005 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.005 af
<b>Pond 40P: Drip Edge</b>	Peak Elev=196.01' Storage=0 cf Inflow=0.06 cfs 0.005 af Discarded=0.01 cfs 0.003 af Primary=0.05 cfs 0.001 af Outflow=0.06 cfs 0.005 af
<b>Pond 50P: Drip Edge</b>	Peak Elev=190.87' Storage=37 cf Inflow=0.05 cfs 0.004 af Discarded=0.02 cfs 0.004 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.004 af
<b>Pond 60P: Concrete Galley 8x14 STORAGE</b>	Peak Elev=186.98' Storage=0.007 af Inflow=0.08 cfs 0.013 af Primary=0.01 cfs 0.006 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.006 af
<b>Pond 70P: RAIN GARDEN</b>	Peak Elev=186.21' Storage=198 cf Inflow=0.23 cfs 0.030 af Discarded=0.05 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.030 af
<b>Total Runoff Area = 1.861 ac Runoff Volume = 0.072 af Average Runoff Depth = 0.47"</b>	
<b>69.87% Pervious = 1.300 ac 30.13% Impervious = 0.561 ac</b>	

**20686-PROPOSED\_working**

Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment10S: 10S** Runoff Area=44,620 sf 23.67% Impervious Runoff Depth>0.95"  
 Flow Length=305' Tc=22.8 min CN=50 Runoff=0.55 cfs 0.081 af

**Subcatchment20S: 20S** Runoff Area=998 sf 100.00% Impervious Runoff Depth>5.36"  
 Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

**Subcatchment30S: 30S** Runoff Area=764 sf 100.00% Impervious Runoff Depth>5.36"  
 Tc=6.0 min CN=98 Runoff=0.09 cfs 0.008 af

**Subcatchment40S: 40S** Runoff Area=713 sf 100.00% Impervious Runoff Depth>5.36"  
 Tc=6.0 min CN=98 Runoff=0.09 cfs 0.007 af

**Subcatchment50S: 50S** Runoff Area=679 sf 100.00% Impervious Runoff Depth>5.36"  
 Tc=6.0 min CN=98 Runoff=0.08 cfs 0.007 af

**Subcatchment60S: 60S** Runoff Area=18,073 sf 28.61% Impervious Runoff Depth>1.22"  
 Flow Length=190' Tc=6.0 min CN=54 Runoff=0.49 cfs 0.042 af

**Subcatchment70S: 70S** Runoff Area=15,199 sf 36.39% Impervious Runoff Depth>1.66"  
 Tc=6.0 min CN=60 Runoff=0.62 cfs 0.048 af

**Reach AP1: Analysis Point 1** Inflow=0.00 cfs 0.000 af  
 Outflow=0.00 cfs 0.000 af

**Pond 10P: Concrete Galley 8x14 STORAGE** Peak Elev=188.21' Storage=0.032 af Inflow=0.55 cfs 0.081 af  
 Primary=0.83 cfs 0.108 af Secondary=0.00 cfs 0.000 af Outflow=0.83 cfs 0.051 af

**Pond 20P: Drip Edge** Peak Elev=195.51' Storage=119 cf Inflow=0.12 cfs 0.010 af  
 Discarded=0.01 cfs 0.010 af Primary=0.05 cfs 0.001 af Outflow=0.07 cfs 0.010 af

**Pond 30P: Drip Edge** Peak Elev=201.89' Storage=111 cf Inflow=0.09 cfs 0.008 af  
 Discarded=0.01 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.008 af

**Pond 40P: Drip Edge** Peak Elev=196.01' Storage=0 cf Inflow=0.09 cfs 0.007 af  
 Discarded=0.01 cfs 0.005 af Primary=0.08 cfs 0.003 af Outflow=0.09 cfs 0.007 af

**Pond 50P: Drip Edge** Peak Elev=191.57' Storage=68 cf Inflow=0.08 cfs 0.007 af  
 Discarded=0.02 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.007 af

**Pond 60P: Concrete Galley 8x14 STORAGE** Peak Elev=188.19' Storage=0.029 af Inflow=0.49 cfs 0.043 af  
 Primary=0.91 cfs 0.046 af Secondary=0.00 cfs 0.000 af Outflow=0.91 cfs 0.018 af

**Pond 70P: RAIN GARDEN** Peak Elev=188.31' Storage=611 cf Inflow=1.77 cfs 0.205 af  
 Discarded=0.22 cfs 0.196 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.196 af

Total Runoff Area = 1.861 ac Runoff Volume = 0.204 af Average Runoff Depth = 1.31"  
 69.87% Pervious = 1.300 ac 30.13% Impervious = 0.561 ac

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"

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**Summary for Subcatchment 10S: 10S**

Runoff = 0.55 cfs @ 12.41 hrs, Volume= 0.081 af, Depth&gt; 0.95"

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 Yr 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
4,628	98	Roofs, HSG A
5,932	98	Paved parking, HSG A
17,640	39	>75% Grass cover, Good, HSG A
16,420	30	Woods, Good, HSG A
44,620	50	Weighted Average
34,060		76.33% Pervious Area
10,560		23.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
22.8	305	Total			

**Summary for Subcatchment 20S: 20S**

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.010 af, Depth&gt; 5.36"

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 Yr 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
998	98	Roofs, HSG A
998		100.00% Impervious Area

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

**20686-PROPOSED\_working**

Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"

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**Summary for Subcatchment 30S: 30S**

Runoff = 0.09 cfs @ 12.09 hrs, Volume= 0.008 af, Depth&gt; 5.36"

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 Yr 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
764	98	Roofs, HSG A
764		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Summary for Subcatchment 40S: 40S**

Runoff = 0.09 cfs @ 12.09 hrs, Volume= 0.007 af, Depth&gt; 5.36"

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 Yr 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
713	98	Roofs, HSG A
713		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Summary for Subcatchment 50S: 50S**

Runoff = 0.08 cfs @ 12.09 hrs, Volume= 0.007 af, Depth&gt; 5.36"

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 Yr 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
679	98	Roofs, HSG A
679		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,



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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"

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**Summary for Subcatchment 60S: 60S**

Runoff = 0.49 cfs @ 12.11 hrs, Volume= 0.042 af, Depth&gt; 1.22"

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 Yr 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
2,883	98	Roofs, HSG A
2,288	98	Paved parking, HSG A
8,729	39	>75% Grass cover, Good, HSG A
4,173	30	Woods, Good, HSG A
18,073	54	Weighted Average
12,902		71.39% Pervious Area
5,171		28.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	190		0.53		Direct Entry,

**Summary for Subcatchment 70S: 70S**

Runoff = 0.62 cfs @ 12.10 hrs, Volume= 0.048 af, Depth&gt; 1.66"

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 Yr 24 Hr(+15%) Rainfall=5.60"

Area (sf)	CN	Description
3,258	98	Roofs, HSG A
2,273	98	Paved parking, HSG A
8,744	39	>75% Grass cover, Good, HSG A
924	30	Woods, Good, HSG A
15,199	60	Weighted Average
9,668		63.61% Pervious Area
5,531		36.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Summary for Reach AP1: Analysis Point 1**

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.861 ac, 30.13% Impervious, Inflow Depth = 0.00" for 10 Yr 24 Hr(+15%) event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

**20686-PROPOSED\_working**

Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

**Summary for Pond 10P: Concrete Galley 8x14 STORAGE ONLY**

[90] Warning: Qout&gt;Qin may require smaller dt or Finer Routing

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=27)

Inflow Area = 1.024 ac, 23.67% Impervious, Inflow Depth > 0.95" for 10 Yr 24 Hr(+15%) event  
 Inflow = 0.55 cfs @ 12.41 hrs, Volume= 0.081 af  
 Outflow = 0.83 cfs @ 17.20 hrs, Volume= 0.051 af, Atten= 0%, Lag= 287.3 min  
 Primary = 0.83 cfs @ 17.20 hrs, Volume= 0.108 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 188.21' @ 16.75 hrs Surf.Area= 0.057 ac Storage= 0.032 af

Plug-Flow detention time= 220.7 min calculated for 0.051 af (64% of inflow)  
 Center-of-Mass det. time= 98.4 min ( 1,011.4 - 912.9 )

Volume	Invert	Avail.Storage	Storage Description
#1A	187.33'	0.000 af	<b>24.00'W x 42.00'L x 5.67'H Field A</b> 0.131 af Overall - 0.131 af Embedded = 0.000 af x 40.0% Voids
#2A	187.33'	0.105 af	<b>Concrete Galley 8x14x5.7</b> x 9 Inside #1 Inside= 84.0"W x 60.0"H => 39.20 sf x 13.00'L = 509.6 cf Outside= 96.0"W x 68.0"H => 45.36 sf x 14.00'L = 635.0 cf 3 Rows of 3 Chambers
#3	186.33'	0.011 af	<b>20.00'W x 60.00'L x 1.00'H Prismatic</b> 0.028 af Overall x 40.0% Voids
#4	187.33'	0.010 af	<b>2.00'W x 144.00'L x 3.67'H Prismatic</b> 0.024 af Overall x 40.0% Voids
		0.126 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	187.50'	<b>9.0" Vert. Orifice/Grate</b> C= 0.600
#2	Secondary	192.00'	<b>160.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=0.00 cfs @ 17.20 hrs HW=188.11' TW=188.23' (Dynamic Tailwater)  
 ↑1=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=186.33' TW=184.41' (Dynamic Tailwater)  
 ↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 20P: Drip Edge**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=63)

Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth > 5.36" for 10 Yr 24 Hr(+15%) event  
 Inflow = 0.12 cfs @ 12.09 hrs, Volume= 0.010 af  
 Outflow = 0.07 cfs @ 12.26 hrs, Volume= 0.010 af, Atten= 44%, Lag= 10.3 min  
 Discarded = 0.01 cfs @ 12.25 hrs, Volume= 0.010 af  
 Primary = 0.05 cfs @ 12.26 hrs, Volume= 0.001 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 195.51' @ 12.25 hrs Surf.Area= 99 sf Storage= 119 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 55.8 min ( 801.6 - 745.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	192.50'	139 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 347 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
192.50	99	0	0
195.50	99	297	297
196.00	99	50	347

Device	Routing	Invert	Outlet Devices
#1	Discarded	192.50'	<b>3.750 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 188.00'
#2	Primary	195.50'	<b>27.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Discarded OutFlow Max=0.01 cfs @ 12.25 hrs HW=195.51' (Free Discharge)

1=Exfiltration ( Controls 0.01 cfs)

Primary OutFlow Max=0.05 cfs @ 12.26 hrs HW=195.51' TW=187.25' (Dynamic Tailwater)

2=Broad-Crested Rectangular Weir (Weir Controls 0.05 cfs @ 0.23 fps)

**Summary for Pond 30P: Drip Edge**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=57)

Inflow Area = 0.018 ac, 100.00% Impervious, Inflow Depth > 5.36" for 10 Yr 24 Hr(+15%) event  
 Inflow = 0.09 cfs @ 12.09 hrs, Volume= 0.008 af  
 Outflow = 0.01 cfs @ 12.71 hrs, Volume= 0.008 af, Atten= 89%, Lag= 37.6 min  
 Discarded = 0.01 cfs @ 12.71 hrs, Volume= 0.008 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"

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Peak Elev= 201.89' @ 12.71 hrs Surf.Area= 96 sf Storage= 111 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 71.0 min ( 816.7 - 745.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	199.00'	154 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 384 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
199.00	96	0	0
202.00	96	288	288
203.00	96	96	384

Device	Routing	Invert	Outlet Devices
#1	Discarded	199.00'	<b>3.750 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 189.00'
#2	Primary	202.00'	<b>35.0' long x 3.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.01 cfs @ 12.71 hrs HW=201.89' (Free Discharge)

↑1=Exfiltration ( Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=199.00' TW=186.33' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 40P: Drip Edge**

Inflow Area = 0.016 ac, 100.00% Impervious, Inflow Depth > 5.36" for 10 Yr 24 Hr(+15%) event  
 Inflow = 0.09 cfs @ 12.09 hrs, Volume= 0.007 af  
 Outflow = 0.09 cfs @ 12.09 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.01 cfs @ 12.09 hrs, Volume= 0.005 af  
 Primary = 0.08 cfs @ 12.09 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 196.01' @ 12.09 hrs Surf.Area= 87 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.0 min ( 745.8 - 745.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	196.00'	139 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 348 cf Overall x 40.0% Voids

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
196.00	87	0	0
199.00	87	261	261
200.00	87	87	348

Device	Routing	Invert	Outlet Devices
#1	Discarded	196.00'	<b>3.750 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 192.00'
#2	Primary	196.00'	<b>26.5' long x 3.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

**Discarded OutFlow** Max=0.01 cfs @ 12.09 hrs HW=196.01' (Free Discharge)↑**1=Exfiltration** ( Controls 0.01 cfs)**Primary OutFlow** Max=0.08 cfs @ 12.09 hrs HW=196.01' TW=187.55' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.08 cfs @ 0.26 fps)**Summary for Pond 50P: Drip Edge**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=92)

Inflow Area = 0.016 ac, 100.00% Impervious, Inflow Depth > 5.36" for 10 Yr 24 Hr(+15%) event  
 Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.007 af  
 Outflow = 0.02 cfs @ 12.42 hrs, Volume= 0.007 af, Atten= 71%, Lag= 19.8 min  
 Discarded = 0.02 cfs @ 12.42 hrs, Volume= 0.007 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 191.57' @ 12.42 hrs Surf.Area= 108 sf Storage= 68 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 18.1 min ( 763.9 - 745.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	190.00'	173 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 432 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
190.00	108	0	0
193.00	108	324	324
194.00	108	108	432

Device	Routing	Invert	Outlet Devices
#1	Discarded	190.00'	<b>3.750 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 189.00'
#2	Primary	193.00'	<b>36.0' long x 3.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"

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2.50 3.00 3.50 4.00 4.50  
 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68  
 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.02 cfs @ 12.42 hrs HW=191.57' (Free Discharge)

↑1=Exfiltration ( Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=190.00' TW=184.41' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 60P: Concrete Galley 8x14 STORAGE ONLY**

[90] Warning: Qout&gt;Qin may require smaller dt or Finer Routing

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=11)

Inflow Area = 0.455 ac, 34.95% Impervious, Inflow Depth > 1.13" for 10 Yr 24 Hr(+15%) event  
 Inflow = 0.49 cfs @ 12.11 hrs, Volume= 0.043 af  
 Outflow = 0.91 cfs @ 17.20 hrs, Volume= 0.018 af, Atten= 0%, Lag= 305.5 min  
 Primary = 0.91 cfs @ 17.20 hrs, Volume= 0.046 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 188.19' @ 16.81 hrs Surf.Area= 0.055 ac Storage= 0.029 af

Plug-Flow detention time= 376.7 min calculated for 0.018 af (42% of inflow)

Center-of-Mass det. time= 229.4 min ( 1,112.2 - 882.8 )

Volume	Invert	Avail.Storage	Storage Description
#1A	187.33'	0.000 af	<b>16.00'W x 56.00'L x 5.67'H Field A</b> 0.117 af Overall - 0.117 af Embedded = 0.000 af x 40.0% Voids
#2A	187.33'	0.094 af	<b>Concrete Galley 8x14x5.7 x 8 Inside #1</b> Inside= 84.0"W x 60.0"H => 39.20 sf x 13.00'L = 509.6 cf Outside= 96.0"W x 68.0"H => 45.36 sf x 14.00'L = 635.0 cf 2 Rows of 4 Chambers
#3	186.33'	0.011 af	<b>20.00'W x 60.00'L x 1.00'H Prismatic</b> 0.028 af Overall x 40.0% Voids
#4	187.33'	0.010 af	<b>2.00'W x 144.00'L x 3.67'H Prismatic</b> 0.024 af Overall x 40.0% Voids
		0.114 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	186.92'	<b>9.0" Vert. Orifice/Grate C= 0.600</b>
#2	Secondary	192.00'	<b>160.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

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Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"

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**Primary OutFlow** Max=0.00 cfs @ 17.20 hrs HW=188.08' TW=188.23' (Dynamic Tailwater)

1=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=186.33' TW=184.41' (Dynamic Tailwater)

2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 70P: RAIN GARDEN**

[80] Warning: Exceeded Pond 10P by 1.75' @ 12.15 hrs (1.20 cfs 0.440 af)

[80] Warning: Exceeded Pond 60P by 1.24' @ 12.15 hrs (2.01 cfs 0.796 af)

Inflow Area = 1.861 ac, 30.13% Impervious, Inflow Depth > 1.32" for 10 Yr 24 Hr(+15%) event  
 Inflow = 1.77 cfs @ 17.20 hrs, Volume= 0.205 af  
 Outflow = 0.22 cfs @ 17.25 hrs, Volume= 0.196 af, Atten= 88%, Lag= 3.0 min  
 Discarded = 0.22 cfs @ 17.25 hrs, Volume= 0.196 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 188.31' @ 17.26 hrs Surf.Area= 1,588 sf Storage= 611 cf

Plug-Flow detention time= 33.7 min calculated for 0.196 af (96% of inflow)

Center-of-Mass det. time= 18.4 min ( 1,078.8 - 1,060.5 )

Volume	Invert	Avail.Storage	Storage Description	
#1	184.41'	3,288 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)
184.41	275	0.0	0	0
185.42	275	40.0	111	111
186.41	275	40.0	109	220
186.42	275	5.0	0	220
186.66	275	5.0	3	223
186.67	275	15.0	0	224
188.16	1,027	15.0	145	369
188.17	1,588	100.0	13	382
189.00	1,588	100.0	1,318	1,700
190.00	1,588	100.0	1,588	3,288

Device	Routing	Invert	Outlet Devices
#1	Discarded	184.41'	<b>3.750 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 183.00'
#2	Primary	189.00'	<b>30.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

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*Type III 24-hr 10 Yr 24 Hr(+15%) Rainfall=5.60"*

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**Discarded OutFlow** Max=0.22 cfs @ 17.25 hrs HW=188.31' (Free Discharge)

↑**1=Exfiltration** ( Controls 0.22 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=184.41' TW=0.00' (Dynamic Tailwater)

↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)



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**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.806	39	>75% Grass cover, Good, HSG A (10S, 60S, 70S)
0.241	98	Paved parking, HSG A (10S, 60S, 70S)
0.320	98	Roofs, HSG A (10S, 20S, 30S, 40S, 50S, 60S, 70S)
0.494	30	Woods, Good, HSG A (10S, 60S, 70S)
<b>1.861</b>	<b>54</b>	<b>TOTAL AREA</b>

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**Soil Listing (selected nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
1.861	HSG A	10S, 20S, 30S, 40S, 50S, 60S, 70S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
<b>1.861</b>		<b>TOTAL AREA</b>

**20686-PROPOSED\_working**

Type III 24-hr 25 Yr 24 Hr(+15%) Rainfall=7.10"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment10S: 10S** Runoff Area=44,620 sf 23.67% Impervious Runoff Depth>1.71"  
 Flow Length=305' Tc=22.8 min CN=50 Runoff=1.15 cfs 0.146 af

**Subcatchment20S: 20S** Runoff Area=998 sf 100.00% Impervious Runoff Depth>6.86"  
 Tc=6.0 min CN=98 Runoff=0.16 cfs 0.013 af

**Subcatchment30S: 30S** Runoff Area=764 sf 100.00% Impervious Runoff Depth>6.86"  
 Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af

**Subcatchment40S: 40S** Runoff Area=713 sf 100.00% Impervious Runoff Depth>6.86"  
 Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af

**Subcatchment50S: 50S** Runoff Area=679 sf 100.00% Impervious Runoff Depth>6.86"  
 Tc=6.0 min CN=98 Runoff=0.11 cfs 0.009 af

**Subcatchment60S: 60S** Runoff Area=18,073 sf 28.61% Impervious Runoff Depth>2.09"  
 Flow Length=190' Tc=6.0 min CN=54 Runoff=0.93 cfs 0.072 af

**Subcatchment70S: 70S** Runoff Area=15,199 sf 36.39% Impervious Runoff Depth>2.67"  
 Tc=6.0 min CN=60 Runoff=1.05 cfs 0.078 af

**Reach AP1: Analysis Point 1** Inflow=0.10 cfs 0.011 af  
 Outflow=0.10 cfs 0.011 af

**Pond 10P: Concrete Galley 8x14 STORAGE** Peak Elev=189.02' Storage=0.051 af Inflow=1.15 cfs 0.146 af  
 Primary=0.56 cfs 0.119 af Secondary=0.00 cfs 0.000 af Outflow=0.54 cfs 0.115 af

**Pond 20P: Drip Edge** Peak Elev=195.52' Storage=120 cf Inflow=0.16 cfs 0.013 af  
 Discarded=0.01 cfs 0.011 af Primary=0.23 cfs 0.002 af Outflow=0.24 cfs 0.013 af

**Pond 30P: Drip Edge** Peak Elev=202.01' Storage=116 cf Inflow=0.12 cfs 0.010 af  
 Discarded=0.01 cfs 0.009 af Primary=0.09 cfs 0.001 af Outflow=0.10 cfs 0.010 af

**Pond 40P: Drip Edge** Peak Elev=196.01' Storage=0 cf Inflow=0.11 cfs 0.009 af  
 Discarded=0.01 cfs 0.006 af Primary=0.10 cfs 0.004 af Outflow=0.11 cfs 0.009 af

**Pond 50P: Drip Edge** Peak Elev=192.15' Storage=93 cf Inflow=0.11 cfs 0.009 af  
 Discarded=0.03 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.009 af

**Pond 60P: Concrete Galley 8x14 STORAGE** Peak Elev=189.01' Storage=0.047 af Inflow=1.05 cfs 0.075 af  
 Primary=0.52 cfs 0.054 af Secondary=0.00 cfs 0.000 af Outflow=0.52 cfs 0.047 af

**Pond 70P: RAIN GARDEN** Peak Elev=189.01' Storage=1,719 cf Inflow=1.15 cfs 0.254 af  
 Discarded=0.25 cfs 0.234 af Primary=0.10 cfs 0.011 af Outflow=0.35 cfs 0.245 af

**Total Runoff Area = 1.861 ac Runoff Volume = 0.337 af Average Runoff Depth = 2.18"**  
**69.87% Pervious = 1.300 ac 30.13% Impervious = 0.561 ac**

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points x 3  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment10S: 10S** Runoff Area=44,620 sf 23.67% Impervious Runoff Depth>2.55"  
 Flow Length=305' Tc=22.8 min CN=50 Runoff=1.81 cfs 0.217 af

**Subcatchment20S: 20S** Runoff Area=998 sf 100.00% Impervious Runoff Depth>8.25"  
 Tc=6.0 min CN=98 Runoff=0.19 cfs 0.016 af

**Subcatchment30S: 30S** Runoff Area=764 sf 100.00% Impervious Runoff Depth>8.25"  
 Tc=6.0 min CN=98 Runoff=0.14 cfs 0.012 af

**Subcatchment40S: 40S** Runoff Area=713 sf 100.00% Impervious Runoff Depth>8.25"  
 Tc=6.0 min CN=98 Runoff=0.13 cfs 0.011 af

**Subcatchment50S: 50S** Runoff Area=679 sf 100.00% Impervious Runoff Depth>8.25"  
 Tc=6.0 min CN=98 Runoff=0.13 cfs 0.011 af

**Subcatchment60S: 60S** Runoff Area=18,073 sf 28.61% Impervious Runoff Depth>3.01"  
 Flow Length=190' Tc=6.0 min CN=54 Runoff=1.39 cfs 0.104 af

**Subcatchment70S: 70S** Runoff Area=15,199 sf 36.39% Impervious Runoff Depth>3.71"  
 Tc=6.0 min CN=60 Runoff=1.48 cfs 0.108 af

**Reach AP1: Analysis Point 1** Inflow=1.56 cfs 0.118 af  
 Outflow=1.56 cfs 0.118 af

**Pond 10P: Concrete Galley 8x14 STORAGE** Peak Elev=189.39' Storage=0.060 af Inflow=1.81 cfs 0.217 af  
 Primary=1.20 cfs 0.184 af Secondary=0.00 cfs 0.000 af Outflow=1.20 cfs 0.184 af

**Pond 20P: Drip Edge** Peak Elev=195.52' Storage=120 cf Inflow=0.19 cfs 0.016 af  
 Discarded=0.01 cfs 0.012 af Primary=0.26 cfs 0.004 af Outflow=0.27 cfs 0.016 af

**Pond 30P: Drip Edge** Peak Elev=202.02' Storage=116 cf Inflow=0.14 cfs 0.012 af  
 Discarded=0.01 cfs 0.010 af Primary=0.17 cfs 0.002 af Outflow=0.18 cfs 0.012 af

**Pond 40P: Drip Edge** Peak Elev=196.02' Storage=1 cf Inflow=0.13 cfs 0.011 af  
 Discarded=0.01 cfs 0.007 af Primary=0.13 cfs 0.005 af Outflow=0.13 cfs 0.011 af

**Pond 50P: Drip Edge** Peak Elev=192.71' Storage=117 cf Inflow=0.13 cfs 0.011 af  
 Discarded=0.03 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.011 af

**Pond 60P: Concrete Galley 8x14 STORAGE** Peak Elev=189.10' Storage=0.049 af Inflow=1.65 cfs 0.110 af  
 Primary=0.37 cfs 0.079 af Secondary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.078 af

**Pond 70P: RAIN GARDEN** Peak Elev=189.07' Storage=1,815 cf Inflow=1.81 cfs 0.375 af  
 Discarded=0.25 cfs 0.244 af Primary=1.56 cfs 0.118 af Outflow=1.81 cfs 0.362 af

**Total Runoff Area = 1.861 ac Runoff Volume = 0.479 af Average Runoff Depth = 3.09"**  
**69.87% Pervious = 1.300 ac 30.13% Impervious = 0.561 ac**

**20686-PROPOSED\_working**

Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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**Summary for Subcatchment 10S: 10S**

Runoff = 1.81 cfs @ 12.35 hrs, Volume= 0.217 af, Depth&gt; 2.55"

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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
4,628	98	Roofs, HSG A
5,932	98	Paved parking, HSG A
17,640	39	>75% Grass cover, Good, HSG A
16,420	30	Woods, Good, HSG A
44,620	50	Weighted Average
34,060		76.33% Pervious Area
10,560		23.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0200	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.70"
0.2	10	0.0200	0.71		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
0.5	120	0.0750	4.11		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
1.9	55	0.0010	0.47		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
0.2	20	0.0050	1.44		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
22.8	305	Total			

**Summary for Subcatchment 20S: 20S**

Runoff = 0.19 cfs @ 12.09 hrs, Volume= 0.016 af, Depth&gt; 8.25"

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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
998	98	Roofs, HSG A
998		100.00% Impervious Area

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

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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**Summary for Subcatchment 30S: 30S**

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.012 af, Depth&gt; 8.25"

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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
764	98	Roofs, HSG A
764		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Summary for Subcatchment 40S: 40S**

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af, Depth&gt; 8.25"

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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
713	98	Roofs, HSG A
713		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Summary for Subcatchment 50S: 50S**

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af, Depth&gt; 8.25"

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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
679	98	Roofs, HSG A
679		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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**Summary for Subcatchment 60S: 60S**

Runoff = 1.39 cfs @ 12.10 hrs, Volume= 0.104 af, Depth&gt; 3.01"

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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
2,883	98	Roofs, HSG A
2,288	98	Paved parking, HSG A
8,729	39	>75% Grass cover, Good, HSG A
4,173	30	Woods, Good, HSG A
18,073	54	Weighted Average
12,902		71.39% Pervious Area
5,171		28.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	190		0.53		Direct Entry,

**Summary for Subcatchment 70S: 70S**

Runoff = 1.48 cfs @ 12.10 hrs, Volume= 0.108 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 50 Yr 24 Hr(+15%) Rainfall=8.50"

Area (sf)	CN	Description
3,258	98	Roofs, HSG A
2,273	98	Paved parking, HSG A
8,744	39	>75% Grass cover, Good, HSG A
924	30	Woods, Good, HSG A
15,199	60	Weighted Average
9,668		63.61% Pervious Area
5,531		36.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Summary for Reach AP1: Analysis Point 1**

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.861 ac, 30.13% Impervious, Inflow Depth = 0.76" for 50 Yr 24 Hr(+15%) event  
 Inflow = 1.56 cfs @ 12.57 hrs, Volume= 0.118 af  
 Outflow = 1.56 cfs @ 12.57 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

**Summary for Pond 10P: Concrete Galley 8x14 STORAGE ONLY**

Inflow Area = 1.024 ac, 23.67% Impervious, Inflow Depth > 2.55" for 50 Yr 24 Hr(+15%) event  
 Inflow = 1.81 cfs @ 12.35 hrs, Volume= 0.217 af  
 Outflow = 1.20 cfs @ 12.64 hrs, Volume= 0.184 af, Atten= 34%, Lag= 17.3 min  
 Primary = 1.20 cfs @ 12.64 hrs, Volume= 0.184 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 189.39' @ 12.64 hrs Surf.Area= 0.057 ac Storage= 0.060 af

Plug-Flow detention time= 144.1 min calculated for 0.184 af (84% of inflow)

Center-of-Mass det. time= 77.3 min ( 956.0 - 878.7 )

Volume	Invert	Avail.Storage	Storage Description
#1A	187.33'	0.000 af	<b>24.00'W x 42.00'L x 5.67'H Field A</b> 0.131 af Overall - 0.131 af Embedded = 0.000 af x 40.0% Voids
#2A	187.33'	0.105 af	<b>Concrete Galley 8x14x5.7 x 9 Inside #1</b> Inside= 84.0"W x 60.0"H => 39.20 sf x 13.00'L = 509.6 cf Outside= 96.0"W x 68.0"H => 45.36 sf x 14.00'L = 635.0 cf 3 Rows of 3 Chambers
#3	186.33'	0.011 af	<b>20.00'W x 60.00'L x 1.00'H Prismatic</b> 0.028 af Overall x 40.0% Voids
#4	187.33'	0.010 af	<b>2.00'W x 144.00'L x 3.67'H Prismatic</b> 0.024 af Overall x 40.0% Voids
		0.126 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	187.50'	<b>9.0" Vert. Orifice/Grate C= 0.600</b>
#2	Secondary	192.00'	<b>160.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=1.20 cfs @ 12.64 hrs HW=189.39' TW=189.07' (Dynamic Tailwater)↑**1=Orifice/Grate** (Orifice Controls 1.20 cfs @ 2.72 fps)**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=186.33' TW=184.41' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)**Summary for Pond 20P: Drip Edge**

[90] Warning: Qout&gt;Qin may require smaller dt or Finer Routing

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=55)



**20686-PROPOSED\_working**

Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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Inflow Area = 0.023 ac, 100.00% Impervious, Inflow Depth > 8.25" for 50 Yr 24 Hr(+15%) event  
 Inflow = 0.19 cfs @ 12.09 hrs, Volume= 0.016 af  
 Outflow = 0.27 cfs @ 12.10 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.8 min  
 Discarded = 0.01 cfs @ 12.10 hrs, Volume= 0.012 af  
 Primary = 0.26 cfs @ 12.10 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 195.52' @ 12.10 hrs Surf.Area= 99 sf Storage= 120 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 49.9 min ( 790.0 - 740.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	192.50'	139 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 347 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
192.50	99	0	0
195.50	99	297	297
196.00	99	50	347

Device	Routing	Invert	Outlet Devices
#1	Discarded	192.50'	<b>3.750 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 188.00'
#2	Primary	195.50'	<b>27.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Discarded OutFlow** Max=0.01 cfs @ 12.10 hrs HW=195.52' (Free Discharge)  
 1=Exfiltration ( Controls 0.01 cfs)

**Primary OutFlow** Max=0.25 cfs @ 12.10 hrs HW=195.52' TW=187.86' (Dynamic Tailwater)  
 2=Broad-Crested Rectangular Weir (Weir Controls 0.25 cfs @ 0.41 fps)

**Summary for Pond 30P: Drip Edge**

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=52)

Inflow Area = 0.018 ac, 100.00% Impervious, Inflow Depth > 8.25" for 50 Yr 24 Hr(+15%) event  
 Inflow = 0.14 cfs @ 12.09 hrs, Volume= 0.012 af  
 Outflow = 0.18 cfs @ 12.15 hrs, Volume= 0.012 af, Atten= 0%, Lag= 3.9 min  
 Discarded = 0.01 cfs @ 12.15 hrs, Volume= 0.010 af  
 Primary = 0.17 cfs @ 12.15 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 202.02' @ 12.15 hrs Surf.Area= 96 sf Storage= 116 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

**20686-PROPOSED\_working**

Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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Center-of-Mass det. time= 64.9 min ( 805.0 - 740.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	199.00'	154 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 384 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
199.00	96	0	0
202.00	96	288	288
203.00	96	96	384

Device	Routing	Invert	Outlet Devices
#1	Discarded	199.00'	<b>3.750 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 189.00'
#2	Primary	202.00'	<b>35.0' long x 3.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

**Discarded OutFlow** Max=0.01 cfs @ 12.15 hrs HW=202.02' (Free Discharge)

↑1=Exfiltration ( Controls 0.01 cfs)

**Primary OutFlow** Max=0.17 cfs @ 12.15 hrs HW=202.02' TW=188.16' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir (Weir Controls 0.17 cfs @ 0.30 fps)

**Summary for Pond 40P: Drip Edge**

Inflow Area = 0.016 ac, 100.00% Impervious, Inflow Depth > 8.25" for 50 Yr 24 Hr(+15%) event  
 Inflow = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af  
 Outflow = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.1 min  
 Discarded = 0.01 cfs @ 12.09 hrs, Volume= 0.007 af  
 Primary = 0.13 cfs @ 12.09 hrs, Volume= 0.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 196.02' @ 12.09 hrs Surf.Area= 87 sf Storage= 1 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 0.0 min ( 740.1 - 740.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	196.00'	139 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 348 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
196.00	87	0	0
199.00	87	261	261
200.00	87	87	348

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	196.00'	<b>3.750 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 192.00'
#2	Primary	196.00'	<b>26.5' long x 3.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

**Discarded OutFlow** Max=0.01 cfs @ 12.09 hrs HW=196.02' (Free Discharge)↑**1=Exfiltration** ( Controls 0.01 cfs)**Primary OutFlow** Max=0.12 cfs @ 12.09 hrs HW=196.02' TW=188.47' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir** (Weir Controls 0.12 cfs @ 0.30 fps)**Summary for Pond 50P: Drip Edge**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=83)

Inflow Area = 0.016 ac, 100.00% Impervious, Inflow Depth > 8.25" for 50 Yr 24 Hr(+15%) event  
 Inflow = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af  
 Outflow = 0.03 cfs @ 12.43 hrs, Volume= 0.011 af, Atten= 73%, Lag= 20.8 min  
 Discarded = 0.03 cfs @ 12.43 hrs, Volume= 0.011 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 192.71' @ 12.43 hrs Surf.Area= 108 sf Storage= 117 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 24.9 min ( 764.9 - 740.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	190.00'	173 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 432 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
190.00	108	0	0
193.00	108	324	324
194.00	108	108	432

Device	Routing	Invert	Outlet Devices
#1	Discarded	190.00'	<b>3.750 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 189.00'
#2	Primary	193.00'	<b>36.0' long x 3.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

**20686-PROPOSED\_working**

Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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**Discarded OutFlow** Max=0.03 cfs @ 12.43 hrs HW=192.70' (Free Discharge)

↳1=Exfiltration ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=190.00' TW=184.41' (Dynamic Tailwater)

↳2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 60P: Concrete Galley 8x14 STORAGE ONLY**

Inflow Area = 0.455 ac, 34.95% Impervious, Inflow Depth > 2.89" for 50 Yr 24 Hr(+15%) event  
 Inflow = 1.65 cfs @ 12.11 hrs, Volume= 0.110 af  
 Outflow = 0.37 cfs @ 12.53 hrs, Volume= 0.078 af, Atten= 78%, Lag= 25.6 min  
 Primary = 0.37 cfs @ 12.53 hrs, Volume= 0.079 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 189.10' @ 12.55 hrs Surf.Area= 0.055 ac Storage= 0.049 af

Plug-Flow detention time= 253.4 min calculated for 0.078 af (71% of inflow)

Center-of-Mass det. time= 156.1 min ( 1,005.9 - 849.8 )

Volume	Invert	Avail.Storage	Storage Description
#1A	187.33'	0.000 af	<b>16.00'W x 56.00'L x 5.67'H Field A</b> 0.117 af Overall - 0.117 af Embedded = 0.000 af x 40.0% Voids
#2A	187.33'	0.094 af	<b>Concrete Galley 8x14x5.7 x 8 Inside #1</b> Inside= 84.0"W x 60.0"H => 39.20 sf x 13.00'L = 509.6 cf Outside= 96.0"W x 68.0"H => 45.36 sf x 14.00'L = 635.0 cf 2 Rows of 4 Chambers
#3	186.33'	0.011 af	<b>20.00'W x 60.00'L x 1.00'H Prismatic</b> 0.028 af Overall x 40.0% Voids
#4	187.33'	0.010 af	<b>2.00'W x 144.00'L x 3.67'H Prismatic</b> 0.024 af Overall x 40.0% Voids
		0.114 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	186.92'	<b>9.0" Vert. Orifice/Grate</b> C= 0.600
#2	Secondary	192.00'	<b>160.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Primary OutFlow** Max=0.36 cfs @ 12.53 hrs HW=189.10' TW=189.07' (Dynamic Tailwater)

↳1=Orifice/Grate (Orifice Controls 0.36 cfs @ 0.82 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=186.33' TW=184.41' (Dynamic Tailwater)

↳2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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Type III 24-hr 50 Yr 24 Hr(+15%) Rainfall=8.50"

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**Summary for Pond 70P: RAIN GARDEN**

[80] Warning: Exceeded Pond 10P by 1.41' @ 11.95 hrs (1.20 cfs 0.066 af)

[80] Warning: Exceeded Pond 60P by 0.98' @ 11.95 hrs (2.01 cfs 0.063 af)

Inflow Area = 1.861 ac, 30.13% Impervious, Inflow Depth > 2.42" for 50 Yr 24 Hr(+15%) event  
 Inflow = 1.81 cfs @ 12.56 hrs, Volume= 0.375 af  
 Outflow = 1.81 cfs @ 12.57 hrs, Volume= 0.362 af, Atten= 0%, Lag= 0.8 min  
 Discarded = 0.25 cfs @ 12.57 hrs, Volume= 0.244 af  
 Primary = 1.56 cfs @ 12.57 hrs, Volume= 0.118 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3  
 Peak Elev= 189.07' @ 12.57 hrs Surf.Area= 1,588 sf Storage= 1,815 cf

Plug-Flow detention time= 63.5 min calculated for 0.361 af (96% of inflow)  
 Center-of-Mass det. time= 46.5 min ( 977.1 - 930.6 )

Volume	Invert	Avail.Storage	Storage Description	
#1	184.41'	3,288 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)
184.41	275	0.0	0	0
185.42	275	40.0	111	111
186.41	275	40.0	109	220
186.42	275	5.0	0	220
186.66	275	5.0	3	223
186.67	275	15.0	0	224
188.16	1,027	15.0	145	369
188.17	1,588	100.0	13	382
189.00	1,588	100.0	1,318	1,700
190.00	1,588	100.0	1,588	3,288

Device	Routing	Invert	Outlet Devices
#1	Discarded	184.41'	<b>3.750 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 183.00'
#2	Primary	189.00'	<b>30.0' long x 1.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

**Discarded OutFlow** Max=0.25 cfs @ 12.57 hrs HW=189.07' (Free Discharge)  
 ↳1=Exfiltration ( Controls 0.25 cfs)

**Primary OutFlow** Max=1.54 cfs @ 12.57 hrs HW=189.07' TW=0.00' (Dynamic Tailwater)  
 ↳2=Broad-Crested Rectangular Weir (Weir Controls 1.54 cfs @ 0.72 fps)

# APPENDIX III

## Test Pit Logs



36 Stage Rd, Nottingham NH 03290  
603.679.1866 C: 603.706.2521  
calbert.env@gmail.com

**TEST PITS**  
**668 MIDDLE ROAD**  
**PORTSMOUTH, NEW HAMPSHIRE**  
**JANUARY 14, 2021**

Performed by: Christopher Albert, SSD #1085

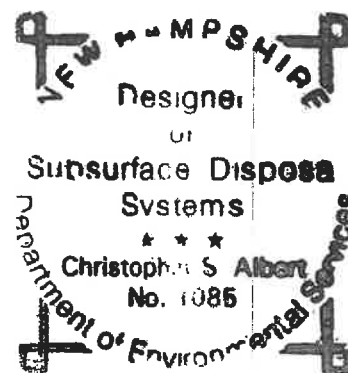
TEST PIT #1 – GRASS MAT

0" - 9"	10YR 3/4	dark yellowish brown fine sandy loam common roots
9" - 20"	10YR 5/6	yellowish brown fine sandy loam common roots
20" - 38"	2.5Y 6/4	Light yellowish brown fine sandy loam Few stones

No H2O observed  
SHWT: 28"  
Roots: 28"  
Refusal: 38"  
Perc Rate = 8 min/inch

TEST PIT #2 – GRASS MAT

0" - 7"	10YR 3/4	dark yellowish brown fine sandy loam to loamy sand many roots
7" - 20"	10YR 5/6	yellowish brown fine sandy loam few roots
20" - 46"	2.5Y 5/3	Light yellowish brown fine sandy loam, few stones





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No H2O observed

SHWT: 32"

Roots: 32"

Refusal: 46"

Perc Rate = 8 min/inch

TEST PIT #3 - GRASS MAT

Refusal: 12"

TEST PIT #4 - GRASS MAT

0" - 9"

10YR 3/4 dark yellowish brown  
fine sandy loam to loamy sand  
many roots

9" - 28"

10YR 5/6 yellowish brown  
fine sandy loam  
few roots

28" - 48"

2.5Y 5/3 Light yellowish brown  
fine sandy loam, few stones

No H2O observed

SHWT: 28"

Roots: 28"

Refusal: 48"

Perc Rate = 8 min/inch

TEST PIT #5 - GRASS MAT

Refusal: 18"







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#### TEST PIT #6 – FOREST MAT

0" – 12"	10YR 3/3	dark brown fine sandy loam few roots
12" - 36"	10YR 4/6	yellowish brown fine sandy loam common roots
36" - 50"	2.5Y 6/4	Light yellowish brown fine sandy loam Few stones

No H2O observed

SHWT: 40"

Roots: 36"

Refusal: 50"

Perc Rate = 8 min/inch

#### Test Pit #7 – GRASS MAT

0" – 12"	10YR 3/3	dark brown fine sandy loam few roots
12" - 36"	10YR 4/6	yellowish brown fine sandy loam common roots
36" - 72"	2.5Y 5/4	Light Olive brown fine sandy loam Firm, Few stones

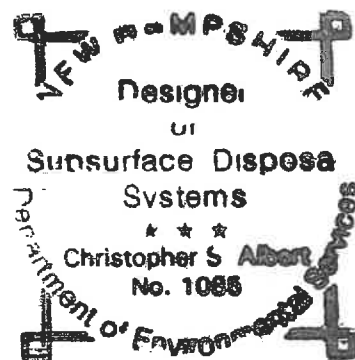
No H2O observed

SHWT: 36"

Roots: 36"

Refusal: 72"

Perc Rate = 8 min/inch





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TEST PIT #8 – GRASS MAT

Refusal: 12"

TEST PIT #9 – GRASS MAT

Refusal: 24"

TEST PIT #10 – GRASS MAT

0" - 10"

Crushed Gravel (fill material)

Stabilization Fabric

10" - 24"

2.5Y 5/3

Light olive brown  
Silty clay loam  
Subangular blocky

Encountered 2" electrical  
conduit

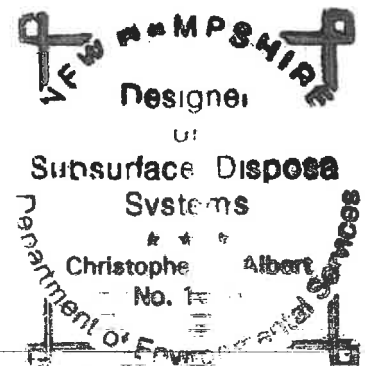
No H<sub>2</sub>O observed

SHWT: 10"

Roots: none

Refusal: none

Perc Rate = 20 min/inch



TEST PIT #11 – EDGE TREE LINE

0" - 20"

10YR 2/2

Very dark brown, FSL  
Few roots

20" - 84"

2.5Y 3/4

Light olive brown  
Silty clay loam  
Subangular blocky



36 Stage Rd, Nottingham NH 03290

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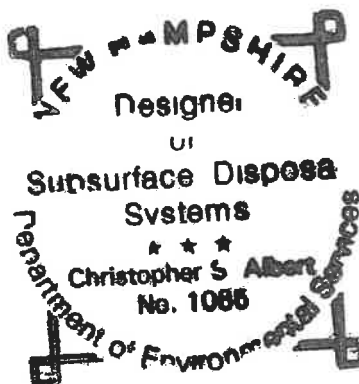
No H2O observed

SHWT: 20"

Roots: 20"

Refusal: none

Perc Rate = 20 min/inch



# APPENDIX IV

## NRCS Soil Map



United States  
Department of  
Agriculture

**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for **Rockingham County, New Hampshire**



December 10, 2021

# Preface

---

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

---

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

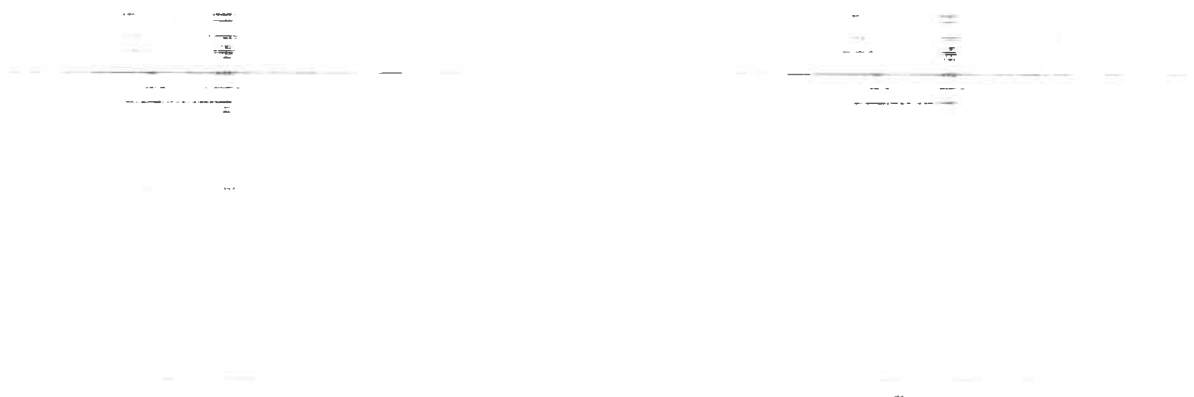
## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

---

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



# Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:1,130 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

<b>Area of Interest (AOI)</b>		<b>Soils</b>	
Area of Interest (AOI)		Soil Map Unit Polygons	
		Soil Map Unit Lines	
		Soil Map Unit Points	
<b>Special Point Features</b>		<b>Water Features</b>	
Blowout		Streams and Canals	
Borrow Pit		<b>Transportation</b>	
Clay Spot		Rails	
Closed Depression		Interstate Highways	
Gravel Pit		US Routes	
Gravelly Spot		Major Roads	
Landfill		Local Roads	
Lava Flow		<b>Background</b>	
Marsh or swamp		Aerial Photography	
Mine or Quarry			
Miscellaneous Water			
Perennial Water			
Rock Outcrop			
Saline Spot			
Sandy Spot			
Severely Eroded Spot			
Sinkhole			
Slide or Slip			
Sodic Spot			

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire  
Survey Area Data: Version 24, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
799	Urban land-Canton complex, 3 to 15 percent slopes	2.9	100.0%
<b>Totals for Area of Interest</b>		<b>2.9</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

## Custom Soil Resource Report

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.



## Rockingham County, New Hampshire

### 799—Urban land-Canton complex, 3 to 15 percent slopes

#### Map Unit Setting

*National map unit symbol:* 9cq0  
*Elevation:* 0 to 1,000 feet  
*Mean annual precipitation:* 42 to 46 inches  
*Mean annual air temperature:* 45 to 48 degrees F  
*Frost-free period:* 120 to 160 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Urban land:* 55 percent  
*Canton and similar soils:* 20 percent  
*Minor components:* 25 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Canton

##### Setting

*Parent material:* Till

##### Typical profile

*H1 - 0 to 5 inches:* gravelly fine sandy loam  
*H2 - 5 to 21 inches:* gravelly fine sandy loam  
*H3 - 21 to 60 inches:* loamy sand

##### Properties and qualities

*Slope:* 3 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 5.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* A  
*Ecological site:* F144AY034CT - Well Drained Till Uplands  
*Hydric soil rating:* No

#### Minor Components

##### Udorthents

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

##### Squamscott and scitico

*Percent of map unit:* 4 percent  
*Landform:* Marine terraces

## Custom Soil Resource Report

*Hydric soil rating: Yes*

### **Walpole**

*Percent of map unit: 4 percent*

*Landform: Depressions*

*Hydric soil rating: Yes*

### **Chatfield**

*Percent of map unit: 4 percent*

*Hydric soil rating: No*

### **Scituate and newfields**

*Percent of map unit: 4 percent*

*Hydric soil rating: No*

### **Boxford and eldridge**

*Percent of map unit: 4 percent*

*Hydric soil rating: No*

# References

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American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_054262](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262)

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053577](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577)

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053580](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580)

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2\\_053374](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374)

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelpdb1043084>

## Custom Soil Resource Report

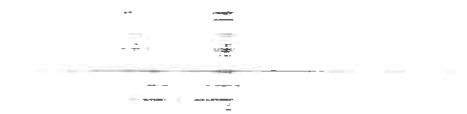
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_052290.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf)

# APPENDIX V

## Extreme Precipitation Estimates



# 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	70.767 degrees West
Latitude	43.068 degrees North
Elevation	0 feet
Date/Time	Mon, 13 Dec 2021 08:39:25 -0500

## Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	1yr	0.70	0.98	1.21	1.56	2.03	2.66	2.92	1yr	2.35	2.81	3.22	3.94	4.55	1yr
2yr	0.32	0.50	0.62	0.81	1.02	1.30	2yr	0.88	1.18	1.52	1.94	2.49	3.21	3.57	2yr	2.84	3.43	3.94	4.68	5.33	2yr
5yr	0.37	0.58	0.73	0.97	1.25	1.61	5yr	1.08	1.47	1.89	2.43	3.14	4.07	4.58	5yr	3.60	4.40	5.04	5.94	6.70	5yr
10yr	0.41	0.65	0.82	1.11	1.45	1.89	10yr	1.25	1.72	2.23	2.89	3.75	4.87	5.53	10yr	4.31	5.32	6.08	7.11	7.98	10yr
25yr	0.48	0.76	0.97	1.33	1.77	2.33	25yr	1.53	2.14	2.77	3.63	4.74	6.17	7.10	25yr	5.46	6.83	7.80	9.02	10.05	25yr
50yr	0.53	0.86	1.10	1.53	2.07	2.75	50yr	1.78	2.52	3.28	4.32	5.66	7.39	8.58	50yr	6.54	8.25	9.42	10.81	11.98	50yr
100yr	0.59	0.96	1.24	1.77	2.41	3.25	100yr	2.08	2.97	3.90	5.15	6.77	8.85	10.38	100yr	7.84	9.98	11.38	12.96	14.28	100yr
200yr	0.67	1.10	1.42	2.04	2.82	3.83	200yr	2.43	3.51	4.61	6.12	8.08	10.61	12.55	200yr	9.39	12.07	13.75	15.55	17.03	200yr
500yr	0.80	1.31	1.71	2.48	3.47	4.75	500yr	2.99	4.37	5.75	7.69	10.21	13.49	16.15	500yr	11.93	15.53	17.67	19.78	21.50	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	2.50	1yr	1.98	2.40	2.86	3.17	3.89	1yr
2yr	0.31	0.49	0.60	0.81	1.00	1.19	2yr	0.86	1.16	1.37	1.82	2.34	3.06	3.45	2yr	2.71	3.32	3.82	4.55	5.08	2yr
5yr	0.35	0.54	0.67	0.92	1.17	1.40	5yr	1.01	1.37	1.61	2.12	2.73	3.79	4.19	5yr	3.35	4.03	4.72	5.54	6.24	5yr
10yr	0.39	0.59	0.73	1.03	1.32	1.60	10yr	1.14	1.56	1.81	2.39	3.06	4.37	4.87	10yr	3.87	4.68	5.45	6.42	7.20	10yr
25yr	0.44	0.67	0.83	1.19	1.56	1.90	25yr	1.35	1.86	2.10	2.76	3.54	4.71	5.90	25yr	4.17	5.68	6.66	7.80	8.69	25yr
50yr	0.48	0.73	0.91	1.31	1.77	2.17	50yr	1.52	2.12	2.35	3.08	3.94	5.32	6.82	50yr	4.71	6.56	7.74	9.06	10.03	50yr
100yr	0.54	0.81	1.01	1.47	2.01	2.47	100yr	1.74	2.41	2.63	3.42	4.36	5.98	7.87	100yr	5.29	7.57	9.00	10.53	11.58	100yr
200yr	0.59	0.89	1.13	1.63	2.28	2.82	200yr	1.97	2.75	2.93	3.79	4.80	6.70	9.09	200yr	5.93	8.74	10.46	12.25	13.39	200yr
500yr	0.69	1.02	1.31	1.91	2.71	3.37	500yr	2.34	3.29	3.41	4.33	5.47	7.79	10.98	500yr	6.89	10.56	12.75	14.99	16.21	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	2.99	3.16	1yr	2.64	3.04	3.58	4.38	5.05	1yr
2yr	0.34	0.52	0.64	0.86	1.07	1.27	2yr	0.92	1.24	1.48	1.96	2.51	3.43	3.70	2yr	3.03	3.56	4.09	4.84	5.63	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	4.34	4.96	5yr	3.84	4.77	5.38	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	3.10	3.95	5.34	6.19	10yr	4.72	5.96	6.81	7.83	8.74	10yr
25yr	0.57	0.87	1.09	1.55	2.04	2.56	25yr	1.76	2.51	2.95	4.07	5.14	7.79	8.33	25yr	6.90	8.01	9.13	10.33	11.40	25yr
50yr	0.67	1.02	1.27	1.82	2.45	3.12	50yr	2.12	3.05	3.59	4.99	6.30	9.76	10.44	50yr	8.64	10.03	11.41	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	7.74	12.22	13.07	100yr	10.81	12.57	14.25	15.67	17.07	100yr
200yr	0.92	1.39	1.76	2.54	3.55	4.64	200yr	3.06	4.54	5.33	7.57	9.50	15.33	16.40	200yr	13.57	15.77	17.84	19.31	20.90	200yr
500yr	1.14	1.70	2.19	3.18	4.52	6.02	500yr	3.90	5.88	6.91	10.00	12.50	20.72	22.13	500yr	18.34	21.28	24.00	25.46	27.31	500yr

# APPENDIX VI

## BMP Worksheets



## INFILTRATION PRACTICE CRITERIA (Env-Wq 1508.06)

**Type/Node Name:**    **Infiltration Basin, 70P**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

<b>Yes</b>		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← yes
0.80	ac	A = Area draining to the practice	
0.25	ac	A <sub>I</sub> = Impervious area draining to the practice	
0.31	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.33	unitless	R <sub>v</sub> = Runoff coefficient = 0.05 + (0.9 x I)	
0.26	ac-in	WQV = 1" x R <sub>v</sub> x A	
947	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
237	cf	25% x WQV (check calc for sediment forebay volume)	
Method of pretreatment? (not required for clean or roof runoff)			
241	cf	V <sub>SED</sub> = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
	cf	V = Volume <sup>1</sup> (attach a stage-storage table)	≥ WQV
	sf	A <sub>SA</sub> = Surface area of the bottom of the pond	
0.30	iph	K <sub>sat</sub> <sub>DESIGN</sub> = Design infiltration rate <sup>2</sup>	
	- hours	I <sub>DRAIN</sub> = Drain time = V / (A <sub>SA</sub> x I <sub>DESIGN</sub> )	≤ 72-hrs
33.90	feet	E <sub>BTM</sub> = Elevation of the bottom of the basin	
30.82	feet	E <sub>SHWT</sub> = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
29.57	feet	E <sub>ROCK</sub> = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
3.08	feet	D <sub>SHWT</sub> = Separation from SHWT	≥ * <sup>3</sup>
4.3	feet	D <sub>ROCK</sub> = Separation from bedrock	≥ * <sup>3</sup>
	ft	D <sub>amend</sub> = Depth of amended soil, if applicable due high infiltration rate	≥ 24"
	ft	D <sub>T</sub> = Depth of trench, if trench proposed	4 - 10 ft
Yes	Yes/No	If a trench or underground system is proposed, has observation well been provided?	← yes
		If a trench is proposed, does material meet Env-Wq 1508.06(k)(2) requirements. <sup>4</sup>	← yes
	Yes/No	If a basin is proposed, is the perimeter curvilinear, and basin floor flat?	← yes
	:1	If a basin is proposed, pond side slopes.	≥ 3:1
36.12	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
37.23	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
37.57	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench? <sup>5</sup>	← yes
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← yes

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. K<sub>sat</sub><sub>DESIGN</sub> includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

**Designer's Notes:**

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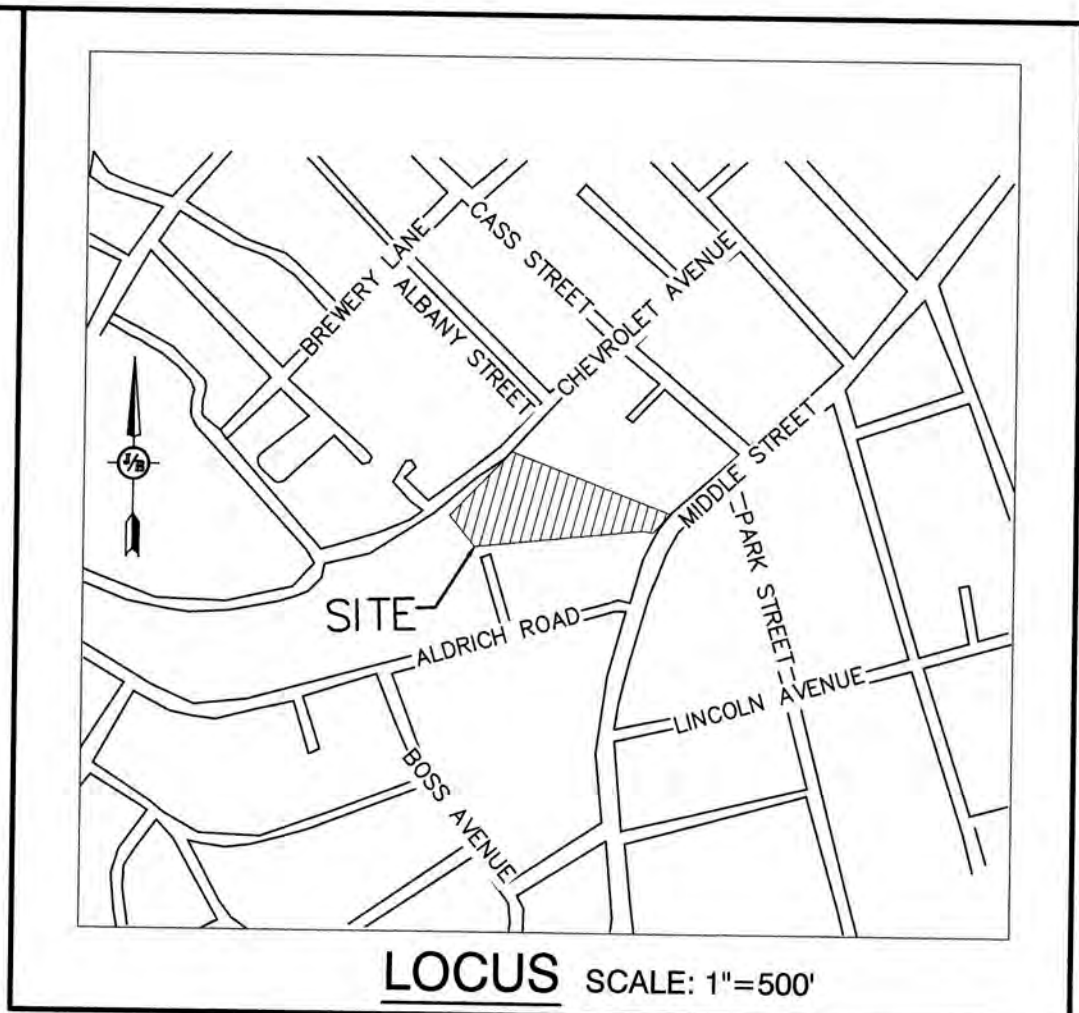
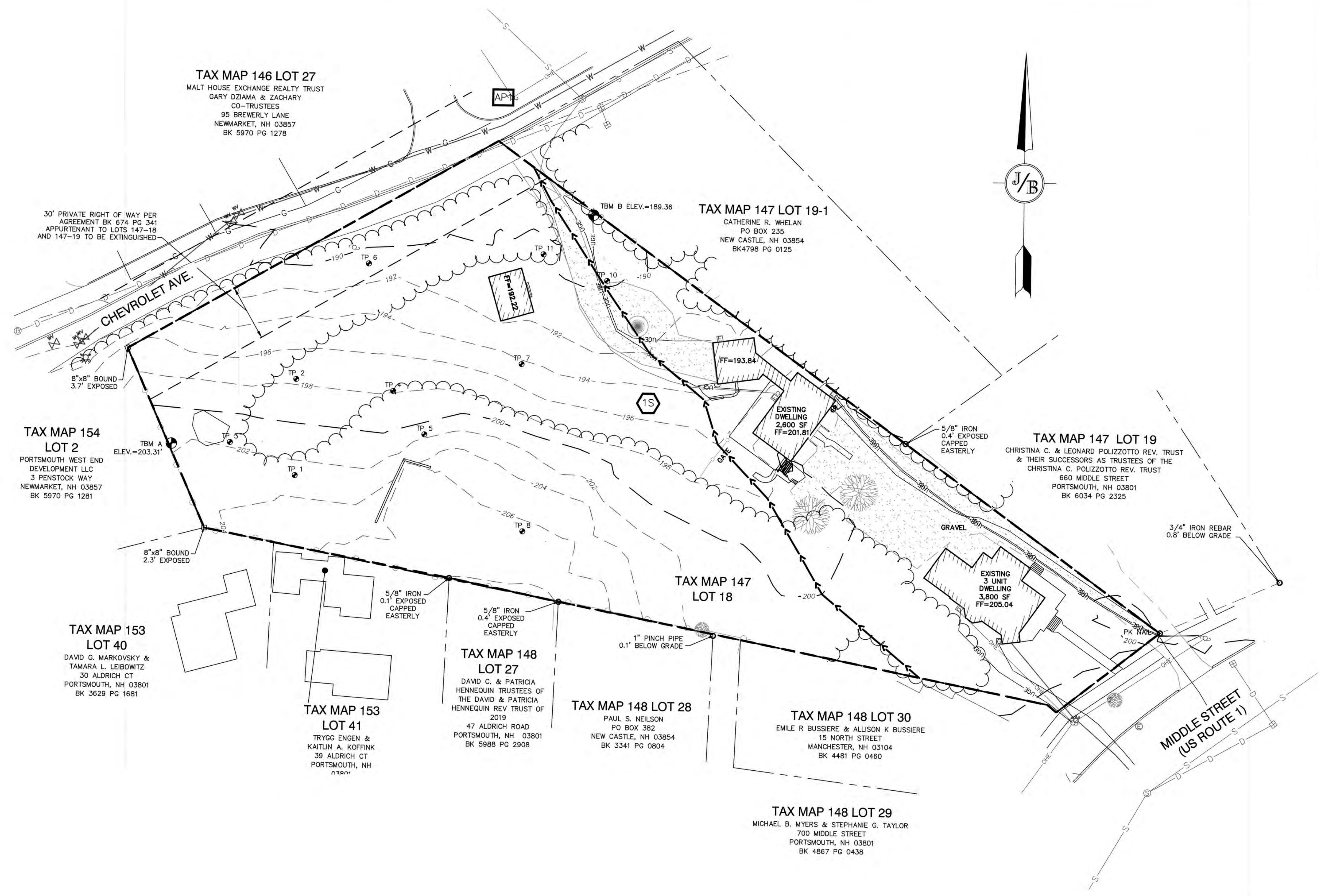


# APPENDIX VII

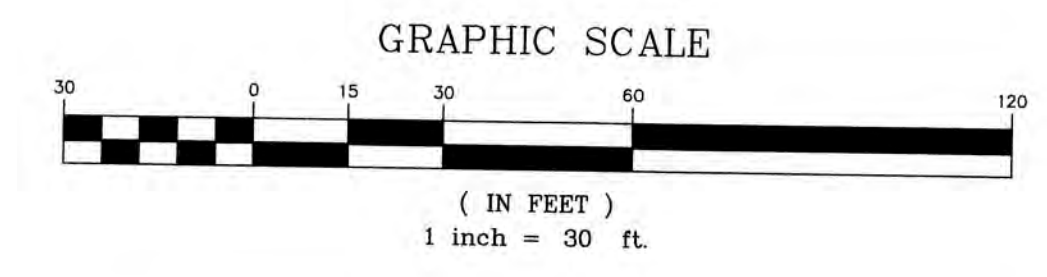
## Pre- and Post-Construction Watershed Plans



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



- LEGEND**
- SUBCATCHMENT BOUNDARY: ---
  - SUBCATCHMENT: [Symbol]
  - REACH: [Symbol]
  - POND: [Symbol]
  - TC PATH: [Symbol]
  - WETLANDS: [Symbol]
  - HISS SOILS: [Symbol]
  - FLOW ARROW: [Symbol]



**PROJECT PARCEL**  
CITY OF PORTSMOUTH  
TAX MAP 147, LOT 18

**APPLICANT**  
TUCK REALTY CORPORATION  
PO BOX 190  
EXETER, NH 03833

**TOTAL LOT AREA**  
81,046 SQ. FT.  
1.86 ACRES

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-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.		

4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVISION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ
REV.	DATE	REVISION	BY

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

Plan Name: **EXISTING WATERSHED PLAN**

Project: **668 MIDDLE STREET  
PORTSMOUTH, NH**

Owner of Record: ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012  
668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.  
**W1**  
SHEET 1 OF 2  
JBE PROJECT NO. 20686



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Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-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.		

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0	1/26/21	ISSUED FOR REVIEW	LAZ
REV.	DATE	REVISION	BY

Designed and Produced in NH

J/B

Jones & Beach Engineers, Inc.

85 Portsmouth Ave.  
PO Box 219  
Stratham, NH 03885

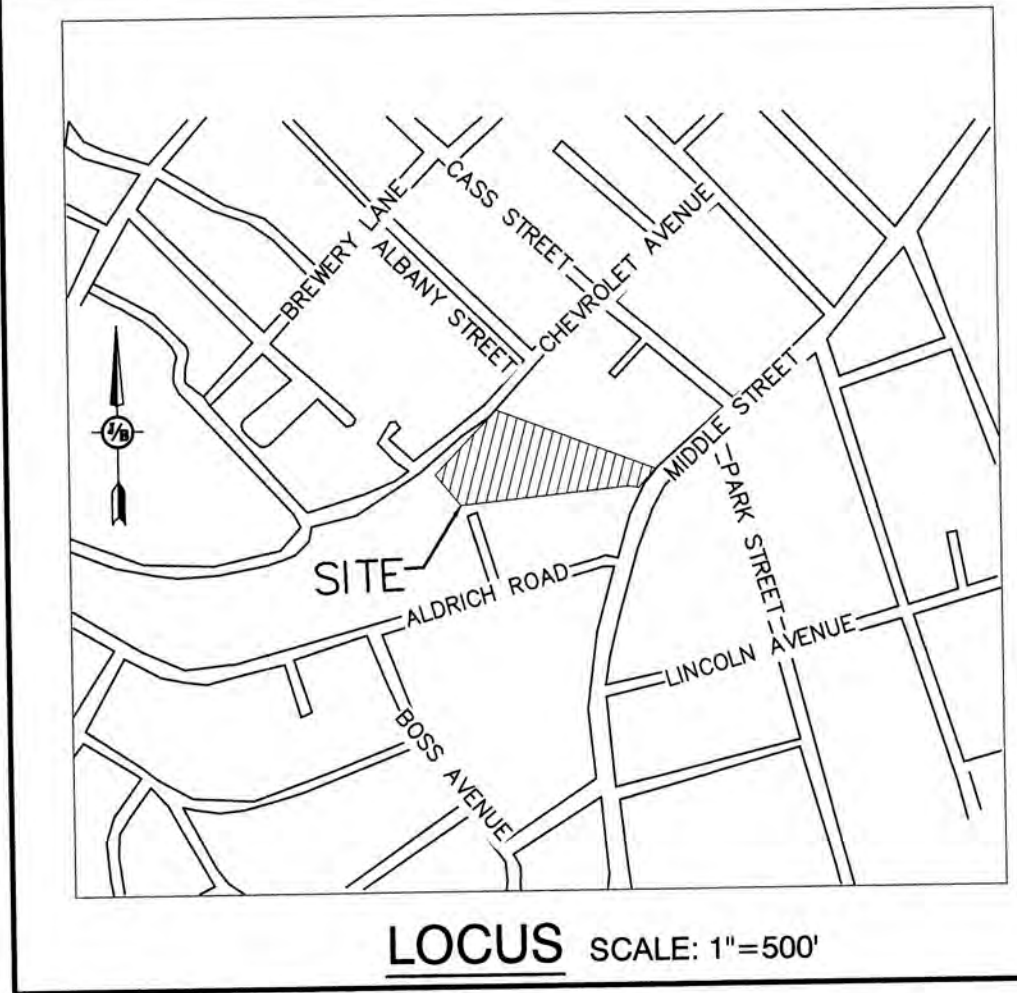
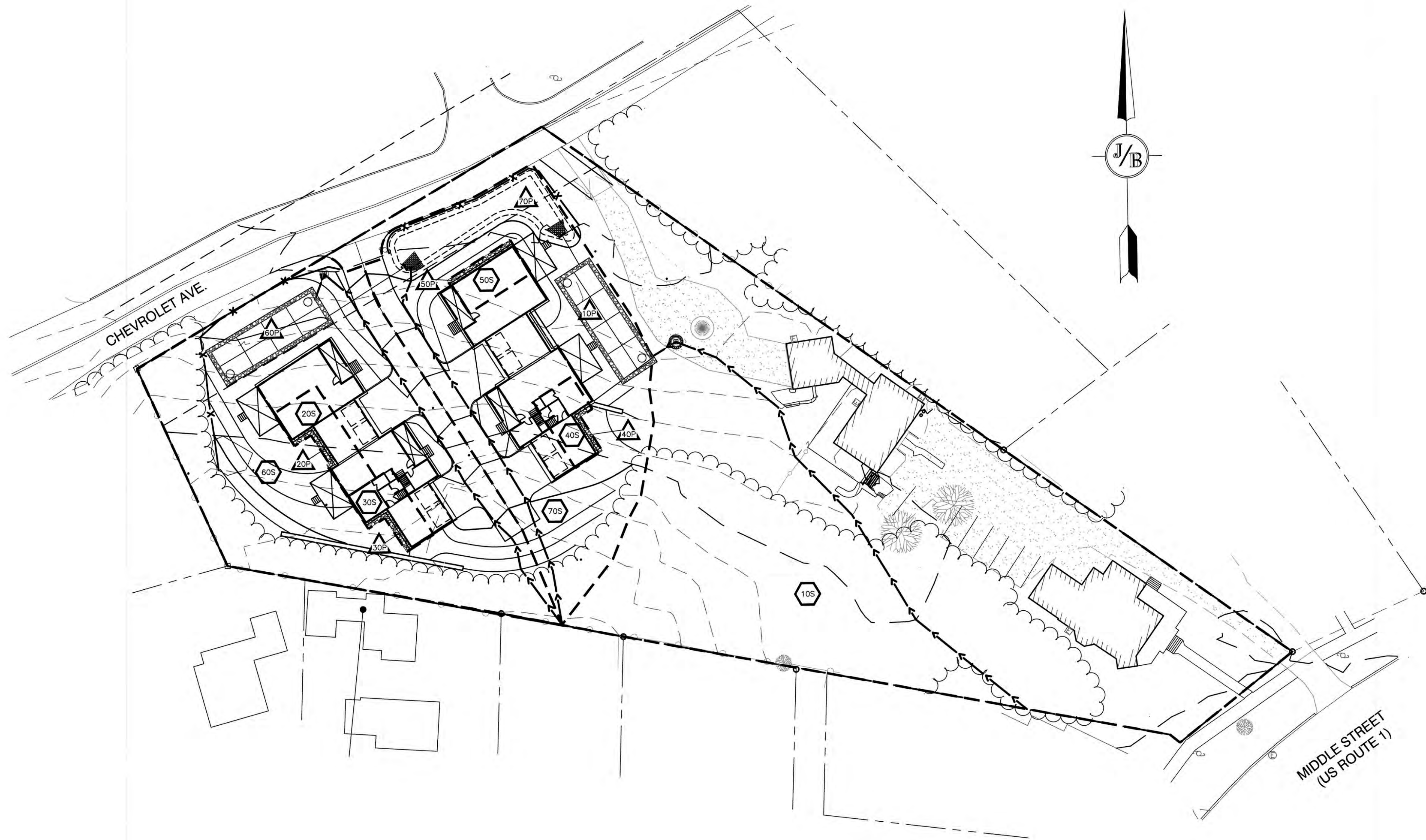
Civil Engineering Services

603-772-4746  
FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	PROPOSED WATERSHED PLAN
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

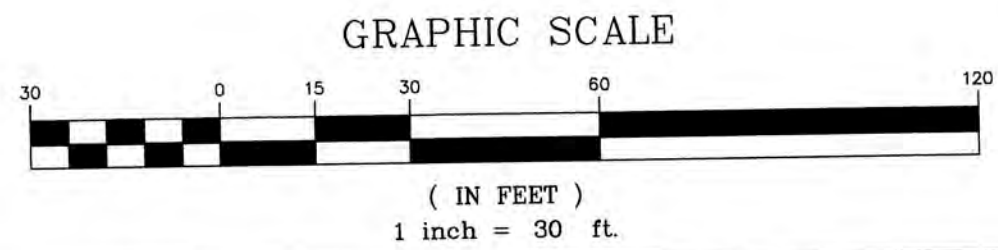
DRAWING No.
W2
SHEET 2 OF 2 JBE PROJECT NO. 20686

PROJECT PARCEL CITY OF PORTSMOUTH TAX MAP 147, LOT 18
APPLICANT TUCK REALTY CORPORATION PO BOX 190 EXETER, NH 03833
TOTAL LOT AREA 81,046 SQ. FT. 1.86 ACRES



#### LEGEND

SUBCATCHMENT	---
BOUNDARY	X
SUBCATCHMENT	X
REACH	X
POND	△
TC PATH	→
WETLANDS	---
HISS SOILS	.....
FLOW ARROW	→

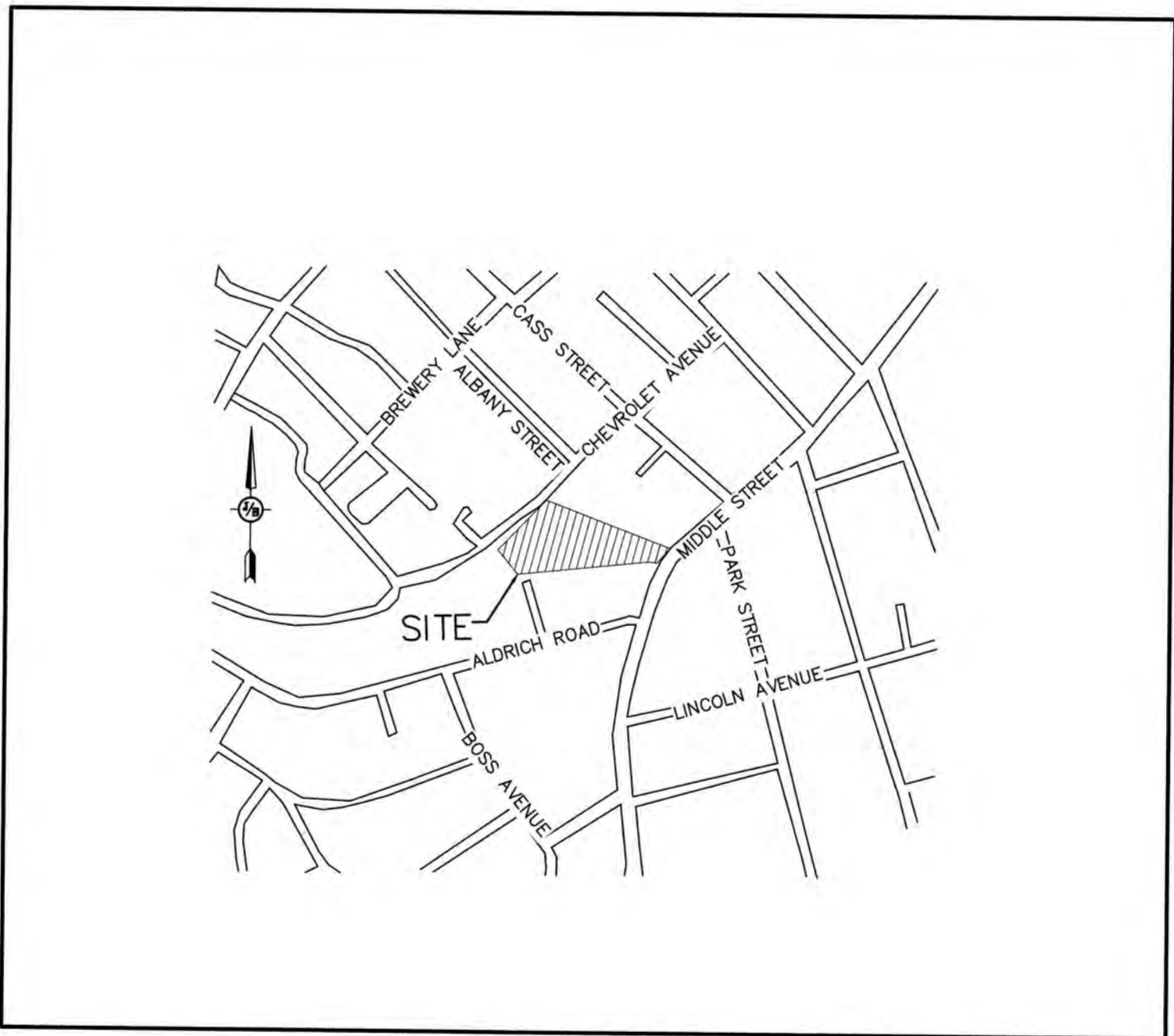




SITE & SUBDIVISION PLAN  
"CHEVROLET AVENUE DUPLEXES"  
TAX MAP 147 LOT 18  
668 MIDDLE STREET, PORTSMOUTH NEW HAMPSHIRE

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
---	---	PROPERTY LINES
---	---	SETBACK LINES
---	---	CENTERLINE
---	---	FRESHWATER WETLANDS LINE
---	---	TIDAL WETLANDS LINE
---	---	STREAM CHANNEL
---	---	TREE LINE
---	---	STONEWALL
---	---	BARBED WIRE
---	---	FENCE
---	---	STOCKADE FENCE
---	---	SOIL BOUNDARY
---	---	AQUIFER PROTECTION LINE
---	---	FLOOD PLAIN LINE
---	---	ZONELINE
---	---	EASEMENT
---	---	MAJOR CONTOUR
---	---	MINOR CONTOUR
---	---	EDGE OF PAVEMENT
---	---	VERTICAL GRANITE CURB
---	---	SLOPE GRANITE CURB
---	---	CAPE COD BERM
---	---	POURED CONCRETE CURB
---	---	SILT FENCE
---	---	DRAINAGE LINE
---	---	SEWER LINE
---	---	SEWER FORCE MAIN
---	---	GAS LINE
---	---	WATER LINE
---	---	WATER SERVICE
---	---	OVERHEAD ELECTRIC
---	---	UNDERGROUND ELECTRIC
---	---	GUARDRAIL
---	---	UNDERDRAIN
---	---	FIRE PROTECTION LINE
---	---	THRUST BLOCK
---	---	IRON PIPE/IRON ROD
---	---	DRILL HOLE
---	---	IRON ROD/DRILL HOLE
---	---	STONE/GRANITE BOUND
---	---	SPOT GRADE
---	---	PAVEMENT SPOT GRADE
---	---	CURB SPOT GRADE
---	---	BENCHMARK (TBM)
---	---	DOUBLE POST SIGN
---	---	SINGLE POST SIGN
---	---	TEST PIT
---	---	TREES AND BUSHES
---	---	UTILITY POLE
---	---	LIGHT POLES
---	---	DRAIN MANHOLE
---	---	SEWER MANHOLE
---	---	HYDRANT
---	---	WATER GATE
---	---	WATER SHUT OFF
---	---	REDUCER
---	---	SINGLE GRATE CATCH BASIN
---	---	DOUBLE GRATE CATCH BASIN
---	---	TRANSFORMER
---	---	CULVERT W/STRAIGHT HEADWALL
---	---	STONE CHECK DAM
---	---	DRAINAGE FLOW DIRECTION
---	---	RIPRAP
---	---	STABILIZED CONSTRUCTION
---	---	ENTRANCE
---	---	CONCRETE
---	---	GRAVEL
---	---	SNOW STORAGE
---	---	RETAINING WALL



LOCUS MAP  
SCALE 1" = 500'

SHEET INDEX

CS	COVER SHEET
C1	EXISTING CONDITIONS PLAN
A1	SUBDIVISION PLAN
C2	SITE PLAN
CS1	CONDO SITE PLAN
C3	GRADING AND DRAINAGE PLAN
C4	UTILITY PLAN
P1	SEWER PLAN AND PROFILE
L1	LIGHTING PLAN
L2	LANDSCAPING PLAN
D1-D2	DETAIL SHEETS
E1	EROSION AND SEDIMENT CONTROL DETAILS

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

**LIGHTING CONSULTANT**  
CHARRON, INC.  
P.O BOX 4550  
MANCHESTER, NH 03108  
(603) 945-3500  
CONTACT: KEN SWEENEY  
EMAIL: KSWEENEY@CHARRONINC.COM

**LANDSCAPE DESIGNER**  
LM LAND DESIGN, LLC  
11 SOUTH ROAD  
BRENTWOOD, NH 03833  
(603) 770-7728  
CONTACT: LISE MCNAUGHTON

**WATER**  
CITY OF PORTSMOUTH  
DEPARTMENT OF PUBLIC WORKS  
WATER DIVISION  
680 PEVERLY HILL ROAD  
PORTSMOUTH, NH 03801  
CONTACT: RAYMOND PEZZULLO  
(603) 427-1530

**SEWER**  
CITY OF PORTSMOUTH  
DEPARTMENT OF PUBLIC WORKS  
SEWER DIVISION  
680 PEVERLY HILL ROAD  
PORTSMOUTH, NH 03801  
CONTACT: TERRY DESMARAI, P.E.  
(603) 766-1421

**NATURAL GAS**  
UNITIL SERVICE CORP.  
114 DRINKWATER ROAD  
KENSINGTON, NH 03833-5602  
(603) 777-5512

**ELECTRIC**  
EVERSOURCE  
74 OLD DOVER ROAD  
ROCHESTER, NH 03867  
(800) 555-5334

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

**CABLE TV**  
COMCAST COMMUNICATION CORPORATION  
334-B CALEF HIGHWAY  
EPPING, NH 03042-2325  
(603) 679-5695

APPROVED – PORTSMOUTH, NH  
PLANNING BOARD

DATE:

PROJECT PARCEL  
CITY OF PORTSMOUTH  
TAX MAP 147, LOT 18

APPLICANT  
TUCK REALTY CORPORATION  
PO BOX 190  
EXETER, NH 03833

TOTAL LOT AREA  
81,046 SQ. FT.  
1.86 ACRES

Design: JAC Draft: AJB Date: 11/11/20  
Checked: JAC Scale: AS NOTED Project No.: 20686  
Drawing Name: 20686-PLAN.dwg  
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Designed and Produced in NH  
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885  
Civil Engineering Services  
603-772-4746  
FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **COVER SHEET**  
Project: **668 MIDDLE STREET  
PORTSMOUTH, NH**  
Owner of Record: ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012  
668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.

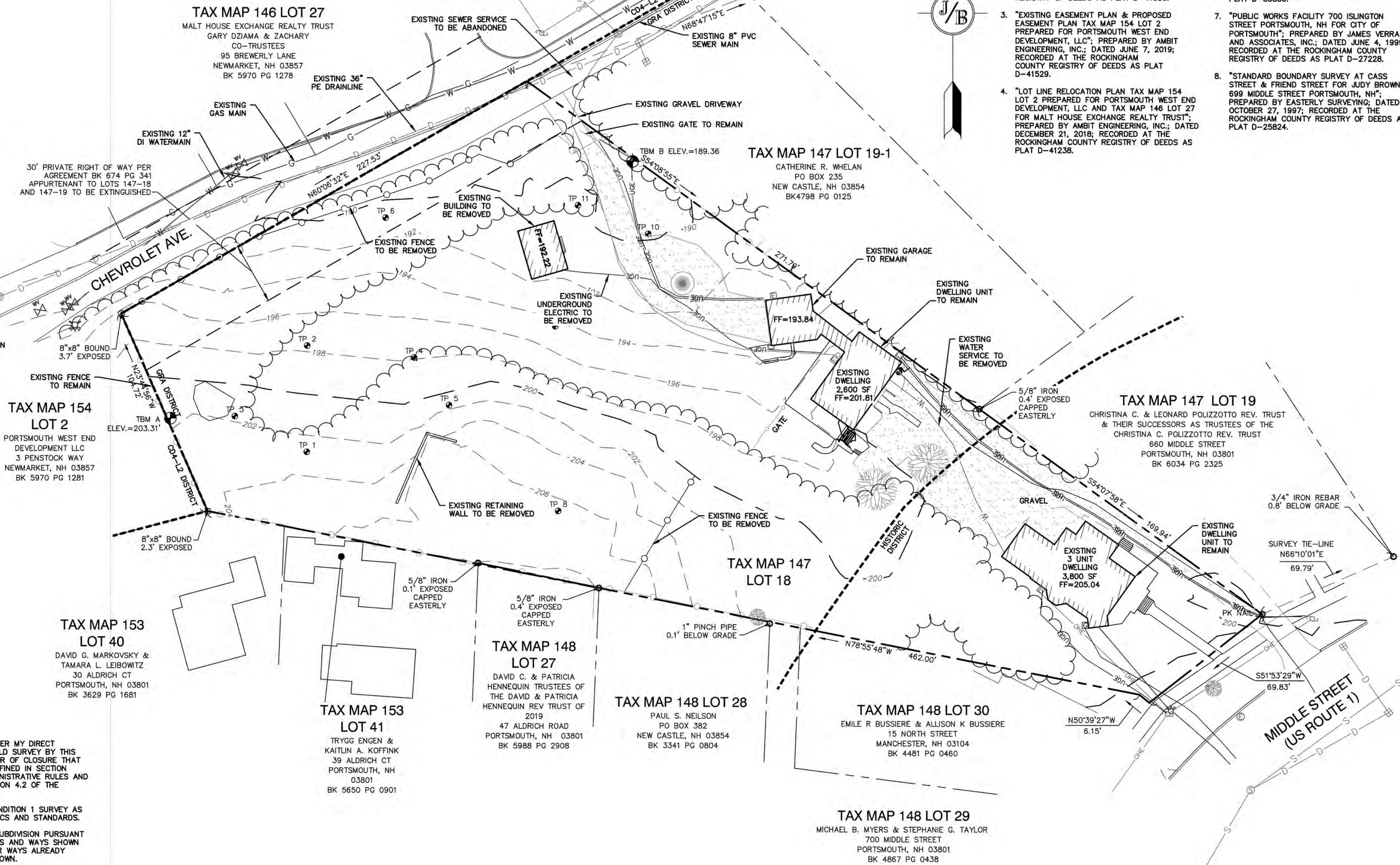
**CS**

SHEET 1 OF 13  
JBE PROJECT NO. 20686



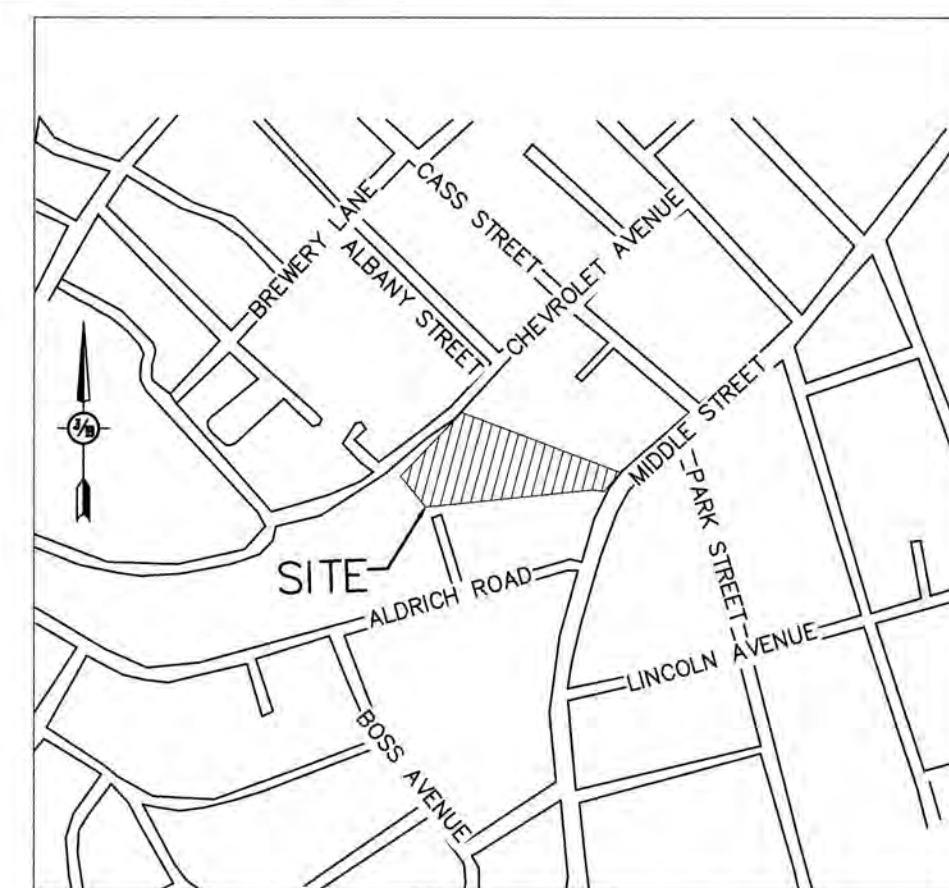
## GENERAL LEGEND

EXISTING	DESCRIPTION
	PROPERTY LINES
	SETBACK LINES
	CENTERLINE
	FRESHWATER WETLANDS LINE
	TREE LINE
	STONEWALL
	BARBED WIRE
	FENCE
	STOCKADE FENCE
	FLOOD PLAIN LINE
	ZONELINE
	EASEMENT
	MAJOR CONTOUR
	MINOR CONTOUR
	EDGE OF PAVEMENT
	DRAINAGE LINE
	SEWER LINE
	GAS LINE
	WATER LINE
	OVERHEAD ELECTRIC
	UNDERGROUND ELECTRIC
	GUARDRAIL
	IRON PIPE/IRON ROD
	DRILL HOLE
	IRON ROD/DRILL HOLE
	STONE/GRANITE BOUND
	BENCHMARK (TBM)
	DOUBLE POST SIGN
	SINGLE POST SIGN
	WELL
	TREES AND BUSHES
	UTILITY POLE
	LIGHT POLES
	DRAIN MANHOLE
	SEWER MANHOLE
	HYDRANT
	WATER GATE
	WATER SHUT OFF
	REDUCER
	SINGLE GRATE CATCH BASIN
	CONCRETE
	GRAVEL



## PLAN REFERENCES:

- "SUBDIVISION PLAN 660 MIDDLE STREET PORTSMOUTH NH OWNER CATHERINE R. WHELAN", PREPARED BY JAMES VERRA AND ASSOCIATES, INC.; DATED MARCH 30, 2011; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-36752.
- "AMENDED SITE PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC", PREPARED BY AMBIT ENGINEERING, INC.; DATED JUNE 7, 2019; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41530.
- "EXISTING EASEMENT PLAN & PROPOSED EASEMENT PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC", PREPARED BY AMBIT ENGINEERING, INC.; DATED JUNE 7, 2019; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41529.
- "LOT LINE RELOCATION PLAN TAX MAP 154 LOT 2 PREPARED FOR PORTSMOUTH WEST END DEVELOPMENT, LLC AND TAX MAP 146 LOT 27 FOR MALT HOUSE EXCHANGE REALTY TRUST", PREPARED BY AMBIT ENGINEERING, INC.; DATED DECEMBER 21, 2018; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-41238.
- "BOUNDARY LINE AGREEMENT PLAN TAX MAP 147 LOT 30 AND CHEVROLET AVE OWNED BY S&G REALTY AND CITY OF PORTSMOUTH", PREPARED BY AMBIT ENGINEERING, INC.; DATED SEPTEMBER 28, 2017; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-40400.
- "CONDOMINIUM SITE PLAN 16 CHEVROLET AVE. ASSESSOR'S PARCEL #146-018 PORTSMOUTH, NH FOR CHEVROLET AVE. CONDOMINIUMS", PREPARED BY JAMES VERRA AND ASSOCIATES, INC.; DATED JUNE 7, 2006; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-33836.
- "PUBLIC WORKS FACILITY 700 ISLINGTON STREET PORTSMOUTH, NH FOR CITY OF PORTSMOUTH", PREPARED BY JAMES VERRA AND ASSOCIATES, INC.; DATED JUNE 4, 1999; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-27228.
- "STANDARD BOUNDARY SURVEY AT CASS STREET & FRIEND STREET FOR JUDY BROWN 699 MIDDLE STREET PORTSMOUTH, NH", PREPARED BY EASTERLY SURVEYING; DATED OCTOBER 27, 1997; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-25824.



LOCUS SCALE: 1"=500'

## NOTES:

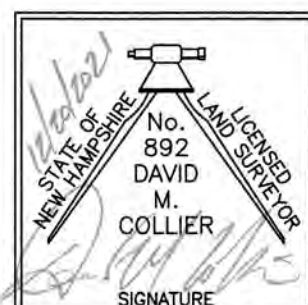
- THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS OF LOT 18 DEPICTED HEREON TAX MAP 147.
- THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND 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 LOCATED WITHIN AN AREA HAVING A ZONE X DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 3301500258F, DATED JANUARY 29, 2021, FOR COMMUNITY PANEL NO. 259 OF 681, IN ROCKINGHAM COUNTY, STATE OF NEW HAMPSHIRE, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR COMMUNITY IN WHICH SAID PREMISES IS SITUATED.
- BASIS OF BEARING: HORIZONTAL: ASSUMED. VERTICAL: ASSUMED AT 200.00'.
- 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 AT THE CITY OF PORTSMOUTH ASSESSOR'S OFFICE AND 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 PRESRIPTIVE.
- 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.
- NO WETLANDS WERE OBSERVED ON THE SUBJECT PREMISES.
- THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 150,000.
- 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.
- HOUSE LOCATIONS OF ADJOINING PROPERTIES ARE FROM AERIAL PHOTOGRAPHY AND DIGITIZED ON PLAT. BUILDINGS WERE LOCATED ON SUBJECT PARCEL BY CONVENTIONAL SURVEYING METHODS.
- RIGHT OF WAY WENT FROM A 50' IN WIDTH (SEE DEED BK. 512 PG. 429) TO 30' RIGHT OF WAY (SEE DEED BK. 674, PG. 341).
- EXISTING 20' WIDE GAS EASEMENT ON SUBJECT PARCEL SEE DEED BK 4470 PG 2003. LOCATION OF EASEMENT UNDETERMINED AT THIS TIME. EASEMENT SHALL FOLLOW THE ROUTE OF PIPELINES 10 FEET ON EACH SIDE EXTENDED TO PROPERTY LINE.

## CERTIFICATION:

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

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

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



DAVID M. COLLIER, LLS 892  
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

DATE:

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		
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Designed and Produced in NH

**J/B Jones & Beach Engineers, Inc.**

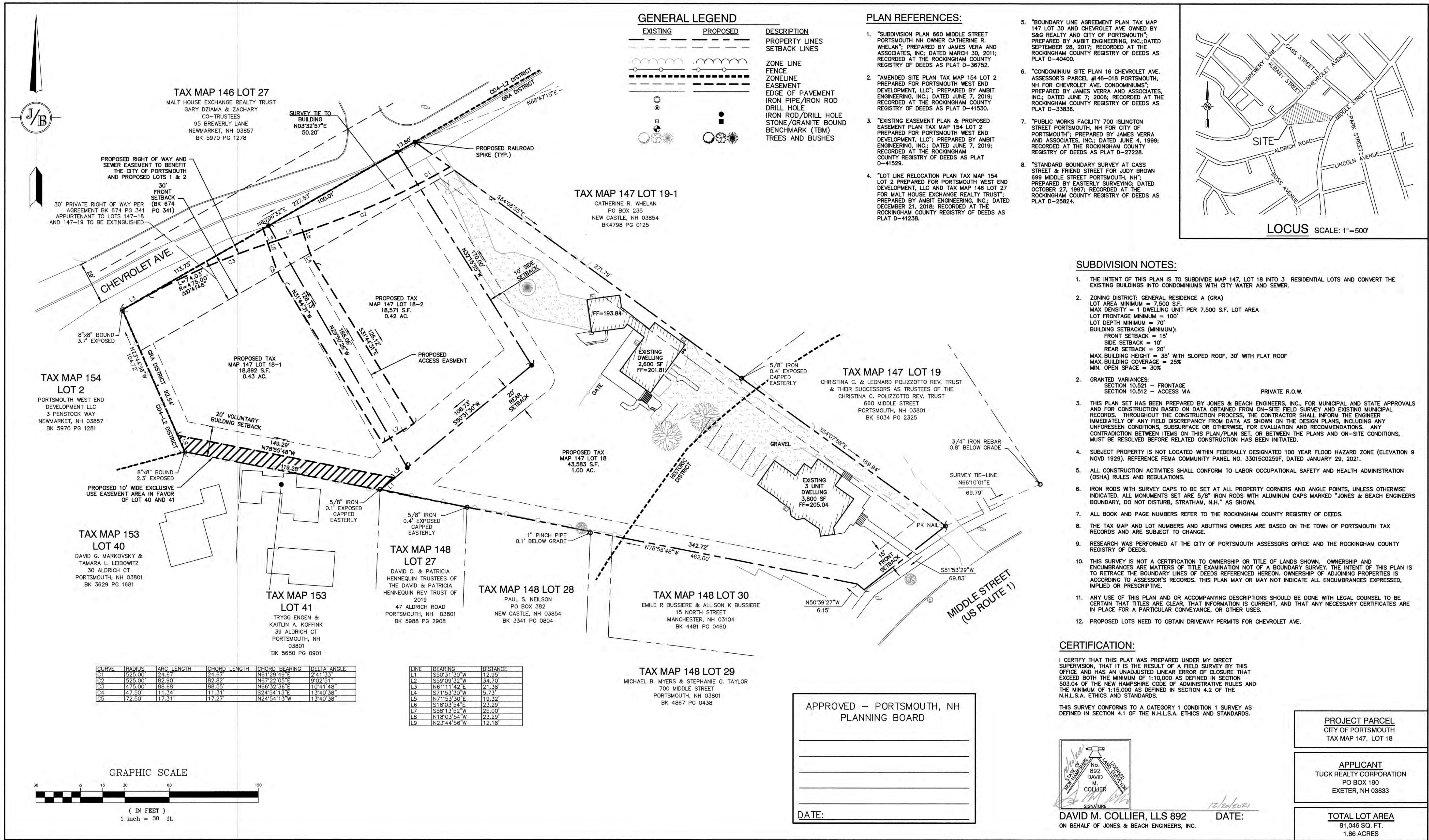
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885

Civil Engineering Services

603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING CONDITIONS PLAN
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799
DRAWING No.	C1
SHEET 2 OF 13	JBE PROJECT NO. 20686

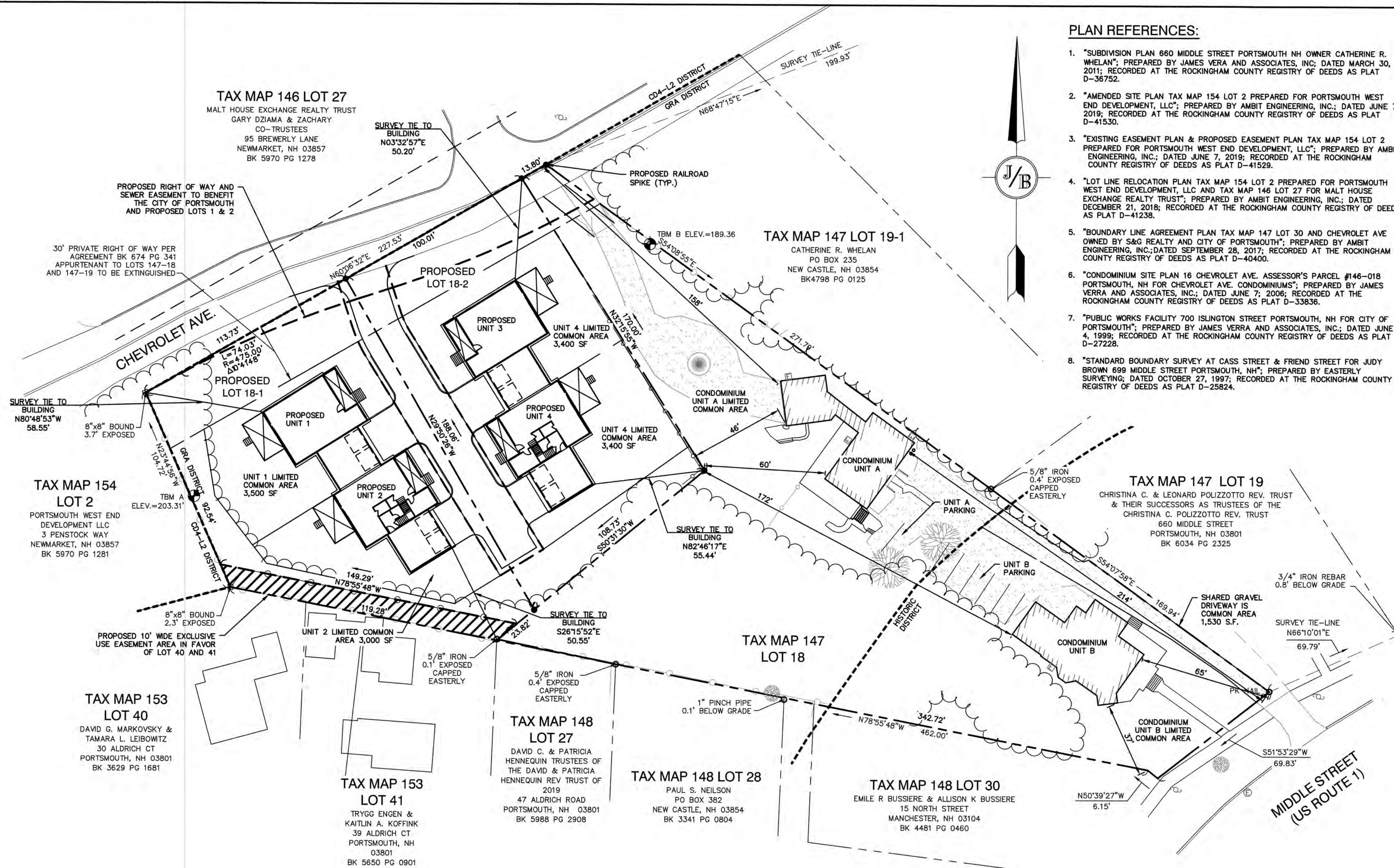










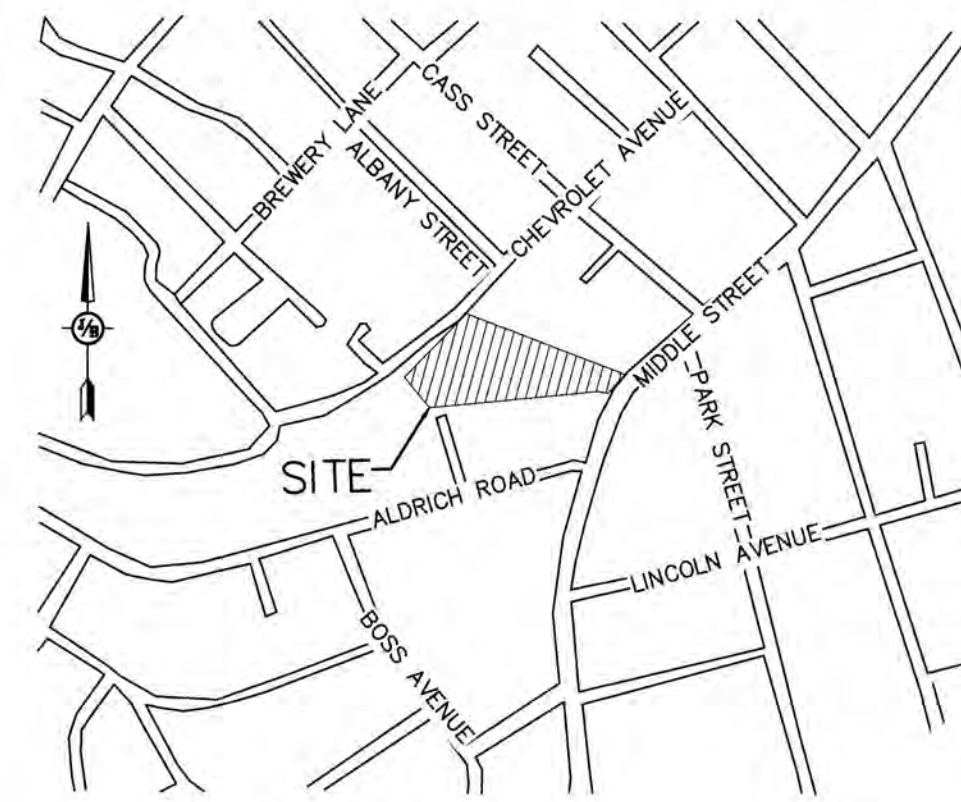


PLAN REFERENCES:

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- "CONDOMINIUM SITE PLAN 16 CHEVROLET AVE. ASSESSOR'S PARCEL #146-018 PORTSMOUTH, NH FOR CHEVROLET AVE. CONDOMINIUMS"; PREPARED BY JAMES VERA AND ASSOCIATES, INC.; DATED JUNE 7, 2008; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-33836.
- "PUBLIC WORKS FACILITY 700 ISLINGTON STREET PORTSMOUTH, NH FOR CITY OF PORTSMOUTH"; PREPARED BY JAMES VERA AND ASSOCIATES, INC.; DATED JUNE 4, 1999; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-27228.
- "STANDARD BOUNDARY SURVEY AT CASS STREET & FRIEND STREET FOR JUDY BROWN 688 MIDDLE STREET PORTSMOUTH, NH"; PREPARED BY EASTERLY SURVEYING; DATED OCTOBER 27, 1997; RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS AS PLAT D-25824.

NOTES:

- THE INTENT OF THIS PLAN IS TO SHOW THE PROPOSED CONDOMINIUM CONVERSION OF THE EXISTING RESIDENCES AT 668 MIDDLE STREET.
- ZONING DISTRICT: GENERAL RESIDENCE A (GRA)  
LOT AREA MINIMUM = 7,500 S.F.  
MAX DENSITY = 1 DWELLING UNIT PER 7,500 S.F. LOT AREA  
LOT FRONTAGE MINIMUM = 100'  
LOT DEPTH MINIMUM = 70'  
BUILDING SETBACKS (MINIMUM):  
FRONT SETBACK = 15'  
SIDE SETBACK = 10'  
REAR SETBACK = 20'  
MAX. BUILDING HEIGHT = 35' WITH SLOPED ROOF, 30' WITH FLAT ROOF  
MAX. BUILDING COVERAGE = 25%  
MIN. OPEN SPACE = 30%
- APPROVED VARIANCES:  
1) SECTION 10.521 REQUIRING 100' FRONTAGE ON A FORMALLY ACCEPTED STREET (PROPOSED TAX MAP 147 LOTS 18-1 & 18-2)  
2) SECTION 10.521 REQUIRING 100' FRONTAGE ON A FORMALLY ACCEPTED STREET (TAX MAP 147 LOT 18)  
3) SECTION 10.512 ALLOW CONSTRUCTION A LOT WITH ACCESS TO A PRIVATE WAY (PROPOSED TAX MAP 147 LOTS 18-1 & 18-2)
- THE SUBJECT PARCEL IS LOCATED WITHIN AN AREA HAVING A ZONE X DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), ON FLOOD INSURANCE RATE MAP NO. 33015C0258F, WITH EFFECTIVE DATE OF JANUARY 29, 2021, FOR COMMUNITY PANEL NO. 259 OF 681, IN ROCKINGHAM COUNTY, STATE OF NEW HAMPSHIRE, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR COMMUNITY IN WHICH SAID PREMISES IS SITUATED.
- BASIS OF BEARING: HORIZONTAL: ASSUMED. VERTICAL: ASSUMED AT 200.00'.
- EACH UNIT SHALL OBTAIN A SEPARATE OCCUPANCY PERMIT FROM THE BUILDING INSPECTOR PRIOR TO BEING SOLD.
- ALL BOOK AND PAGE NUMBERS REFER TO 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.
- LOCATION, DEPTH, SIZE, TYPE, EXISTENCE, NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY.
- 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.
- CONDOMINIUM UNIT A IS A SINGLE DWELLING AND CONDOMINIUM UNIT B IS A 3 UNIT DWELLING.
- LCA UNIT A IS ALL AREA NORTHWEST OF THE HISTORIC DISTRICT LINE. LCA UNIT B IS ALL AREA SOUTHEAST OF THE HISTORIC DISTRICT LINE, EXCEPT THE DRIVEWAY FROM MIDDLE STREET TO THE HISTORIC DISTRICT LINE WHICH IS COMMON AREA.

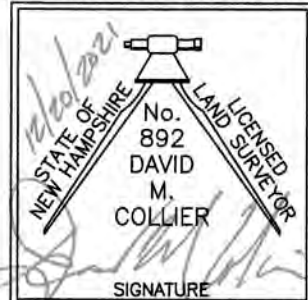


LOCUS SCALE: 1"=500'

CONDOMINIUM SITE PLAN CERTIFICATION:

I CERTIFY THAT THIS PLAN FULLY AND ACCURATELY DEPICTS THE LOCATION AND DIMENSIONS OF THE LAND AND EXISTING IMPROVEMENTS SHOWN THEREON AND TO THE EXTENT FEASIBLE, ALL EASEMENTS APPURTENANT THERETO, AND THAT THE UNITS 1-4 DEPICTED HEREON HAVE NOT YET BEGUN. THE UNITS A AND B DEPICTED HEREON ARE HAVE BEEN SUBSTANTIALLY COMPLETE. THIS PLAN COMPLIES WITH NH RSA 356-B20 (I).

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



DAVID M. COLLIER, LLS 892  
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

DATE:

12/24/2021

GRAPHIC SCALE



PROJECT PARCEL  
CITY OF PORTSMOUTH  
TAX MAP 147, LOT 18

APPLICANT  
TUCK REALTY CORPORATION  
PO BOX 190  
EXETER, NH 03833

TOTAL LOT AREA  
81,046 SQ. FT.  
1.86 ACRES

Design: JAC Draft: AJB Date: 11/11/20  
Checked: JAC Scale: AS NOTED Project No.: 20686  
Drawing Name: 20686-PLAN.dwg

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REV.	DATE	REVISION	BY
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2	8/23/21	REVISED FOR PRELIMINARY SUBDIVISION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ

Designed and Produced in NH  
**J/B Jones & Beach Engineers, Inc.**  
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885  
Civil Engineering Services  
700 MIDDLE STREET PORTSMOUTH, NH 03801  
603-772-4746  
FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **CONDOMINIUM SITE PLAN**  
Project: **668 MIDDLE STREET PORTSMOUTH, NH**  
Owner of Record: ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012  
668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.

**CS1**

SHEET 5 OF 13  
JBE PROJECT NO. 20686







# UTILITY NOTES:

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, CONNECTION FEES AND BONDS.
2. THE CONTRACTOR SHALL PROVIDE A MINIMUM NOTICE OF FOURTEEN (14) DAYS TO ALL CORPORATIONS, COMPANIES AND/OR LOCAL AUTHORITIES OWNING OR HAVING A JURISDICTION OVER UTILITIES RUNNING TO, THROUGH OR ACROSS PROJECT AREAS PRIOR TO DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
3. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE TO THE STANDARDS AND REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY (ELECTRIC, TELEPHONE, CABLE TELEVISION, FIRE ALARM, GAS, WATER, AND SEWER).
4. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, ENGINEER, ARCHITECT, CONTRACTOR, LOCAL OFFICIALS, AND ALL PROJECT-RELATED UTILITY COMPANIES (PUBLIC AND PRIVATE) PRIOR TO START OF CONSTRUCTION.
5. ALL CONSTRUCTION SHALL CONFORM TO THE TOWN STANDARDS AND REGULATIONS, AND NHDES STANDARDS AND SPECIFICATIONS, WHICHEVER ARE MORE STRINGENT, UNLESS OTHERWISE SPECIFIED.
6. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
7. BUILDING TO BE SERVICED BY UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED.
8. THE CONTRACTOR IS TO VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITY STUBS PRIOR TO CONSTRUCTION AND DISCONNECT ALL EXISTING SERVICE CONNECTIONS AT THEIR RESPECTIVE MAINS IN ACCORDANCE WITH THE RESPECTIVE UTILITY COMPANY'S STANDARDS AND SPECIFICATIONS. ENGINEER TO BE NOTIFIED.
9. AS-BUILT PLANS SHALL BE SUBMITTED TO DEPARTMENT OF PUBLIC WORKS.
10. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE THROUGH CHANNEL UNDERLAYMENT OF INVERT, AND SHELF SHALL CONSIST OF BRICK MASONRY.
11. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30 INCH DIA. CLEAR OPENING. THE WORD "SEWER" OR "DRAIN" SHALL BE CAST INTO THE CENTER OF THE UPPER FACE OF EACH COVER WITH RAISED, 3" LETTERS.
12. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS, SERVICES, AND FORCE MAINS.
13. SANITARY SEWER FLOW CALCULATIONS:  
4 - FOUR BEDROOM UNITS @ 150 GPD/BEDROOM  
TOTAL FLOW = 2,400 GPD
14. ALL SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
15. PROPOSED RIM ELEVATIONS OF DRAINAGE AND SANITARY MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
16. ALL WATER SERVICE PIPES SHALL HAVE A MINIMUM 12" VERTICAL AND 24" HORIZONTAL SEPARATION TO MANHOLES, OR CONTRACTOR SHALL INSTALL BOARD INSULATION FOR FREEZING PROTECTION.
17. WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE. WATERMAINS SHALL BE TESTED AT 1.5 TIMES THE WORKING PRESSURE OR 150 PSI, WHICHEVER IS GREATER. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 4 OF AWWA STANDARD C 600. WATERMAINS SHALL BE DISINFECTED AFTER THE ACCEPTANCE OF THE PRESSURE AND LEAKAGE TESTS ACCORDING TO AWWA STANDARD C 651.
18. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
19. THE CONTRACTOR SHALL HAVE THE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER FIRE PROTECTION SYSTEM PRIOR TO INSTALLATION.
20. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
21. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
22. ALL GRAVITY SEWER PIPE, MANHOLES, AND FORCE MAINS SHALL BE TESTED ACCORDING TO NHDES STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWAGE AND WASTEWATER TREATMENT FACILITIES, CHAPTER ENV-WQ 700, ADOPTED ON 10-15-14.
23. ENV-WQ 704.06 GRAVITY SEWER PIPE TESTING. GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY USE OF LOW-PRESSURE AIR TESTS CONFORMING WITH ASTM F1417-92(2005) OR UNI-BELL PVC PIPE ASSOCIATION UNI-B-6. LINES SHALL BE CLEANED AND VISUALLY INSPECTED AND TRUE TO LINE AND GRADE. DEFLECTION TESTS SHALL TAKE PLACE AFTER 30 DAYS FOLLOWING INSTALLATION AND THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5% OF AVERAGE INSIDE DIAMETER. A RIGID BALL OR MANDREL WITH A DIAMETER OF AT LEAST 95% OF THE AVERAGE INSIDE PIPE DIAMETER SHALL BE USED FOR TESTING PIPE DEFLECTION. THE DEFLECTION TEST SHALL BE CONDUCTED WITHOUT MECHANICAL PULLING DEVICES.
24. ENV-WQ 704.17 SEWER MANHOLE TESTING. SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST PRIOR TO BACKFILLING AND PLACEMENT OF SHELVES AND INVERTS.
25. SANITARY SEWER LINES SHALL BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM AN EXISTING OR PROPOSED WATER LINE. WHEN A SEWER LINE CROSSES UNDER A WATER LINE, THE SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATERMAIN. THE SEWER LINE SHALL ALSO MAINTAIN A VERTICAL SEPARATION OF NOT LESS THAN 18 INCHES.
26. SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6 FEET BELOW GRADE IN ALL ROADWAY LOCATIONS, AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS-COUNTRY LOCATIONS. PROVIDE TWO-INCHES OF R-10 FOAM BOARD INSULATION 2-FOOT WIDE TO BE INSTALLED 8-INCHES OVER SEWER PIPE IN AREAS WHERE DEPTH IS NOT ACHIEVED. A WAIVER FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES/WASTEWATER ENGINEERING BUREAU IS REQUIRED PRIOR TO INSTALLING SEWER AT LESS THAN MINIMUM COVER.
27. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END AT RIGHT OF WAY AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
28. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
29. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.

APPROVED - PORTSMOUTH, NH  
PLANNING BOARD

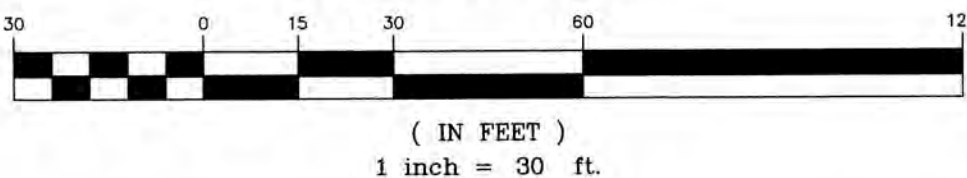
PROJECT PARCEL  
CITY OF PORTSMOUTH  
TAX MAP 147, LOT 18

APPLICANT  
TUCK REALTY CORPORATION  
PO BOX 190  
EXETER, NH 03833

TOTAL LOT AREA  
81,046 SQ. FT.  
1.86 ACRES

DATE:

GRAPHIC SCALE



Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		
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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:	UTILITY PLAN
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.  
**C4**  
SHEET 7 OF 13  
JBE PROJECT NO. 20686



TAX MAP 146 LOT 27

MALT HOUSE EXCHANGE REALTY TRUST  
GARY DZIAMA & ZACHARY  
CO-TRUSTEES  
95 BREWERLY LANE  
NEWMARKET, NH 03857  
BK 5970 PG 1278

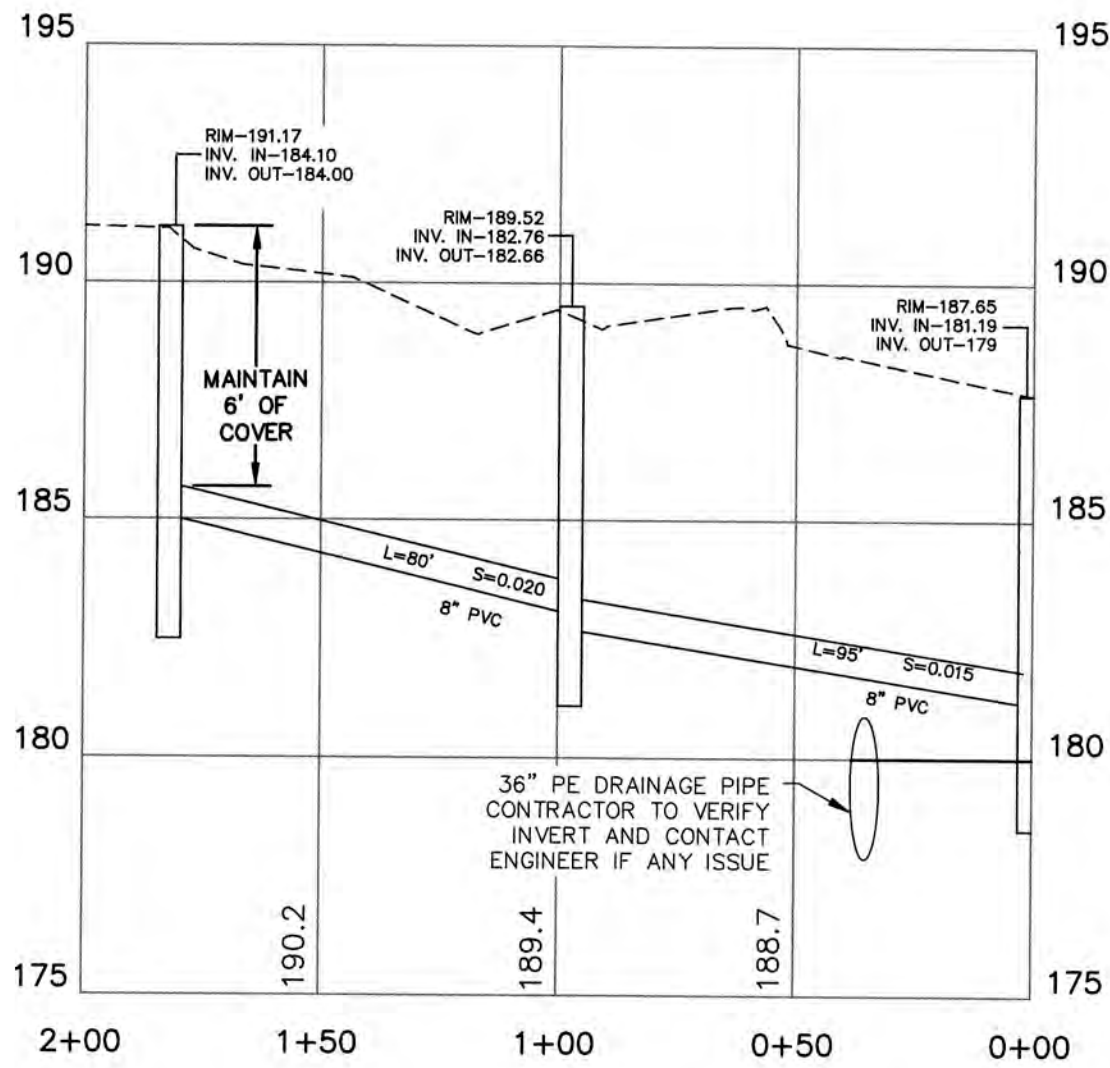
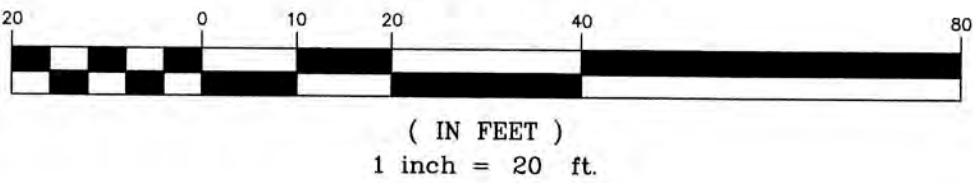
TAX MAP 147 LOT 19-1

CATHERINE R. WHELAN  
PO BOX 235  
NEW CASTLE, NH 03854  
BK4798 PG 0125

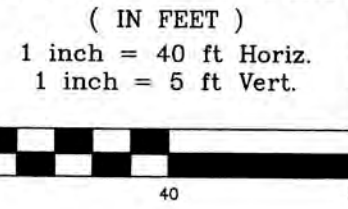
NOTES:

1. ALL ROAD AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR THE TOWN, AND NHDOT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
2. AS-BUILT PLANS TO BE SUBMITTED TO THE TOWN PRIOR TO ACCEPTANCE OF THE ROADWAY.
3. DEVELOPER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING ANY PERMITTING AND SETBACK REQUIREMENTS REQUIRED UNDER THESE REGULATIONS.
4. THIS PLAN HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC. FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA SHOWN ON THE DESIGN PLANS. THIS INCLUDES ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS OF THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
5. SILTATION AND EROSION CONTROLS SHALL BE INSTALLED PRIOR TO CONSTRUCTION, SHALL BE MAINTAINED DURING CONSTRUCTION, AND SHALL REMAIN UNTIL SITE HAS BEEN STABILIZED WITH PERMANENT VEGETATION.
6. ALL DISTURBED AREAS NOT STABILIZED BY NOVEMBER 1st SHALL BE COVERED WITH AN EROSION CONTROL BLANKET. PRODUCT TO BE SPECIFIED BY THE ENGINEER.
7. FINAL DRAINAGE, GRADING AND EROSION PROTECTION MEASURES SHALL CONFORM TO REGULATIONS OF THE PUBLIC WORKS DEPARTMENT.
8. CONTRACTOR TO VERIFY EXISTING UTILITIES AND TO NOTIFY ENGINEER OF ANY DISCREPANCY IMMEDIATELY.
9. SIDEWALK TO BE INSTALLED AT TIME OF TOP COURSE PAVING ALONG WITH DRIVEWAY APRONS.
10. CONTRACTOR MUST HAVE A VALID PIPE INSTALLER'S LICENSE FROM THE PUBLIC WORKS DEPARTMENT BEFORE WORKING ON ANY DRAINAGE AND/OR UTILITY CONSTRUCTION.

GRAPHIC SCALE



GRAPHIC SCALE



Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
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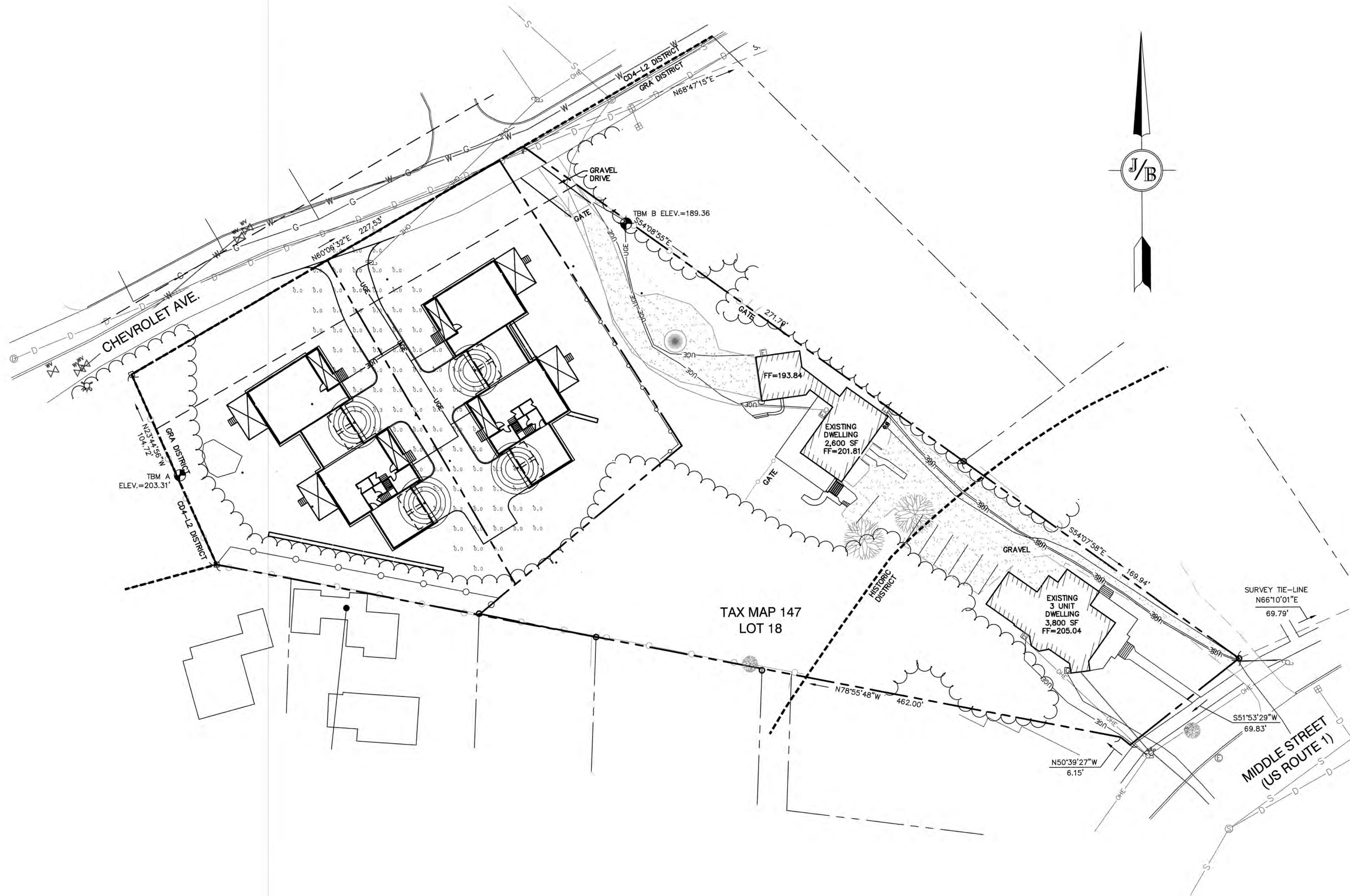
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**J/B Jones & Beach Engineers, Inc.**  
Designed and Produced in NH  
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885  
Civil Engineering Services  
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	SEWER PLAN AND PROFILE
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.	P1
SHEET 8 OF 13	JBE PROJECT NO. 20686





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

## Calvin Wall



**TMS LIGHTING**  
ESTABLISHED 1923

**Construction**  
High grade spun aluminum, brushed solid copper, or brushed 316L stainless steel reflector, with stainless steel mounting hardware, for indoor and outdoor applications.

**Lamp**  
Operates with Cree™ LED (19W max.), compact fluorescent (42W max.), metal halide (100W max.), or incandescent (150W max.). Specify 3000K, 3500K or 4000K CCT for LED systems. A dimmable, screw-type, 17W LED lamp is also available (PAR 38, E26 base, 120V, 4000K CCT).

**Note:** LED systems are available with 120-277V supply voltage only. LED modules do not require a socket, and are wired directly to the integral driver. Incandescent and metal halide systems, and those using the 17W LED PAR 38 lamp, use a medium base socket (E26).

**Diffuser**  
Globe: clear and prismatic, elongated, glass globes are available. Lens: the clear, flat lens provides slight diffusion, and protects any components located in the reflector.

**Note:** G3 is used with 100W, 32CF, and 15LED max. Only prismatic globes are compatible with LED systems. Globes are not available with the 17W LED PAR 38 lamps.

**Option**  
Wire Guard: a steel, chrome-plated wire guard is available for lamp protection against light projectiles, wildlife, and serves as a vandal deterrent.

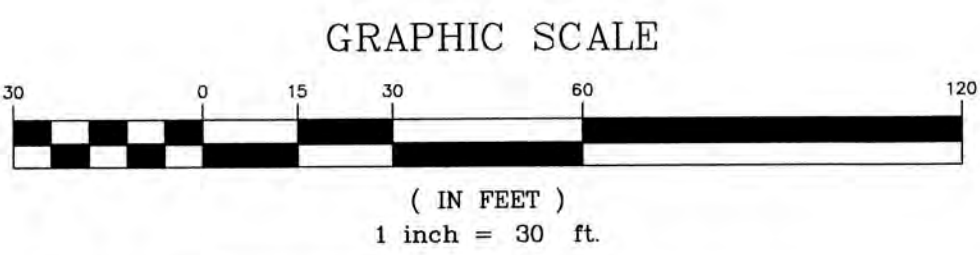
**Ballast/LED Driver**  
Ballasts are efficient with a high power factor greater than 90%, and quiet with an "A" sound rating. The LED source is controlled by an advanced electronic driver that delivers consistent power. Ballast and LED drivers are electronic, and available for integral and remote mounting, indoor or outdoor.

- Features**
- Provides excellent coverage and uniformity with cut-off
  - Practical and aesthetic options for application and design flexibility
  - Weatherproof construction to withstand the elements
  - Quality components combined with the most current technology for high efficiency and reduced lighting costs

**Applications**  
The Calvin wall-mount luminaire is ideal for illuminating areas where localized distribution is necessary, such as doorways and entrances, laneways, patios and could provide adequate night time security lighting. It lends itself to commercial, and industrial applications that could benefit from materials and maintenance cost reductions. Calvin could either augment the existing lighting, or illuminate a small to medium-sized area. Calvin is also available as a pendant-style model.

UL LISTED ENEC IP23

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	4	W	Single	2W-O-15LED-30K-120-WM-XX



**PROJECT PARCEL**  
CITY OF PORTSMOUTH  
TAX MAP 147, LOT 18

**APPLICANT**  
TUCK REALTY CORPORATION  
PO BOX 190  
EXETER, NH 03833

**TOTAL LOT AREA**  
81,046 SQ. FT.  
1.86 ACRES

Design: JAC Draft: AJB Date: 11/11/20  
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85 Portsmouth Ave. PO Box 219 Stratham, NH 03885  
Civil Engineering Services  
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	<b>LIGHTING PLAN</b>
Project:	<b>668 MIDDLE STREET PORTSMOUTH, NH</b>
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.  
**L1**  
SHEET 9 OF 13  
JBE PROJECT NO. 20686



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REV.	DATE	REVISION	BY

Designed and Produced in NH

J/B

Jones & Beach Engineers, Inc.

85 Portsmouth Ave.  
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Stratham, NH 03885

Civil Engineering Services

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FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

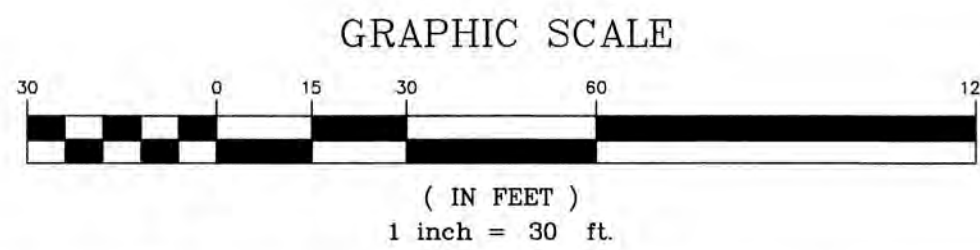
Plan Name:	LANDSCAPE PLAN
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
L2
SHEET 10 OF 13 JBE PROJECT NO. 20686

#### 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 NURSERYMEN.
- ALL PLANT SUBSTITUTIONS MUST BE APPROVED THE LANDSCAPE ARCHITECT.
- ALL PLANT MATERIALS SHALL BE EXACTLY AS SPECIFIED BY THE LANDSCAPE ARCHITECT. IF PLANT SPECIES CULTIVARS ARE FOUND TO VARY FROM THAT SPECIFIED AT ANY TIME DURING THE GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO HAVE THE CONTRACTOR REPLACE THAT PLANT MATERIAL.
- 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.
- NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN FINISHED AND APPROVED BY THE LANDSCAPE ARCHITECT.
- 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 PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NOT LESS THAN ONE FULL YEAR FROM THE TIME OF PROVISIONAL ACCEPTANCE. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OR OTHERWISE FORFEIT HIS CLAIM.
- FINAL ACCEPTANCE BY THE LANDSCAPE ARCHITECT WILL BE MADE UPON THE CONTRACTOR'S REQUEST AFTER ALL CORRECTIVE WORK HAS BEEN COMPLETED.
- BY THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAS DIED, LOST NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESSIVE PRUNING OR INADEQUATE OR IMPROPER CARE, OR THAT IS, IN THE OPINION OF THE LANDSCAPE ARCHITECT, IN UNHEALTHY OR UNSIGHTLY CONDITION.
- 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.
- ALL LANDSCAPING SHALL MEET THE TOWN STANDARDS AND REGULATIONS.
- EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE DRIPLINE OF THE TREE. THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- 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.

Plants			
Quantity	Botanical Name	Common Name	Size
2	Acer rubrum 'October Glory'	OCTOBER GLORY RED MAPLE	3" Caliper
4	Azalea 'Girards Hotshot'	HOTSHOT AZALEA	3 Gallon
4	Buxus 'Green Mountain'	GREEN MT BOXWOOD	5 Gallon
4	Cornus kousa X C. florida 'Stellar Pink'	STELLAR PINK DOGWOOD	2.5" Caliper
4	Ilex glabra 'Shamrock'	SHAMROCK INKBERRY HOLLY	5 Gallon
6	Ilex virginica 'Sprich Little Henry'	LITTLE HENRY SWEETSPICE	3 Gallon
6	Thuja plicata 'Green Gaint'	GREEN GIANT ARBORVITAE	10-12 Ft. Ht.
6	Spiraea nipponica 'Snowmound'	SNOWMOUND SPIREA	3 Gallon
4	Weigela florida 'Alexandra'	WINE & ROSES WEIGELA	3 Gallon

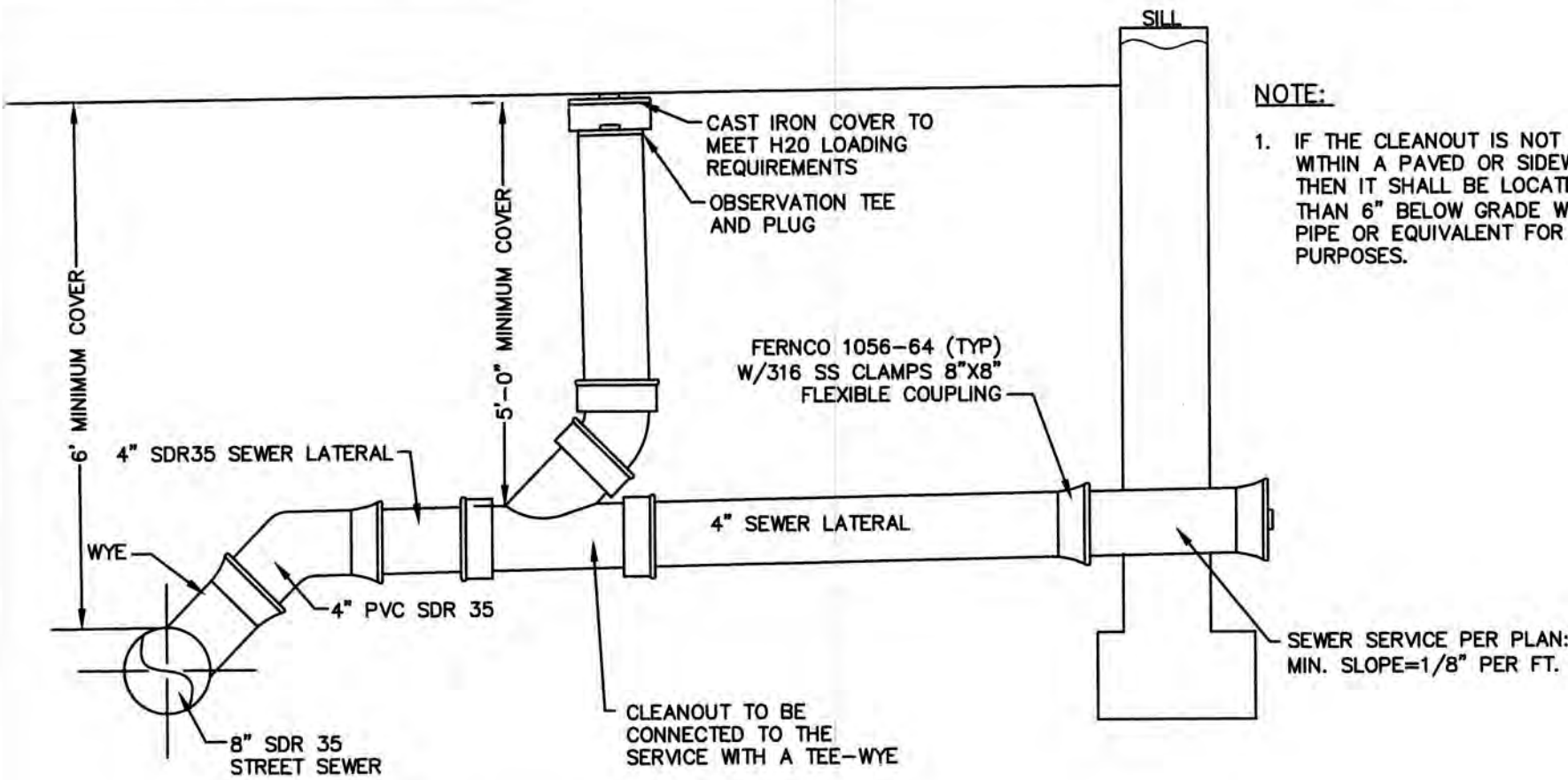


PROJECT PARCEL  
CITY OF PORTSMOUTH  
TAX MAP 147, LOT 18

APPLICANT  
TUCK REALTY CORPORATION  
PO BOX 190  
EXETER, NH 03833

TOTAL LOT AREA  
81,046 SQ. FT.  
1.86 ACRES



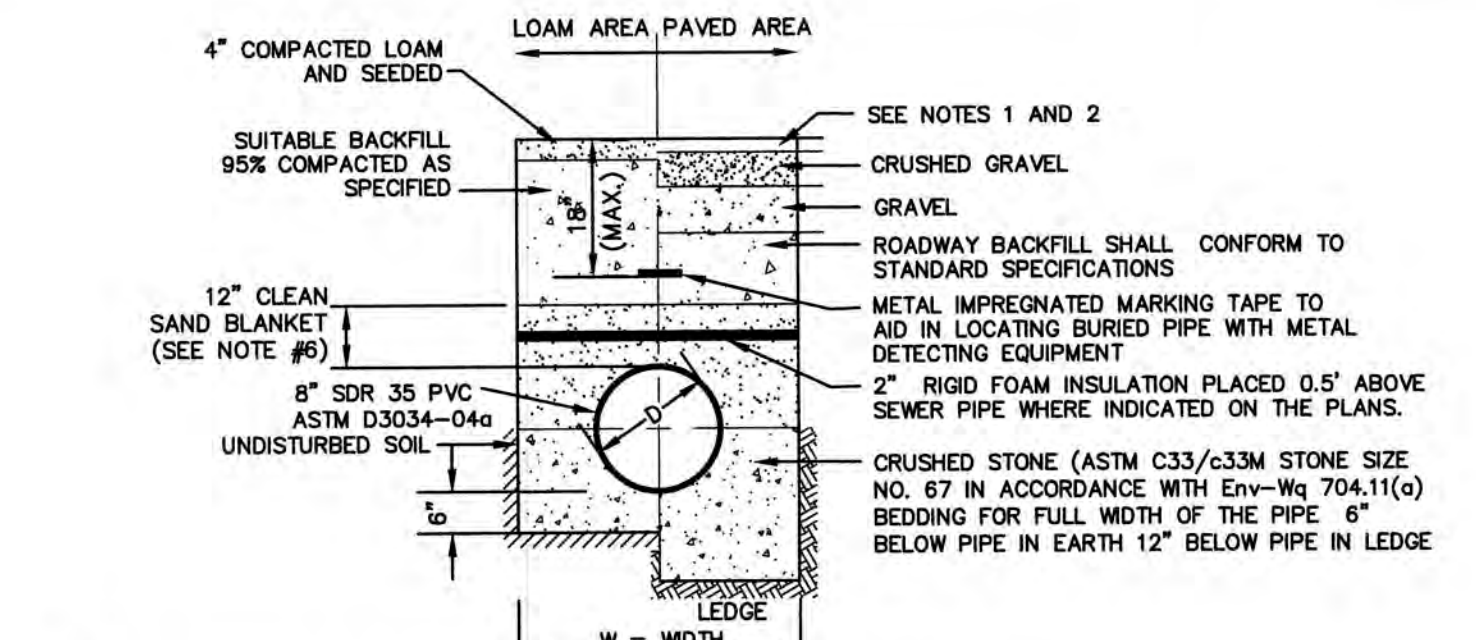
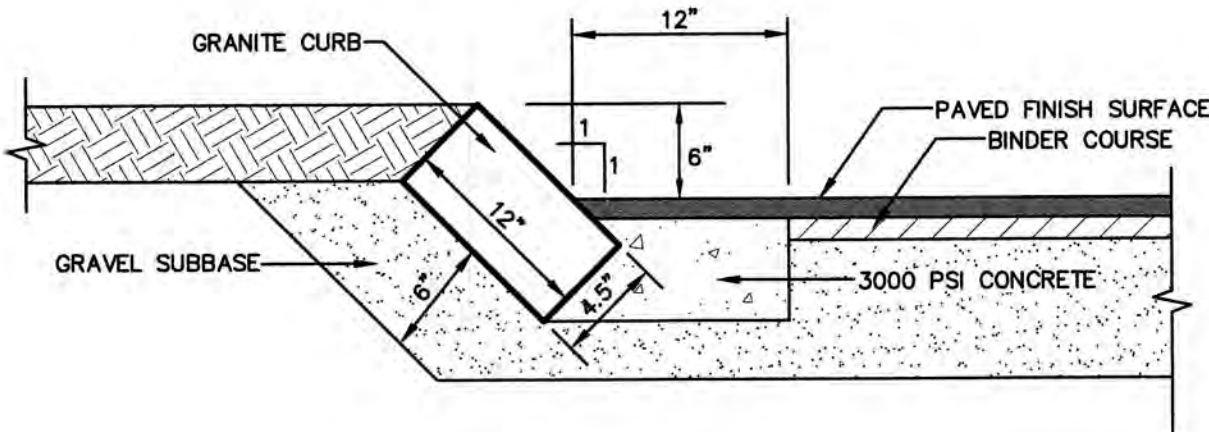


## HOUSE SEWER SERVICE

NOT TO SCALE

## SLOPED GRANITE CURB

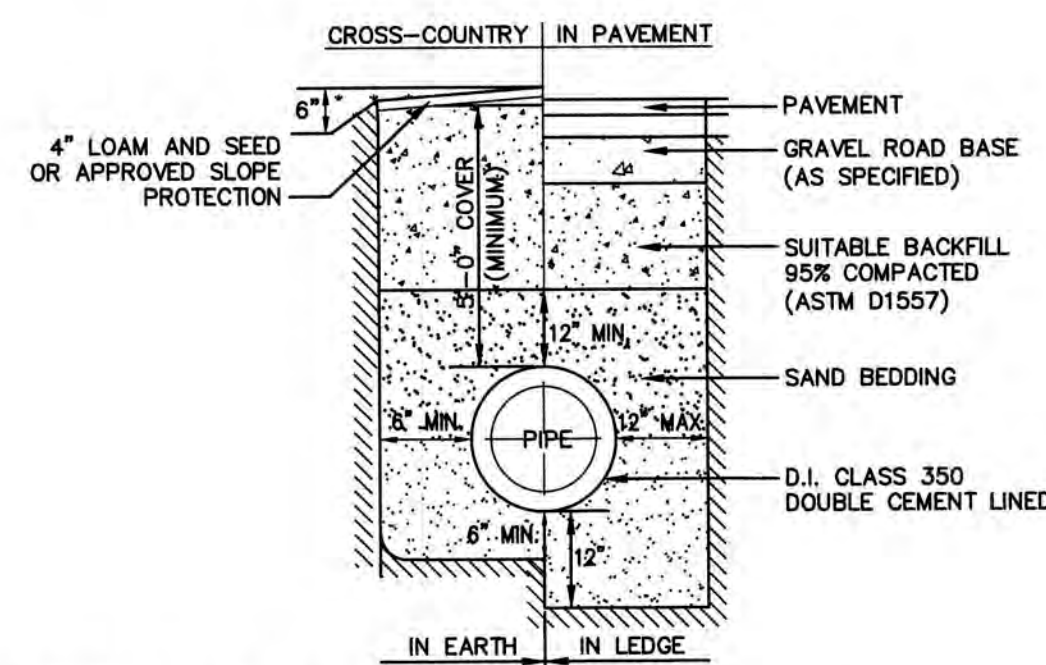
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- NOTES:**
- PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO PAVEMENT DETAILS.
  - NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPECIFICATIONS.
  - TRENCH BACKFILL SHALL CONFORM WITH ENV. Wq 704.11(h) AND BE FREE OF DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE OR ROCKS OVER SIX INCHES.
  - W= MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, WIDTH SHALL BE NO MORE THAN 36"; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, WIDTH SHALL BE 24 INCHES PLUS PIPE O.D. WIDTH SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
  - RIGID FOAM INSULATION TO BE PROVIDED WHERE COVER IN THE ROADWAY IS LESS THAN 6" AND CROSS COUNTRY IS LESS THAN 4", PURSUANT TO DES WAIVER BEING ISSUED.
  - PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIALS, GRADED SUCH THAT 100% PASSES A 1/2" SIEVE AND A MAXIMUM OF 15% PASSES A #200 SIEVE IN ACCORDANCE WITH Env-Wq 704.11(b).
  - JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL AND CERTIFIED BY THE MANUFACTURER AS CONFORMING TO THE ASTM D3212 STANDARD IN EFFECT WHEN THE JOINT SEALS WERE MANUFACTURED, AND SHALL BE PUSH-ON, BELL-AND-SPIGOT TYPE PER Env-Wq 704.05 (e).

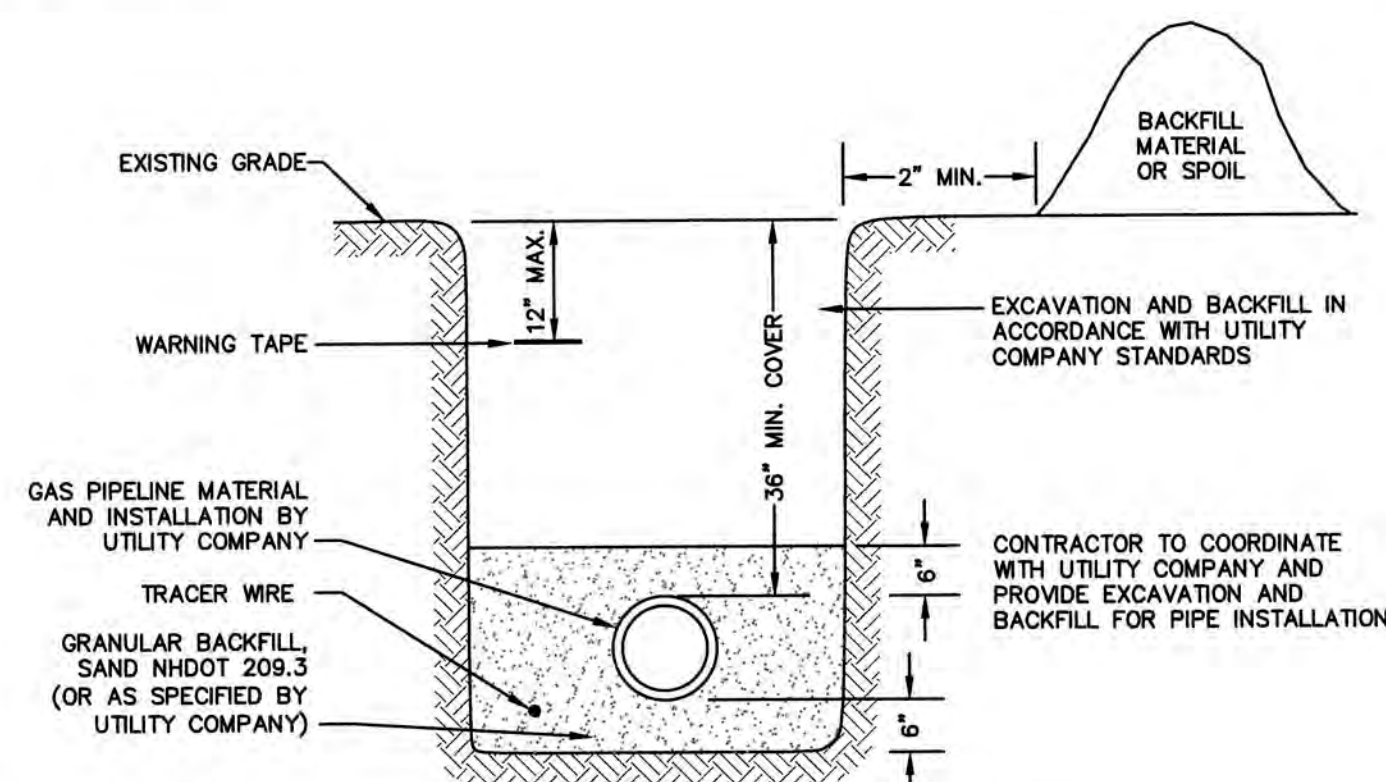
## SEWER TRENCH

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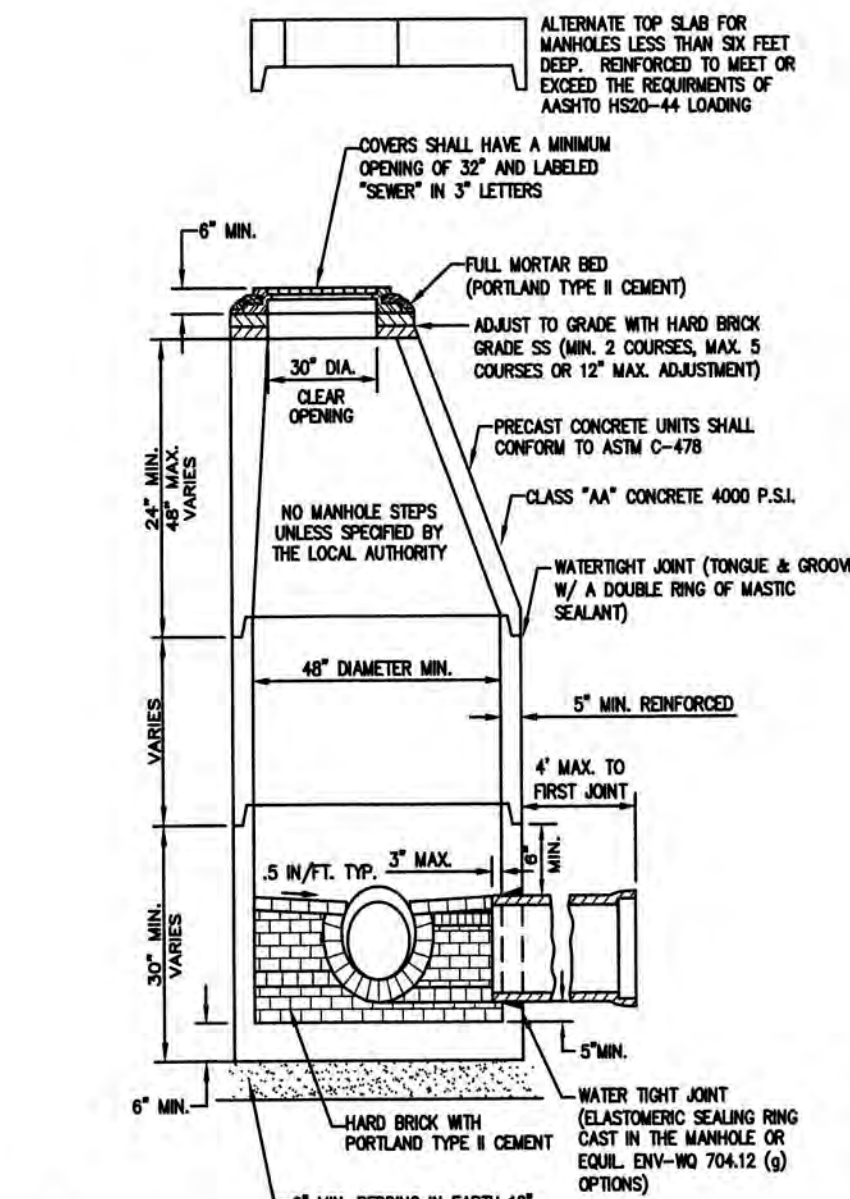
## WATER SYSTEM TRENCH

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## GAS TRENCH

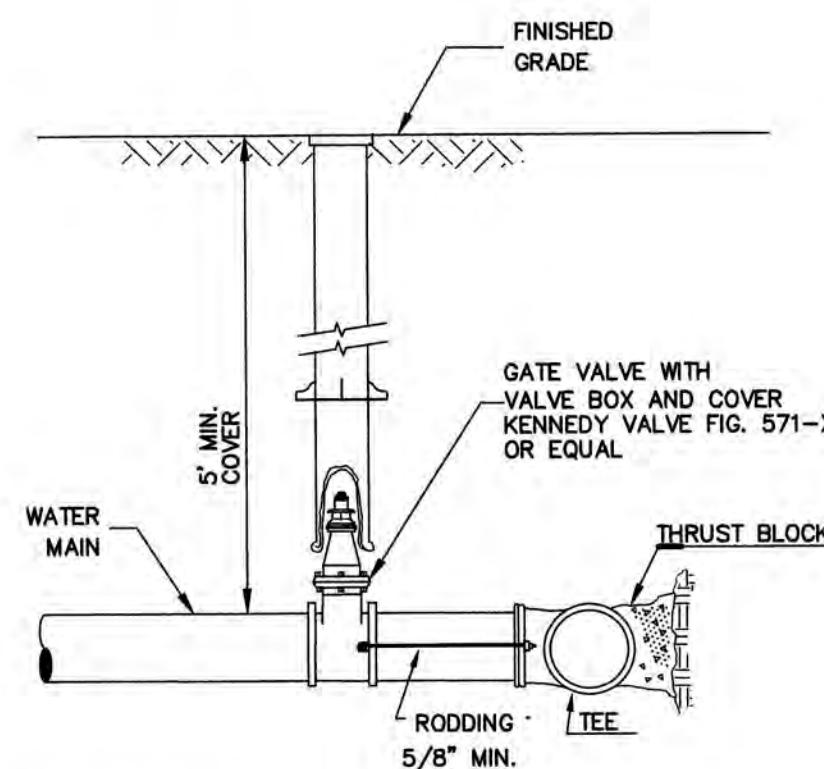
NOT TO SCALE



- NOTES:**
- PER RHDES ENV-WQ 704.13(c), MORTAR USED IN MANHOLE CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING:  
a. MORTAR SHALL BE COMPOSED OF TYPE I PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION  
b. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE PER TABLE 704-4:  
(1) 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR  
(2) 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PART HYDRATED LIME.  
c. CEMENT SHALL BE TYPE I PORTLAND CEMENT THAT IS CERTIFIED BY ITS MANUFACTURER AS CONFORMING TO THE ASTM C150/C150M STANDARD IN EFFECT AT THE TIME THE CEMENT WAS MANUFACTURED  
d. HYDRATED LIME SHALL BE TYPE S THAT IS CERTIFIED BY ITS MANUFACTURER AS CONFORMING TO THE ASTM C207 STANDARD IN EFFECT AT THE TIME THE HYDRATED LIME WAS PROCESSED  
e. SAND SHALL CONSIST OF INERT NATURAL SAND THAT IS CERTIFIED BY ITS SUPPLIER AS CONFORMING TO THE ASTM C33 STANDARD IN EFFECT AT THE TIME THE SAND IS PROCESSED BY STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES  
f. CONCRETE FOR DROP SUPPORTS SHALL CONFORM TO THE REQUIREMENT FOR CLASS AAA CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AS AVAILABLE AT:  
[HTTP://WWW.NH.GOV/DOT/ORG/PROJECTDEVELOPMENT/PROJWHADESIGN/SPECIFICATIONS/INDEX.HTM](http://www.nh.gov/dot/ORG/PROJECTDEVELOPMENT/PROJWHADESIGN/SPECIFICATIONS/INDEX.HTM)  
g. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL IN ACCORDANCE WITH ENV-WQ 704.12 (d).
  - ALL MANHOLES SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH ENV-WQ 704.17 (a) THROUGH (d).
  - SEWER MANHOLE COVERS SHALL CONFORM TO ASTM A48/A48M WITH A CASTING EQUAL TO CLASS 30 IN ACCORDANCE WITH ENV-WQ 704.13 (d) (8).
  - ALL PRECAST SECTIONS SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING IN ACCORDANCE WITH ENV-WQ 704.12 (d).
  - ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDULBY MARKED ON THE INSIDE WALL PER ENV-WQ 704.12(f).
  - BRICK MASONRY SHALL CONFORM TO ASTM C32 (ENV-WQ 704.12(a)(9))

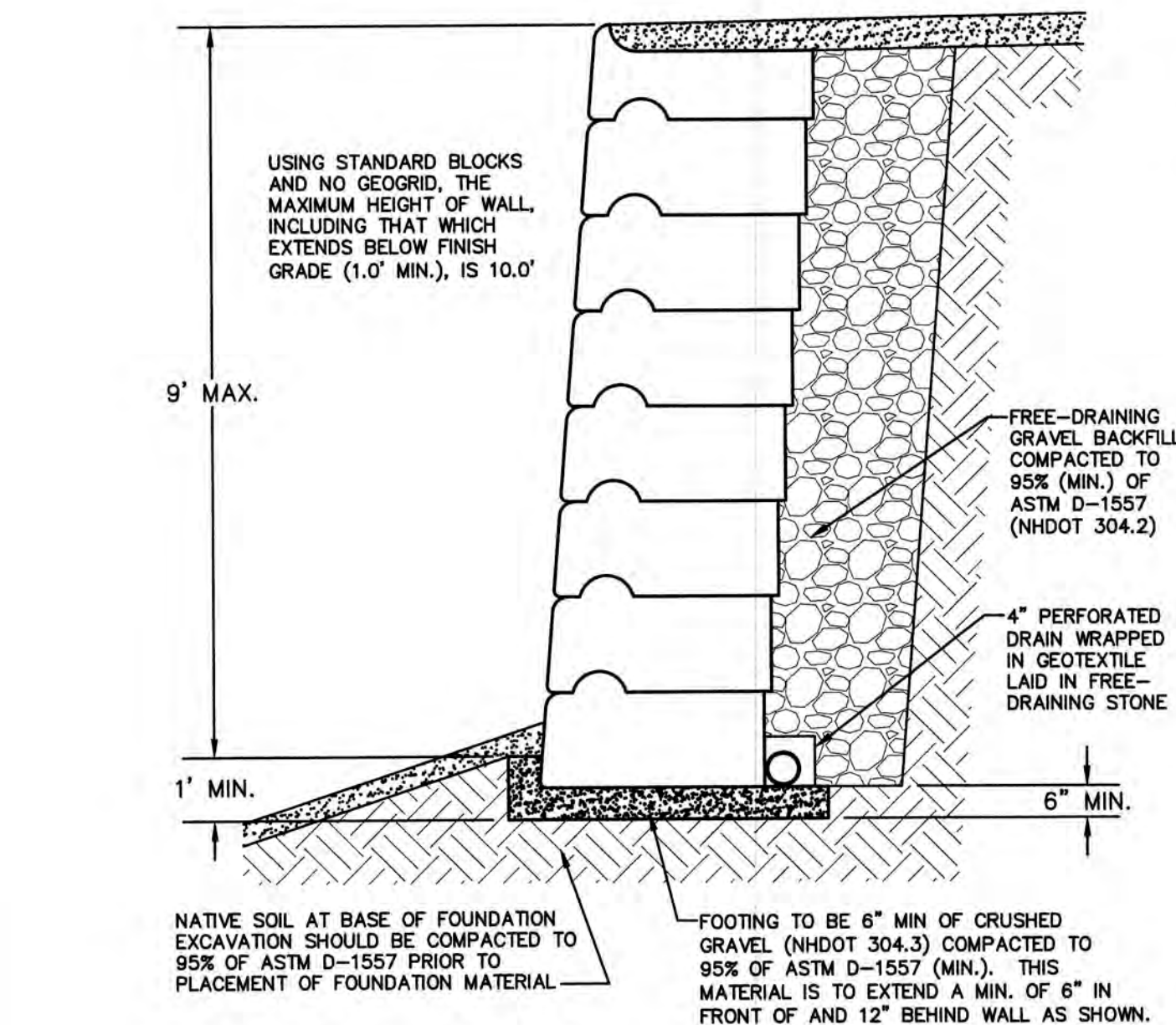
## SEWER MANHOLE

NOT TO SCALE



## BURIED GATE VALVE DETAIL

NOT TO SCALE



- PRE-FABRICATED WALL UNITS SHALL BE REDI-ROCK INTERNATIONAL AS PRODUCED BY A LICENSED MANUFACTURER, OR AN EQUIVALENT APPROVED IN WRITING BY THE CIVIL ENGINEER OF RECORD (JONES & BEACH ENGINEERS, INC.).
- THE CONTRACTOR IS RESPONSIBLE FOR RETAINING THE SERVICES OF A LICENSED STRUCTURAL ENGINEER TO DESIGN ANY WALL THAT HAS A HEIGHT OVER 4.0'. JONES & BEACH ENGINEERS, INC. DOES NOT ACCEPT ANY LIABILITY FOR THE STRUCTURAL DESIGN AND/OR INSTALLATION OF ANY RETAINING WALL OF ANY TYPE ABOVE THIS HEIGHT. THIS DETAIL IS INTENDED TO PROVIDE AN EXAMPLE OF THE RETAINING WALL FOR PLANNING PURPOSES ONLY AND IS SPECIFICALLY NOT INTENDED FOR USE BY THE CONTRACTOR IN ANY CONSTRUCTION-RELATED ACTIVITY.
- CONSTRUCTION OF THE RETAINING WALL(S) SHOULD FOLLOW THE SPECIFICATIONS OF REDI-ROCK INTERNATIONAL AND THE STRUCTURAL ENGINEER OF RECORD.
- RETAINING WALL-RELATED CORRESPONDENCE SHOULD BE DIRECTED TO:

REDI-ROCK INTERNATIONAL  
05481 SOUTH U.S. 31  
CHARLEVOIX, MICHIGAN 49720

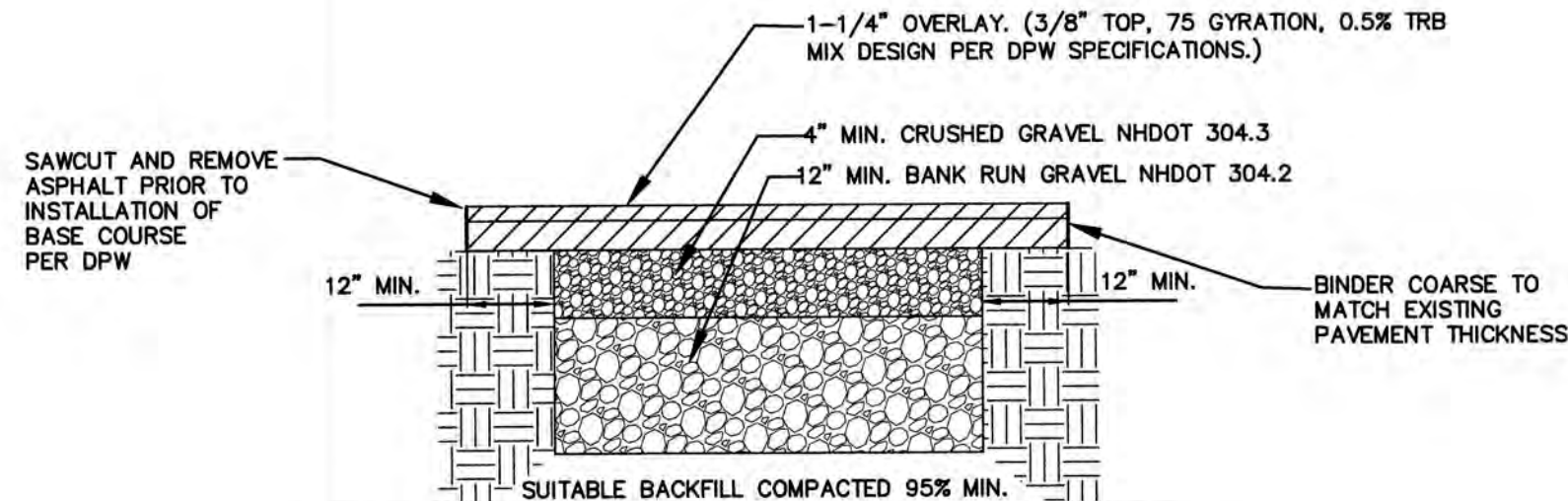
T# (231) 237-9500  
F# (231) 237-9521  
[www.redi-rock.com](http://www.redi-rock.com)

## REDI-ROCK INTERNATIONAL RETAINING WALL DETAIL (STANDARD BLOCKS W/ NO GEOGRID)

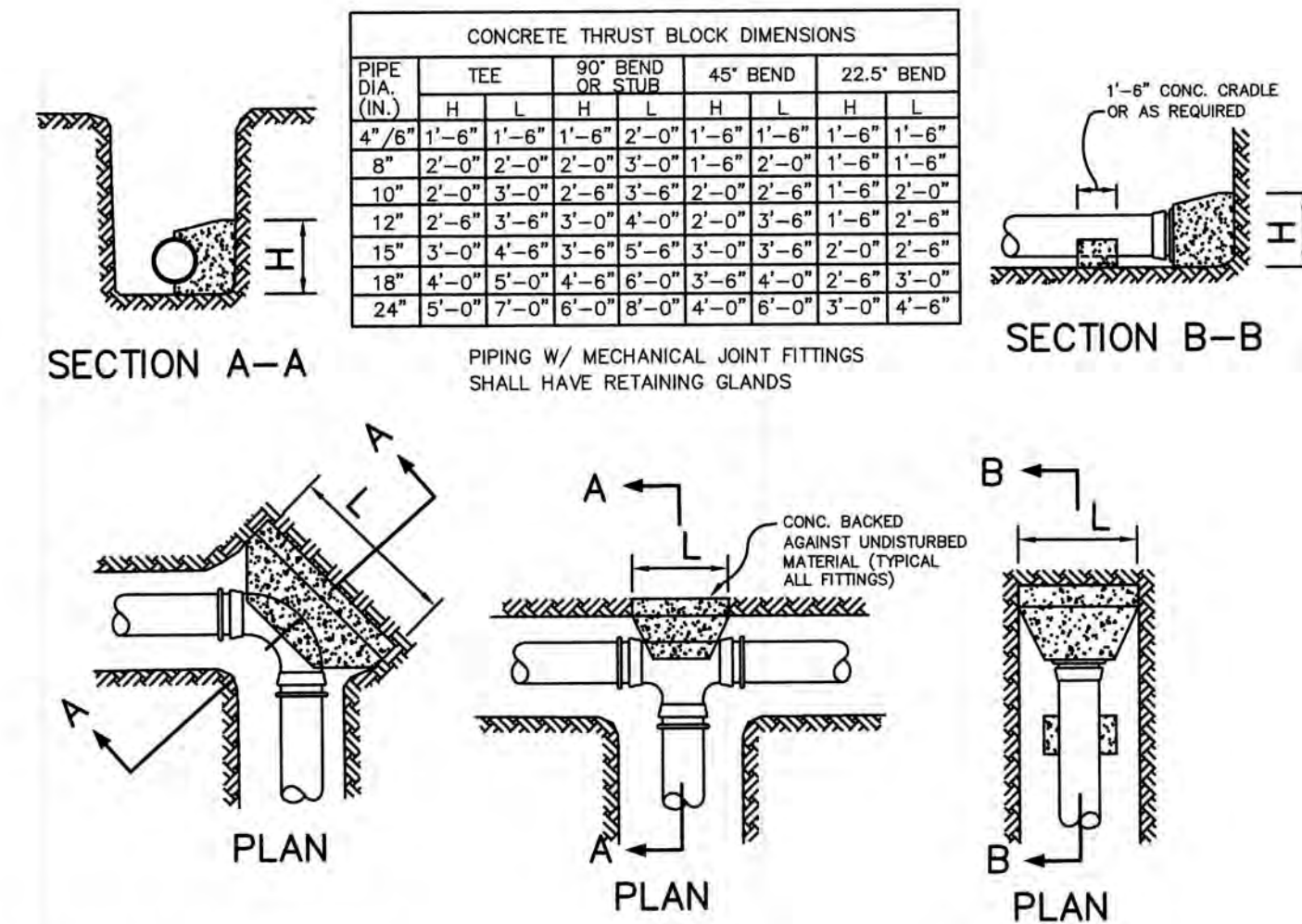
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## TYPICAL PAVEMENT REPAIR DETAIL

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- AFTER PROPER BACKFILLING AND COMPACTION, ADJACENT PAVEMENT MUST BE "SAW CUT" (STRAIGHT CUTS) A MINIMUM OF ONE FOOT (1') AROUND THE PERIMETER OF THE EXCAVATION. PAVEMENT MUST BE REMOVED.
- INSTALL BASE COURSE LEAVING A REVEAL FOR SURFACE COURSE.
- INSTALL SURFACE COURSE OF ASPHALT PAVING.
- APPLY EMULSION SEALANT AT PERIMETER OF JOINT OVERLAPPING BASE COURSE. INSTALL WEARING COURSE OF ASPHALT TO GRADE. APPLY LIGHT SAND TO ABSORB EXCESS JOINT SEALANT.
- GRAVEL COMPACTIONS TO MEET 95% MINIMUM.



## THRUST BLOCK DETAILS

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Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		
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4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
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1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ
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](mailto:JBE@JONESANDBEACH.COM)

Plan Name:	DETAIL SHEET
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.	D1
SHEET 11 OF 13	JBE PROJECT NO. 20686

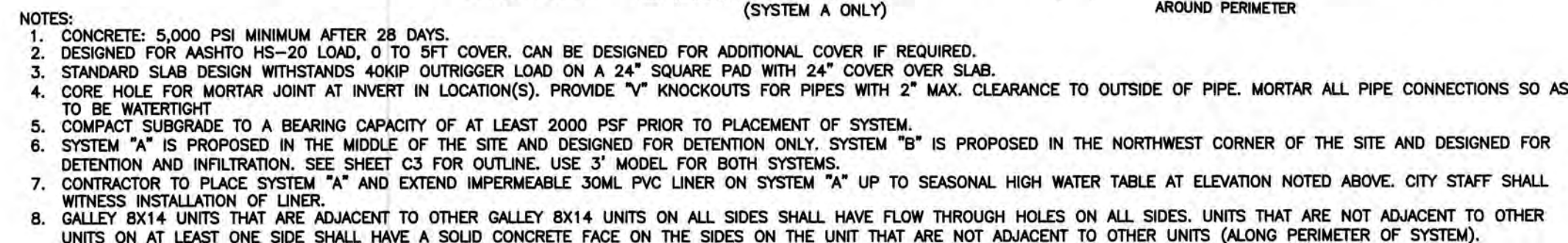




1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA & BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL AVERAGE THICKNESS. ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

NOT TO SCALE

ELEVATION SCHEDULE							
	EL. A	EL. B	EL. C	EL. D	EL. E	EL. F	EL. G
SYSTEM A	> 192.0	191.00	190.33	186.92	185.33	N/A	184.33
SYSTEM B	> 192.0	191.00	190.33	186.92	185.33	N/A	184.33



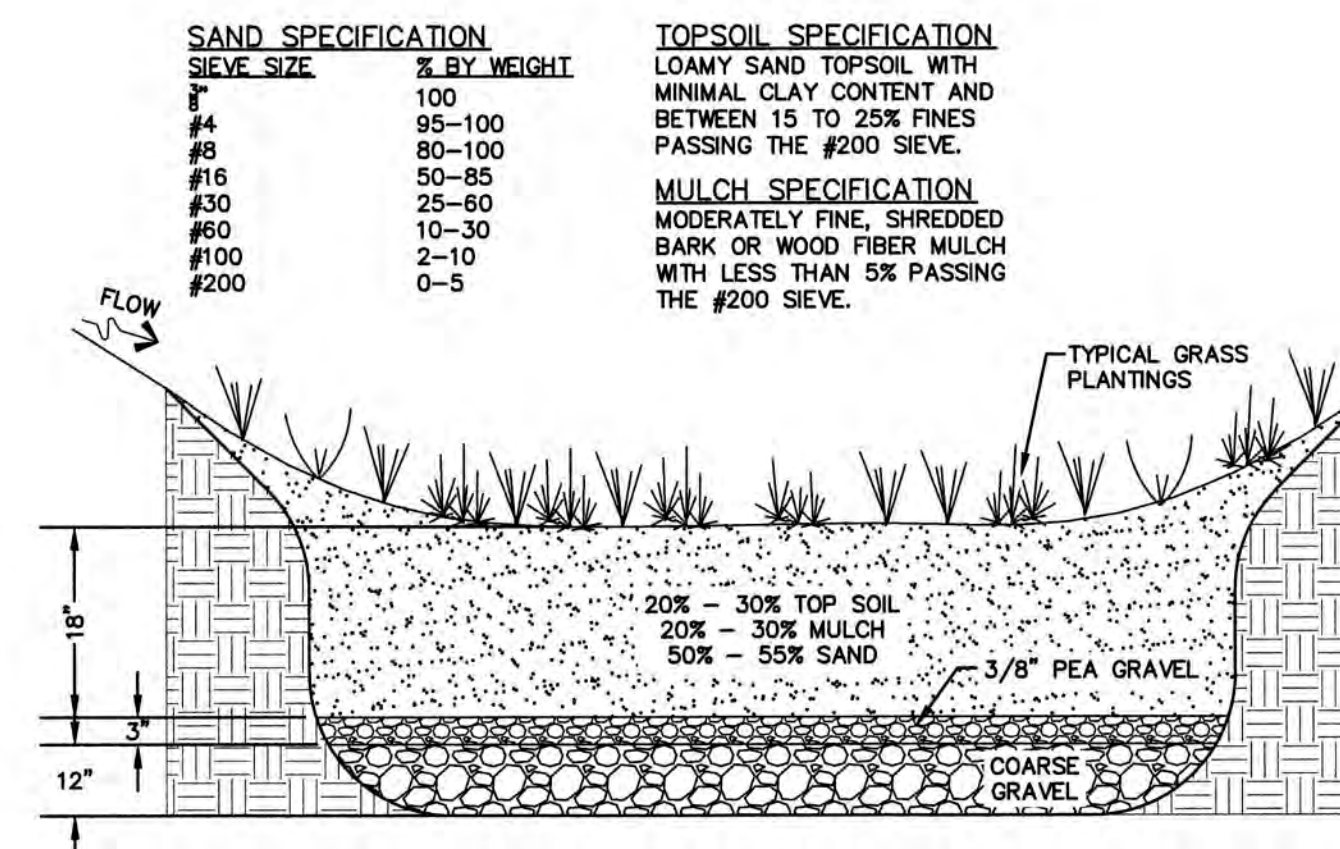
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HEIGHT<H>	VOLUME<EA>	WEIGHT
2'-0"	200CF	14,900#
3'-0"	300CF	16,600#
4'-0"	400CF	18,300#
5'-0"	500CF	20,000#



1. A 6" THICK IMPERVIOUS CLAY LINER IS TO BE PLACED UNDER ENTIRE SEDIMENT FOREBAY AND SPILLWAY AND ONLY AROUND THE SIDES OF THE ENTIRE BIORETENTION AREA.
2. SEDIMENT FOREBAYS TO BE LINED WITH GEOTEXTILE FABRIC.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURE WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE STRUCTURE.
4. EMBANKMENT MATERIAL SHALL BE CLEAN MINERAL SOIL FREE OF ROOTS, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES. IT SHALL CONTAIN NO ROCKS OR LUMPS OVER FOUR INCHES (4") IN DIAMETER. THIS MATERIAL SHALL BE INSTALLED IN 6" LIFTS COMPACTED TO 92% OF ASTM D-1557, AND SHALL MEET THE FOLLOWING SPECIFICATIONS: 6" PASSING 100%, #4 SIEVE 40-90%, #40 SIEVE 95-100%, #100 SIEVE 25-40%, #200 SIEVE 15-30% (OF THE TOTAL SAMPLE).
5. 6" THICK IMPERVIOUS CLAY LINER MATERIAL SHALL BE CLEAN SILTY-CLAY BORROW FREE OF ROOTS, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES, AND SHALL CONTAIN NO ROCKS OR LUMPS OVER THREE INCHES (3") IN DIAMETER. THIS MATERIAL SHALL BE INSTALLED IN 6" LIFTS COMPACTED TO 92% OF ASTM D-1557, AND SHALL MEET THE FOLLOWING SPECIFICATIONS: PASSING 100%, #4 SIEVE 95-100%, #40 SIEVE 60-80%, #100 SIEVE 40-60%, #200 SIEVE 25-45% OF THE FRACTION PASSING THE #4 SIEVE). THE CLAY COMPONENT SHALL HAVE A PLASTICITY INDEX OF AT LEAST 8 AND A HYDRAULIC CONDUCTIVITY OF 10 TO THE -6 CM/SEC.

NOT TO SCALE



## DESIGN CONSIDERATIONS

1. DO NOT DIRECT RUNOFF TO THE BIORETENTION SYSTEMS UNTIL IT HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
2. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN-OFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
3. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

**MAINTENANCE REQUIREMENTS:**

1. SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24 HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
2. PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
3. TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
4. AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72 HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FUNCTION. FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
5. VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING PRUNING, REMOVAL AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

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Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-PLAN.dwg		
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REV.	DATE	REVISION	BY

Designed and Produced in NH

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**J/B** Jones & Beach Engineers, Inc

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PO Box 219  
Stratham, NH 03865 FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.

D2

SHEET 12 OF13  
JBE PROJECT NO. 20686

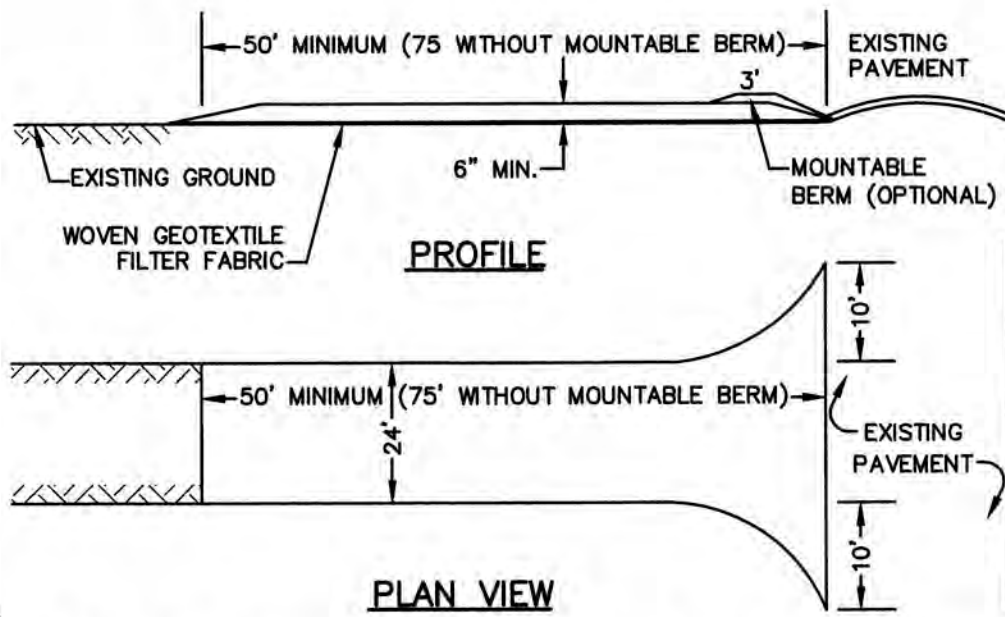


TEMPORARY EROSION CONTROL NOTES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF 5 ACRES BE EXPOSED AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. SILT FENCES AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
7. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER) ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
8. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
9. AFTER OCTOBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
10. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
  - b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
  - c. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED; OR
  - d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. FUGITIVE DUST CONTROL IS REQUIRED TO BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000, AND THE PROJECT IS TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES.
12. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR'S NAME, ADDRESS, AND PHONE NUMBER SHALL BE SUBMITTED TO DES VIA EMAIL (SEE BELOW).
13. PRIOR TO CONSTRUCTION, A PHASING PLAN THAT DELINEATES EACH PHASE OF THE PROJECT SHALL BE SUBMITTED. ALL TEMPORARY SEDIMENT BASINS THAT WILL BE NEEDED FOR DEWATERING WORK AREAS SHALL BE LOCATED AND IDENTIFIED ON THIS PLAN.

SEEDING SPECIFICATIONS

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



NOTES:

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

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

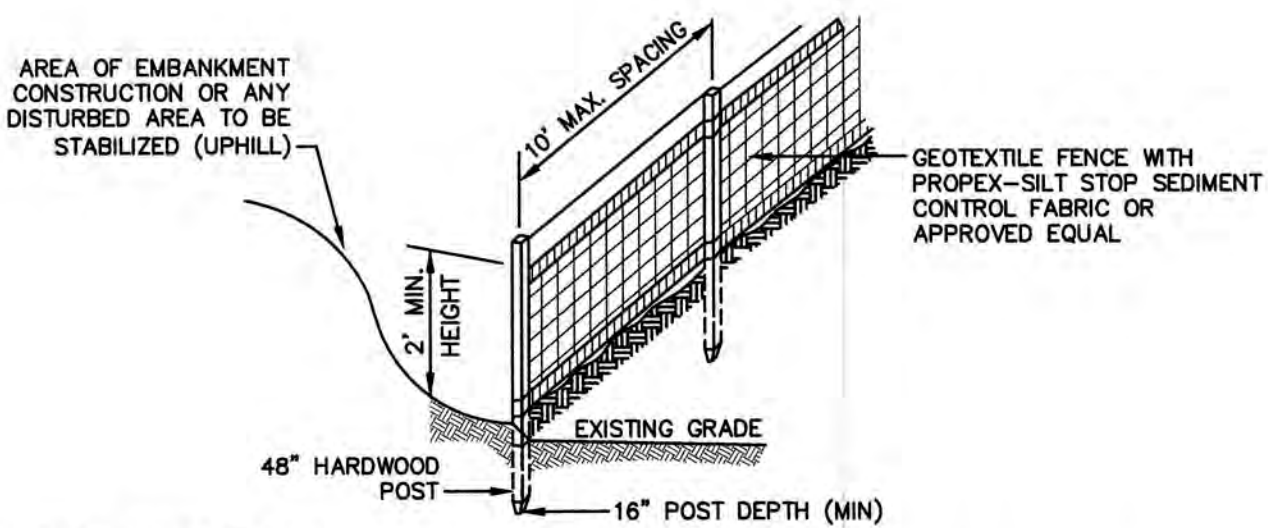
USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT	2/
	F	FAIR	EXCELLENT	EXCELLENT	2/
GRAVEL PIT. SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.					
1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.					
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.					

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

SEEDING GUIDE

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRD'S FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60
1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.		

SEEDING RATES

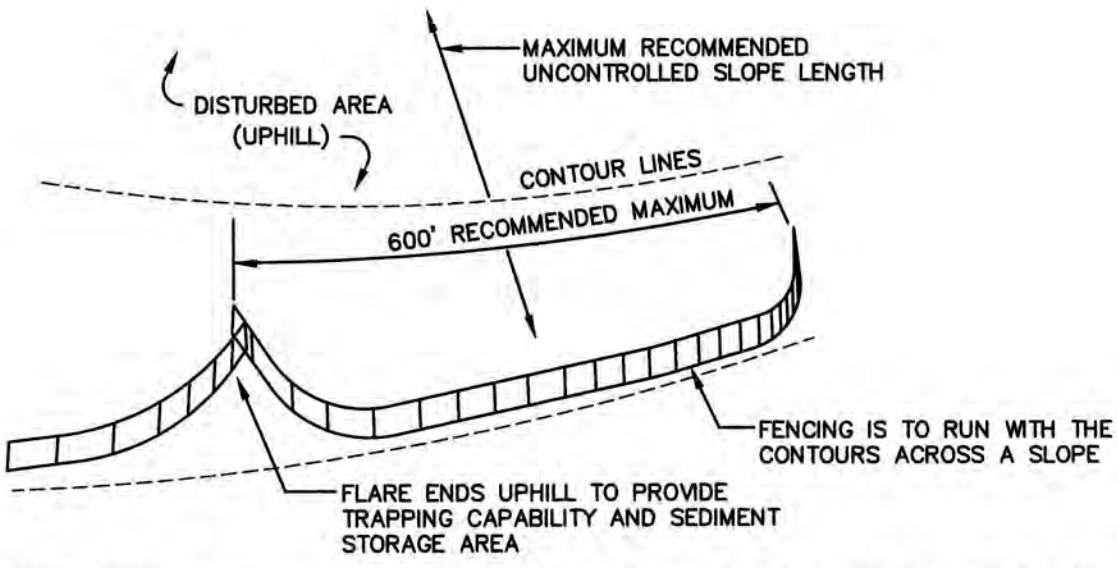


CONSTRUCTION SPECIFICATIONS:

- WOVEN FABRIC FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP, MID AND BOTTOM AND EMBEDDED IN THE GROUND A MINIMUM OF 6" AND THEN COVERED WITH SOIL.
- THE FENCE POSTS SHALL BE A MINIMUM OF 48" LONG, SPACED A MAXIMUM 10' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
- WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED 6", FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
- MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED AND PROPERLY DISPOSED OF WHEN IT IS 6" DEEP OR VISIBLE 'BULGES' DEVELOP IN THE SILT FENCE.
- PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
- SILT FENCE SHALL REMAIN IN PLACE FOR 24 MONTHS.

SILT FENCE

NOT TO SCALE



7. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND REVEGETATED.

MAINTENANCE:

- SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE DONE IMMEDIATELY.
- IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
- SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
- SEDIMENT DEPOSITS THAT ARE REMOVED, OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED, SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

Design: JAC	Draft: AJB	Date: 11/11/20
Checked: JAC	Scale: AS NOTED	Project No.: 20686
Drawing Name: 20686-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.		



4	12/20/21	REVISED FOR PLANNING BOARD SUBMISSION	AJB
3	9/30/21	REVISED PER TAC COMMENTS	AJB
2	8/23/21	REVISED FOR PRELIMINARY SUBDIVISION	AJB
1	5/26/21	REVISED FOR ZBA	AJB
0	1/26/21	ISSUED FOR REVIEW	LAZ
REV.	DATE	REVISION	BY

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

Plan Name:	EROSION AND SEDIMENT CONTROL DETAILS
Project:	668 MIDDLE STREET PORTSMOUTH, NH
Owner of Record:	ELIZABETH B. LARSEN, TRUSTEE OF THE ELIZABETH B. LARSEN TRUST OF 2012 668 MIDDLE STREET, PORTSMOUTH, NH 03801 DEED BK 5390 PG 2799

DRAWING No.
E1
SHEET 13 OF 13 JBE PROJECT NO. 20686





FUSS & O'NEILL

December 20, 2021

Peter Britz  
Interim Planning Director  
City of Portsmouth  
1 Junkins Ave, 3rd Floor  
Portsmouth, NH 03801

RE: LU 19-18; Cate Street Development, LLC  
West End Yards Amendment to Site Plan Review Application and Boundary Line  
Adjustment  
Fuss & O'Neill Reference No. 20180317.B10

Dear Mr. Britz, Members of the Technical Advisory Committee, and Planning Board:

On behalf of Cate Street Development, LLC, Fuss & O'Neill is requesting an Amendment the previously approved Site Plan (LU 19-18) for the West End Yards Development Site and A Boundary Line Adjustment between Cate Street Development and the Boston And Maine Corp. in support of the Amendment to the Site Plan.

### Boundary Line Adjustment

Cate Street Development, LLC recently acquired Tax Map 172, Lot 2, the vacant Car Dealership lot on Route 1 Bypass and will be adding that property to the previously approved development site, this will be discussed below in the Site Plan Amendment portion of this narrative. In support of the Site Plan Amendment being requested, Cate Street Development is also acquiring property from the Boston and Maine Corp. currently part of the Railroad Right-of-Way south of the existing West End Yards Development Site.

A Boundary Line Adjustment is being proposed that will add railroad Right-of-Way to the following Cate Street Development, LLC / West End Yards properties:

Cate Street Development property	Current Lot Area	Area from Railroad	Proposed Total Lot Area
Tax Map 165, Lot 2	260,789 sf (5.99 Ac.)	9,075 sf (0.21 Ac.)	269,864 sf (6.20 Ac.)
Tax Map 172, Lot 1	126,500 sf (2.90 Ac.)	11,643 sf (0.27 Ac.)	138,143 sf (3.17 Ac.)
Tax Map 172, Lot 2	42,351 sf (0.97 Ac.)	10,469 sf (0.24 Ac.)	52,820 sf (1.21 Ac.)

Please refer to the Boundary Line Adjustment Plan.

5 Fletcher Street  
Suite 1  
Kennebunk, ME  
04043  
t 207.363.0669  
800.286.2469  
f 860.533.5143

[www.fando.com](http://www.fando.com)

California  
Connecticut  
Maine  
Massachusetts  
New Hampshire  
Rhode Island  
Vermont

## Amendment to Approved Site Plan

### Addition of Tax Map 172 Lot 2

As stated above Cate Street Development, LLC recently acquired Tax Map 172, Lot 2, the vacant Car Dealership lot on Route 1 Bypass and will be adding that property to the previously approved development site. The proposed changes to that site involve:

- reconfiguring pavement to be more efficient and geared toward a retail / commercial or restaurant use,
- redesign of site lighting to become integrated with the rest of the West End Yards Development Site,
- Landscaping improvements around the perimeter of the site, particularly along Route 1 Bypass.

Utilities for this site are already in existence and are not proposed to change. The property is served by City Water and Sewer, Electric, Gas and Telecommunications.

The reconfigured parking for tax Map 172 lot will provide 56 spaces and a dedicated loading area. 2 of the spaces are handicapped accessible.

### Addition of Parking on Tax Map 165 Lot 2 and Tax Map 172 Lot 1

Along with the addition Tax Map 172 Lot 2, Cate Street Development is acquiring property from the Railroad to enable expansion of the parking lot serving the apartments Building A and Building B.

The additional parking being proposed consists of:

- 11 tandem parking spaces near the dog exercise area.
  - These are allowed under the zoning code and will be provided to tenants in the same apartment only.
- 61 additional parking spaces along the Railroad Right-of Way on the south side of the properties.

No new utilities are required for this parking aside from Stormwater collection and treatment. Stormwater will be collected by 2 catch basins that flow to a Jellyfish filter water quality unit treated and then outlet to the existing ditch along the southern property line of Tax Map 172 Lot 2.

The Site lighting will be modified by adding an addition luminaire to each of the existing light poles along the south side of the properties in the development site.

#### Local, State and Federal Approvals Required:

The following are the Approvals that the design team foresees as necessary for this project.

City of Portsmouth:

- Amended Site Plan Review
- Boundary Line Adjustment

Other Committee reviews may be appropriate as decided by TAC. These reviews if suggested would be performed concurrently with the above.

State of New Hampshire Department of Environmental Services (NHDES):

- Amendment to Alteration of Terrain Permit (AoT)

State of New Hampshire Department of Transportation (NHDOT):

The Access to West End Yards and Tax Map 172 Lot 2 was previously approved by NHDOT during the design of the original project. The uses are not being changes nor the building sizes. Therefore, the driveway permits will be still be sufficient as is.

EPA, Construction General Permit (CGP):

There is a current Construction General Permit for the West End Yards development Site. The Stormwater Pollution Prevention Plan (SWPPP) being implemented by Severino Construction will be updated accordingly.

### Technical Advisory Committee (TAC) Work Session Comments

On November 9, 2021 a TAC Work Session was attended and comments were received. The following is a response to those comments. The comments are paraphrased and restated in *bold italicized text* and the responses are in normal text.

#### Planning – Nick Cracknell:

1. *The site is heavy on parking! We really don't like all the surface parking*

*We Suggest the applicant consider:*

- a. *A parking Structure*
  - i. *Realize there is an expense to this*
  - ii. *Just don't want the surface parking*
- b. *Possibly a Shed Protected lift system that stacks parked cars along the existing back edge of the site?*
  - i. *That is probably \$7,500 a space (Nick Cracknell estimate)*
  - ii. *Set the stacked spaces for specific units.*

The Client has explored the implementation of a parking structure, both during the original proposal and during this amendment proposal. The Applicant is gaining the additional parking they seek through a Boundary Line Adjustment with the Boston and Maine Corp. This proposal is the one that Cate Street Development, LLC is willing to pursue.

Parking is an allowed use and will be accessory to the approved uses within the Development site.

2. *The old KIA Dealership Lot;*
  - a. *Is reuse of the building the highest and best use of the property?*
  - b. *This would be a great spot for a Parking structure with a Liner Building Wrap!*

Cate Street Development, LLC acquired Tax Map 172 Lot 2, to be able to control how it is redeveloped and interacts with West End Yards.

Currently, Cate Street Development, LLC is proposing a renovation and lease of the building with improvements being made to the parking area that better integrate it to the overall development site.

3. *Let your Client know I (Nick) would be willing to talk with them about other options.*

We did let Jay Bisognano of Cate Street Development, LLC know the City Staff would be willing to talk about other options. Cate Street Development, LLC is able to acquire the additional parking it seeks through a Boundary Line Adjustment with the railroad.

Planning – Peter Britz:

1. *Concur with Nick, is there anywhere to put a parking structure?*

As discussed above the client does not need a parking structure and is proposing additional parking along the south property boundary.

DPW/Engineering – Dave Desfosses:

1. *It is a big parking lot. You are looking at hundreds of parking spaces.*

While this is a big parking lot, even with this additional parking, there is less impervious surface on the development site than was there in 2018.

The previous approval reduced the impervious surface within the Development site by 1.8 Ac. over 13.3 Ac. of total development area.

The amendment does add some of the removed pavement back; however, there is still a 1.34 Ac. reduction of over the now 15.08 Ac. Development sight.

2. *The city will need an easement for the Outfall of the Button Factory's culvert that comes under the railroad.*

An easement has been depicted on sheets CS-100, and CS-101 it will be added to the Boundary Line Adjustment Plans for recording an Easement Deed will be developed in favor of the City of Portsmouth.

Fire Department – Patrick Howe:

1. *Will want to see truck templates to make sure the redone KIA Dealership lot is navigable.*

The Fire Truck Turning Template has been run through the Tax Map 172 Lot 2 Commercial site.

Please refer to the attached Exhibit CT-100. Aerial Firetruck Turning Movement Plan.

The Aerial truck enters from the current West End Yards Parking lot, turns Left into Tax Map 172 Lot 2, left again to head east then right to go around the back of the building then right again to head back to the entrance to the site.

We hope the above narrative helps The City Staff and Planning Board in its review of this Site Plan Amendment and Boundary Line Adjustment.

If you have any questions or concerns, please do not hesitate to contact me at (207) 363-0669 x2314 or by email ([rlundborn@fando.com](mailto:rlundborn@fando.com)).

Sincerely,



Rick Lundborn, PE  
Senior Project Manager

/BH

Enclosures:           Plans  
                              Drainage Report

c:           Cate Street Development, LLC  
              August Consulting, PLLC  
              Bosen & Associates



LINE TABLE			CURVE TABLE						
LINE	BEARING	DISTANCE	CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH	
L1	N21°59'17"W	34.56'	C1	80.19'	51.00'	90°05'21"	N77°59'32"W	72.18'	
L2	S34°40'04"E	41.97'	C2	30.94'	45.00'	39°23'52"	S48°30'09"W	30.34'	
L3	N32°56'35"W	25.61'	C3	24.56'	1008.50'	1°23'42"	N68°53'56"E	24.56'	
L4	S64°45'32"W	60.21'	C4	38.52'	635.87'	3°28'15"	N60°29'39"E	38.51'	
L5	N66°29'39"E	60.09'							
L6	N46°59'07"W	41.00'							
L7	N46°59'10"W	64.76'							
L8	S57°25'45"W	47.00'							
L9	S46°59'07"E	41.00'							

NOTES:

1. OWNERS OF RECORD:  
TAX MAP 165, LOT 2  
TAX MAP 172, LOT 1  
(R.C.R.D. BOOK 5959, PAGE 109)  
TAX MAP 172, LOT 2  
(R.C.R.D. BOOK 6158, PAGE 2124)  
CATE STREET DEVELOPMENT, LLC  
11 ELKINS STREET, SUITE 420  
BOSTON, MA 02127

TAX MAP 165, LOT 14  
BOSTON AND MAINE CORP.  
IRON HORSE PK HIGH STREET  
NO BILLERICA, MA 01862

2. ZONES: GW1--GATEWAY NEIGHBORHOOD MIXED USE  
CORRIDOR (SEE CITY OF PORTSMOUTH ZONING  
ORDINANCE FOR DIMENSIONAL REQUIREMENTS. SUBJECT  
LOTS WERE REZONED TO GW1 ON DECEMBER 4, 2017  
PER SAID ORDINANCE.)

--SEE SITE PLANS FOR DIMENSIONAL REQUIREMENTS AND  
DEVELOPMENT SITE STANDARDS.

3. FIELD SURVEY PERFORMED BY DOUCET SURVEY. DURING  
NOVEMBER 2016 USING A TRIMBLE S6 TOTAL STATION, A  
TRIMBLE R8 SURVEY GRADE GPS UNIT, A TRIMBLE TSC3  
DATA COLLECTOR AND A SOKKIA B21 AUTO LEVEL.  
DURING JULY 2018 AND SEPTEMBER -- OCTOBER 2018  
AND OCTOBER 2021 USING A TRIMBLE S6 TOTAL STATION  
WITH A TRIMBLE TSC3 DATA COLLECTOR, TRAVERSE  
ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.  
ADDITIONAL FIELD SURVEY PERFORMED, DURING  
NOVEMBER 2016 AND OCTOBER 2018 USING A LEICA HDS  
SCANNER.

4. FLOOD HAZARD ZONE: "X", PER FIRM MAP #33015C0259E,  
DATED 5/17/05.

5. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE  
PLANE(2800) NAD83(2011) DERIVED FROM REDUNDANT  
GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS  
NETWORK.

6. 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.

7. 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 ROUTE 1  
BYPASS AS DEPICTED HEREON IS/ARE BASED ON  
RESEARCH CONDUCTED AT THE PORTSMOUTH CITY HALL,  
PORTSMOUTH DEPARTMENT OF ENGINEERING, THE  
ROCKINGHAM COUNTY REGISTRY OF DEEDS, AND THE  
NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.

8. TAX MAP 172, LOT 2  
SUBJECT TO EASEMENTS, RESTRICTIONS AND  
CONDITIONS CONTAINED IN R.C.R.D. BOOK 1476, PAGE  
293 AND R.C.R.D. BOOK 2411, PAGE 1484.

SEE ALSO REFERENCE PLAN 2 FOR RELATED  
EASEMENTS.

TAX MAP 172, LOT 1 & TAX MAP 165, LOT  
SEE REFERENCE PLAN 1 FOR RELATED EASEMENTS.

9. DOUCET SURVEY DID NOT COMPLETE A COMPLETE  
BOUNDARY SURVEY FOR TAX MAP 165, LOT 14 BUT  
HAVE SURVEY VERIFIED THE SUBJECT LOT LINES  
AFFECTED BY THE BOUNDARY LINE ADJUSTMENT.

REFERENCE PLANS:

- "SUBDIVISION & EASEMENT PLAN FOR CATE STREET  
DEVELOPMENT LLC, OF TAX MAP 163, LOTS 33 & 34, TAX  
MAP 165, LOT 2, TAX MAP 172, LOT 1 & TAX MAP 173,  
LOT 2, CATE STREET & US ROUTE 1 BYPASS,  
PORTSMOUTH, NH", BY DOUCET SURVEY LLC, DATED JULY  
3, 2019, R.C.R.D. PLAN D-42451.
- "ALTA/NSPS LAND TITLE SURVEY, TAX MAP 172 -- LOT 2,  
OWNER OF RECORD: 406 HIGHWAY 1 BYPASS, LLC, 549 US  
HIGHWAY 1 BYPASS, PORTSMOUTH, NH 03801", BY AMBIT  
ENGINEERING, INC., DATED JANUARY 2020.
- "LOT LINE REVISION, U.S. ROUTE ONE BY-PASS,  
PORTSMOUTH, N.H. FOR WIGGIN, PARSONS, & O'BRIEN", BY  
JOHN W. DURGIN ASSOCIATES, INC., DATED JANUARY 22,  
1982, R.C.R.D. PLAN D-10722.
- SEE REFERENCE PLAN 1 FOR ADDITIONAL PLAN  
REFERENCES.

BORTHWICK AVENUE  
EXTENSION

TAX MAP 234,  
LOT 3

TAX MAP 234,  
LOT 2A

TAX MAP 233,  
LOT 145

AREA A  
10,469 Sq. Ft.  
0.24 Acres  
TO BE CONVEYED TO  
TAX MAP 172, LOT 2

4" X 4" CONC. BND. FND.  
(NO D.H.) UP 6"  
(HELD FOR EDGE OF  
RIGHT OF WAY ALIGNMENT)

R.R.S.F.  
(HELD FOR LINE)  
(N57°25'45"E, 0.51'  
TO CORNER)

5/8" REBAR FLUSH  
(HELD FOR LINE)  
(N52°09'11"E, 0.11'  
TO CORNER)

EXISTING  
TAX MAP 172, LOT 2  
42,351 SQ. FT.  
0.97 ACRES  
PROPOSED  
TAX MAP 172, LOT 2  
52,820 SQ. FT.  
1.21 ACRES

EXISTING  
TAX MAP 172, LOT 1  
128,500 SQ. FT.  
2.90 ACRES  
PROPOSED  
TAX MAP 172, LOT 1  
138,143 SQ. FT.  
3.17 ACRES

AREA B  
11,643 Sq. Ft.  
0.27 Acres  
TO BE CONVEYED TO  
TAX MAP 172, LOT 1

EXISTING  
TAX MAP 165, LOT 14  
2.45 ACRES  
(PER CITY RECORDS)

EXISTING  
TAX MAP 165, LOT 2  
260,789 SQ. FT.  
5.99 ACRES  
PROPOSED  
TAX MAP 165, LOT 2  
269,864 SQ. FT.  
6.20 ACRES

TAX MAP 172, LOT 4

APPROVED FOR THE RECORD

CHAIRMAN PORTSMOUTH PLANNING BOARD

DATE

TAX MAP 173, LOT 9

TAX MAP 173, LOT 3

TAX MAP 163, LOT 32

TAX MAP 163, LOT 2

CATE STREET EXTENSION

CATE STREET

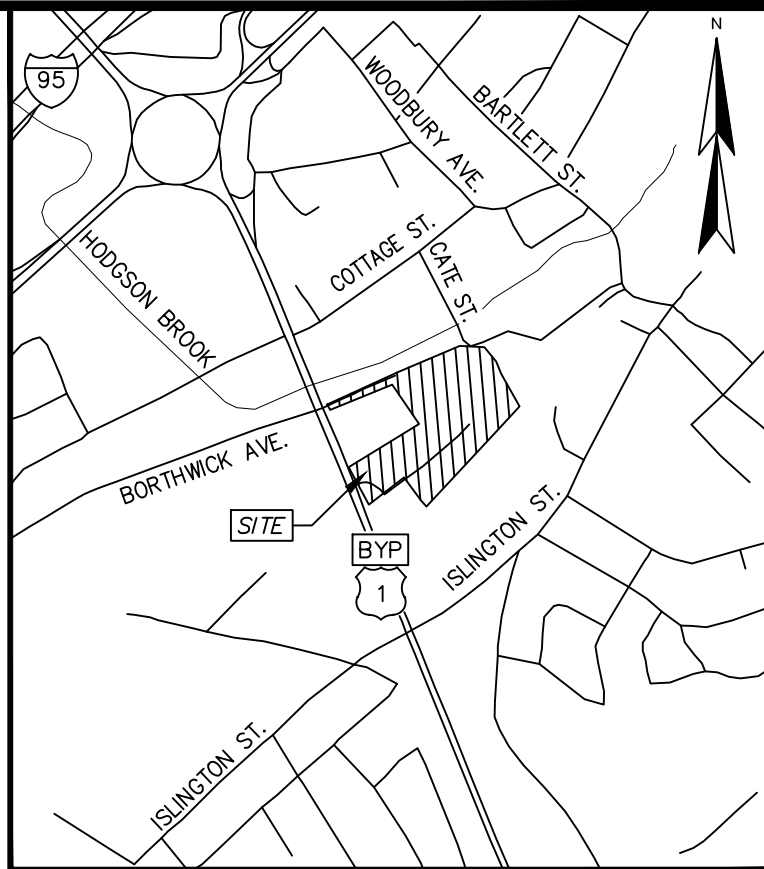
PROPOSED BUILDING

PROPOSED BUILDING

PROPOSED BUILDING

TAX MAP 163, LOT 34

TAX MAP 165, LOT 1



LOCATION MAP (n.t.s.)

LEGEND

---	EXISTING LOT LINE
---	PROPOSED LOT LINE
---	LOT LINE TO BE ABANDONED
---	APPROXIMATE ABUTTER LOT LINE
□	BOUND FOUND
△	RAILROAD SPIKE FOUND
○	IRON PIPE/ROD FOUND
●	4"x4" GRANITE BOUND TO BE SET
●	5/8" REBAR W/ID CAP TO BE SET
●	BOUND FOUND
●	IRON PIPE FOUND
●	CONCRETE
●	DRILL HOLE

**DRAFT**  
11/17/21

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

\_\_\_\_\_. L.L.S. #989

\_\_\_\_\_. 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.

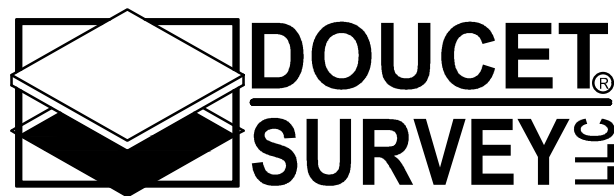
60 0 60 120  
SCALE: 1 INCH = 60 FT.

BOUNDARY LINE ADJUSTMENT

FOR  
CATE STREET DEVELOPMENT LLC  
(TAX MAP 165, LOT 2)  
(TAX MAP 172, LOTS 1 & 2)  
AND  
BOSTON & MAINE RAILROAD  
(TAX MAP 165, LOT 14)  
CATE STREET & US ROUTE 1 BYPASS  
PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	M.T.L.	DATE:	OCTOBER 12, 2021
CHECKED BY:	M.W.F.	DRAWING NO.:	5517E
JOB NO.:	5517	SHEET	1 OF 1



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102 Kent Place, Newmarket, NH 03857 (603) 659-6560  
Offices in Bedford & Keene, NH and Kennebunk, ME  
<http://www.doucetsurvey.com>

ABUTTERS

TAX MAP 163, LOT 2  
INDUSTRIAL RENTS--NH, LLC  
6 WAYNE ROAD  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 5606, PAGE 2334

TAX MAP 163, LOT 32  
SHARAN R. GROSS REV. TRUST  
180 BIRCH HILL RD  
YORK, ME 03909  
R.C.R.D. BOOK 5261 PAGE 2208  
R.C.R.D. BOOK 3406 PAGE 1383

TAX MAP 163, LOT 34  
CATE STREET DEVELOPMENT, LLC  
11 ELKINS STREET, SUITE 420  
BOSTON, MA 02127  
R.C.R.D. BOOK 5959, PAGE 109

TAX MAP 165, LOT 1  
CONDOMINIUMS MULTIPLE OWNERS

TAX MAP 172, LOT 4  
MILLPORT INC  
3 PENSTOCK WAY  
NEWMARKET, NH 03857  
R.C.R.D. BOOK 3169, PAGE 154

TAX MAP 172, LOT 5  
PORTSMOUTH MUSIC AND  
ARTS CENTER INC  
973 ISLINGTON ST  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 5502, PAGE 2161

TAX MAP 172, LOT 6  
959 BOYS LLC  
959 ISLINGTON ST  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 3943, PAGE 141

TAX MAP 172, LOT 7  
SHARAN R. GROSS REV. TRUST  
180 BIRCH HILL RD  
YORK, ME 03909  
R.C.R.D. BOOK 5261 PAGE 2208  
R.C.R.D. BOOK 3406 PAGE 1383

TAX MAP 172, LOT 11  
MAXICO LLC  
865 ISLINGTON ST SUITE 100  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 5876, PAGE 1848

TAX MAP 172, LOT 12  
ISLINGTON BUTTRICK LLC  
C/O YANKEE REALTY  
855 ISLINGTON ST #1,  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 5477, PAGE 1198

TAX MAP 173, LOT 3  
JESSE WARREN ANDERSON  
224 CATE ST  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 6159 PG 1388

TAX MAP 173, LOT 9  
PAUL J. HOLLOWAY  
C/O COAST PONTIAC  
500 US HWY 1 BYPASS  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 2821 PAGE 2396

TAX MAP 173, LOT 10  
AREC 13, LLC  
C/O U-HAUL INTERNATIONAL  
PO BOX 29046  
PHOENIX, AZ 85038  
R.C.R.D. BOOK 4575 PAGE 950

TAX MAP 233, LOT 145  
CITY OF PORTSMOUTH  
1 JUNKINS AVENUE  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 5127, PAGE 2074

TAX MAP 234, LOT 2A  
PUBLIC SERVICE CO. OF NH  
PO BOX 270  
HARTFORD, CT 06141  
R.C.R.D. BOOK 1257, PAGE 324

TAX MAP 234, LOT 3  
PUBLIC SERVICE CO. OF NH  
PO BOX 270  
HARTFORD, CT 06141  
R.C.R.D. BOOK 5548, PAGE 738



# WEST END YARDS

CATE STREET · PORTSMOUTH · NEW HAMPSHIRE

## SITE PLANS

DECEMBER 20, 2021

PREPARED FOR  
**CATE STREET DEVELOPMENT, LLC**  
11 ELKINS STREET, SUITE 420  
BOSTON, MA 02127  
987.490.5278



PREPARED BY  
**FUSS & O'NEILL**  
UPPER SQUARE BUSINESS CENTER  
5 FLETCHER STREET, SUITE 1  
KENNEBUNK, MAINE 04043  
207.363.0669  
www.fando.com

### PROJECT TEAM

DESIGN CONSULTANT  
AUGUST CONSULTING, PLLC  
1 WILLOW LANE  
RYE, NH. 03870  
603.475.3658

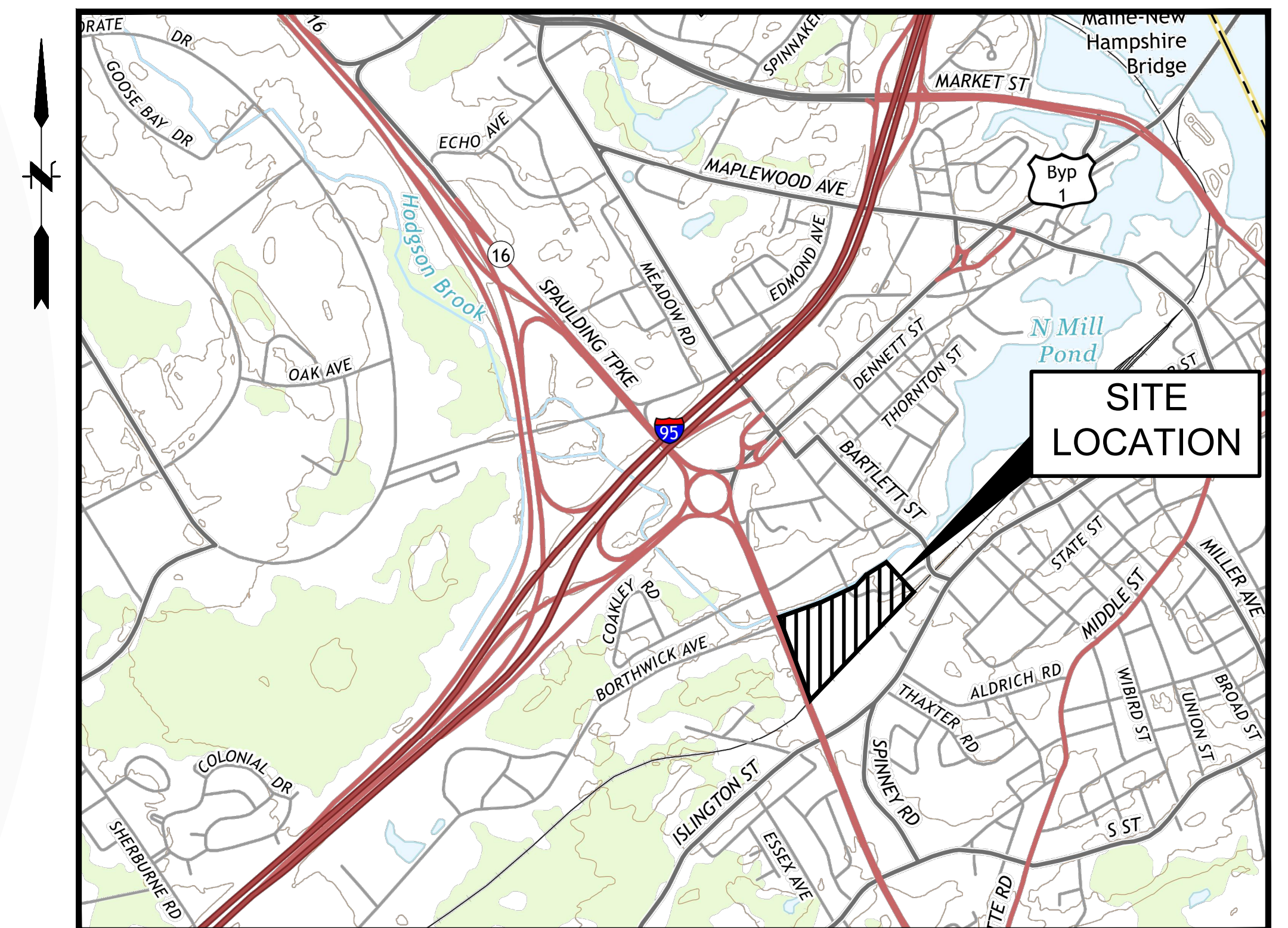
LANDSCAPE ARCHITECTS  
HAWK DESIGNS  
39 PLEASANT STREET  
SAGAMORE, MA 02561  
508.833.8800

NATURAL RESOURCES CONSULTANT  
GOVE ENVIRONMENTAL SERVICES, INC  
8 CONTINENTAL DRIVE  
BUILDING 2, SUITE H  
EXETER, NH. 03833-7507  
603.778.0644

LAND SURVEYOR  
DOUCET SURVEY, INC  
102 KENT PLACE  
NEWMARKET, NH. 03857  
603.659.6560

### SHEET INDEX

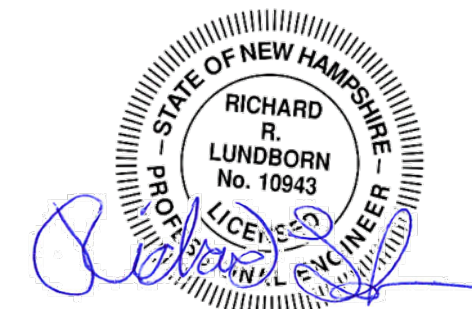
<u>SHEET No.</u>	<u>SHEET TITLE</u>
GI-001	COVER SHEET
CN-001	GENERAL NOTES
CN-002	LEGEND
CS-002	DEVELOPMENT STANDARDS SITE PLAN
CS-003	OPEN SPACE PLAN
CS-100	SITE OVERVIEW KEY PLAN
CS-101 & CS-102	SITE PLANS
CG-101 & CG-102	GRADING, DRAINAGE, & EROSION CONTROL PLANS
CU-101	UTILITIES PLAN
CD-510 - CD-563	DETAILS
LS-100	LANDSCAPING PLAN
LT-100	LIGHTING PLAN
BL-100	BOUNDARY LINE ADJUSTMENT PLAN



**LOCATION MAP**  
SCALE: 1" = 1200'



CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION  
THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. GLD CONSULTING ENG. INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. 72 HOURS PRIOR TO ANY EXCAVATION ON SITE, THE CONTRACTOR SHALL CONTACT DIG-SAFE AT 1-888-DIG-SAFE.



STATE AND FEDERAL PERMITS REQUIRED:		
PERMIT	REQUIRED / NOT REQUIRED	STATUS / PERMIT NO.
NHDES WETLANDS BUREAU STANDARD DREDGE AND FILL	NOT REQUIRED	2019-00523 (PREVIOUS)
NHDES ALTERATION OF TERRAIN	AMENDMENT REQUIRED	AOT-1719
NHDES SEWER MAIN EXTENSION	NOT REQUIRED	D2019-1109
NHDOT ENTRANCE PERMIT	NOT REQUIRED	(INSERT PERMIT NUMBER)(PREVIOUS)
EPA, NPDES CONSTRUCTION GENERAL PERMIT (CGP)	REQUIRED	NHR1000WV

PROJ. No.: 20180317.B10  
DATE: 12/20/2021

GI-001



1. FIELD SURVEY PERFORMED BY P.J.S. & J.C.M. DURING NOVEMBER 2016 USING A TRIMBLE S6 TOTAL STATION, A TRIMBLE R8 SURVEY GRADE GPS UNIT, A TRIMBLE TSC3 DATA COLLECTOR AND A SOKKIA B21 AUTO LEVEL, BY L.P.S. & S.N.F. DURING JULY 2018 AND T.M.M. & J.C.M. IN SEPTEMBER & OCTOBER 2018 USING A TRIMBLE S6 TOTAL STATION WITH A TRIMBLE TSC3 DATA COLLECTOR. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS. ADDITIONAL FIELD SURVEY PERFORMED BY M.C. DURING NOVEMBER 2016 AND OCTOBER 2018 USING A LEICA HDS SCANNER.
2. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY MARC JACOBS IN NOVEMBER OF 2016 AND REVIEWED BY GOVE ENVIRONMENTAL SERVICES, INC. DURING APRIL 2018 IN ACCORDANCE WITH THE US ARMY CORPS OF ENGINEERS WETLAND DELINEATION MANUAL, TECHNICAL REPORT Y-87-1, JANUARY 1987 AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL; NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0 JANUARY 2012 AND FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4, MAY 2017, NEW ENGLAND HYDRIC SOILS TECHNICAL COMMITTEE.
3. FLOOD HAZARD ZONE: "X", PER FIRM MAP #33015C0259E, DATED 5/17/05.
4. VERTICAL DATUM IS BASED ON NGVD29 PER DISK V 28 1942 ELEV. 25.59.
5. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.
6. REFERENCE PLANS:  
REFER TO THE PLAN OF LAND AT THE END OF THIS PACKAGE FOR ALL REFERENCE PLANS AND EASEMENTS THAT THE PARCELS ARE SUBJECT TO.

1. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SHOWN ON THE DRAWINGS TO SCALE OR TO THEIR ACTUAL DIMENSION OR LOCATION. COORDINATE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
2. DO NOT RELY SOLELY ON ELECTRONIC VERSIONS OF DRAWINGS, SPECIFICATIONS, AND DATA FILES THAT ARE PROVIDED BY THE ENGINEER. FIELD VERIFY LOCATION OF PROJECT FEATURES.
3. PERFORM NECESSARY CONSTRUCTION NOTIFICATIONS, APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK AS REQUIRED BY THE CONTRACT DOCUMENTS.
4. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS OF BUILDINGS AND ADJACENT SITE ELEMENTS INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
5. PLEASE READ ALL OTHER NOTES ON THIS PAGE. THEY CONTAIN INFORMATION RELATED TO AND ASSOCIATED WITH THIS PROJECT AND DESIGN.
6. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DRAWINGS, THE OWNER SHALL BE REQUIRED TO CORRECT THE DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE CITY.
7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE SITE AND EXISTING CONDITIONS SURROUNDING IT AND THEREON. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF HIS INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
8. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO THE CITY OF PORTSMOUTH SITE PLAN REGULATIONS, CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS, AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ALL CONSTRUCTION DETAILS SHALL BE IN ACCORDANCE WITH THE CITY OF PORTSMOUTH.
9. THE CONTRACTOR SHALL BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, AND STANDARDS.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY FUSS & O'NEILL DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HERE ON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.

1. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, FIRE HYDRANTS, AND UTILITIES WITHOUT APPROPRIATE PERMITS.
2. WORK IS RESTRICTED TO THE HOURS OF 7AM TO 6PM ON WEEKDAYS AND 7AM TO 6PM ON WEEKENDS.

1. WITHIN LOCAL RIGHTS-OF-WAY, PERFORM THE WORK IN ACCORDANCE WITH LOCAL MUNICIPAL STANDARDS.
2. WITHIN STATE RIGHTS-OF-WAY, PERFORM THE WORK IN ACCORDANCE WITH THE LATEST EDITION OF THE DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS AND ISSUED REVISIONS/SUPPLEMENTS.
3. PROVIDE TRAFFIC SIGNAGE AND PAVEMENT MARKINGS IN CONFORMANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
4. BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. PERFORM CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.

1. INSTALL EROSION CONTROL MEASURES PRIOR TO STARTING ANY WORK ON THE SITE. REFER TO THE EROSION AND SEDIMENT CONTROL DRAWINGS.
2. IMPLEMENT ALL NECESSARY MEASURES REQUIRED TO CONTROL STORMWATER RUNOFF, DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE. PERFORM CORRECTIVE ACTION AS NEEDED FOR EROSION CLEANUP AND REPAIRS TO OFF SITE AREAS, IF ANY, AT NO COST TO OWNER.
3. INSPECT AND MAINTAIN EROSION CONTROL MEASURES PER THE SCHEDULE IN THE EROSION AND SEDIMENT CONTROL DRAWINGS. DISPOSE OF SEDIMENT IN AN UPLAND AREA. DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
4. PERFORM CONSTRUCTION SEQUENCING IN SUCH A MANNER TO CONTROL EROSION AND TO MINIMIZE THE TIME THAT EARTH MATERIALS ARE EXPOSED BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, REMOVE AND DISPOSE OF TEMPORARY EROSION CONTROL MEASURES. CLEAN SEDIMENT AND DEBRIS FROM TEMPORARY MEASURES AND FROM PERMANENT STORM DRAIN AND SANITARY SEWER SYSTEMS.

1. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS AND UNSUITABLE MATERIAL BENEATH AND FOR A DISTANCE OF 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING EXTERIOR COLUMNS, UNLESS OTHERWISE NOTED.

1. PROVIDE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED SITE IMPROVEMENTS. FIELD VERIFY EXISTING PAVEMENT AND GROUND ELEVATIONS AT THE INTERFACE WITH PROPOSED PAVEMENTS AND DRAINAGE STRUCTURES BEFORE START OF CONSTRUCTION.
2. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, FIELD VERIFY PROPOSED UTILITY ROUTES AND IDENTIFY ANY INTERFERENCES OR OBSTRUCTIONS WITH EXISTING UTILITIES OR PUBLIC RIGHTS-OF-WAY.
3. IMMEDIATELY INFORM THE ENGINEER IN WRITING IF EXISTING UTILITY CONDITIONS CONFLICT OR DIFFER FROM THAT INDICATED AND IF THE WORK CANNOT BE COMPLETED AS INDICATED.
4. DIMENSIONS ARE FROM FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS NOTED OTHERWISE.
5. BOUNDS OR MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.

1. NOTIFY UTILITY LOCATOR SERVICE AT LEAST 72 HOURS BEFORE STARTING EXCAVATION.  
  
CALL DIGSAFE: 1-888-DIG-SAFE
2. STOP WORK IN THE VICINITY OF SUSPECTED CONTAMINATED SOIL, GROUNDWATER OR OTHER MEDIA. IMMEDIATELY NOTIFY THE OWNER SO THAT APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN. RESUME WORK IN THE IMMEDIATE VICINITY ONLY UPON DIRECTION BY THE OWNER.
3. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, PERFORM EARTHWORK OPERATIONS TO SUBGRADE ELEVATIONS. SEE DRAWINGS BY OTHERS FOR WORK ABOVE SUBGRADE.

1. AT A MINIMUM, CONSTRUCT ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).

1. PROVIDE 6 INCHES OF TOPSOIL AND SEED TO AREAS DISTURBED DURING CONSTRUCTION AND NOT DESIGNATED TO BE RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) UNLESS OTHERWISE NOTED.
2. REPAIR DAMAGES RESULTING FROM CONSTRUCTION LOADS, AT NO ADDITIONAL COST TO OWNER.
3. RESTORE AREAS DISTURBED BY CONSTRUCTION OPERATIONS TO THEIR ORIGINAL CONDITION OR BETTER, AT NO ADDITIONAL COST TO OWNER.

1. TERMINATE EXISTING UTILITIES IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. COORDINATE UTILITY SERVICE DISCONNECTS WITH UTILITY REPRESENTATIVES.
2. THE TYPE, SIZE AND LOCATION OF DEPICTED UNDERGROUND UTILITIES ARE APPROXIMATE REPRESENTATIONS OF INFORMATION OBTAINED FROM FIELD LOCATIONS OF VISIBLE FEATURES, EXISTING MAPS AND PLANS OF RECORD, UTILITY MAPPING, AND OTHER SOURCES OF INFORMATION OBTAINED BY THE ENGINEER. ASSUME NO GUARANTEE AS TO THE COMPLETENESS, SERVICEABILITY, EXISTENCE, OR ACCURACY OF UNDERGROUND FACILITIES. FIELD VERIFY THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES.
3. PAY ALL FEES AND COSTS ASSOCIATED WITH UTILITY MODIFICATIONS AND CONNECTIONS, REGARDLESS OF THE ENTITY THAT PERFORMS THE WORK.
4. COORDINATE THE WORK AND WORK SCHEDULE WITH UTILITY COMPANIES. PROVIDE ADEQUATE NOTICE TO UTILITIES TO PREVENT DELAYS IN CONSTRUCTION.
5. INTERIOR DIAMETERS OF STORM DRAIN AND SANITARY SEWER STRUCTURES SHALL BE DETERMINED BY THE PRECAST MANUFACTURER, BASED ON THE INDICATED PIPE SYSTEM LAYOUT AND LOCAL MUNICIPAL STANDARDS.  
  
MINIMUM INTERIOR DIAMETERS:  
    O TO 20 FEET DEEP; 4 FEET.  
    20 FEET OR GREATER; 5 FEET.
6. RIM ELEVATIONS FOR MANHOLES, VALVE COVERS, GATE AND PULL BOXES, AND OTHER STRUCTURES ARE APPROXIMATE. SET OR RESET RIM ELEVATIONS AS FOLLOWS:

MINIMUM INTERIOR DIAMETERS:  
0 TO 20 FEET DEEP; 4 FEET.  
20 FEET OR GREATER; 5 FEET.

IN PAVEMENTS AND CONCRETE SURFACES: FLUSH  
IN SURFACES ALONG ACCESSIBLE ROUTES: FLUSH  
IN LANDSCAPE, SEEDED, AND OTHER EARTH SURFACE AREAS:  
1 INCH ABOVE SURROUNDING AREA; TAPER EARTH TO RIM ELEVATION.

7. INSTALL PROPOSED PRIVATE UTILITY SERVICES ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY THE AUTHORITY HAVING JURISDICTION (WATER, SEWER, GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). COORDINATE FINAL DESIGN LOADS AND LOCATIONS WITH OWNER AND ARCHITECT.

**WATER/SEWER:**  
JIM TOW  
GENERAL FOREMAN  
PORTSMOUTH DEPARTMENT OF PUBLIC  
WORKS  
680 PEVERLY HILL ROAD  
PORTSMOUTH, NH 03801  
603.766.1426  
JVTOW@CITYOFPORTSMOUTH.COM

**ELECTRIC:**  
NICKOLAI KOSKO  
FIELD SERVICE REPRESENTATIVE  
EVERSOURCE ENERGY  
74 OLD DOVER ROAD  
ROCHESTER, NH 03867  
603.332.4227 EXT. 5555334  
NICKOLAI.KOSKO@EVERSOURCE.COM

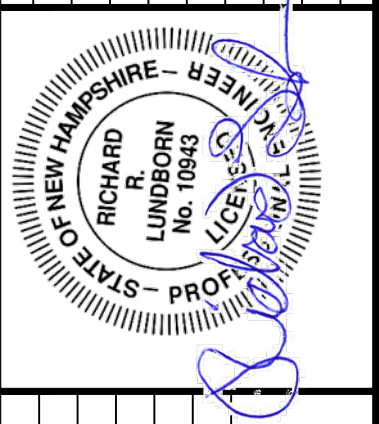
NATURAL GAS:  
DAVID BEAULIEU  
SR. BUSINESS DEVELOPMENT  
REPRESENTATIVE  
UNITIL SERVICE CORP.  
325 WEST ROAD  
PORTSMOUTH, NH 03801  
603.294.5144  
BEAULIEU@UNITIL.COM

TRAFFIC:  
ERIC EBY  
PARKING AND TRANSPORTATION  
ENGINEER  
DEPARTMENT OF PUBLIC WORKS  
680 PEVERLY HILL ROAD  
PORTSMOUTH, NH 03801  
603.766.1415


CABLE:  
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COMCAST  
334 CALEF HIGHWAY  
EPPING, NH 03042  
603.679.5695  
MIKE.COLLINS@COMCAST.COM

**TELEPHONE:**  
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ENGINEER  
CONSOLIDATED COMMUNICATIONS  
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GREENLAND, NH 03840  
603.427.5525  
JOSEPH.CONSIDINE@CONSOLIDATED.COM

**ROAD, MATERIALS AND SIGNAL:**  
DAVE DEFOSSES  
PROJECT MANAGER  
PORTSMOUTH DEPARTMENT OF PUBLIC  
WORKS  
680 PEVERLY HILL ROAD  
PORTSMOUTH, NH 03801  
603.766.1411  
DJDEFOSSES@CITYOFPORTSMOUTH.COM

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SCALE:	
	HORZ.:
	VERT.:
DATUM:	
	HORZ.:
	VERT.:



**FUSS & O'NEILL**  
UPPER SQUARE BUSINESS CENTER  
5 FLETCHER STREET, SUITE 1  
KENNEBUNK, MAINE 04043  
207.363.0669  
[www.fando.com](http://www.fando.com)

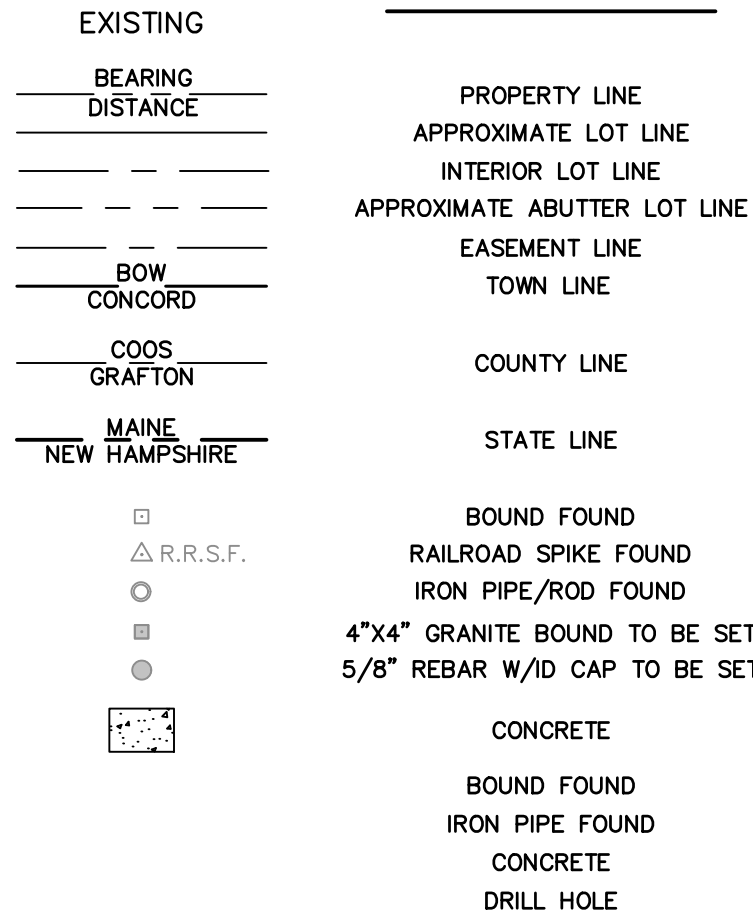
CATE STREET DEVELOPMENT, LLC  
GENERAL NOTES  
ROUTE 1 BYPASS / HODGDON WAY  
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.B10
DATE: 12/20/2021

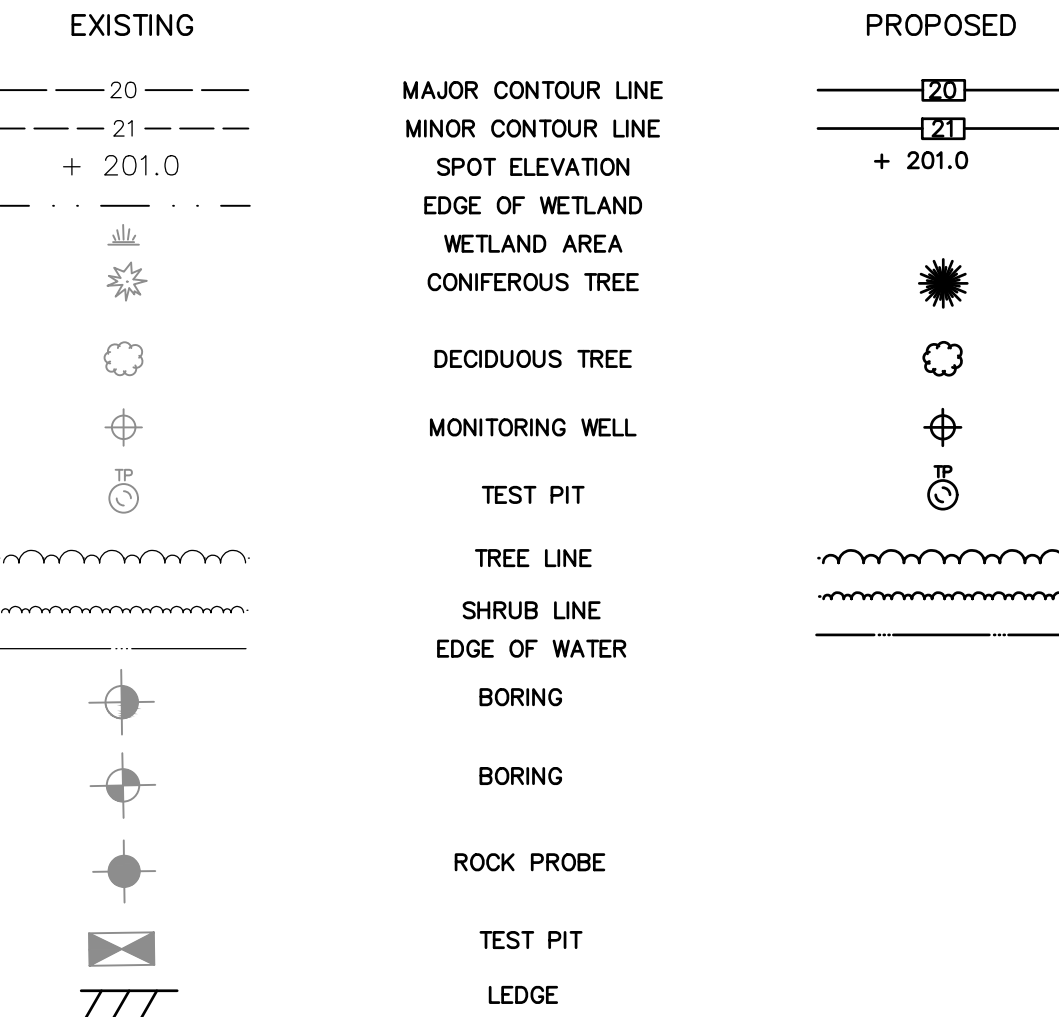
CN-001



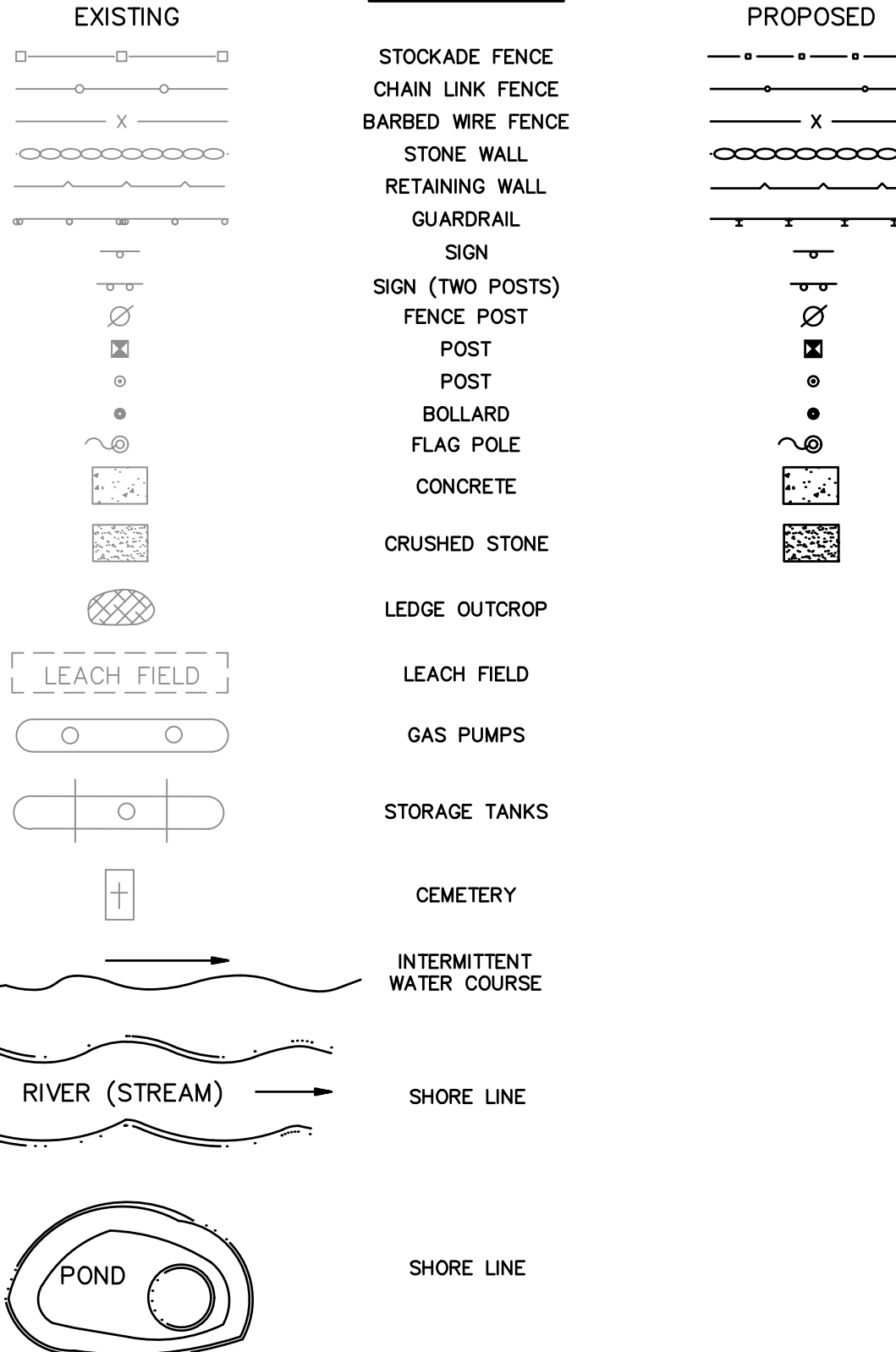
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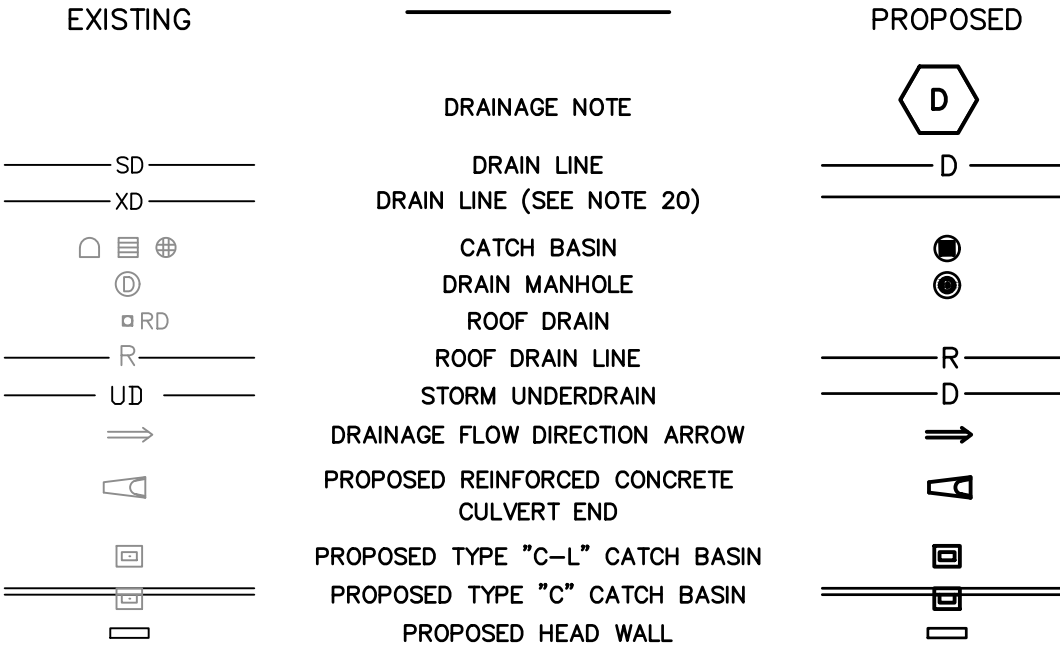
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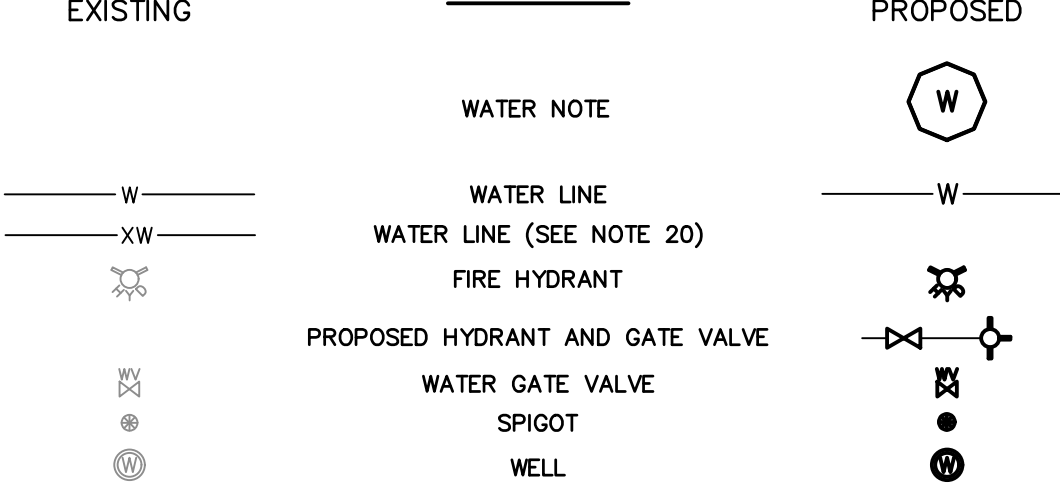
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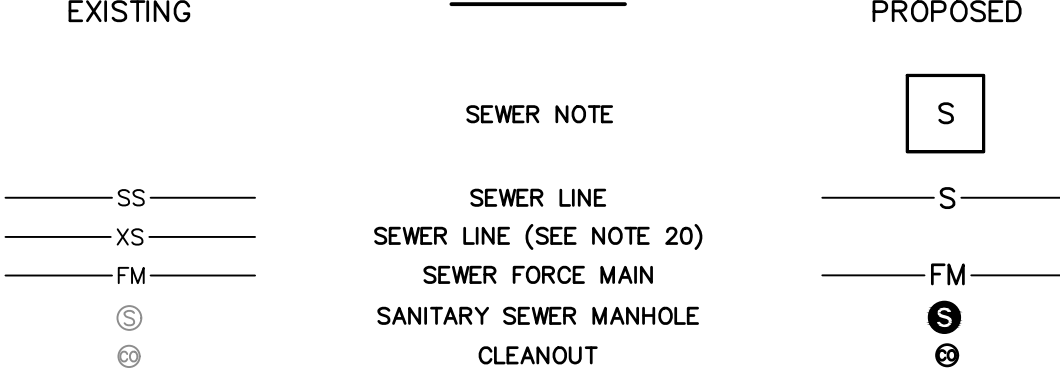
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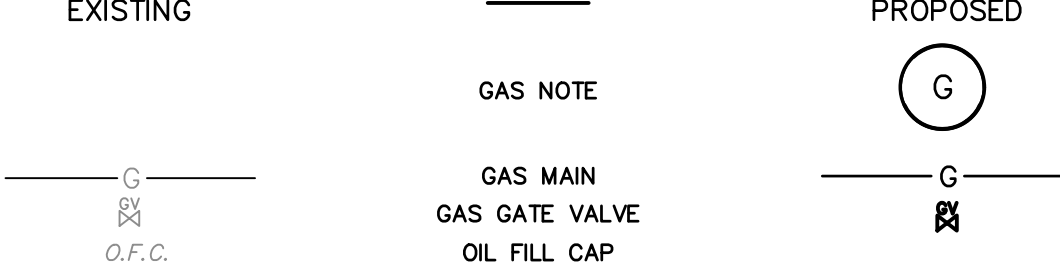
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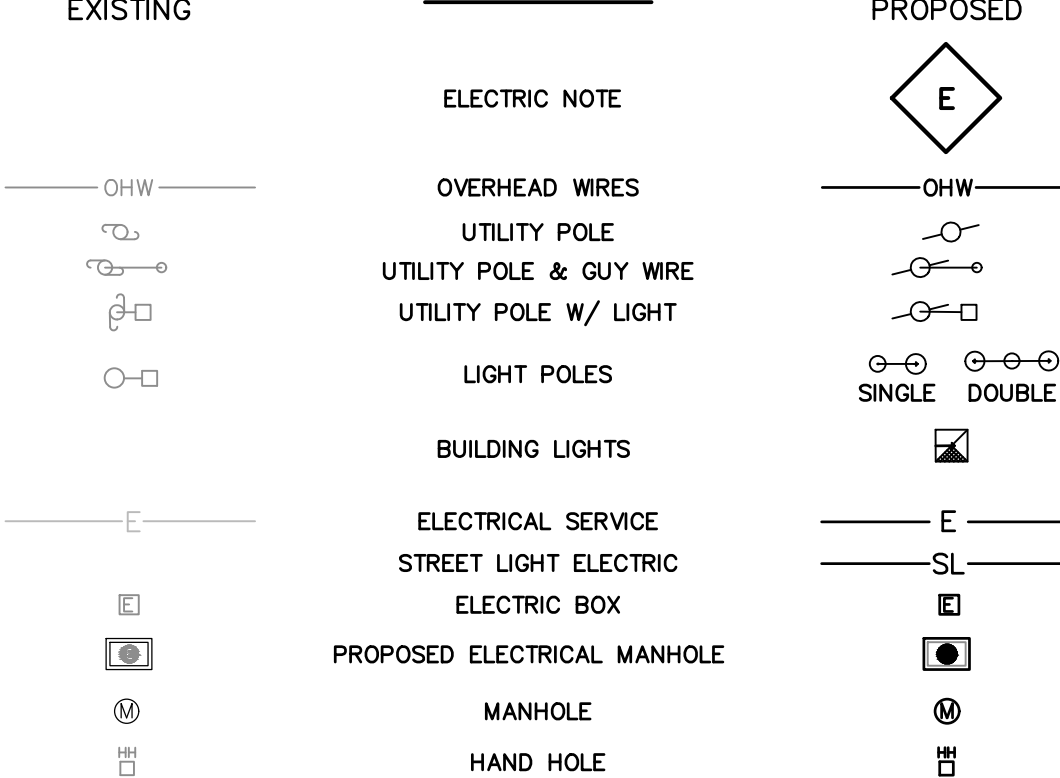
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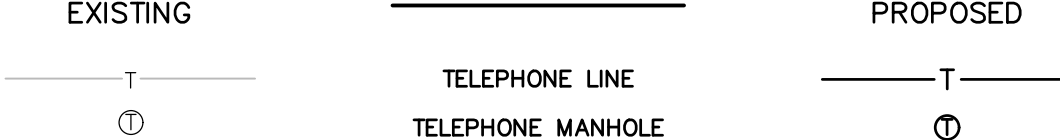
## GAS



## ELECTRIC



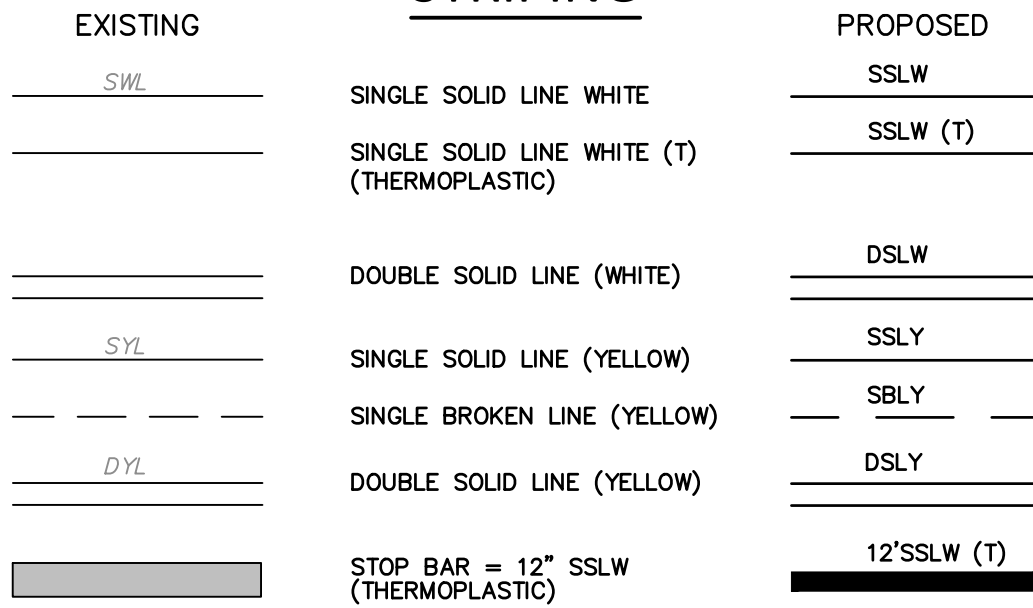
## TELEPHONE



## CATV



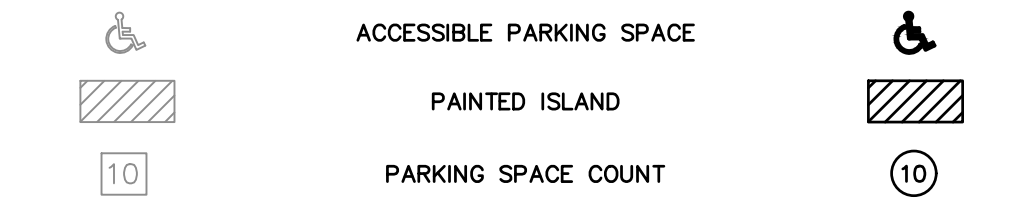
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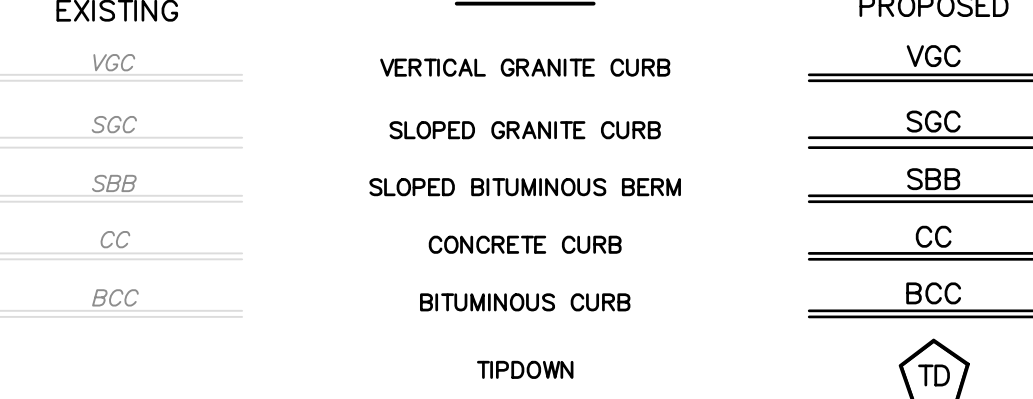
GENERAL PAVEMENT MARKING NOTE:  
 PLACEMENT AND COLOR OF PAVMENT MARKING LINES, SYMBOLS AND  
 WORDS SHALL CONFORM TO THE (MUTCD) SECTION 632 OF NHDOT  
 STANDARD SPECIFICATION BOOK, CONTRACT SUPPLEMENTAL  
 SPECIFICATIONS, THE STATE OF NEW HAMPSHIRE PAVEMENT MARKING  
 STANDARD DETAIL SHEETS, AND STANDARD PLAN SHEETS.

RETROREFLECTIVE PAINT PAYMENT MARKING KEY:  
THE FOLLOWING PAVEMENT MARKINGS SHALL BE RETROREFLECTIVE  
THERMOPLASTIC UNLESS OTHERWISE NOTIFIED BY THE STATE  
STANDARD SYMBOLS AND WORDS

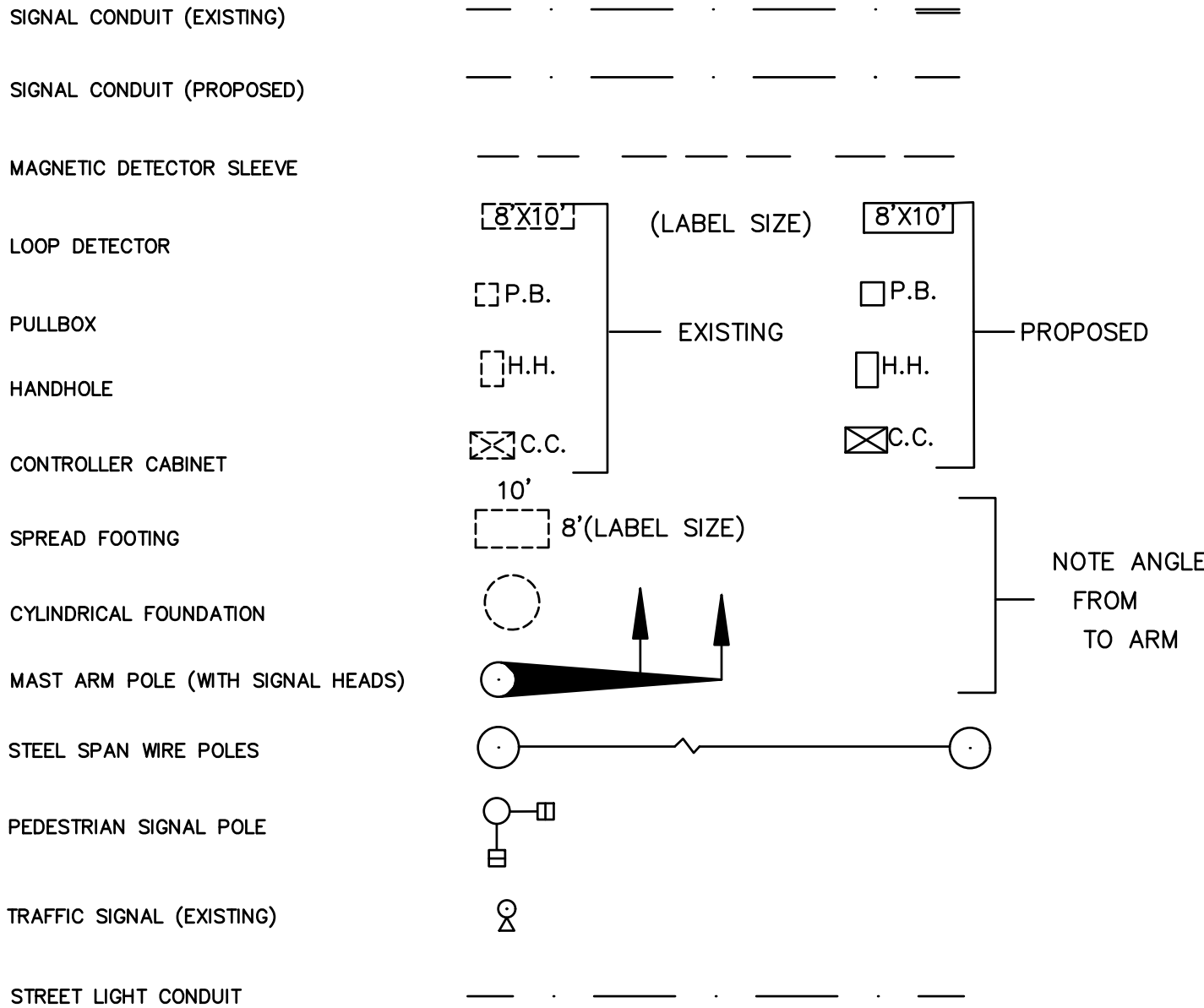
ONLY - WORDS  
A = STOP BARS = 12" SSL (WHITE)(T)



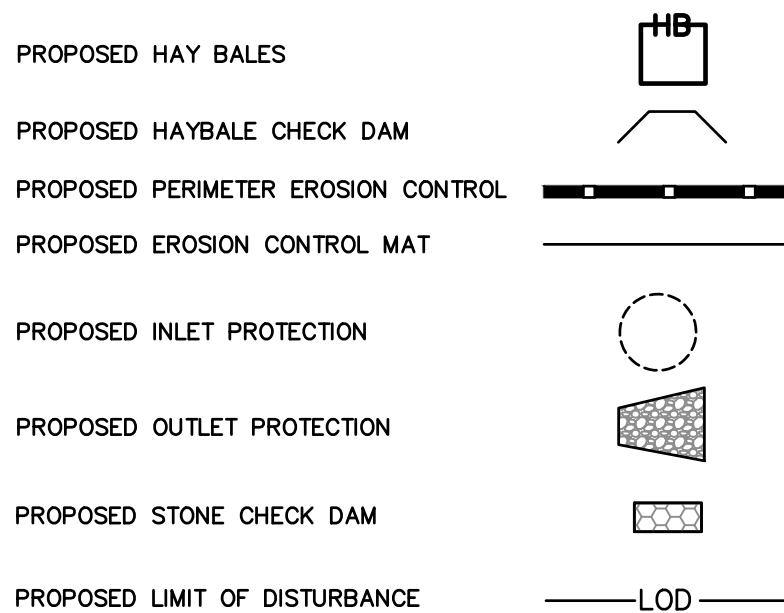
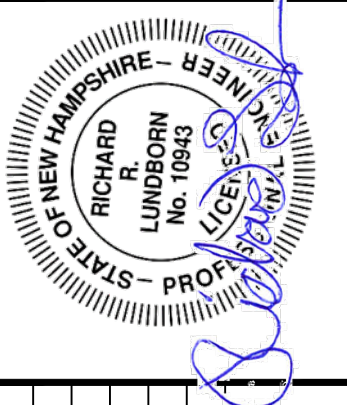
## CURE



## TRAFFIC UTILITIES



## EROSION CONTROL

[illegible]

SCALE:	
HORZ.:	
VERT.:	
DATUM:	
HORZ.:	NAD83
VERT.:	NGVD29



LEGEND

CATE STREET DEVELOPMENT, LLC

ROUTE 1 BYPASS / HODGDON WAY

PORTSMOUTH

NEW HAMPSHIRE

PROJ. No.: 20180317.B10
DATE: 12/20/2021

CN-002



NH LLS-2  
PURSUANT TO RSA 676:18 III:  
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 SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. RANDOM TRAVERSE SURVEY BY TOTAL STATION, WITH A PRECISION GREATER THAN 1:15,000.  
\_\_\_\_\_. L.L.S. #  
\_\_\_\_\_. 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.

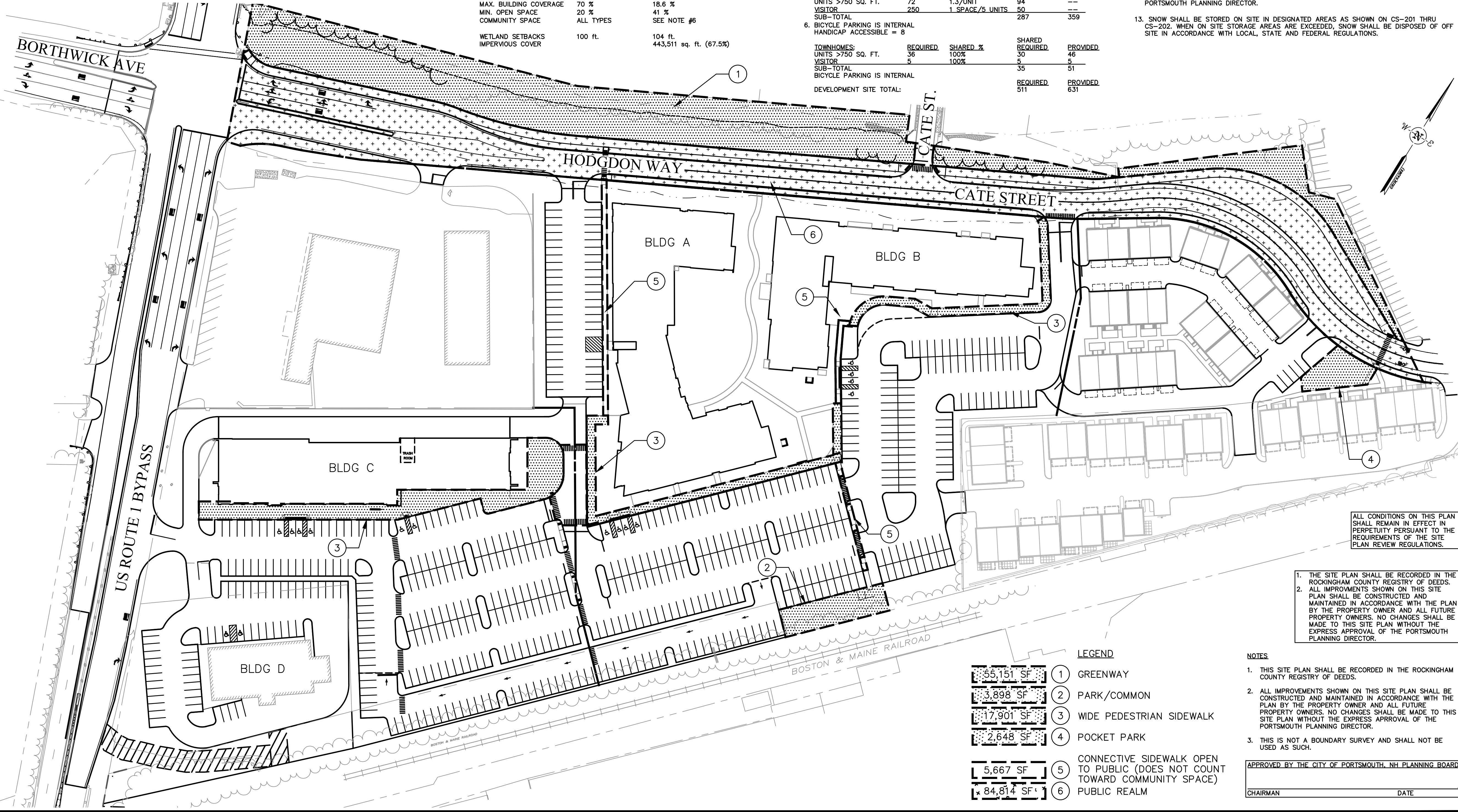
THE SOLE PURPOSE OF THIS PLAN IS TO DEPICT THE LOCATION OF EXISTING AND PROPOSED IMPROVEMENTS ON THE SITE. RECORDING OF THIS PLAN WAS A REQUIREMENT OF THE PORTSMOUTH PLANNING BOARD AS PART OF THEIR SITE PLAN APPROVAL DATED \_\_\_\_\_.  
\_\_\_\_\_. L.L.S. #  
\_\_\_\_\_. DATE  
THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEEDS REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.  
\_\_\_\_\_. FOR DOUCET SURVEY  
\_\_\_\_\_. DATE

SITE NOTES:

1. PARCEL AREA:  
TAX MAP 165, LOT 2-269,864 SF (6.20 AC.)  
TAX MAP 72, LOT 1-138,143 SF (3.17 AC.)  
TAX MAP 172, LOT 2-52,820 SF (1.21 AC.)  
TAX MAP 163, LOT 34-56,421 SF (1.29 AC.)  
PROPOSED RIGHT OF WAY-139,755 SF (3.21 AC.) (RCRD D-42151)  
TOTAL DEVELOPMENT SITE-657,003 SF (15.08 AC.)  
2. ZONES: G-1-GATEWAY NEIGHBORHOOD MIXED USE  
3. DIMENSIONAL REQUIREMENTS, DEVELOPMENT SITE STANDARDS:  
MIN. DEVELOPMENT AREA 20,000 sq.ft.  
MIN. SITE WIDTH 100 ft.  
MIN. LOT DEPTH 100 ft.  
MIN. PERIMETER BUFFER 75 ft. FROM RES. DIST., MIXED RES., OR CD4-L1 DIST.  
MAX. DEV. BLOCK 800 ft. LENGTH, 2,200 LINEAR ft.  
MIN. FRONTAGE 50 ft.  
MAX. BUILDING HEIGHT 25-FT STEP BACK 45 ft.  
MAX. BUILDING COVERAGE 70 %  
MIN. OPEN SPACE 20 %  
COMMUNITY SPACE ALL TYPES  
WETLAND SETBACKS 100 ft.  
IMPERVIOUS COVER 104 ft.  
443,511 sq. ft. (67.5%)  
OWNER OF RECORD:  
CATE STREET DEVELOPMENT, LLC  
11 ELKINS STREET SUITE 420  
BOSTON, MA 02127  
RCRD BOOK 5929, PAGE 109  
CATE STREET, LLC  
105 BARTLETT STREET  
PORTSMOUTH, NH 03801  
RCRD BOOK 6175, PAGE 2815  
CITY OF PORTSMOUTH  
RCRD BOOK 6122, PAGE 2121  
PROPOSED:  
657,003 SF  
VARIES > 100 ft.  
VARIES > 100 ft.  
N/A  
610 ft.  
227 ft.  
45 ft.  
18.6 %  
41 %  
SEE NOTE #6  
104 ft.  
443,511 sq. ft. (67.5%)

4. PARKING CALCULATIONS PER 10.1112.30:					
COMMERCIAL BUILDING	AREA	REQUIREMENT	REQUIRED	PROVIDED	
C-EATING & DRINKING	13,600SF	1/100 SF	136	---	
C-RETAIL	5,800 SF	1/300 SF	20	---	
C-OFFICE	15,900 SF	1/350 SF	46	---	
D-RETAIL	7,832 SF	1/300 SF	27	---	
SUB-TOTAL			229	221	
RESIDENTIAL A AND B:	UNITS	REQUIREMENT	REQUIRED	PROVIDED	
UNITS <500 SQ. FT.	71	0.5 SPACE/UNIT	36	---	
UNITS 500-750 SQ. FT.	107	1 SPACE/UNIT	107	---	
UNITS >750 SQ. FT.	72	1.3/UNIT	94	---	
VISITOR	250	1 SPACE/5 UNITS	50	---	
SUB-TOTAL			287	359	
TOWNHOMES:	UNITS	REQUIREMENT	REQUIRED	PROVIDED	
UNITS >750 SQ. FT.	23	1.3/UNIT	30	46	
VISITOR	23	1/5 UNITS	5	5	
SUB-TOTAL			35	51	
(EACH TOWNHOME HAS A 2 CAR GARAGE)					
5. SHARED PARKING CALCULATIONS: COLUMN C WEEKDAY EVENINGS PER 10.1112.60:					
COMMERCIAL BUILDING	REQUIRED	SHARED %	SHARED	PROVIDED	
EATING AND DRINKING	136	100%	136	---	
RETAIL	47	90%	43	---	
OFFICE	46	20%	10	---	
SUB-TOTAL			189	221	
BICYCLE PARKING			19	25	
HANDICAP ACCESSIBLE = 8					
RESIDENTIAL A AND B:	REQUIRED	SHARED %	SHARED	REQUIRED	PROVIDED
UNITS <500 SQ. FT.	71	0.5 SPACE/UNIT	36	---	
UNITS 500-750 SQ. FT.	107	1 SPACE/UNIT	107	---	
UNITS >750 SQ. FT.	72	1.3/UNIT	94	---	
VISITOR	250	1 SPACE/5 UNITS	50	---	
SUB-TOTAL			287	359	
6. BICYCLE PARKING IS INTERNAL HANDICAP ACCESSIBLE = 8					
TOWNHOMES:	REQUIRED	SHARED %	SHARED	REQUIRED	PROVIDED
UNITS >750 SQ. FT.	36	100%	30	46	
VISITOR	5	100%	5	5	
SUB-TOTAL			35	51	
BICYCLE PARKING IS INTERNAL					
DEVELOPMENT SITE TOTAL:			REQUIRED 511	PROVIDED 631	

7. COMMUNITY SPACE CALCULATION:  
TOTAL DEVELOPMENT SITE  
GREENWAY  
PARK/COMMON  
POCKET PARK  
WIDE PEDESTRIAN SIDEWALK  
TOTAL  
PUBLIC REALM IMPROVEMENTS ARE BEING PROVIDED AS A PART OF THIS PROJECT. A CONNECTOR ROAD CONNECTING ROUTE 1 BYPASS TO BARTLETT STREET AND THE WEST END OF PORTSMOUTH, AS WELL AS A BICYCLE/MULTI-USE TRAIL ALONG HODGDON BROOK ARE BOTH BEING PROVIDED. PUBLIC REALM SPACE CANNOT COUNT TOWARD COMMUNITY SPACE. AS SUCH THE AREA OF THE LAND OCCUPIED BY THE MULTI-USE TRAIL TO THE SIDEWALK ON THE SOUTH SIDE OF THE CONNECTOR ROAD IS EXCLUDED FROM THE CALCULATION IN NOTE #6 COMMUNITY SPACE CALCULATIONS.  
PUBLIC REALM SPACE:  
TOTAL DEVELOPMENT SITE  
PUBLIC REALM  
REQUIRED  
OPTIONAL  
PROVIDED  
657,003 SF  
84,814 SF (12.9%)  
65,700 SF (10%)  
79,598 SF (12.12%)  
8. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE, THE PROPERTY OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE CITY.  
10. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REGULATIONS.  
11. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.  
12. ALL IMPROVEMENTS SHOWN ON THE SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.  
13. SNOW SHALL BE STORED ON SITE IN DESIGNATED AREAS AS SHOWN ON CS-201 THRU CS-202. WHEN ON SITE STORAGE AREAS ARE EXCEEDED, SNOW SHALL BE DISPOSED OF OFF SITE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.



SCALE: HORIZ.: 1"=60' VERT.: 1"=60' DATUM: HORIZ.: NAD83 VERT.: NAVD88 60 30 0 60 GRAPHIC SCALE

PROJ. No.: 20180317.B10 DATE: 12/20/2021

CS-002

CATE STREET DEVELOPMENT, LLC  
DEVELOPMENT STANDARDS  
SITE PLAN  
ROUTE 1 BYPASS / HODGDON WAY  
PORTSMOUTH  
NEW HAMPSHIRE

FUSS & O'NEILL  
UPPER SQUARE BUSINESS CENTER  
5 FLETCHER STREET, SUITE 1  
KENNEBUNK, MAINE 04043  
207.363.6669  
www.fandco.com

RICHARD R. LUNDGREN  
LICENSED PROFESSIONAL LAND SURVEYOR  
STATE OF NEW HAMPSHIRE - 8351

11/1/2021  
DATE  
1. No.

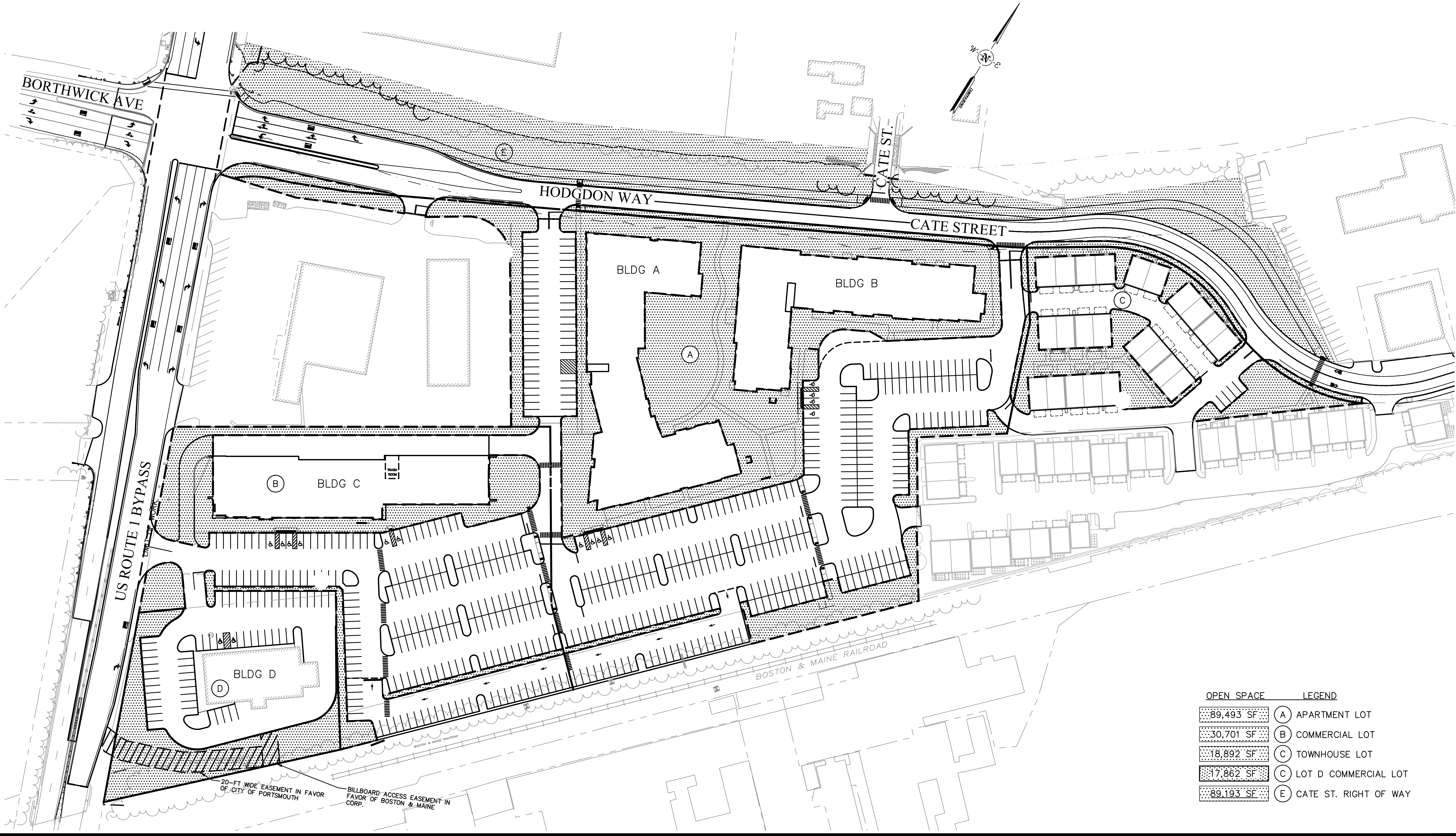
CHAIRMAN  
DATE

APPROVED BY THE CITY OF PORTSMOUTH, NH PLANNING BOARD

DESIGNER REVIEWER



OPEN SPACE CALCULATION:			
	LOT AREA	REQUIRED	PROVIDED
TOTAL DEVELOPMENT SITE			657,003 SF
APARTMENT LOT	269,857 SF	--	89,493 SF (33.2% LOT/13.6% TOTAL)
COMMERCIAL LOT	138,143 SF	--	30,711 SF (22.2% LOT/4.67% TOTAL)
TOWNHOUSE LOT	56,154 SF	--	18,892 SF (33.6% LOT/2.88% TOTAL)
LOT D COMMERCIAL LOT	52,820 SF	--	17,862 SF (33.8% LOT/2.72% TOTAL)
CATE ST ROW	--	--	89,193 SF (13.6% OF TOTAL)
TOTAL	131,400 SF (20%)	246,151 SF (38.6%)	



OPEN SPACE	LEGEND
89,493 SF	(A) APARTMENT LOT
30,701 SF	(B) COMMERCIAL LOT
18,892 SF	(C) TOWNHOUSE LOT
17,862 SF	(C) LOT D COMMERCIAL LOT
89,193 SF	(E) CATE ST. RIGHT OF WAY

CATE STREET DEVELOPMENT, LLC

OPEN SPACE SITE PLAN

ROUTE 1 BYPASS / HODGDON WAY

PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.B10

DATE: 12/20/2021

CS-003

SCALE:

HORZ.: 1"=60'

VERT.: 1"=60'

DATUM:

HORZ.: NAD83

VERT.: NAVD88

60 30 0 60

GRAPHIC SCALE

PROF. SEAL

STATE OF NEW HAMPSHIRE - HSW

RICHARD R. LUNDGREN

NO. 10543

REGISTERED PROFESSIONAL

11/1/2021

DATE

1.

NO.

TAC WORKSHOP SUBMITTAL

DESCRIPTION

DESIGNER REVIEWER










SEE SHEET CS-102


**CATE STREET DEVELOPMENT, LLC**

**SITE PLAN**

**ROUTE 1 BYPASS / HODGDON WAY**


**PORTSMOUTH      NEW HAMPSHIRE**

 **FUSS & O'NEILL**  
UPPER SQUARE BUSINESS CENTER  
5 FLETCHER STREET, SUITE 1  
KENNEBUNK, MAINE 04043  
207.363.0669  
[www.fando.com](http://www.fando.com)

SCALE:	
HOR.:	1" = 20'
VERT.:	
DATUM:	
HOR.:	NAD83
VERT.:	NGVD29
	
GRAPHIC SCALE	

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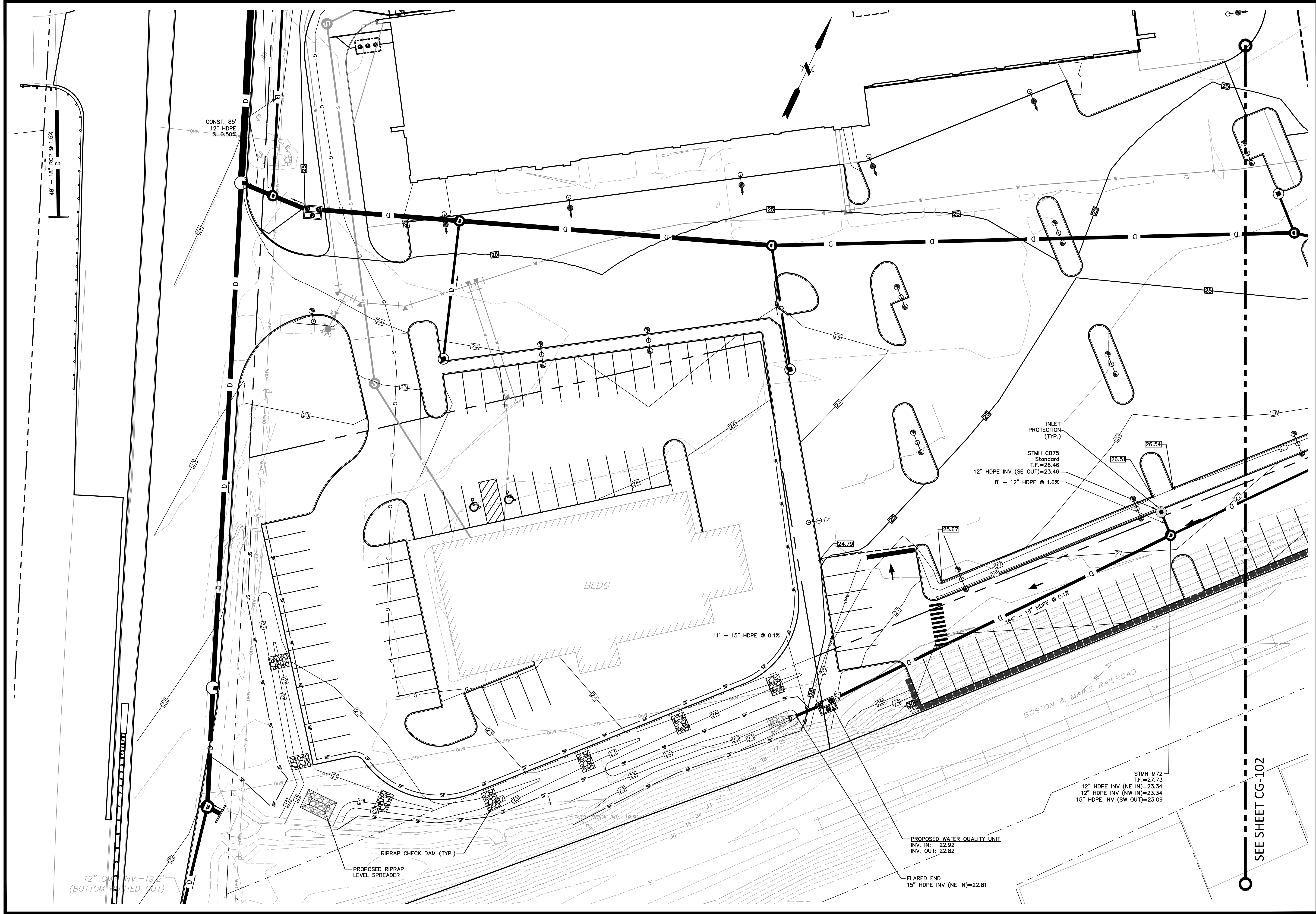


CS-102

UPPER SQUARE BUSINESS CENTER  
5 FLETCHER STREET, SUITE 1  
KENNEBUNK, MAINE 04043  
207.363.0669  
[www.fando.com](http://www.fando.com)

	<b>Z</b>
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BLDG

BOSTON & MAINE RAILROAD

BLDG

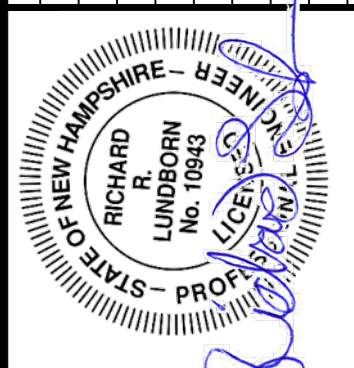
CATE STREET DEVELOPMENT, LLC  
GRADING, DRAINAGE &  
EROSION CONTROL PLAN  
ROUTE 1 BYPASS / HODGDON WAY  
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.: 20180317.B10  
DATE: 12/20/2021

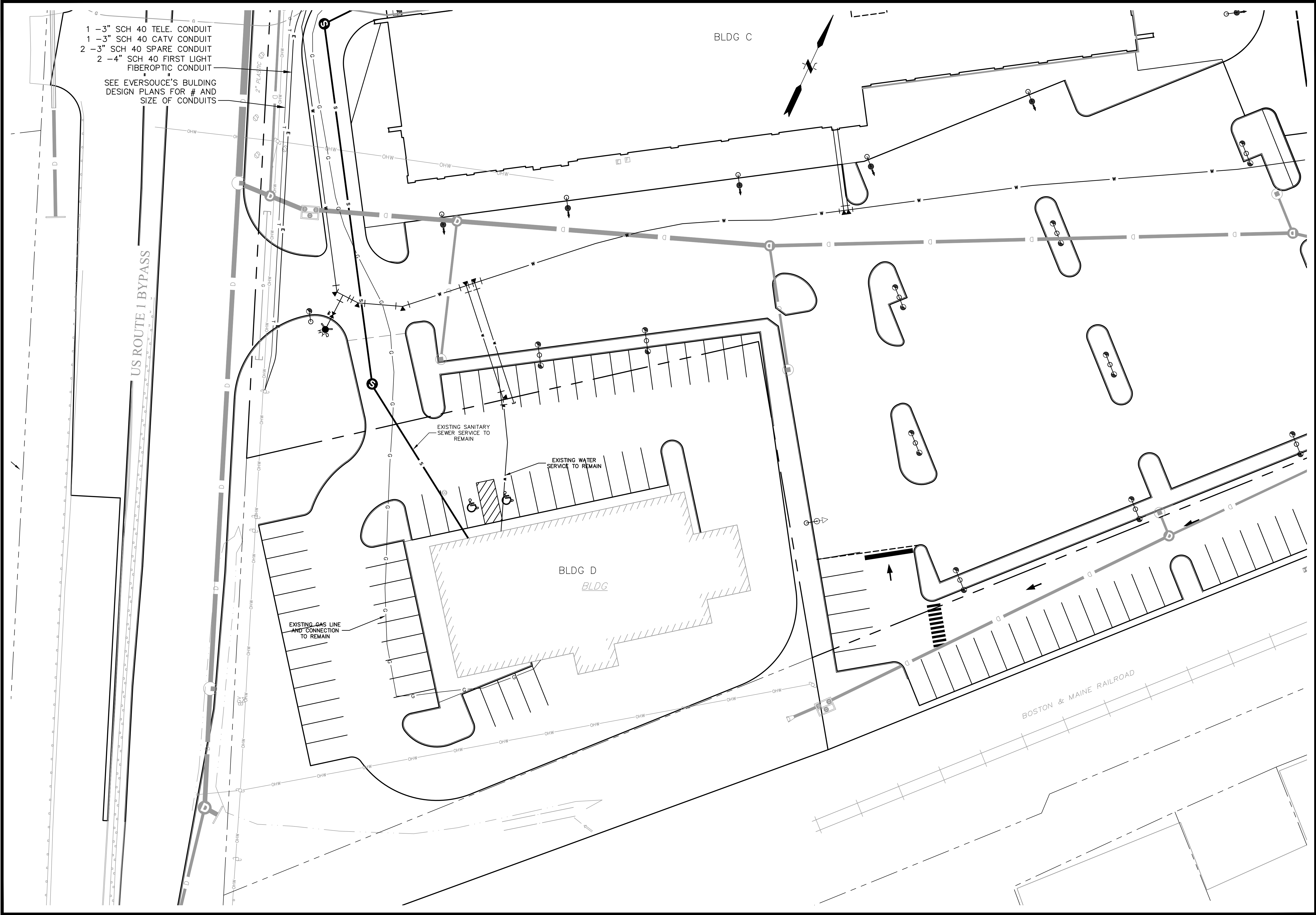
CG-101

**FUSS & O'NEILL**  
UPPER SQUARE BUSINESS CENTER  
5 FLETCHER STREET, SUITE 1  
KENNEBUNK, MAINE 04043  
207.363.0669  
[www.fando.com](http://www.fando.com)

SCALE:	
HORIZ.: 1" = 20'	
VERT.: AS NOTED	
DATUM:	
HORIZ.: NAD83	
VERT.: NGVD29	
20 10 0 20	
GRAPHIC SCALE	

[illegible]







- 
- Diagram illustrating the cross-section of a trench installation, showing the following components and dimensions:
- MIN. COVER TO RIGID PAVEMENT, H**: Minimum cover to rigid pavement.
  - MIN. COVER TO FLEXIBLE PAVEMENT**: Minimum cover to flexible pavement.
  - FINAL BACKFILL**: The top layer of backfill.
  - INITIAL BACKFILL**: The layer immediately surrounding the pipe.
  - HAUNCH**: The layer below the initial backfill.
  - BEDDING**: The layer below the haunch.
  - SUITABLE FOUNDATION**: The base layer.
  - SPRINGLINE**: The top edge of the pipe.
  - 4" FOR 12"~24" PIPE**: Dimension for the bedding layer for 12" to 24" pipe.
  - 6" FOR 30"~60" PIPE**: Dimension for the bedding layer for 30" to 60" pipe.
  - MIN. TRENCH WIDTH (SEE TABLE)**: Minimum trench width.

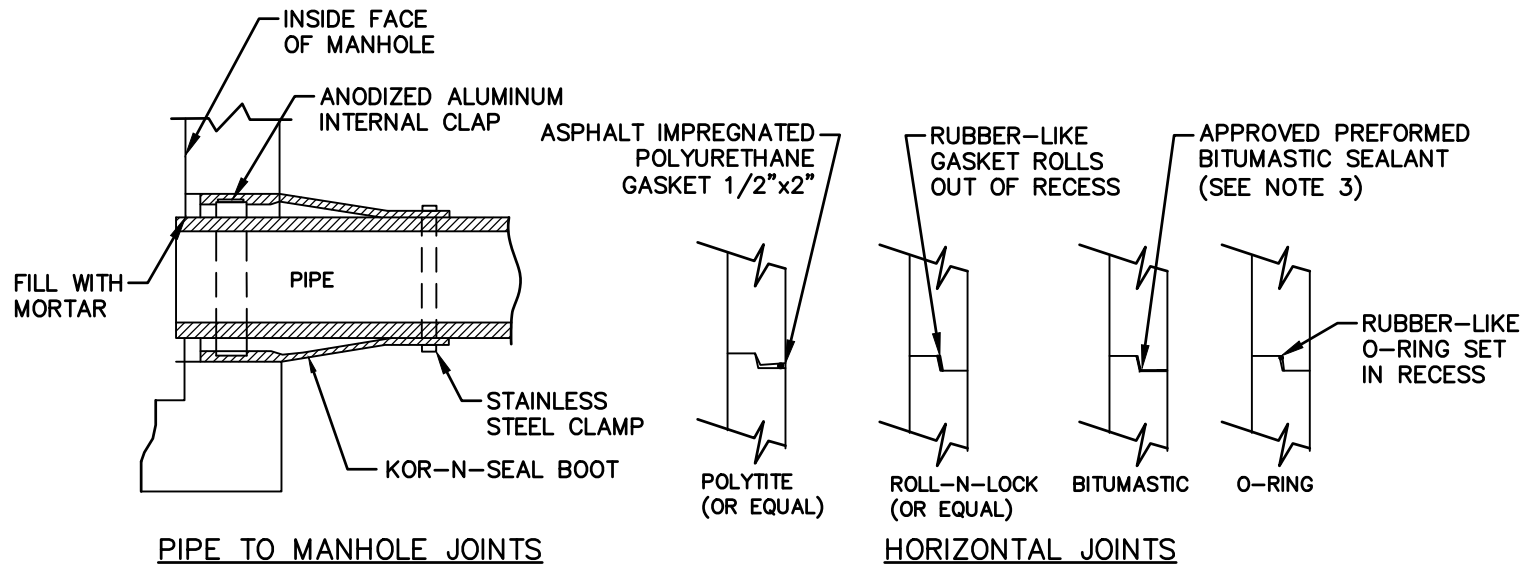
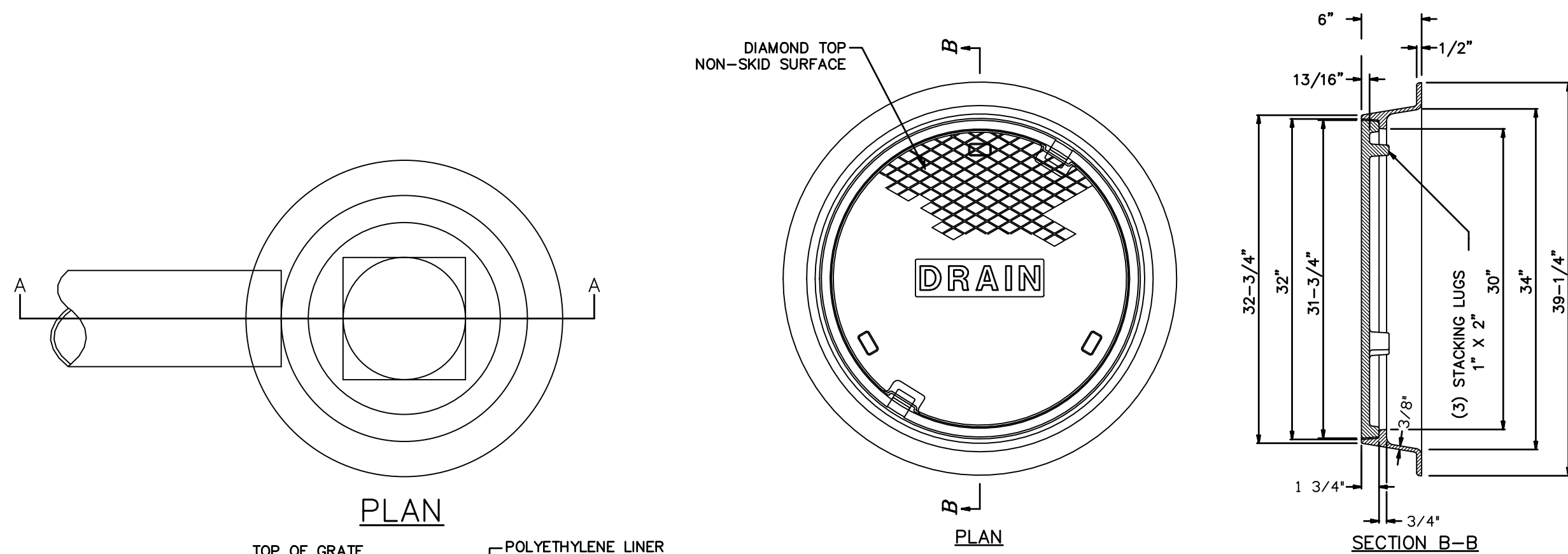
PIPE DIAM.	MIN. TRENCH WIDTH
12" (300mm)	30" (762mm)
15" (375mm)	34" (864mm)
18" (450mm)	39" (991mm)
24" (600mm)	48" (1219mm)
30" (750mm)	56" (1422mm)
36" (900mm)	64" (1626mm)
42" (1050mm)	72" (1829mm)
48" (1200mm)	80" (2032mm)
60" (1500mm)	96" (2438mm)

	SURFACE LIVE LOAD CONDITION	
PIPE DIAM.	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD)*
12"-48" (300mm-1200mm)	12" (305mm)	12" (305mm)
60" (1500mm)	24" (610mm)	60" (1524mm)

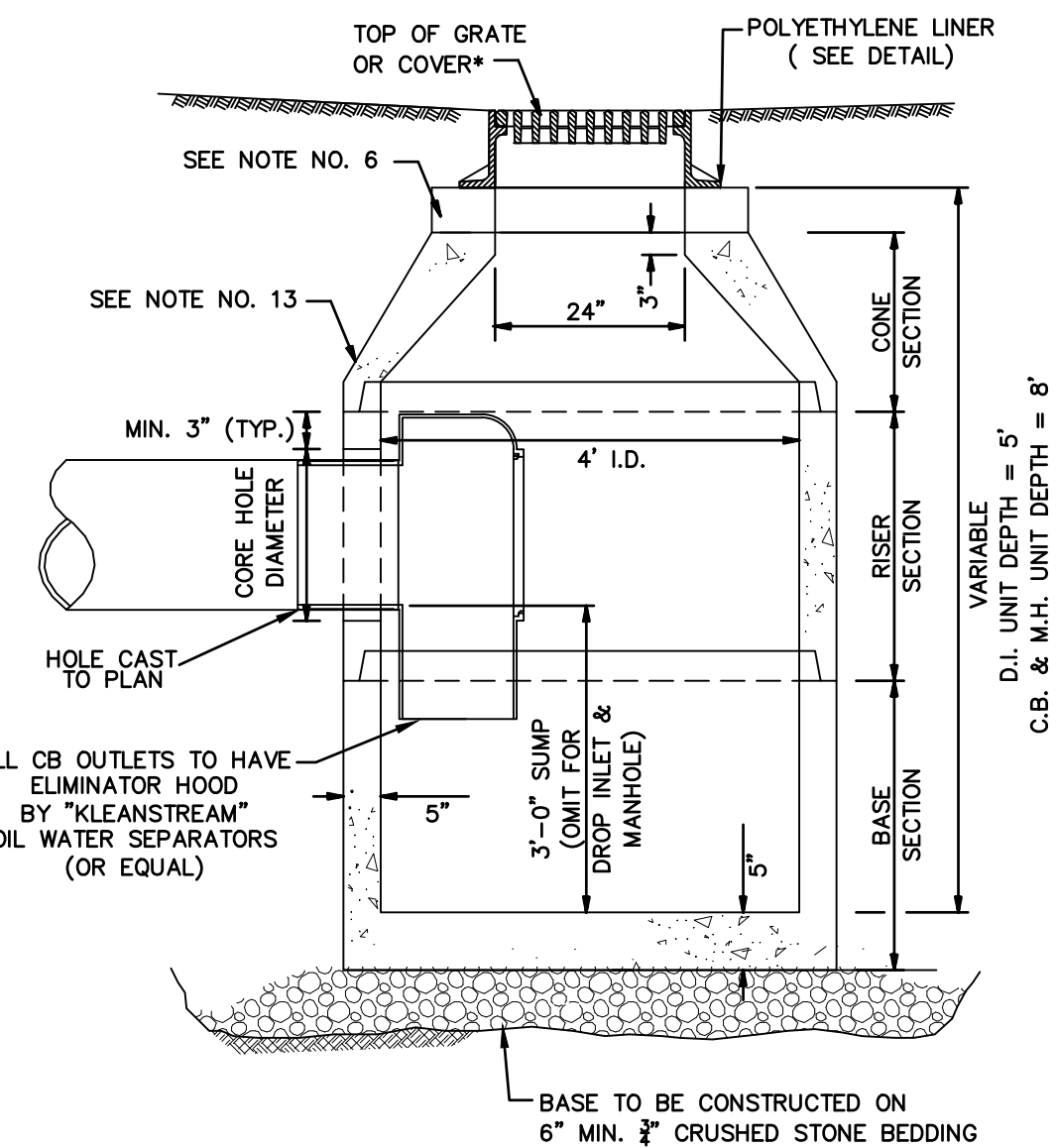
	CLASS I		CLASS II			CLASS III		CLASS IV
PIPE DIA.	COMPACTED	95%	90%	85%	95%	90%	95%	
12" (305mm)	41" (12.5m)	28" (8.5m)	26" (6.4m)	18" (4.9m)	20" (6.4m)	16" (4.9m)	16" (4.9m)	
15" (375mm)	42" (12.8m)	28" (8.6m)	24" (6.4m)	16" (4.9m)	21" (6.4m)	16" (4.9m)	16" (4.9m)	
18" (450mm)	44" (13.4m)	30" (9.1m)	26" (6.4m)	18" (4.9m)	22" (6.7m)	17" (5.2m)	14" (4.9m)	
24" (607mm)	47" (13.7m)	32" (9.5m)	28" (7.3m)	19" (4.9m)	23" (7.3m)	19" (4.9m)	14" (4.3m)	
30" (750mm)	48" (13.9m)	35" (11.9m)	32" (8.2m)	20" (5.8m)	24" (5.8m)	18" (4.8m)	14" (4.3m)	
36" (900mm)	48" (13.9m)	35" (11.9m)	32" (8.2m)	20" (5.8m)	24" (5.8m)	18" (4.8m)	14" (4.3m)	
42" (1050mm)	48" (13.9m)	35" (11.9m)	32" (8.2m)	20" (5.8m)	24" (5.8m)	18" (4.8m)	14" (4.3m)	
48" (1200mm)	48" (13.9m)	35" (11.9m)	32" (8.2m)	20" (5.8m)	24" (5.8m)	18" (4.8m)	14" (4.3m)	
60" (1500mm)	48" (13.9m)	35" (11.9m)	32" (8.2m)	20" (5.8m)	24" (5.8m)	18" (4.8m)	14" (4.3m)	

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D3221, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION WITH THE EXCEPTION THAT THE INITIAL BACKFILL MAY EXTEND TO THE CROWN OF THE PIPE. SOIL CLASSIFICATIONS ARE PER THE LATEST VERSION OF ASTM D2486, "STANDARD TEST METHOD FOR CLASSIFYING SOILS" AS DEFINED IN PREVIOUS VERSIONS OF ASTM D3221 ARE NOT APPROPRIATE BACKFILL MATERIALS.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND PLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II, III OR IV. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED, UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) for 12"-24" (300mm-600mm) DIAMETER PIPE; 6" (150mm) FOR 30"-60" (750mm-1500mm) DIAMETER PIPE. THE MIDDLE 1/3 BENEATH THE PIPE INVERT SHALL BE LOOSELY PLACED.
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II, III OR IV IN THE PIPE ZONE EXTENDING TO THE CROWN OF THE PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D3221, LATEST EDITION. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICATION FILL HEIGHTS LISTED. PLEASE NOTE, CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT; USE ONLY WITH THE APPROVAL OF A SOIL EXPERT.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" (300mm) FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS; CLASS I OR II MATERIAL COMPACTED TO 90% SPD AND CLASS III COMPACTED TO 95% SPD IS REQUIRED. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" (300mm) UP TO 48" (1200mm) DIAMETER PIPE AND 24" (600mm) OF COVER FOR 60" (1500mm) DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.
7. FOR ADDITIONAL INFORMATION SEE TECHNICAL NOTE 2.04.

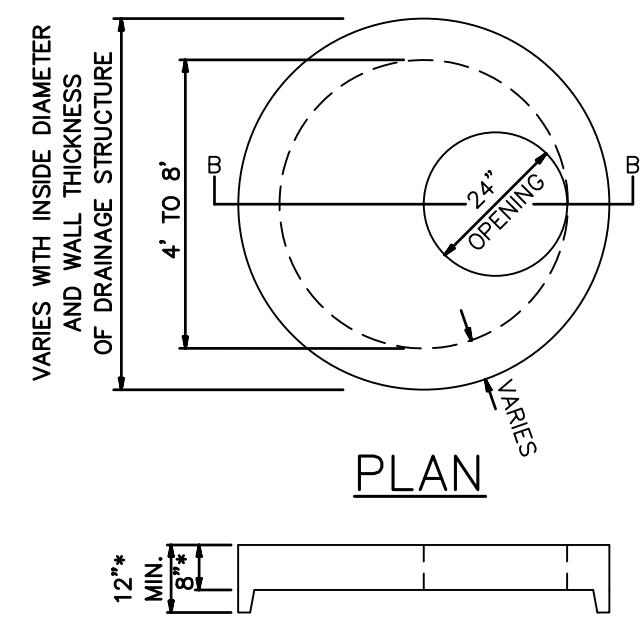
NOT TO SCALE



NOT TO SCALE

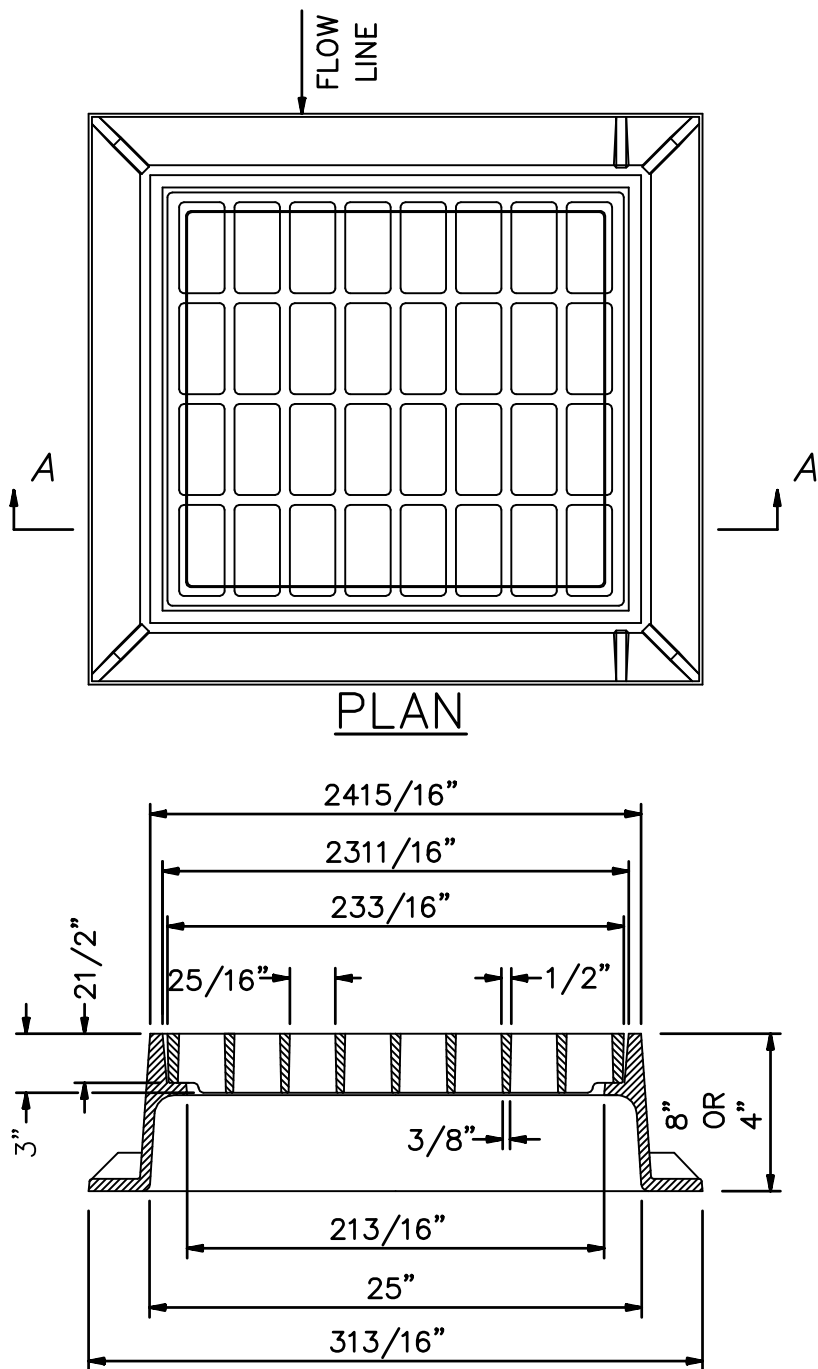


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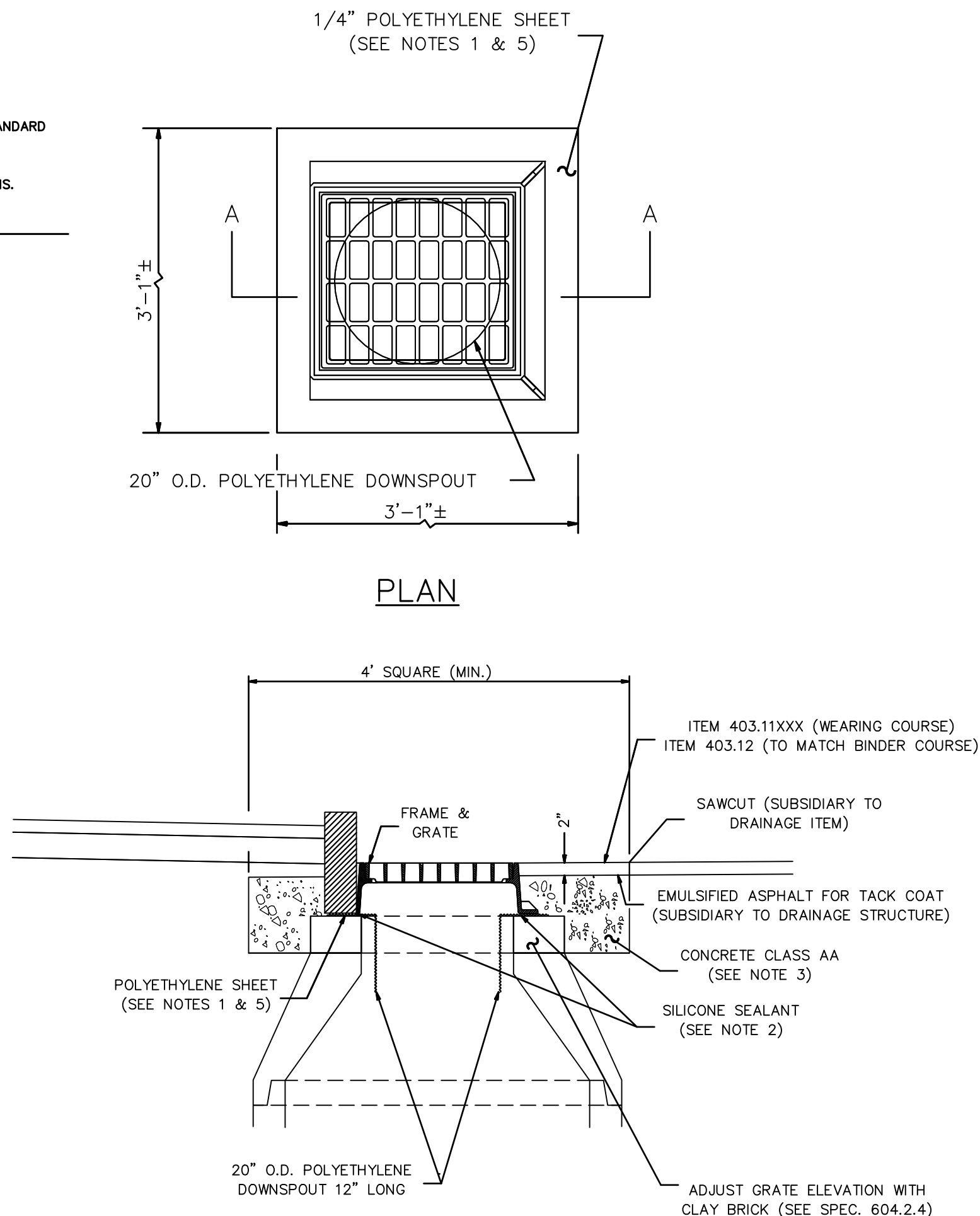


SECTION B-B

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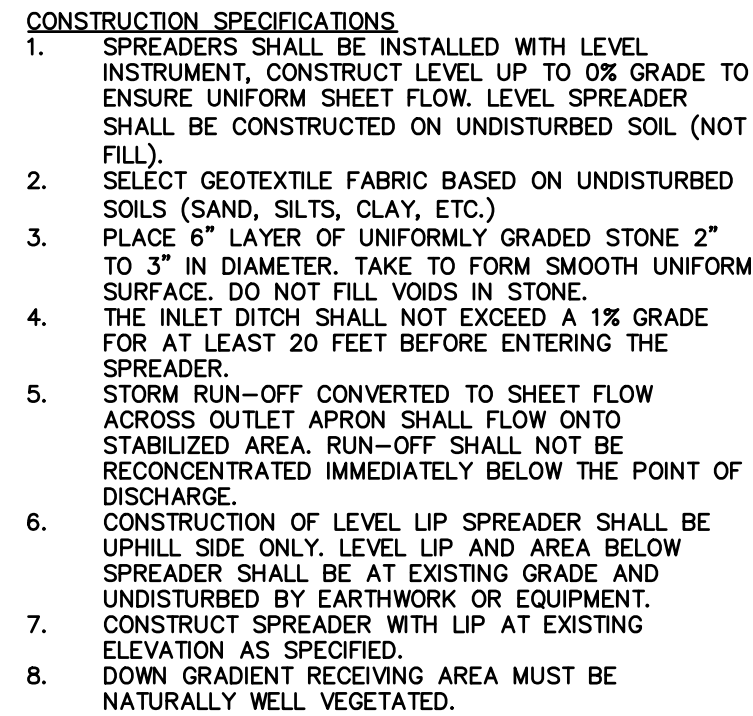


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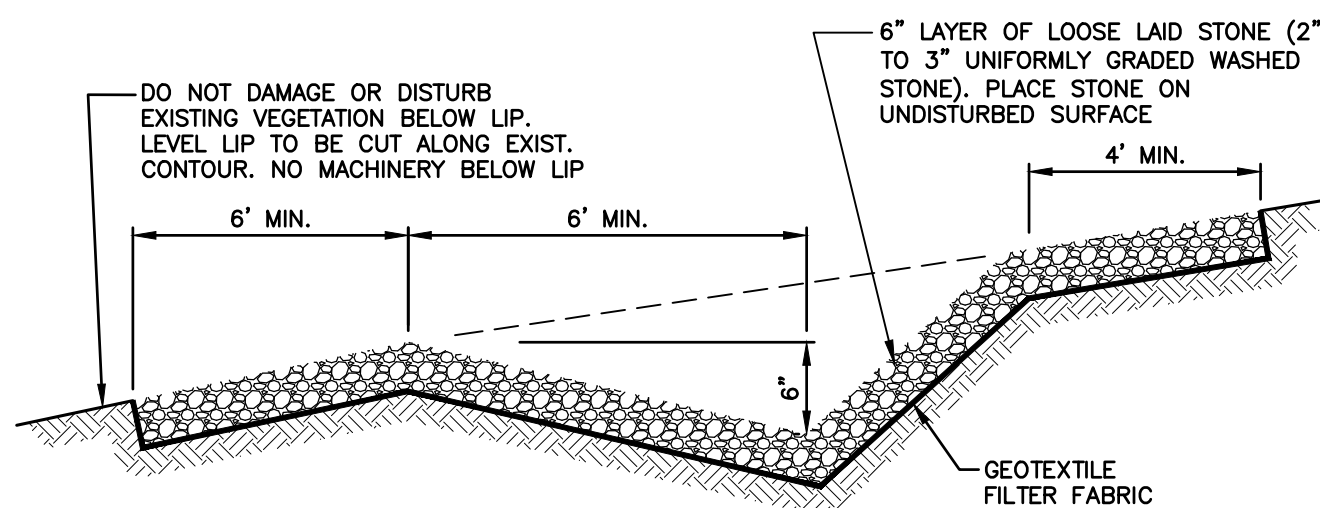
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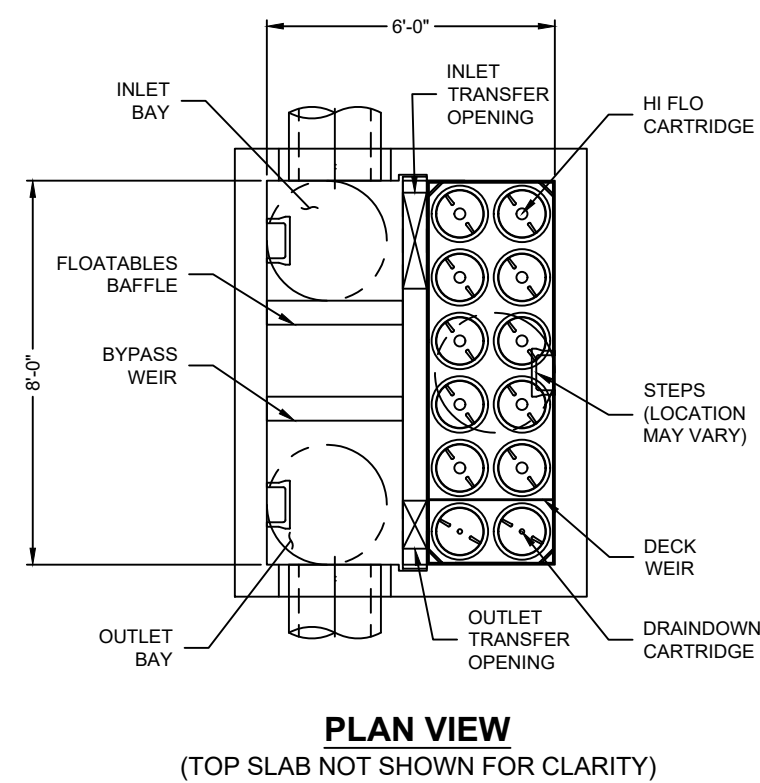
MAINTENANCE NOTES:

1. 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.
2. ANY DETRIMENTAL ACCUMULATION OF SEDIMENTS SHOULD BE REMOVED.
3. IF RILLING HAS TAKEN PLACE ON THE LIP, THEN THE DAMAGE SHOULD BE REPAIRED AND RE-VEGETATED.
4. THE VEGETATION SHOULD BE MOWED OCCASIONALLY TO CONTROL WINDS AND ENCROACHMENT OF WOODS. VEGETATION CLIPPINGS SHOULD BE REMOVED AND DISPOSED OF OUTSIDE THE SPREADER AND AWAY FROM THE OUTLET AREA.

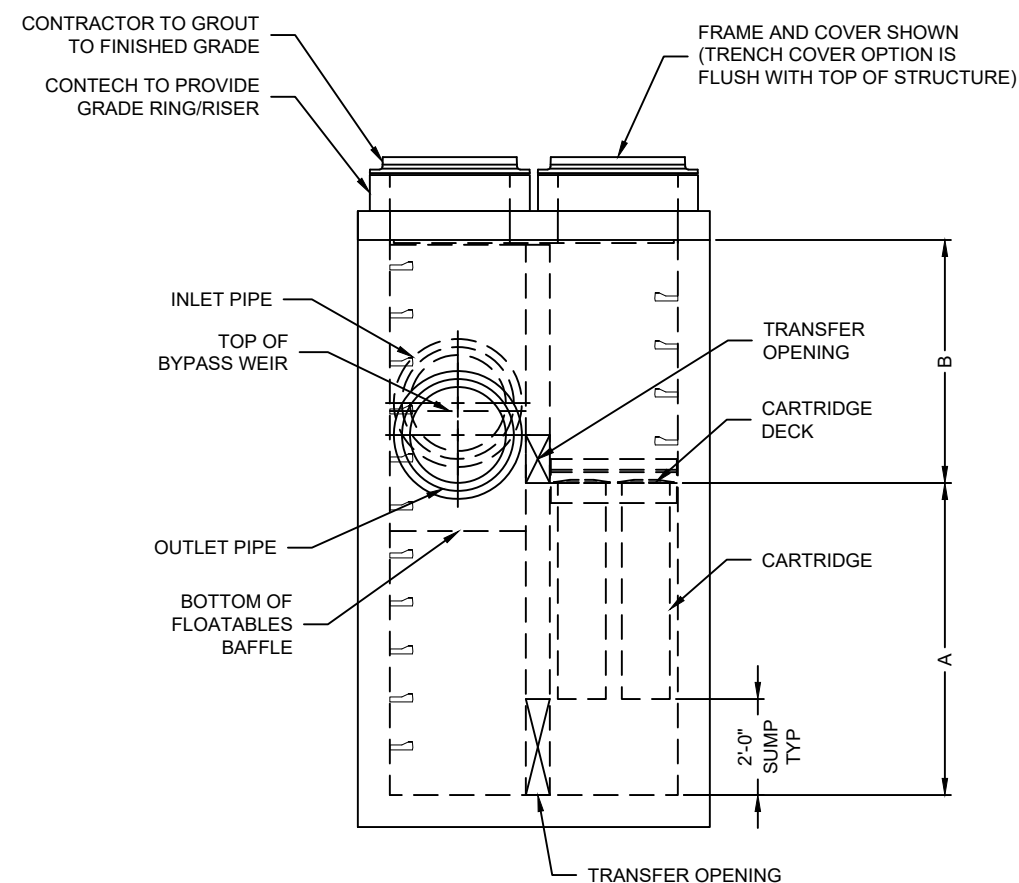


CROSS SECTION

STONE LINED LEVEL SPREADER  
NOT TO SCALE



**PLAN VIEW**  
(NOT SHOWN FOR CLARITY)



**ELEVATION VIEW**



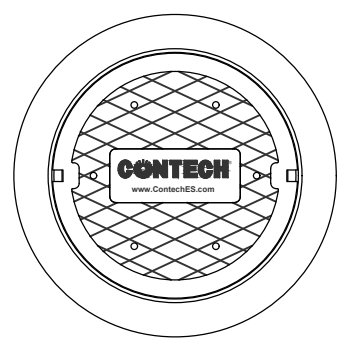
WATER QUALITY UNIT #3 NOTES:

1. WATER QUALITY UNIT #3 SHALL BE A CONTECH JELLY FISH FILTER OR APPROVED EQUAL.
2. WATER QUALITY UNIT #3 CAN HAVE NO MORE THAN A 0.25-FT DROP BETWEEN INVERT IN AND INVERT OUT.

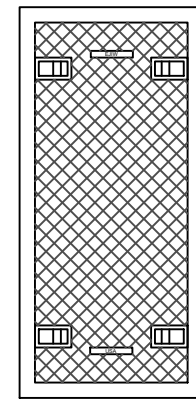
### WATER QUALITY UNIT 3 (WQU3) DETAIL

NOT TO SCALE

JELLYFISH DESIGN NOTES				
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD				
CARTRIDGE SELECTION				
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	3'-3"	
FLOW RATE H <sub>2</sub> O / (BRANDOWN CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
PEAK TREATMENT (CFS)			0.98	0.54
DECK TO INFLUO / (MAIN) (IN)	5.00	4.00	4.00	4.00



**FRAME AND COVER**  
(DIAMETER VARIES)  
N.T.S.



**24"**  
**TRENCH COVER**  
(LENGTH VARIES)  
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS						
STRUCTURE ID						WQW#3
WATER QUALITY FLOW RATE (cfs)						0.361
PEAK FLOW RATE (cfs)						2.16
RETURN PERIOD OF PEAK FLOW (yrs)						10
# OF CARTRIDGES REQUIRED (HF / DD)						8/4
CARTRIDGE LENGTH						
PIPE DATA:	12	EE	MATL	DIA	SLOPE %	HGL
INLET #1	22.92	HDPE	15"	*	*	*
INLET #2	*	*	*	*	*	*
OUTLET	22.82	HDPE	15"	*	*	*
SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.						
RIM ELEVATION						27±
ANTI-FLOTATION BALLAST				WIDTH	HEIGHT	
				8"	6"	
NOTES/SPECIAL REQUIREMENTS:						
* PER ENGINEER OF RECORD						

GENERAL NOTES:

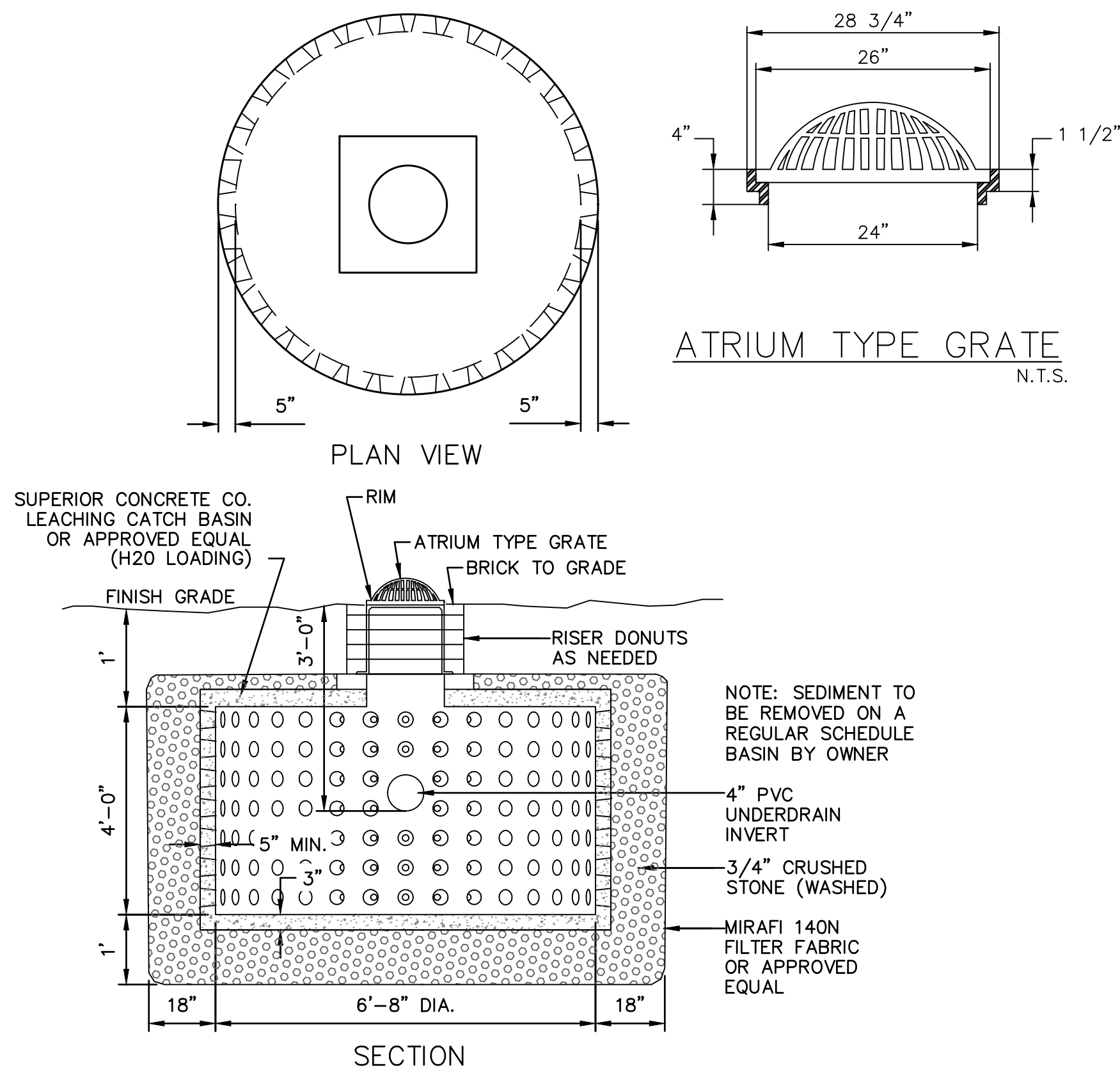
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE: [www.contech.com](http://www.contech.com)
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. ALL INSTALLATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 10" AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO
5. ALL CASTINGS SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, AASHTO M247, ASTM C918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR NEARLY EQUAL SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID OR, AS DIRECTED BY THE ENGINEER OF RECORD.

## INSTALLATION NOTES

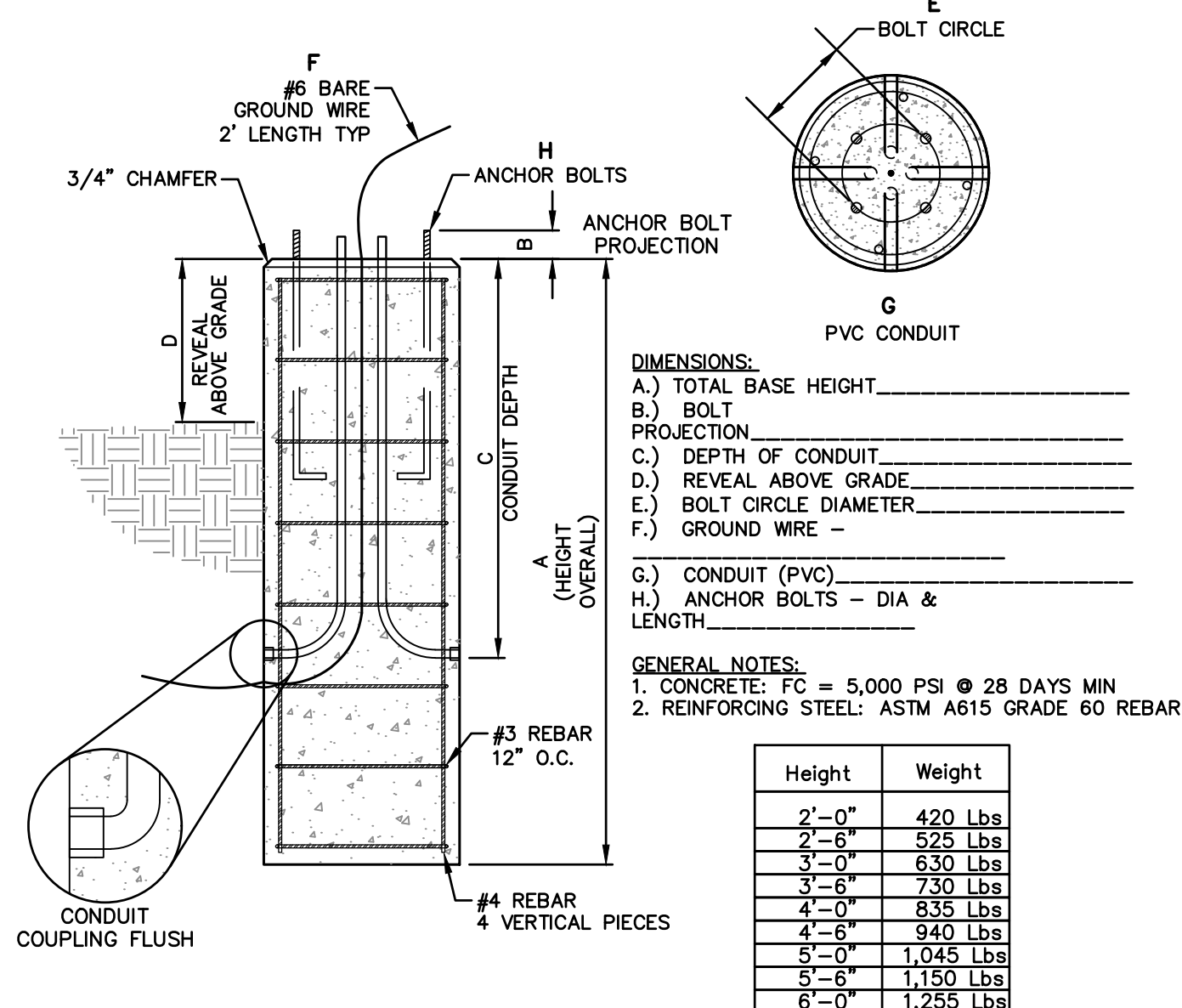
- A. ANY SUB-BASE, BACKFILL, DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
- C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH ANTI-FLOTATION AGENT) OR FLEXIBLE FOOT.
- D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLY-FISH IS CLEAN AND FREE OF DEBRIS. CONTRACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.



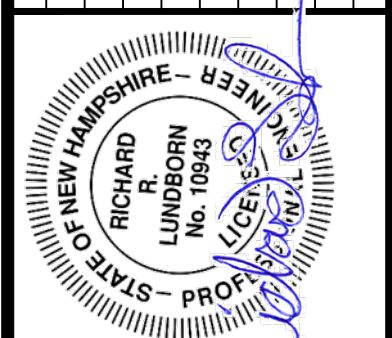
JELLYFISH JFPD0806  
STANDARD DETAIL  
PEAK DIVERSION CONFIGURATION




LEACHING CATCH BASIN  
N.T.S.



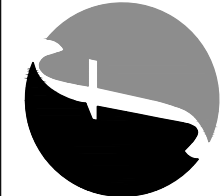
16" Ø LIGHT POLE BASE  
NOT TO SCALE



SCALE:	HORZ.: NTS
	VERT.:
STATION:	HORZ.:
	VERT.:
	
GRAPHIC SCALE	

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## DRAINAGE DETAILS

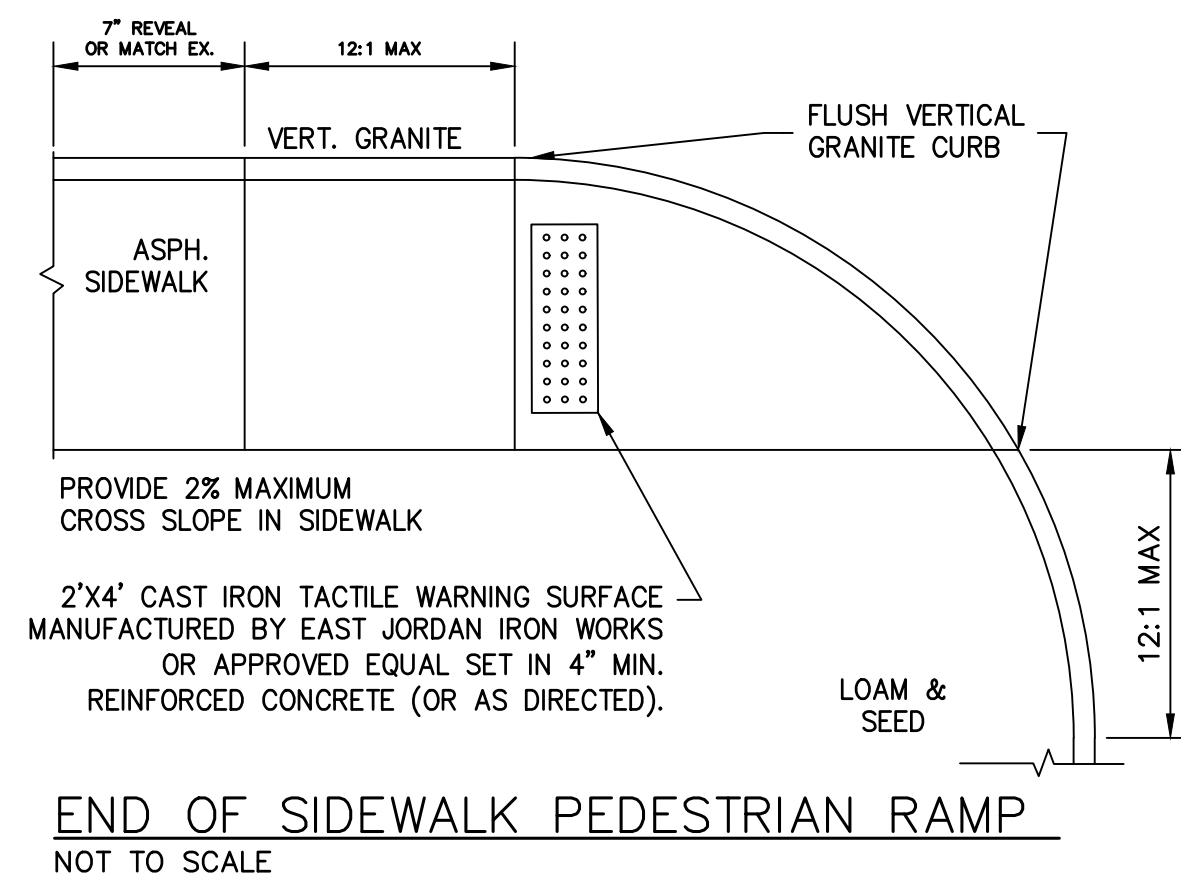
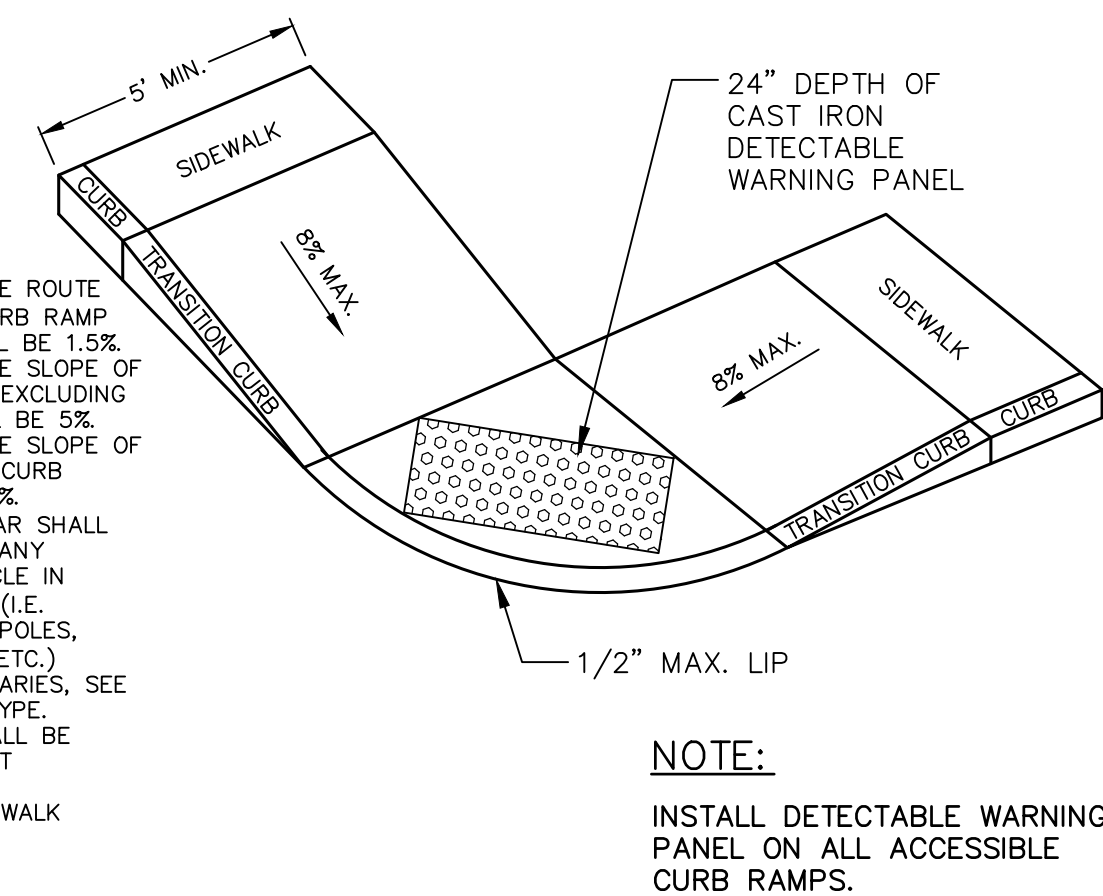
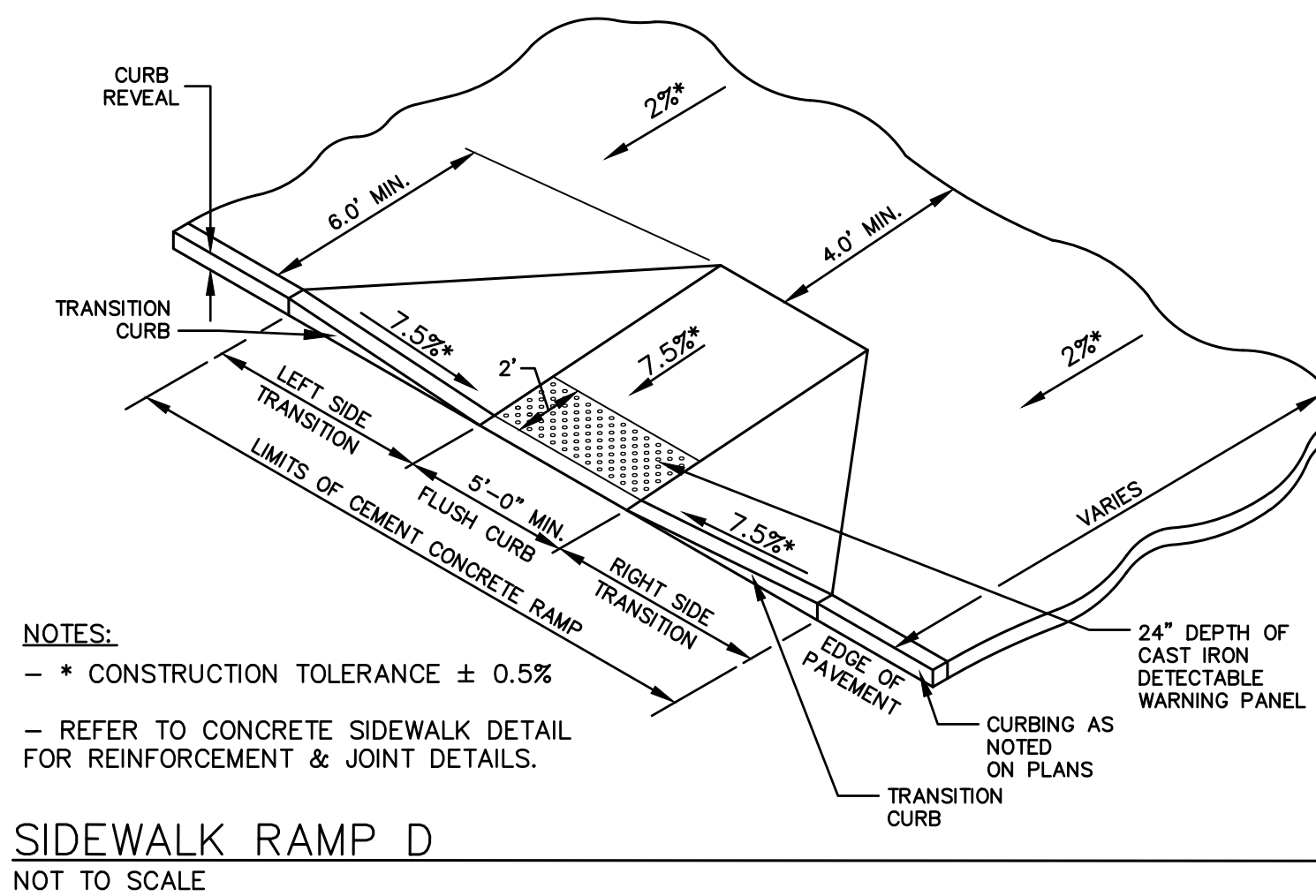
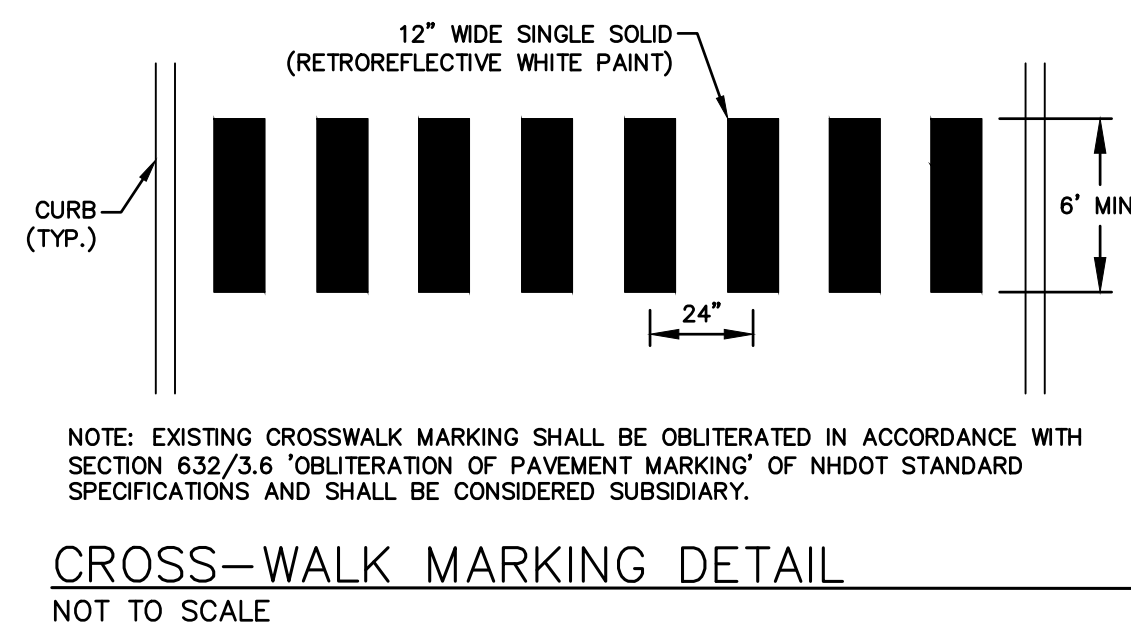
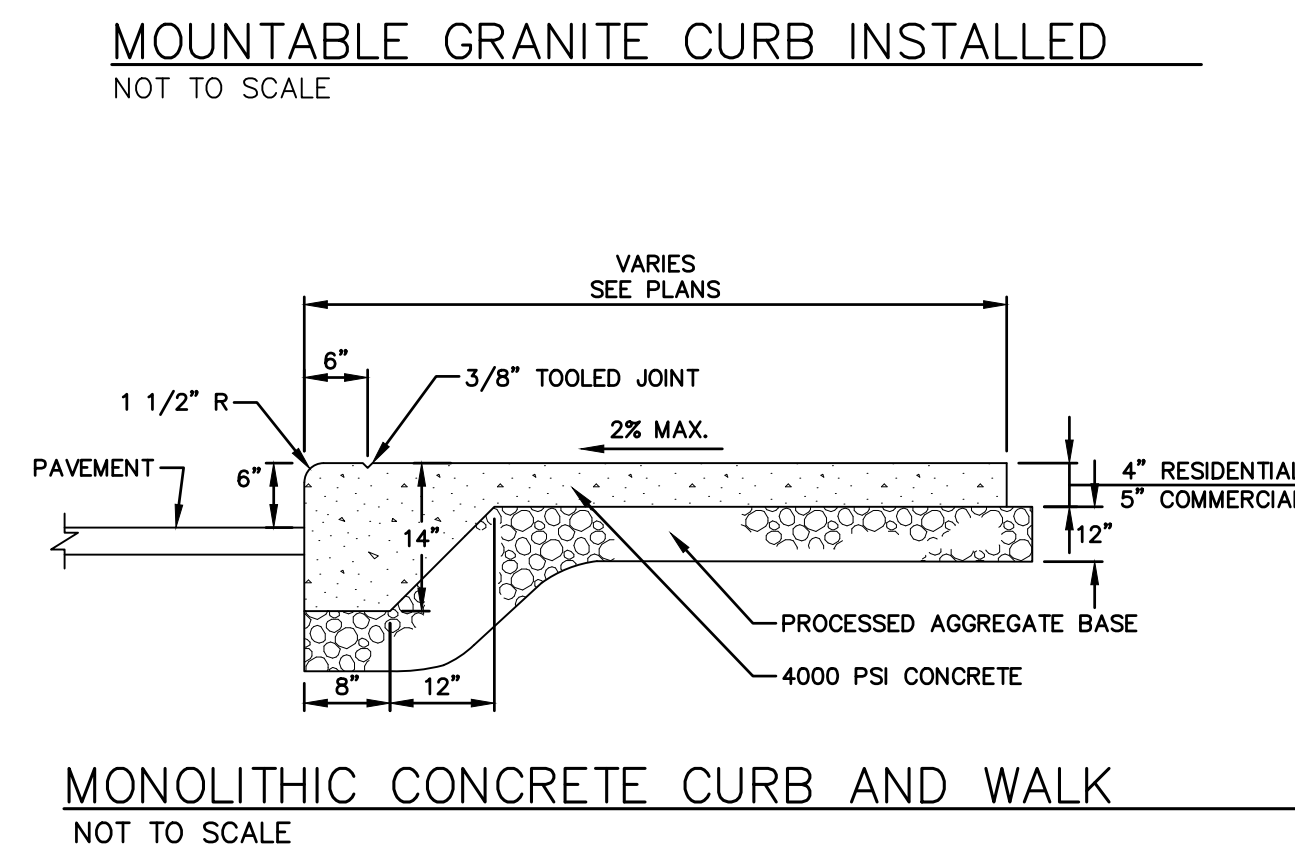
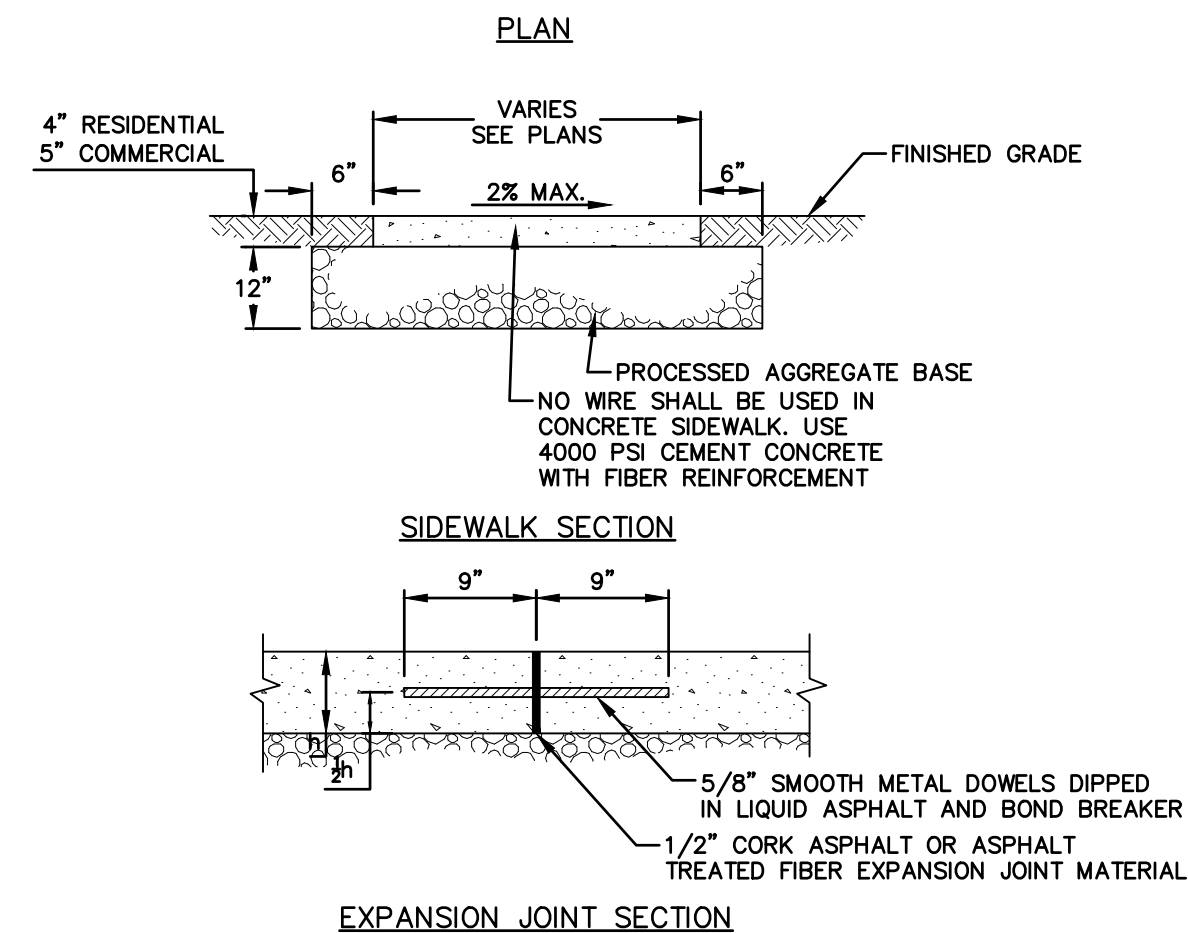
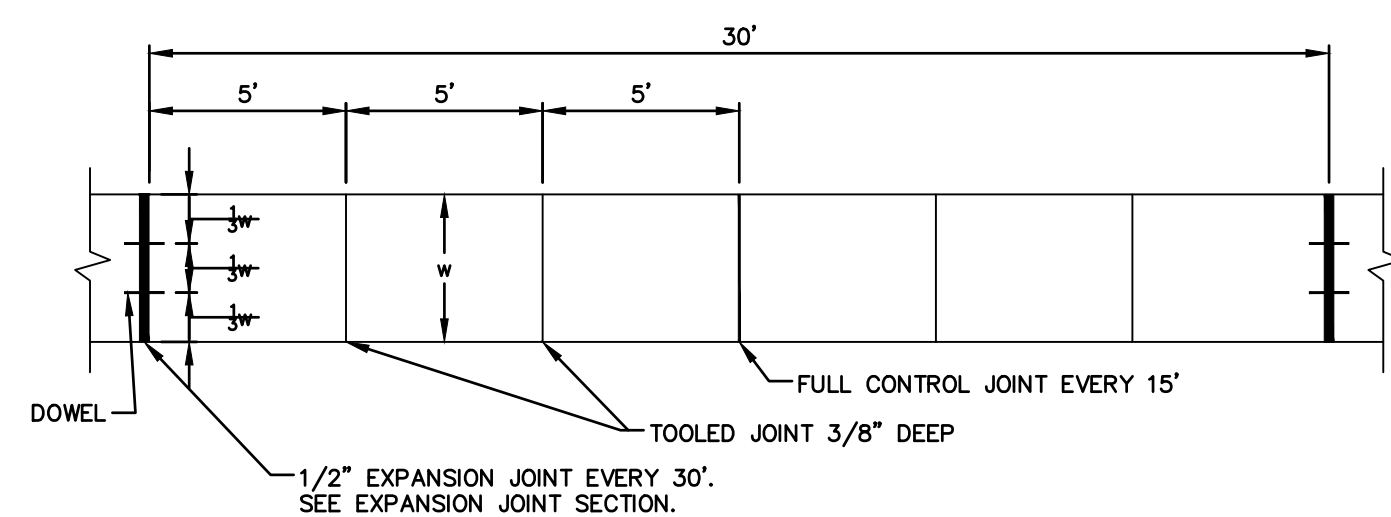
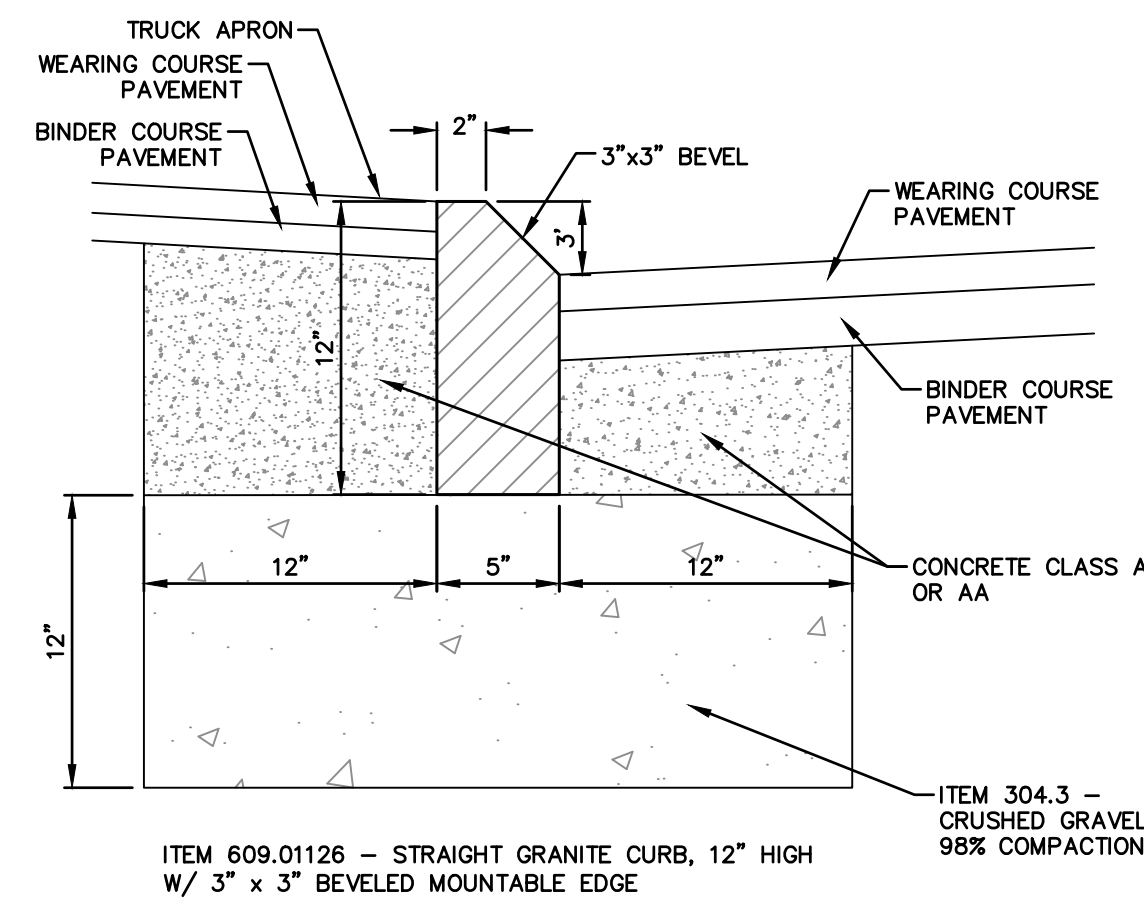
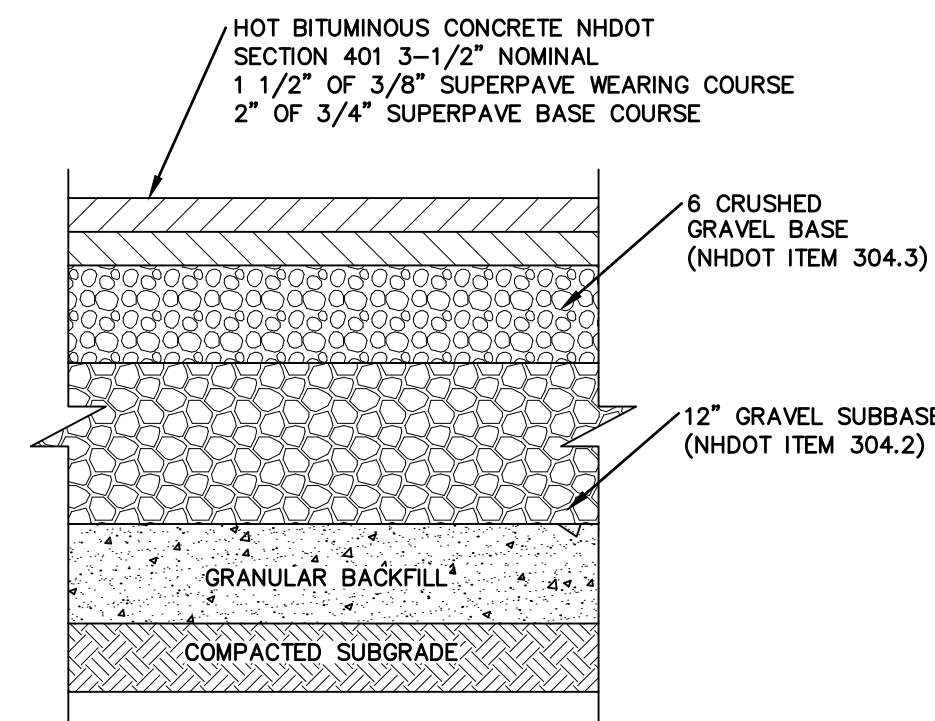
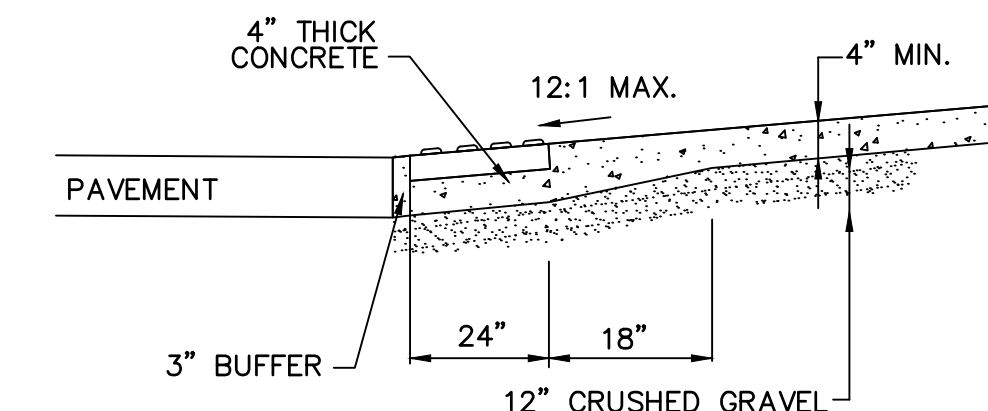
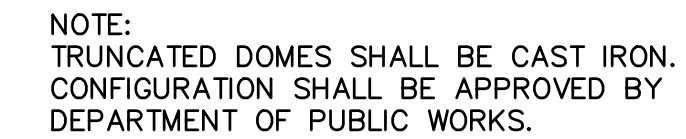
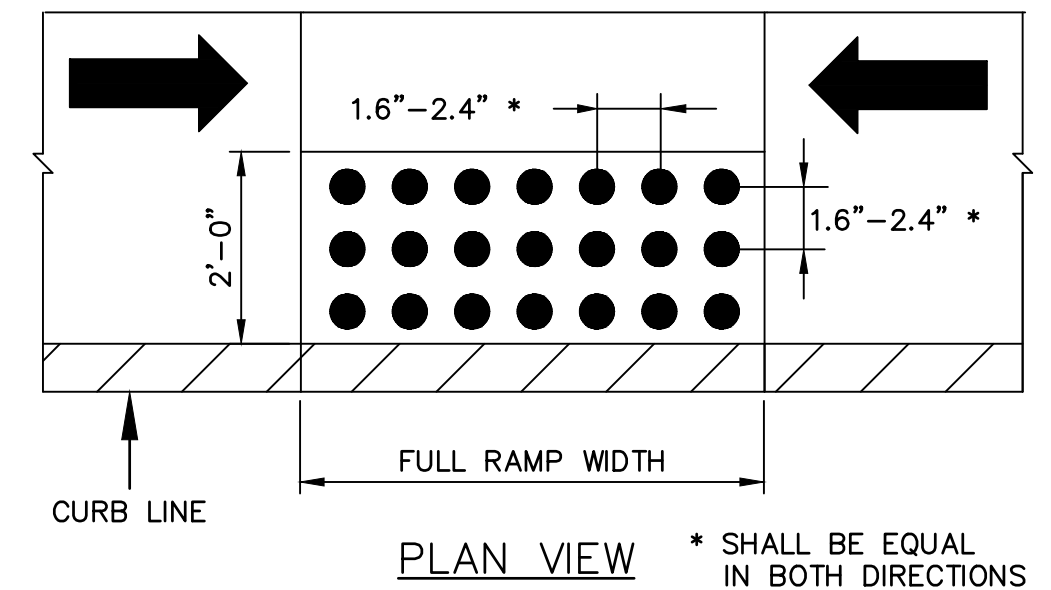
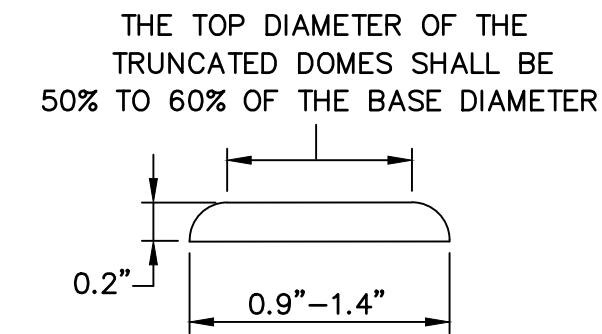
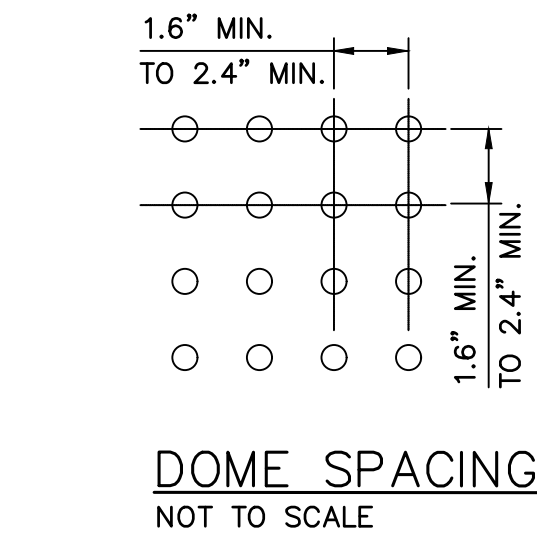
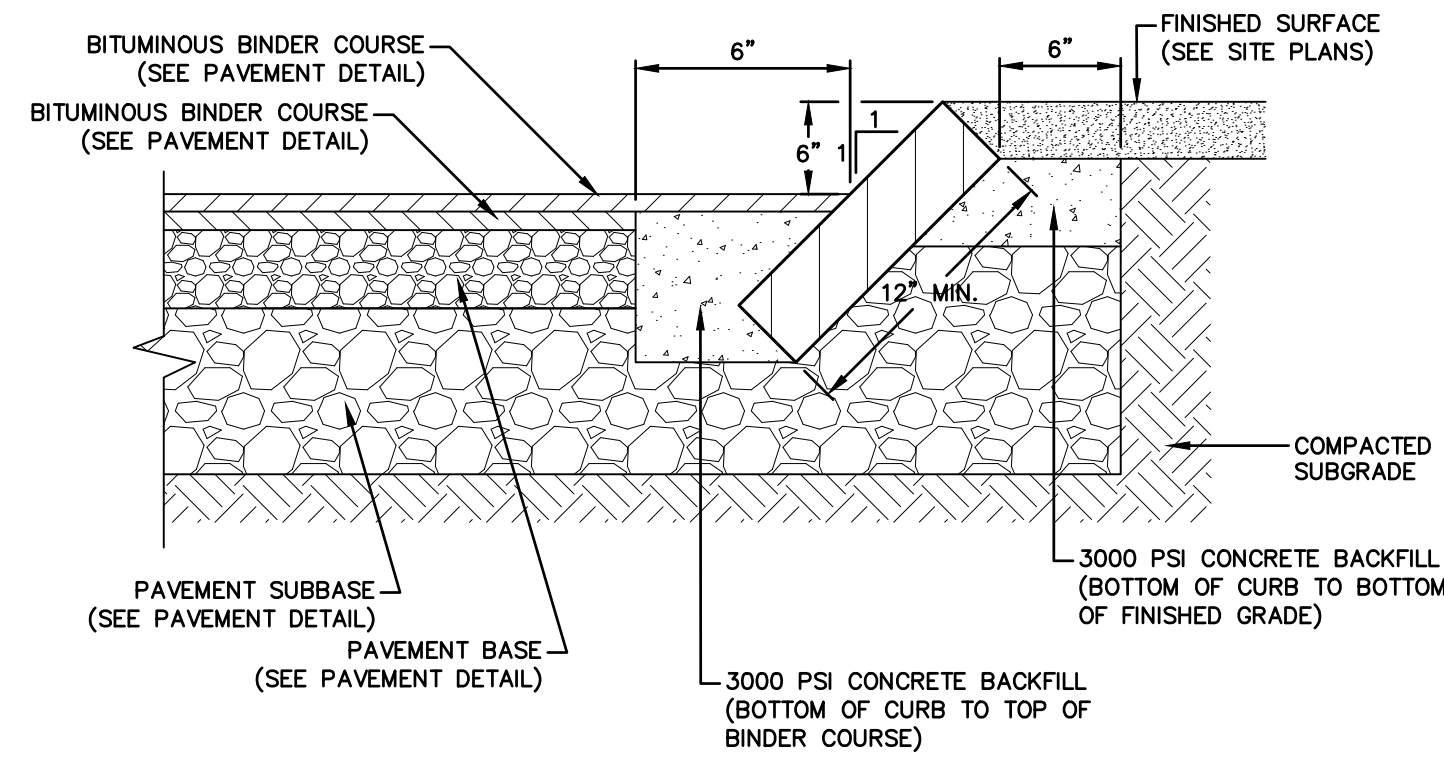
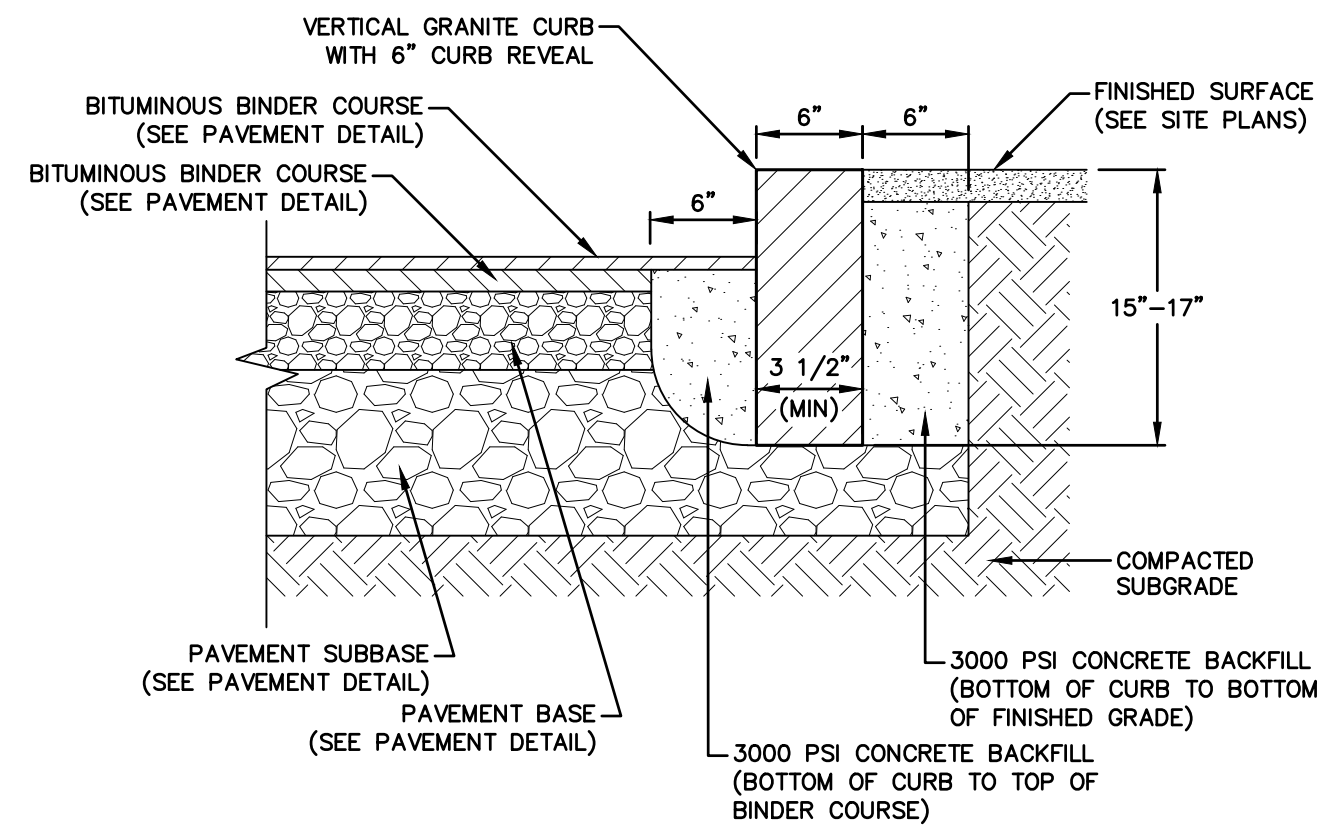
ROUTE 1 BYPASS / HODGDON WAY

PORTSMOUTH  
NEW HAMPSHIRE

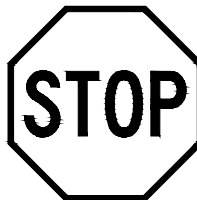






PROJ. No.: 20180317.B10  
DATE: 12/20/2021

CD-502

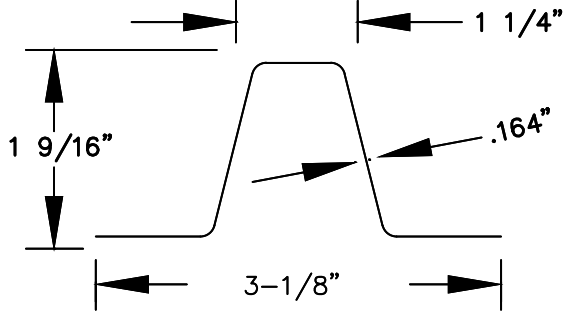




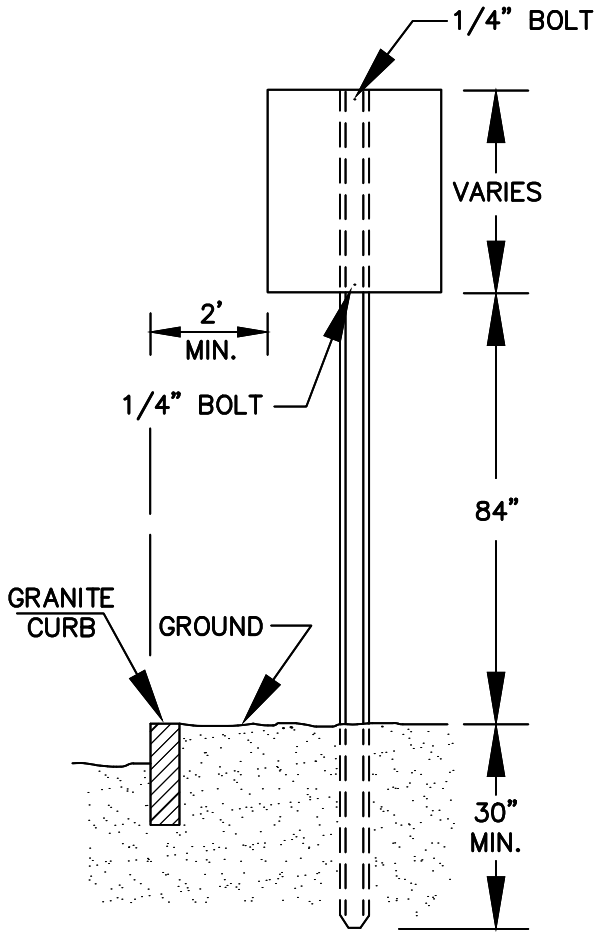


CP	IDENT#	SIZE OF SIGN		TEXT	TEXT DIMENSIONS			SHIELD SIZE (INCH)	AROW (INCH)	NUMERA L (INCH)	# SIGNS REQ'D	SIGN AREA (SQ. FT.)		POSTS PER SIGN					REMARKS
		WIDTH (INCHES)	HEIGHT (INCHES)		LETTER HEIGHT (INCH)							NOM AREA	TOTAL AREA	BREAKAWAY	STEEL BEAM	CONCRETE BASE	4" OD ALUMINUM	U-CHANNEL GALV	
					UC	LC	CAPS												
	R1-1	30	30				10C				2	6.25	12.50				14		RED/WHITE
	W8-1	30	30									6.25	6.25				1		BLACK/RED/YELLOW
	R7-8R	12	18								1						4		GREEN/BLUE/WHITE
	R7-8L	12	18								1						4		GREEN/BLUE/WHITE
	R7-8P	18	9								2						0		GREEN/WHITE
	R5-1	30	30								1								
	R6-1	36	12								2								
	INTERNAL DIRECTION SIGN										3								
	FREESTANDING SIGN (PERMIT REQUIRED)										4								

LENGTH: P-12, 12'-0"; P-14, 14'-0"; P-16, 16'-0".  
WEIGHT PER LINEAR FOOT: 2.50 LBS. (MIN.)  
HOLES: 3/8" DIA. 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 AIR DRIED,  
PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION  
SHALL BE COMPLETE BEFORE PAINTING.



DIMENSIONS SHOWN ARE NOMINAL  
ALTERNATE SECTIONS MUST BE APPROVED PRIOR  
TO USE.



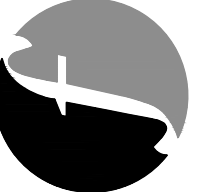
SIGN POST  
NOT TO SCALE

- NOTES
1. POSTS SHALL BE PLUMB; ANY POST BENT OR OTHERWISE DAMAGED SHALL BE REMOVED AND PROPERLY REPLACED.
  2. POSTS MAY BE SET OF DRIVEN. WHEN POSTS ARE SET, HOLES SHALL BE DUG TO THE PROPER DEPTH; AFTER INSERTING POSTS, THE HOLES SHALL BE BACK FILLED WITH SUITABLE MATERIAL IN LAYERS NOT TO EXCEED A 6" DEPTH, THOROUGHLY COMPACTED.
  3. CARE SHALL BE TAKEN TO PRESERVE THE ALIGNMENT OF THE POST. WHEN POSTS ARE DRIVEN, A SUITABLE DRIVING CAP SHALL BE USED AND AFTER DRIVING THE TOP OF THE POST SHALL HAVE SUBSTANTIALLY THE SAME CROSS-SECTIONAL DIMENSION AS THE BODY OF THE POST; BATTERED HEADS WILL NOT BE ACCEPTED.
  4. POSTS SHALL NOT BE DRIVEN WITH THE SIGN ATTACHED TO THE POST.
  5. SIGNS SHALL BE ERECTED IN CONFORMANCE WITH THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
  6. WHEN SIGN IS IN PLACE NO PART OF POST SHALL EXTEND ABOVE THE SIGN.

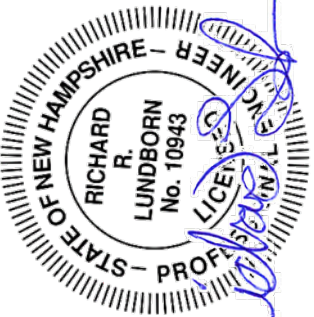
PROJ. No.: 20180317.B10  
DATE: 12/20/2021

CD-551

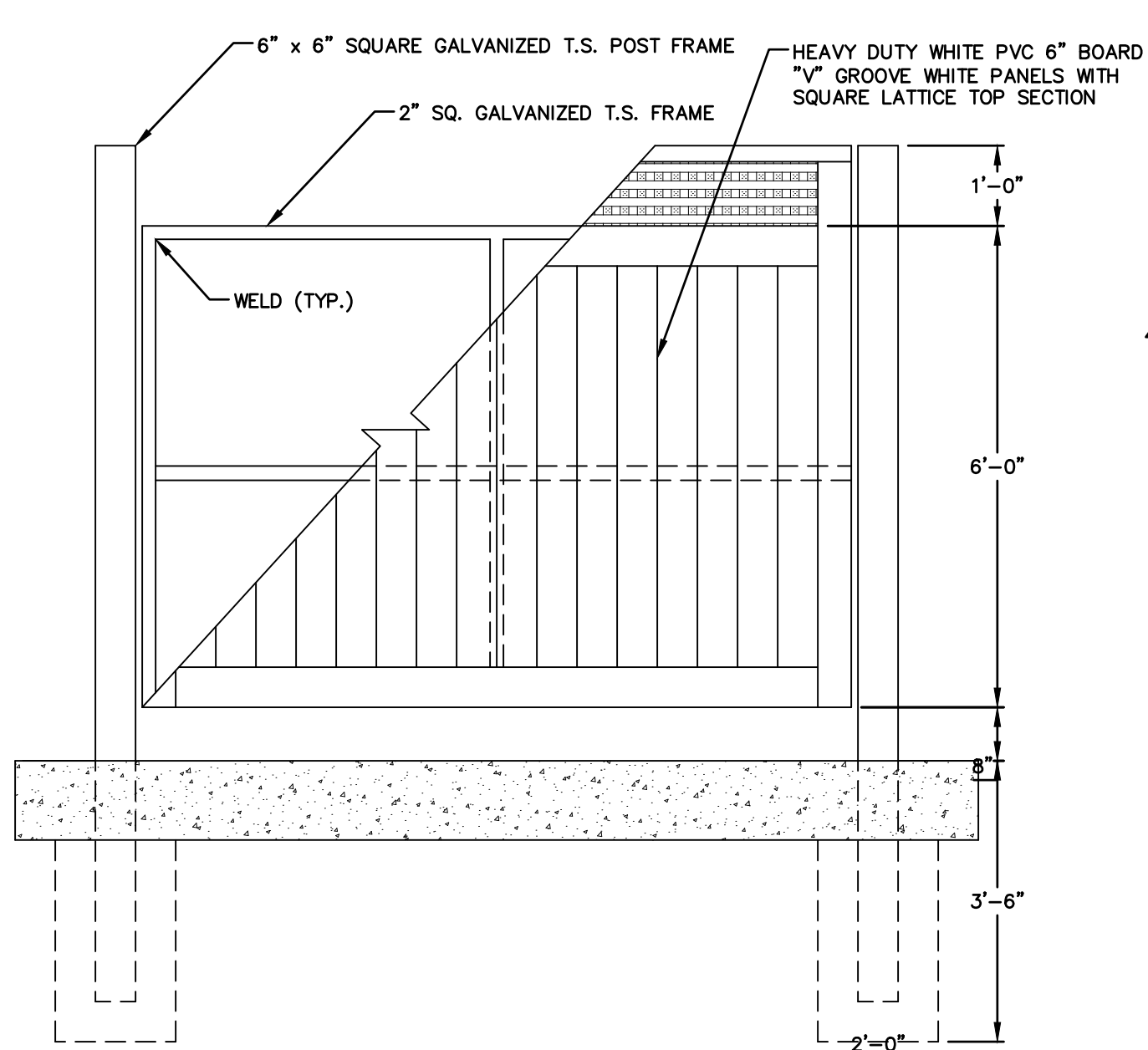
CATE STREET DEVELOPMENT, LLC  
SITE DETAILS  
ROUTE 1 BYPASS / HODGDON WAY  
PORTSMOUTH NEW HAMPSHIRE

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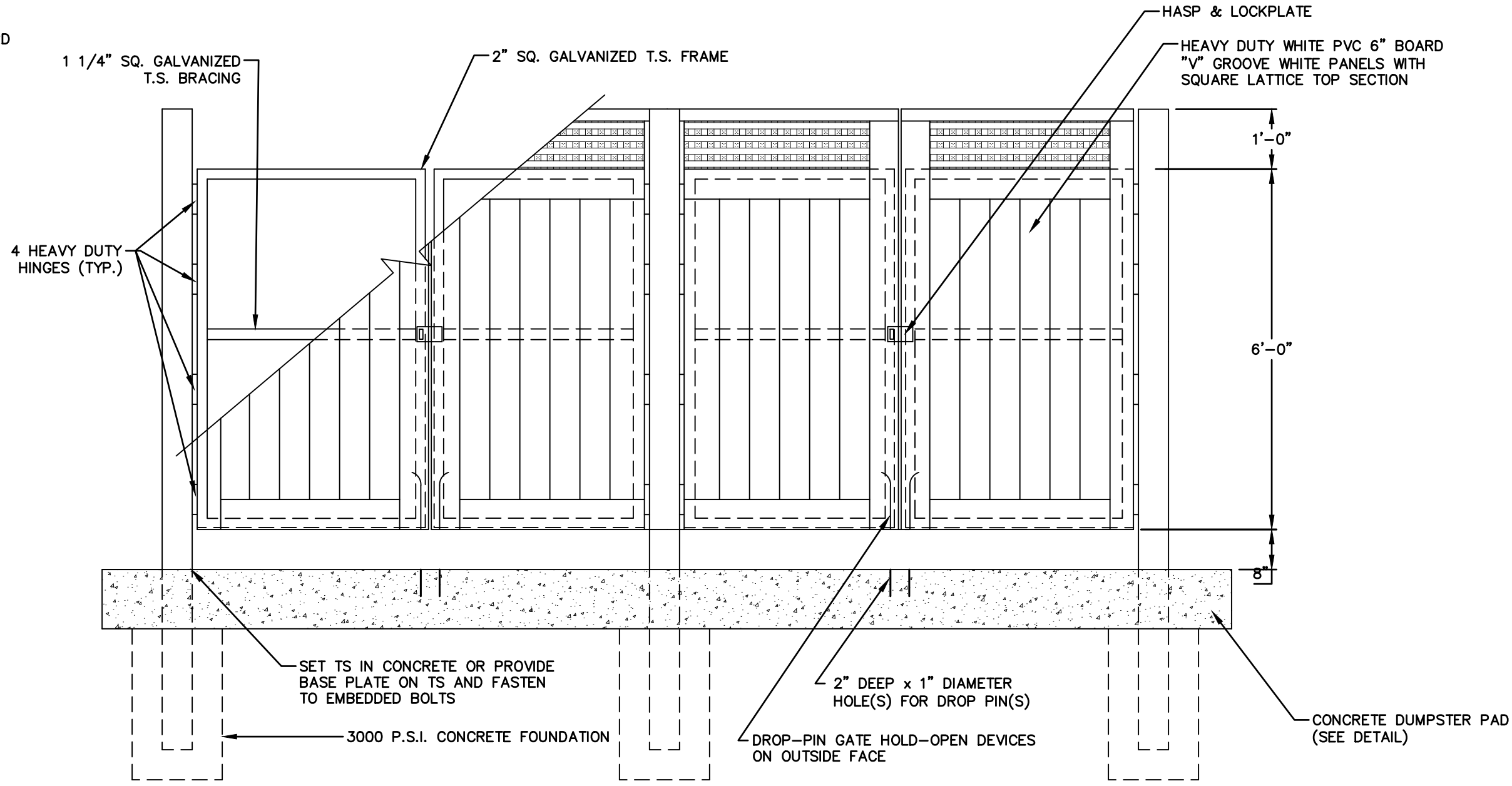
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GRAPHIC SCALE



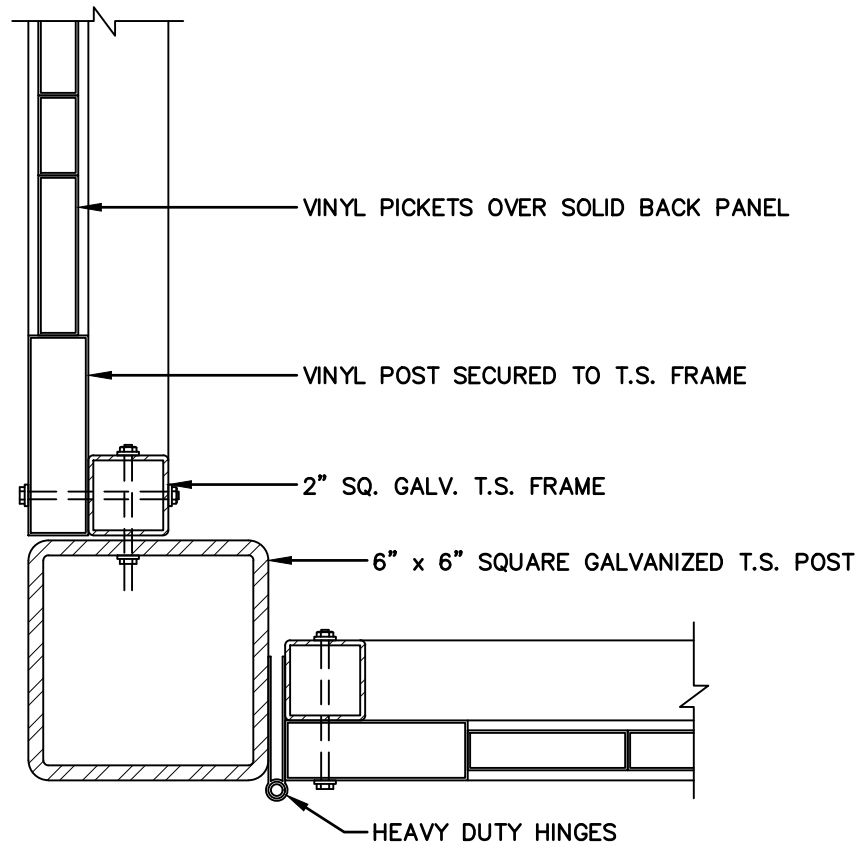
1. No. 11/1/2021  
DATE  
TAC WORKSHOP SUBMITTAL  
DESCRIPTION  
JH/ART  
RRL  
DESIGNER REVIEWER



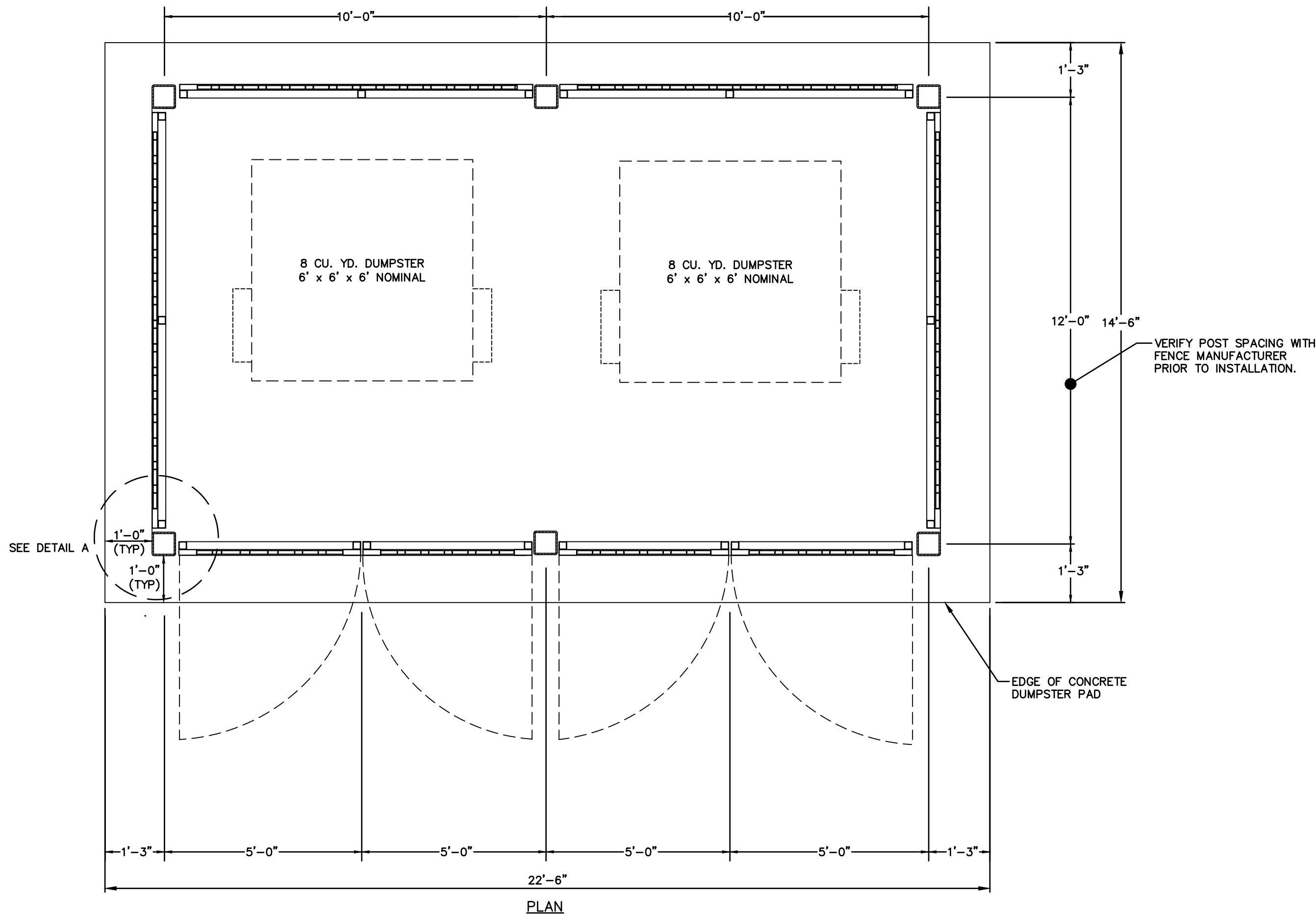
SIDE ELEVATION



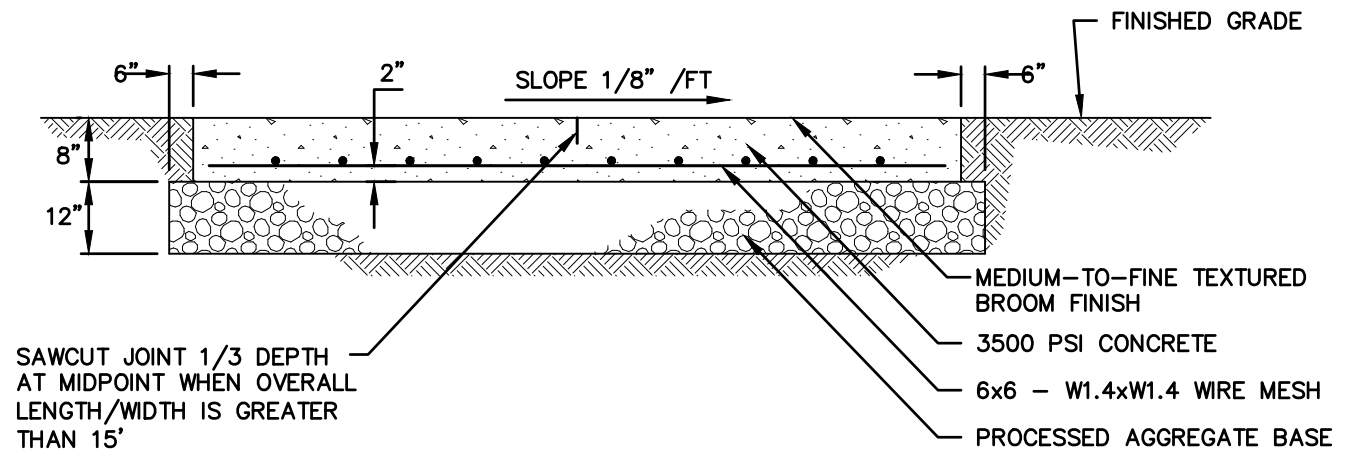
FRONT ELEVATION



DETAIL A

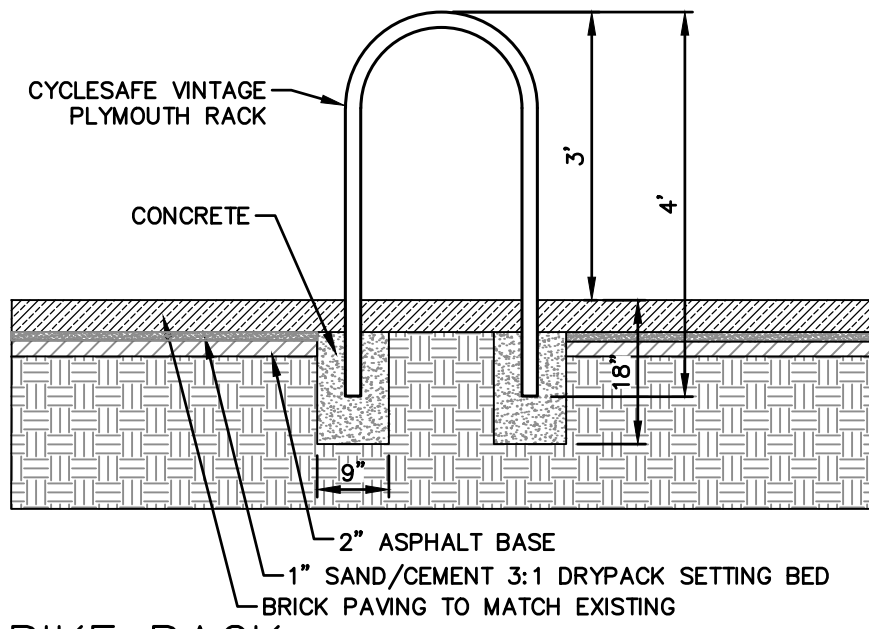


PLAN



CONCRETE DUMPSTER PAD

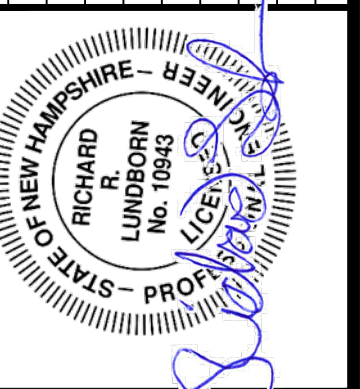
NOT TO SCALE



BIKE RACK

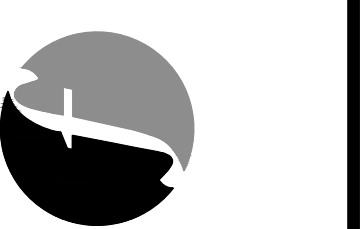
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PROJ. No.	DATE	TAC WORKSHOP SUBMITTAL	DESIGNER REVIEWER
20180317.B10	12/20/2021		



SCALE:	HORIZ.: NTS	VERT.: NTS

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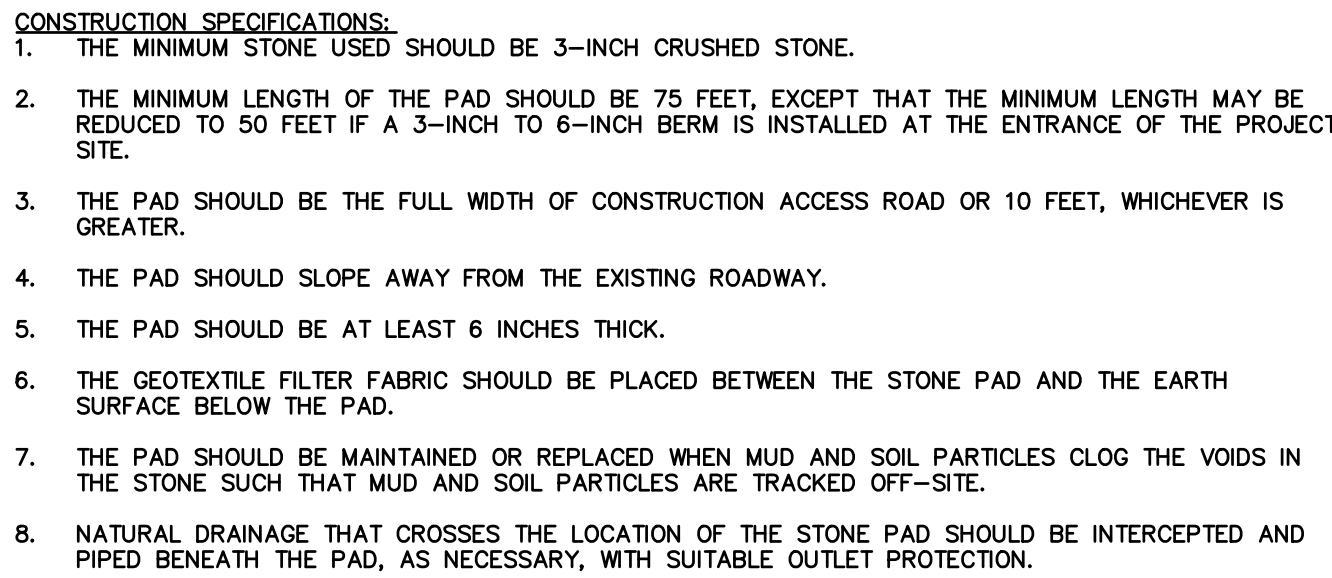


CATE STREET DEVELOPMENT, LLC  
SITE DETAILS  
ROUTE 1 BYPASS / HODGDON WAY  
PORTSMOUTH NEW HAMPSHIRE

PROJ. No.	DATE
20180317.B10	12/20/2021

CD-552





- #### MAINTENANCE REQUIREMENTS:
1. EROSION CONTROL MIX BERMS SHOULD BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
  2. EROSION CONTROL MIX BERMS SHOULD BE REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM.
  3. IF THERE ARE SIGNS OF BREACHING OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, THE EROSION CONTROL MIX BERMS SHOULD BE REPLACED WITH OTHER MEASURES TO INTERCEPT AND TRAP SEDIMENT (SUCH AS A DIVERSION BERM DIRECTING RUNOFF TO A SEDIMENT TRAP OR BASIN).
  4. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT.
  5. SEDIMENT DEPOSITS MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE THIRD (1/3) OF THE HEIGHT OF THE BARRIER.
  6. EROSION CONTROL MIX BERMS SHOULD BE RESHAPED OR REAPPLIED AS NEEDED.
  7. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE BARRIER IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

1. EROSION CONTROL MIX CAN BE MANUFACTURED ON OR OFF OF THE PROJECT SITE.
2. EROSION CONTROL MIX MUST CONSIST PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR ACCEPTABLE MANUFACTURED PRODUCTS.
3. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS WILL NOT BE ACCEPTABLE AS THE ORGANIC COMPONENT OF THE MIX.
4. COMPOSITION OF THE EROSION CONTROL MIX SHOULD BE AS FOLLOWS:

- A. EROSION CONTROL MIX SHALL BE A WELL GRADED MIXTURE OF PARTICLE SIZES FREE OF REFUSE, PHYSICAL CONTAMINANTS, MATERIAL LIKELY TOXIC TO PLANT GROWTH AND MAY NOT CONTAIN ROCKS LESS THAN 4-INCHES IN DIAMETER;
- B. ORGANIC MATTER = 25-65% DRY WEIGHT BASIS
- C. PARTICLES PASSING BY WEIGHT:

<u>SCREEN:</u>	<u>PASSING BY WEIGHT:</u>
3-INCH	100%
1-INCH	90-100%
3/4-INCH	70-100%
1/4-INCH	30-75%
- D. THE ORGANIC PORTION NEEDS TO BE FIBROUS AND ELONGATED.
- E. THE MIX SHOULD CONTAIN NO SILTS, CLAYS OR FINE SANDS.
- F. SOLUBLE SALTS CONTENT < 4.0 mmhos/cm
- G. pH OF THE MIX SHOULD BE BETWEEN 5.0 AND 8.0
5. THE BARRIER SHOULD BE PLACED ALONG A RELATIVELY LEVEL CONTOUR.
6. IT MAY BE NECESSARY TO CUT TALL GRASSES AND WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES IN THE BARRIER THAT WOULD ENABLE FINES TO WASH UNDER THE BARRIER THROUGH THE GRASS BLADES OR PLANT STEMS.
7. THE BARRIER MUST BE A MINIMUM OF 12-INCHES TALL AS MEASURED ON THE UPHILL SIDE OF THE BARRIER.
8. THE BARRIER SHOULD BE A MINIMUM OF 2-FT WIDE.

1. AN ALTERNATIVE PRODUCT, THE CONTINUOUS CONTAINED BERM (OR "FILTER SOCK") CAN BE AN EFFECTIVE SEDIMENT BARRIER AS IT ADDS CONTAMINANT AND STABILITY TO A BERM OF EROSION CONTROL MIX.
2. IN THE EVENT THAT USE OF CONTINUOUS CONTAINED BERM IS DESIRED, THE PRODUCT SELECTED SHOULD BE REVIEWED AND APPROVED BY THE DESIGN ENGINEER.
3. INSTALLATION OF CONTINUOUS CONTAINED BERMS SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS OF THE MANUFACTURER.

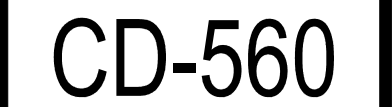
7. WITHIN 24 HOURS OF STOCKPILING SOIL MATERIALS SHOULD BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A 4 INCH LAYER OF EROSION CONTROL MIX. MULCH SHOULD BE APPLIED PRIOR TO ANY RAIN OR SIGNIFICANT SOIL STOCKPILE SHOULD BE PLACED (EVEN COVERED WITH MULCH) WITHIN 100-FT OF ANY WETLAND OR OTHER WATER RESOURCE AREA.
8. FROZEN MATERIAL (I.E. FROST LAYER REMOVED DURING WINTER CONSTRUCTION) SHOULD BE STOCKPILED SEPARATELY AND IN A LOCATION AWAY FROM ANY AREA NEEDING PROTECTION. FROZEN MATERIAL STOCKPILES CAN MELT IN SPRING AND BECOME UNWORKABLE AND DIFFICULT TO TRANSPORT DUE TO HIGH SOIL MOISTURE CONTENT.
9. INSTALLATION OF EROSION CONTROL BLANKETS SHOULD NOT OCCUR OVER SNOW OF GREATER THAN 1 INCH IN DEPTH OR ON FROZEN GROUND.
10. ALL GRASS-LINED DITCHES AND CHANNELS SHOULD BE CONSTRUCTED BY SEPTEMBER 1. ALL DITCHES AND SNALES WHICH DO NOT EXHIBIT 85% VEGETATIVE GROWTH BY OR ARE DISTURBED AFTER OCTOBER 15, SHOULD BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR DESIGN INTENTION AS DETERMINED BY A PROFESSIONAL ENGINEER. IF STONE LINING IS NECESSARY, THE CONTRACTOR MAY NEED TO RE-GRADE THE DITCH AS REQUIRED TO PROVIDE ADEQUATE CROSS-SECTION AFTER ALLOWING FOR PLACEMENT OF THE STONE.
11. ALL STONE LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED BY OCTOBER 15.
12. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING AREAS WHERE ACTIVE CONSTRUCTION HAS STOPPED FOR THE WINTER SHOULD BE PROTECTED WITH A MINIMUM 3 INCH LAYER OF SAND AND GRAVEL WITH A GRADATION THAT IS LESS THAN 12% OF THE SAND PORTION, OR MATERIAL PASSING THE NUMBER 4 SIEVE, BY WEIGHT, PASSES THE NUMBER 200 SIEVE.

## COVERING.

1. THE CONTRACTOR SHALL TAKE STEPS TO PREVENT THE SPREAD OF INVASIVE PLANT, INSECT, AND FUNGAL SPECIES BY MEETING THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO INVASIVE SPECIES. [HTTP://GENCOURT.STATE.NH.US/RULES/STATE\\_AGENCIES/AGR3800.HTML](http://GENCOURT.STATE.NH.US/RULES/STATE_AGENCIES/AGR3800.HTML)

27. ALL GRADED AREAS SHOULD BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.

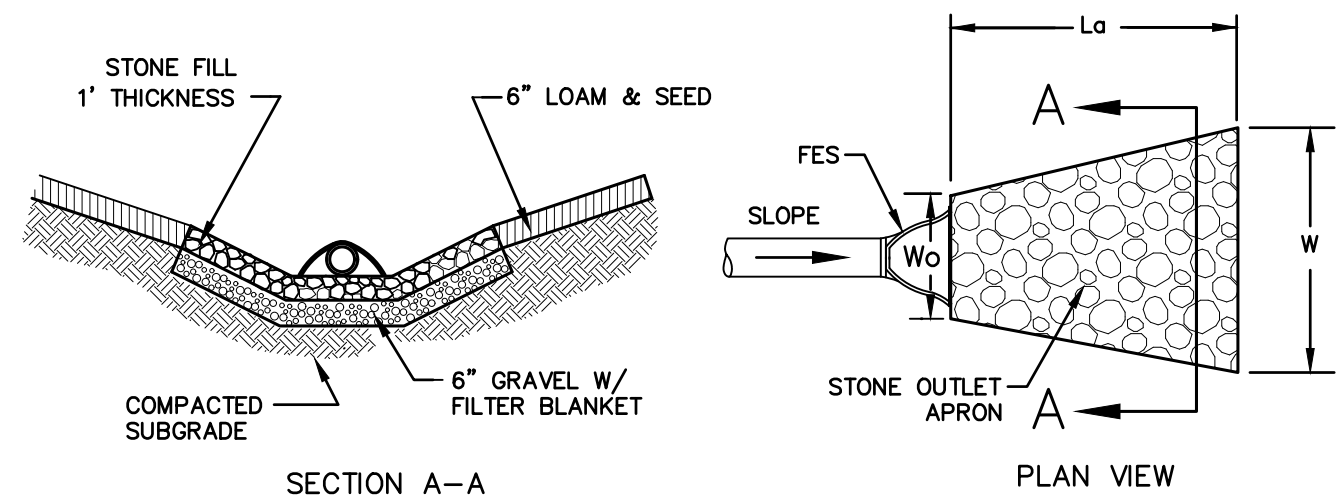
ABOVE NOTES EXCERPTED, ADAPTED AND REFERENCED FROM "NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 3 CONSTRUCTION PHASE EROSION AND SEDIMENT CONTROLS, DECEMBER 2008" (NHSM, VOL. 3)





D10=10" RIP-RAP GRADATION		APRON DIMENSION TABLE					
% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE (INCHES)	PIPE OUTLET	Wo	W	Lq	T	d50
100	5	TO	6				
85	4	TO	5				
50	3	TO	5				
15	1	TO	2				

PIPE OUTLET	Wo	W	Lq	T	d50
15" SWALE	4'	2'	14'	8"	3"
36" HEADWALL					
12" BRB#1	3.0'	11.5'	8.5'	16"	3"
12" BRB#2	3.0'	13.5'	10.5'	16"	3"



STONE: D50 = 3" WELL GRADED WITH SUFFICIENT SAND AND GRAVEL TO FILL THE VOIDS

THE HEIGHT OF THE STRUCTURAL LINING ALONG THE CHANNEL SIDES SHALL BEGIN AT THE ELEVATION EQUAL TO THE TOP OF THE CONDUIT AND TAPER DOWN TO THE CHANNEL BOTTOM THROUGH THE LENGTH OF THE APRON.

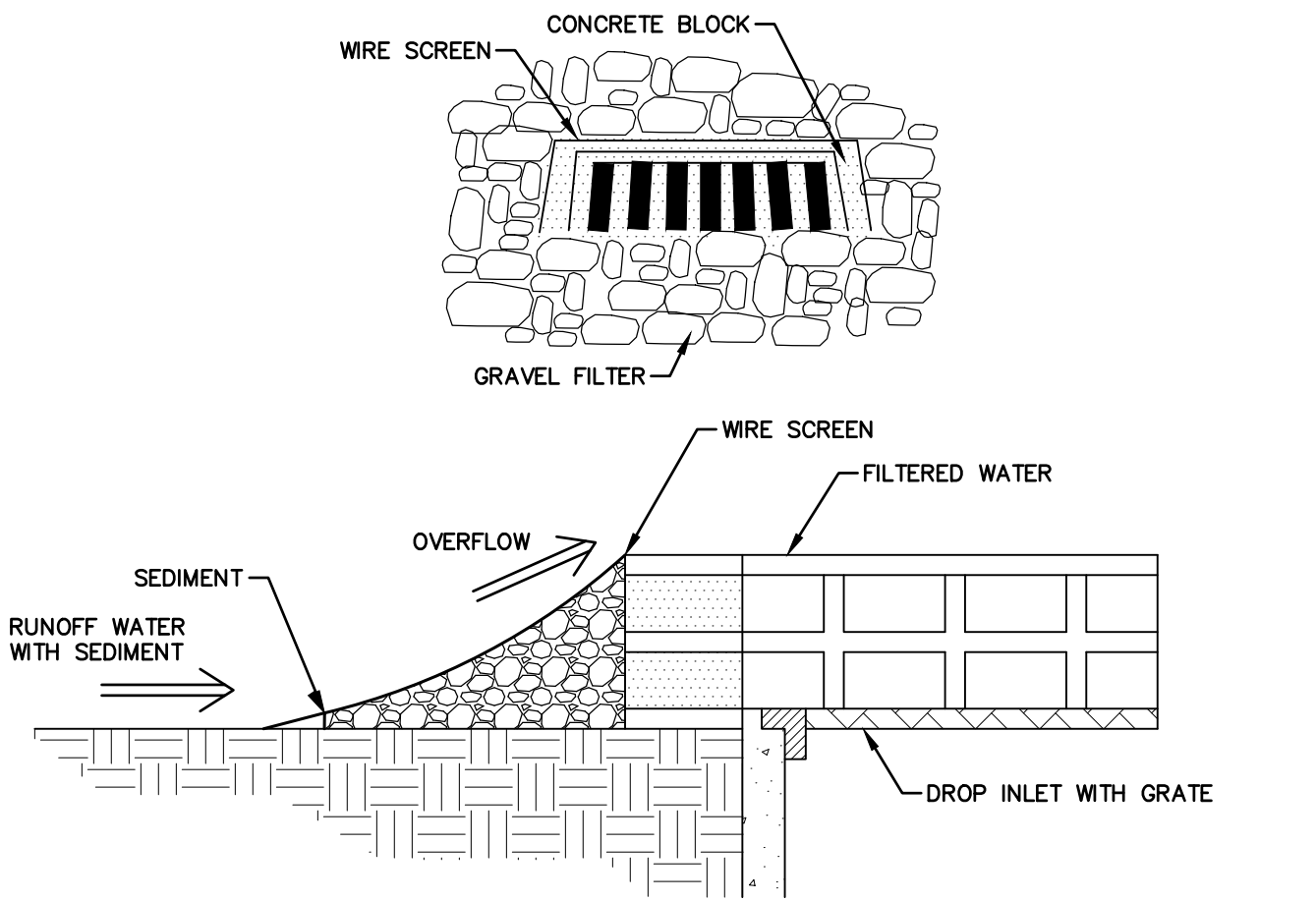
- NOTES:**
- ALL PIPE CULVERTS SHALL HAVE END SECTIONS OR HEADWALLS. END SECTION MATERIAL AND MANUFACTURER SHALL MATCH THAT OF THE PIPE CULVERT.
  - THE LARGEST RIP-RAP SIZE DETERMINED DURING HYDROLOGIC ANALYSIS HAS BEEN USED FOR ALL OUTLETS FOR ECONOMY AND SIMPLICITY.
  - APRON LENGTHS, WIDTHS AND THICKNESSES HAVE BEEN ROUNDED UP TO WHOLE NUMBERS FOR EASE OF CONSTRUCTION.

- CONSTRUCTION SPECIFICATIONS:**
- PREPARE THE SUB-GRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP-RAP TO THE GRADES SHOWN ON THE PLANS.
  - MINIMUM 6" SAND/GRAVEL BEDDING OR GEOTEXTILE FABRIC REQUIRED UNDER ALL ROCK RIP-RAP.
  - THE ROCK OR GRAVEL USED FOR FILTER OR RIP-RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
  - GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF ROCK RIP-RAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO (2) PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
  - STONE FOR THE RIP-RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
  - RIP-RAP SIZE CHOSEN FOR THE WORST CASE OF ALL OUTLETS. ALL RIP-RAP USED FOR PIPE OUTLET PROTECTION WILL HAVE THE SAME GRADATION AND THICKNESS.

- MAINTENANCE NOTES:**
- OUTLETS SHALL BE INSPECTED AND CLEANED ANNUALLY AND AFTER ANY MAJOR STORM EVENT. ANY EROSION OR DAMAGE TO THE RIP-RAP SHALL BE REPAIRED IMMEDIATELY.
  - THE CHANNEL IMMEDIATELY DOWNSTREAM FROM THE OUTLET SHOULD BE CHECKED TO SEE THAT NO EROSION IS OCCURRING.
  - THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

## RIP RAP APRON OUTLET PROTECTION

NOT TO SCALE



## BLOCK AND GRAVEL INLET SEDIMENT FILTER

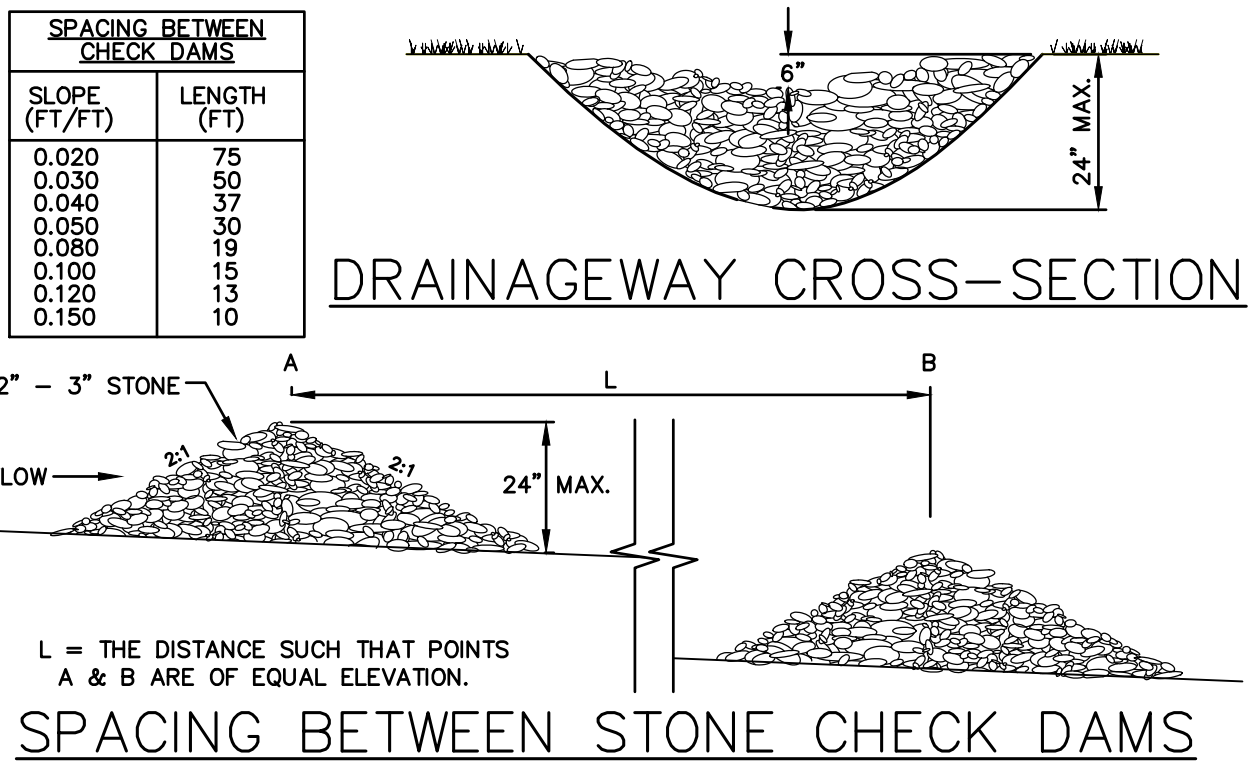
NOT TO SCALE

- CONSTRUCTION SPECIFICATIONS:**
- PLACE CONCRETE BLOCKS LENGTHWISE ON THEIR SIDE IN A SINGLE ROW AROUND THE PERIMETER OF THE INLET, WITH THE ENDS OF ADJACENT BLOCKS ABUTTING. THE HEIGHT OF THE BARRIER CAN BE VARIED, DEPENDING ON DESIGN NEEDS, BY STACKING COMBINATIONS OF 4-INCH, 8-INCH AND 12-INCH WIDE BLOCKS. THE BARRIER OF BLOCKS SHALL BE AT LEAST 12 INCHES HIGH AND NO GREATER THAN 24 INCHES HIGH.
  - WIRE MESH SHALL BE PLACED OVER THE OUTSIDE VERTICAL FACE (WEBBING) OF THE CONCRETE BLOCKS TO PREVENT STONE FROM BEING WASHED THROUGH THE HOLES IN THE BLOCKS. HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2-INCH OPENINGS SHALL BE USED.
  - STONE SHALL BE PILED AGAINST THE WIRE TO THE TOP OF THE BLOCK BARRIER, AS SHOWN ABOVE. STONE GRADATION SHALL BE WELL GRADED WITH THE MAXIMUM STONE SIZE OF 6 INCHES AND MINIMUM STONE SIZE OF 1 INCH.
  - IF THE STONE FILTER BECOMES CLOGGED WITH SEDIMENT SO THAT IT NO LONGER ADEQUATELY PERFORMS ITS FUNCTION, THE STONE MUST BE PULLED AWAY FROM THE BLOCKS, CLEANED AND REPLACED.

- MAINTENANCE NOTES:**
- THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
  - SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
  - STRUCTURES SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

## SEDIMENTATION CONTROL AT CATCH BASINS

NOT TO SCALE

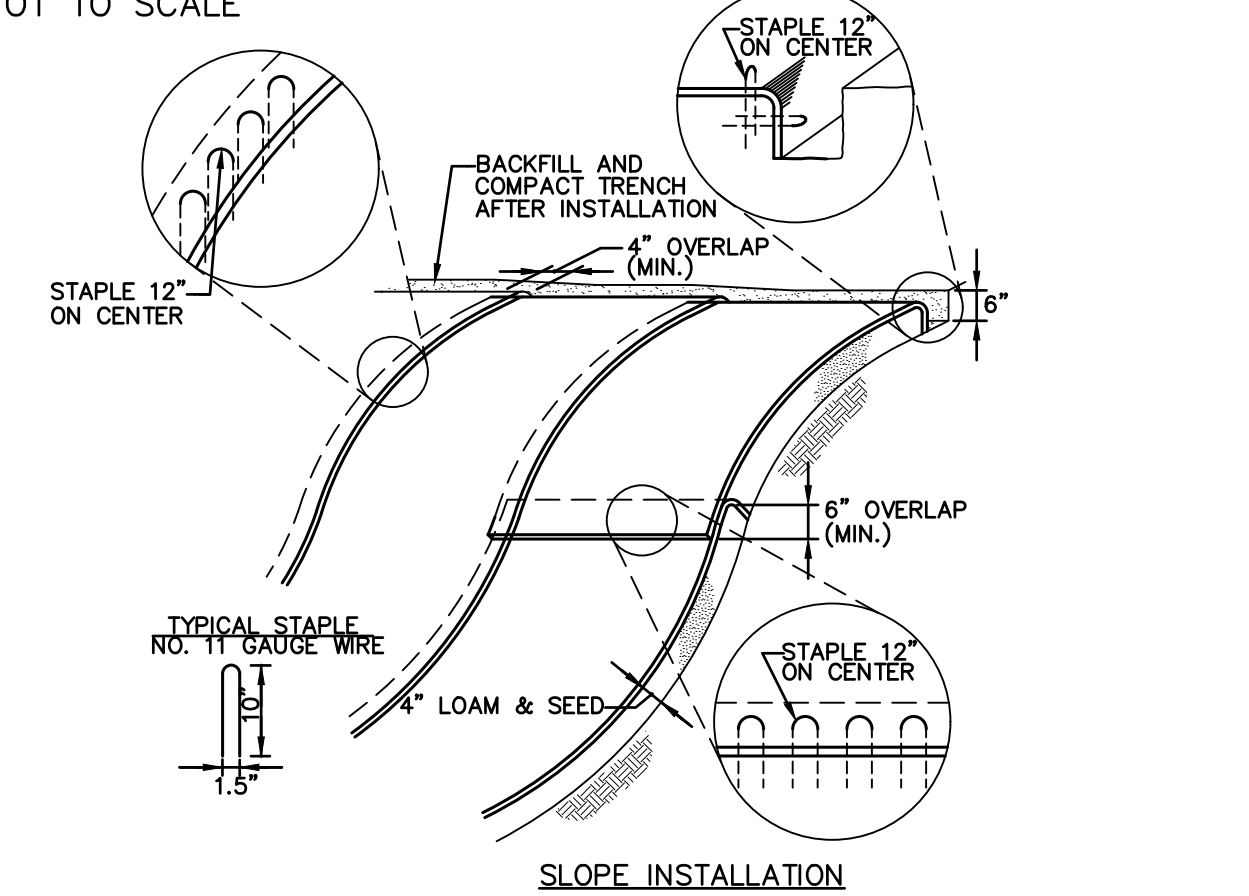


- CONSTRUCTION SPECIFICATIONS:**
- STRUCTURES SHALL BE INSTALLED ACCORDING TO THE DIMENSIONS SHOWN ON THE PLANS AT THE APPROPRIATE SPACING.
  - CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER SO THAT EROSION, AIR AND WATER POLLUTION WILL BE MINIMIZED.
  - STRUCTURES SHALL BE REMOVED FROM THE CHANNEL WHEN THEIR USEFUL LIFE HAS BEEN COMPLETED.

- MAINTENANCE NOTES:**
- TEMPORARY GRADE STABILIZATION STRUCTURES SHOULD BE INSPECTED AFTER EACH STORM AND DAILY DURING PROLONGED STORM EVENTS. ANY DAMAGE TO THE STRUCTURES SHALL BE REPAIRED IMMEDIATELY.
  - PARTICULAR ATTENTION SHOULD BE GIVEN TO END RUN AND EROSION AT THE DOWNSTREAM TOE OF THE STRUCTURE.
  - WHEN REMOVING THE STRUCTURES, THE DISTURBED AREAS SHALL BE BROUGHT UP TO EXISTING CHANNEL GRADE AND THE AREAS PREPARED, SEEDED AND MULCHED.
  - SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT REACHES 1/2 THE ORIGINAL HEIGHT OF THE STRUCTURE.

## STONE CHECK DAM INSTALLATION DETAIL

NOT TO SCALE



- MAINTENANCE REQUIREMENTS:**
- ALL BLANKET AND MATS SHOULD BE INSPECTED WEEKLY DURING THE CONSTRUCTION PERIOD, AND AFTER ANY RAINFALL EVENT EXCEEDING 1/2 INCH IN A 24-HOUR PERIOD.
  - ANY FAILURE SHOULD BE REPAIRED IMMEDIATELY. IF WASHOUT OF THE SLOPE, DISPLACEMENT OF THE MAT, OR DAMAGE TO THE MAT OCCURS, THE AFFECTED SLOPE SHALL BE REPAIRED AND RESEEDED, AND THE AFFECTED AREA OF MAT SHALL BE RE-INSTALLED.

- CONSTRUCTION SPECIFICATIONS:**
- MANUFACTURE'S INSTALLATION INSTRUCTIONS:
    - PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
    - BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
    - ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
    - THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" - 5" (5 CM - 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
    - CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

- SITE PREPARATION:
  - PROPER PREPARATION IS ESSENTIAL TO ENSURE COMPLETE CONTACT OF THE PROTECTION MATTING WITH THE SOIL.
  - GRADE AND SHAPE AREA IF INSTALLATION.
  - REMOVE ALL ROCKS, CLODS, TRASH, VEGETATIVE OR OTHER OBSTRUCTIONS SO THAT THE INSTALLED BLANKETS WILL HAVE DIRECT CONTACT WITH THE SOIL.
  - PREPARE SEEDBED BY LOOSENING 2-3 INCHES OF TOPSOIL ABOVE FINAL GRADE.
  - INCORPORATE AMENDMENTS, SUCH AS LIME AND FERTILIZER, INTO SOIL ACCORDING TO SOIL TEST AND THE SEEDING PLAN.
- SEEDING:
  - SEED AREA BEFORE BLANKET INSTALLATION FOR EROSION CONTROL AND REVEGETATION. SEEDING AFTER MAT INSTALLATION IS OFTEN SPECIFIED FOR TURF REINFORCEMENT APPLICATIONS. WHEN SEEDING PRIOR TO BLANKET INSTALLATION, ALL CHECK SLOTS AND OTHER AREAS DISTURBED DURING INSTALLATION MUST BE RESEEDED.
  - WHEN SOIL FILLING IS SPECIFIED, SEED THE MATTING AND THE ENTIRE DISTURBED AREA AFTER INSTALLATION AND PRIOR TO FILLING THE MAT WITH SOIL.

## EROSION CONTROL - BLANKET SLOPE PROTECTION

NOT TO SCALE

## PERMANENT VEGETATION:

### SPECIFICATIONS:

- SITE PREPARATION:**
- INSTALL NEEDED EROSION AND SEDIMENT CONTROL MEASURES SUCH AS SILTATION BARRIERS, DIVERSIONS, AND SEDIMENT TRAPS.
  - GRADE AS NEEDED FOR THE ACCESS OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING.
  - RUNOFF SHOULD BE DIVERTED FROM THE SEEDBED AREA.
  - ON SLOPES 4:1 OR STEEPER, THE FINAL PREPARATION SHOULD INCLUDE CREATING HORIZONTAL GROOVES PERPENDICULAR TO THE DIRECTION OF THE SLOPE TO CATCH SEED AND REDUCE RUNOFF.

### SEEDBED PREPARATION:

- WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM, FINE SEEDBED IS PREPARED. ALL BUT CLAY AND SILT SOILS SHOULD BE ROLLED TO FIRM THE SEEDBED WHEREVER FEASIBLE.
- REMOVE FROM THE SURFACE ALL STONES 2INCHES OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, CONCRETE CLODS, LUMPS, TRASH OR OTHER UNSUITABLE MATERIAL.
- INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED; THE AREA MUST BE TILLED AND FIRMED AS ABOVE.
- WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
- IF APPLICABLE, FERTILIZER AND ORGANIC SOIL AMENDMENTS SHOULD BE APPLIED DURING THE GROWING SEASON.
- APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL FERTILIZER AND LIMESTONE MAY BE APPLIED AT THE FOLLOWING RATES:  
  
LIMESTONE APPLICATION RATE = 3 TONS/ACRE (138 LB./1,000-SF)\*  
\*EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE  
  
FERTILIZER APPLICATION RATE = 600 LB./ACRE (13.8 LB./1,000-SF)\*  
\*LOW PHOSPHATE FERTILIZER (N-P205-K20) OR EQUIVALENT
- FERTILIZER SHOULD BE RESTRICTED TO LOW PHOSPHATE, SLOW RELEASE NITROGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 AND 250-FT FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25-FT OF A SURFACE WATER BODY. THESE ARE THE REQUIREMENTS FOR ANY WATER BODY PROTECTED BY THE COMPREHENSIVE SHORELAND PROTECTION ACT.

### SEEDING:

- INOCULATE ALL LEGUME SEED WITH THE CORRECT TYPE OF INOCULANT.
- APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM 1/4 TO 1/2 INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE.
- WHERE FEASIBLE EXCEPT WHERE EITHER CULTIPACKER TYPE SEEDER OR HYDROSEEDER IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A ROLLER, OR LIGHT DRAG.
- SPRING SEEDING USUALLY GIVES THE BEST RESULTS FOR ALL SEED MIXES OR WITH LEGUMES. PERMANENT SEEDING SHOULD BE COMPLETED 45 DAYS PRIOR TO FIRST KILLING FROST. WHEN CROWN VETCH IS SEEDING IN LATE SUMMER AT LEAST 35% OF THE SEED SHOULD BE HARD SEED (UNSCARIFIED). IF SEEDING CANNOT BE DONE WITHIN THE SPECIFIED SEEDING DATES, MULCH ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE DESCRIBED IN THE NHSSM, VOL. 3. AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.
- AREAS SEEDED BETWEEN MAY 15 AND AUGUST 15 SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE DESCRIBED IN THE NHSSM, VOL. 3.
- VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT OTHER TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.

### HYDROSEEDING:

- WHEN HYDROSEEDING (HYDRAULIC APPLICATION), PREPARE THE SEEDBED AS SPECIFIED ABOVE OR BY HAND RAKING TO LOOSEN AND SMOOTH THE SOIL AND REMOVE SURFACE STONES LARGER THAN 2 INCHES IN DIAMETER.
- SLOPES MUST BE NO STEEPER THAN 2:1 (2 FEET HORIZONTALLY BY 1 FOOT VERTICALLY).
- LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF FIBER MULCH ON CRITICAL AREAS IS NOT RECOMMENDED (UNLESS IT IS USED TO HOLD STRAW OR HAY). BETTER PROTECTION IS GAINED BY USING STRAW MULCH AND HOLDING IT WITH ADHESIVE MATERIALS OR 500 POUNDS PER ACRE OF WOOD FIBER MULCH.
- SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

### MAINTENANCE REQUIREMENTS:

- PERMANENT SEEDED AREAS SHOULD BE INSPECTED AT LEAST MONTHLY DURING THE COURSE OF CONSTRUCTION. INSPECTION, MAINTENANCE AND CORRECTIVE ACTIONS SHOULD CONTINUE UNTIL THE OWNER ASSUMES PERMANENT OPERATION OF THE SITE.
- SEEDED AREAS SHOULD BE MOWED AS REQUIRED TO MAINTAIN A HEALTHY STAND OF VEGETATION. MOWING HEIGHT AND FREQUENCY DEPEND OF TYPE OF GRASS COVER.
- BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABILIZATION OF EXPOSED SOILS.
- AT A MINIMUM 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.
- IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS SHOULD BE RESEEDED, WITH OTHER TEMPORARY MEASURES (I.E. MULCH, ETC.) USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.

## PERMANENT VEGETATION SEEDING RECOMMENDATIONS

USE	MIXTURE	SPECIES	LBS./ACRE	LBS./1,000-SF
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	TALL FESCUE	20	0.45
		CREeping RED FESCUE	20	0.45
		RED TOP	2	0.05
		TOTAL	42	0.95
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER	A	TALL FESCUE	20	0.45
		CREeping RED FESCUE	20	0.45
		RED TOP	2	0.05
		TOTAL	42	0.95
LIGHTLY USED PARKING LOTS, ODD AREAS, UNSEEDED LANDS, AND LOW INTENSITY RECREATION SITES	A	TALL FESCUE	20	0.45
		CREeping RED FESCUE	20	0.45
		RED TOP	2	0.05
		TOTAL	42	0.95
PLAY AREAS AND ATHLETIC FIELDS (TOPSOIL ESSENTIAL FOR GOOD TURF)	F	CREeping RED FESCUE	50	1.15
		KENTUCKY BLUEGRASS	50	1.15
		TOTAL	100	2.30

- SOURCES:**
- NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 3, TABLES 4-2 AND 4-3
  - MINNICK, E.L. AND H.T. MARSHALL, (AUGUST 1992)

## TEMPORARY VEGETATION:

### SPECIFICATIONS:

- SITE PREPARATION:**
- INSTALL NEEDED EROSION AND SEDIMENT CONTROL MEASURES SUCH AS SILTATION BARRIERS, DIVERSIONS, AND SEDIMENT TRAPS.
  - GRADE AS NEEDED FOR THE ACCESS OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING.
  - RUNOFF SHOULD BE DIVERTED FROM THE SEEDBED AREA.
  - ON SLOPES 4:1 OR STEEPER, THE FINAL PREPARATION SHOULD INCLUDE CREATING HORIZONTAL GROOVES PERPENDICULAR TO THE DIRECTION OF THE SLOPE TO CATCH SEED AND REDUCE RUNOFF.

### SEEDBED PREPARATION:

- STONES AND TRASH SHOULD BE REMOVED SO AS NOT TO INTERFERE WITH THE SEEDING AREA.
- WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
- IF APPLICABLE, FERTILIZER AND ORGANIC SOIL AMENDMENTS SHOULD BE APPLIED DURING THE GROWING SEASON.
- APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL FERTILIZER AND LIMESTONE MAY BE APPLIED AT THE FOLLOWING RATES:

LIMESTONE APPLICATION RATE = 3 TONS/ACRE (138 LB./1,000-SF)\*

\*EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE

FERTILIZER APPLICATION RATE = 600 LB./ACRE (13.8 LB./1,000-SF)\*

\*LOW PHOSPHATE FERTILIZER (N-P205-K20) OR EQUIVALENT

- FERTILIZER SHOULD BE RESTRICTED TO LOW PHOSPHATE, SLOW RELEASE NITROGEN FERTILIZER WHEN APPLIED TO AREAS BETWEEN 25 AND 250-FT FROM A SURFACE WATER BODY. NO FERTILIZER EXCEPT LIMESTONE SHOULD BE APPLIED WITHIN 25-FT OF A SURFACE WATER BODY. THESE ARE THE REQUIREMENTS FOR ANY WATER BODY PROTECTED BY THE COMPREHENSIVE SHORELAND PROTECTION ACT.

### SEEDING:

- APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL CULTIPACKER TYPE SEEDER OR HYDRO SEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM 1/4 TO 1/2 INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.
- TEMPORARY SEED SHOULD TYPICALLY OCCUR PRIOR TO SEPTEMBER 15.
- AREAS SEEDED BETWEEN MAY 15 AND AUGUST 15 SHOULD BE COVERED WITH HAY OR STRAW MULCH, ACCORDING TO THE "TEMPORARY AND PERMANENT MULCHING" PRACTICE DESCRIBED IN THE NHSSM, VOL. 3.
- VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT OTHER TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.

### MAINTENANCE REQUIREMENTS:

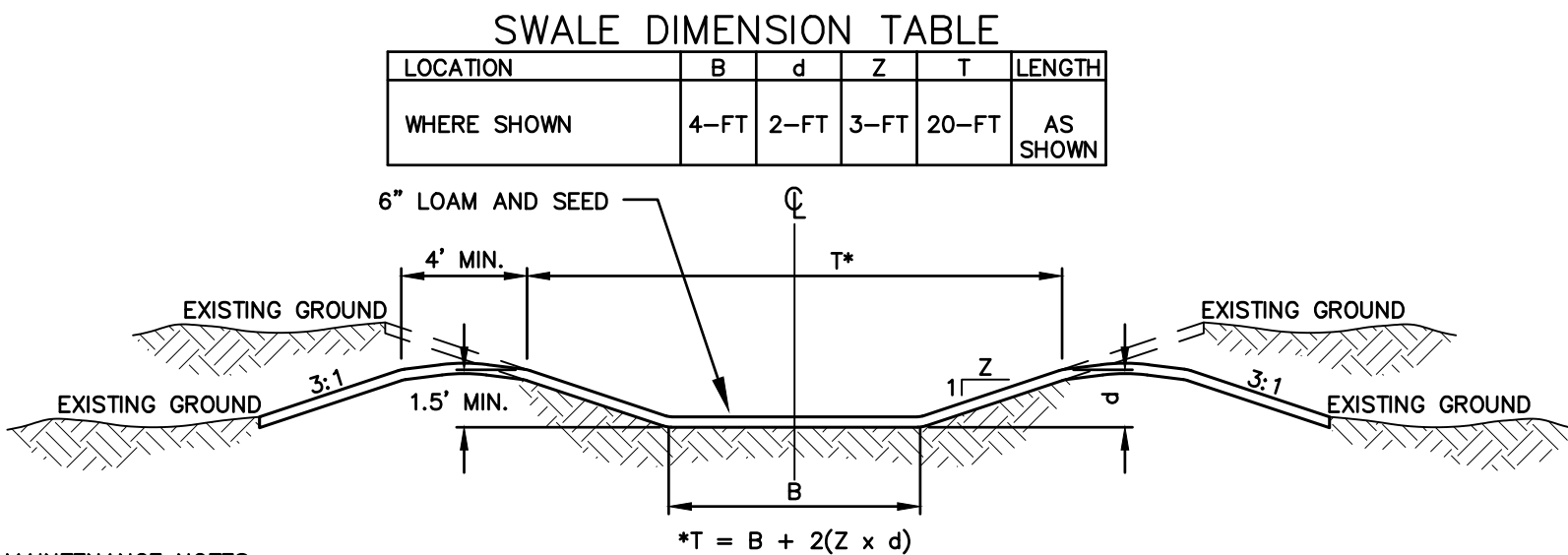
- TEMPORARY SEEDING SHOULD BE INSPECTED WEEKLY AFTER ANY RAINFALL EXCEEDING 1/2 INCH IN 24 HOURS ON ACTIVE CONSTRUCTION SITES. TEMPORARY SEEDING SHOULD BE INSPECTED JUST PRIOR TO SEPTEMBER 15, TO ASCERTAIN WHETHER ADDITIONAL SEEDING IS REQUIRED TO PROVIDE STABILIZATION OVER THE WINTER PERIOD.
- BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABILIZATION OF EXPOSED SOILS IF IT IS TOO LATE IN THE PLANTING SEASON TO APPLY ADDITIONAL SEED, THEN OTHER TEMPORARY STABILIZATION MEASURES SHOULD BE IMPLEMENTED.
- IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS SHOULD BE RESEEDED, WITH OTHER TEMPORARY MEASURES (I.E. MULCH, ETC.) USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.

## TEMPORARY VEGETATION SEEDING RECOMMENDATIONS

SPECIES	PER ACRE BUSHELS (BU) OR POUNDS (LBS.)	PER 1,000-SF	REMARKS
WINTER RYE	2.5 BU OR 112 LBS.	2.5 LBS.	BEST FOR FALL SEEDING. SEED FROM AUGUST 15 TO SEPTEMBER 15 FOR BEST COVER. SEED TO A DEPTH OF 1 INCH.
OATS	2.5 BU OR 80 LBS.	2.0 LBS.	BEST FOR SPRING SEEDING. SEED NO LATER THAN MAY 15 FOR SUMMER PROTECTION. SEED TO A DEPTH OF 1 INCH.
ANNUAL RYEGRASS	40 LBS.	1.0 LB.	GROWS QUICKLY, BUT IS OF SHORT DURATION. USE WHERE APPEARANCES ARE IMPORTANT. SEED EARLY SPRING AND/OR BETWEEN AUGUST 15 AND SEPTEMBER 15. COVER THE SEED WITH NO MORE THAN 0.25 INCH OF SOIL.
PERENNIAL RYEGRASS	30 LBS.	0.7 LBS.	BEST FOR FALL SEEDING. SEED FROM AUGUST 15 TO SEPTEMBER 15 FOR BEST COVER. SEED TO A DEPTH OF 1 INCH.

### SOURCES:

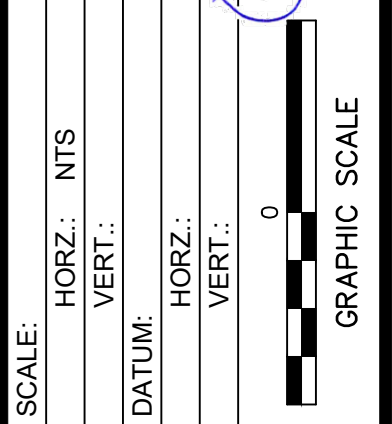
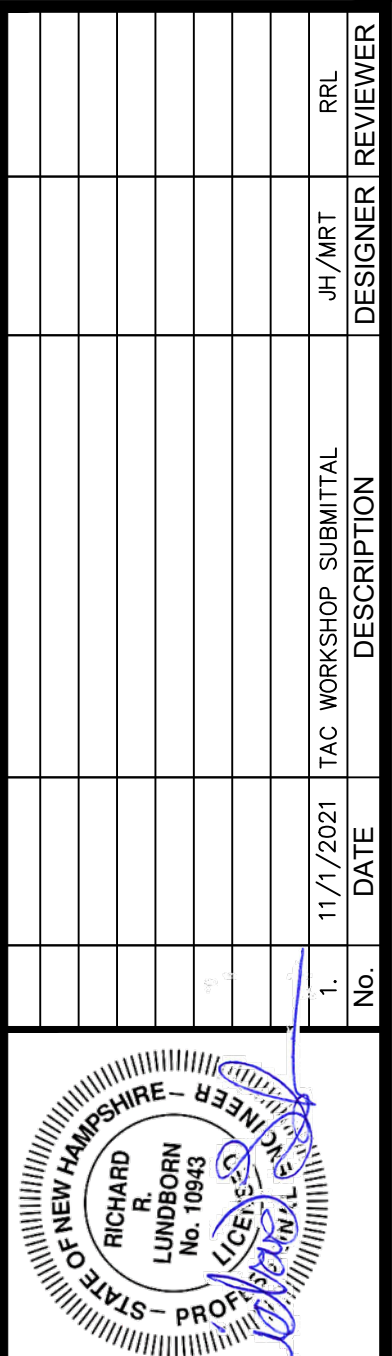
- NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 3, TABLE 4-1
- MINNICK, E.L. AND H.T. MARSHALL, (AUGUST 1992)



- MAINTENANCE NOTES:**
- THE SWALE(S) SHALL BE MOWED WITH THE REST OF THE SITES LAWN AREAS TO PROMOTE HEALTHY GROWTH AND PREVENT THE ENCROACHMENT OF WEEDS AND WOODY VEGETATION. DO NOT MOW GRASS IN SWALE(S) TOO SHORT. THIS WILL REDUCE THE SWALES FILTERING ABILITY.
  - THE SWALE(S) SHOULD BE FERTILIZED ON AN AS NECESSARY BASIS, TO KEEP THE GRASS HEALTHY. OVER FERTILIZATION COULD RESULT IN THE SWALE(S) BECOMING A SOURCE OF POLLUTION TO THE SURROUNDING WETLAND AREAS.
  - THE SWALE(S) SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND RE-VEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

## VEGETATED SWALE DETAIL

NOT TO SCALE



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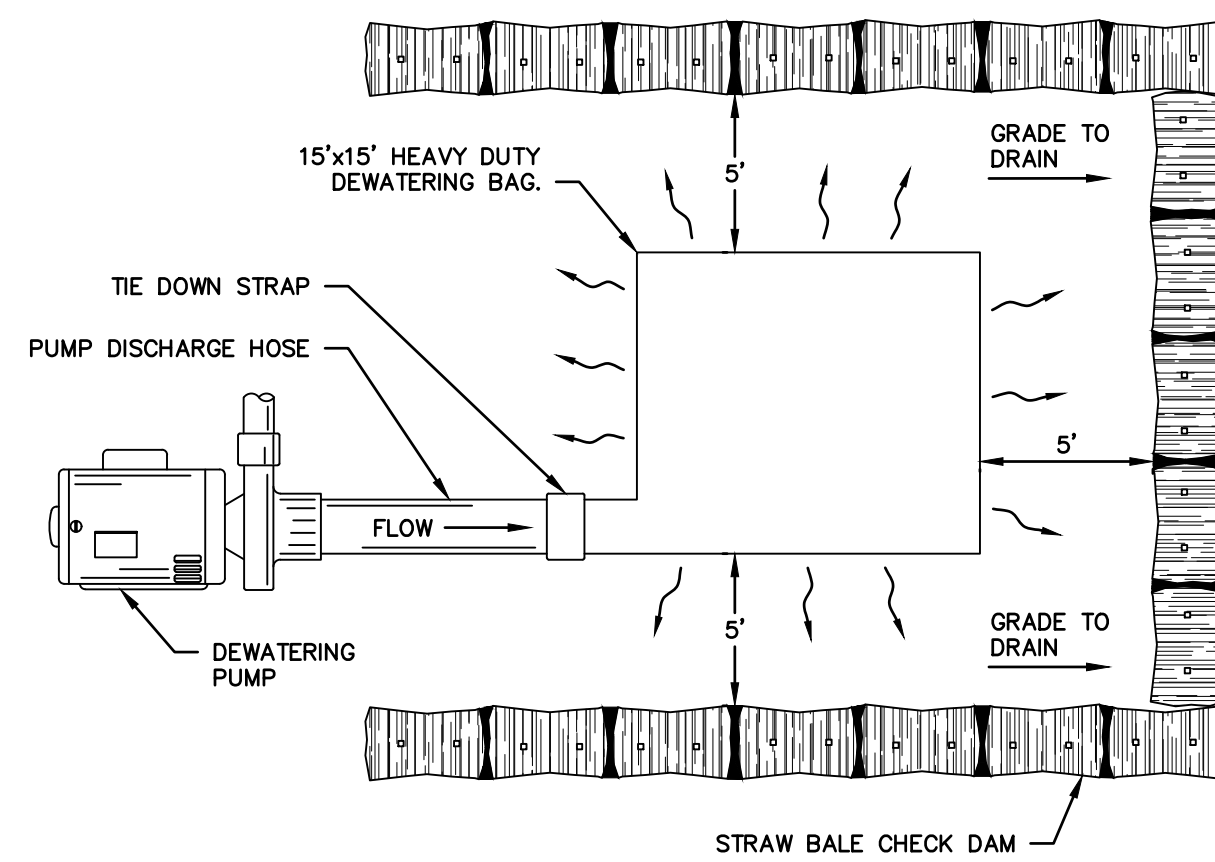


CATE STREET DEVELOPMENT, LLC  
EROSION CONTROL DETAILS  
ROUTE 1 BYPASS / HODGDON WAY  
PORTSMOUTH  
NEW HAMPSHIRE

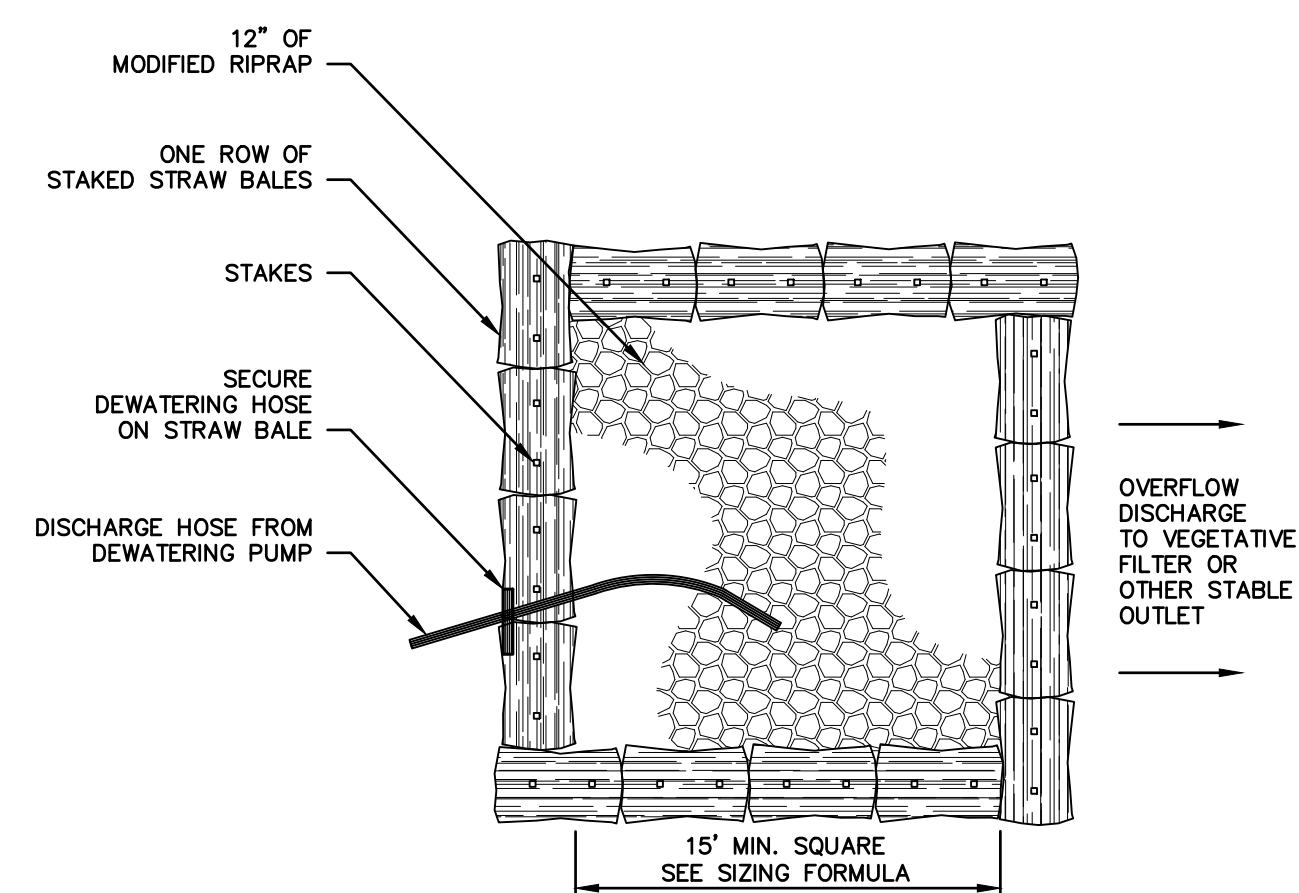
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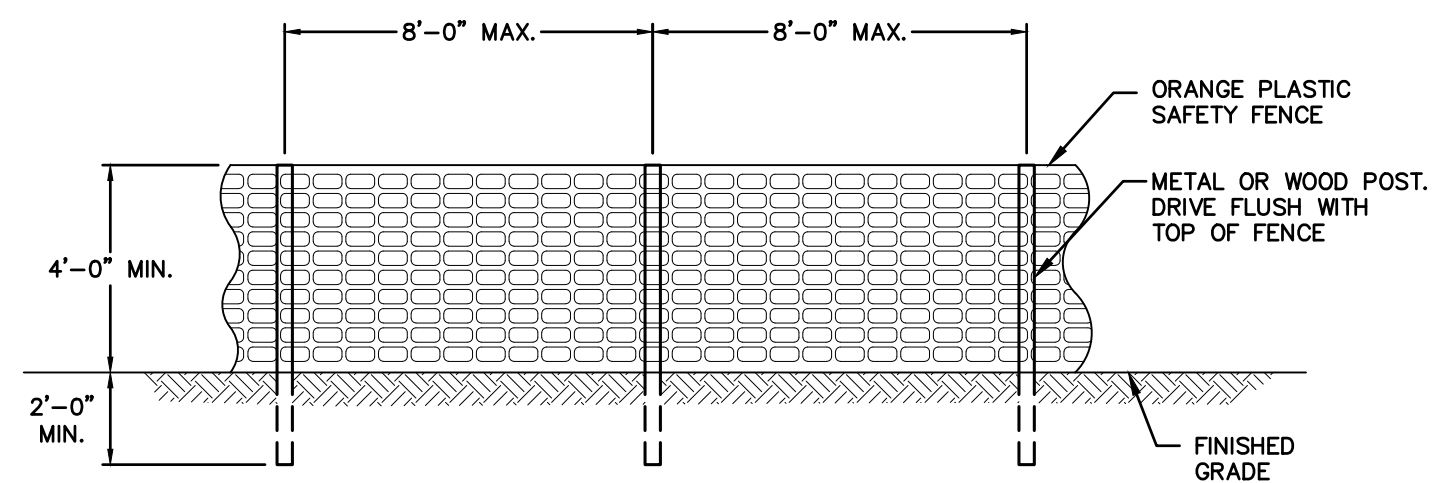


DEWATERING BAG  
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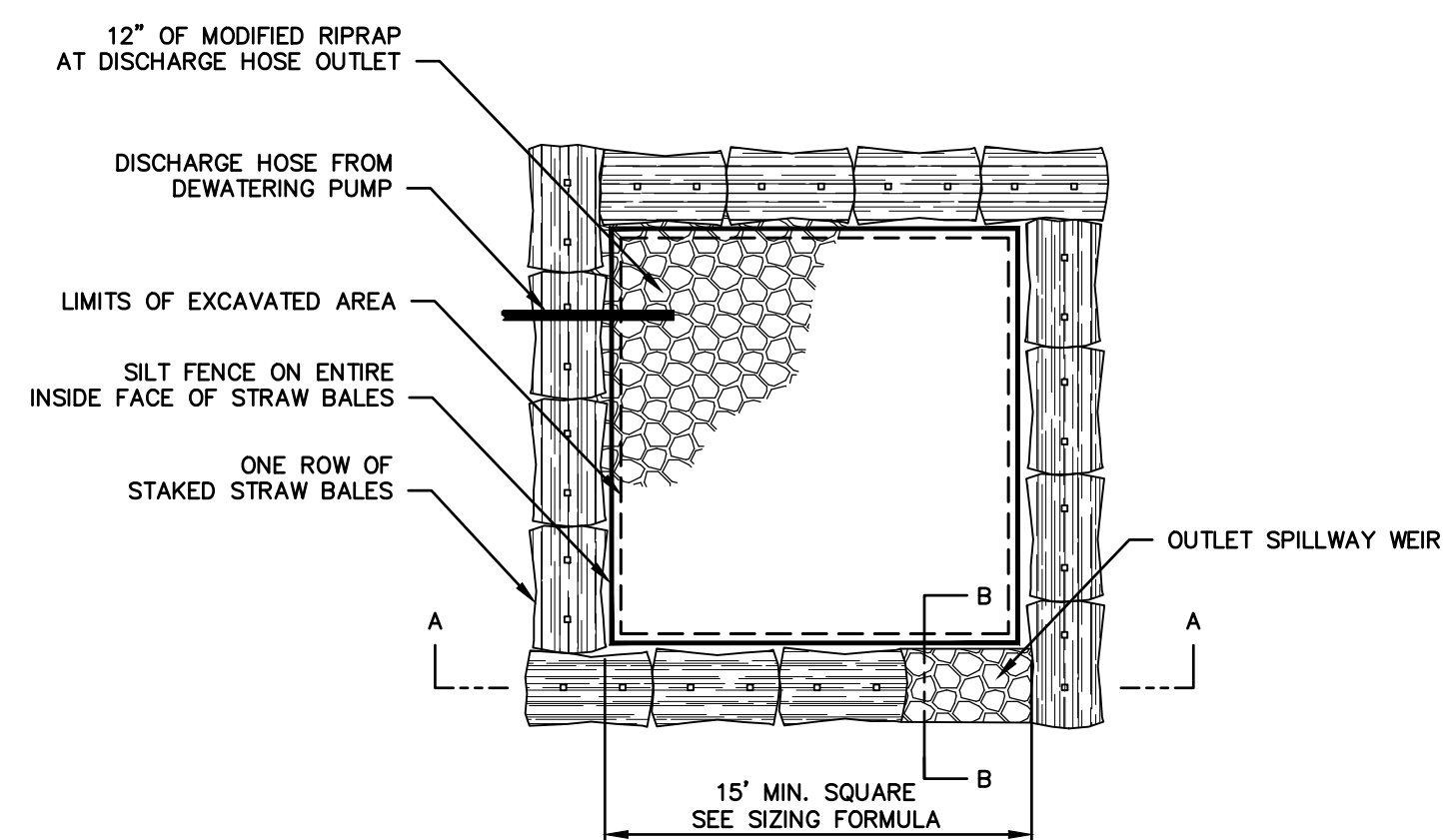
SIZING FORMULA:  
CUBIC FT. OF REQUIRED STORAGE = PUMP DISCHARGE RATE (GPM) x 16

PLAN  
PUMP SETTLING BASIN TYPE I  
NOT TO SCALE



FOR TREE PROTECTION FENCE SHALL BE PLACED AT DRIPLINE OF TREES.

PROTECTIVE SAFETY FENCE  
SCALE: N.T.S.

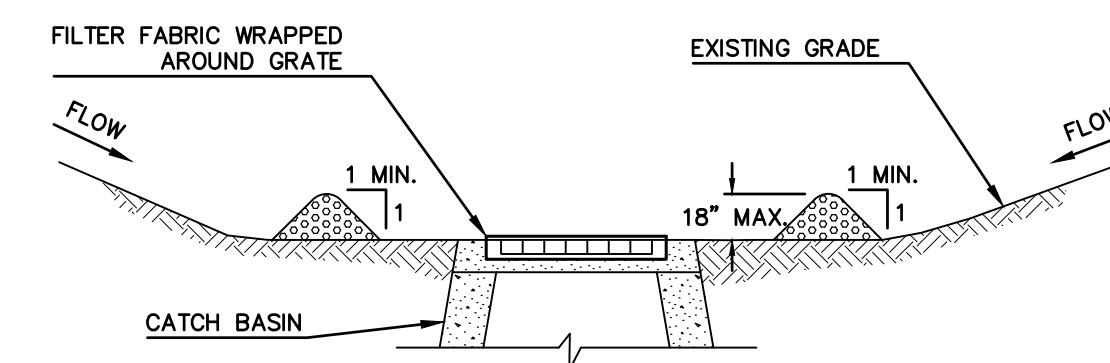
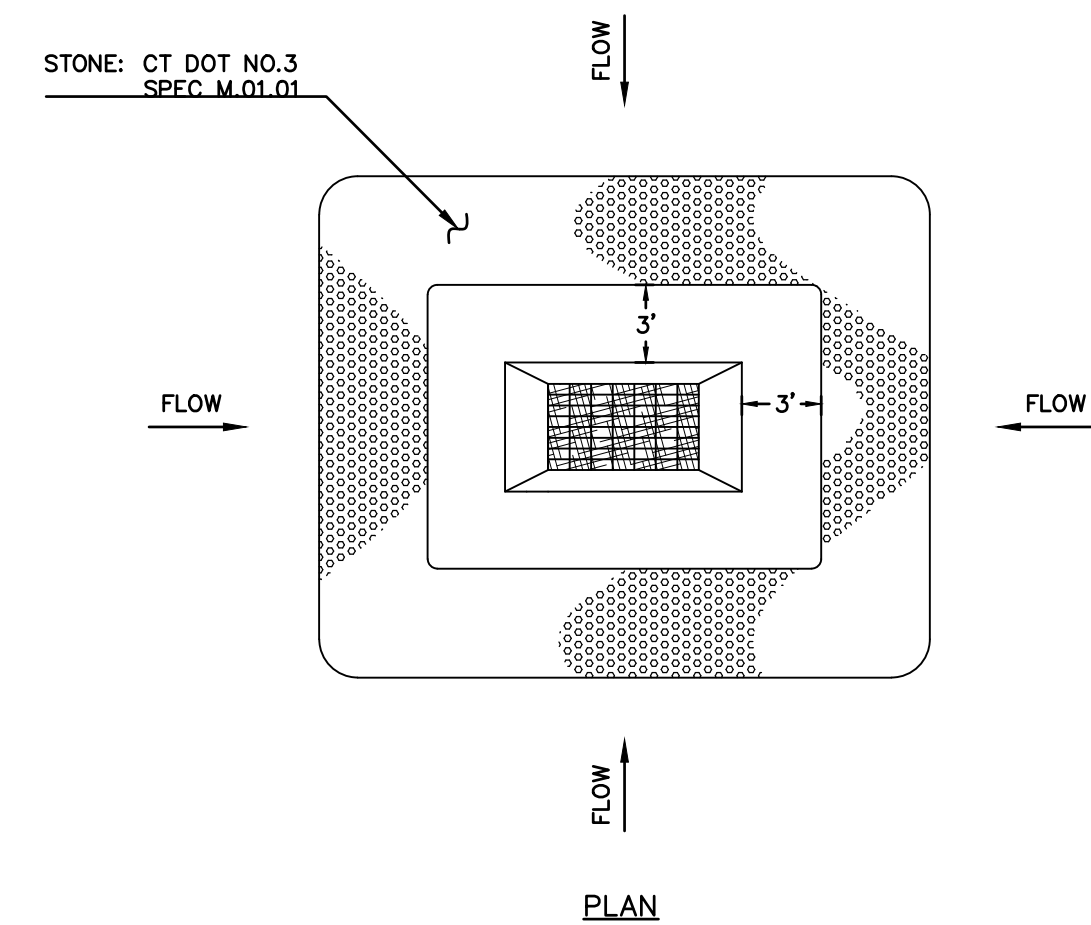


SIZING FORMULA:  
CUBIC FT. OF REQUIRED STORAGE = PUMP DISCHARGE RATE (GPM) x 16

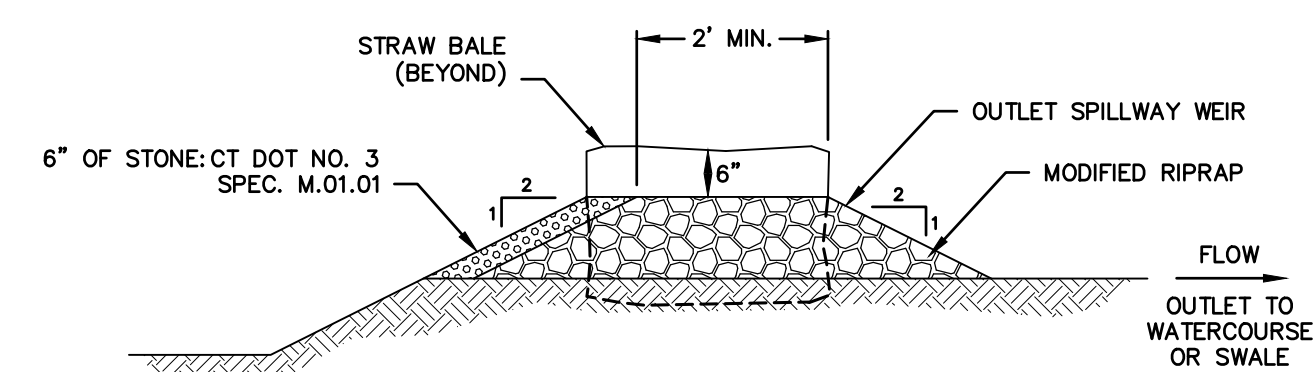
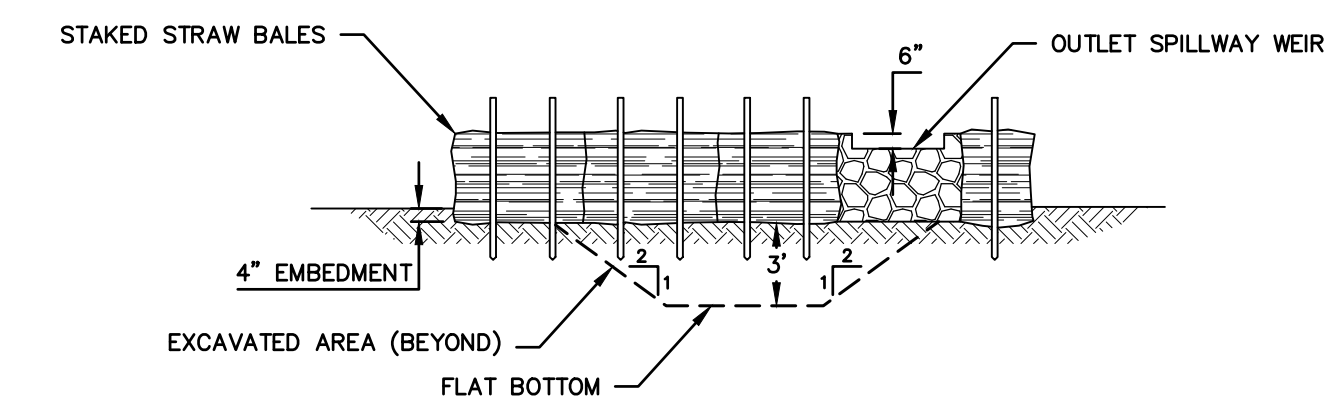
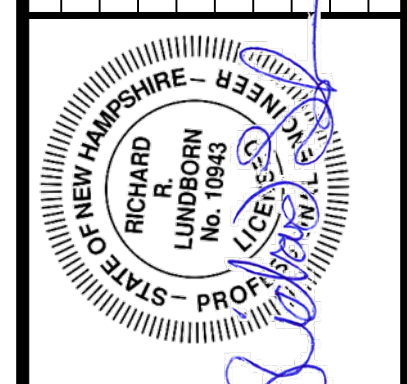
PLAN

PUMP SETTLING BASIN TYPE II

NOT TO SCALE



LOW POINT STONE CHECK DAM  
NOT TO SCALE

[illegible]

SCALE:

HORIZ.: NTS

VERT.:

ODATUM:

HORIZ.:

VERT.:

0

GRAPHIC SCALE

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CATE STREET DEVELOPMENT, LLC
EROSION CONTROL DETAILS
ROUTE 1 BYPASS / HODGDON WAY PORTSMOUTH NEW HAMPSHIRE

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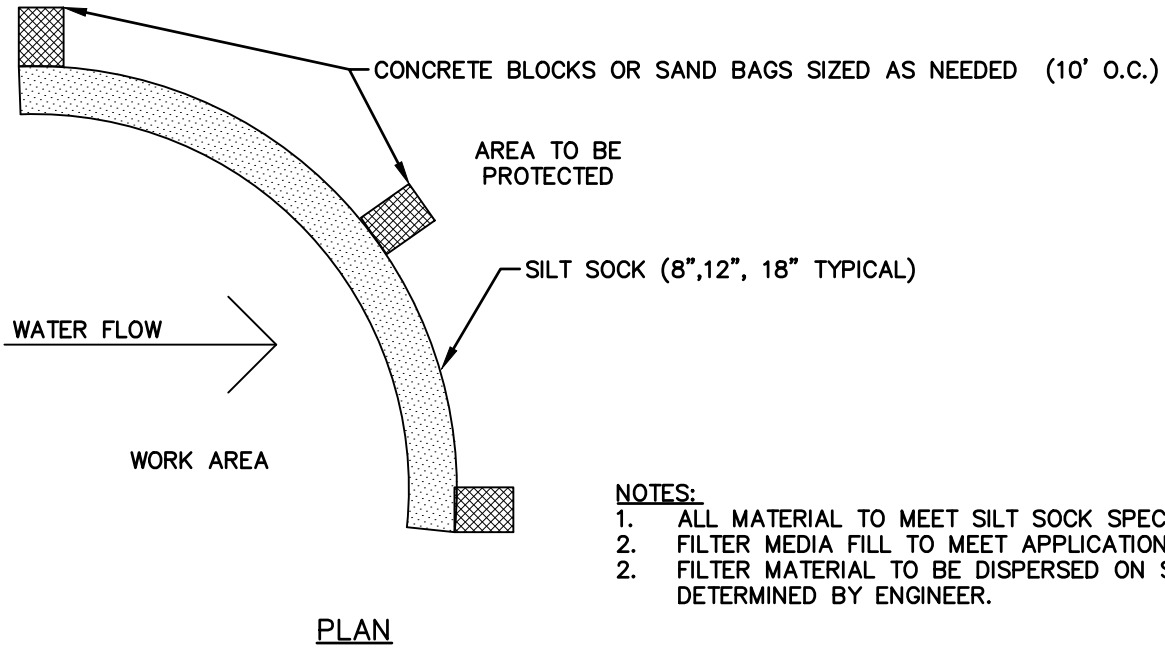
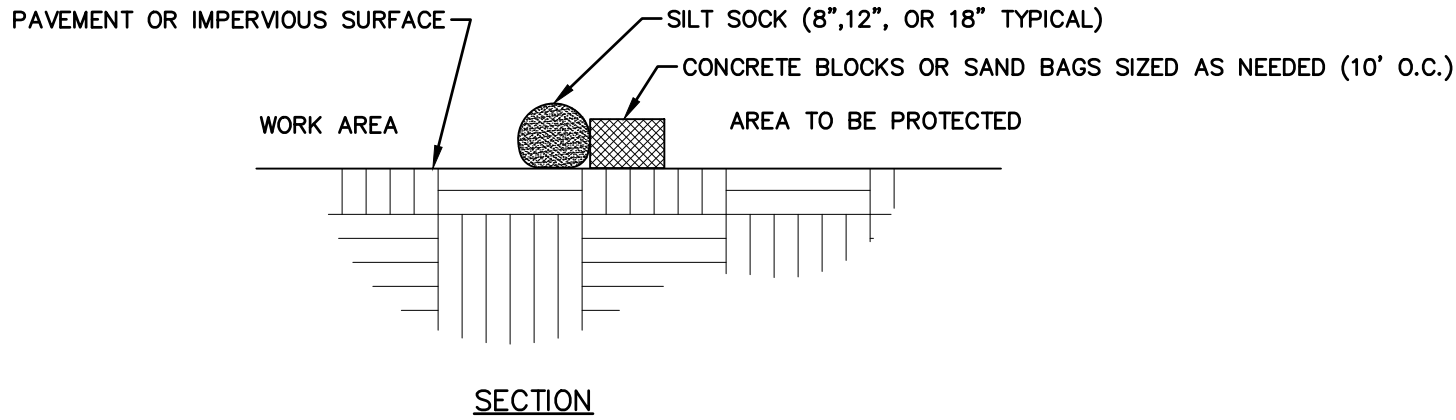
## SILT SOCKS

MAINTENANCE REQUIREMENTS:

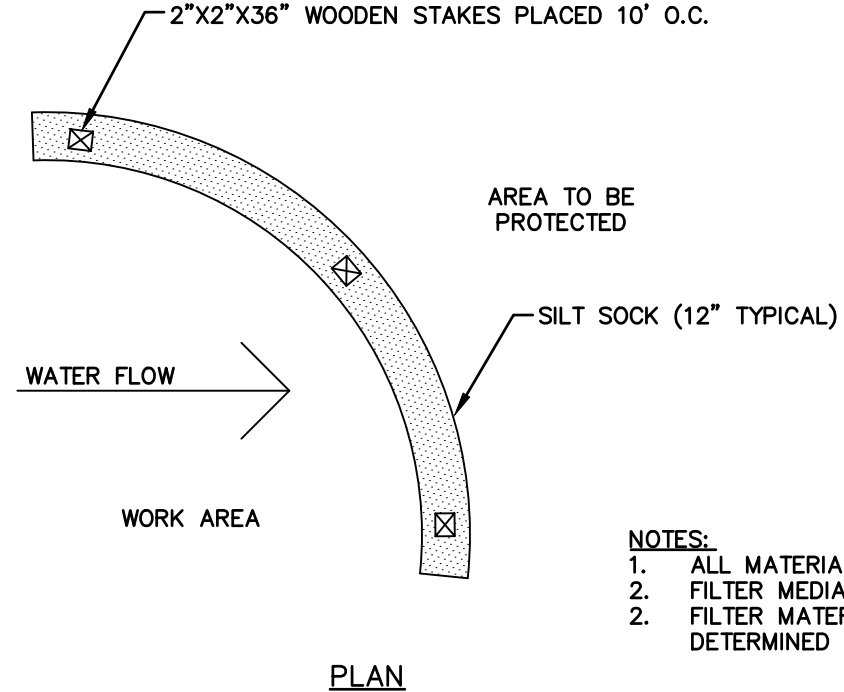
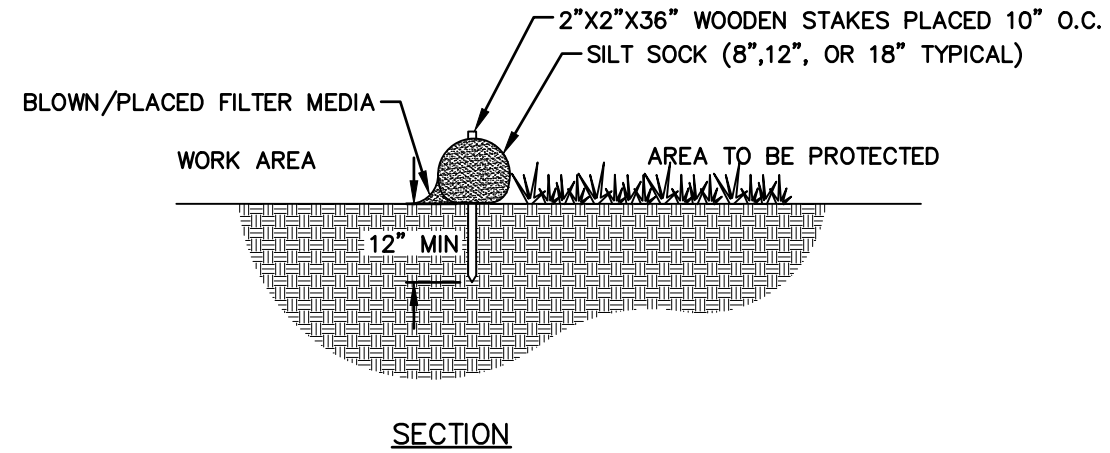
1. SILT SOCKS SHOULD BE INSPECTED AND MAINTAINED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALLS;
2. SEDIMENT DEPOSITION SHOULD BE REMOVED, AT A MINIMUM, WHEN DEPOSITION ACCUMULATES TO ONE-HALF THE HEIGHT OF THE SOCK, AND MOVED TO AN APPROPRIATE LOCATION SO THE SEDIMENT IS NOT READILY TRANSPORTED BACK TOWARD THE SILT SOCK.
3. SILT SOCKS SHOULD BE REPAIRED IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHOULD BE REPLACED WITH A TEMPORARY CHECK DAM.
4. SHOULD THE FABRIC ON A SILT SOCK DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL IS NECESSARY; THE FABRIC SHOULD BE REPLACED PROMPTLY.
5. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT SOCK IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE PREPARED AND SEEDED.
6. IF THERE IS EVIDENCE OF END FLOW ON PROPERLY INSTALLED BARRIERS, EXTEND BARRIERS UPHILL OR CONSIDER REPLACING THEM WITH OTHER MEASURES, SUCH AS TEMPORARY DIVERSIONS AND SEDIMENT TRAPS.
7. SILT SOCKS HAVE A USEFUL LIFE OF ONE SEASON, ON LONGER CONSTRUCTION PROJECTS, SILT SOCKS SHOULD BE REPAIRED PERIODICALLY AS REQUIRED TO MAINTAIN EFFECTIVENESS.

CONSTRUCTION SPECIFICATIONS:

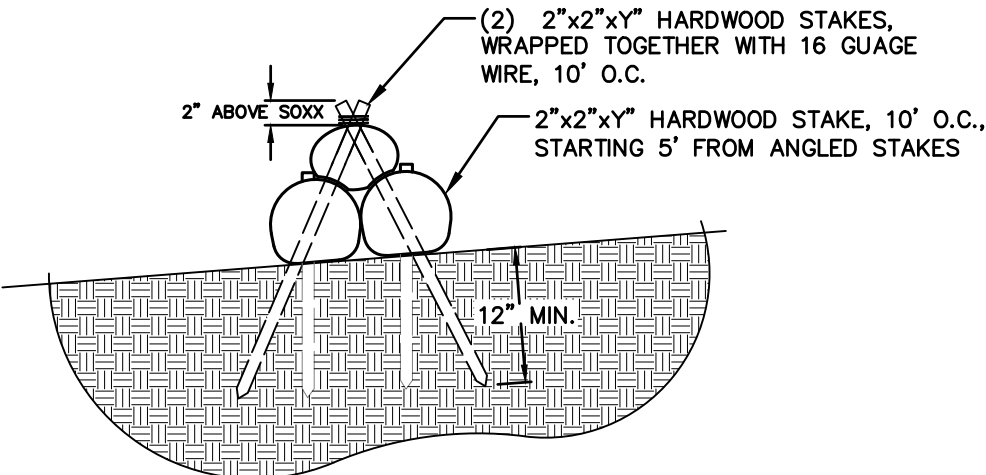
1. SILT SOCKS SHOULD BE USED IN AREAS WHERE EROSION WILL OCCUR ONLY IN THE FORM OF SHEET EROSION AND THERE IS NO CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY ABOVE THE SILT SOCK. SEDIMENT BARRIERS SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA ABOVE THE SILT SOCK SHOULD BE LESS THAN 1 ACRE PER 100 LINEAR FEET OF SILT SOCK;
3. THE MAXIMUM LENGTH OF SLOPE ABOVE THE SILT SOCK SHOULD BE 100 FEET;
4. THE MAXIMUM SLOPE ABOVE THE SILT SOCK SHOULD BE 2:1;
5. SILT SOCKS SHOULD BE INSTALLED FOLLOWING THE CONTOUR OF THE LAND AS CLOSELY AS POSSIBLE, AND
  - A. THE ENDS OF THE SILT SOCK SHOULD BE FLARED UPSLOPE;
  - B. STAKE POSTS SHOULD BE SIZED AND ANCHORED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS WITH MAXIMUM POST SPACING OF 10 FEET ON CENTER;
  - C. ADJOINING SECTIONS OF THE SILT SOCK SHOULD BE OVERLAPPED BY A MINIMUM OF 18 INCHES.
6. SILT SOCKS PLACED AT THE TOE OF A SLOPE SHOULD BE SET AT LEAST 6 FEET FROM THE TOE TO ALLOW SPACE FOR SHALLOW PONDING AND TO ALLOW FOR MAINTENANCE ACCESS WITHOUT DISTURBING THE SLOPE.



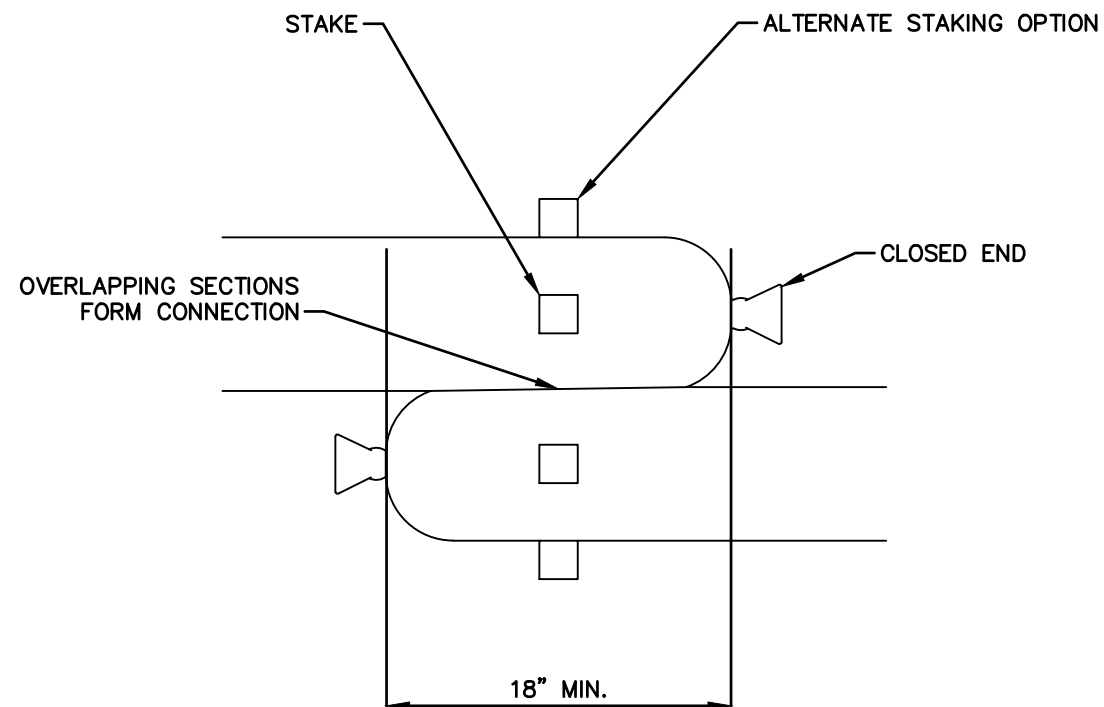
SILT SOCK FOR SEDIMENT CONTROL ON PAVEMENT  
SCALE: N.T.S.



SILT SOCK FOR SEDIMENT CONTROL  
SCALE: N.T.S.



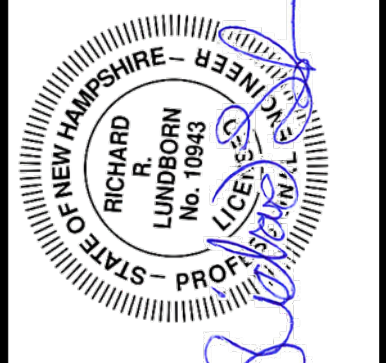
SILT SOCK PYRAMIND STACK DETAIL  
NOT TO SCALE




SILT SOCK CONNECTION/ATTACHMENT DETAIL

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SCALE: N.T.S.

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GRAPHIC SCALE	

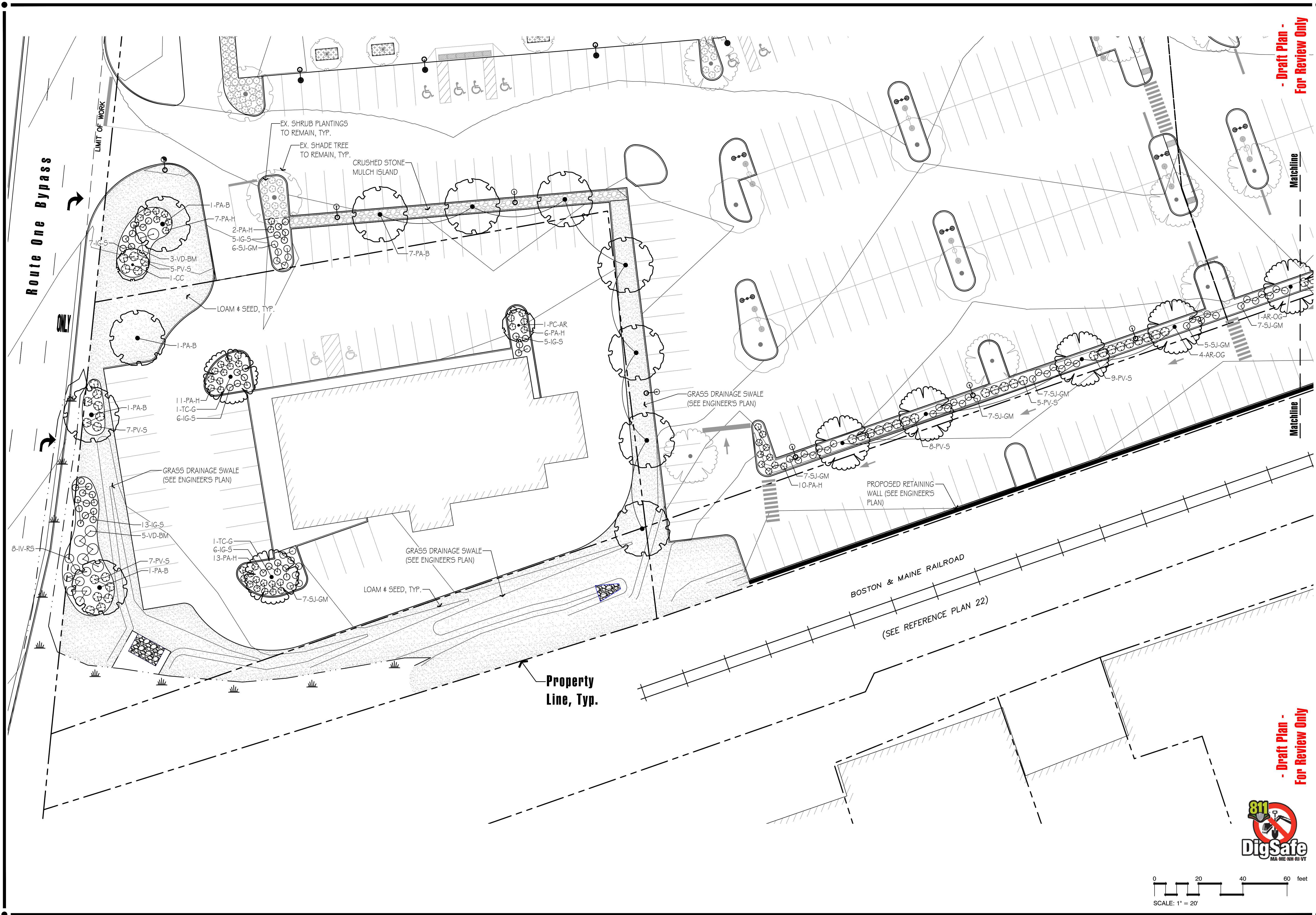


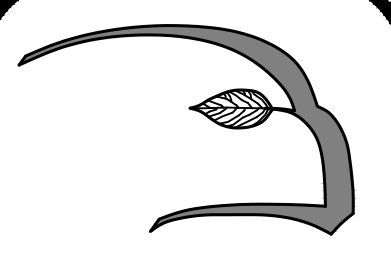
CATE STREET DEVELOPMENT, LLC  
EROSION CONTROL DETAILS  
ROUTE 1 BYPASS / HODGDON WAY  
PORTSMOUTH NEW HAMPSHIRE

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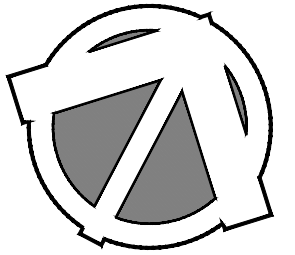






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Revisions:

Num.	Date	Description
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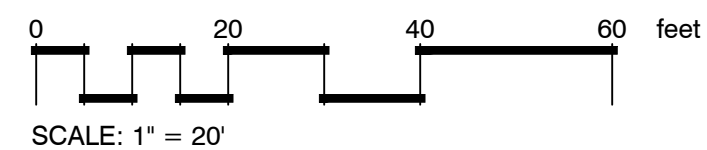
**Cate Street Development, LLC.**  
Route 1 Bypass / Hodgdon Way  
Portsmouth, New Hampshire

Drawn By: BNL    Checked By: TEM

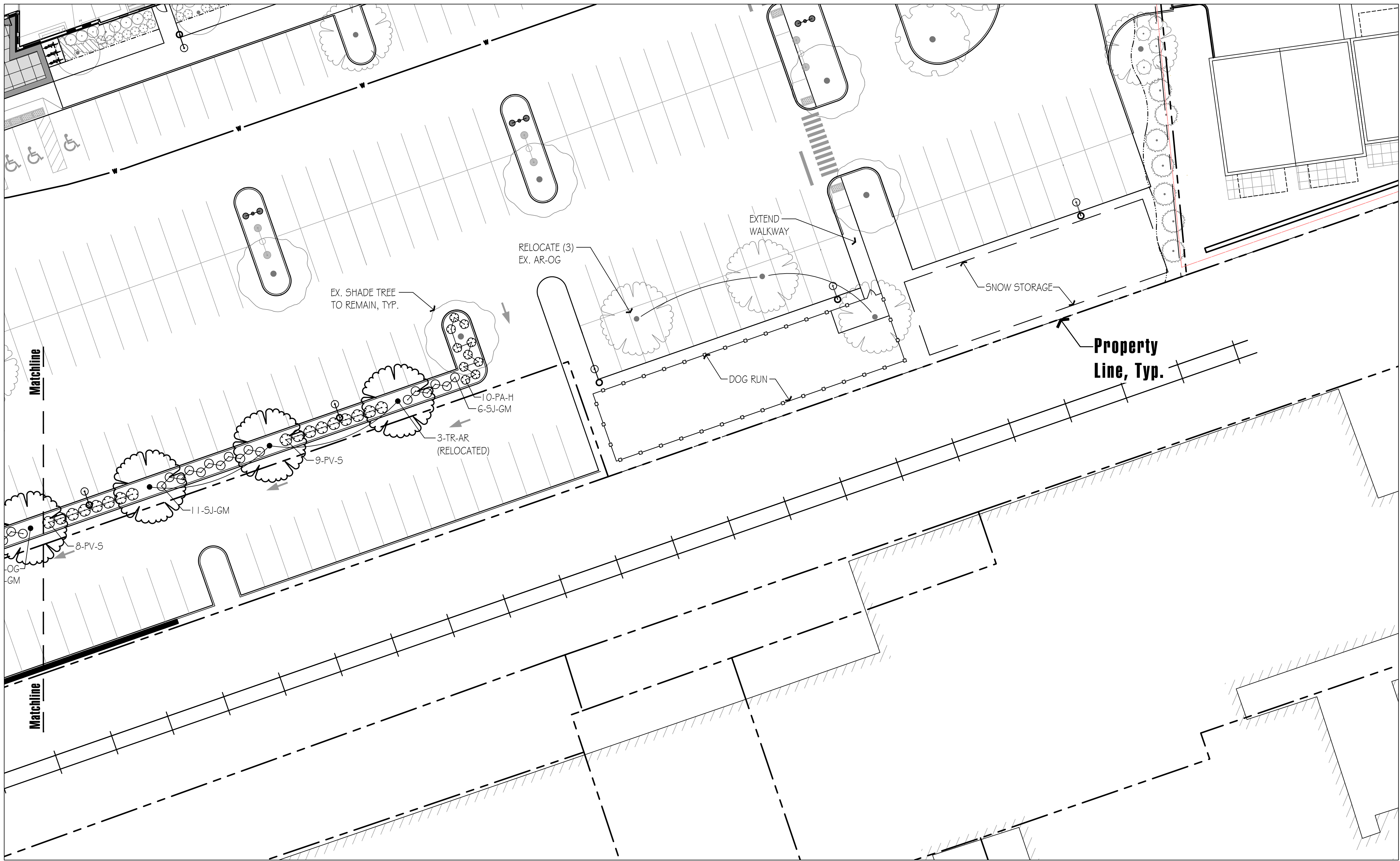
**Planting Plan**

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Sheet: **L1**



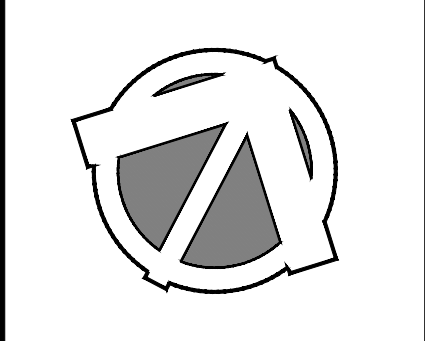




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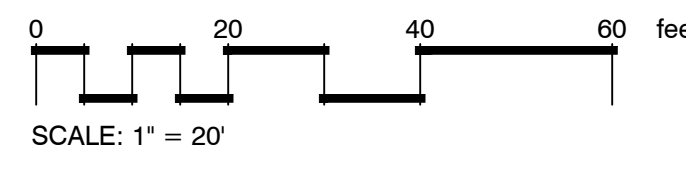
Route 1 Bypass / Hodgdon Way  
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Drawn By: BNL      Checked By: TEM

Planting  
Plan

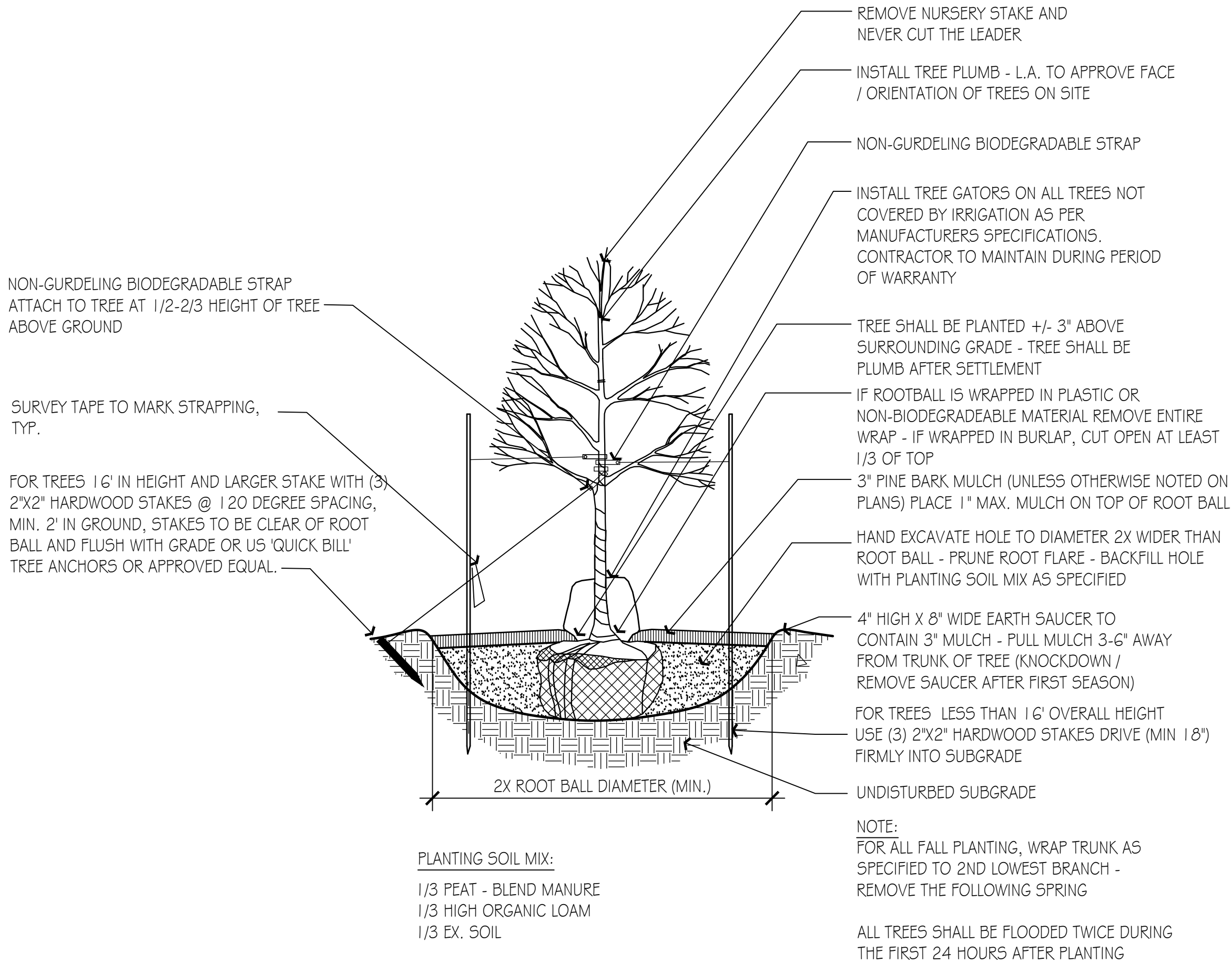
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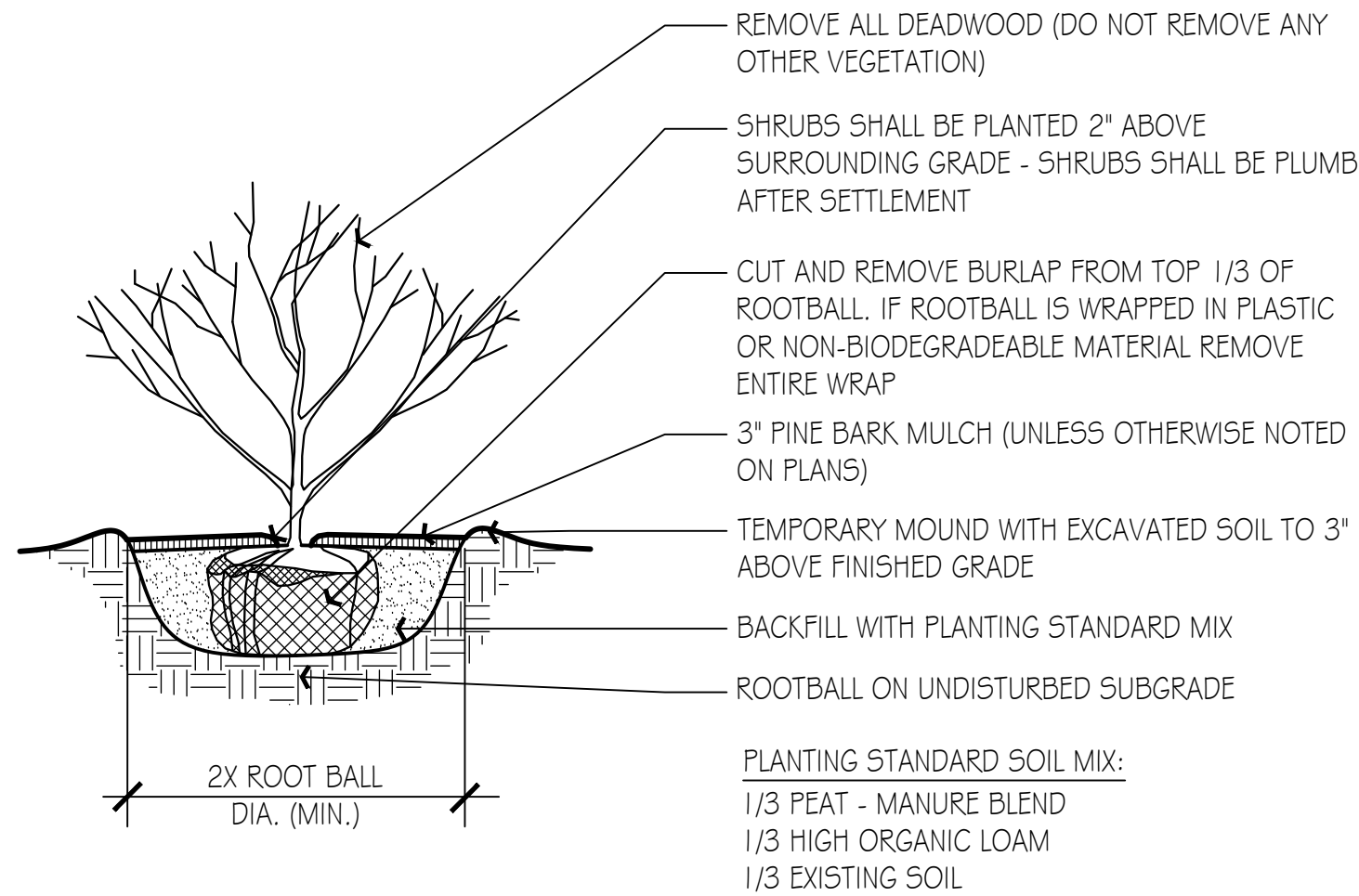
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## 1 Deciduous Tree Planting

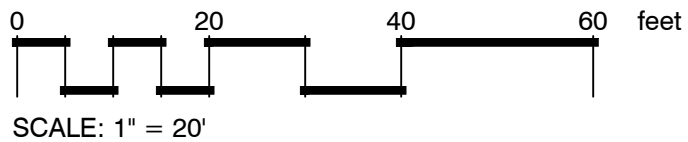
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## 2 Shrub Planting

Scale: N.T.S.

PLANT SCHEDULE										
TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	PLANT SIZE	MIN. HT. AT INSTALL	PLANT SIZE AT MATURITY	GROWTH HABIT	SALT TOLERANCE	NOTES
AR-OG	5	Acer rubrum 'October Glory'	October Glory Maple	B & B	3-3.5" CAL.	14' HT.	60' HT.	BROAD / ROUNDED	HIGH	NATIVE CULTIVAR
CC	1	Cercis canadensis	Eastern Redbud	B & B	2-2.5" CAL.	10' HT.	25' HT.	ROUNDED	MEDIUM	NATIVE
PA-B	11	Platanus acerifolia 'Bloodgood'	Bloodgood London Plane Tree	B & B	3-3.5" CAL.	14' HT.	70' HT.	BROAD / ROUNDED	MEDIUM	
PC-AR	1	Pyrus calleryana 'Aristocrat'	Aristocrat Pear	B & B	3-3.5" CAL.	14' HT.	40' HT.	COLUMNAR	MEDIUM	
TC-G	2	Tilia cordata 'Greenspire'	Greenspire Littleleaf Linden	B & B	3-3.5" CAL.	14' HT.	50' HT.	PYRAMIDAL	MEDIUM	
TR-AR	3	Acer rubrum 'October Glory'	October Glory Maple	Relocated		N/A				
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT	PLANT SIZE					
IG-S	42	Ilex glabra 'Shamrock'	Inkberry	B & B	18-24" HT.		4'X4'	ROUNDED	HIGH	NATIVE CULTIVAR
IV-RS	8	Ilex verticillata 'Red Sprite'	Red Sprite Winterberry	CONT.	18-24" SPD		4'X4'	ROUNDED	HIGH	NATIVE CULTIVAR
PA-H	59	Pennisetum alopecuroides 'Hameln'	Hameln Fountain Grass	2 GAL			2'X2'	MOUNDED	HIGH	
PV-S	58	Panicum virgatum 'Shenandoah'	Switch Grass	3 GAL			4'X3'	NARROW CLUMP	HIGH	NATIVE CULTIVAR
SJ-GM	63	Spiraea japonica 'Goldmound'	Gold Mound Spirea	B & B	18-24" SPD		3'X4'	MOUNDED	HIGH	
VD-BM	8	Viburnum dentatum 'Blue Muffin'	Blue Muffin Viburnum	CONT.	3-3.5' HT.		7'X4'	UPRIGHT	HIGH	NATIVE CULTIVAR



## Cate Street Development, LLC.

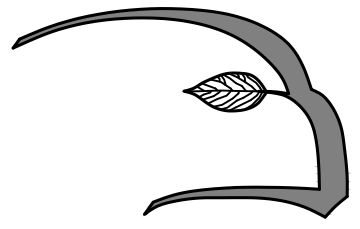
Route 1 Bypass / Hodgdon Way  
Portsmouth, New Hampshire

Drawn By: BNL Checked By: TEM

### Plant Schedule and Planting Details

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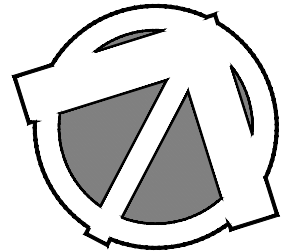
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General Landscape Notes:

1. 1) CONTRACTOR REQUIREMENTS:  
A) ALL WORK SHALL COMPLY WITH APPLICABLE CODES AND REGULATIONS, FROM ALL FEDERAL, STATE AND LOCAL AUTHORITIES.
- B) THE CONTRACTOR SHALL ARRANGE FOR AND OBTAIN ALL PERMITS AND LICENSES REQUIRED FOR THE COMPLETE WORK SPECIFIED HEREIN AND SHOWN ON ALL THE DRAWINGS. THE CONTRACTOR SHALL PAY FOR ANY FEES NOT WAIVED.
1. 2) UTILITIES:  
A) LANDSCAPE CONTRACTOR IS REQUIRED TO CONTACT THE RELEVANT UTILITY COMPANIES PRIOR TO DOING ANY EXCAVATION ON THE SITE, IF ANY WORK IS TO BE DONE AROUND UNDERGROUND UTILITIES, THE APPROPRIATE AUTHORITY OF THAT UTILITY MUST BE NOTIFIED OF THE IMPENDING WORK.
- B) UTILITIES SHALL BE LOCATED AND MARKED PRIOR TO ANY INSTALLATION. ADJUSTMENTS MAY BE NECESSARY IN THE FIELD TO ACCOMMODATE UTILITY LOCATIONS. REPORT ANY CONFLICTS TO THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
- C) THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES DONE TO EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF SATISFACTORY REPAIR OF ALL DAMAGE IN KIND RESULTING FROM THEIR FAILURE TO COMPLY.
1. 3) PROTECTION OF EXISTING WORK: IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM ALL WORK IN A MANNER THAT PROTECTS WORK COMPLETED BY OTHERS, SUCH AS CURBS, UTILITIES, STORM DRAINAGE, FENCES, DRIVEWAY APRONS, DRIVES, VEGETATION, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF SATISFACTORY REPAIR OF ALL DAMAGE IN KIND RESULTING FROM THEIR FAILURE TO COMPLY.
1. 4) QUANTITIES: A COMPLETE LIST OF PLANTS INCLUDING A SCHEDULE OF QUANTITIES, SIZES, TYPES, AND NAMES IS INCLUDED IN THIS SET OF DRAWINGS. IN THE EVENT OF DISCREPANCIES BETWEEN QUANTITIES OF PLANT IN THE PLANT LIST AND THE QUANTITIES SHOWN ON THE DRAWINGS, THE PLAN SHALL GOVERN. THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT OF UNLABELED PLANTS IN PLAN FOR CLARIFICATION. THE LANDSCAPE ARCHITECT SHALL BE ALERTED BY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO FINAL BID NEGOTIATION.
1. 5) APPLICABLE PLANT MATERIALS STANDARDS: ALL PLANT MATERIALS ARE TO COMPLY WITH THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSEYMEN. PLANTING METHODS WILL BE IN ACCORDANCE WITH SITE-SPECIFIC REQUIREMENTS.
1. 6) PLANT HARDINESS: ALL TREES AND SHRUBS SHALL BE NURSERY GROWN WITHIN A USDA PLANT HARDINESS ZONE, WHICH IS THE SAME AS, OR COLDER THAN, THE ZONE IN WHICH THE PROJECT IS LOCATED.
1. 7) PLANTING SEASONS: PLANTING SHALL ONLY OCCUR DURING SPECIFIED SEASONS. SPRING SEASON SHALL BE FROM MARCH 1 TO JUNE 15. FALL PLANTING SEASON SHALL BE FROM SEPTEMBER 15 THROUGH NOVEMBER 15. NO PLANTING SHALL OCCUR WHEN THE GROUND IS FROZEN.
1. 8) PLANT SUBSTITUTIONS: NO SUBSTITUTIONS OF PRODUCTS, PLANT TYPES OR SIZES SHALL BE MADE WITHOUT THE WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT. REQUESTS FOR SUBSTITUTION SHALL BE IN WRITING, AND SHALL STATE THE REASON FOR THE SUBSTITUTION REQUEST, THE SUGGESTED ALTERNATIVE AND THE CHANGES IN COST. REQUESTS FOR SUBSTITUTION IN PLANT MATERIALS SHALL STATE THE NAMES OF NURSERIES THAT HAVE BEEN UNABLE TO SUPPLY THE ORIGINALLY SPECIFIED MATERIAL.
1. 9) THE LANDSCAPE ARCHITECT SHALL RESERVE THE RIGHT TO INSPECT ALL PLANT MATERIALS AT THE NURSERY, UPON SITE DELIVERY AND DURING INSTALLATION TO INSURE SPECIFICATIONS AND PROCEDURES ARE ADHERED TO.
1. 10) MINIMUM SIZES: ALL PLANTS 3' OR GREATER IN HEIGHT OR SPREAD SHALL BE BALLED AND BURLAPPED. SIZES SPECIED IN THE PLANT LIST ARE MINIMUMS ON WHICH THE PLANTS ARE TO BE JUDGED.
1. 1 1) DEAD PLANTS: DEAD PLANTS ARE TO BE REMOVED FROM THE SITE IMMEDIATELY, AND REPLACED WITH THE SAME PLANT & SIZE REGARDLESS OF SEASON, WEEKLY FROM THE JOB BY THE CONTRACTOR. THE CONTRACTOR SHALL MAINTAIN AN UPDATED COMPREHENSIVE LIST OF ALL DEAD MATERIALS REMOVED AND PRESENT A COPY OF THE LIST TO THE OWNER AND LANDSCAPE ARCHITECT AT THE END OF EVERY MONTH DURING THE CONTRACT PERIOD.
1. 1 2) PLANT MATERIAL REMOVAL: NO EXISTING TREES SHALL BE REMOVED WITHOUT THE WRITTEN AUTHORIZATION FROM THE LANDSCAPE ARCHITECT EXCEPT WHERE NOTED ON THE PLANS. CONTRACTORS WHO REMOVE EXISTING TREES WITHOUT WRITTEN APPROVAL WILL BE REQUIRED TO MAKE REMEDIES DETERMINED BY THE GOVERNING URBAN FORESTER OR EQUIVALENT AUTHORITY. NO GRUBBING SHALL OCCUR WITHIN EXISTING TREE AREAS UNLESS SPECIFICALLY NOTED ON THE PLANS.
1. 1 3) ALL DISTURBED AREAS NOT TO RECEIVE PLANT MATERIALS ARE TO BE LOAMED AND SEEDED AND BLENDED INTO EXISTING GRADE AND CONDITIONS. SEE SECTION 4.0.
1. 1 4) LEDGE BOULDERS: IF DURING SITE EXCAVATION, LEDGE BOULDERS ARE AVAILABLE, THESE ARE TO BE STOCKPILED FOR USE IN EARTH BERMS IF APPLICABLE, WITH HAWK DESIGN, INC. PRIOR TO INSTALLATION. THIS ITEM WILL ONLY APPLY IF SO SPECIFIED ON DRAWINGS. BOULDERS SIZES TO BE STOCKPILED WILL RANGE FROM TWO TO FIVE FEET IN DIAMETER. SEE APPROPRIATE DETAIL FOR INSTALLATION COORDINATION.
1. 1 5) SLEEVES: LANDSCAPE OR SITE CONTRACTOR SHALL PLACE INDIVIDUAL SLEEVES FOR LIGHTING AND IRRIGATION UNDER ANY PROPOSED WALKWAY OR VEHICULAR ROADWAY PRIOR TO INSTALLATION. COORDINATE SLEEVE LOCATIONS WITH IRRIGATION AND LIGHTING CONTRACTORS PRIOR TO INSTALLATION.
1. 1 6) DO NOT CLOSE OR OBSTRUCT ANY STREET, SIDEWALK, ALLEY OR PASSAGEWAY WITHOUT PRIOR NOTIFICATION AND PERMISSION. CONDUCT OPERATIONS AS TO INTERFERE AS LITTLE AS POSSIBLE WITH THE USE ORDINARILY MADE OF ROADS, DRIVEWAYS, ALLEYS, SIDEWALKS OR OTHER FACILITIES NEAR ENOUGH TO THE WORK TO BE EFFECTED THEREBY.

Planting Materials:

2. 1) PLANTING MATERIAL ITEMS IN SECTION 2.0 ARE TO BE INCORPORATED DURING PLANT INSTALLATION UNLESS OTHERWISE DEEMED UNNECESSARY IN ACCORDANCE WITH SOIL TEST RECOMMENDATIONS. SEE SECTION 3.1.
- MULCH - MULCH WILL BE DOUBLE-SHREDDED PINE BARK MULCH.  
- TREES AND SHRUBS SHALL RECEIVE AN EVEN 3" MULCH LAYER.  
- GROUNDCOVERS, PERENNIALS AND ANNUALS SHALL RECEIVE AN EVEN 2" MULCH LAYER.
- MANURE- TO BE WELL ROTTED, ODORLESS, UNLEACHED COW MANURE, CONTAINING NOT MORE THAN 15% BEDDED MATERIALS SUCH AS STRAW, WOOD CHIPS OR SHAVINGS, AGED NOT LESS THAN TWO YEARS OLD.
- HERBICIDE- A PRE-EMERGENCE WEED KILLER IS TO BE USED ON ALL LAWN AND PLANTING AREAS PRIOR TO INSTALLATION AS PER MANUFACTURER'S SPECIFICATIONS. \*HERBICIDES ARE NOT TO BE APPLIED IN RESTRICTED CONSERVATION AREAS.
- FERTILIZER- ALL TREES AND SHRUBS TO HAVE SLOW RELEASE PACKET OR PELLET PLACED INTO THE PLANT PIT WITH A MINIMUM ANALYSIS OF 10-10-10. ALL GROUNDCOVERS, PERENNIALS AND ANNUALS ARE TO RECIEVE A BROADCAST APPLICATION OF A 14-14-14 FERTILIZER AT 3 LB PR 100 SQ. FT. APPLY AS PER MANUFACTURER'S INSTRUCTIONS. \*FERTILIZERS ARE NOT TO BE APPLIED IN RESTRICTED CONSERVATION AREAS.
- TOPSOIL- ACCEPTABLE TOPSOIL SHALL BE FERTILE, FRIABLE NATURAL LOAM, UNIFORM IN COMPOSITION, FREE OF STONES, LIMBS, PLANTS AND THEIR ROOTS, DEBRIS AND OTHER EXTRANEOUS MATTER OVER ONE INCH IN DIAMETER. THE SOIL SHALL BE CAPABLE OF SUSTAINED PLANT GROWTH AND HAVE A 5% MINIMUM ORGANIC CONTENT. IN SITUATIONS WHICH REQUIRE A CUSTOM TOPSOIL OR STRUCTURAL SOIL, THE SOIL MIXTURE SPECIFICATION WILL BE PROVIDED BY THE LANDSCAPE ARCHITECT.
- SOIL AMENDMENTS: APPLY AS NECESSARY ACCORDING TO SOIL TEST RESULTS, AS PER MANUFACTURES SPECIFICATIONS.
- ANTI-DESICCANT- "WILT PRUF" NCF OR EQUAL APPLY AS PER MANUFACTURERS' SPECIFICATIONS.

Plant Installation:

3. 1) SOIL TESTING: LANDSCAPE CONTRACTOR SHALL PROVIDE A CERTIFIED SOIL ANALYSIS PRIOR TO ANY PLANT INSTALLATION TO DETERMINE ANY NECESSARY AMENDMENTS TO THE EXISTING SOIL CONDITIONS FOR SEEDING AND PLANTING. THE ANALYSIS WILL ALSO BE REQUIRED FOR ESTABLISHING THE FERTILIZER PROGRAM REQUIRED. COORDINATE RESULTS AND PROVIDE WRITTEN RECOMMENDATIONS TO HAWK DESIGN, INC. 15 DAYS PRIOR TO INSTALLATION.
3. 2) ALL PLANTS SHALL BE TRANSPORTED TO THE SITE IN COVERED TRUCKS, TARPAULIN COVERS SHALL BE UTILIZED TO PREVENT WIND DAMAGE OF LOAD.
3. 3) DELIVER PLANT MATERIALS IMMEDIATELY PRIOR TO PLACEMENT. KEEP PLANT MATERIALS MOIST. DO NOT STORE PLANT MATERIAL ON PAVED AREAS. ROOTS OR BALLS SHALL BE PROTECTED FROM THE SUN OR DRYING WINDS. AS REQUIRED BY TEMPERATURE OR WIND CONDITIONS, APPLY ANTI-DESICCANT EMULSION TO PREVENT DRYING OUT OF PLANT MATERIALS.
3. 4) CONDITIONS FOR PLANT REJECTION:  
A) REJECT PLANTS WHEN BALL OF EARTH SURROUNDING ROOTS HAS BEEN CRACKED OR BROKEN PREPARATORY TO OR DURING THE PROCESS OF PLANTING.
- B) WHEN BURLAP, STAVES AND ROPES REQUIRED IN CONNECTION WITH TRANSPLANTING HAVE BEEN DISPLACED PRIOR TO ACCEPTANCE.
- C) WIND DAMAGED PLANT MATERIAL FROM POOR TARPAULIN COVER PROCEDURES ARE SUBJECT TO REJECTION.
3. 5) ALL PLANT MATERIAL, WHICH CANNOT BE PLANTED IMMEDIATELY ON DELIVERY, SHALL BE SET ON THE GROUND IN A SHADED LOCATION AND SHALL BE TEMPORARILY PROTECTED WITH SOIL OR OTHER ACCEPTABLE MATERIAL. TEMPORARY WATERING OR IRRIGATION SHALL BE INCORPORATED AND REGULARLY CONDUCTED ON PLANTINGS IN HOLD AREAS.
3. 6) IN CASE OF CONFLICTS DURING CONSTRUCTION WITH UTILITIES, ROCK MATERIALS, TREE ROOTS OR OTHER OBSTRUCTIONS FOR THE EXCAVATION OF SHRUB BEDS AND TREE PITS. CONTACT LANDSCAPE ARCHITECT FOR APPROVED ALTERNATE LOCATIONS.
3. 7) SOIL PERMABILITY: TEST DRAINAGE OF PLANTING BEDS AND PITS BY FILLING WITH WATER TWICE IN SUCCESSION. CONDITIONS PERMITTING THE RETENTION OF WATER FOR MORE THAN 24 HOURS SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.
3. 8) SOIL EXCAVATIONS:  
A) EXCAVATE TREE PITS AND SHRUB BEDS TO DEPTHS REQUIRED BY PLANTING DETAILS. ALL PITS SHALL BE CIRCULAR IN OUTLINE, EXCEPT FOR WHOLE BEDS. SEE APPROPRIATE PLANTING DETAILS.
- B) SOIL EXCAVATIONS FOR BALLED & BURLAP AND CONTAINER PLANTINGS MUST BE NO LESS THAN 2X ROOT BALL DIAMETER. SEE PLANTING DETAILS. IF QUESTIONABLE SUBSURFACE SOIL CONDITIONS EXIST SUCH AS POOR DRAINAGE CONDITIONS, RUBBLE OR OBSTRUCTIONS, REPORT TO THE LANDSCAPE ARCHITECT AND CONSTRUCTION MANAGER BEFORE PLANTING.
3. 9) GRADING:  
A) VERIFY GRADES PRIOR TO PLANTING, THE CONTRACTOR SHALL VERIFY THAT CONSTRUCTED GRADES ARE AS INDICATED ON PLANS. THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT IF ADJUSTMENTS TO PLANT PLACEMENT MAY BE REQUIRED DUE TO FIELD CONDITIONS AND FINAL GRADING.
- B) POSITIVE DRAINAGE SHALL BE MAINTAINED AWAY FROM AND AROUND BUILDINGS (REFER TO ENGINEERS GRADING PLANS). REPORT ANY CONFLICTS TO HAWK DESIGN, INC. PRIOR TO INSTALLATION.
- C) FINISH GRADE OF PLANTINGS SHALL BE EQUIVALENT TO FORMER EXISTING GRADE OF PLANT IN THE NURSERY.
3. 1 0) BALLED AND BURLAPPED (B&B) MATERIALS:  
A) CUT WIRE BASKETS ONCE IN THE PLANT PIT AND PEEL WIRE BACK.
- B) TAGS AND TWINE ARE TO BE REMOVED AND BURLAP IS TO BE ROLLED BACK ONE-THIRD ON ALL B&B PLANT MATERIAL. ANY SYNTHETIC BURLAP SHALL BE COMPLETELY REMOVED FROM ANY PLANT MATERIAL

Plant Installation Cont'd

3. 1 1) CONTAINER GROWN STOCK: SHALL BE REMOVED FROM CONTAINER BY CUTTING CONTAINER AWAY TO AVOID ROOT DAMAGE TO PLANT ROOT SYSTEM. IF PLANT ROOT IS BOUND, SLICE ROOT BALLS APPROXIMATELY 2" DEEP WITH KNIFE OR SHARP SPADE.
3. 1 2) DO NOT USE MUDDY OR FROZEN SOIL TO BACKFILL PLANTINGS.
3. 1 3) WATERING: THOROUGHLY WATER UNTIL SOIL IS SATURATED AROUND ALL TREES AND SHRUBS AFTER PLANTING AND THROUGHOUT THE TIME PERIOD UNTIL FINAL ACCEPTANCE FROM CLIENT. DURING DRY CONDITIONS, WATER AS REQUIRED TO MAINTAIN PLANTS IN A WILT-FREE CONDITION.
3. 1 4) PRUNING: TREES SHALL BE PRUNED TO BALANCE TOP GROWTH WITH ROOTS AND TO PRESERVE THEIR NATURAL CHARACTER AND TYPICAL GROWTH HABIT. PRUNING SHALL BE RESTRICTED IN GENERAL TO THE SECONDARY BRANCHES AND SUCKER GROWTH. ALL CUTS TO BE FLUSH WITH TRUNK. DO NOT CUT A LEADER. THE LANDSCAPE ARCHITECT WILL REJECT ALL PLANTS DISFIGURED BY POOR PRUNING PRACTICES. ALL PRUNING CUTS SHALL REMAIN UNPAINTED.
3. 1 5) STAKING AND GUYING: ALL TREES TO BE STAKED AND GUYED WITHIN 48 HOURS OF PLANTING. METHODS AND MATERIALS FOR STAKING AND GUYING ARE ILLUSTRATED IN INDIVIDUAL PLANTING DETAILS. NEATLY FLAG ALL GUY WIRES WITH ROT RESISTANCE YELLOW TREE MARKING RIBBON.
3. 1 6) STAKE OUT PLANT LOCATIONS: PRIOR TO PLANTING THE CONTRACTOR SHALL LAYOUT THE EXTENT OF THE PLANT BEDS AND PROPOSED LOCATIONS FOR B&B PLANTS FOR REVIEW BY THE OWNER AND LANDSCAPE ARCHITECT.
3. 1 7) PLANTING FIELD ADJUSTMENTS:  
A) THE CONTRACTOR IS TO SLIGHTLY ADJUST PLANT LOCATIONS IN THE FIELD AS NECESSARY TO BE CLEAR OF DRAINAGE SWALES AND UTILITIES.
- B) LARGE GROWING PLANTS ARE NOT TO BE PLANTED IN FRONT OF WINDOWS OR UNDER BUILDING OVERHANGS. NOTIFY THE LANDSCAPE ARCHITECT OF DISCREPANCIES IN PLANTING PLAN VS. FIELD CONDITIONS.
- C) SHRUBS PLANTED NEAR HVAC UNITS ARE TO BE LOCATED SO THAT SHRUBS AT MATURITY WILL MAINTAIN ONE FOOT (1') AIRSPACE BETWEEN THE UNIT AND THE PLANT. ANY PLANTING SHOWN ADJACENT TO CONDENSER UNITS SHALL BE PLANTED TO SCREEN THE UNITS. SHOULD THE CONDENSER UNITS BE INSTALLED IN LOCATIONS DIFFERENT FROM THOSE SHOWN ON THE PLAN, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE LANDSCAPE ARCHITECT AND INSTALL THE MATERIAL AROUND THE CONDENSERS AND ADJUST THE OTHER PLANTING ACCORDINGLY.
3. 1 8) PLANT BED EDGES/LINES: GROUPS OF SHRUBS, PERENNIALS AND GROUNDCOVERS SHALL BE PLACED IN A CONTINUOUS MULCH BED WITH SMOOTH CONTINUOUS LINES. ALL MULCHED BED EDGES SHALL BE CURVILINEAR IN SHAPE, FOLLOWING THE CONTOUR OF THE PLANT MASS. TREES LOCATED WITHIN 4 FEET OF PLANT BEDS SHALL SHARE THE SAME MULCH BEDS.
3. 1 9) A.D.A. - THE AMERICAN WITH DISABILITIES ACT STANDARDS REQUIRE THAT A 7 FOOT VERTICAL CLEARANCE BE MAINTAINED FROM TREE BRANCHES TO FINISHED GRADE WHERE PEDESTRIANS SIDEWALKS AND/OR TRAILS ARE LOCATED. THE CONTRACTOR IS TO ADJUST TREE PLANTINGS IN FIELD TO SLIGHTLY MINIMIZE BRANCH OVERHANG AND COMPLY WITH THE A.D.A. ACT.
3. 20) TREE SPACING MINUMUMS: TREES SHALL BE LOCATED A MINIMUM OF 4 FEET FROM RETAINING WALLS AND WALKS WITHIN THE PROJECT. IF A CONFLICT ARISES BETWEEN ACTUAL SIZE OF AREA AND PLANS, THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT FOR RESOLUTION. FAILURE TO MAKE SUCH CONFLICTS KNOWN TO LANDSCAPE ARCHITECT WILL RESULT IN CONTRACTOR'S LIABILITY TO RELOCATE MATERIALS.

Seeding and Sodding:

4. 1) SEEDING OF LAWN AREAS: GRASS SEED APPLICATION SHALL BE SPREAD AT THE RATE OF 5 LBS. PER 1,000 SQUARE FEET. SEEDING SHALL BE ACCOMPLISHED BY MEANS OF A HYDRO-SEEDING PROCESS.
4. 2) WATERING OF SEEDED AREAS: 24 HOURS AFTER HYDRO SEEDING, THE CONTRACTOR SHALL WATER THE SEEDED AREA LIGHTLY AND SUFFICIENTLY TO A DEPTH OF TWO INCHES (2") 2 TIMES A DAY (BETWEEN THE HOURS OF 7 PM AND 7 AM), UNTIL THE SEEDS ARE ESTABLISHED.
4. 3) SEEDED AREA PROTECTION: THE CONTRACTOR SHALL ERECT SUITABLE SIGNS AND BARRICADES NOTIFYING THE PUBLIC TO KEEP OFF THE SEEDED AREAS UNTIL WELL ESTABLISHED. ANY TRAFFIC DAMAGE AND VANDALISM THAT MAY OCCUR PRIOR TO FINAL ACCEPTANCE OF THE WORK SHALL BE REPAIRED AND RESEEDED AT THE OWNER'S EXPENSE. ANY DISTURBED OR DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIFICATIONS AT THE CONTRACTOR'S EXPENSE.
4. 4) LAYING OF SOD: A KENTUCKY BLUEGRASS SOD MIX - BY LOCAL SOURCE AS SELECTED BY CONTRACTOR, SHALL BE FRESHLY CUT FROM THE SAME FIELD WITH 1/2 -3/4 INCHES OF SOIL. SOD SHALL BE LAID IMMEDIATELY WITH ANY STORED SOD BEING UNROLLED GRASS SIDE UP AND KEPT WATERED. LAY COURSES TIGHTLY TOGETHER WITHOUT OVERLAPPING WITH THE JOINTS STAGGERED. AFTER SODDING IS COMPLETE, ROLL LIGHTLY. THE CONTRACTOR SHALL WATER THE SODDED AREAS TO A DEPTH OF AT LEAST SIX INCHES AFTER THE SODDING PROCESS. OWNER SHALL THEN BE RESPONSIBLE FOR WATERING. THE FREQUENCY SHALL BE DETERMINED BY RAIN FALL AND WINDS WITH THE UPPER TWO OR THREE INCHES OF SOIL NOT DRYING OUT MARKEDLY.
4. 5) SODDED AREA: INSPECTION AND ACCEPTANCE: FOUR WEEKS AFTER CONTRACTOR COMPLETES INSTALLATION, LANDSCAPE ARCHITECT SHALL INSPECT THE LAWN TO DETERMINE THE ACCEPTABILITY OF THE INSTALLATION. SODDED AREAS FAILING TO SHOW ADEQUATE ROOTING INTO THE SUBSOIL, OVERLAPPING, COURSE SEPARATION, UNEVENNESS OF THE SURFACE, UNEVEN COURSE COLOR AND EXCESSIVE BROADLEAF WEED CONTENT SHALL BE REPLACED. THE COST SHALL BE BORNE BY THE CONTRACTOR EXCEPT WHERE VANDALISM OR NEGLECT ON THE PART OF OTHERS NOT UNDER THE CONTRACTORS CONTROL HAS RESULTED IN DAMAGE.
4. 6) FINAL APPROVAL: SEEDED AND SODDED AREAS WILL RECEIVE FINAL APPROVAL IF COVERAGE IS FULL AND CONSISTENT, FREE OF BARE SPOTS AND WEED FREE. WHEN GRASS IS CUT AT 2" HEIGHT NO SOIL SHOULD BE VISIBLE. SOD AREAS MUST HAVE RECEIVED A MINIMUM OF TWO MOWINGS. AREAS SODDED AFTER NOVEMBER 1ST WILL BE ACCEPTED THE FOLLOWING SPRING - ONE MONTH AFTER THE START OF THE GROWING SEASON, IF THE ABOVE CRITERIA HAS BEEN MET.

Maintenance:

5. 1) MAINTENANCE DURING INSTALLATION: MAINTENANCE OPERATIONS SHALL BEGIN IMMEDIATELY AFTER EACH PLANT IS PLANTED AND SHALL CONTINUE AS REQUIRED UNTIL FINAL ACCEPTANCE AND THEN FOR THE GUARANTEE PERIOD. PLANTS SHALL BE KEPT IN A HEALTHY, GROWING CONDITION BY WATERING, PRUNING, SPRAYING, WEEDING AND ANY OTHER NECESSARY OPERATIONS OF MAINTENANCE. PLANT SAUCERS AND BEDS SHALL BE KEPT FREE OF WEEDS, GRASS AND OTHER UNDESIRED VEGETATION. PLANTS SHALL BE INSPECTED AT LEAST ONCE PER WEEK BY THE CONTRACTOR DURING THE INSTALLATION PERIOD AND ANY NEEDED MAINTENANCE IS TO BE PERFORMED PROMPTLY.
5. 2) GRASS AND WEED CONTROL: THE CONTRACTOR SHALL BE RESPONSIBLE FOR MOWING ALL GRASS AROUND LANDSCAPE BEDS AND INDIVIDUAL TREES AND SHRUBS UNTIL FINAL ACCEPTANCE. WEED CONTROL AREAS SHALL INCLUDE ALL LANDSCAPE BEDS AND THE AREA WITHIN 2 FEET OF THE OUTER EDGE OF THE MULCH AREA OR INDIVIDUAL TREE/SHRUBS.
5. 3) THE CONTRACTOR SHALL WATER, FERTILIZE, WEED, CULTIVATE, REMULCH, SPRAY TO CONTROL INSECT INFESTATION AND DISEASE AND PERFORM ANY OTHER GOOD HORTICULTURAL PRACTICE NECESSARY TO MAINTAIN THE PLANTS IN A LIVING HEALTHY CONDITION UPON THE TIME FOR TERMINATION OF HIS RESPONSIBILITY FOR CARE AS SET OUT HEREIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PLANTS THROUGHOUT LIFE OF THE CONTRACT.
5. 4) ALL PLANTS STOLEN, DAMAGED OR DESTROYED BY FIRE, AUTOMOBILES, VANDALISM OR ANY OTHER CAUSE, WITH THE EXCEPTION OF PLANTS DAMAGED OR DESTROYED BY THE OWNERS MAINTENANCE OPERATIONS, SHALL BE REPLACED BY THE OWNER PRIOR TO THE DATE OF FINAL ACCEPTANCE.
5. 5) LANDSCAPE CONTRACTOR SHALL PREPARE MAINTENANCE SPECIFICATIONS AND SCHEDULE ANNUAL CARE OF ALL PLANTED AND LAWN AREAS INCLUDING FERTILIZING, WEEDING, MULCHING, BED EDGING, PRUNING AND PEST PREVENTION AND TREATMENT.

Plant Material Guarantee:

- \*CONTRACTOR SHALL GUARANTEE IN WRITING ALL PLANT MATERIAL AND LANDSCAPE IMPROVEMENTS FOR A PERIOD OF ONE YEAR. THE GUARANTEE IS TO INCLUDE THE FOLLOWING:
6. 1) INSPECTIONS: PERFORM PERIODIC INSPECTIONS DURING GUARANTEE PERIOD WITH RESULTING WRITTEN REPORTS TO OWNER, PROJECT ADMINISTRATOR AND LANDSCAPE ARCHITECT STATING CONDITIONS AND RECOMMEND MAINTENANCE MODIFICATIONS. THE CONTRACTOR MUST CONTACT THE OWNER AND LANDSCAPE ARCHITECT AT LEAST 10 DAYS IN ADVANCE TO SCHEDULE ACCEPTANCE INSPECTION(S).
6. 2) REMOVAL AND REPLACEMENT OF PLANTS PROVIDED BY CONTRACTOR TO BE DONE WITHIN THIRTY DAYS OF NOTIFICATION BY OWNER OF THEIR UNSATISFACTORY CONDITION DURING GROWING SEASONS. REPLACEMENT MATERIALS MUST BE EQUAL IN TYPE AND SIZE PER THE PROJECTS PLANT LIST.
6. 3) WHEN REPLACEMENT PLANT SPECIES IS EITHER NOT READILY AVAILABLE OR NO LONGER SUITABLE TO EXISTING SITE CONDITIONS WRITTEN NOTICE RECOMMENDATION OF SUBSTITUTION TO BE PROVIDED TO THE OWNER AND LANDSCAPE ARCHITECT WITHIN FIFTEEN DAYS FOR APPROVAL.
6. 4) REMOVAL OF TREES SUPPORTS AND DEAD LIMBS PRIOR TO END OF GUARANTEE INSPECTION PERIOD.
6. 5) CONTINUE WITH MAINTENANCE, SEE SECTION 5.0
6. 6) GUARANTEE SHALL BEGIN UPON DATE OF FINAL ACCEPTANCE FROM OWNER AND WILL CONTINUE FOR ONE YEAR.

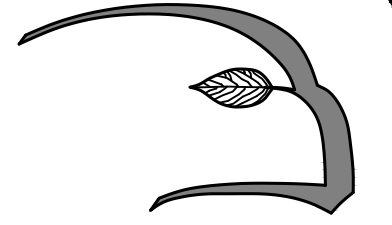
Site Cleanup:

7. 1) SITE WORK CONDITIONS: EXCESS WASTE MATERIAL SHALL BE REMOVED DAILY WHEN PLANTING IN AN AREA HAS BEEN COMPLETED, THE AREA SHALL BE CLEARED OF ALL DEBRIS, SOIL PILES AND CONTAINERS DAILY. WHERE EXISTING GRASS AREAS HAVE BEEN DAMAGED OR SCARRED DURING PLANTING OPERATIONS, THE CONTRACTOR SHALL RESTORE DISTURBED AREAS TO THEIR ORIGINAL CONDITIONS AT HIS EXPENSE.
7. 2) CLEAN PAVED AREAS UTILIZED FOR HAULING OR EQUIPMENT STORAGE AT END OF EACH WORKDAY.
7. 3) MAINTAIN VEHICLES AND EQUIPMENT IN CLEAN CONDITION TO PREVENT SOILING OF ROADS, WALKS OR OTHER PAVED OR SURFACED AREAS.
7. 4) REMOVE PROTECTIVE BARRIERS AND WARNING SIGNS AT TERMINATION OF LAWN ESTABLISHMENT.

Irrigation Notes:

8. 1) ALL IRRIGATION SYSTEM COMPONENTS SHALL BE SUPPLIED BY REGIONALLY AUTHORIZED DISTRIBUTORS TO PROVIDE SINGLE SOURCE RESPONSIBILITY FOR WARRANTY SERVICE AND OPERATIONS TO CONFORM TO SPECIFICATIONS IN ALL RESPECTS.
8. 2) THE CONTRACTOR IS TO SUBMIT PLANS PREPARED BY A IRRIGATION SPECIALIST TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
8. 3) ALL LINE VOLTAGE TO CONTROLLER AND ASSOCIATED BREAKER, CONDUIT ETC TO BE PERFORMED BY A LICENSED ELECTRICIAN.
8. 4) ALL WIRES FOR RAIN SENSOR TO BE RUN IN SCHEDULE 40 PVC CONDUIT FOR APPLICATIONS IN EXPOSED AREAS UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT.
8. 5) SLEEVES TO BE COORDINATED, LOCATED AND INSTALLED UNDER ALL HARDSCAPE FEATURES SUCH AS WALKS, WALLS AND DRIVEWAYS. THE CONTRACTOR IS TO IMMEDIATLY NOTIFY THE LANDSCAPE ARCHITECT OF ALL CONFLICT AND DISCREPANCIES.
8. 6) CONTRACTOR WILL REVIEW WITH CLIENT ALL IRRIGATION PROCEDURES AND PROCESSES (i.e. TIMERS, ZONES AND ALL OTHER ITEMS INVOLVED W/ THE IRRIGATION SYSTEM) AND PROVIDE NECESSARY DOCUMENTATION FOR OPERATION OF IRRIGATION SYSTEM.
8. 7) THE CONTRACOR IS TO PROVIDE WIRES FOR FUTURE EXPANSION IN 1/2" DIAMETER VALVE BOX AS DIRECTED BY THE LANDSCAPE ARCHITECT OR CLIENT.
8. 8) UNLESS INDICATED OTHERWISE, ALL PLANT BEDS ARE TO BE IRRIGATED WITH DRIP IRRIGATION, ALL LAWN AREAS TO BE IRRIGATED WITH SPRAY HEADS. MODELS/TYPES T..B.D. AND VERIFIED BY LANDSCAPE ARCHITECT AND IRRIGATION CONTRACTOR.

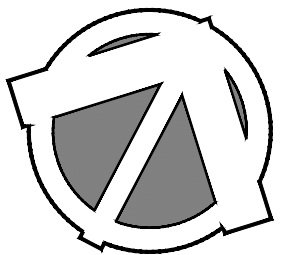
- Draft Plan -  
For Review Only



**Hawk Design, Inc.**  
Landscape Architecture  
Land Planning

Sagamore, MA  
508-833-8800  
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HAWK DESIGN, INC. 2021  
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Date: 12/16/21

Revisions:

Num.	Date	Description

**Cate Street Development, LLC.**

Route 1 Bypass / Hodgdon Way  
Portsmouth, New Hampshire

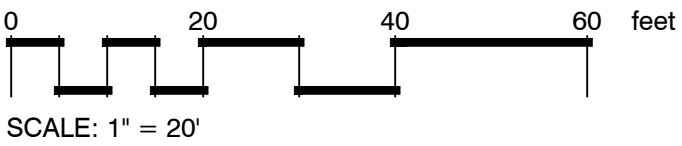
- Draft Plan -  
For Review Only



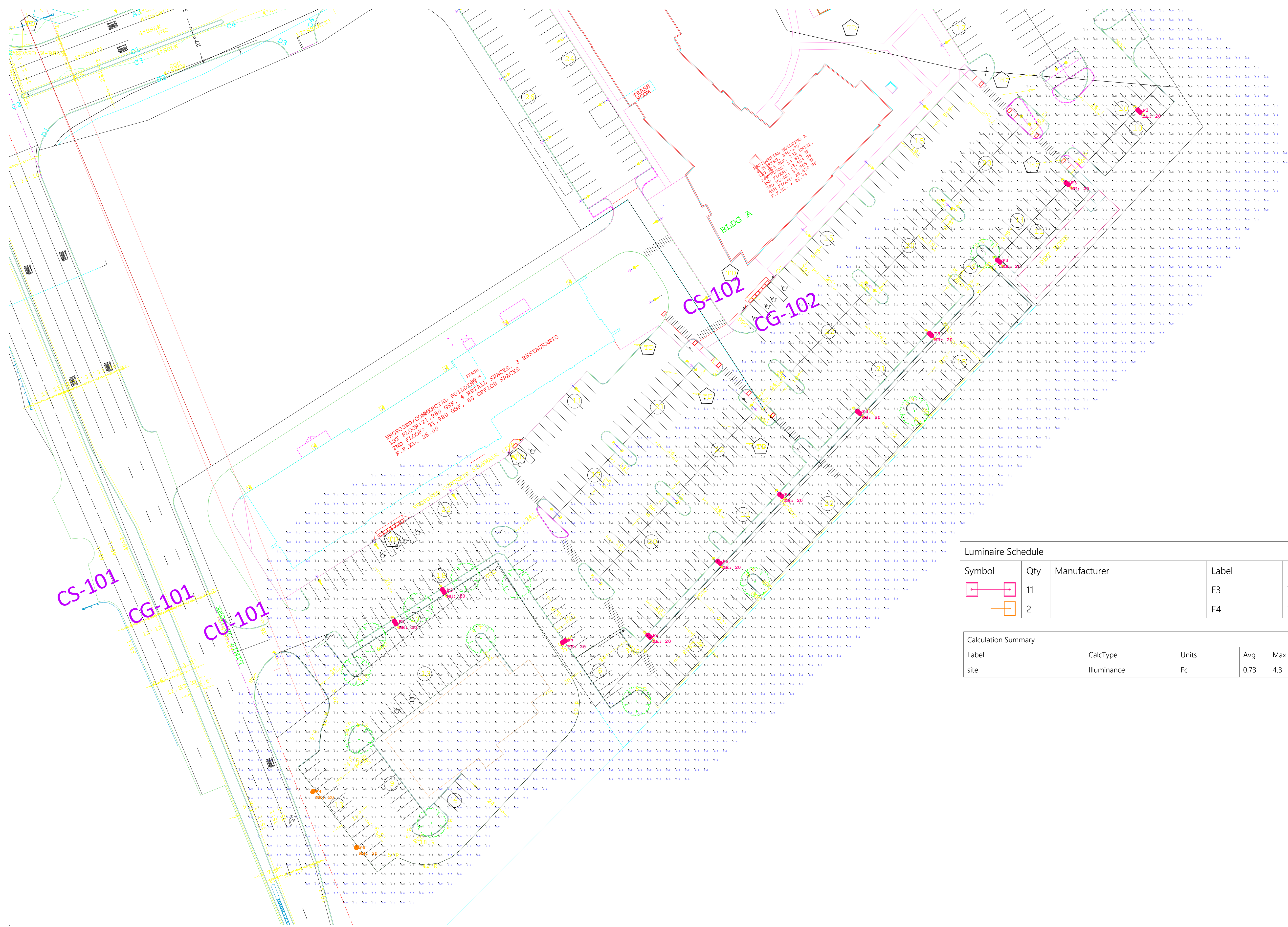
Planting  
Notes

Scale: 1" = 20'-0"

Sheet: **L4**







Luminaire Schedule				
Symbol	Qty	Manufacturer	Label	Description
	11		F3	VP-S-36L-80-4K7-4
	2		F4	VP-S-36L-80-4K7-4-BC

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
site	Illuminance	Fc	0.73	4.3	0.0	N.A.	N.A.

Revisions		
#	Date	Comments

Drawn By: SHJ	Checked By: MC	Date: 12/17/2021	Scale:
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LINE TABLE			CURVE TABLE						
LINE	BEARING	DISTANCE	CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH	
L1	N21°59'17"W	34.56'	C1	80.19'	51.00'	90°05'21"	N77°59'32"W	72.18'	
L2	S34°40'04"E	41.97'	C2	30.94'	45.00'	39°23'52"	S48°30'09"W	30.34'	
L3	N32°56'35"W	25.61'	C3	24.56'	1008.50'	1°23'42"	N68°53'56"E	24.56'	
L4	S64°45'32"W	60.21'	C4	38.52'	635.87'	3°28'15"	N60°29'39"E	38.51'	
L5	N66°29'39"E	60.09'							
L6	N46°59'07"W	41.00'							
L7	N46°59'10"W	64.76'							
L8	S57°25'45"W	47.00'							
L9	S46°59'07"E	41.00'							

#### NOTES:

- OWNERS OF RECORD:  
TAX MAP 165, LOT 2  
TAX MAP 172, LOT 1  
(R.C.R.D. BOOK 5959, PAGE 109)  
TAX MAP 172, LOT 2  
(R.C.R.D. BOOK 6158, PAGE 2124)  
CATE STREET DEVELOPMENT, LLC  
11 ELKINS STREET, SUITE 420  
BOSTON, MA 02127

TAX MAP 165, LOT 14  
BOSTON AND MAINE CORP.  
IRON HORSE PK HIGH STREET  
NO BILLERICA, MA 01862

- ZONES: GW1-GATEWAY NEIGHBORHOOD MIXED USE CORRIDOR (SEE CITY OF PORTSMOUTH ZONING ORDINANCE FOR DIMENSIONAL REQUIREMENTS. SUBJECT LOTS WERE REZONED TO GW1 ON DECEMBER 4, 2017 PER SAID ORDINANCE.)

-SEE SITE PLANS FOR DIMENSIONAL REQUIREMENTS AND DEVELOPMENT SITE STANDARDS.

- FIELD SURVEY PERFORMED BY DOUCET SURVEY. DURING NOVEMBER 2016 USING A TRIMBLE S6 TOTAL STATION, A TRIMBLE R8 SURVEY GRADE GPS UNIT, A TRIMBLE TSC3 DATA COLLECTOR AND A SOKKIA B21 AUTO LEVEL. DURING JULY 2018 AND SEPTEMBER - OCTOBER 2018 AND OCTOBER 2021 USING A TRIMBLE S6 TOTAL STATION WITH A TRIMBLE TSC3 DATA COLLECTOR. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS. ADDITIONAL FIELD SURVEY PERFORMED. DURING NOVEMBER 2016 AND OCTOBER 2018 USING A LEICA HDS SCANNER.

- FLOOD HAZARD ZONE:"X", PER FIRM MAP #33015C0259E, DATED 5/17/05.

- HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM REDUNDANT GPS OBSERVATIONS UTILIZING THE KEYNET GPS VRS NETWORK.

- 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 ROUTE 1 BYPASS AS DEPICTED HEREON IS/ARE BASED ON RESEARCH CONDUCTED AT THE PORTSMOUTH CITY HALL, PORTSMOUTH DEPARTMENT OF ENGINEERING, THE ROCKINGHAM COUNTY REGISTRY OF DEEDS, AND THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.

- TAX MAP 172, LOT 2  
SUBJECT TO EASEMENTS, RESTRICTIONS AND CONDITIONS CONTAINED IN R.C.R.D. BOOK 1476, PAGE 293 AND R.C.R.D. BOOK 2411, PAGE 1484.

SEE ALSO REFERENCE PLAN 2 FOR RELATED EASEMENTS.

TAX MAP 172, LOT 1 & TAX MAP 165, LOT 2  
SEE REFERENCE PLAN 1 FOR RELATED EASEMENTS.

- DOUCET SURVEY DID NOT COMPLETE A COMPLETE BOUNDARY SURVEY FOR TAX MAP 165, LOT 14 BUT HAVE SURVEY VERIFIED THE SUBJECT LOT LINES AFFECTED BY THE BOUNDARY LINE ADJUSTMENT.

#### REFERENCE PLANS:

- "SUBDIVISION & EASEMENT PLAN FOR CATE STREET DEVELOPMENT LLC, OF TAX MAP 163, LOTS 33 & 34, TAX MAP 165, LOT 2, TAX MAP 172, LOT 1 & TAX MAP 173, LOT 2, CATE STREET & US ROUTE 1 BYPASS, PORTSMOUTH, NH", BY DOUCET SURVEY LLC, DATED JULY 3, 2019, R.C.R.D. PLAN D-42451.
- "ALTA/NSPS LAND TITLE SURVEY, TAX MAP 172 - LOT 2, OWNER OF RECORD: 406 HIGHWAY 1 BYPASS, LLC, 549 US HIGHWAY 1 BYPASS, PORTSMOUTH, NH 03801", BY AMBIT ENGINEERING, INC., DATED JANUARY 2020.
- "LOT LINE REVISION, U.S. ROUTE ONE BY-PASS, PORTSMOUTH, N.H. FOR WIGGIN, PARSONS, & O'BRIEN", BY JOHN W. DURGIN ASSOCIATES, INC., DATED JANUARY 22, 1982, R.C.R.D. PLAN D-10722.
- SEE REFERENCE PLAN 1 FOR ADDITIONAL PLAN REFERENCES.

BORTHWICK AVENUE  
EXTENSION

TAX MAP 234,  
LOT 3

TAX MAP 234,  
LOT 2A

TAX MAP 233,  
LOT 145

AREA A  
10,469 Sq. Ft.  
0.24 Acres  
TO BE CONVEYED TO  
TAX MAP 172, LOT 2

4" X 4" CONC. BND. FND.  
(NO D.H.) UP 6"  
(HELD FOR EDGE OF  
RIGHT OF WAY ALIGNMENT)

TAX MAP 172, LOT 4

APPROVED FOR THE RECORD

CHAIRMAN PORTSMOUTH PLANNING BOARD

DATE

TAX MAP 173, LOT 9

TAX MAP 173, LOT 3

TAX MAP 163, LOT 32

TAX MAP 163, LOT 2

CATE STREET EXTENSION

CATE STREET

PROPOSED BUILDING

PROPOSED BUILDING

PROPOSED BUILDING

EXISTING  
TAX MAP 165, LOT 2  
260,789 SQ. FT.  
5.99 ACRES  
PROPOSED  
TAX MAP 165, LOT 2  
269,864 SQ. FT.  
6.20 ACRES

EXISTING  
TAX MAP 172, LOT 1  
128,500 SQ. FT.  
2.90 ACRES  
PROPOSED  
TAX MAP 172, LOT 1  
138,143 SQ. FT.  
3.17 ACRES

AREA B  
11,643 Sq. Ft.  
0.27 Acres  
TO BE CONVEYED TO  
TAX MAP 172, LOT 1

EXISTING  
TAX MAP 172, LOT 2  
42,351 SQ. FT.  
0.97 ACRES  
PROPOSED  
TAX MAP 172, LOT 2  
52,820 SQ. FT.  
1.21 ACRES

EXISTING  
TAX MAP 165, LOT 14  
2,445 ACRES  
(PER CITY RECORDS)

#### ABUTTERS

TAX MAP 163, LOT 2  
INDUSTRIAL RENTS-NH, LLC  
6 WAYNE ROAD  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 5606, PAGE 2334

TAX MAP 163, LOT 32  
SHARAN R. GROSS REV. TRUST  
180 BIRCH HILL RD  
YORK, ME 03909  
R.C.R.D. BOOK 5261 PAGE 2208  
R.C.R.D. BOOK 3406 PAGE 1363

TAX MAP 163, LOT 34  
CATE STREET DEVELOPMENT, LLC  
11 ELKINS STREET, SUITE 420  
BOSTON, MA 02127  
R.C.R.D. BOOK 5959, PAGE 109

TAX MAP 165, LOT 1  
CONDOMINIUMS MULTIPLE OWNERS

TAX MAP 172, LOT 4  
MILLPORT INC  
3 PENSTOCK WAY  
NEWMARKET, NH 03857  
R.C.R.D. BOOK 3169, PAGE 154

TAX MAP 172, LOT 5  
PORTSMOUTH MUSIC AND  
ARTS CENTER INC  
973 ISLINGTON ST  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 5502, PAGE 2161

TAX MAP 172, LOT 6  
959 BOYS LLC  
959 ISLINGTON ST  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 3943, PAGE 141

TAX MAP 172, LOT 7  
SHARAN R. GROSS REV. TRUST  
180 SACO AVE  
OLD ORCHARD BEACH, ME 04064  
R.C.R.D. BOOK 4333, PAGE 87

TAX MAP 172, LOT 11  
MAXICO LLC  
865 ISLINGTON ST SUITE 100  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 5876, PAGE 1848

TAX MAP 172, LOT 12  
ISLINGTON BUTTRICK LLC  
C/O YANKEE REALTY  
855 ISLINGTON ST #1,  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 5477, PAGE 1198

TAX MAP 173, LOT 3  
JESSE WARREN ANDERSON  
224 CATE ST  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 6159 PG 1388

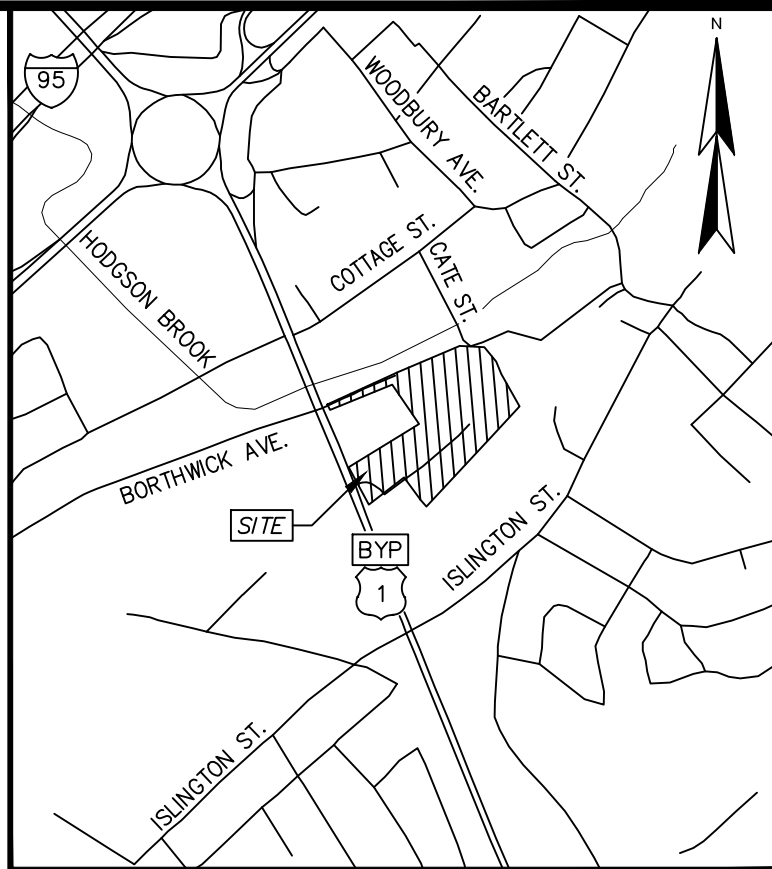
TAX MAP 173, LOT 9  
PAUL J. HOLLOWAY  
C/O COAST PONTIAC  
500 US HWY 1 BYPASS  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 2821 PAGE 2396

TAX MAP 173, LOT 10  
AREC 13, LLC  
C/O U-HAUL INTERNATIONAL  
PO BOX 29046  
PHOENIX, AZ 85038  
R.C.R.D. BOOK 4575 PAGE 950

TAX MAP 233, LOT 145  
CITY OF PORTSMOUTH  
1 JUNKINS AVENUE  
PORTSMOUTH, NH 03801  
R.C.R.D. BOOK 5127, PAGE 2074

TAX MAP 234, LOT 2A  
PUBLIC SERVICE CO. OF NH  
PO BOX 270  
HARTFORD, CT 06141  
R.C.R.D. BOOK 1257, PAGE 324

TAX MAP 234, LOT 3  
PUBLIC SERVICE CO. OF NH  
PO BOX 270  
HARTFORD, CT 06141  
R.C.R.D. BOOK 5548, PAGE 738



LEGEND	
---	EXISTING LOT LINE
---	PROPOSED LOT LINE
---	LOT LINE TO BE ABANDONED
---	APPROXIMATE ABUTTER LOT LINE
□	BOUND FOUND
△	RAILROAD SPIKE FOUND
○	IRON PIPE/ROD FOUND
●	4"x4" GRANITE BOUND TO BE SET
●	5/8" REBAR W/ID CAP TO BE SET
●	BOUND FOUND
●	IRON PIPE FOUND
●	CONCRETE
●	DRILL HOLE

**DRAFT**  
11/17/21

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

\_\_\_\_\_  
L.L.S. #989  
\_\_\_\_\_  
DATE

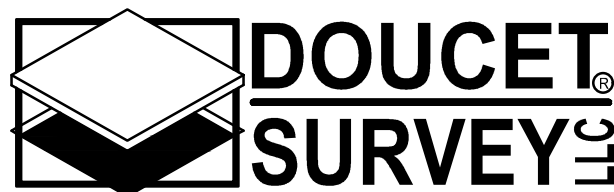
THE CERTIFICATIONS SHOWN HEREON ARE INTENDED TO MEET REGISTRY OF DEED REQUIREMENTS AND ARE NOT A CERTIFICATION TO TITLE OR OWNERSHIP OF PROPERTY SHOWN. OWNERS OF ADJOINING PROPERTIES ARE ACCORDING TO CURRENT TOWN ASSESSORS RECORDS.

60 0 60 120  
SCALE: 1 INCH = 60 FT.

## BOUNDARY LINE ADJUSTMENT FOR CATE STREET DEVELOPMENT LLC (TAX MAP 165, LOT 2) (TAX MAP 172, LOTS 1 & 2) AND BOSTON & MAINE RAILROAD (TAX MAP 165, LOT 14) CATE STREET & US ROUTE 1 BYPASS PORTSMOUTH, NEW HAMPSHIRE

NO.	DATE	DESCRIPTION	BY

DRAWN BY:	M.T.L.	DATE:	OCTOBER 12, 2021
CHECKED BY:	M.W.F.	DRAWING NO.:	5517E
JOB NO.:	5517	SHEET	1 OF 1



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