

# **8 INDUSTRIAL DRIVE ADDITION**

SP# 05-23

## **STAFF REPORT**

August 23, 2023

**SITE:** 8 Industrial Drive, Map 161 Lot 041

**ZONING:** Industrial

**PURPOSE OF PLAN:** To show a proposed 4,200 SF automotive addition and access at back of property.

### **PLANS UNDER REVIEW:**

8 Industrial Drive / Site Plan Amendment, Map 161 Lot 41, 8 Industrial Drive, Hudson, New Hampshire; prepared by: Bedford Design Consultants, Inc. 592 Harvey Road, Manchester, NH 03103; prepared for: MDP Realty Associates, LLC, 9 Old Derry Road, Hudson, NH; consisting of 5 sheets and general notes 1-14 on Sheet 1; dated May 22, 2023; last revised August 7, 2023.

### **ATTACHMENTS:**

- A. Peer Review, prepared by Fuss & O'Neill, received June 19, 2023.
- B. Department Comments
- C. Applicant Response to Peer Review & Town Comments, prepared by Bedford Design Consultants Inc., dated June 26, 2023, received June 10, 2023.
- D. Drainage report, prepared by Bedford Design Consultants, received August 7, 2023
- E. CAP Fee worksheet

### **APPLICATION TRACKING:**

- May 30, 2023 – Application received.
- August 23, 2023 – Public hearing scheduled.

### **COMMENTS & RECOMMENDATIONS:**

#### **BACKGROUND**

The site is approximately 6.106 acres and is located in the Industrial zone. There is an existing 77,921 SF building on the site that is currently used for manufacturing and warehousing. The site is served by municipal water and sewer. It is not in a flood zone. There is a wetland on the northwest edge of the site, along the Route 111 right of way, that the Applicant identifies as a

man-made wetland and therefore not subject to the Wetlands Conservation Overlay District. The applicant proposes building a 5,000 SF addition that would be along the southwest edge of the building, near the Route 111 right of way. The addition would be accessed by a 20' wide gravel driveway to be constructed between the existing building and the Route 111 right of way. The Applicant plans to use the addition to maintain vehicles that he owns and it would not be a retail business at this time.

### PEER REVIEW

Fuss and O'Neill completed a peer review on June 19, 2023, see **Attachment A**. Bedford Design Consultants, Inc. provided a response on behalf of the applicant on June 26, 2023. The following issues remain outstanding:

- Existing connections to public water and sewer mains are not shown on the plans.
- The applicant should verify with the Town that the existing water main has adequate flow and pressure to meet both domestic and fire suppression requirements of the proposed expansion.
- Applicant should provide existing and proposed stormwater calculations illustrating converting the existing grass area to proposed gravel driveway.
- Applicant should provide additional information to support using a 3 in/hr infiltration rate.
- Applicant should provide calculations for the 10- and 25-year storm event.

Note: a second round of peer review is currently underway

### DEPARTMENT COMMENTS

See **Attachment B** for comments from town departments.

1. Engineering: Applicant shall provide soil and infiltration testing to confirm the assumed value and a summary table of pre- and post-storm events, shall provide a treatment swale along the proposed driveway to treat and detain the runoff before it leaves the site, and shall provide a cross section of the 8" sewer service pipe in relation to the proposed foundation.

Comment: The Applicant has addressed Engineering's comments with the revised plans and drainage report.

### WAIVERS REQUESTED

1. Waiver for Parking Lot Landscaping, 275-8.C.(7), to not require any additional landscaping where landscaping would typically be required. The Applicant states that there is no additional parking proposed, the addition is located at the back of the property and is screened by plantings along the Route 111 Right of Way.
2. Waiver for Licensed Land Surveyor Stamp, 276-11.1.B.(9), to not require a surveyor stamp where one is typically required. The Applicant states that the proposed addition is not within the Town's building setbacks and the Overview Sheet shows pertinent boundary information and bearings and distances.

- 3. Waiver for Benchmarks on Plan, 276-11.1.B.(17), to not require location of benchmarks when they are typically required. The applicant states that the existing building will serve as the benchmark.
- 4. Waiver for Minimum Parking Requirements, 275-8.(g), to have 48 spaces on site, as opposed to the 142 required by regulation. The Applicant states that the existing parking is adequate, and that the new addition will be for the Owner’s use only, and will not be used for retail.

**RECOMMENDATIONS**

Staff recommends making the procedural determination of whether or not the application constitutes a development of regional impact (DRI). Unless determined to be a DRI, Staff recommends accepting the application and holding a public hearing, followed by deliberation and consideration of waiver requests and if the waivers are granted, potential approval.

**DRAFT MOTIONS**

**REGIONAL IMPACT in accordance with RSA 36:56:**

I move to determine that site plan application SP# 05-23, 8 Industrial Drive / Site Plan Amendment, 8 Industrial Drive, Map 161 Lot 041 (**IS or IS NOT**) a development of regional impact.

Motion by: \_\_\_\_\_ Second: \_\_\_\_\_ Carried/Failed: \_\_\_\_\_

**ACCEPT the site plan application:**

I move to accept the site plan application for the 8 Industrial Drive / Site Plan Amendment, SP# 05-23, 8 Industrial Drive, Map 161 Lot 041.

Motion by: \_\_\_\_\_ Second: \_\_\_\_\_ Carried/Failed: \_\_\_\_\_

*(Draft motions are continued on next page)*

**To GRANT a waiver:**

1. I move to grant a waiver from § 275-8.C.(7), Parking Lot Landscaping, to not require any additional landscaping where landscaping would typically be required, based on the Board's discussion, the testimony of the Applicant's representative, and in accordance with the language included in the submitted Waiver Request Form for said waiver.

Motion by: \_\_\_\_\_ Second: \_\_\_\_\_ Carried/Failed: \_\_\_\_\_

2. I move to grant a waiver from § 276-11.1.B.(9), Licensed Land Surveyor Stamp, to not require a licensed surveyor stamp where one is typically required, based on the Board's discussion, the testimony of the Applicant's representative, and in accordance with the language included in the submitted Waiver Request Form for said waiver.

Motion by: \_\_\_\_\_ Second: \_\_\_\_\_ Carried/Failed: \_\_\_\_\_

3. I move to grant a waiver from § 276-11.1.B.(17), Benchmarks on Plan, to not require a survey company to calculate and locate benchmarks when they are typically required, based on the Board's discussion, the testimony of the Applicant's representative, and in accordance with the language included in the submitted Waiver Request Form for said waiver.

Motion by: \_\_\_\_\_ Second: \_\_\_\_\_ Carried/Failed: \_\_\_\_\_

4. I move to grant a waiver from § 275-8.(G), Parking Calculations and Requirements, to not require 142 parking spaces that are typically required, based on the Board's discussion, the testimony of the Applicant's representative, and in accordance with the language included in the submitted Waiver Request Form for said waiver.

Motion by: \_\_\_\_\_ Second: \_\_\_\_\_ Carried/Failed: \_\_\_\_\_

*(Draft motions are continued on next page)*



**APPROVE the site plan application:**

I move to approve the site plan application for the 8 Industrial Drive / Site Plan Amendment, Map 161 Lot 41, 8 Industrial Drive, Hudson, New Hampshire; prepared by: Bedford Design Consultants, Inc. 592 Harvey Road, Manchester, NH 03103; prepared for: MDP Realty Associates, LLC, 9 Old Derry Road, Hudson, NH; consisting of 5 sheets and general notes 1-14 on Sheet 1; dated May 22, 2023; last revised August 7, 2023; and:

That the Planning Board finds that this application complies with the Zoning Ordinances, and with the Land Use Regulations with consideration of the waivers granted; and for the reasons set forth in the written submissions, together with the testimony and factual representations made by the applicant during the public hearing;

Subject to, and revised per, the following stipulations:

1. All stipulations of approval shall be incorporated into the Notice of Decision, which shall be recorded at the HCRD, together with the Plan.
2. A cost allocation procedure (CAP) amount of \$6,594.00 shall be paid prior to the issuance of a Certificate of Occupancy.
3. Prior to the issuance of a final certificate of occupancy, an L.L.S. Certified “as-built” site plan shall be provided to the Town of Hudson Land Use Division confirming that the development conforms to the Plan approved by the Planning Board.
4. Prior to the Planning Board endorsement of the Plan, it shall be subject to final administrative review by Town Planner and Town Engineer.
5. Prior to application for a building permit, the Applicant shall schedule a pre-construction meeting with the Town Engineer.
6. Construction activities involving the subject lot shall be limited to the hours between 7:00 A.M. and 7:00 P.M. No exterior construction activities shall be allowed on Sundays.
7. Hours of refuse removal shall be exclusive to the hours between 7:00 A.M. and 7:00 P.M., Monday through Friday only.

Motion by: \_\_\_\_\_ Second: \_\_\_\_\_ Carried/Failed: \_\_\_\_\_



June 19, 2023

Mr. Brian Groth  
Town Planner  
Town of Hudson  
12 School Street  
Hudson, NH 03051

Re: Town of Hudson Planning Board Review  
8 Industrial Drive Addition Site Plan, 8 Industrial Drive  
Tax Map 161 Lot 40; Acct. #1350-188  
Reference No. 20030249.22290

Dear Mr. Groth:

Fuss & O'Neill (F&O) has reviewed the first submission of the materials received on May 30, 2023, related to the above-referenced project. Authorization to proceed was received on June 8, 2023. A list of items reviewed is enclosed. The scope of our review is based on the Site Plan Review Codes, Stormwater Codes, Driveway Review Codes, Sewer Use Ordinance 77, Zoning Regulations, and criteria outlined in the CLD Consulting Engineers Proposal approved September 16, 2003, revised September 20, 2004, June 4, 2007, September 3, 2008, and October 2015.

We have included a copy of Fuss & O'Neill's evaluation of the checklist for your reference. We note that several items could not be verified by Fuss & O'Neill and require action by the Town.

The project appears to consist of a warehouse building addition on a previously developed industrial building site. Proposed improvements to the site also include the construction of a gravel drive, drainage improvements, and other associated site improvements. The existing building is serviced by public water and sewer.

The following items are noted:

#### 1. Site Plan Review Codes (HR 275)

- a. Hudson Regulation (HR) 275-6.C. The site currently does not have a sidewalk at Industrial Drive and the applicant has not proposed to add any sidewalks as part of this project.
- b. HR 275-6.I. The scope of this review does not include the adequacy of any fire protection provisions for the proposed building addition. The applicant has not shown the existing water connection to the site on the plan set.
- c. HR 275-6.T. The applicant is not proposing any offsite improvements on the plan set.
- d. HR 275-8.C.(2)(g) and Zoning Ordinance (ZO) 334-15.A. The applicant has provided parking calculations on the plan set and noted that 142 parking spaces are required for industrial use using the 1 space per 600 square feet formula, and that 48 spaces are provided. The applicant has requested a waiver from the Regulation, noting that the existing parking is more than adequate for the site and that the new addition will be for the Owners use and not a retail establishment.

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New Hampshire  
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Vermont



Mr. Brian Groth

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- e. HR 275-8.C.(6). The applicant has shown the off-street loading areas on the plan and has not proposed any changes or provided any calculations for these spaces.
- f. HR 275-9.C.(11). The applicant has shown one existing handicap accessible parking space for the site in the existing parking lot and has not proposed any modifications to this lot. We note that one handicap accessible space does not meet the minimum requirement.
- g. HR 275-9.F. The applicant has not provided copies of easements and deeds as part of the package received for review.

## 2. Administrative Review Codes (HR 276)

- a. HR 276-11.1.B.(6). We note that the plan was signed by the owner's authorized representative and not the property owner.
- b. HR 276-11.1.B.(9). The applicant has requested a waiver for having the plans stamped and signed by a licensed land surveyor.
- c. HR 276-11.1.B.(13). The applicant has noted that no signs are proposed on the plan set.
- d. HR 276-11.1.B.(14). The applicant should note if any exterior lighting is proposed on the plan set. We note that no lighting information has been provided.
- e. HR 276-11.1.B.(17). The applicant has not provided any benchmark information on the plan set.
- f. HR 276-11.1.B.(20). The applicant has not provided the height of the existing building on the plan set.
- g. HR 276-11.1.B.(24). The applicant should provide calculations showing the open space percentage of the lot. Measurements of the pdf version of the plans indicate an open space percentage of approximately 39%, but the applicant should provide an accurate measured value from the CAD plans.

## 3. Driveway Review Codes (HR 275-8.B. (34)/Chapter 193)

- a. HR 193.10. The applicant has not proposed any changes to the existing driveways. The site will continue to have three driveways onto Industrial Drive.

## 4. Traffic (HR 275-9.B)

- a. HR 275.9.B. The applicant has not provided any traffic information in the package received for review.

## 5. Utility Design/Conflicts

- a. HR 275-9.E. The applicant should note on the plan that the site is currently serviced by municipal water and sewer. We note that the existing connections to the public water and sewer mains are not shown on the plans, nor are any connections from the existing building to the proposed addition shown. The applicant should clarify if utility connections will be provided for the building addition.
- b. HR 275-9.E. The applicant has shown an existing sewer manhole and piping under the proposed building addition area. The applicant should provide more information on how this manhole will remain accessible within the addition.



Mr. Brian Groth

June 19, 2023

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- c. Engineering Technical Guideline & Typical Details (ETGTD) Section 801. The applicant should verify with the Town that the existing water main has adequate flow and pressure to meet both domestic and fire suppression requirements of the proposed expansion for this site.

**6. Drainage Design/Stormwater Management (HR 275-9.A./Chapter 290)**

- a. HR 275-9.A. and Stormwater Management Regulation 290. We note the project disturbs less than the 20,000 square foot threshold required for the Stormwater Management Plan Section 290 of the Regulations. The project is still subject to Site Plan Section 275 drainage requirements. The review utilizes Site Plan Regulations Section 275 with general engineering practices on the information provided.
- b. HR 275 and ZO-334-35.C. We note the plans are stamped by a wetland scientist, a letter was provided, and the plans call out a “manmade wetland” to the north of the existing building. The applicant should have the wetland scientist sign and stamp the letter provided. The applicant should also coordinate with NHDES to confirm the man-made status of this wetland.
- c. HR 275-9.A. We note the drainage computations as well as the plans refer to the gravel driveway as “pervious”. The applicant should provide additional information on how this gravel is classified as pervious and is going to free-drain, given the following
  - i. The Gravel Drive Detail illustrated on plan sheet 3 calls for the gravel to be installed above compacted subgrade.
  - ii. The gravel driveway is assumed to be installed and compacted, as NHDOT item 304.3 is typically installed.
- d. HR 275-9.A. The applicant should provide an I&M manual for the land owner to follow. Debris, leaves, sand, and soil transported by plows and snowmelt may lead to maintenance issues and shorten the lifespan of the onsite BMPs.
- e. HR 275-9.A.1. The applicant has only provided stormwater modeling for the building and infiltration trench only for the proposed 50-year event. The applicant should provide existing and proposed stormwater calculations illustrating converting the existing grass area to proposed gravel driveway.
- f. HR 275-9.A.3. The applicant should provide test pit information for the proposed infiltration trench. Due to the proximity of the nearby wetland, the water table may be high and reduce the ability of the proposed 3’ deep infiltration trench.
- g. HR 275-9.A.3. The applicant has noted the use of an infiltration rate of 3 in/hr within the Drainage Computations. The applicant should provide additional information to support the utilization of this number.
- h. HR 275-9.A.3. The Roof Drip Infiltration Trench Detail notes the 12” perforated pipe is optional. The applicant should remove the “optional” term or remove the pipe from the drainage computations.
- i. HR 275-9.A.4. The applicant should provide the 10 and 25-year storm event.
- j. The applicant will be required to comply with all provisions of the Town of Hudson’s MS4 permit, including but not limited to annual reporting requirements, construction site stormwater runoff control, and record keeping requirements.
- k. Please note that this review was carried out in accordance with applicable regulations and standards in place in New Hampshire at this time. Note that conditions at the site, including average weather conditions, patterns and trends, and design storm characteristics,

Mr. Brian Groth  
June 19, 2023  
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may change in the future. In addition, future changes in federal, state or local laws, rules or regulations, or in generally accepted scientific or industry information concerning environmental, atmospheric and geotechnical conditions and developments may affect the information and conclusions set forth in this review. In no way shall Fuss & O'Neill be liable for any of these changed conditions that may impact the review, regardless of the source of or reason for such changed conditions. Other than as described herein, no other investigation or analysis has been requested by the Client or performed by Fuss & O'Neill in preparing this review.

**7. Zoning (ZO 334)**

- a. ZO 334-14.A. The applicant has noted the maximum height allowed on the plan set.
- b. ZO 334-17 & 334-21. The applicant has noted that the subject parcel is located within the Industrial (I) zoning district. The existing/proposed use is permitted by the Ordinance within this district.
- c. ZO 334-33 & 334-35.C. The applicant has shown a wetland on the plan set but believes that a buffer is not required because it is manmade and therefore is not part of the Wetlands Conservation Overlay District. We note that the applicant has not proposed any construction within this wetland.
- d. ZO 334-60. The applicant has noted that they will not be adding any new signs to the site.
- e. ZO 334-83 and HR 218-4.E. The applicant has noted that the site is not located within a flood hazard area.

**8. Erosion Control/Wetland Impacts**

- a. The Town of Hudson should reserve the right to require any additional erosion control measures as needed. The applicant has noted this on the plans.

**9. Landscaping (HR 275-8.C.(7) & 276-11.1.B.(20)) and Lighting (HR 276-11.1.B.(14))**

- a. HR 275-8.C.(7). The applicant has requested a waiver for the landscaping requirements and has not shown any proposed landscaping on the plan.
- b. HR 276-11.1.B.(14). The applicant has not shown any lighting fixture locations on the plans.

**10. State and Local Permits (HR 275-9.G.)**

- a. HR 275-9.G. The applicant has not listed any required permits with their status on the plan set.
- b. HR 275-9.G. The applicant did not provide copies of any applicable Town, State or Federal approvals or permits in the review package.
- c. Additional local and state permitting may be required.



Mr. Brian Groth  
June 19, 2023  
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**11. Other**

- a. No other comments at this time.

Please feel free to call if you have any questions.

Very truly yours,

Steven W. Reichert, P.E.

SWR:  
Enclosure

cc: Town of Hudson Engineering Division – File  
Bedford Design Consultants, Inc. – [katiew@bedforddesign.com](mailto:katiew@bedforddesign.com)

**From:** Dhima, Elvis  
**Sent:** Thursday, June 8, 2023 12:29 PM  
**To:** Dubowik, Brooke; Groth, Brian  
**Cc:** Steve Reichert  
**Subject:** RE: Dept Signoff SP# 05-23 - 8 Industrial Drive Addition

Please see below

1. Applicant shall provide soil testing and infiltration testing to confirm the assumed value
2. Applicant shall provide a summary table of pre and post storm events
3. Currently the runoff from the driveway sheet flows and is not captured, treated or detained, as stated on the drainage report
4. Applicant shall provide a treatment swale along the proposed driveway to treat and detain the runoff before it leaves the site
5. The plan proposes to install a building over a 8" sewer service. Applicant shall provide a cross section of the pipe in relation to the proposed foundation

E

***Elvis Dhima, P.E.***  
***Town Engineer***

12 School Street  
Hudson, NH 03051  
Phone: (603) 886-6008  
Mobile: (603) 318-8286



**June 26, 2023**

Mr. Brian Groth  
Town Planner  
Town of Hudson  
12 School Street  
Hudson, NH 03051

**Re: Comment Reply Letter**  
8 Industrial Drive Addition Site Plan  
8 Industrial Drive, Hudson, NH  
Tax Map 161 Lot 40

Mr. Groth:

Bedford Design has reviewed the comment letters from the Town of Hudson from Elvis Dhima dated June 8, 2023, and the review engineer Steven Reichert, P.E. of Fuss and O'Neill dated June 19, 2023. Attached are our replies to each comment and attached are updated plans and documents.

Sincerely,  
**Bedford Design Consultants, Inc**



Katherine A. Weiss, PLA, ASLA  
Project Manager



## Fuss & O'Neill Comments

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### 1. Site Plan Review Codes (HR 275)

- a. Hudson Regulation (HR) 275-6.C. The site currently does not have a sidewalk at Industrial Drive and the applicant has not proposed to add any sidewalks as part of this project.

Reply: No Comment Required (NCR typical)

- b. HR 275-6.I. The scope of this review does not include the adequacy of any fire protection provisions for the proposed building addition. The applicant has not shown the existing water connection to the site on the plan set.

Reply: NCR

- c. HR 275-6.T. The applicant is not proposing any offsite improvements on the plan set.

Reply: NCR

- d. HR 275-8.C.(2)(g) and Zoning Ordinance (ZO) 334-15.A. The applicant has provided parking calculations on the plan set and noted that 142 parking spaces are required for industrial use using the 1 space per 600 square feet formula, and that 48 spaces are provided. The applicant has requested a waiver from the Regulation, noting that the existing parking is more than adequate for the site and that the new addition will be for the Owners use and not a retail establishment.

Reply: NCR

- e. HR 275-8.C.(6). The applicant has shown the off-street loading areas on the plan and has not proposed any changes or provided any calculations for these spaces.

Reply: NCR

- f. HR 275-9.C.(11). The applicant has shown one existing handicap accessible parking space for the site in the existing parking lot and has not proposed any modifications to this lot. We note that one handicap accessible space does not meet the minimum requirement.

Reply: On the Cover Sheet we show an additional accessible spot for a total of 2 accessible spaces on site as required per ADA regulations.

- g. HR 275-9.F. The applicant has not provided copies of easements and deeds as part of the package received for review.

Reply: We have included a copy of the deed with this submission.

## 2. Administrative Review Codes (HR 276)

- a. HR 276-11.1.B.(6). We note that the plan was signed by the owner's authorized representative and not the property owner.

Reply: NCR

- b. HR 276-11.1.B.(9). The applicant has requested a waiver for having the plans stamped and signed by a licensed land surveyor.

Reply: NCR

- c. HR 276-11.1.B.(13). The applicant has noted that no signs are proposed on the plan set.

Reply: NCR

- d. HR 276-11.1.B.(14). The applicant should note if any exterior lighting is proposed on the plan set. We note that no lighting information has been provided.

Reply: We have included two lights above the proposed man doors as required by building code. A detail of the light can be found on the detail sheets. Footcandles are shown on the site plan.

- e. HR 276-11.1.B.(17). The applicant has not provided any benchmark information on the plan set.

Reply: We have requested an additional waiver from this requirement.

- f. HR 276-11.1.B.(20). The applicant has not provided the height of the existing building on the plan set.

Reply: The existing building is 22.7' high and is now noted in the dimensional regulations.

- g. HR 276-11.1.B.(24). The applicant should provide calculations showing the open space percentage of the lot. Measurements of the pdf version of the plans indicate an open space percentage of approximately 39%, but the applicant should provide an accurate measured value from the CAD plans.

- a. Reply: We included open space information on the site data sheet. We have since removed an area of existing gravel, updated the calculations, and they are now shown in the notes under Dimensional Standards.

### **3. Driveway Review Codes (HR 275-8.B. (34)/Chapter 193)**

- a. HR 193.10. The applicant has not proposed any changes to the existing driveways. The site will continue to have three driveways onto Industrial Drive.

Reply: NCR

### **4. Traffic (HR 275-9.B)**

- a. HR 275.9.B. The applicant has not provided any traffic information in the package received for review.

Reply: This is correct. The additional traffic from this use will be extremely minimal.

### **5. Utility Design/Conflicts**

- a. HR 275-9.E. The applicant should note on the plan that the site is currently serviced by municipal water and sewer. We note that the existing connections to the public water and sewer mains are not shown on the plans, nor are any connections from the existing building to the proposed addition shown. The applicant should clarify if utility connections will be provided for the building addition.

Reply: A note has been added to the plan that the site is serviced by town water and sewer. The addition will not have any water or sewer. Existing facilities on site will be used.

- b. HR 275-9.E. The applicant has shown an existing sewer manhole and piping under the proposed building addition area. The applicant should provide more information on how this manhole will remain accessible within the addition.

Reply: A sewer profile has been added to the plan set which shows the existing sewer line and the proposed addition.

- c. Engineering Technical Guideline & Typical Details (ETGTD) Section 801. The applicant should verify with the Town that the existing water main has adequate flow and pressure to meet both domestic and fire suppression requirements of the proposed expansion for this site.

Reply: We have set up a meeting with the Town to discuss water adequacy.

## 6. Drainage Design/Stormwater Management (HR 275-9.A./Chapter 290)

- a. HR 275-9.A. and Stormwater Management Regulation 290. We note the project disturbs less than the 20,000 square foot threshold required for the Stormwater Management Plan Section 290 of the Regulations. The project is still subject to Site Plan Section 275 drainage requirements. The review utilizes Site Plan Regulations Section 275 with general engineering practices on the information provided.

Reply: We have included additional information in our submittal including an I&M manual and test pit information.

- b. HR 275 and ZO-334-35.C. We note the plans are stamped by a wetland scientist, a letter was provided, and the plans call out a “manmade wetland” to the north of the existing building. The applicant should have the wetland scientist sign and stamp the letter provided. The applicant should also coordinate with NHDES to confirm the man-made status of this wetland.

Reply: We have included a signed and stamped letter with this submittal.

- c. HR 275-9.A. We note the drainage computations as well as the plans refer to the gravel driveway as “pervious”. The applicant should provide additional information on how this gravel is classified as pervious and is going to free-drain, given the following

- i. The Gravel Drive Detail illustrated on plan sheet 3 calls for the gravel to be installed above compacted subgrade.

Reply: We have updated the design to show an infiltration trench along the northern side of the drive.

- ii. The gravel driveway is assumed to be installed and compacted, as NHDOT item 304.3 is typically installed.

Reply: We have updated the design to show an infiltration trench along the northern side of the drive.

- d. HR 275-9.A. The applicant should provide an I&M manual for the land owner to follow. Debris, leaves, sand, and soil transported by plows and snowmelt may lead to maintenance issues and shorten the lifespan of the onsite BMPs.

Reply: We have included an I&M manual for the infiltration trenches with this submission.

- e. HR 275-9.A.1. The applicant has only provided stormwater modeling for the building and infiltration trench only for the proposed 50-year event. The applicant should provide existing and proposed stormwater calculations illustrating converting the existing grass area to proposed gravel driveway.

Reply: We have updated the calculations to show the gravel drive and additional infiltration trench.

- f. HR 275-9.A.3. The applicant should provide test pit information for the proposed infiltration trench. Due to the proximity of the nearby wetland, the water table may be high and reduce the ability of the proposed 3' deep infiltration trench.

Reply: We have included test pit information with this submission. The water table is approximately 80" below the surface in one test pit and not observed in the other (depth of 93").

- g. HR 275-9.A.3. The applicant has noted the use of an infiltration rate of 3 in/hr within the Drainage Computations. The applicant should provide additional information to support the utilization of this number.

Reply: The drainage report shows the underlying soil information. This information states that the site has Group B soils and are well-drained. Both test pits show a significant layer of fill above the original soils. Ksat values can be from 0.14 to 14.17 inches per hour. We used a cautious 3 inches per hour for our calculations. Based on the test pits and the type of soils available this is a conservative estimate.

- h. HR 275-9.A.3. The Roof Drip Infiltration Trench Detail notes the 12" perforated pipe is optional. The applicant should remove the "optional" term or remove the pipe from the drainage computations.

Reply: We updated the note on the detail.

- i. HR 275-9.A.4. The applicant should provide the 10 and 25-year storm event.

Reply: The design shows that the trench holds a 50-year storm event. It is not designed to allow water to flow out of the trench for a 10- and 25-year event. This information would not be valuable.

- j. The applicant will be required to comply with all provisions of the Town of Hudson's MS4 permit, including but not limited to annual reporting requirements, construction site stormwater runoff control, and record keeping requirements.

Reply: This has been noted. Please see note 12 on the Cover Sheet.

- k. Please note that this review was carried out in accordance with applicable regulations and standards in place in New Hampshire at this time. Note that conditions at the site, including average weather conditions, patterns and trends, and design storm characteristics, may change in the future. In addition, future changes in federal, state or local laws, rules or regulations, or in generally accepted scientific or industry information concerning environmental, atmospheric and geotechnical conditions and developments may affect the information and conclusions set forth in this review. In no way shall Fuss & O'Neill be liable for any of these changed conditions that may impact the review, regardless of the source of or reason for such changed conditions. Other than as described herein, no other investigation or analysis has been requested by the Client or performed by Fuss & O'Neill in preparing this review.

Reply: NCR

## 7. Zoning (ZO 334)

- a. ZO 334-14.A. The applicant has noted the maximum height allowed on the plan set.

Reply: NCR

- b. ZO 334-17 & 334-21. The applicant has noted that the subject parcel is located within the Industrial (I) zoning district. The existing/proposed use is permitted by the Ordinance within this district.

Reply: NCR

- c. ZO 334-33 & 334-35.C. The applicant has shown a wetland on the plan set but believes that a buffer is not required because it is manmade and therefore is not part of the Wetlands Conservation Overlay District. We note that the applicant has not proposed any construction within this wetland.

Reply: NCR

- d. ZO 334-60. The applicant has noted that they will not be adding any new signs to the site.

Reply: NCR

- e. ZO 334-83 and HR 218-4.E. The applicant has noted that the site is not located within a flood hazard area.

Reply: NCR

## 8. Erosion Control/Wetland Impacts

- a. The Town of Hudson should reserve the right to require any additional erosion control measures as needed. The applicant has noted this on the plans.

Reply: NCR

#### **9. Landscaping (HR 275-8.C.(7) & 276-11.1.B.(20)) and Lighting (HR 276-11.1.B.(14))**

- a. HR 275-8.C.(7). The applicant has requested a waiver for the landscaping requirements and has not shown any proposed landscaping on the plan.

Reply: NCR

- b. HR 276-11.1.B.(14). The applicant has not shown any lighting fixture locations on the plans.

Reply: NCR

#### **10. State and Local Permits (HR 275-9.G.)**

- a. HR 275-9.G. The applicant has not listed any required permits with their status on the plan set.

Reply: NCR

- b. HR 275-9.G. The applicant did not provide copies of any applicable Town, State or Federal approvals or permits in the review package.

Reply: NCR

- c. Additional local and state permitting may be required.

Reply: NCR

#### **Town Comments**

---

1. Applicant shall provide soil testing and infiltration testing to confirm the assumed value.

Reply: We have requested a waiver from testing the infiltration rates. An amoozemeter test is not financially feasible for this small area.

2. Applicant shall provide a summary table of pre and post storm events.

Reply: We capture all post flow from impervious surfaces and hold the entire 50 year storm event with no outlet. The runoff from a 10 and 25 year storm event would be 0.

3. Currently the runoff from the driveway sheet flows and is not captured, treated, or detained, as stated on the drainage report.

Reply: We have updated the driveway detail. Please see the detail sheets.

4. Applicant shall provide a treatment swale along the proposed driveway to treat and detain the runoff before it leaves the site.

Reply: Please see the updated detail on the detail sheet.

5. The plan proposes to install a building over an 8" sewer service. Applicant shall provide a cross section of the pipe in relation to the proposed foundation.

Reply: We have included a plan and profile with the plan set.

**END OF COMMENTS**



***Bedford Design Consultants* Inc.**  
**ENGINEERS AND SURVEYORS**

592 Harvey Road Manchester, NH 03103  
Telephone: (603) 622-5533 • [www.bedforddesign.com](http://www.bedforddesign.com)

**Drainage Computations**  
**8 Industrial Drive Site Plan Amendment**

ON LOT:

Map 161 Lot 41  
8 Industrial Drive  
Hudson, New Hampshire

PREPARED FOR:

**MDP Realty Associates, LLC**

9 Old Derry Road  
Hudson, NH

PREPARED BY:

**Bedford Design Consultants, Inc.**

592 Harvey Road  
Manchester, NH 03103  
(603) 622-5533  
[www.bedforddesign.com](http://www.bedforddesign.com)

May 30, 2023

**Updated July 5, 2023 (Partial Set Only with Updates)**

**Updated July 14, 2023 ( Full Set)**

BDC Project # 503-14



## Table of Contents

- Post-Development Description
- Pre and Post Table
- Conclusion
- NRCS Soils Report with Ksat Information
- Extreme Precipitation Tables for Hudson, NH
- Pre and Post Calculations for S100 for 2, 10 and 25-year storm events
- Post Development Summaries for P1 and P2 50-year storm event
- Test Pit Logs
- Inspection and Maintenance Manual and Inspection Log
- Pre and Post Development Plan

### ***Post-Development***

The project site consists of a 5,000 s.f. addition with roof water to be treated in a roof drip infiltration trench. All water is infiltrated into the ground and the trench holds a 50- year storm event. The gravel drive is also collected into a 2' trench, which runs the length of the drive, and will capture rainwater, allowing it to be infiltrated.

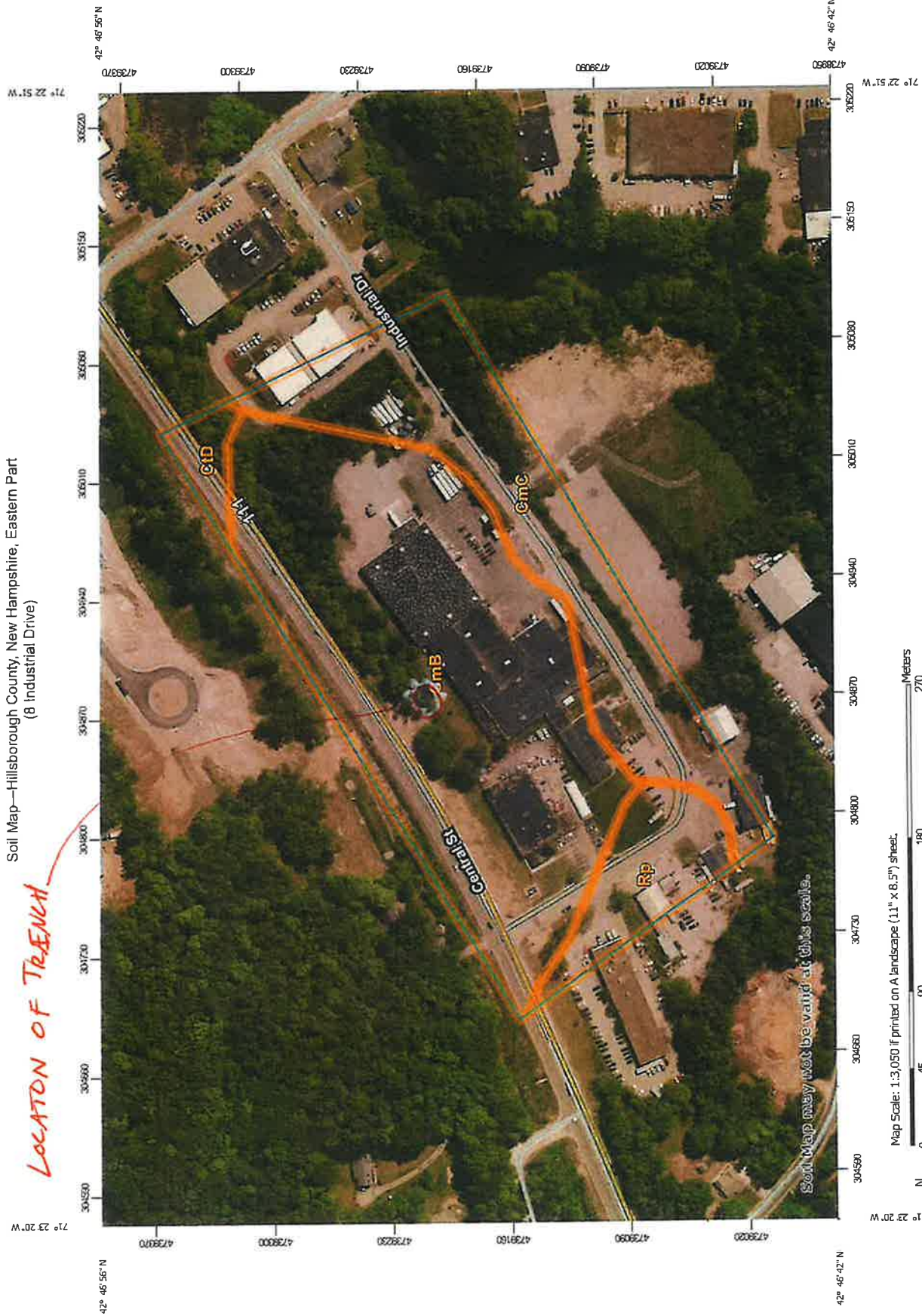
The soils are a Group B and have a Ksat value from 0.14 to 14.17 inches per hour. We have used a conservative 3 inches per hour for our design.

### Pre and Post Table:

	<b>Pre</b>	<b>Post</b>	<b>Increase/Decrease</b>
2-year	0.28	0.15	<b>-0.13</b>
10-year	1.30	0.98	<b>-0.32</b>
25-year	2.36	1.99	<b>-0.37</b>

### ***Conclusion***

Stormwater from the developed area is held entirely within both infiltration trenches for all storms and including the 50 year storm. The trench has emergency outlet structures. Because all new construction run off is captured and not allowed to leave the site, Post-Development calculations do not exceed Pre-Development flows.



Soil Map—Hillsborough County, New Hampshire, Eastern Part (8 Industrial Drive)

LOCATION OF TRENCH

Soil Map may not be valid at this scale.

Map Scale: 1:3,050 if printed on A landscape (11" x 8.5") sheet.

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

Soil Map—Hillsborough County, New Hampshire, Eastern Part  
(8 Industrial Drive)

**MAP LEGEND**

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

**MAP INFORMATION**

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Hillsborough County, New Hampshire, Eastern Part  
 Survey Area Data: Version 25, Sep 12, 2022

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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
CmB	Canton fine sandy loam, 0 to 8 percent slopes, very stony	10.8	60.4%
CmC	Canton fine sandy loam, 8 to 15 percent slopes, very stony	5.0	28.2%
CtD	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	0.5	2.6%
Rp	Rippowam fine sandy loam	1.6	8.8%
<b>Totals for Area of Interest</b>		<b>17.9</b>	<b>100.0%</b>



## Hillsborough County, New Hampshire, Eastern Part

### **CmB—Canton fine sandy loam, 0 to 8 percent slopes, very stony**

#### **Map Unit Setting**

*National map unit symbol:* 2w811  
*Elevation:* 0 to 1,180 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 240 days  
*Farmland classification:* Farmland of local importance

#### **Map Unit Composition**

*Canton, very stony, and similar soils:* 80 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Canton, Very Stony**

##### **Setting**

*Landform:* Moraines, hills, ridges  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Nose slope, side slope, crest  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex  
*Parent material:* Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

##### **Typical profile**

*O<sub>i</sub> - 0 to 2 inches:* slightly decomposed plant material  
*A - 2 to 5 inches:* fine sandy loam  
*Bw<sub>1</sub> - 5 to 16 inches:* fine sandy loam  
*Bw<sub>2</sub> - 16 to 22 inches:* gravelly fine sandy loam  
*2C - 22 to 67 inches:* gravelly loamy sand

##### **Properties and qualities**

*Slope:* 0 to 8 percent  
*Surface area covered with cobbles, stones or boulders:* 1.6 percent  
*Depth to restrictive feature:* 19 to 39 inches to strongly contrasting textural stratification  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Moderately low to high (0.14 to 14.17 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 3.4 inches)

Map Unit Description: Canton fine sandy loam, 0 to 8 percent slopes, very stony--Hillsborough County, New Hampshire, Eastern Part

8 Industrial Drive

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6s

*Hydrologic Soil Group:* B

*Ecological site:* F144AY034CT - Well Drained Till Uplands

*Hydric soil rating:* No

### Minor Components

#### Scituate, very stony

*Percent of map unit:* 9 percent

*Landform:* Hills, drumlins, ground moraines

*Landform position (two-dimensional):* Summit, backslope, footslope

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Convex, linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Montauk, very stony

*Percent of map unit:* 5 percent

*Landform:* Recessional moraines, ground moraines, hills, drumlins

*Landform position (two-dimensional):* Summit, shoulder, backslope

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Convex, linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Gloucester, very stony

*Percent of map unit:* 4 percent

*Landform:* Moraines, hills, ridges

*Landform position (two-dimensional):* Summit, shoulder, backslope

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Convex, linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Swansea

*Percent of map unit:* 2 percent

*Landform:* Marshes, depressions, bogs, swamps, kettles

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

## Data Source Information

Soil Survey Area: Hillsborough County, New Hampshire, Eastern Part

Survey Area Data: Version 25, Sep 12, 2022

# Extreme Precipitation Tables

## Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

<b>Smoothing</b>	Yes
<b>State</b>	New Hampshire
<b>Location</b>	
<b>Longitude</b>	71.663 degrees West
<b>Latitude</b>	43.420 degrees North
<b>Elevation</b>	0 feet
<b>Date/Time</b>	Wed, 23 Mar 2022 11:11:06 -0400

### Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
<b>1yr</b>	0.26	0.40	0.50	0.65	0.81	1.02	<b>1yr</b>	0.70	0.96	1.18	1.48	1.85	2.32	2.57	<b>1yr</b>	2.06	2.47	2.87	3.54	4.07	<b>1yr</b>
<b>2yr</b>	0.32	0.49	0.61	0.80	1.00	1.26	<b>2yr</b>	0.87	1.15	1.45	1.79	2.22	2.73	3.06	<b>2yr</b>	2.42	2.95	3.42	4.09	4.68	<b>2yr</b>
<b>5yr</b>	0.38	0.58	0.73	0.98	1.26	1.58	<b>5yr</b>	1.08	1.47	1.83	2.26	2.77	3.39	3.86	<b>5yr</b>	3.00	3.71	4.29	5.05	5.75	<b>5yr</b>
<b>10yr</b>	0.42	0.67	0.84	1.15	1.49	1.90	<b>10yr</b>	1.29	1.76	2.19	2.70	3.30	3.99	4.60	<b>10yr</b>	3.53	4.42	5.10	5.92	6.71	<b>10yr</b>
<b>25yr</b>	0.51	0.80	1.02	1.41	1.87	2.39	<b>25yr</b>	1.61	2.25	2.76	3.40	4.13	4.96	5.80	<b>25yr</b>	4.39	5.58	6.41	7.31	8.25	<b>25yr</b>
<b>50yr</b>	0.58	0.92	1.18	1.65	2.22	2.85	<b>50yr</b>	1.92	2.71	3.30	4.06	4.90	5.84	6.92	<b>50yr</b>	5.17	6.66	7.63	8.58	9.64	<b>50yr</b>
<b>100yr</b>	0.66	1.06	1.37	1.94	2.64	3.41	<b>100yr</b>	2.28	3.26	3.96	4.85	5.82	6.89	8.26	<b>100yr</b>	6.10	7.95	9.08	10.08	11.28	<b>100yr</b>
<b>200yr</b>	0.75	1.22	1.58	2.27	3.14	4.08	<b>200yr</b>	2.71	3.93	4.73	5.78	6.91	8.13	9.87	<b>200yr</b>	7.20	9.49	10.80	11.84	13.19	<b>200yr</b>
<b>500yr</b>	0.91	1.49	1.95	2.82	3.95	5.14	<b>500yr</b>	3.41	5.04	5.97	7.27	8.66	10.13	12.48	<b>500yr</b>	8.97	12.00	13.61	14.65	16.24	<b>500yr</b>

### Lower Confidence Limits

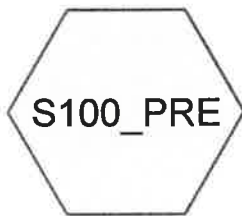
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
<b>1yr</b>	0.23	0.36	0.43	0.58	0.72	0.87	<b>1yr</b>	0.62	0.85	0.96	1.32	1.59	2.14	2.38	<b>1yr</b>	1.89	2.28	2.70	3.30	3.83	<b>1yr</b>
<b>2yr</b>	0.31	0.47	0.58	0.79	0.97	1.14	<b>2yr</b>	0.84	1.12	1.30	1.69	2.18	2.67	2.99	<b>2yr</b>	2.36	2.87	3.33	3.99	4.55	<b>2yr</b>
<b>5yr</b>	0.34	0.53	0.66	0.90	1.15	1.36	<b>5yr</b>	0.99	1.33	1.56	2.00	2.58	3.20	3.59	<b>5yr</b>	2.83	3.45	4.02	4.73	5.36	<b>5yr</b>
<b>10yr</b>	0.38	0.58	0.72	1.01	1.30	1.53	<b>10yr</b>	1.13	1.49	1.73	2.22	2.88	3.69	4.10	<b>10yr</b>	3.27	3.95	4.63	5.37	6.04	<b>10yr</b>
<b>25yr</b>	0.43	0.66	0.82	1.17	1.54	1.82	<b>25yr</b>	1.33	1.78	2.05	2.56	3.38	4.46	4.89	<b>25yr</b>	3.95	4.71	5.61	6.36	7.10	<b>25yr</b>
<b>50yr</b>	0.48	0.73	0.91	1.31	1.76	2.07	<b>50yr</b>	1.52	2.03	2.33	2.85	3.79	5.18	5.57	<b>50yr</b>	4.58	5.36	6.49	7.22	8.02	<b>50yr</b>
<b>100yr</b>	0.53	0.80	1.00	1.45	1.99	2.36	<b>100yr</b>	1.71	2.31	2.63	3.18	4.27	6.00	6.38	<b>100yr</b>	5.31	6.13	7.52	8.18	9.03	<b>100yr</b>
<b>200yr</b>	0.59	0.88	1.12	1.62	2.25	2.68	<b>200yr</b>	1.95	2.62	2.97	3.54	4.80	7.00	7.33	<b>200yr</b>	6.20	7.05	8.72	9.31	10.18	<b>200yr</b>
<b>500yr</b>	0.68	1.00	1.29	1.88	2.67	3.16	<b>500yr</b>	2.31	3.09	3.47	4.07	5.63	8.59	8.83	<b>500yr</b>	7.60	8.49	10.63	11.04	11.87	<b>500yr</b>

### Upper Confidence Limits

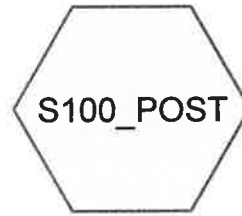
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
<b>1yr</b>	0.29	0.45	0.55	0.73	0.90	1.08	<b>1yr</b>	0.78	1.06	1.21	1.53	1.91	2.49	2.74	<b>1yr</b>	2.20	2.63	3.02	3.83	4.35	<b>1yr</b>
<b>2yr</b>	0.33	0.51	0.63	0.86	1.06	1.24	<b>2yr</b>	0.91	1.22	1.40	1.81	2.32	2.81	3.19	<b>2yr</b>	2.48	3.06	3.54	4.22	4.84	<b>2yr</b>
<b>5yr</b>	0.40	0.62	0.77	1.06	1.35	1.65	<b>5yr</b>	1.16	1.61	1.86	2.37	2.99	3.58	4.10	<b>5yr</b>	3.17	3.94	4.61	5.35	6.16	<b>5yr</b>
<b>10yr</b>	0.49	0.75	0.93	1.30	1.68	2.01	<b>10yr</b>	1.45	1.97	2.21	2.78	3.48	4.30	4.99	<b>10yr</b>	3.81	4.80	5.64	6.42	7.39	<b>10yr</b>
<b>25yr</b>	0.64	0.98	1.22	1.74	2.28	2.71	<b>25yr</b>	1.97	2.65	2.93	3.58	4.42	5.48	6.49	<b>25yr</b>	4.85	6.24	7.37	8.19	9.45	<b>25yr</b>
<b>50yr</b>	0.79	1.20	1.49	2.15	2.89	3.41	<b>50yr</b>	2.49	3.34	3.64	4.34	5.31	6.58	7.93	<b>50yr</b>	5.82	7.62	9.01	9.84	11.40	<b>50yr</b>
<b>100yr</b>	0.97	1.47	1.84	2.66	3.65	4.29	<b>100yr</b>	3.15	4.20	4.51	5.25	6.36	7.87	9.67	<b>100yr</b>	6.97	9.30	11.03	11.83	13.76	<b>100yr</b>
<b>200yr</b>	1.19	1.80	2.28	3.30	4.60	5.41	<b>200yr</b>	3.97	5.29	5.60	6.38	7.64	9.45	11.81	<b>200yr</b>	8.36	11.35	13.49	14.24	16.62	<b>200yr</b>
<b>500yr</b>	1.59	2.36	3.04	4.41	6.27	7.37	<b>500yr</b>	5.41	7.20	7.48	8.24	9.74	11.97	15.37	<b>500yr</b>	10.59	14.78	17.60	18.20	21.35	<b>500yr</b>



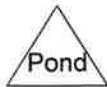




PRE



POST



**Routing Diagram for 503-14-7-13-23-POST**

Prepared by Bedford Design Consultants, Inc , Printed 7/13/2023  
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**503-14-7-13-23-POST**

Type III 24-hr 2 YEAR Rainfall=2.73"

Prepared by Bedford Design Consultants, Inc

Printed 7/13/2023

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**Summary for Subcatchment S100\_PRE: PRE**

Runoff = 0.28 cfs @ 12.34 hrs, Volume= 0.047 af, Depth&gt; 0.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 YEAR Rainfall=2.73"

Area (sf)	CN	Description
43,201	55	Woods, Good, HSG B
8,500	96	Gravel surface, HSG B
1,059	98	Paved parking, HSG B
31,277	61	>75% Grass cover, Good, HSG B
84,037	62	Weighted Average
82,978		98.74% Pervious Area
1,059		1.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	28	0.0200	0.98		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.73"
7.1	32	0.0400	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.73"
4.6	276	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
12.2	336	Total			

**503-14-7-13-23-POST**

Type III 24-hr 2 YEAR Rainfall=2.73"

Prepared by Bedford Design Consultants, Inc

Printed 7/13/2023

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**Summary for Subcatchment S100\_POST: POST**

Runoff = 0.15 cfs @ 12.35 hrs, Volume= 0.030 af, Depth> 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 YEAR Rainfall=2.73"

Area (sf)	CN	Description
43,201	55	Woods, Good, HSG B
1,059	98	Paved parking, HSG B
26,937	61	>75% Grass cover, Good, HSG B
1,785	96	Gravel surface, HSG B
72,982	59	Weighted Average
71,923		98.55% Pervious Area
1,059		1.45% Impervious Area

*- subtracts S1+S2 from Subcatchment*

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	30	0.0400	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.73"
0.3	20	0.0400	1.22		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.73"
1.4	115	0.0400	1.40		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
2.2	134	0.0400	1.00		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
7.0	299	Total			

**503-14-7-13-23-POST**

*Type III 24-hr 10 YEAR Rainfall=3.99"*

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Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment S100\_POST: POST**      Runoff Area=72,982 sf 1.45% Impervious Runoff Depth>0.71"  
Flow Length=299' Slope=0.0400 '/' Tc=7.0 min CN=59 Runoff=0.98 cfs 0.099 af

**Subcatchment S100\_PRE: PRE**      Runoff Area=84,037 sf 1.26% Impervious Runoff Depth>0.86"  
Flow Length=336' Tc=12.2 min CN=62 Runoff=1.30 cfs 0.138 af

**Total Runoff Area = 3.605 ac Runoff Volume = 0.236 af Average Runoff Depth = 0.79"**  
**98.65% Pervious = 3.556 ac 1.35% Impervious = 0.049 ac**

**503-14-7-13-23-POST**

*Type III 24-hr 25 YEAR Rainfall=4.96"*

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Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

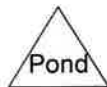
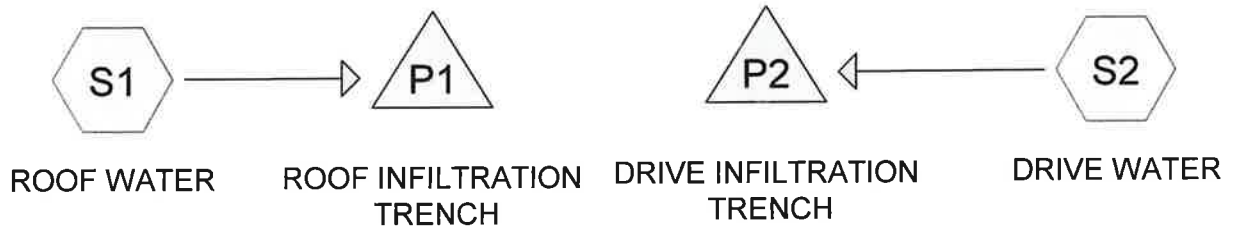
**Subcatchment S100\_POST: POST**

Runoff Area=72,982 sf 1.45% Impervious Runoff Depth>1.21"  
Flow Length=299' Slope=0.0400 '/' Tc=7.0 min CN=59 Runoff=1.99 cfs 0.169 af

**Subcatchment S100\_PRE: PRE**

Runoff Area=84,037 sf 1.26% Impervious Runoff Depth>1.41"  
Flow Length=336' Tc=12.2 min CN=62 Runoff=2.36 cfs 0.227 af

**Total Runoff Area = 3.605 ac Runoff Volume = 0.395 af Average Runoff Depth = 1.32"**  
**98.65% Pervious = 3.556 ac 1.35% Impervious = 0.049 ac**



**Routing Diagram for 503-14-7-13-23-POST**

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**503-14-7-13-23-POST**

Type III 24-hr 50 YEAR Rainfall=5.94"

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Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment S1: ROOF WATER**

Runoff Area=5,000 sf 100.00% Impervious Runoff Depth>5.53"  
 Tc=5.0 min CN=98 Runoff=0.67 cfs 0.053 af

**Subcatchment S2: DRIVE WATER**

Runoff Area=6,040 sf 0.00% Impervious Runoff Depth>5.37"  
 Tc=5.0 min CN=96 Runoff=0.80 cfs 0.062 af

**Pond P1: ROOF INFILTRATION TRENCH**

Peak Elev=260.39' Storage=1,042 cf Inflow=0.67 cfs 0.053 af  
 Outflow=0.03 cfs 0.047 af

**Pond P2: DRIVE INFILTRATION TRENCH**

Peak Elev=260.52' Storage=1,220 cf Inflow=0.80 cfs 0.062 af  
 Outflow=0.04 cfs 0.056 af

**Total Runoff Area = 0.253 ac Runoff Volume = 0.115 af Average Runoff Depth = 5.45"**  
**54.71% Pervious = 0.139 ac 45.29% Impervious = 0.115 ac**

*was initially  
incorrect*

**503-14-7-13-23-POST**

Type III 24-hr 50 YEAR Rainfall=5.94"

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**Summary for Subcatchment S1: ROOF WATER**

Runoff = 0.67 cfs @ 12.07 hrs, Volume= 0.053 af, Depth&gt; 5.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50 YEAR Rainfall=5.94"

Area (sf)	CN	Description
5,000	98	Roofs, HSG B
5,000		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 5 MINUTES MIN.

**Summary for Subcatchment S2: DRIVE WATER**

Runoff = 0.80 cfs @ 12.07 hrs, Volume= 0.062 af, Depth&gt; 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50 YEAR Rainfall=5.94"

Area (sf)	CN	Description
6,040	96	Gravel surface, HSG B
6,040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, 5 MIN. MIN.

**Summary for Pond P1: ROOF INFILTRATION TRENCH**

Inflow Area = 0.115 ac, 100.00% Impervious, Inflow Depth > 5.53" for 50 YEAR event  
 Inflow = 0.67 cfs @ 12.07 hrs, Volume= 0.053 af  
 Outflow = 0.03 cfs @ 10.30 hrs, Volume= 0.047 af, Atten= 95%, Lag= 0.0 min  
 Discarded = 0.03 cfs @ 10.30 hrs, Volume= 0.047 af

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 260.39' @ 14.01 hrs Surf.Area= 500 sf Storage= 1,042 cf  
 Flood Elev= 261.40' Surf.Area= 500 sf Storage= 1,244 cf

Plug-Flow detention time= 238.8 min calculated for 0.047 af (89% of inflow)  
 Center-of-Mass det. time= 185.1 min ( 945.4 - 760.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	255.40'	1,171 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 3,000 cf Overall - 73 cf Embedded = 2,927 cf x 40.0% Voids
#2	256.50'	73 cf	<b>12.0" Round Pipe Storage</b> Inside #1 L= 93.0'
		1,244 cf	Total Available Storage



**503-14-7-13-23-POST**

Type III 24-hr 50 YEAR Rainfall=5.94"

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Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
255.40	500	210.0	0	0	500
261.40	500	210.0	3,000	3,000	1,760

Device	Routing	Invert	Outlet Devices
#1	Discarded	255.40'	3.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 10.30 hrs HW=255.46' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.03 cfs)

**Summary for Pond P2: DRIVE INFILTRATION TRENCH**

Inflow Area = 0.139 ac, 0.00% Impervious, Inflow Depth > 5.37" for 50 YEAR event  
 Inflow = 0.80 cfs @ 12.07 hrs, Volume= 0.062 af  
 Outflow = 0.04 cfs @ 10.45 hrs, Volume= 0.056 af, Atten= 95%, Lag= 0.0 min  
 Discarded = 0.04 cfs @ 10.45 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 260.52' @ 13.97 hrs Surf.Area= 614 sf Storage= 1,220 cf  
 Flood Elev= 261.60' Surf.Area= 614 sf Storage= 1,485 cf

Plug-Flow detention time= 236.4 min calculated for 0.056 af (91% of inflow)  
 Center-of-Mass det. time= 189.8 min ( 955.9 - 766.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	255.70'	1,425 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 3,623 cf Overall - 60 cf Embedded = 3,562 cf x 40.0% Voids
#2	258.50'	60 cf	6.0" Round Pipe Storage Inside #1 L= 307.0'
		1,485 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
255.70	614	0	0
261.60	614	3,623	3,623

Device	Routing	Invert	Outlet Devices
#1	Discarded	255.70'	3.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.04 cfs @ 10.45 hrs HW=255.76' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.04 cfs)

**TEST PIT DATA**

8 INDUSTRIAL DRIVE  
HUDSON, NH  
BDC JOB # 503-14  
PERFORMED: JUNE 27, 2023  
PERFORMED BY: TONY MARCOTTE, P.E.

**TEST PIT NO. 1** - ELEVATION 260.20

0-20", 10-YR, 3/2, FINE SANDY LOAM, STONY  
20-56", 10-YR 4/3, SANDY LOAM, FILL  
56-68", 10-YR 7/6, LOAM  
68-74", 10-YR 3/2, LOAM WITH ROOTS  
74-88", 10-YR 6/3, LOAMY SAND, GRAY

ESHWT = NONE OBSERVED



VIEW OF PIT



**TEST PIT NO. 2** - ELEVATION 260.15

0-16", 10-YR 3/2, FINE SANDY LOAM  
16-54", 10-YR 6/4. STONY LOAMY SAND FILL  
54-80", 10-YR 3/2, LOAM, ROOTS AND STUMPS  
80-92", 10-YR 6/6, CLAYEY SILT, ROLLS TO 1/4"

ESHWT @ 80" (ELEVATION 253.48)  
RESTRICTIVE LAYER @ 80"



VIEW OF PIT



CLAYEY SILT

# *Bedford Design Consultants* Inc.

**ENGINEERS AND SURVEYORS**

592 Harvey Road Manchester, NH 03103

Telephone: (603) 622-5533 • www.bedforddesign.com

## **Long Term Maintenance Plan & Inspection & Maintenance (I&M) Manual for Storm Water Best Management Practices**

MDP Realty Associates, LLC  
8 Industrial Drive  
Map 161 Lot 41  
7-5-23  
BDC Job # 503-14

The purpose of this Inspection and Maintenance manual is to assist the responsible parties for maintaining and understanding the functions of the storm water best management practices.

### **Party Responsible for Reporting, Inspection, & Maintenance after construction:**

Marco Plante  
9 Old Derry Road  
Hudson, NH  
[marco@saveonwall.com](mailto:marco@saveonwall.com)  
603-235-8066

**Stormwater BMPs on site****Stone Infiltration Trench****Recommended Maintenance for specific BMPs****Infiltration Trench**

- Inspect 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 an inspection. Any sand or debris should be removed.
- Inspect Drain Manholes for sediment at least once annually.
- Remove and dispose of accumulated sediment based on inspection.
- If the system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the conditions of the stone and determine the measures required to restore filtration, including but not limited to removal of accumulated sediments or reconstruction of the trench.

**Outlet Structures (Nyloplast)**

- Inspect twice a year and remove debris from inlet and outlet areas.
- Check sump for accumulated sediment and remove as needed.

**Removal of Non-Native Invasive Plants**

During maintenance activities, check for the presence of invasive plants. Non-native invasive plants crowd out natives in natural and managed landscapes. Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material, so the plants don't grow where disposed. Remove and dispose of all invasive plant materials in accordance with "Methods for Disposing Non-Native Invasive Plants" published by the University of New Hampshire Cooperative Extension.

[http://extension.unh.edu/resources/files/resource000988\\_rep1720.pdf](http://extension.unh.edu/resources/files/resource000988_rep1720.pdf)



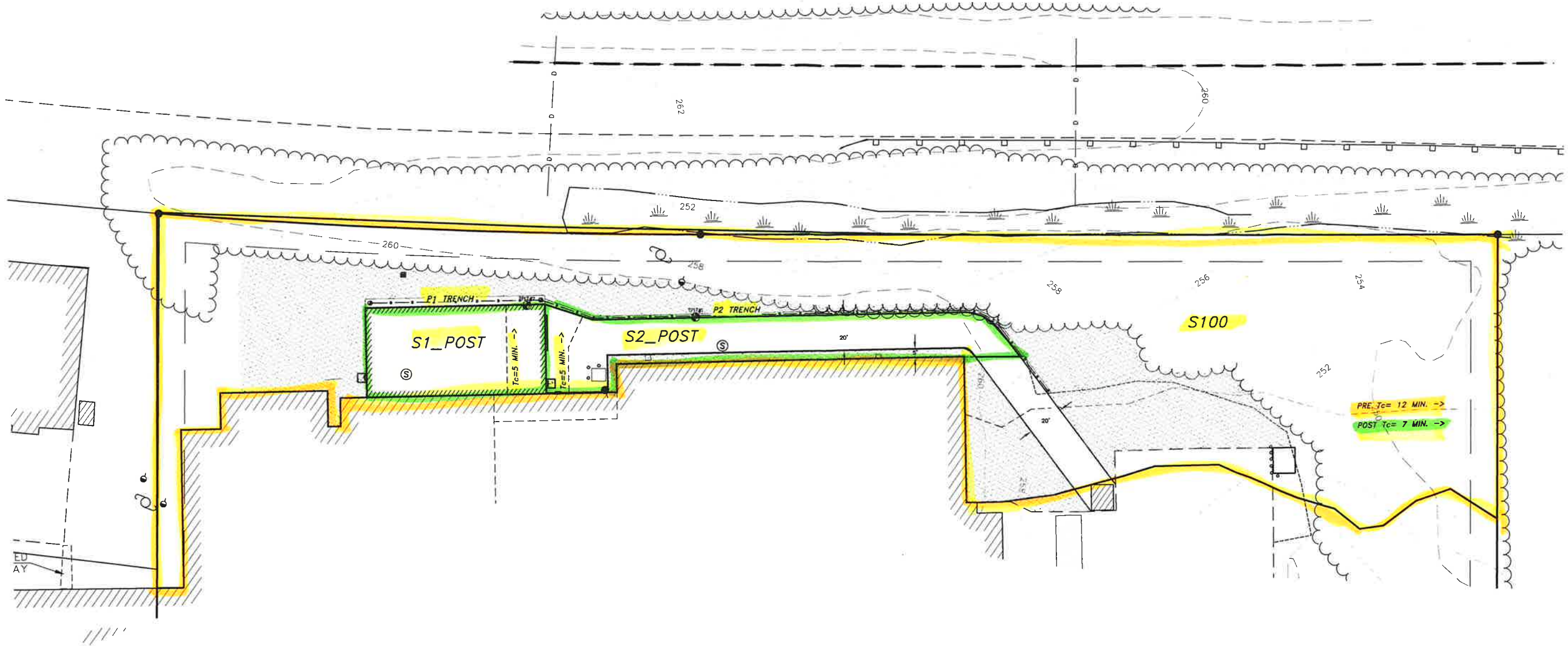
### Inspection Checklist

(Make additional copies for each inspection)  
 (All inspections should be kept in a log book in date order from oldest to newest inspection)

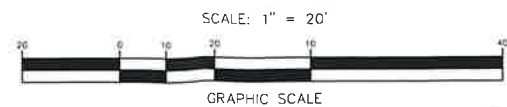
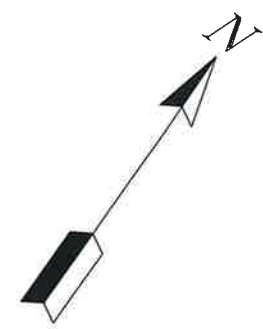
Date: \_\_\_\_\_

Best Management Practice	Minimum Frequency	Date Performed	Comments and Location	Cleaning/Repair Needed?	Date of Cleaning/Repair	Performed By
Roof Trench	Twice Annually			Yes/No		
2 Nyloplast Structures	Twice Annually			Yes/No		
Driveway Trench	Twice Annually			Yes/No		





POST  
PRE



**TAX MAP 161 LOT 41**  
**PRE AND POST DRAINAGE PLAN**  
**8 INDUSTRIAL DR SITE PLAN AMENDMENT**  
 LOCATED AT:  
**8 INDUSTRIAL DRIVE**  
**HUDSON, NEW HAMPSHIRE**  
 PREPARED FOR/OWNER:  
 MDP REALTY ASSOCIATES, LLC  
 9 OLD DERRY ROAD  
 HUDSON, STATE

SCALE: 1" = 40'      JULY 13, 2023      SHEET 1 OF 1

DESIGN:	DRAWN:	CHECKED:	FB:	PG:	
KAW	KAW	RJB	###	###	503-14

**Bedford Design Consultants Inc.**  
 ENGINEERS AND SURVEYORS  
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 www.bedforddesign.com

6-26-23	REVISED PER TOWN COMMENTS	KAW	A
DATE	DESCRIPTION	BY	REV.

G:\PROJECT\0503014\DWG\503-14-CV.dwg



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**Drainage Computations**  
**8 Industrial Drive Site Plan Amendment**

ON LOT:

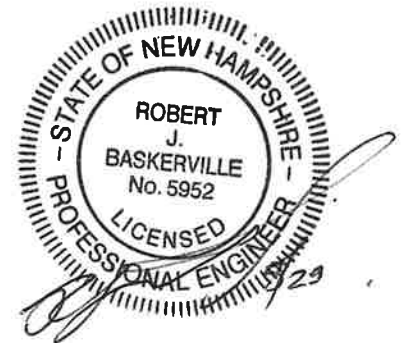
Map 161 Lot 41  
8 Industrial Drive  
Hudson, New Hampshire

PREPARED FOR:

**MDP Realty Associates, LLC**  
9 Old Derry Road  
Hudson, NH

PREPARED BY:

**Bedford Design Consultants, Inc.**  
592 Harvey Road  
Manchester, NH 03103  
(603) 622-5533  
[www.bedforddesign.com](http://www.bedforddesign.com)



May 30, 2023

**Updated July 5, 2023 (Partial Set Only with Updates)**

**Updated July 14, 2023 ( Full Set)**

**Updated August 7, 2023 (Perc Test Updates Only)**

BDC Project # 503-14

## Table of Contents

- Post-Development Description
- Pre and Post Table
- Conclusion
- NRCS Soils Report with Ksat Information
- **Percolation Test (added 8-7-23)**
- Extreme Precipitation Tables for Hudson, NH
- **Pre and Post Calculations for S100 for 2, 10 and 25-year storm events**
- **Post Development Summaries for P1 and P2 50-year storm event**
- Test Pit Logs
- Inspection and Maintenance Manual and Inspection Log
- Pre and Post Development Plan

### ***Post-Development***

The project site consists of a 5,000 s.f. addition with roof water to be treated in a roof drip infiltration trench. All water is infiltrated into the ground and the trench holds a 50- year storm event. The gravel drive is also collected into a 2' trench, which runs the length of the drive, and will capture rainwater, allowing it to be infiltrated.

The soils are a Group B and have a Ksat value from 0.14 to 14.17 inches per hour. **After performing a percolation test, we have uses 6 inches per hour for our design and have updated the calculations accordingly.**

#### Pre and Post Table:

	<b>Pre</b>	<b>Post</b>	<b>Increase/Decrease</b>
2-year	0.28	0.15	<b>-0.13</b>
10-year	1.30	0.98	<b>-0.32</b>
25-year	2.36	1.99	<b>-0.37</b>

### ***Conclusion***

Stormwater from the developed area is held entirely within both infiltration trenches for all storms and including the 50 year storm. The trench has emergency outlet structures. Because all new construction run off is captured and not allowed to leave the site, Post-Development calculations do not exceed Pre-Development flows.

## Percolation testing at 8 Industrial Drive

August 1, 2023

The top 18" of topsoil and underling material in the A Horizon was removed with a small excavator in the area of the proposed infiltration trench. This underlying material represented the most restrictive soil type from Test Pits. The loose material was removed around the area of the perc test

An approximately 8" to 10" diameter - 14" deep hole was dug  
2" of fine gravel was added to the bottom of the hole.

12" of water was added and the level was maintained for 2 hours (8:45 to 10:45)  
The depth of water was lowered to 6" deep and 8" below a reference board.

Time	Elapsed Time (min)	Water Depth from board (in.)	Depth of Water inches	Notes
10:45	0	8"	6"	Start of 1 hour test
10:55	0:10	9.5"	4.5"	
11:05	0:20	10.5"	3.5"	
11:15	0:30	11.5"	2.5"	Final 30 Min test
11:25	0:40	12.5"	1.5"	
11:25	0:40	8"	6"	Water added
11:35	0:50	9.5"	4.5"	
11:45	1:00	10.5"	3.5"	

Confirmation test that infiltration rate is faster when water is at 6"

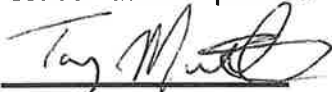
11:45	0	8"	6"	added water
11:55	0:10	9.5"	4.5"	confirm 1.5" drop

Eric Belanger, removed topsoil, witnessed the test and provided water

## Conclusion:

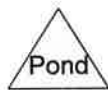
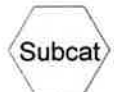
Water percolation rate is 6" to 7" per hour depending on level of water

**Conservative 6" per hour (10 Minutes per inch) Percolation rate**



Tony Marcotte, PE





**503-14-8-07-23-POST**

*Type III 24-hr 2 YEAR Rainfall=2.73"*

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Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment S1: ROOF WATER**

Runoff Area=5,000 sf 100.00% Impervious Runoff Depth>2.46"  
Tc=5.0 min CN=98 Runoff=0.30 cfs 0.024 af

**Subcatchment S2: DRIVE WATER**

Runoff Area=6,040 sf 0.00% Impervious Runoff Depth>2.28"  
Tc=5.0 min CN=96 Runoff=0.35 cfs 0.026 af

**Pond P1: ROOF INFILTRATION TRENCH**

Peak Elev=258.79' Storage=220 cf Inflow=0.30 cfs 0.024 af  
Outflow=0.07 cfs 0.024 af

**Pond P2: DRIVE INFILTRATION TRENCH**

Peak Elev=258.86' Storage=239 cf Inflow=0.35 cfs 0.026 af  
Outflow=0.09 cfs 0.026 af

**Total Runoff Area = 0.253 ac Runoff Volume = 0.050 af Average Runoff Depth = 2.36"**  
**54.71% Pervious = 0.139 ac 45.29% Impervious = 0.115 ac**





**503-14-8-07-23-POST**

Type III 24-hr 50 YEAR Rainfall=5.94"

Prepared by Bedford Design Consultants, Inc

Printed 8/7/2023

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Time span=5.00-24.00 hrs, dt=0.05 hrs, 381 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment S1: ROOF WATER**      Runoff Area=5,000 sf 100.00% Impervious Runoff Depth>5.53"  
Tc=5.0 min CN=98 Runoff=0.67 cfs 0.053 af

**Subcatchment S2: DRIVE WATER**      Runoff Area=6,040 sf 0.00% Impervious Runoff Depth>5.37"  
Tc=5.0 min CN=96 Runoff=0.80 cfs 0.062 af

**Pond P1: ROOF INFILTRATION TRENCH**      Peak Elev=261.38' Storage=760 cf Inflow=0.67 cfs 0.053 af  
Outflow=0.07 cfs 0.053 af

**Pond P2: DRIVE INFILTRATION TRENCH**      Peak Elev=261.49' Storage=893 cf Inflow=0.80 cfs 0.062 af  
Outflow=0.09 cfs 0.062 af

**Total Runoff Area = 0.253 ac Runoff Volume = 0.115 af Average Runoff Depth = 5.45"**  
**54.71% Pervious = 0.139 ac 45.29% Impervious = 0.115 ac**



**503-14-8-07-23-POST**

Type III 24-hr 50 YEAR Rainfall=5.94"

Prepared by Bedford Design Consultants, Inc

Printed 8/7/2023

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**Summary for Pond P1: ROOF INFILTRATION TRENCH**

Inflow Area = 0.115 ac, 100.00% Impervious, Inflow Depth > 5.53" for 50 YEAR event  
 Inflow = 0.67 cfs @ 12.07 hrs, Volume= 0.053 af  
 Outflow = 0.07 cfs @ 11.45 hrs, Volume= 0.053 af, Atten= 90%, Lag= 0.0 min  
 Discarded = 0.07 cfs @ 11.45 hrs, Volume= 0.053 af

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 261.38' @ 12.77 hrs Surf.Area= 500 sf Storage= 760 cf  
 Flood Elev= 261.40' Surf.Area= 500 sf Storage= 764 cf

Plug-Flow detention time= 72.7 min calculated for 0.053 af (100% of inflow)  
 Center-of-Mass det. time= 72.3 min ( 832.6 - 760.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	257.80'	691 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc) 1,800 cf Overall - 73 cf Embedded = 1,727 cf x 40.0% Voids
#2	258.30'	73 cf	<b>12.0" Round Pipe Storage</b> Inside #1 L= 93.0'
		764 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
257.80	500	210.0	0	0	500
261.40	500	210.0	1,800	1,800	1,256

Device	Routing	Invert	Outlet Devices
#1	Discarded	257.80'	<b>6.000 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.07 cfs @ 11.45 hrs HW=257.84' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 0.07 cfs)

**Summary for Pond P2: DRIVE INFILTRATION TRENCH**

Inflow Area = 0.139 ac, 0.00% Impervious, Inflow Depth > 5.37" for 50 YEAR event  
 Inflow = 0.80 cfs @ 12.07 hrs, Volume= 0.062 af  
 Outflow = 0.09 cfs @ 11.50 hrs, Volume= 0.062 af, Atten= 89%, Lag= 0.0 min  
 Discarded = 0.09 cfs @ 11.50 hrs, Volume= 0.062 af

Routing by Stor-Ind method, Time Span= 5.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 261.49' @ 12.75 hrs Surf.Area= 614 sf Storage= 893 cf  
 Flood Elev= 261.60' Surf.Area= 614 sf Storage= 920 cf

Plug-Flow detention time= 70.1 min calculated for 0.062 af (100% of inflow)  
 Center-of-Mass det. time= 69.7 min ( 835.8 - 766.1 )

**503-14-8-07-23-POST**

Type III 24-hr 50 YEAR Rainfall=5.94"

Prepared by Bedford Design Consultants, Inc

Printed 8/7/2023

HydroCAD® 10.00-18 s/n 04427 © 2016 HydroCAD Software Solutions LLC

Volume	Invert	Avail.Storage	Storage Description
#1	258.00'	860 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 2,210 cf Overall - 60 cf Embedded = 2,150 cf x 40.0% Voids
#2	258.50'	60 cf	<b>6.0" Round Pipe Storage</b> Inside #1 L= 307.0'
		920 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
258.00	614	0	0
261.60	614	2,210	2,210

Device	Routing	Invert	Outlet Devices
#1	Discarded	258.00'	<b>6.000 in/hr Exfiltration over Surface area</b>

Discarded OutFlow Max=0.09 cfs @ 11.50 hrs HW=258.04' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.09 cfs)



# TOWN OF HUDSON

## Planning Department



12 School Street • Hudson, New Hampshire 03051 • Tel: 603-886-6008 • Fax: 603-594-1142

### CAP FEE WORKSHEET - 2023

Date: 08-09-23 Zone # 2 Map/Lot: 161-041-000  
8 Industrial D

Project Name: 8 Industrial Drive

Proposed ITE Use #1: General Industrial

Proposed Building Area (square footage): 4,200 S.F.

#### CAP FEES: (ONE CHECK NEEDED)

1.	(Bank 09) 2070-702	(\$1.57 x 4,200) Traffic Improve (Zone 2)	<u>\$ 6,594.00</u>
		<b>Total CAP Fee</b>	<u>\$ 6,954.00</u>

Check should be made payable to the Town of Hudson.



# *Bedford Design Consultants* Inc.

ENGINEERS AND SURVEYORS

592 Harvey Road Manchester, NH 03103  
Telephone: (603) 622-5533 • www.bedforddesign.com

July 10, 2023

Hudson Planning Board  
Town of Hudson  
12 School St  
Hudson, NH 03051

**RE: Site Plan Amendment Narrative - Updated**

Map 161 Lot 41  
8 Industrial Drive  
Hudson, NH 03051

Members of the Board,

Bedford Design is pleased to submit this Site Plan Amendment, on behalf of our client MDP Realty Associates, LLC., for the existing warehouse and manufacturing building at 8 Industrial Drive.

The existing 80,000+ warehouse and manufacturing facility is zoned Industrial. It has parking, storage, and a detention pond along the front of the property, while loading is located along the northeast side. The north side of the building abuts Route 111, and there is a manmade wetland along the Route 111 boundary line.

The proposed automotive addition is 5,000 s.f. and will be accessed by a 20' wide gravel drive. The owner plans to maintain vehicles that he owns in this addition. It will not be a retail business.

The building will be metal with a 12' high by 20' wide overhead door, and two man doors facing the northeast and southwest. Two lights will be located above each door. A row of windows will face Route 111. Landscaping and signage are not proposed for the addition. The addition will be screened by the existing Route 111 foliage.

The site disturbance is under the 20,000 s.f. Stormwater Management and Erosion Control Plan threshold. We are proposing a roof drip infiltration trench. This trench will hold and infiltrate a 50-year storm event. The gravel drive is pervious and will allow water to infiltrate into the ground.

We are requesting several waivers from the Site Plan Regulations. One is for a Licensed Land Surveyor's stamp. We prepared an overview sheet which includes bearings and distances, topography, and wetland delineation, this was stamped by a Professional Engineer and is sufficient for this Site Plan Amendment.

The second and third waiver are for Parking Landscaping and Benchmarks. The existing Uses of manufacturing and warehouse only use half of the parking spaces, as a result, we are not proposing any additional parking. We also do not believe benchmarks are needed for this project. The existing building is a fixed object on the landscape and can be used as a benchmark, while dimensions shown on the plan will provide the location of the addition.



The addition will be located by the two doors leaving the existing building and extend 50' towards the left of the photo.





The gravel drive will run along the space between the building and the tree line.

We look forward to discussing this project with you at the next planning board meeting. Please feel free to contact us with any questions at 603-622-5533.

Sincerely,

**Bedford Design Consultants, Inc.**

Handwritten signature of Katherine A. Weiss in cursive script.

Katherine A. Weiss, PLA, ASLA  
Project Manager

**SITE DATA SHEET**

PLAN NAME: 8 Industrial Drive Site Plan Amendment

PLAN TYPE: SITE PLAN

LEGAL DESCRIPTION: MAP 161 LOT 41

DATE: 5-30-23

---

Location by Street: 8 Industrial Drive

Zoning: Industrial

Proposed Land Use: Auto Maintenance

Existing Use: Manufacturing and Warehouse (to remain)

Surrounding Land Use(s): Industrial, Residential across Route 111

Number of Lots Occupied: one

Existing Area Covered by Building: 77,921 s.f.

Existing Buildings to be removed: none

Proposed Area Covered by Building: 81,921 s.f.

Open Space Proposed: 37.5% 40%

Open Space Required: 40%

Total Area: S.F.: 265,992 Acres: 6.106

Area in Wetland: 399 Area Steep Slopes: 13,000 s.f.

Required Lot Size: 30,000 s.f.

Existing Frontage: 750.4'

Required Frontage: 150'

Building Setbacks:

	<u>Required*</u>	<u>Proposed</u>
Front:	<u>50'</u>	<u>ex. bldg 7.2'</u>
Side:	<u>15'</u>	<u>ex. bldg 0'</u>
Rear:	<u>15'</u>	<u>pr. additiona 50'</u>



**SITE DATA SHEET**  
(Continued)

Flood Zone Reference: not in flood zone per Panel 330092005B 1-3-1979

Width of Driveways: pr. gravel drive at addition is 20'

Number of Curb Cuts: 2 existing curb cuts.

Proposed Parking Spaces: 48

Required Parking Spaces: 142 25 per alternate employee shift option

Basis of Required Parking (Use): Industrial (actual use manufacturing/warehouse/auto

Dates/Case #/Description/Stipulations  
of ZBA, Conservation Commission,  
NH Wetlands Board Actions: \_\_\_\_\_  
(Attach stipulations on separate sheet) \_\_\_\_\_  
\_\_\_\_\_

Waiver Requests

<i>Town Code Reference:</i>	<i>Regulation Description:</i>
<del>276-8(C)(9)</del>	<del>Parking Calculations</del>
275-8(C)(7)	Parking Lot Landscaping
276-11.1(B)(9)	Licensed Land Surveyor Stamp
276-11.1.B.(17)	Benchmarks on Plan

<b>(For Town Use Only)</b>	
Data Sheets Checked By: _____	Date: _____

**WAIVER REQUEST FORM**

Name of Subdivision/Site Plan: 8 Industrial Drive Site Plan Amendment

Street Address: 8 Industrial Drive

I Katherine Weiss hereby request that the Planning Board waive the requirements of item 276-11.1(B)(9) Licensed Land Surveyor Stamp of the Hudson Land Use Regulations in reference to a plan presented by Bedford Design Consultants, Inc.

(name of surveyor and engineer) dated 5-30-23 for property tax map(s) 161 and lot(s) 41 in the Town of Hudson, NH.

As the aforementioned applicant, I, herein, acknowledge that this waiver is requested in accordance with the provisions set forth in RSA 674:36, II (n), i.e., without the Planning Board granting said waiver, it would pose an unnecessary hardship upon me (the applicant), and the granting of this waiver would not be contrary to the spirit and intent of the Land Use Regulations.

Hardship reason(s) for granting this waiver (if additional space is needed please attach the appropriate documentation hereto):

The proposed addition is not within teh Town's building setbacks. A stamped boundary is not required in order to show the new addition's location on the lot. The Overview Sheet shows pertinent boudnary information and bearings and distances.

Reason(s) for granting this waiver, relative to not being contrary to the spirit and intent of the Land Use Regulations: (if additional space is needed please attach the appropriate documentation hereto):

The site has been through the Town Permitting process before. Topography and boundary information were completed at that time. We show that information on the Overview Sheet which has been stamped by a Professional Engineer. The wetland delineation was also located.

Signed:

\_\_\_\_\_  
Applicant or Authorized Agent





**WAIVER REQUEST FORM**

Name of Subdivision/Site Plan: 8 Industrial Drive Site Plan Amendment

Street Address: 8 Industrial Drive

I Katherine Weiss hereby request that the Planning Board waive the requirements of item 275-11.1.b(17) Benchmarks of the Hudson Land Use Regulations in reference to a plan presented by Bedford Design Consultants, Inc.

(name of surveyor and engineer) dated 5-30-23 for property tax map(s) 161 and lot(s) 41 in the Town of Hudson, NH.

As the aforementioned applicant, I, herein, acknowledge that this waiver is requested in accordance with the provisions set forth in RSA 674:36, II (n), i.e., without the Planning Board granting said waiver, it would pose an unnecessary hardship upon me (the applicant), and the granting of this waiver would not be contrary to the spirit and intent of the Land Use Regulations.

Hardship reason(s) for granting this waiver (if additional space is needed please attach the appropriate documentation hereto):

There is a financial cost to have a survey company calculate and locate benchmarks when they  
are not needed to locate the building and driveway properly on the plan. The  
existing building will serve as the benchmark.

Reason(s) for granting this waiver, relative to not being contrary to the spirit and intent of the Land Use Regulations: (if additional space is needed please attach the appropriate documentation hereto):

The existing building will serve as a benchmark to locate the proposed addition and driveway.

Signed:

  
Applicant or Authorized Agent

# PEAK

Environmental Consulting & Permitting

May 29, 2023

Hudson, NH Planning Board  
12 School St  
Hudson, NH 03051

**Re: 8 Industrial Drive  
Hudson, MA**

Dear Planning Board:

Joshua Brien, NHCWS 256, has completed the site investigation that you requested on the above referenced parcel. These services were requested to determine if the wetland found alongside Central St and adjacent to the property line for this parcel was considered natural or may have been created during the construction activities for Central St and 8 Industrial Dr.

During our site visit it was noted that there was no direct connection via culvert or attachment to a known wetland system for this area. The resource as found today is located between a topographically elevated area of parking/ paved access to the rear of the existing structure at 8 Industrial Dr and the elevated roadway known as Central St in Hudson, NH. The drainage appears to have been man made during construction activities. Whereas both of the adjacent land forms have been elevated and drain storm water from the south side of Central St and the north side of the paved area of 8 Industrial Drive into this depression and then off-site easterly in a rather straight line.

It was our opinion during the site visit that this resource area was a result of human construction activities. Activities to direct storm water from both areas would be common place during construction activities. The elevated grades of the adjacent Central St and lands located at 8 Industrial Dr have been graded to direct surface water from the north and south into this depressed area. The characteristics found of the adjacent land forms lends itself to concur with this belief that the wetland was formed as a result of human activity.

If you have any further questions or concerns, please do not hesitate to contact me at (603) 496-8532 or via email at [Peakenviro603@gmail.com](mailto:Peakenviro603@gmail.com)

Sincerely,

Joshua M Brien  
CWS 256



*Environmental Planning & Permitting      Soil & Wetland Investigations      Septic Designs*

170 King St, Boscawen, NH 03303    Phone 603-496-8532  
Email: [peakenviro603@gmail.com](mailto:peakenviro603@gmail.com)



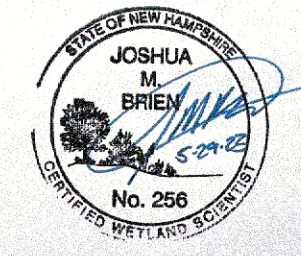
# 8 INDUSTRIAL DRIVE SITE PLAN AMENDMENT

8 INDUSTRIAL DRIVE  
HUDSON, NEW HAMPSHIRE

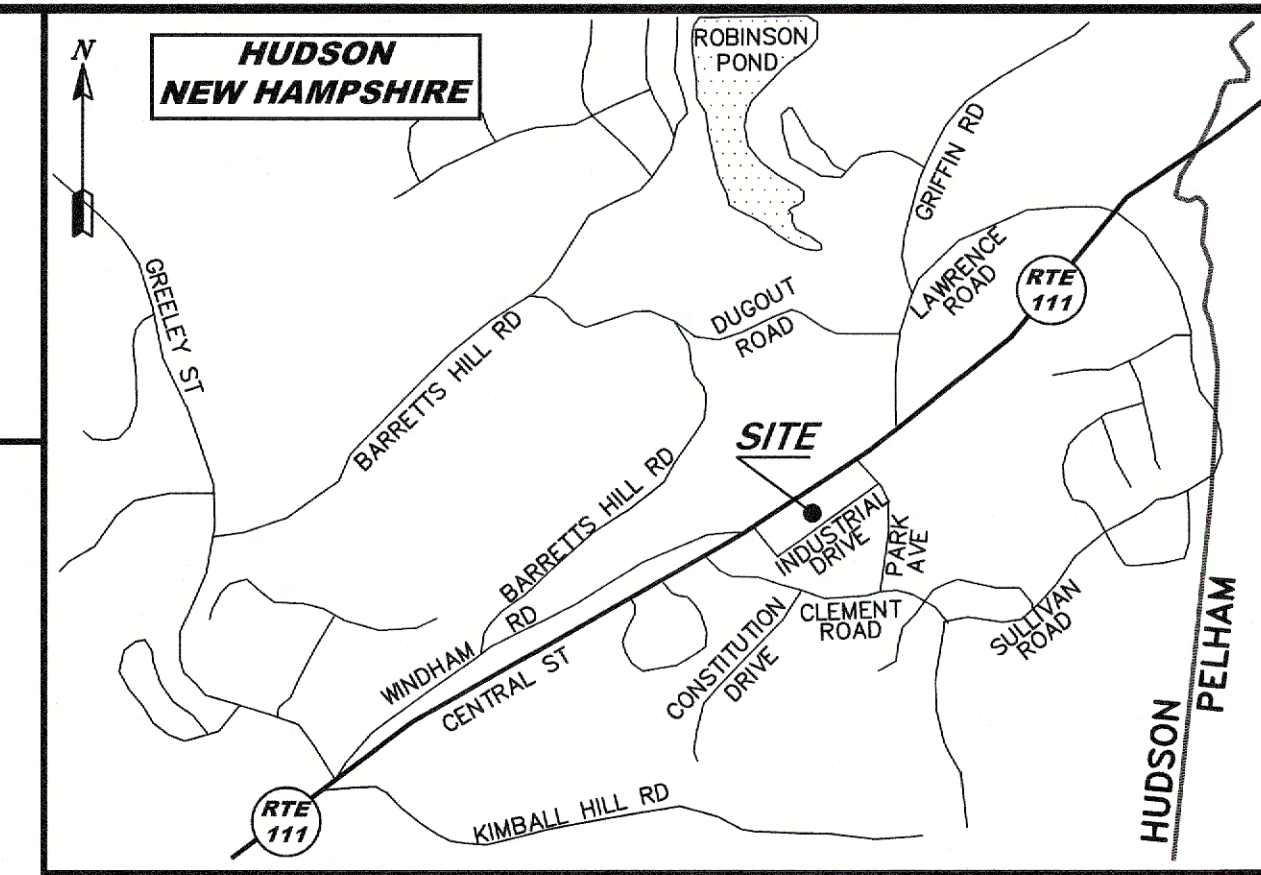
**PLAN INDEX**

**SHEET NO**

- OVERVIEW SHEET 1
- SITE & GRADING PLAN 2
- SEWER PLAN & PROFILE 3
- CONSTRUCTION DETAILS 4-5



JOSHUA M BRIEN, CERTIFIED WETLAND SCIENTIST #256, OF PEAK ENVIRONMENTAL, L.L.C. OF BOSCAWEN, NH, PERFORMED THE WETLAND MAPPING IN THE FALL OF 2023 ACCORDING TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012, US ARMY CORPS OF ENGINEERS.

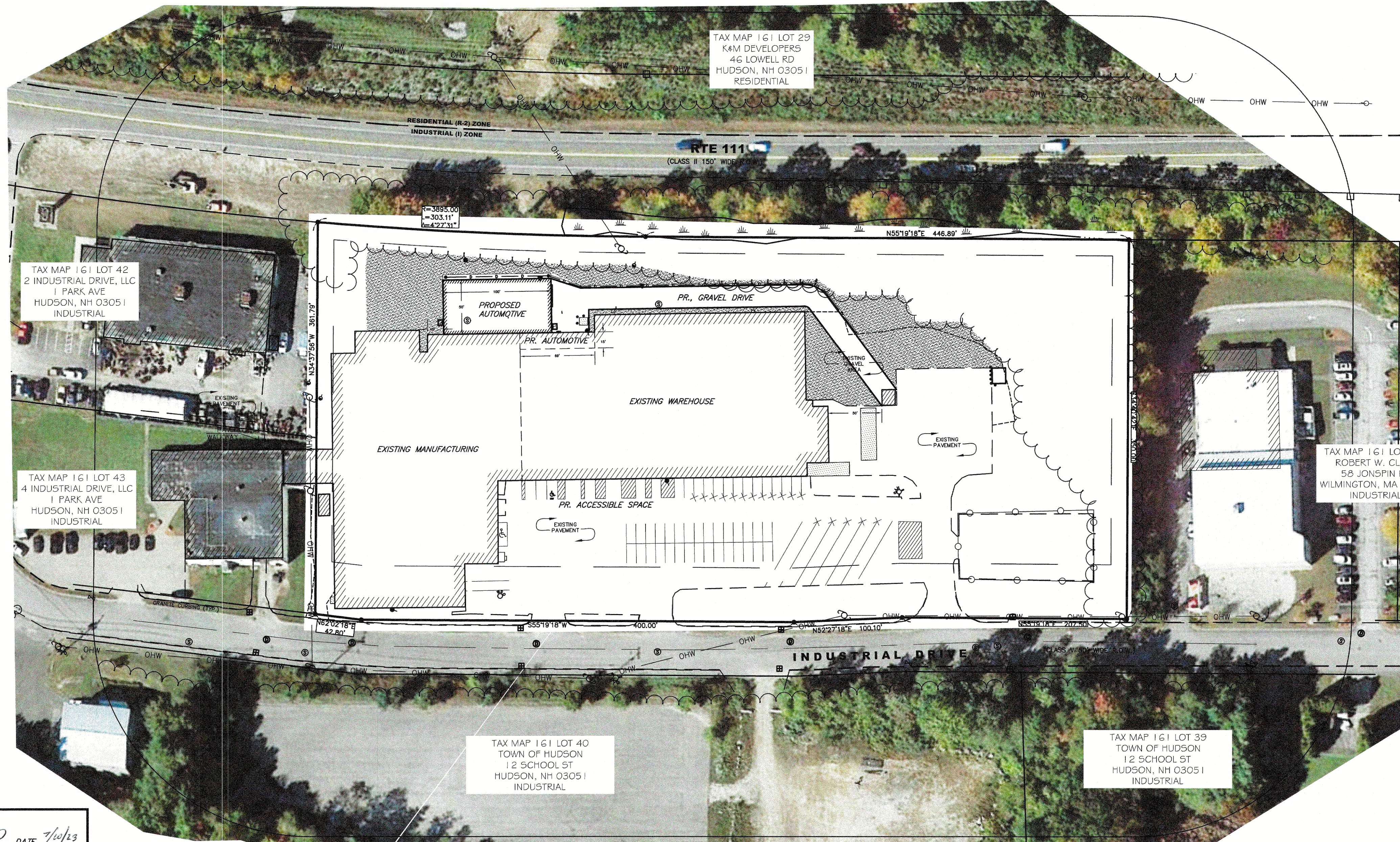


**LOCUS MAP**

SCALE 1" = 1,000'

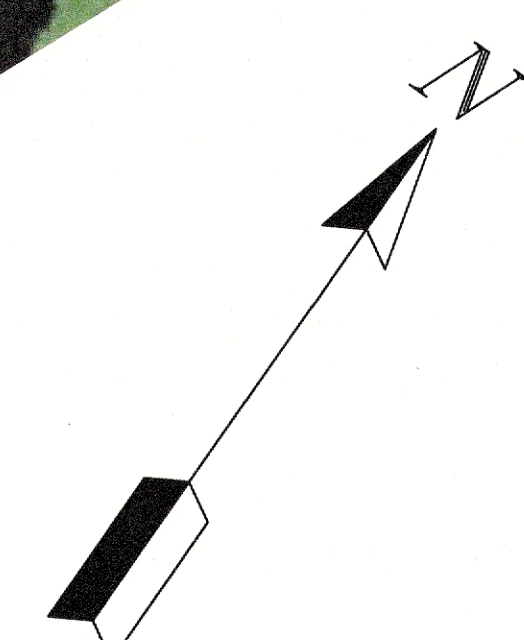
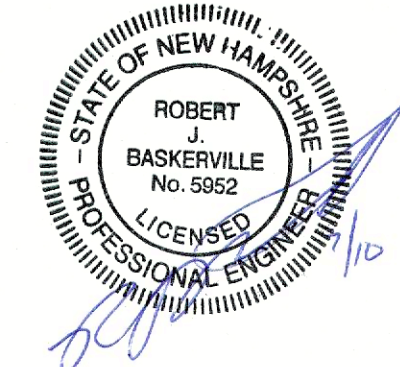
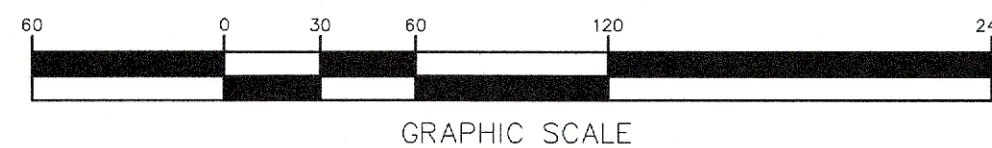
**NOTES:**

1. APPLICANT/OWNER:  
TAX MAP 161 LOT 41  
MDP REALTY ASSOCIATES, LLC  
9 OLD DERRY ROAD  
HUDSON, NH 03051  
BK. 7531 PG. 2641
2. TOWN OF HUDSON ZONE - 7" (INDUSTRIAL DISTRICT)  
DIMENSIONAL STANDARDS:  
MIN. LOT AREA = 30,000 S.F. SUBJECT = 265,992 SQ.FT.  
BUILDING SETBACKS = 50'  
FRONT = 50'  
SIDE = 15'  
REAR = 15'  
MINIMUM FRONTAGE = 150' EXISTING = 700+ PR ADDITION = 22.5'  
BUILDING HEIGHT = 38' EXISTING = 23' PR ADDITION = 40%  
MIN. OPEN SPACE = 40% EXISTING = 41% PR. OPEN SPACE = 40%
3. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED 5,000 S.F. AUTOMOTIVE ADDITION WITH GRAVEL ACCESS DRIVE.
4. PARKING CALCULATIONS:  
COMBINED EMPLOYEES OF TWO LARGEST CONSECUTIVE SHIFTS = 20 PEOPLE  
A SHIFT = 8 PEOPLE  
B SHIFT = 8 PEOPLE  
M-F SHIFT = 12 PEOPLE  
WAREHOUSE M-F SHIFT = 5 PEOPLE  
TOTAL NUMBER OF SPACES REQUIRED = 25  
TOTAL NUMBER PROPOSED = 48  
WE SHOW 2 ACCESSIBLE SPACES PER ADA REGULATIONS
5. THE INFORMATION SHOWN WAS TAKEN FROM AN ACTUAL SURVEY PERFORMED BY THIS OFFICE DURING OCTOBER & NOVEMBER OF 2008.
6. BOUNDARY INFORMATION SHOWN WAS TAKEN FROM REFERENCE PLAN #1.
7. THE HORIZONTAL DATUM IS N.H.S.P.C. 1983. THE VERTICAL DATUM IS NGVD29. TAKEN FROM THE NHDOT GEODETIC CONTROL POINT 229-0370 LOCATED IN A LEDGE OUTCROP ON THE SOUTH SIDE OF RT. 111 & THE WEST SIDE OF CLEMENT ROAD, ELEV. = 264.54'.
8. THE SUBJECT PROPERTY IS NOT LOCATED IN THE 100-YR FLOOD PLAIN PER F.I.R.M. PANEL 3300920005B, EFFECTIVE DATE JANUARY 3, 1979.
9. NO SIGNS ARE PROPOSED.
10. WAIVERS REQUESTED:  
276-11.1(B)(9) LICENSED SURVEYOR STAMP  
275-BC(7) PARKING LOT LANDSCAPING  
275-11.1B(17) BENCHMARKS ON PLAN
11. THE PROPOSED ADDITION WILL BE SPRINKLERED.
12. THERE ARE TWO SECURITY LIGHTS SHOWN ON THE PLAN AT THE PROPOSED MAIN DOORS.
13. THE APPLICANT WILL BE REQUIRED TO COMPLY WITH ALL PROVISIONS OF THE TOWN OF HUDSON'S M54 PERMIT, INCLUDING BUT NOT LIMITED TO ANNUAL REPORTING REQUIREMENTS, CONSTRUCTION SITE STORMWATER RUNOFF CONTROL, AND RECORD KEEPING REQUIREMENTS.
14. THE EXISTING BUILDING HAS EXISTING TOWN WATER AND SEWER. THE ADDITION WILL HAVE NO BATHROOMS OR SINKS.



**OVERVIEW PLAN**

SCALE: 1" = 60'



OWNER'S SIGNATURE  
NAME: *Marco Plante* DATE: 7/10/23

MARCO PLANTE  
MDP REALTY ASSOCIATES, LLC  
9 OLD DERRY ROAD  
HUDSON, NH

APPROVED BY THE HUDSON, NH PLANNING BOARD

DATE OF MEETING: \_\_\_\_\_ DATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM THE DATE OF APPROVAL.



SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

DATE	DESCRIPTION	BY	REV.
8-07-23	REVISED PER PERC TEST	KAW	C
7-14-23	REVISED PER TOWN COMMENTS	KAW	B
6-26-23	REVISED PER TOWN COMMENTS	KAW	A

**TAX MAP 161 LOT 41**

**OVERVIEW SHEET  
8 INDUSTRIAL DR SITE PLAN AMENDMENT**

LOCATED AT:  
8 INDUSTRIAL DRIVE  
HUDSON, NEW HAMPSHIRE

PREPARED FOR/OWNER:  
MDP REALTY ASSOCIATES, LLC  
9 OLD DERRY ROAD  
HUDSON, STATE

SCALE: 1" = 60'      MAY 22, 2023      SHEET 1 OF 5

DESIGN: KAW      DRAWN: KAW      CHECKED: RJB      FB: ###      PG: ###      503-14

**Bedford Design Consultants Inc.**  
ENGINEERS AND SURVEYORS

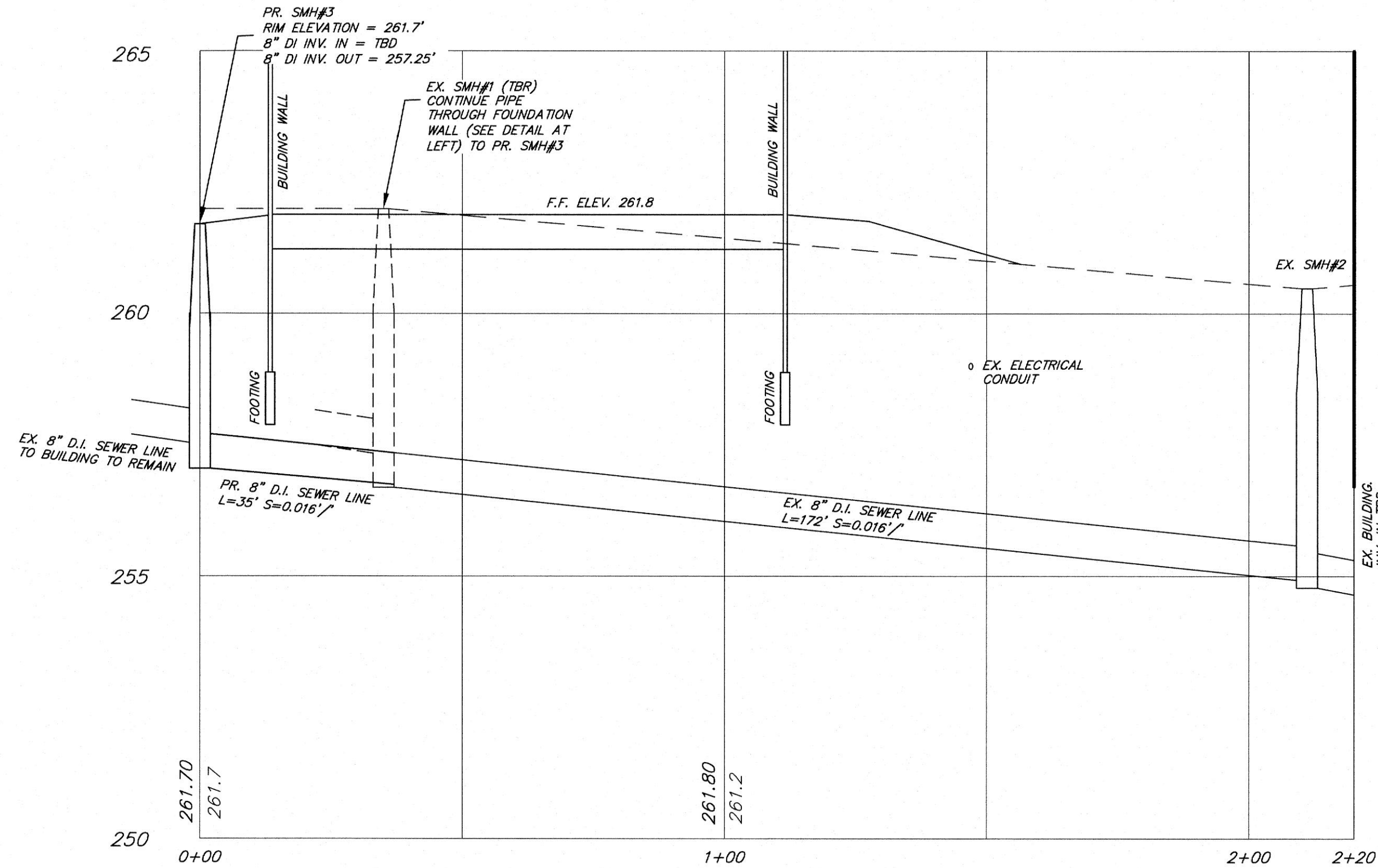
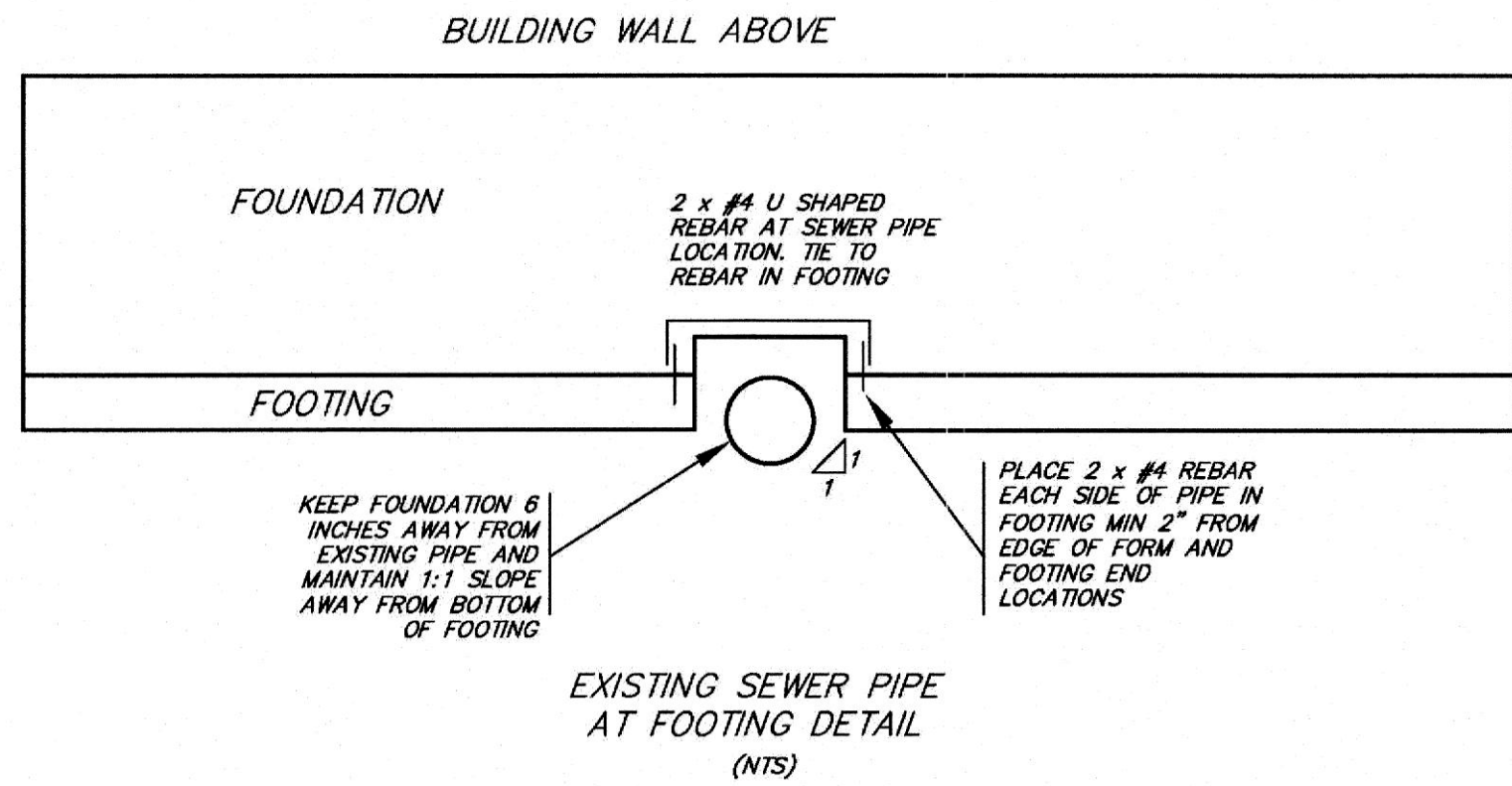
592 Harvey Road, Manchester, NH 03103  
Telephone: (603) 622-5533  
www.bedforddesign.com





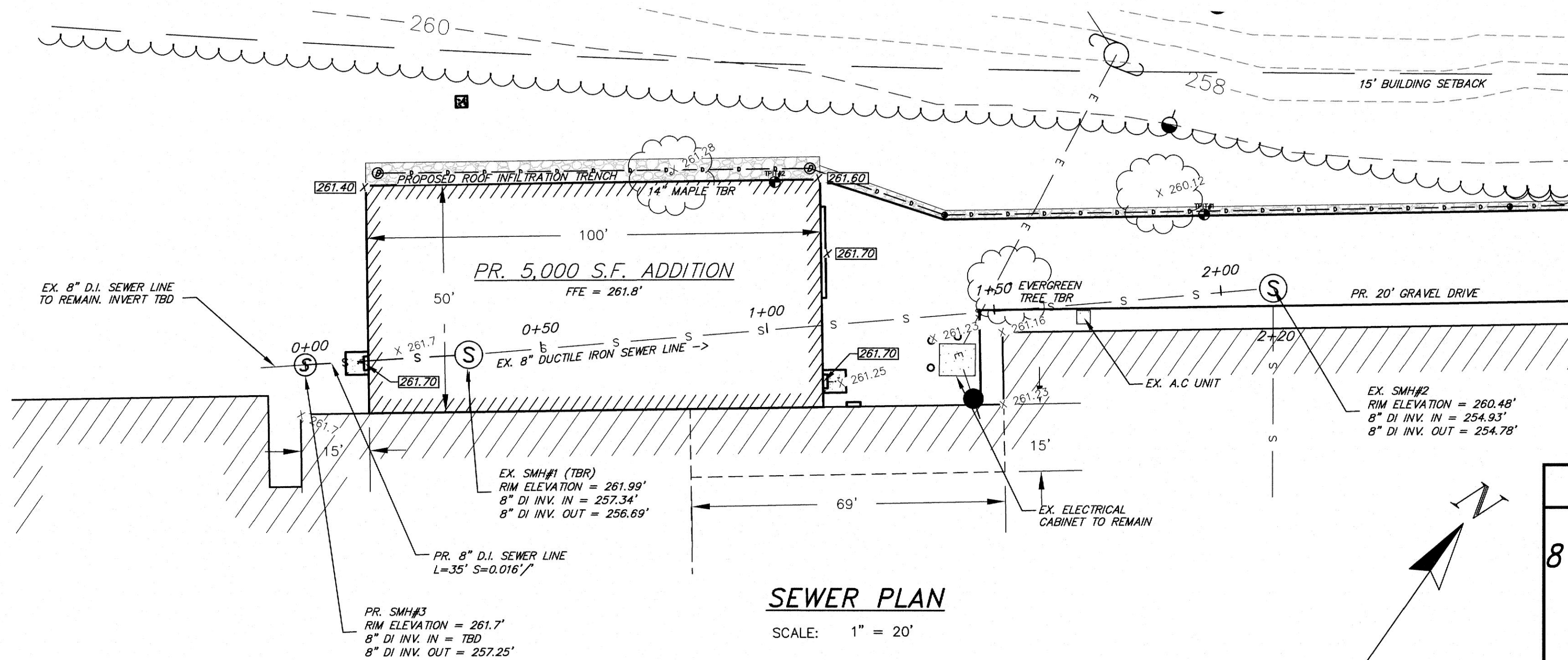


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**LEGEND**

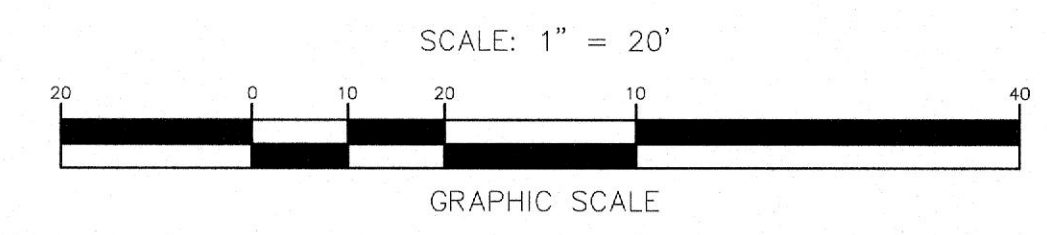
- BUILDING USE LINES
- PROPOSED AREA OF DISTURBANCE
- BUILDING USE LINES
- PROPOSED AREA OF DISTURBANCE
- 290 --- PROPOSED CONTOUR
- 290 --- EXISTING CONTOUR
- X 430.3 --- PROPOSED SPOT GRADE
- 282.6 X --- EXISTING SPOT GRADE
- BOUNDARY/PROPERTY LINE
- SETBACK LINE
- EDGE OF JURISDICTIONAL WETLANDS
- WETLAND SYMBOL
- WETLAND BUFFER
- PROPOSED TREE LINE
- EXISTING TREE LINE
- EXISTING GRAVEL AREA
- PROPOSED GRAVEL DRIVE
- EX. PAVEMENT
- E --- EXISTING UNDERGROUND ELECTRIC
- S --- EXISTING SEWER LINE
- EXISTING UTILITY POLE
- EXISTING GUY WIRE
- PROPOSED BUILDING
- PROPOSED GRASS
- PROPOSED GRAVEL TRENCH
- EXISTING TREES
- SEWER MANHOLE
- PROPOSED DRAIN LINE
- EXISTING DRAIN LINE
- OHW --- EXISTING OVERHEAD UTILITIES
- PROPOSED SILT FENCE



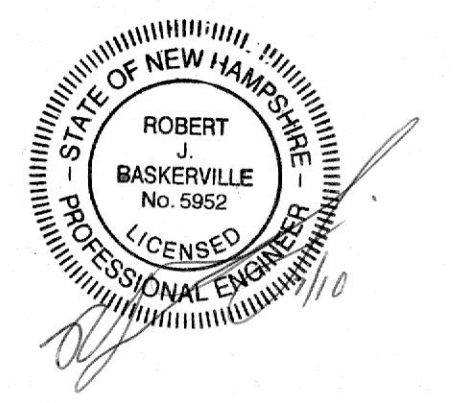
OWNER'S SIGNATURE  
 NAME: *Margo Plante* DATE: 7/10/23  
 MARGO PLANTE  
 MDP REALTY ASSOCIATES, LLC  
 9 OLD DERRY ROAD  
 HUDSON, NH

APPROVED BY THE HUDSON, NH PLANNING BOARD  
 DATE OF MEETING: \_\_\_\_\_ DATE \_\_\_\_\_  
 SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
 SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_  
 SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING  
 FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING  
 DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM THE DATE OF APPROVAL.



DATE	DESCRIPTION	BY	REV.
6-26-23	REVISED PER TOWN COMMENTS	KAW	A



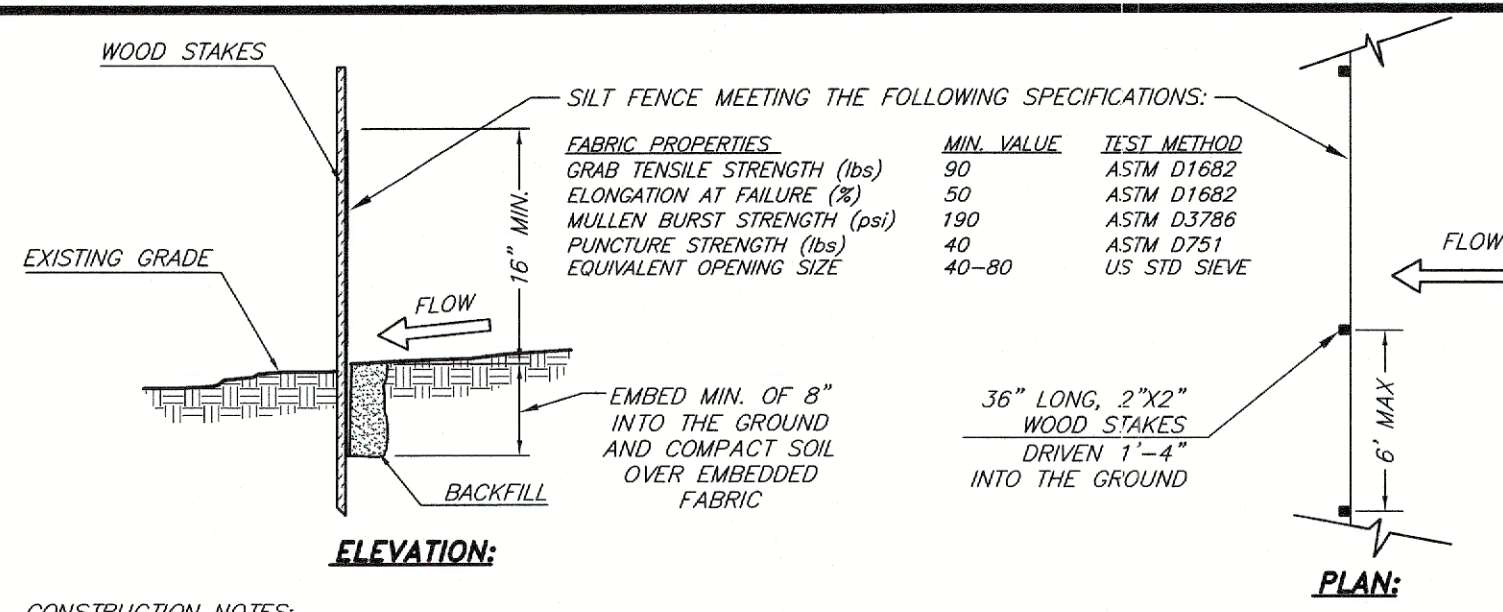
**TAX MAP 161 LOT 41**  
**SEWER PLAN AND PROFILE**  
**8 INDUSTRIAL DR SITE PLAN AMENDMENT**  
 LOCATED AT:  
**8 INDUSTRIAL DRIVE**  
**HUDSON, NEW HAMPSHIRE**  
 PREPARED FOR/OWNER:  
 MDP REALTY ASSOCIATES, LLC  
 9 OLD DERRY ROAD  
 HUDSON, STATE

SCALE: 1" = 20'      MAY 22, 2023      SHEET 3 OF 5

DESIGN: KAW	DRAWN: KAW	CHECKED: RUB	FB: ###	PC: ###	503-14
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**Bedford Design Consultants Inc.**  
 ENGINEERS AND SURVEYORS  
 592 Harvey Road, Manchester, NH 03103  
 Telephone: (603) 622-5533  
 www.bedforddesign.com





- CONSTRUCTION NOTES:**
- FENCES SHALL 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 OTHER DRAINAGE WAY ABOVE THE FENCE.
  - THE MAXIMUM CONTRIBUTING DRAINAGE AREA ABOVE THE FENCE SHALL BE LESS THAN 1/4-ACRE PER 100 LINEAR FEET OF FENCE.
  - THE MAXIMUM LENGTH OF THE SLOPE ABOVE THE FENCE SHALL BE 100 FEET.
  - THE MAXIMUM SLOPE OF THE AREA ABOVE THE FENCE SHALL BE 2:1.
  - FENCES SHALL BE INSTALLED AS FOLLOWS:
    - FENCES SHALL FOLLOW THE CONTOUR OF THE LAND AS CLOSELY AS POSSIBLE;
    - THE ENDS OF THE FENCE SHALL BE FLARED UP-SLOPE;
    - THE BASE OF THE FENCE SHALL BE:
      - FOLDED SUCH THAT NOT LESS THAN 4 INCHES OF THE FENCE IS PLACED ALONG THE BOTTOM OF A TRENCH THAT IS EXCAVATED AT LEAST 4 INCHES DEEP INTO THE GROUND, WITH THE SOIL COMPACTED OVER THE EMBEDDED FABRIC, OR
      - IF SITE CONDITIONS INCLUDE FROZEN GROUND, LEDGE, OR THE PRESENCE OF HEAVY ROOTS, EMBEDDED IN A MINIMUM THICKNESS OF 8 INCHES OF 1/4-INCH STONE;
    - SUPPORT POSTS SHALL BE SIZED AND ANCHORED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS; AND
    - ADJOINING SECTIONS OF THE FENCE SHALL BE OVERLAPPED BY 6 INCHES, FOLDED AND STAPLED TO A SUPPORT POST;
  - FENCES SHALL BE INSPECTED AND MAINTAINED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS SHALL BE MADE IMMEDIATELY, AND
  - SEDIMENT THAT ACCUMULATES AT THE FENCE SHALL BE REMOVED WITH SUFFICIENT FREQUENCY TO PREVENT THE DEPTH OF THE SEDIMENT FROM REACHING ONE-THIRD THE HEIGHT OF THE FENCE.
  - INSTALL FENCE PER MANUFACTURER'S SPECIFICATIONS.
  - IF THE FABRIC ON THE SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE LIFE OF THE FENCE, THE FABRIC SHALL BE PROMPTLY REPLACED.
  - SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE BARRIER HAS BEEN DISMANTLED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED USING THE APPROPRIATE VEGETATIVE BMP.

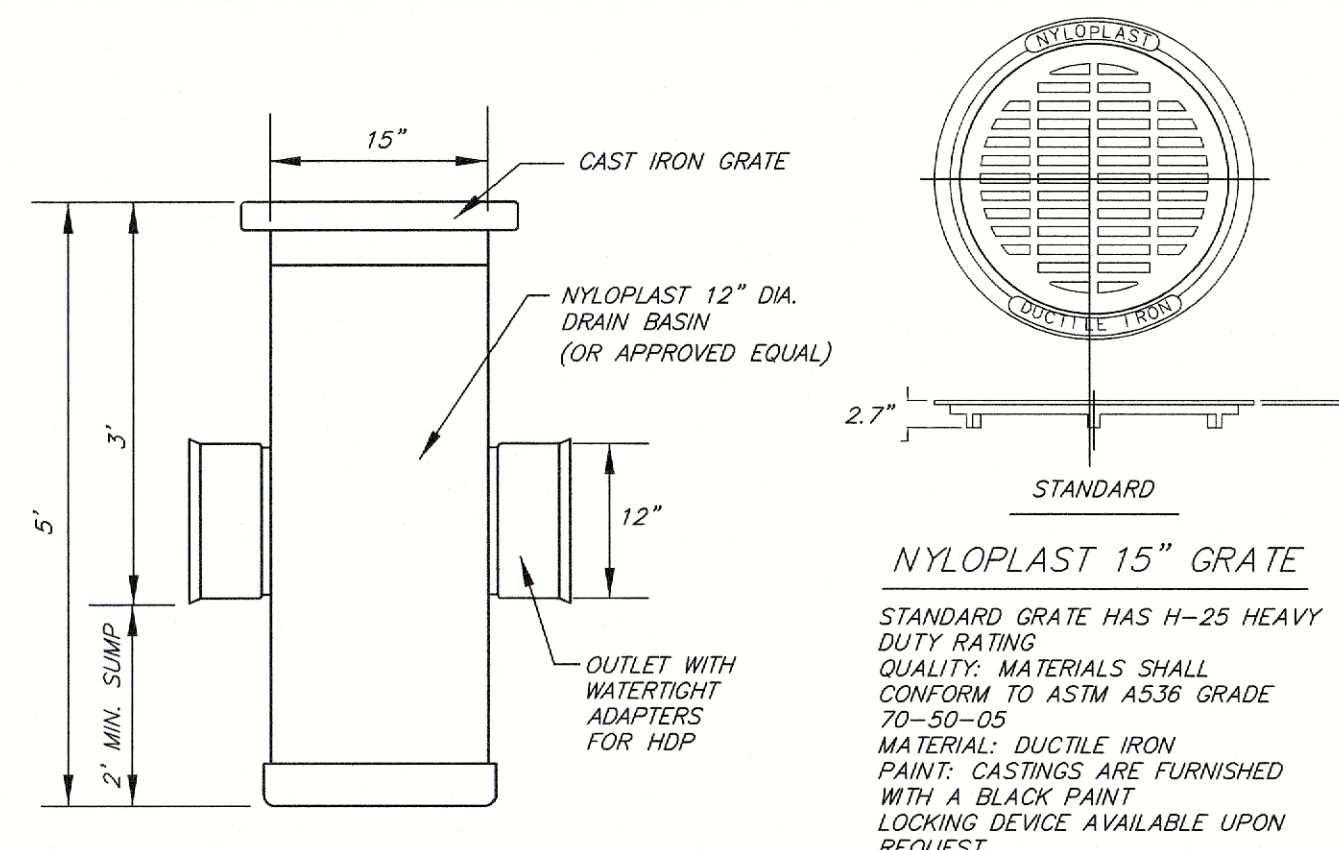
**SILT FENCE DETAIL:**  
NOT TO SCALE

**UTILITY NOTES:**

- THE PURPOSE OF THIS PLAN IS TO SHOW THE UTILITY IMPROVEMENTS ASSOCIATED WITH THE PROPOSED SITE PLAN.
- ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY/TOWN OF HUDSON AND SHALL BE BUILT IN A WORKMAN LIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION APPROVED AND ADOPTED 2006 ARE HEREBY INCORPORATED BY REFERENCE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THESE PLANS. PRIOR TO THE START OF ANY CONSTRUCTION, THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROXIMATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 1-888-344-7233 AT LEAST 72 HOURS BEFORE DIGGING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RELOCATION AND/OR PROTECTION OF ALL UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE WITH THE OWNER OF SAID UTILITIES.
- NO FOUNDATION DRAINS, ROOF DRAINS, FLOOR DRAINS SHALL BE CONNECTED TO THE MUNICIPAL SEWER.
- ALL SEWER CONSTRUCTION SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE STANDARD SEWER CONSTRUCTION SPECIFICATIONS AND THE CITY OF MANCHESTER STANDARD SPECIFICATIONS FOR ROAD, DRAIN & SEWER CONSTRUCTION.
- A MANDATORY PRECONSTRUCTION MEETING SHALL BE HELD WITH THE CITY, CONTRACTOR, OWNER, AND ALL UTILITY REPRESENTATIVES PRIOR TO CONSTRUCTION. NO WORK SHALL BEGIN UNTIL APPROVAL BY THE DEPARTMENT OF PUBLIC WORKS HAS BEEN OBTAINED.
- WATERLINE CONSTRUCTION SHALL BE IN ACCORDANCE WITH MANCHESTER WATER WORKS SPECIFICATIONS.
- WHERE UNDERGROUND WATER MAINS AND HYDRANTS ARE TO BE PROVIDED, THEY SHALL BE INSTALLED, COMPLETED, AND IN SERVICE PRIOR TO CONSTRUCTION WORK BEGINNING.
- GAS LINE CONSTRUCTION SHALL BE IN ACCORDANCE WITH NATIONAL CODES AND SPECIFICATIONS.
- ALL ELECTRIC, TELEPHONE AND CABLE TV LINES ARE TO BE INSTALLED IN CONFORMANCE WITH APPLICABLE UTILITY COMPANY SPECIFICATIONS.
- ANY UTILITIES TO BE TAKEN OUT OF SERVICE SHALL BE DISCONNECTED AS DIRECTED BY THE SPECIFIC UTILITY COMPANY AND THE LOCAL DEPARTMENT OF PUBLIC WORKS.
- THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF ALL PROPOSED BUILDING UTILITY CONNECTIONS WITH THE ARCHITECTURAL PLANS.
- ANY FIELD UTILITY ADJUSTMENTS SHALL BE APPROVED BY THE LOCAL AUTHORITIES AND THE OWNER PRIOR TO INSTALLATION.
- ALL PARKING AREA LIGHTING SHALL BE FULL CUT-OFF TYPE FIXTURES.
- ALL BUILDING LIGHTING FOR SECURITY OR AESTHETICS WILL BE FULL CUT-OFF OR A SHIELDED TYPE, NOT ALLOWING ANY UPWARD DISTRIBUTION OF LIGHT.
- THE PROPOSED BUILDING SHALL BE SPRINKLERED AND ALARMED.
- THE SITE PLAN REGULATIONS OF THE CITY OF MANCHESTER ARE A PART OF THIS PLAN, AND APPROVAL OF THIS PLAN IS CONTINGENT ON COMPLETION OF ALL REQUIREMENTS OF SAID SITE PLAN REGULATIONS, EXCEPTING ONLY MODIFICATIONS AND CONDITIONS MADE IN WRITING BY THE PLANNING BOARD.
- A COMPLETE SET OF PLANS IS ON FILE WITH THE CITY OF MANCHESTER COMMUNITY DEVELOPMENT DEPARTMENT.
- ALL WORK MUST CONFORM TO THE CITY OF MANCHESTER, DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS AND ANY WORK WITHIN THE CITY RIGHT-OF-WAY REQUIRES AN EXCAVATION PERMIT.

OWNER'S SIGNATURE  
NAME: MARCO PLANTE DATE: \_\_\_\_\_  
MOP REALTY ASSOCIATES, LLC  
9 OLD DERRY ROAD  
HUDSON, NH

APPROVED BY THE HUDSON, NH PLANNING BOARD  
DATE OF MEETING: \_\_\_\_\_ DATE: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_  
SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_  
PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM THE DATE OF APPROVAL.  
SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.



**NYLOPLAST DRAIN BASIN DETAIL**  
NOT TO SCALE

**GRADING AND DRAINAGE NOTES:**

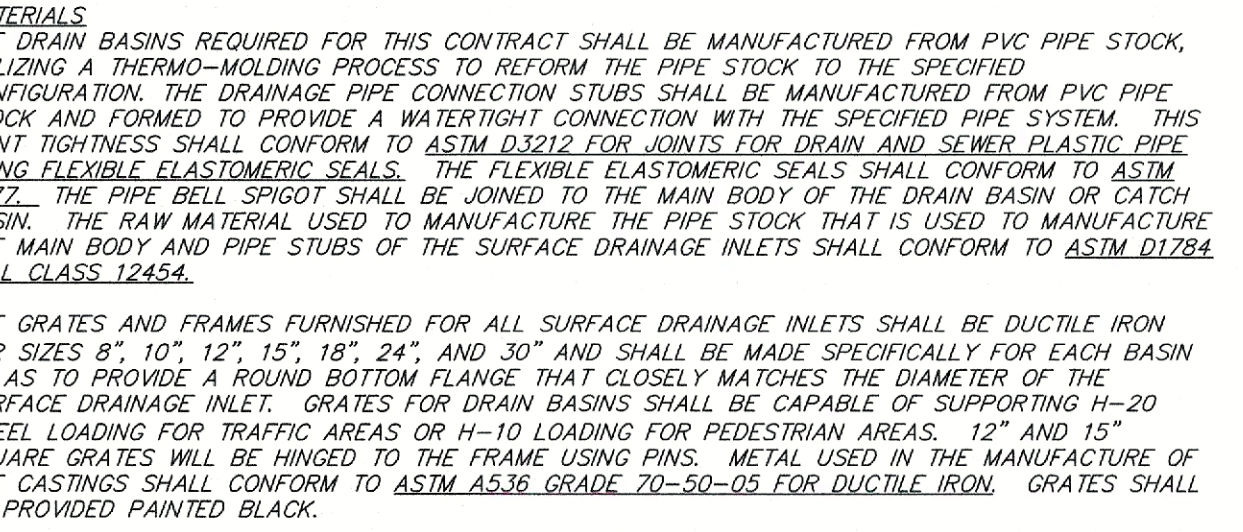
- THE PURPOSE OF THIS PLAN IS TO SHOW THE GRADING AND DRAINAGE IMPROVEMENTS ASSOCIATED WITH THE PROPOSED SITE PLAN.
- ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY/TOWN OF HUDSON AND SHALL BE BUILT IN A WORKMAN LIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION APPROVED AND ADOPTED 2016 ARE HEREBY INCORPORATED BY REFERENCE.
- ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THESE PLANS. PRIOR TO THE START OF ANY CONSTRUCTION, THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROXIMATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 1-800-344-7233 AT LEAST 72 HOURS BEFORE DIGGING.
- REFER TO UTILITY SHEETS FOR DRAINAGE RIMS, INVERTS & PIPE SLOPES.
- ALL DRAINAGE PIPE SHALL BE NON-PERFORATED ADS N-12 HIGH-DENSITY POLYETHYLENE PIPE SMOOTH INTERIOR (OR APPROVED EQUAL) OR RCP CLASS IV, UNLESS NOTED ON THE PLANS. ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RELOCATION AND/OR PROTECTION OF ALL UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE WITH THE OWNER OF SAID UTILITIES.
- THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY HIS CONSTRUCTION WORK AT ALL TIMES.
- THE CONTRACTOR SHALL THOROUGHLY SECURE ALL EXCAVATIONS ON A DAILY BASIS AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
- CONTRACTOR SHALL VERIFY T.B.M. ELEVATION PRIOR TO THE START OF CONSTRUCTION.
- ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
- THE CONTRACTOR SHALL STABILIZE ALL DITCHES, PONDS, AND SWALES PRIOR TO DIRECTING RUNOFF TO THEM.
- ALL PROPOSED AND EXISTING CATCH BASINS WHICH MAY RECEIVE STORMWATER RUNOFF FROM THE DEVELOPMENT DURING CONSTRUCTION, SHALL BE OUTFITTED WITH STONE INLET PROTECTION OR SILT SACKS (SEE DETAILS SHEETS).
- ALL CATCH BASIN SUMPS AND PIPING SHALL BE THOROUGHLY CLEANED TO REMOVE ALL SEDIMENT AND DEBRIS AFTER THE PROJECT HAS BEEN PAVED.
- THE CONTRACTOR SHALL DISPOSE OF ANY UNSUITABLE MATERIAL FOUND ON-SITE (I.E. TRASH, STUMPS, ETC.) IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN IN THE PLAN SET THROUGHOUT THE DURATION OF THE PROJECT IN ACCORDANCE WITH APPLICABLE M.H.D.E.S. STANDARDS. IF DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE CONTRACTOR SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE CITY/TOWN.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THIS PLAN SET, PREPARED BY BEDFORD DESIGN CONSULTANTS, INC., DO NOT EXTEND TO OR INCLUDE METHODS 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 AND/OR ENGINEER AS INCLUDED IN THE PLAN SET DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE AND/OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REQUIREMENTS.
- ALL TRAFFIC CONTROL AND TEMPORARY CONSTRUCTION SIGNAGE ARRANGEMENTS, ACCEPTABLE TO N.H.D.O.T., LOCAL CITY/TOWN POLICE DEPARTMENT, AND DEPARTMENT OF PUBLIC WORKS SHALL BE EMPLOYED FOR ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY.
- ADJUST ALL MANHOLES, CATCH BASIN, CURB BOXES, ETC. WITHIN THE LIMITS OF WORK TO FINISH GRADE PRIOR TO INSTALLATION OF FINISHED PAVEMENT.
- THE SITE SHALL BE GRADED SO ALL FINISHED PAVEMENT HAS POSITIVE DRAINAGE.
- CONTRACTOR TO PROVIDE FINISHED PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE, RAMPS, AND LOADING AREAS.
- ALL ELEVATIONS SHOWN AT THE CURB ARE TO THE BOTTOM OF THE CURB UNLESS OTHERWISE NOTED.
- ALL SIDEWALK AND OTHER CURB REVEALS SHALL BE 6 INCHES. WHERE SIDEWALK IS TO BE FLUSH, THE PAVEMENT REVEAL SHALL BE 1/4" WITH A TOLERANCE OF 1/8".
- THE FINISHED GRADE AT THE BOTTOM OF ALL ACCESSIBLE RAMPS SHALL BE FLUSH WITH THE PAVEMENT, WITH A TOLERANCE OF PLUS OR MINUS 1/4".

**GENERAL:**  
PVC SURFACE DRAINAGE INLETS SHALL INCLUDE THE DRAIN BASIN TYPE AS INDICATED ON THE CONTRACT DRAWING AND REFERENCED WITHIN THE CONTRACT SPECIFICATIONS. THE DUCTILE IRON GRATES FOR EACH OF THESE FITTINGS ARE TO BE CONSIDERED AN INTEGRAL PART OF THE SURFACE DRAINAGE INLET AND SHALL BE FURNISHED BY THE SAME MANUFACTURER. THE SURFACE DRAINAGE INLETS SHALL BE AS MANUFACTURED BY NYLOPLAST A DIVISION OF ADVANCED DRAINAGE SYSTEMS, INC., OR PRIOR APPROVED EQUAL.

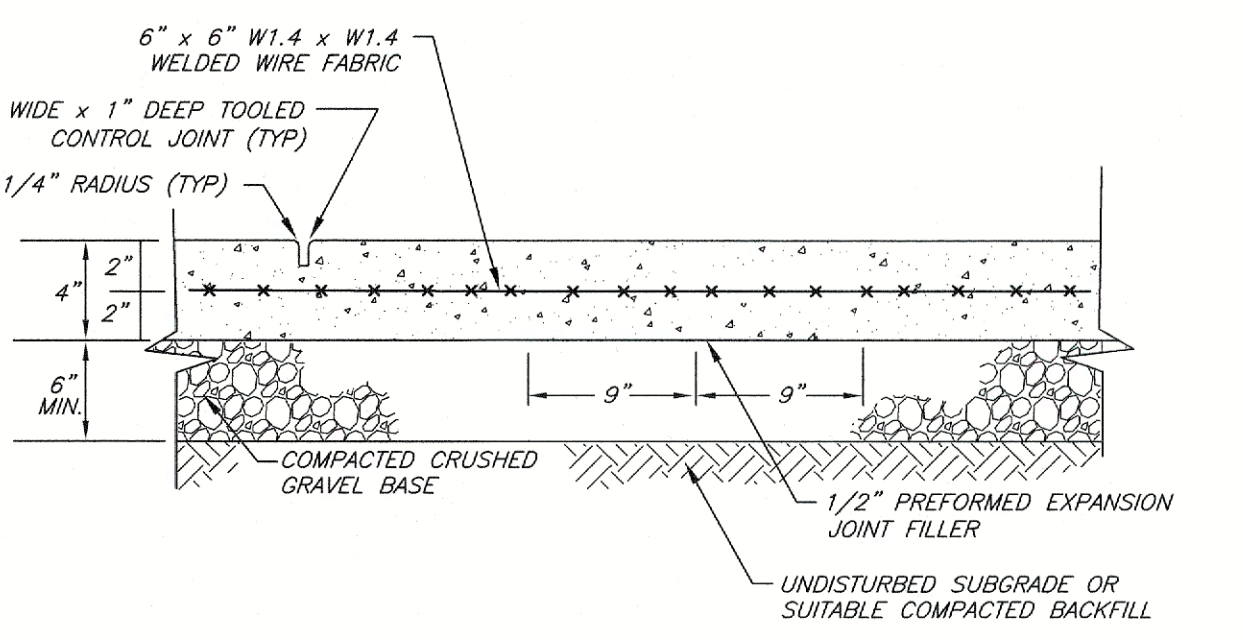
**MATERIALS:**  
THE DRAIN BASINS REQUIRED FOR THIS CONTRACT SHALL BE MANUFACTURED FROM PVC PIPE STOCK, UTILIZING A THERMO-MOLDING PROCESS TO REFORM THE PIPE STOCK TO THE SPECIFIED CONFIGURATION. THE DRAINAGE PIPE CONNECTION STUBS SHALL BE MANUFACTURED FROM PVC PIPE STOCK AND FORMED TO PROVIDE A WATER TIGHT CONNECTION WITH THE SPECIFIED PIPE SYSTEM. THIS JOINT FITNESS SHALL CONFORM TO ASTM D3212 FOR JOINTS FOR DRAIN AND SEWER PLASTIC PIPE USING FLEXIBLE ELASTOMERIC SEALS. THE FLEXIBLE ELASTOMERIC SEALS SHALL CONFORM TO ASTM F477. THE PIPE BELL SPIGOT SHALL BE JOINED TO THE MAIN BODY OF THE DRAIN BASIN OR CATCH BASIN. THE RAW MATERIAL USED TO MANUFACTURE THE PIPE STOCK THAT IS USED TO MANUFACTURE THE MAIN BODY AND PIPE STUBS OF THE SURFACE DRAINAGE INLETS SHALL CONFORM TO ASTM D1784 CELL CLASS 12454.

THE GRATES AND FRAMES FURNISHED FOR ALL SURFACE DRAINAGE INLETS SHALL BE DUCTILE IRON FOR SIZES 8" 10" 12" 15" 18" 24" AND 30" AND SHALL BE MADE SPECIFICALLY FOR EACH BASIN SO AS TO PROVIDE A ROUND BOTTOM FLANGE THAT CLOSELY MATCHES THE DIAMETER OF THE SURFACE DRAINAGE INLET. GRATES FOR DRAIN BASINS SHALL BE CAPABLE OF SUPPORTING H-20 WHEEL LOADING FOR TRAFFIC AREAS OR H-10 LOADING FOR PEDESTRIAN AREAS. 12" AND 15" SQUARE GRATES WILL BE HINGED TO THE FRAME USING PINS. METAL USED IN THE MANUFACTURE OF THE CASTINGS SHALL CONFORM TO ASTM A536 GRADE 70-50-05 FOR DUCTILE IRON. GRATES SHALL BE PROVIDED PAINTED BLACK.

**INSTALLATION:**  
THE SPECIFIED PVC SURFACE DRAINAGE INLET SHALL BE INSTALLED USING CONVENTIONAL FLEXIBLE PIPE BACKFILL MATERIALS AND PROCEDURES. THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS 2 MATERIAL AS DEFINED IN ASTM D2321. BEDDING AND BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED AND COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321. THE DRAIN BASIN BODY WILL BE CUT AT THE TIME OF THE FINAL GRADE. NO BRICK, STONE, OR CONCRETE BLOCK WILL BE REQUIRED TO SET THE GRATE TO THE FINAL GRADE HEIGHT. FOR H-20 LOAD RATED INSTALLATIONS, A CONCRETE RING WILL BE POURED UNDER AND AROUND THE GRATE AND FRAME. THE CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, AND OTHER APPLICABLE DESIGN FACTORS. FOR OTHER INSTALLATION CONSIDERATIONS SUCH AS MIGRATION OF FINES, GROUND WATER, AND SOFT FOUNDATIONS REFER TO ASTM D2321 GUIDELINES.



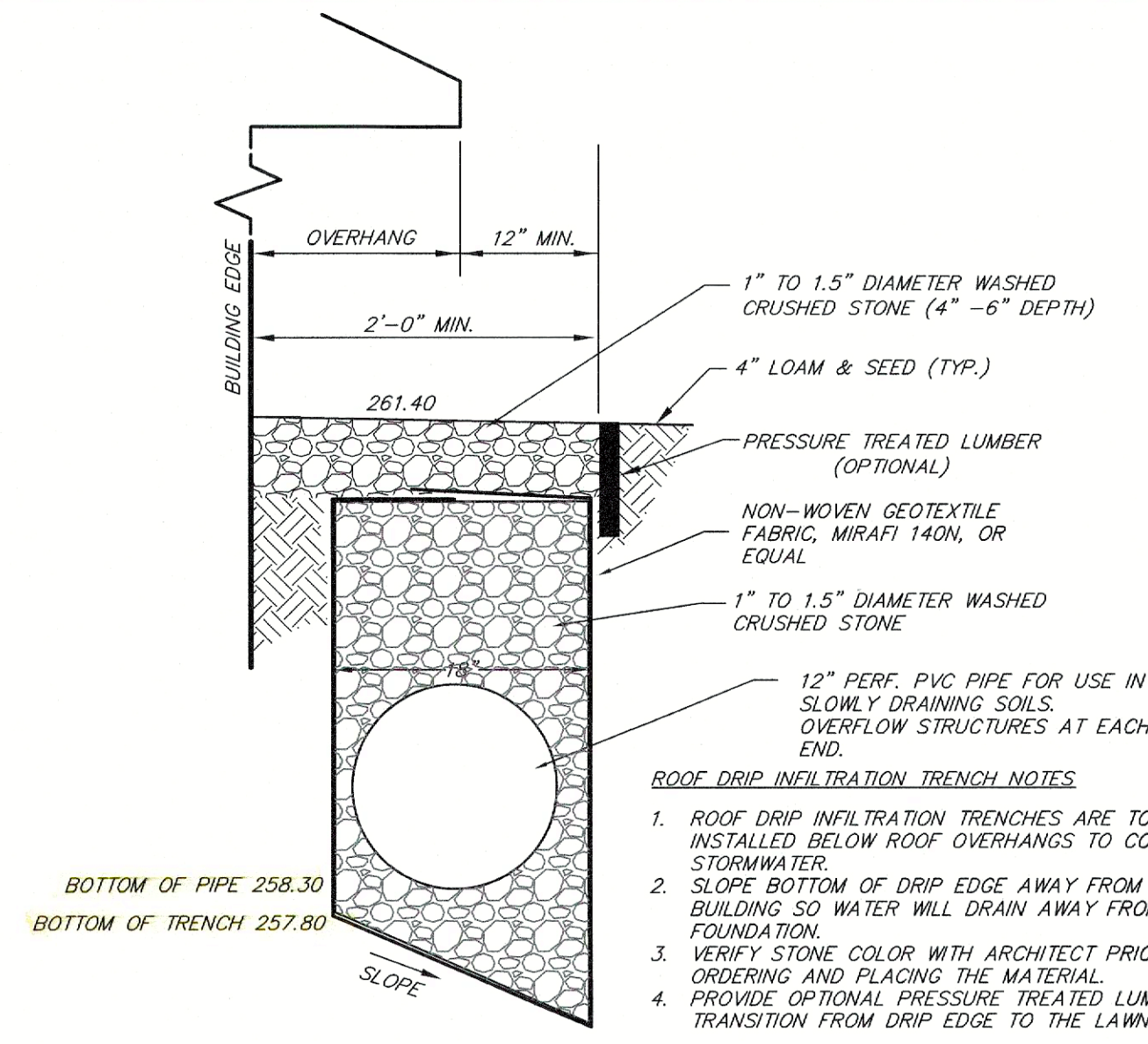
**GRAVEL DRIVE & INFILTRATION TRENCH DETAIL**  
NOT TO SCALE



**CONCRETE PAD AT MAN DOORS DETAIL**  
NOT TO SCALE

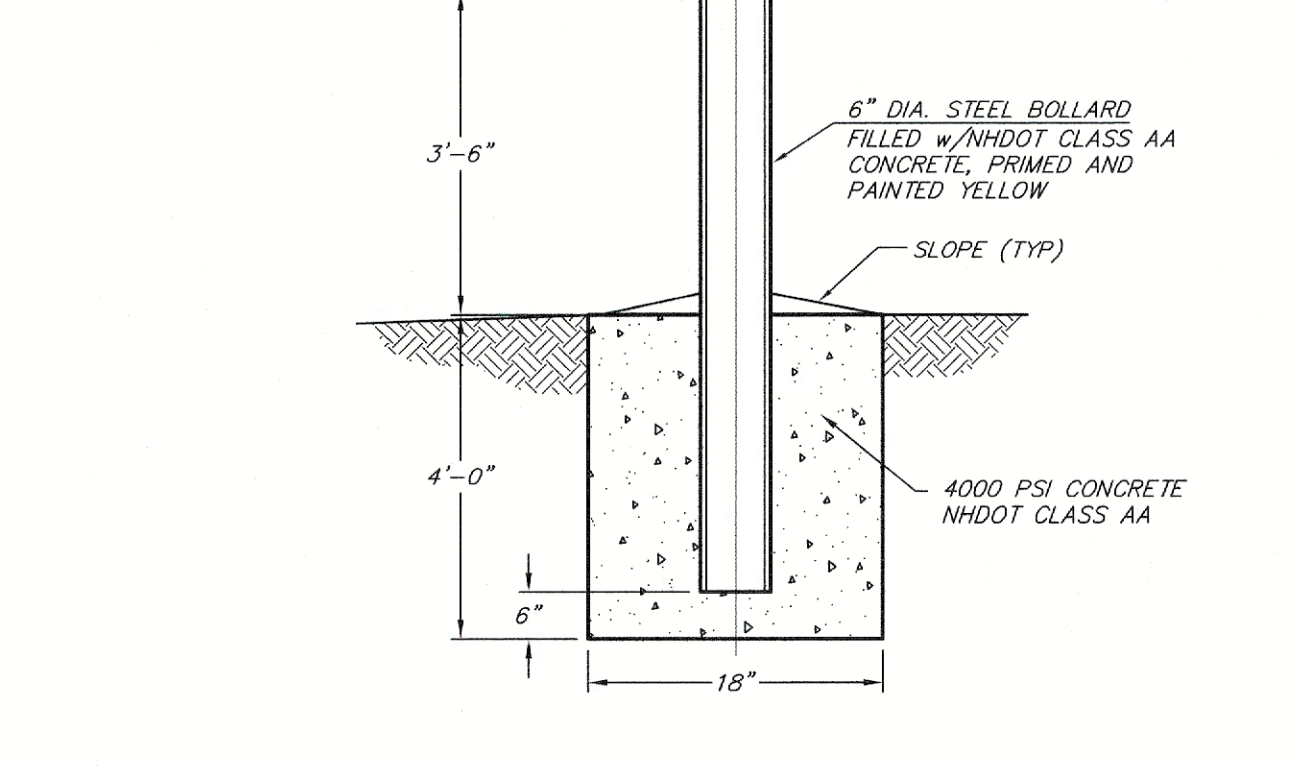
NOTES:  
1. CROSS SLOPE OF PAD TO BE 1% AS SPECIFIED ON THE PLAN.  
2. ALL CONCRETE TO BE 4,000 PSI NHDOT CLASS AA.

DATE	DESCRIPTION	BY	REV.
8-07-23	REVISED PER PERC TEST	KAW	C
7-14-23	REVISED PER TOWN COMMENTS	KAW	B
6-26-23	REVISED PER TOWN COMMENTS	KAW	A



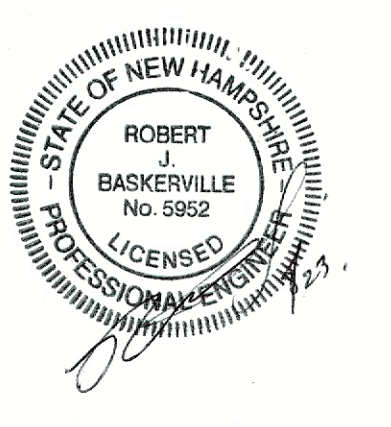
**ROOF DRIP INFILTRATION TRENCH DETAIL**  
NOT TO SCALE

- ROOF DRIP INFILTRATION TRENCH NOTES:**
- ROOF DRIP INFILTRATION TRENCHES ARE TO BE INSTALLED BELOW ROOF OVERHANGS TO COLLECT STORMWATER.
  - SLOPE BOTTOM OF DRIP EDGE AWAY FROM THE BUILDING SO WATER WILL DRAIN AWAY FROM THE FOUNDATION.
  - VERIFY STONE COLOR WITH ARCHITECT PRIOR TO ORDERING AND PLACING THE MATERIAL.
  - PROVIDE OPTIONAL PRESSURE TREATED LUMBER TO TRANSITION FROM DRIP EDGE TO THE LAWN.



**TYPICAL BOLLARD DETAIL**  
NOT TO SCALE

FOR USE AROUND EXISTING ELECTRICAL CABINET AND PROPANE STORATE BUILDING



**TAX MAP 161 LOT 41**  
**DETAIL SHEET 1**  
**8 INDUSTRIAL DR SITE PLAN AMENDMENT**  
LOCATED AT:  
**8 INDUSTRIAL DRIVE**  
**HUDSON, NEW HAMPSHIRE**  
PREPARED FOR/OWNER:  
MDP REALTY ASSOCIATES, LLC  
9 OLD DERRY ROAD  
HUDSON, STATE

SCALE: 1" = 20'      MAY 22, 2023      SHEET 4 OF 5

DESIGN: KAW	DRAWN: KAW	CHECKED: RJB	FB: ###	PG: ###	503-14
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**Bedford Design Consultants Inc.**  
ENGINEERS AND SURVEYORS  
592 Harvey Road, Manchester, NH 03103  
Telephone: (603) 622-5533  
www.bedforddesign.com

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**GENERAL CONSTRUCTION NOTES:**

- BOTH THE CONTRACTOR AND OWNER NEED TO SUBMIT A SEPARATE "NOTICE OF INTENT" TO BE COVERED BY THE N.H.D.E.S. GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES.
- A MANDATORY PRECONSTRUCTION MEETING SHALL BE HELD WITH THE TOWN, CONTRACTOR, OWNER, AND ALL UTILITY REPRESENTATIVES PRIOR TO CONSTRUCTION. NO WORK SHALL BEGIN UNTIL APPROVAL BY THE HIGHWAY DEPARTMENT HAS BEEN OBTAINED.
- ALL CONSTRUCTION MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPROPRIATE SECTION OF THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (LATEST EDITION) AND LOCAL REGULATIONS.
- ANY SUBSTITUTIONS OF MATERIALS SHALL BE APPROVED BY THE ENGINEER IN WRITING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED LOCAL AND STATE CONSTRUCTION PERMITS PRIOR TO BEGINNING WORK.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL FIELD CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
- SHOULD GROUND WATER OR UNSUITABLE MATERIALS BE ENCOUNTERED DURING CONSTRUCTION, THE ENGINEER SHALL BE CONTACTED IMMEDIATELY FOR DETERMINATION OF POSSIBLE CONSTRUCTION DESIGN CHANGES SUCH AS (BUT NOT LIMITED TO) UNDERDRAINS OR ALIGNMENT AND GRADE CHANGES.
- CLEARING THE SITE SHALL INCLUDE THE REMOVAL AND DISPOSAL OF DOWN TIMBER, RUBBISH AND DEBRIS FOUND EXISTING WITHIN THE AREAS TO BE CLEARED. CLEARING SHALL NOT TAKE PLACE UNTIL THE CONTRACTOR HAS DETERMINED FROM THE OWNER WHICH TREES ARE TO BE SAVED WITHIN THE CLEARING LIMITS.
- PAVEMENT OF THE ROADWAY SHALL CONSIST OF A HOT BITUMINOUS LAYER, A CRUSHED GRAVEL LAYER AND A GRAVEL SUBBASE LAYER.
  - BITUMINOUS TYPE F WEARING AND TYPE B BASE COURSES SHALL BE CONSTRUCTED PER N.H.D.O.T. SPECIFICATION 401 CONSTRUCTION REQUIREMENTS.
  - GRAVEL SHALL MEET THE REQUIREMENTS OF N.H.D.O.T. 304.2
  - THE CRUSHED GRAVEL SHALL MEET THE REQUIREMENTS OF N.H.D.O.T. 304.3
  - REFER TO THE TYPICAL ROAD CROSS SECTION DETAIL FOR DIMENSIONS.
- COMPACTION OF BACKFILL:
  - GRASSED AREAS: EMBANKMENT FILL AREAS SHALL CONSIST OF COMMON FILL PLACED IN 12 INCH LIFTS AND COMPACTED TO 90% ROADWAY.
  - THE COMPACTION REQUIREMENTS FOR MATERIALS PLACED AS BACKFILL, SUBGRADE, BASE COURSE AND PAVEMENT SHALL BE AS SPECIFIED FOR EACH SEPARATE ITEM IN THE N.H.D.O.T. "STANDARD SPECIFICATIONS" FOR ROAD AND BRIDGE CONSTRUCTION.
- CATCH BASINS AND MANHOLES SHALL BE PRE-CAST REINFORCED CONCRETE DESIGNED BY AN ENGINEER REGISTERED IN THE STATE OF NEW HAMPSHIRE AND ABLE TO WITHSTAND LOADINGS OF 8 TONS (H=20 LOADING).
- TRENCH CONSTRUCTION WILL CONFORM WITH SECTION 603.3.1. OF THE N.H.D.O.T. STANDARD SPECIFICATIONS (LATEST EDITION).
- WOOD SHEETING OR A SUITABLE TRENCH BOX SHALL BE USED TO SUPPORT THE TRENCH AS NECESSARY. IF WOOD SHEETING IS USED, IT SHALL BE DRIVEN AT A DISTANCE OF ONE FOOT FROM THE OUTSIDE DIAMETER OF THE PIPE TO A DEPTH SIX INCHES BELOW THE INVERT OF THE PIPE. WOOD SHEETING SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN ONE FOOT ABOVE THE TOP OF THE PIPE, BUT NOT GREATER THAN THREE FEET BELOW THE FINISHED GRADE.
- TRENCH BEDDING SHALL CONFORM WITH SECTION 603.3.2. OF THE STANDARD SPECIFICATIONS (LATEST EDITION). FIRST CLASS BEDDING WILL BE REQUIRED FOR ALL PIPES 48" OR MORE IN DIAMETER OR SPAN.
- BACKFILL MATERIAL FOR TRENCHES WILL CONFORM WITH SECTION 603.3.5. OF THE STANDARD SPECIFICATIONS (LATEST EDITION) AND IN ADDITION, SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTE, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIAL WHICH AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION. BACKFILL SHALL NOT BE PLACED ON FROZEN MATERIAL.
- COMPACTION OF TRENCH BACKFILL AND PIPE BEDDING SHALL BE SIX INCH LIFTS FOR BEDDING AND BACKFILL TO A PLANE ONE FOOT ABOVE THE PIPE AND IN 12 INCH LIFTS THEREAFTER BY AN APPROVED MECHANICAL COMPACTOR.
- SHOULD FROZEN MATERIAL BE ENCOUNTERED, IT SHALL NOT BE PLACED IN THE BACKFILL NOR SHALL BACKFILL BE PLACED UPON FROZEN MATERIAL.
- THE DISTURBED AREA SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 30 DAYS SHALL BE STABILIZED.
- ALL SEEDD AREAS SHALL BE MULCHED WITHIN 24 HOURS AFTER SEEDING. A GOOD QUALITY OF STRAW MULCH SHOULD BE USED AND APPLIED AT THE RATE OF 2 TONS PER ACRE.
- BASIN FLOORS IN THE INFILTRATION BASINS ARE TO BE DEEPLY TILLED TO RESTORE INFILTRATION RATES. FOLLOWED BY A PASS WITH A LEVELING DRAG PRIOR TO FINAL SEEDING. STORMWATER FLOWS SHALL NOT BE DIRECTED TO THE INFILTRATION BASINS, SWALES, OR DITCHES UNTIL ALL CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
- ALL SLOPES GREATER THAN 3:1 MUST BE MATTED WITH NORTH AMERICAN GREEN S150BN EROSION CONTROL BLANKETING.
- THE PROJECT SHALL BE MANAGED TO MEET THE REQUIREMENTS OF AND INTENT OF RSA 430:51-57 AND Ag<sub>9</sub> 3800 RELATIVE TO INVASIVE SPECIES. AND FUGITIVE DUST IS TO BE CONTROLLED IN ACCORDANCE WITH ENV-W 1000.
- THE TOWN OF \_\_\_\_\_ RESERVES THE RIGHT TO REQUIRE THAT ADDITIONAL EROSION CONTROL MEASURES BE INSTALLED DURING CONSTRUCTION BASED ON FIELD OBSERVATIONS/INSPECTIONS.

**CONSTRUCTION SEQUENCE:**

- A MANDATORY PRECONSTRUCTION MEETING SHALL BE HELD WITH THE TOWN, CONTRACTOR, OWNER, AND ALL UTILITY REPRESENTATIVES PRIOR TO CONSTRUCTION. NO WORK SHALL BEGIN UNTIL APPROVAL BY THE HIGHWAY DEPARTMENT HAS BEEN OBTAINED.
- CLEAR AREA FOR CONSTRUCTION ENTRANCE AND INSTALL STABILIZED CONSTRUCTION ENTRANCES AS SHOWN ON THESE PLANS.
- PLANT TREES IN ROADWAY CONSTRUCTION AREAS ONLY AS SHOWN ON THESE PLANS.
- INSTALL SILT FENCE ALONG LIMIT OF CLEARING, AND AS SHOWN ON THESE PLANS.
- REMOVE STUMPS FROM SITE FOR SITE GRADING (CUT AND/OR FILL) TO SUBGRADE. STABILIZE AREAS WITH BASE GRAVEL WITHIN SIX WEEKS OF REMOVING STUMPS.
- THE MAXIMUM SEEDING AREA SHALL BE LIMITED TO THE MINIMUM AREA PRACTICABLE FOR SITE CONSTRUCTION (NOT TO EXCEED 5 ACRES). NO AREA SHALL BE LEFT UNSTABILIZED MORE THAN 6 WEEKS. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS HAPPENED:
  - BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
  - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
  - A MINIMUM OF 85% STONE OR STONE OR RIP-RAP HAS BEEN INSTALLED; OR
  - EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
- CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES AS PER THE NOTES IN THESE DRAWINGS. EROSION, SEDIMENT, AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATION.
  - SILT FENCE
  - RIP RAP LINED SWALES
  - RIP RAP APPROXS AT CULVERT OUTLETS
  - TREATMENT SWALES
  - DETENTION PONDS
- ALL DITCHES/SWALES/BASINS SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
- IF DURING CONSTRUCTION IT BECOMES APPARENT THAT ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION AND SEDIMENT CONTROL MEASURES.
- BASIN FLOORS IN THE INFILTRATION BASINS ARE TO BE DEEPLY TILLED TO RESTORE INFILTRATION RATES. FOLLOWED BY A PASS WITH A LEVELING DRAG PRIOR TO FINAL SEEDING. STORMWATER FLOWS SHALL NOT BE DIRECTED TO THE INFILTRATION BASINS, SWALES, OR DITCHES UNTIL ALL CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
- FINISH CLEARING AND GRUBBING.
- CONSTRUCT DRAINAGE CULVERTS AND DIVERSION CHANNELS, AS NECESSARY.
- CONSTRUCT CONSTRUCTION ENTRANCE FOR ACCESS TO DESIRED CONSTRUCTION AREAS.
- BEGIN CONSTRUCTION OF UTILITIES AND STORM DRAINAGE AS NECESSARY.
- MODIFY EROSION CONTROL MEASURES AS NECESSARY DURING CONSTRUCTION.
- REMOVE PERMANENT AND TEMPORARY INSTALLATION OF SEED AND MULCH. ALL CUT AND FILL SLOPES SHALL BE STABILIZED DAILY OR AS REQUIRED. CONSTRUCT TEMPORARY BERMS, DRAIN DITCHES, SILT FENCES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS NECESSARY. SPREAD ALL GRAVELS AND PAVE ROADWAY AREAS AS SPECIFIED ON THE PLAN.
- INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. ALL EROSION AND SEDIMENT CONTROL NEED TO BE INSPECTED WEEKLY AND AFTER EVERY 0.5" OF RAINFALL.
- COMPLETE PERMANENT SEEDING AND LANDSCAPING.
- ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 72 HOURS OF FINISH GRADING. MAXIMUM EXPOSURE LENGTH FOR ALL DISTURBED AREAS IS 30 DAYS.
- REMOVE TEMPORARY CONTROL MEASURES AFTER SEEDD AREAS HAVE ESTABLISHED THEMSELVES AND SITE IMPROVEMENTS ARE COMPLETED.
- LOT DISTURBANCE, OTHER THAN THAT SHOWN ON THE APPROVED PLANS, SHALL NOT COMMENCE UNTIL AFTER THE ROADWAY HAS THE BASE COURSE TO DESIGN ELEVATION AND THE ASSOCIATED DRAINAGE IS COMPLETE AND STABLE

**SITE MAINTENANCE AND INSPECTION PROGRAM**

- A. INSPECTIONS**
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES THROUGHOUT THE DURATION OF THE CONSTRUCTION PROJECT. MAINTENANCE PRACTICES SHALL INCLUDE, BUT ARE NOT LIMITED TO

- CLEANING OF CATCH BASINS TWICE PER YEAR OR MORE FREQUENTLY AS DICTATED BY WEEKLY INSPECTIONS BEFORE OR AFTER RAINFALL EVENTS.
- CLEANING OF SEDIMENT OR DEBRIS FROM STORM WATER MANAGEMENT AREA INLETS TWICE PER YEAR OR MORE FREQUENTLY AS DICTATED BY WEEKLY INSPECTIONS AND/OR AFTER 0.5" RAINFALL EVENTS.
- WEEKLY SITE INSPECTIONS TO DETERMINE/IMPLEMENT NECESSARY REPAIR AND MAINTENANCE ACTIVITIES.
- REMOVAL OF SEDIMENT BUILDUP ALONG SILT FENCES, STRAW BALE BARRIERS, GRASS SWALES, AND TREATMENT BASIN INLETS. REMOVE SEDIMENT BUILDUP IN BOTTOM OF TREATMENT BASINS SUCH THAT ALL OUTLETS ARE KEPT FREE FROM SEDIMENT AND DEBRIS.
- INSPECTION/RECONSTRUCTION OF THE STABILIZED CONSTRUCTION ENTRANCE.
- TREATMENT OF NON-STORMWATER RELATED DISCHARGES SUCH AS WATER LINE INSTALLATION FLUSH WATER OR GROUNDWATER FROM DEWATERING ACTIVITIES. THESE FLOWS SHOULD BE DIRECTED TO A TEMPORARY SEDIMENTATION BASIN OR CONSTRUCTED STORM WATER MANAGEMENT AREA WITH WATER QUALITY SWIMMER OUTLETS.
- SWEEP PAVED PARKING LOTS AND DRIVES REGULARLY TO MINIMIZE SEDIMENT ACCUMULATION.

- B. GOOD HOUSEKEEPING PRACTICES**
- THE CONTRACTOR SHALL EMPLOY MEASURES AND PRACTICES TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS TO STORM WATER RUNOFF. THE CONTRACTOR SHALL USE CARE IN THE HANDLING AND DEPOSIT OF SUCH PRODUCTS AS PETROLEUM PRODUCTS, FERTILIZERS AND PAINTS TO ENSURE THAT THE RISK ASSOCIATED WITH THE USE OF THESE PRODUCTS IS MINIMIZED. THE FOLLOWING PRACTICES SHALL BE FOLLOWED DURING THE CONSTRUCTION OF THIS PROJECT:

- AN EFFORT SHALL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED FOR THIS SPECIFIC SITE.
- ALL MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER SUITABLE ENCLOSURE.
- PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THEIR ORIGINAL LABELS.
- WHENEVER POSSIBLE, ALL OF THE PRODUCT SHALL BE USED BEFORE DISPOSING OF THE CONTAINER.
- THE MANUFACTURER'S RECOMMENDATIONS SHALL BE FOLLOWED IN REGARD TO THE PROPER USE AND DISPOSAL OF ALL PRODUCTS.
- THE CONTRACTOR SHALL INSPECT DAILY TO ENSURE THE PROPER USE AND DISPOSAL OF ALL MATERIALS ON SITE.

- C. SPILL PREVENTION AND CLEANUP PRACTICES**
- THE CONTRACTOR/OPERATOR SHALL BE RESPONSIBLE FOR THE SAFE HANDLING, USE AND DISPOSAL PROGRAM OF ALL HAZARDOUS MATERIALS FOR THE DURATION OF THIS PROJECT AND SHALL HAVE A SPECIFIC SPILL PREVENTION AND CLEANUP PROTOCOL FOR ALL HAZARDOUS MATERIALS, INCLUDING, BUT NOT LIMITED TO:

- MANUFACTURERS RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THESE PROCEDURES AND THE LOCATION OF THE CLEANUP SUPPLIES.
- MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIAL WILL INCLUDE, BUT NOT BE LIMITED TO, BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC/METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
- ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
- THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
- SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.
- THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING, AND HOW TO CLEAN UP THE SPILL IF THERE IS ANOTHER ONE. A DESCRIPTION OF THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES WILL ALSO BE INCLUDED.

**COLD WEATHER STABILIZATION**

- ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE SEEDD WITH ANCHORED NETTING SOMEWHERE. 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.
- 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.
- AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3. TO ADEQUATELY PROTECT WATER QUALITY DURING COLD WEATHER AND DURING SPRING RUNOFF.

**GENERAL EROSION CONTROL NOTES:**

- PERMETER CONTROLS MUST BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS;
- STORMWATER TREATMENT PONDS AND DRAINAGE SWALES MUST BE INSTALLED BEFORE ROUGH GRADING THE SITE.
- RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMPs ARE STABILIZED;
- BASINS, DITCHES AND SWALES MUST BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM;
- ROADWAYS AND PARKING AREAS MUST BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE;
- CUT AND FILL SLOPES MUST BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE;
- ALL AREAS OF UNSTABILIZED SOIL MUST BE STABILIZED AS SOON AS PRACTICABLE BUT NO LATER THAN 45 DAYS OF INITIAL DISTURBANCE;
- EROSION CONTROL PRACTICES MUST BE INSPECTED AT LEAST WEEKLY AND AFTER EVERY RAIN EVENT OF 0.5 INCH OR MORE;
- THE AREA OF DISTURBANCE MUST BE LIMITED TO 5 ACRES UNLESS ENV-WO 1505.05 RELATIVE TO COLD WEATHER STABILIZATION APPLIES;
- IN AREAS THAT WILL NOT BE PAVED, STABLE MEANS THAT:
  - A MINIMUM OF 85% VEGETATIVE COVER HAS BEEN ESTABLISHED;
  - A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR
- EROSION CONTROL BLANKETS HAVE BEEN INSTALLED IN ACCORDANCE WITH ENV-WO 1506.03; AND
- IN AREAS TO BE PAVED, STABLE MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.

- TEMPORARY SEDIMENT TRAP.** TEMPORARY SEDIMENT TRAPS SHALL COMPLY WITH THE FOLLOWING:
- THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA OR SOURCE OF SEDIMENT AS POSSIBLE;
  - THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE TRAP SHALL BE LESS THAN 5 ACRES;
  - THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA;
  - THE SIDE SLOPES OF THE TRAP SHALL BE 3:1 OR FLATTER, AND SHALL BE STABILIZED IMMEDIATELY AFTER THEIR CONSTRUCTION;
  - THE OUTLET OF THE TRAP SHALL BE A MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP AND SHALL DISCHARGE TO A STABILIZED AREA;
  - THE TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED; AND
  - THE MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.

- CONSTRUCTION DEWATERING.** DEWATERING SHALL COMPLY WITH THE FOLLOWING:
- THE DISCHARGE SHALL BE STOPPED IMMEDIATELY IF THE RECEIVING AREA SHOWS ANY SIGN OF INSTABILITY OR EROSION;
  - ALL CHANNELS, SWALES, AND DITCHES DUG FOR DISCHARGING WATER FROM THE EXCAVATED AREA SHALL BE STABLE PRIOR TO DIRECTING DISCHARGE TO THEM;
  - IF A CONSTRUCTION EQUIPMENT BUCKET IS USED, IT SHALL EMPTY THE MATERIAL TO A STABLE AREA;
  - NO DEWATERING SHALL OCCUR DURING PERIODS OF INTENSE, HEAVY RAIN;
  - FLOW TO THE SEDIMENT REMOVAL STRUCTURE SHALL NOT EXCEED THE STRUCTURE'S CAPACITY TO SETTLE AND FILTER FLOW OR ITS VOLUME CAPACITY; AND
  - WHEREVER POSSIBLE, THE DISCHARGE FROM THE SEDIMENT REMOVAL STRUCTURE SHALL DRAIN TO A WELL-VEGETATED BUFFER BY SHEET FLOW WHILE MAXIMIZING THE
  - DISTANCE TO THE NEAREST WATER RESOURCE AND MINIMIZING THE SLOPE OF THE BUFFER AREA

- TEMPORARY STORMWATER DIVERSION.** TEMPORARY STORMWATER DIVERSION SHALL COMPLY WITH THE FOLLOWING:
- WHEN NECESSARY TO MINIMIZE RELEASE OF SEDIMENT-LADEN RUNOFF PRIOR TO STABILIZATION OF THE SITE THE PERMANENT STORMWATER MANAGEMENT SYSTEM COMPONENTS, SEDIMENT-LADEN WATER SHALL BE DIVERTED AND STORED IN TEMPORARY DIVERSION PRACTICES SUCH AS SEDIMENT BASINS OR TRENCHES;
  - SUBJECT TO (C), BELOW, TEMPORARY DIVERSION PRACTICES SHALL BE STABILIZED PRIOR TO RECEIVING RUNOFF;
  - TEMPORARY DIVERSION CHANNELS WITH A GRADIENT OF 2 PERCENT OR GREATER SHALL BE STABILIZED, HOWEVER CHANNELS WITH A SLOPE OF LESS THAN 2% SHALL BE STABILIZED ONLY IF EROSION IS OBSERVED;
  - THE AREA DRAINING TO EACH TEMPORARY DIVERSION PRACTICE SHALL BE LESS THAN 5 ACRES;
  - TEMPORARY DIVERSION CHANNELS SHALL CONVEY, AND TEMPORARY BASINS AND TRENCHES SHALL CONTAIN, THE 2-YEAR, 24 HOUR DESIGN STORM WITHOUT OVERTOPPING THE BANKS;
  - THE BED SLOPE OF DIVERSION CHANNELS SHALL HAVE A POSITIVE GRADE TO ASSURE DRAINAGE;
  - WHERE DIVERSIONS CARRY CONCENTRATED FLOWS, ENERGY DISSIPATION METHODS SHALL BE IMPLEMENTED TO DISPERSE FLOW INTO AREAS DOWNSTREAM OF THE DISTURBED AREA;
  - IF EROSION OF DIVERSION PRACTICES OCCURS DURING CONSTRUCTION, CORRECTIVE ACTION SHALL BE TAKEN TO STABILIZE THE BASIN, CHANNEL, AND BERM; AND
  - DIVERSION BASINS AND TRENCHES SHALL BE CLEARED OF SEDIMENT WHENEVER SEDIMENT ACCUMULATES.

**SEEDING/MULCHING OF DISTURBED AREAS**

- TEMPORARY AND PERMANENT MULCHING.** MULCHING SHALL COMPLY WITH THE FOLLOWING:
- HAY AND STRAW MULCHES SHALL BE ANCHORED WITH MULCH NETTING OR TACKIFIER SO THAT THEY ARE NOT BLOWN AWAY BY WIND OR WASHED AWAY BY FLOWING WATER;
  - MULCH MATERIALS SHALL BE SELECTED BASED UPON SOILS, SLOPE, FLOW CONDITIONS, AND TIME OF YEAR;
  - HAY OR STRAW MULCH SHALL BE APPLIED AT A RATE OF 1.5 TO 2 TONS PER ACRE, EQUIVALENT TO 70 TO 90 POUNDS PER 1,000 SQUARE FEET;
  - WOOD CHIPS OR GROUND BARK SHALL BE APPLIED AT 2 TO 6 INCHES DEEP AT A RATE OF 10 TO 20 TONS PER ACRE, EQUIVALENT TO 460 TO 900 POUNDS PER 1,000 SQUARE FEET;
  - JUTE AND FIBROUS MATS AND WOOD EXCELSDOR SHALL BE INSTALLED ACCORDING TO THE APPLICABLE MANUFACTURER'S INSTRUCTIONS; AND
  - EROSION CONTROL MIX SHALL:
    - MEET THE CRITERIA OF ENV-WO 1506.05(B); AND
    - BE PLACED AT A THICKNESS OF 2 INCHES OR MORE.

- VEGETATION.** VEGETATING DISTURBED AREAS SHALL BE COMPLETED ONLY AS SPECIFIED BELOW:
- ALL ESSENTIAL GRADING AND TEMPORARY STRUCTURES, SUCH AS DIVERSIONS, DAMS, DITCHES, AND DRAINS NEEDED TO PREVENT GULLYING AND REDUCE SILTATION, SHOULD BE COMPLETED PRIOR TO SEEDING;
  - STONES AND TRASH SHALL BE REMOVED FROM THE AREA TO BE SEEDD SO AS NOT TO INTERFERE WITH THE SEEDING;
  - TILL THE SOIL TO A DEPTH OF ABOUT FOUR (4) INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL;
  - ON SLOPES 4:1 OR STEEPER, FINAL PREPARATION OF THE AREA TO BE SEEDD SHALL INCLUDE CREATING GROOVES IN THE SOIL PERPENDICULAR TO THE DIRECTION OF THE SLOPE TO CATCH SEED AND REDUCE RUNOFF;
  - IF NEEDED TO ENSURE GROWTH, FERTILIZER OR OTHER ORGANIC SOIL AMENDMENTS SHALL BE APPLIED DURING THE GROWING SEASON;
  - FERTILIZER APPLIED TO AN AREA WITHIN 100 FEET OF ANY RIVER, STREAM, POND, OR LAKE SHALL BE LOW PHOSPHATE, SLOW RELEASE NITROGEN FERTILIZER ONLY;
  - FERTILIZER APPLIED TO ANY AREA THAT IS SUBJECT TO RSA 483-B, THE COMPREHENSIVE WATER QUALITY PROTECTION ACT (ACT), SHALL MEET OR BE MORE PROTECTIVE OF WATER QUALITY THAN THE MINIMUM STANDARDS OF THE ACT;
  - ALL SEEDD AREAS SHALL BE FERTILIZED, FERTILIZATION SHALL BE AT THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER;
  - ALL GRADED AREAS SHALL BE SEEDD WITH:
    - TALL FESCUE: 20 POUNDS PER ACRE
    - CREeping RED FESCUE: 20 POUNDS PER ACRE
    - BIRD'SFOOT TREFLOIL: 8 POUNDS PER ACRE
    - TOTAL 48 POUNDS PER ACRE LIVE SEED

- 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 0.25 IN. OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
- RUNOFF SHALL BE DIVERTED FROM THE SEEDD AREA;
- SUBJECT TO (N) BELOW, SEEDING SHALL OCCUR PRIOR TO SEPTEMBER 15TH OF THE YEAR IN WHICH THE AREA BEING SEEDD WAS DISTURBED;
- AREAS SEEDD BETWEEN MAY 15TH TO AUGUST 15TH SHALL BE COVERED WITH HAY OR STRAW MULCH MEETING THE CRITERIA OF ENV-WO 1506.01(A) THROUGH (C); AND
- IF VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA IS NOT ACHIEVED PRIOR TO OCTOBER 15TH, ONE OR MORE ADDITIONAL EROSION CONTROL METHODS SHALL BE IMPLEMENTED.

**TEMPORARY SEEDING/MULCHING**

- TEMPORARY SEEDING SHALL COMPLY WITH THE FOLLOWING:
- TEMPORARY VEGETATION CONSISTS OF THE ESTABLISHMENT OF A GRASS COVER ON EXPOSED SOILS FOR UP TO 12 MONTHS. THE PURPOSE IS TO REDUCE EROSION AND SEDIMENTATION BY STABILIZING DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A YEAR OR LESS AND TO REDUCE PROBLEMS ASSOCIATED WITH MUD AND DUST PRODUCTION FROM EXPOSED SOILS DURING CONSTRUCTION. ALL ESSENTIAL GRADING AND TEMPORARY STRUCTURES, SUCH AS DIVERSIONS, DAMS, DITCHES, AND DRAINS NEEDED TO PREVENT GULLYING AND REDUCE SILTATION, SHOULD BE COMPLETED PRIOR TO SEEDING.
  - SEEDBED PREPARATION
 

REMOVE THE STONES AND TRASH THAT WILL INTERFERE WITH SEEDING OF THE AREA. WHERE FEASIBLE, TILL THE SOIL TO A DEPTH OF ABOUT FOUR (4) INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
  - FERTILIZERS
 

FERTILIZER SHOULD BE UNIFORMLY SPREAD OVER THE AREA PRIOR TO BEING INCORPORATED INTO THE SOIL. A MINIMUM OF 300 POUNDS PER ACRE (7 POUNDS PER 1,000 SQUARE FEET) OF 10-10-10 FERTILIZER, OR ITS EQUIVALENT, SHOULD BE APPLIED.
  - SEED AND SEEDING
 

SEED AND SEEDING RATES MAY BE SELECTED FROM THE TABLE BELOW. THE SELECTION WILL BE BASED ON THE TIME OF YEAR THE SEEDING IS TO BE MADE AND THE LENGTH OF TIME THE VEGETATION IS TO AFFORD THE PROTECTION. THE SEED SHOULD BE SPREAD UNIFORMLY OVER THE AREA. AFTER SEEDING, THE SOIL SHOULD BE FIRMD BY ROLLING OR PACKING. WHERE ROLLING OR PACKING IS NOT FEASIBLE, THE SEED SHOULD BE COVERED LIGHTLY BY RAKING, DISKING, OR DRAGGING.
  - MULCHING
 

MULCH THE AREA WITH HAY OR STRAW AT 2 TONS/AC. (90 LBS./1000 S.F. OR 2 BALES/1000 S.F.). QUALITY OF HAY OR STRAW MULCH ALLOWABLE WILL BE DETERMINED BASED ON LONG TERM USE AND VISUAL CONCERNS. MULCH ANCHORING WILL BE REQUIRED WHERE WIND OR AREAS OF WATER ARE A CONCERN. WOOD FIBER, HYDROMULCH OR OTHER SPRAYABLE PRODUCTS MAY BE USED IF APPLIED ACCORDING TO MANUFACTURERS SPECIFICATIONS.
  - PLANT SELECTION AND SEEDING RATES

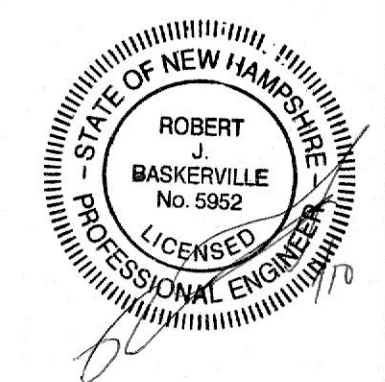
SPECIES	PER ACRE	PER 1000 SQ. FT.	REMARKS
WINTER RYE	90 LBS.	2 LBS.	BEST FOR FALL SEEDING. SEED FROM AUGUST 15 TO SEPT. 5 FOR BEST COVER. SEED TO A DEPTH OF 1 IN.
ANNUAL RYEGRASS	20 LBS.	0.5 LB.	GROWS QUICKLY, BUT IS OF SHORT DURATION. USE WHERE APPEARANCES ARE IMPORTANT. SEED EARLY. SPRING COVER THE SEED WITH NO MORE THAN 0.25 INCH OF SOIL.
PERENNIAL RYEGRASS	20 LBS.	0.5 LBS.	GOOD COVER WHICH IS LONGER LASTING THAN ANNUAL RYEGRASS. SEED BETWEEN APRIL 1 AND JUNE 1. MULCHING WILL ALLOW SEEDING THROUGHOUT THE GROWING SEASON. SEED TO A DEPTH OF APPROXIMATELY 0.5 INCH.

- ESTABLISHING A STAND
 

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.

**FUELING AND MAINTENANCE OF CONSTRUCTION EQUIPMENT**

- IF ANY CONSTRUCTION EQUIPMENT, INCLUDING BUT NOT LIMITED TO EARTHMOVING, EXCAVATION, AND BORING EQUIPMENT, WILL BE FUELED FROM A TANK TRUCK OR OTHER CONTAINER THAT IS MOVED AROUND THE SITE, THE FOLLOWING SHALL APPLY:
  - PORTABLE CONTAINMENT EQUIPMENT THAT IS SIZED TO CONTAIN THE MOST LIKELY VOLUME OF FUEL TO BE SPILLED DURING A FUEL TRANSFER SHALL BE USED, WHERE THE MOST LIKELY VOLUME TO BE SPILLED IS DETERMINED BASED ON THE FUEL TRANSFER RATE, THE AMOUNT OF FUEL BEING TRANSFERRED, THE DISTANCE BETWEEN THE HOSE NOZZLE AND PUMP SHUT OFF SWITCH, AND THE RESPONSE TIME OF PERSONNEL AND EQUIPMENT AVAILABLE AT THE FACILITY;
  - THE CONTAINMENT EQUIPMENT SHALL BE POSITIONED TO CATCH ANY FUEL SPILLS DUE TO OVERTIPPING THE EQUIPMENT; AND ANY OTHER SPILLS THAT MIGHT OCCUR AT OR NEAR THE FUEL FILLER PORT TO THAT EQUIPMENT;
  - THE TYPE OF CONTAINMENT EQUIPMENT USED AND ITS POSITIONING AND USE SHALL ACCOUNT FOR ALL OF THE DRIP POINTS ASSOCIATED WITH THE FUEL FILLING PORT AND THE HOSE FROM THE FUEL DELIVERY TRUCK; AND
  - PERSONNEL SHALL NOT LEAVE THE IMMEDIATE AREA WHILE FUEL IS BEING TRANSFERRED, TO ENSURE THAT ANY SPILLS WILL BE OF LIMITED VOLUME.
- IF THE SITE WILL HAVE A FIXED LOCATION FOR FUELING CONSTRUCTION EQUIPMENT, THE FOLLOWING SHALL APPLY:
  - ALL FUEL CONTAINERS, INCLUDING BUT NOT LIMITED TO SKID-MOUNTED TANKS, DRUMS, AND FIVE GALLON CANS, SHALL HAVE SECONDARY CONTAINMENT THAT:
    - IS CAPABLE OF CONTAINING 110% OF THE VOLUME OF THE LARGEST FUEL STORAGE CONTAINER; AND
    - HAS AN IMPERVIOUS FLOOR;
  - SECONDARY CONTAINMENT FOR TANKS MAY COMPRISE A METAL, PLASTIC, POLYMER OR PRECAST CONCRETE VAULT PROVIDING 110 PERCENT OF THE VOLUME OF THE LARGEST FUEL STORAGE CONTAINER;
  - FOR FUEL CONTAINERS, SECONDARY CONTAINMENT MAY COMPRISE CONTAINMENT PALLETS;
  - THE AREA WHERE FUEL IS TRANSFERRED SHALL BE A FLAT, IMPERVIOUS AREA THAT:
    - IS ADJACENT TO THE FUEL CONTAINER(S); AND
    - EXTENDS BEYOND THE FULL REACH, OR LENGTH, OF THE FUEL HOSE; AND
  - SECONDARY CONTAINMENT AREAS MAY BE IN THE FORM OF A BASIN THAT IS:
    - SLOPED DOWN TO A CENTRAL LOW POINT OR BERMED ALONG THE PERIMETER;
    - LINED WITH A CONTINUOUS SHEET OF 20 MIL OR THICKER POLYMER MATERIAL OR APPROPRIATE GEOMEMBRANE LINER; AND
    - BACKFILLED WITH AT LEAST 6 INCHES OF SAND



**TAX MAP 161 LOT 41**

**DETAIL SHEET 1**

**8 INDUSTRIAL DR SITE PLAN AMENDMENT**

LOCATED AT:

**8 INDUSTRIAL DRIVE**  
**HUDSON, NEW HAMPSHIRE**

PREPARED FOR/OWNER:  
 MDP REALTY ASSOCIATES, LLC  
 9 OLD DERRY ROAD  
 HUDSON, STATE

SCALE: 1" = 20'	MAY 22, 2023	SHEET 5 OF 5
DESIGN: KAW	DRAWN: KAW	CHECKED: RJB
FB: ###	PC: ###	503-14

**Bedford Design Consultants Inc.**  
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OWNER'S SIGNATURE \_\_\_\_\_ DATE 7/1/23

NAME: MARCO PLANTE  
 MDP REALTY ASSOCIATES, LLC  
 9 OLD DERRY ROAD  
 HUDSON, NH

APPROVED BY THE HUDSON, NH PLANNING BOARD

DATE OF MEETING: \_\_\_\_\_ DATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL ORAINED HEREIN EXPIRES ONE YEAR FROM THE DATE OF APPROVAL.

SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.

DATE	DESCRIPTION	BY	REV.