

**NOTICE OF PUBLIC HEARING  
SUDBURY CONSERVATION COMMISSION**

The Sudbury Conservation Commission will hold a public hearing to review the Notice of Intent filing for a proposed workshop building, with associated grading and stormwater management facilities within the 100-foot Buffer Zone, pursuant to the state Act and local Bylaw, at 46 Union Ave., Sudbury MA. Michael Precourt, applicant. The hearing will be held on Mon., March 22, 2021 at 6:45 pm, via Zoom. Please see the Conservation Commission web page for further information.

<https://sudbury.ma.us/conservationcommission/meeting/conservation-commission-meeting-monday-march-22-2021/>

SUDBURY CONSERVATION COMMISSION  
March 8, 2021

# WETLANDS NOTICE OF INTENT

for

## PROPOSED WORKSHOP BUILDING

Precourt Stone  
46 Union Avenue  
Sudbury, MA 01776

**Prepared for:**

Charles J. Precourt & Son, Inc.  
46 Union Avenue  
Sudbury, MA 01776

**Prepared by:**

DGT Associates – Project Civil Engineer  
1071 Worcester Road  
Framingham, MA 01701  
508-879-0030

March 3, 2021



**Massachusetts Department of Environmental Protection**  
Bureau of Resource Protection - Wetlands

**WPA Form 3 – Notice of Intent**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Sudbury

City/Town

**Important:**

When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note:  
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

**A. General Information**

1. Project Location (**Note:** electronic filers will click on button to locate project site):

<u>46 Union Avenue</u>	<u>Sudbury, MA</u>	<u>01776</u>
a. Street Address	b. City/Town	c. Zip Code
Latitude and Longitude:	<u>46.363661</u>	<u>71.420651</u>
	d. Latitude	e. Longitude
<u>K08</u>	<u>0043 and 0041</u>	
f. Assessors Map/Plat Number	g. Parcel /Lot Number	

2. Applicant:

<u>Michael</u>	<u>Precourt</u>	
a. First Name	b. Last Name	
<u>Charles J. Precourt &amp; Son, Inc</u>		
c. Organization		
<u>46 Union Avenue</u>		
d. Street Address		
<u>Sudbury</u>	<u>MA</u>	<u>01776</u>
e. City/Town	f. State	g. Zip Code
<u>978-443-6717</u>	<u>mike@precourtstone.com</u>	
h. Phone Number	i. Fax Number	j. Email Address

3. Property owner (required if different from applicant):  Check if more than one owner

<u>Michael</u>	<u>Precourt (Trustee)</u>	
a. First Name	b. Last Name	
<u>Union Avenue Realty, LLC</u>		
c. Organization		
<u>46 Union Avenue</u>		
d. Street Address		
<u>Sudbury</u>	<u>MA</u>	<u>01776</u>
e. City/Town	f. State	g. Zip Code
<u>978-443-6717</u>	<u>mike@precourtstone.com</u>	
h. Phone Number	i. Fax Number	j. Email address

4. Representative (if any):

<u>Fredric</u>	<u>King</u>	
a. First Name	b. Last Name	
<u>DGT Associates, Inc.</u>		
c. Company		
<u>1071 Worcester Road</u>		
d. Street Address		
<u>Framingham</u>	<u>MA</u>	<u>01701</u>
e.	f. State	g. Zip Code
<u>508-879-0030</u>	<u>508-879-1797</u>	<u>fking@dgtassociates.com</u>
h. Phone Number	i. Fax Number	j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

<u>\$1,050.00</u>	<u>\$512.50</u>	<u>\$537.50</u>
a. Total Fee Paid	b. State Fee Paid	c. City/Town Fee Paid



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Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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## A. General Information (continued)

6. General Project Description:

Construction of a proposed workshop building with associated grading and stormwater management.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

- 1.  Single Family Home
- 2.  Residential Subdivision
- 3.  Commercial/Industrial
- 4.  Dock/Pier
- 5.  Utilities
- 6.  Coastal engineering Structure
- 7.  Agriculture (e.g., cranberries, forestry)
- 8.  Transportation
- 9.  Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

- 1.  Yes  No If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

<u>Middlesex South</u>	
a. County	b. Certificate # (if registered land)
<u>44569</u>	<u>168</u>
c. Book	d. Page Number

## B. Buffer Zone & Resource Area Impacts (temporary & permanent)

- 1.  Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
- 2.  Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.





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**B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)**

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. <input type="checkbox"/> Bank	1. linear feet	2. linear feet
b. <input type="checkbox"/> Bordering Vegetated Wetland	1. square feet	2. square feet
c. <input type="checkbox"/> Land Under Waterbodies and Waterways	1. square feet	2. square feet
	3. cubic yards dredged	

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. <input type="checkbox"/> Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. <input type="checkbox"/> Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. <input type="checkbox"/> Riverfront Area	1. Name of Waterway (if available) - <b>specify coastal or inland</b>	

2. Width of Riverfront Area (check one):

- 25 ft. - Designated Densely Developed Areas only
- 100 ft. - New agricultural projects only
- 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: \_\_\_\_\_ square feet

4. Proposed alteration of the Riverfront Area:

_____ a. total square feet	_____ b. square feet within 100 ft.	_____ c. square feet between 100 ft. and 200 ft.
----------------------------	-------------------------------------	--

5. Has an alternatives analysis been done and is it attached to this NOI?  Yes  No

6. Was the lot where the activity is proposed created prior to August 1, 1996?  Yes  No

3.  Coastal Resource Areas: (See 310 CMR 10.25-10.35)

**Note:** for coastal riverfront areas, please complete **Section B.2.f.** above.



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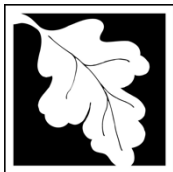
City/Town

**B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)**

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users:  
 Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. <input type="checkbox"/> Land Under the Ocean	_____	
	1. square feet	
	_____	
	2. cubic yards dredged	
c. <input type="checkbox"/> Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. <input type="checkbox"/> Coastal Beaches	_____	_____
	1. square feet	2. cubic yards beach nourishment
e. <input type="checkbox"/> Coastal Dunes	_____	_____
	1. square feet	2. cubic yards dune nourishment
	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
f. <input type="checkbox"/> Coastal Banks	_____	
	1. linear feet	
g. <input type="checkbox"/> Rocky Intertidal Shores	_____	
	1. square feet	
h. <input type="checkbox"/> Salt Marshes	_____	_____
	1. square feet	2. sq ft restoration, rehab., creation
i. <input type="checkbox"/> Land Under Salt Ponds	_____	
	1. square feet	
	_____	
	2. cubic yards dredged	
j. <input type="checkbox"/> Land Containing Shellfish	_____	
	1. square feet	
k. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above	
	_____	
	1. cubic yards dredged	
l. <input type="checkbox"/> Land Subject to Coastal Storm Flowage	_____	
	1. square feet	
4. <input type="checkbox"/> Restoration/Enhancement	If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.	
	_____	_____
	a. square feet of BVW	b. square feet of Salt Marsh
5. <input type="checkbox"/> Project Involves Stream Crossings		
	_____	_____
	a. number of new stream crossings	b. number of replacement stream crossings



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**C. Other Applicable Standards and Requirements**

- This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

**Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review**

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to [http://maps.massgis.state.ma.us/PRI\\_EST\\_HAB/viewer.htm](http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm).

- a.  Yes  No **If yes, include proof of mailing or hand delivery of NOI to:**

**Natural Heritage and Endangered Species Program**  
**Division of Fisheries and Wildlife**  
**1 Rabbit Hill Road**  
**Westborough, MA 01581**

Current Mass. GIS

b. Date of map

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

- c. Submit Supplemental Information for Endangered Species Review\*

1.  Percentage/acreage of property to be altered:

(a) within wetland Resource Area \_\_\_\_\_  
percentage/acreage

(b) outside Resource Area \_\_\_\_\_  
percentage/acreage

2.  Assessor's Map or right-of-way plan of site

2.  Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work \*\*

- (a)  Project description (including description of impacts outside of wetland resource area & buffer zone)
- (b)  Photographs representative of the site

\* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see <https://www.mass.gov/endangered-species-act-mesa-regulatory-review>).

Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

\*\* MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.



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**C. Other Applicable Standards and Requirements (cont'd)**

(c)  MESA filing fee (fee information available at <https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review>).  
 Make check payable to "Commonwealth of Massachusetts - NHESP" and **mail to NHESP** at above address

*Projects altering 10 or more acres of land, also submit:*

- (d)  Vegetation cover type map of site
- (e)  Project plans showing Priority & Estimated Habitat boundaries
- (f) OR Check One of the Following

- 1.  Project is exempt from MESA review.  
 Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, <https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat>; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)
- 2.  Separate MESA review ongoing. \_\_\_\_\_ a. NHESP Tracking # \_\_\_\_\_ b. Date submitted to NHESP
- 3.  Separate MESA review completed.  
 Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?  
 a.  Not applicable – project is in inland resource area only      b.  Yes     No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:      North Shore - Hull to New Hampshire border:

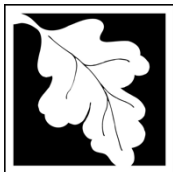
Division of Marine Fisheries -  
 Southeast Marine Fisheries Station  
 Attn: Environmental Reviewer  
 836 South Rodney French Blvd.  
 New Bedford, MA 02744  
 Email: [dmf.envreview-south@mass.gov](mailto:dmf.envreview-south@mass.gov)

Division of Marine Fisheries -  
 North Shore Office  
 Attn: Environmental Reviewer  
 30 Emerson Avenue  
 Gloucester, MA 01930  
 Email: [dmf.envreview-north@mass.gov](mailto:dmf.envreview-north@mass.gov)

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

c.  Is this an aquaculture project?      d.  Yes     No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).



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**C. Other Applicable Standards and Requirements (cont'd)**

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?
- a.  Yes  No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.
- b. ACEC
5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?
- a.  Yes  No
6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?
- a.  Yes  No
7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?
- a.  Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:
1.  Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
  2.  A portion of the site constitutes redevelopment
  3.  Proprietary BMPs are included in the Stormwater Management System.
- b.  No. Check why the project is exempt:
1.  Single-family house
  2.  Emergency road repair
  3.  Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

**D. Additional Information**

- This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

**Online Users:** Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1.  USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)
2.  Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

**Online Users:**  
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.



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## D. Additional Information (cont'd)

- 3.  Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.
- 4.  List the titles and dates for all plans and other materials submitted with this NOI.
 

<u>Site Plan - Proposed Workshop Building, 46 Union Avenue, Sudbury, MA (4 sheets)</u>	
a. Plan Title	
<u>DGT Associates, Inc.</u>	<u>Fredric King, P.E.</u>
b. Prepared By	c. Signed and Stamped by
<u>January 20, 2021</u>	<u>Various scales.</u>
d. Final Revision Date	e. Scale
<u>See Attached List of Documents</u>	
f. Additional Plan or Document Title	g. Date
- 5.  If there is more than one property owner, please attach a list of these property owners not listed on this form.
- 6.  Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.
- 7.  Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.
- 8.  Attach NOI Wetland Fee Transmittal Form
- 9.  Attach Stormwater Report, if needed.

## E. Fees

- 1.  Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

<u>60269</u>	<u>2/24/2021</u>
2. Municipal Check Number	3. Check date
<u>60270</u>	<u>2/24/2021</u>
4. State Check Number	5. Check date
<u>Michael</u>	<u>Precourt</u>
6. Payor name on check: First Name	7. Payor name on check: Last Name



4. State Check Number

5. Check date

6. Payor name on check: First Name

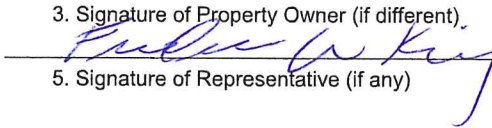
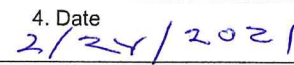
7. Payor name on check: Last Name

### F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

	
1. Signature of Applicant	2. Date

	
3. Signature of Property Owner (if different)	4. Date
5. Signature of Representative (if any)	6. Date

**For Conservation Commission:**

Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

**For MassDEP:**

One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

**Other:**

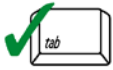
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.



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**NOI Wetland Fee Transmittal Form**  
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



**A. Applicant Information**

1. Location of Project:

<u>46 Union Avenue</u>	<u>Sudbury</u>
a. Street Address	b. City/Town
<u>60270</u>	<u>\$512.50</u>
c. Check number	d. Fee amount

2. Applicant Mailing Address:

<u>Michael</u>	<u>Precourt</u>	
a. First Name	b. Last Name	
<u>Charles J. Precourt &amp; Son, Inc.</u>		
c. Organization		
<u>46 Union Avenue</u>		
d. Mailing Address		
<u>Sudbury</u>	<u>MA</u>	<u>01776</u>
e. City/Town	f. State	g. Zip Code
<u>978-443-6717</u>	<u>Mike@precourtstone.com</u>	
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

<u>Michael</u>	<u>Precourt</u>	
a. First Name	b. Last Name	
<u>Union Avenue Realty, LLC</u>		
c. Organization		
<u>46 Union Avenue</u>		
d. Mailing Address		
<u>Sudbury</u>	<u>MA</u>	<u>01776</u>
e. City/Town	f. State	g. Zip Code
<u>978-443-6717</u>	<u>Mike@precourtstone.com</u>	
h. Phone Number	i. Fax Number	j. Email Address

**B. Fees**

Fee should be calculated using the following process & worksheet. **Please see Instructions before filling out worksheet.**

**Step 1/Type of Activity:** Describe each type of activity that will occur in wetland resource area and buffer zone.

**Step 2/Number of Activities:** Identify the number of each type of activity.

**Step 3/Individual Activity Fee:** Identify each activity fee from the six project categories listed in the instructions.

**Step 4/Subtotal Activity Fee:** Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

**Step 5/Total Project Fee:** Determine the total project fee by adding the subtotal amounts from Step 4.

**Step 6/Fee Payments:** To calculate the state share of the fee, divide the total fee in half and subtract \$12.50. To calculate the city/town share of the fee, divide the total fee in half and add \$12.50.

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).





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**B. Fees** (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 3.b. Building and Site	1	\$1,050	\$1,050
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

**Step 5/Total Project Fee:** \_\_\_\_\_

**Step 6/Fee Payments:**

Total Project Fee:	<u>\$1,050</u>
	a. Total Fee from Step 5
State share of filing Fee:	<u>\$ 512.50</u>
	b. 1/2 Total Fee <b>less</b> \$12.50
City/Town share of filing Fee:	<u>\$ 537.50</u>
	c. 1/2 Total Fee <b>plus</b> \$12.50

**C. Submittal Requirements**

- a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection  
 Box 4062  
 Boston, MA 02211

- b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

**To MassDEP Regional Office** (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

## **LIST OF INCLUDED DOCUMENTS**

Notice of Intent Form (WPA Form 3) Signed

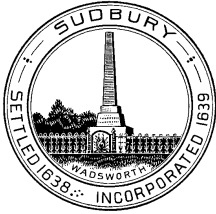
Sudbury Notice of Intent Checklist (next page)

### **ATTACHMENTS**

1. Project Narrative
  - Includes: USGS Locus Map
  - NHESP Map
  - FEMA Firmette Map
  - FEMA Flood Profile
  - Site Photos
  
2. Copies of Filing Fee Checks and Sudbury Fee Information.
  
3. Copy of Draft Abutter Notice and Lists of Abutters
  
4. Stormwater Report (Under Separate Cover):
  - “Stormwater Management Design and Runoff Calculations Report for Proposed Workshop Building...” Dated November 9, 2020 as revised February 24, 2021, by DGT Associates.
  
  - Completed DEP Stormwater Management Checklist.
  
  - See the document for complete list of included information
  
5. Additional Relevant Documents -
  - Includes - Copy of final Peer Review Report by Horsley Witten Group dated January 21, 2021.
  
  - Copy of Major Stormwater Permit issued by the Sudbury Planning Board (SWMP Permit #21-01) Dated February 10, 2021.
  
  - Response Letter to the Sudbury Planning Board Dated January 20, 2021

### **SITE PLANS:**

“Site Plan, Proposed Workshop Building, 46 Union Avenue (Rear), Sudbury, MA”  
Dated November 9, 2020, as revised January 20, 2021, by DGT Associates  
(6 Sheets).



# Town of Sudbury

## Conservation Commission

Conservation Department  
275 Old Lancaster Rd.  
Sudbury MA 01776  
978-440-5472  
ConCom@sudbury.ma.us

### **Notice of Intent Submission Checklist**

A complete application package (double-sided and collated) must be submitted by close of business a minimum of two weeks in advance of a scheduled meeting. The Commission generally meets every other Monday. A list of meetings and submission deadlines can be found on the Commission's webpage (<https://sudbury.ma.us/conservationcommission/>). Incomplete packages may be returned and/or cause delay of your project.

Supplemental information for continued hearings must be submitted by 3:30 pm at least 4 business days in advanced of the next scheduled Commission meeting.

### **REQUIRED DOCUMENTATION:**

- ✓ 1. One original signature and one copy of completed Notice of Intent Application Form (WPA Form 3) signed by the Applicant and Property Owner.
- ✓ 2. One completed NOI Wetland Fee Transmittal Form Pages 1 & 2.
- ✓ 3. One copy of the following maps, all with the site clearly identified. (One can generate these maps be using the Town GIS at [www.mapsonline.net/sudburyma/](http://www.mapsonline.net/sudburyma/) or by using Oliver through MassGIS at: [http://maps.massgis.state.ma.us/map\\_ol/oliver.php](http://maps.massgis.state.ma.us/map_ol/oliver.php).)
  - ✓ - USGS
  - ✓ - FEMA
  - ✓ - NHESP
- ✓ 4. Two sets of full-sized stamped plans, including graphic scale (not more than 1 inch = 20 feet) and title block that shows proposed structures or modifications to existing structures, paving, drainage, or water control structures, and erosion controls. Be sure to include resource delineation, riverfront and/or buffer zones, and existing and proposed topography. GIS maps may be used for small projects at the discretion of the Conservation Commission.
  - Plan revisions shall be clearly noted and dated on the plans.
  - Colored plan shall be provided that clearly depict existing and proposed conditions with the following color scheme:

Color plans not provided
--------------------------

    - Existing conditions = Black
    - Proposed Construction = Red
    - Wetland boundaries = Blue
    - Buffer Zone = Yellow
    - Riverfront = Purple
    - Proposed Tree line = Green
    - Erosion Controls = Orange
- ✓ 5. One copy of the Abutter's list, Abutter Notification form, and proof of mailing. Notification can be either by hand or via certificate of mailing or certified mail. This certificate, return receipt green cards, copies of green cards, or proof of receipt of hand delivered mail, must be submitted prior to the hearing (scanned copies are OK).
- ✓ 6. Two copies of a narrative which should include the following information:

- ✓ - Description of work within regulated resource areas, the buffer zones, and any impacts to these areas.
- ✓ - Description of the project's compliance with the WPA performance standards. If work is proposed in the Riverfront Area, you must provide an alternatives analysis.
- ✓ - Description of the project's compliance with the Sudbury Administration Wetlands Bylaw.
  - ✓ - If work is proposed within Adjacent Upland Resource Area, you must provide an alternatives analysis.
  - ✓ - If work is located adjacent to a stream, you must provide the required evidence in accordance with Section 2.3 of the Sudbury Administration Wetlands Bylaw Regulations to determine whether the stream is intermittent or perennial.
- ✓ 7. Proposed mitigation for unavoidable project impacts to regulated areas. Provide the following information:
  - ✓ - Square footage of work proposed by type (i.e. disturbance, structures, impervious surface, etc.) within each regulated area, including the 100-foot Buffer Zone, 100-foot Adjacent Upland Resource Area, and 200-foot Riverfront Area (inner and outer riparian zones).
  - Square footage of proposed mitigation by type (i.e. native plantings, invasive species removal, impervious surface reduction, etc.) within each regulated area.
- ✓ 8. Description of wetland resource areas, date delineated, and name of wetland scientist that conducted the delineation
- ✓ 9. Photos of the site.
- ✓ 10. Applicable Filing Fees under the Wetlands Protection Act and the Sudbury Administrative Wetlands Bylaw Checks to the Town of Sudbury. See attached.
 

\* Please note, a legal notice fee will be billed directly to the Applicant. The Applicant is responsible for the cost of the legal notice in accordance with the state Wetlands Protection Act [310 CMR 10.05(5)(a)] and Sudbury Administration Wetlands Bylaw.
- ✓ 11. If applicable, one completed, signed Stormwater Management Form, Appendix C, if applicable. This does not apply to projects on single-family lots.
- ✓ 12. If applicable, one signed copy of any Operation and Maintenance Plans associated with elements located or that discharge to resource areas.
- ✓ 13. All documentation also must be provided in electronic format, including any revised information.

#### DEP MAILING

- ✓ 1. Send check for state fee made out to the Commonwealth of Massachusetts and copy of NOI Wetland Fee Transmittal Form Pages 1 & 2 to: DEP, Box 4062, Boston, MA 02211.
- ✓ 2. Send one complete copy of the Notice of Intent application, including copies of all required maps, project plans, Wetland Fee Transmittal Form, list of abutters, Notification to Abutters Form, and a copy of the check for state and town fee payments to:  
DEP-NERO, Wetlands Division 205 Lowell Street Wilmington, MA 01887.

# **ATTACHMENT 1**

## **NOTICE OF INTENT Narrative and Summary**

for

**Proposed Workshop Building  
Precourt Stone**  
46 Union Avenue and Station Road  
Sudbury, MA 01776

# **ATTACHMENT 1**

## **PRECOURT STONESHOP PROJECT**

### **NOTICE OF INTENT**

### **PROJECT NARRATIVE**

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The Notice of Intent is for a project to construct a workshop building with associated grading and stormwater management facilities within an existing materials storage area at the Charles J. Precourt and Son facility at 46 Union Avenue in Sudbury Massachusetts. This business is a supplier and manufacturer of architectural stone products for building and landscape purposes. The new workshop is to provide enclosed /covered working area for the current staff and additional indoor space for increased automated production capabilities for the existing stone cutting, carving and stone product manufacturing business.

Some of the site work proposed for this project is within the 100 foot Buffer Zone under the Mass Wetlands Protection Act and the 100 foot “Adjacent Upland Resource Area” under the Sudbury Wetlands Administration Bylaw (Article XXII) and associated Regulations. This Notice of Intent is being filed as required under those laws and regulations.

This narrative and the attached plans and documents provide detailed information on the existing and proposed site conditions and describes how the project conforms to the wetlands laws and regulations, stormwater regulations, and other applicable regulatory requirements for the project.

#### **Existing Property Description**

The overall Precourt Stone property covers a total of 5.75 acres in three parcels. The parcel at the corner of Union Avenue and Station Road (46 Union Ave.) contains the present office, a shop building and two tented structures. The rear parcel is a materials storage yard that is 0.88 acres in area, and the adjoining easterly parcel (known as Lot 2) is 4 acres in area and was recently being used as a new car storage lot for nearby car dealerships. The latter parcel has 414 feet of frontage on Station Road and the easterly property line of that parcel is the center line of Hop Brook (a perennial stream). 2.75 acres of that parcel along Hop Brook is in a Conservation Restriction. The boundary between the Conservation Restriction and new car storage yard is marked by a concrete block barrier. The new car storage area and the materials storage yard on the rear lot have compacted gravel surfaces.

*Note re Conservation Restriction Status: The CR has been fully executed and has been delivered to the Middlesex South Registry District of the Land Court for registration. The registration of the plan is presently going through the multi-tiered approval process which is delayed due to COVID-19 related staggered staffing and the low priority of this particular type of registration. The owner is awaiting the registration confirmation or feedback on the submittal. In the meantime, the owner has been managing the site in conformance with the terms of the CR. No portion of the current project is within the CR boundary.*

The portion of the property for the proposed project is the 0.88 acre “Rear Parcel” that is a materials storage yard. The area is relatively flat, gently sloping from west to east. The northerly corner of the parcel contains a series of storage bins constructed of large concrete block dividers and concrete paved floors. A concrete block divider in the eastern portion of the site separates the storage yard from the new car storage area. With the exception of some small vegetated areas in the northeast and southeast corners and paved storage bins, the ground is a compacted gravel surface that is used as material storage for stone materials and products.

Stormwater runoff from the Rear parcel presently drains to two existing drain ditches. Approximately half of the area drains to a drain ditch off the northeast corner that flows through the Lot 2 parcel to Hop Brook. That ditch also receives drainage from the Town Drain system in Union Avenue and abutting properties.

The south half of the Rear Lot drains to the ditch off the southeast corner of the Lot. That ditch flows southerly through abutting property to a Town culvert under Station Road. The culvert discharges to a Town drain ditch on the south side of the Road that flows easterly to Hop Brook. These ditches and associated wetlands are classified as Wetland Resource Area under the Mass. Wetland Protection Act and Sudbury Wetlands Administration Bylaw.

### **Wetland Resource Areas**

There are several protected wetland resource areas (WRAs) at this site and these are shown on the included Site Plans. The boundaries of the WRAs are from the plan entitled “Conservation Restriction Plan of Land in Sudbury, Massachusetts” prepared for Charles J. Precourt and Son, Inc. dated June 10, 2019. These delineations have been reviewed and approved by the Conservation Commission over the years at this site and the process for the Conservation Restriction is still going through the registration process.

The WRAs for this current project include the following:

#### Banks (of Streams)

The two drain ditches located in the northeast and southeast corners of the “Rear Lot” are both man-made but are classified as streams and have been known to have intermittent flow. The northeasterly ditch is connected by Town drain pipes to upstream wetlands to the west of Union Avenue. The southeasterly ditch does have narrow areas of Bordering Vegetated Wetland along it in some areas and is also known to be intermittent. So to be conservative, this has been considered in past reviews and planning to be a protected intermittent stream at this site.

The resource areas in this case that are closest to the proposed project are “Banks” and the Buffer Zones shown on the plan are drawn from that boundary. Under the By-law, the upper boundary of the Banks are defined as “*the first observable break in the slope or the mean annual flood level, whichever is higher.*” In the case of these particular sections of the bank, the banks are steep and higher than the mean annual high water level, so the bank delineation is from the top of the banks.

### Riverfront

Hop Brook is a perennial stream that forms the eastern boundary of the property. The Mean Annual High Water Line (MAHW) was first delineated by Fred King (this writer, then of Schofield Brothers of New England, Inc.) in 1998 and that delineation line has been used for this site since that time.

The limit of the 200 foot Riverfront does not extend into the eastern portion of the “rear lot” and is shown on the plans. No alteration of the Riverfront Area is proposed for this current project.

### Bordering Vegetated Wetlands (BVW)

There are vegetated wetlands in the northern and eastern portions of the site that border on Hop Brook and the streams mentioned above. However, these are not near the site of the proposed work.

### Bordering Land Subject to Flooding (BLSF)

Portions of the site are within the current FEMA Flood Zone AE of Hop Brook. This is classified as BLSF (100 year flood plain). The elevation of the 100 year flood is shown on the FEMA Flood Profiles as being elevation 133.6 (NAVD 88). Small portions of the “Rear Parcel” near the proposed project are within this elevation and shown on the Site Plans. No work or alteration is proposed in these areas.

Note that BLSF is also the Flood Plain overlay district under the Sudbury Zoning Bylaws.

### Other Protected Water Resources (WRPD)

The entire 5.75 acre site is within the Sudbury Water Resources Protection District of the Zoning Bylaws. The majority of the property is within the Zone 2 which is the same as a Zone II Aquifer Protection Area for the Sudbury Town Well located approximately 2,000 feet to the south from the site. A small area along Hop Brook is within the Zone 3.

This has important implications for use and stormwater management. Note that this project has recently received approvals from the Sudbury Planning Board under the WRPD Bylaw for this project.

### **Soils and Groundwater**

The NRCS classifies the soils at the site as being in the Udorthents-Urban Land Complex soil series. These soils are generally areas altered by grading, filling and development so the surface soils are likely not original. The underlying soils tend to be well drained to excessively drained sandy loams or loamy sand. The hydrologic soil group (HSG) varies depending on the surface conditions. To be conservative, we are using HSG-C.

On-site soil testing was conducted by DGT Associates for this project on June 18, 2020. The testing consisted of 3 deep hole test pits to determine soil consistency, texture and the Estimated Seasonal High Groundwater depth (ESHGW). The testing revealed a relatively shallow ESHGW ranging from 43 to 56 inches below the surface. Soils are a gravelly/stony fill over the natural



sand and loamy sand subsoils. In some areas there is a buried sandy loam layer that was the former topsoil, now below the fill. The testing showed that the soils are relatively consistent over the site.

The complete soils report with NRCS information and test logs is contained in the Stormwater Report (Attachment 4 of this NOI Submittal). The Site Plans show the surveyed test hole locations, surface and groundwater elevations.

### **Project Description**

The project is the construction of a new workshop building for stone cutting and product preparation that will be located in the middle of the compacted gravel storage yard. The building will be a 75 foot long by 35 foot steel barn with a 14 ft. x 18 ft. attached shed. This covers a total area 2,877 sq. ft.

The building is to be located outside of the 100 foot Buffer Zone and the only work inside the Buffer Zone will be some grading to raise the grade slightly. The total area of alteration for the project including the building and grading will be 21,300 sq. ft. The existing area is compacted gravel and will remain as compacted gravel and will continue to be used as a material storage area.

The total area of alteration within the Buffer Zone will be 6,740 sq. ft. The minimum distance from the limit of Work to the northeast drain ditch will be 26 feet and to the southeast drain ditch will be 43 feet. No alteration of the BLSF is proposed. Erosion and Sediment controls will be installed and maintained throughout construction to protect. No alteration of the vegetated areas is proposed. The storage yard around the building will remain as it is today and will continue to be used for material storage.

The reason for the proposed grade change is as follows:

To conform with the requirements of the Water Resource Protection District and the Decision issued by the Sudbury Planning Board issued on February 10, 2021 for this project, the portion of the site around the proposed building will be raised to increase the portion of the site that will be 5 feet or more above the estimated seasonal high groundwater table to the extent practicable. The grades will be raised approximately 1 foot at the ends of the proposed building and will gradually slope down to the existing grades. The average fill depth will be 5.5 inches over existing grade. No fill will be placed within the Flood Plain (BLSF) and the alterations will not change the runoff characteristics of the site. See Attachment 5 – Letter to Sudbury Planning Board dated January 20, 2021 for more detailed information.

Since the area is already developed and the proposed grading changes will result in no discernible changes relative to the values and functions of the Buffer Zone (Adjacent Upland Resource Area) while providing positive stormwater and groundwater benefits, this project should meet the Performance Standards under the Sudbury Wetlands Administration Bylaw.

### Stormwater Management:

The project will not increase the area of impervious surfaces on the site as defined in the Sudbury Zoning Bylaw and Stormwater Management Bylaw as compacted gravel surfaces are defined as impervious. The runoff Curve Number (CN) of the compacted gravel surface is 96 and the paved area and roofs have a CN of 98. So there would be a slight increase in runoff without some stormwater management to mitigate the increase. Mitigation is proposed to not increase peak flows and volumes and meet the recharge requirements for the proposed building and to improve water quality as follows:

The Rear Lot site today is developed and entirely used as an outdoor Material Storage Area for stone and stone products. There will be no increase in impervious surface or developed area. As such the project is classified as a “Redevelopment Project” under the Stormwater Management Regulations, the Sudbury Stormwater Management Bylaw and the Water Resources Protection District.

The following Stormwater Best Management Practice is proposed in order to mitigate small increase in runoff and to provide improvement over existing conditions with regard to recharge to the Aquifer Zone II (WRPD) and improve water quality:

- The roof runoff from the building will be directed to stone drip trenches at the perimeter of the building. These are sized to capture and infiltrate at least one full inch of runoff from the roof area to meet the recharge requirements for the building. Once the drip trenches are full during a storm event, the overflow is to the existing gravel surface. Roof runoff is classified as clean, so no pretreatment is necessary. This system provides an increase in the volume of groundwater recharge of clean runoff to the aquifer, while decreasing both surface runoff volumes and peak rates to the downstream areas.
- There will be a reduction in the gravel surface and increase in roof area (with clean runoff) draining to downstream areas, resulting some improvement in runoff water quality.

Through the Planning Board review process under Site Plan Review, Sudbury Stormwater Management Bylaw and the Water Resource Protection District Bylaw, the stormwater management design and calculations were peer reviewed by the Horsley Witten Group. Their review is included in Attachment 5 and they have found that the project as designed meets the requirements of the Massachusetts and Sudbury Stormwater Management Regulation.

Complete information on how the project is designed to meet the Mass. Stormwater Management Regulations, Sudbury Stormwater Management Bylaw and the Water Resource Protection District is contained in the Stormwater Management Report (Attachment 4) and in Attachment 5.

### **Alternatives Analysis**

The site for the proposed building was selected for the following reasons:

- The site is on an area that is presently developed with impervious surface.

- It is within an area which fits with the present operations of the facility by permitting the continued use for outdoor storage and will allow 360 degree access around the building.
- There will be no intrusion into wetland areas and minimizes alteration of wetland buffer zones with no alterations of any undeveloped areas.
- It is in close proximity to the present buildings for access, utilities, and near the existing bathrooms and facilities for staff.

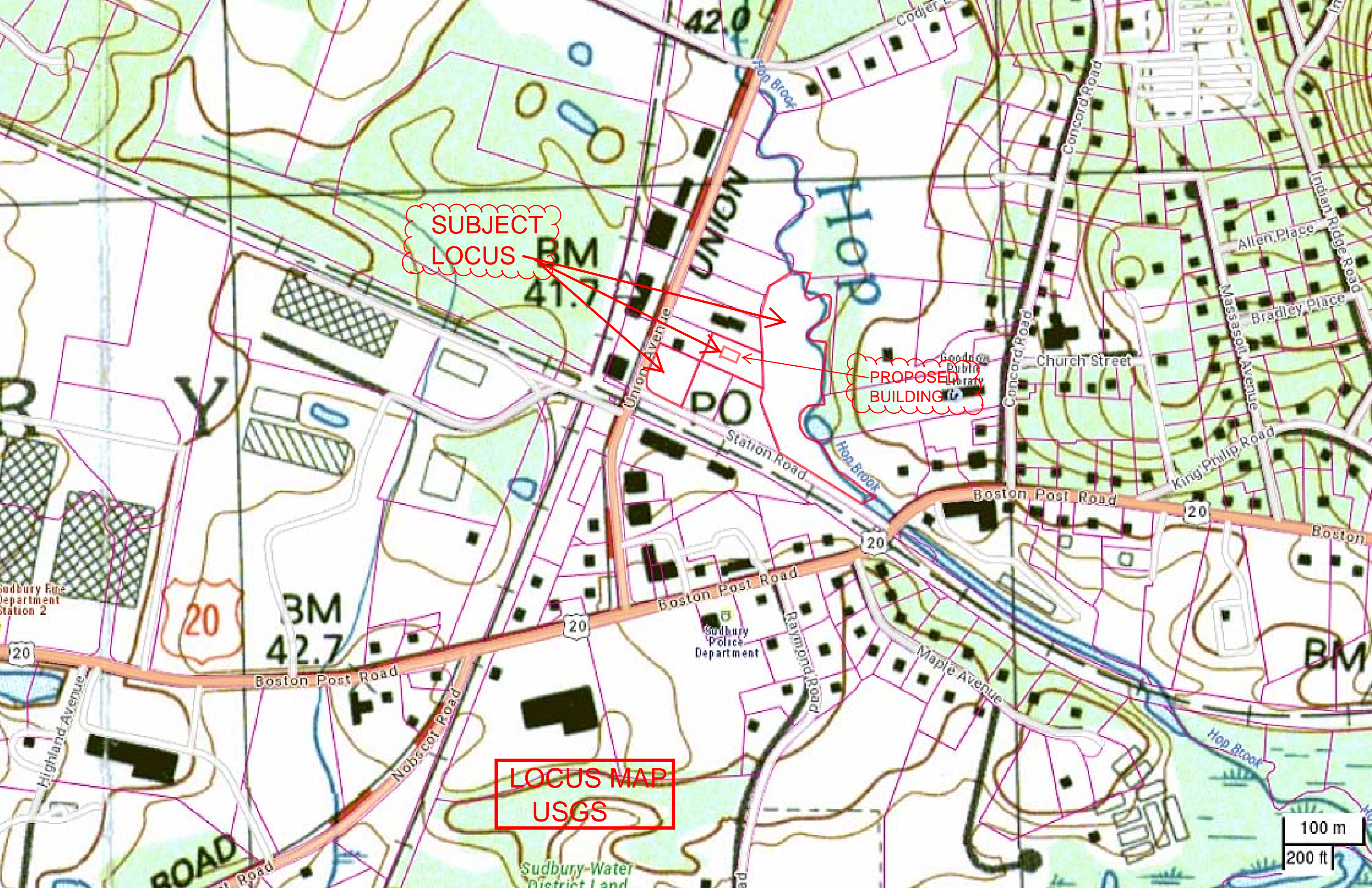
In the planning process, the owner considered putting an addition on the existing workshop building but found there was not sufficient space to facilitate the building addition without severely compromising the present uses and access in this already crowded portion of the site. So this alternative was ruled out as not feasible.

Putting the workshop on the 4 acre easterly parcel (Lot 2) would be too far from the existing buildings; would put much more work in wetland buffer zones; and would disrupt the current uses.

The present design was submitted to the Planning Board with the building outside of the Buffer Zone as presently planned and no grading or alterations within the Buffer Zones. Through the WRPD permitting process, the Planning Board required that the grades be revised to raise the elevation around the building to bring as much of the Rear Lot site as feasible into conformance with the WRPD requirement of being 5 feet above the Seasonal High Groundwater Level. So keeping all alterations completely out of the Buffer Zone was found to not be feasible as originally planned. This is discussed above in this Narrative and detailed information is included in Attachment 5 of this NOI submittal.

**Mass. Natural Heritage Endangered Species Program (NHESP)**

Attached at the end of this Narrative is a Mass. GIS Plan with the current NHESP data layers. The site is not within or near any Priority or Estimated Habitat of Endangered Species. There are also no Certified or Potential Vernal Pools identified on the property. The nearest Potential Vernal Pool is in the rear of the Public Goodnow Library property adjacent to Hop Brook. That Potential Vernal Pool is approximately 400 feet from the subject project area.



SUBJECT  
LOCUS

PROPOSED  
BUILDING

LOCUS MAP  
USGS

100 m  
200 ft



NHESP MAP  
MASS GIS

PROPOSED  
BUILDING

POTENTIAL  
VERNAL POOL

- Conservation / Recreation
  - Areas of Critical Environmental C
  - Community Preservation Act
  - Natural Heritage Data
    - BioMap2
      - NHESP Ecoregions
      - NHESP Certified Vernal Pools
      - NHESP Estimated Habitats of F
      - NHESP Natural Communities
      - NHESP Priority Habitats of Rare
      - Potential Vernal Pools

Active Data Layers

- Check all | Uncheck all
- Potential Vernal Pools
  - NHESP Certified Vernal Pools
  - NHESP Priority Habitats of Rare
  - NHESP Estimated Habitats of F
  - Tax Parcels for Query

Legend

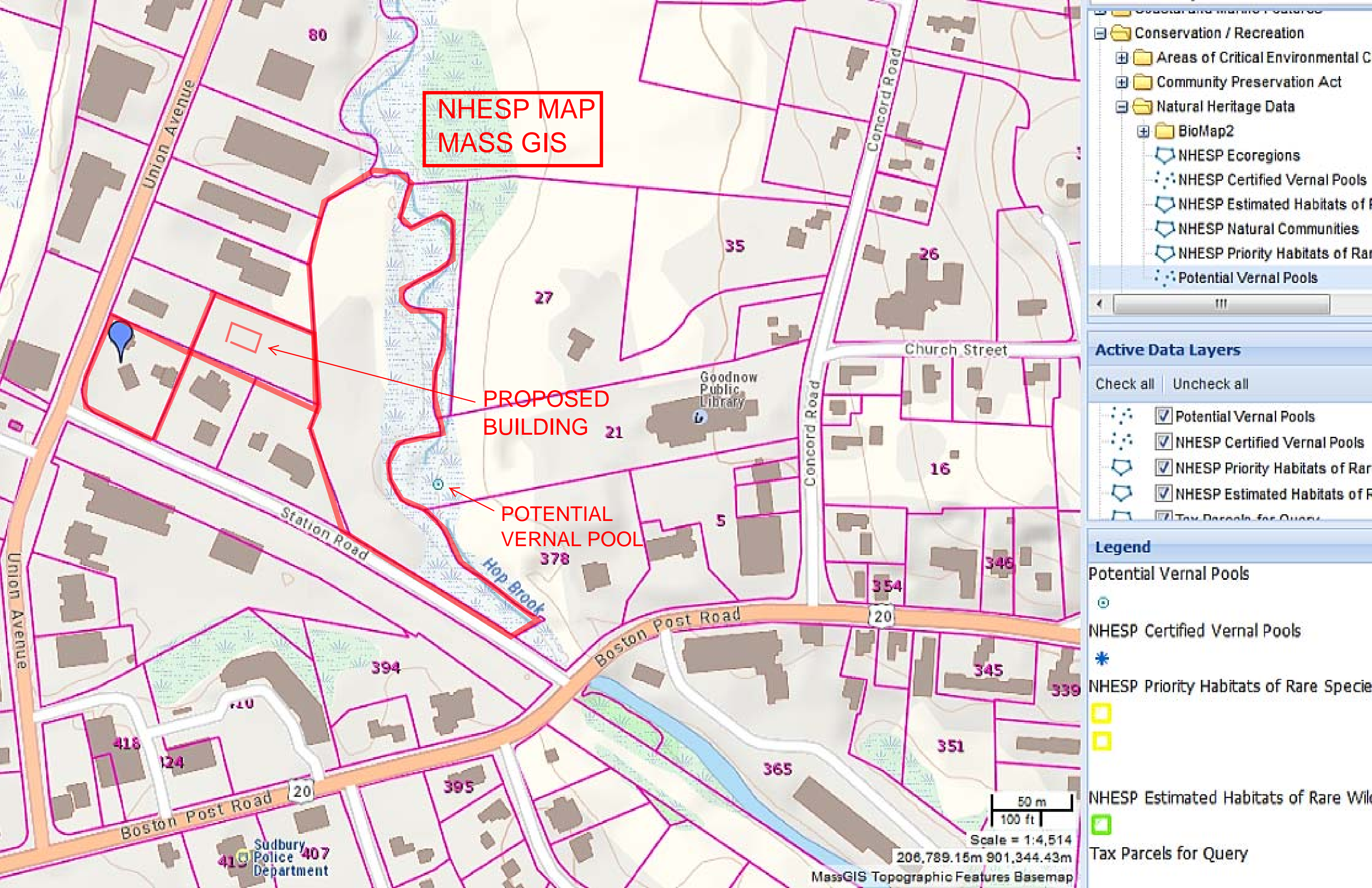
- Potential Vernal Pools
  - ⊙
- NHESP Certified Vernal Pools
  - \*
- NHESP Priority Habitats of Rare Species
  - 
  -
- NHESP Estimated Habitats of Rare Wildl
  -
- Tax Parcels for Query

50 m  
100 ft

Scale = 1:4,514

206,789.15m 901,344.43m

MassGIS Topographic Features Basemap

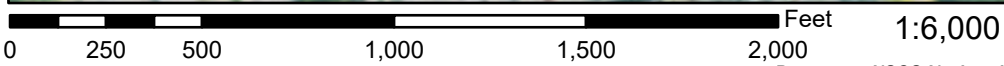
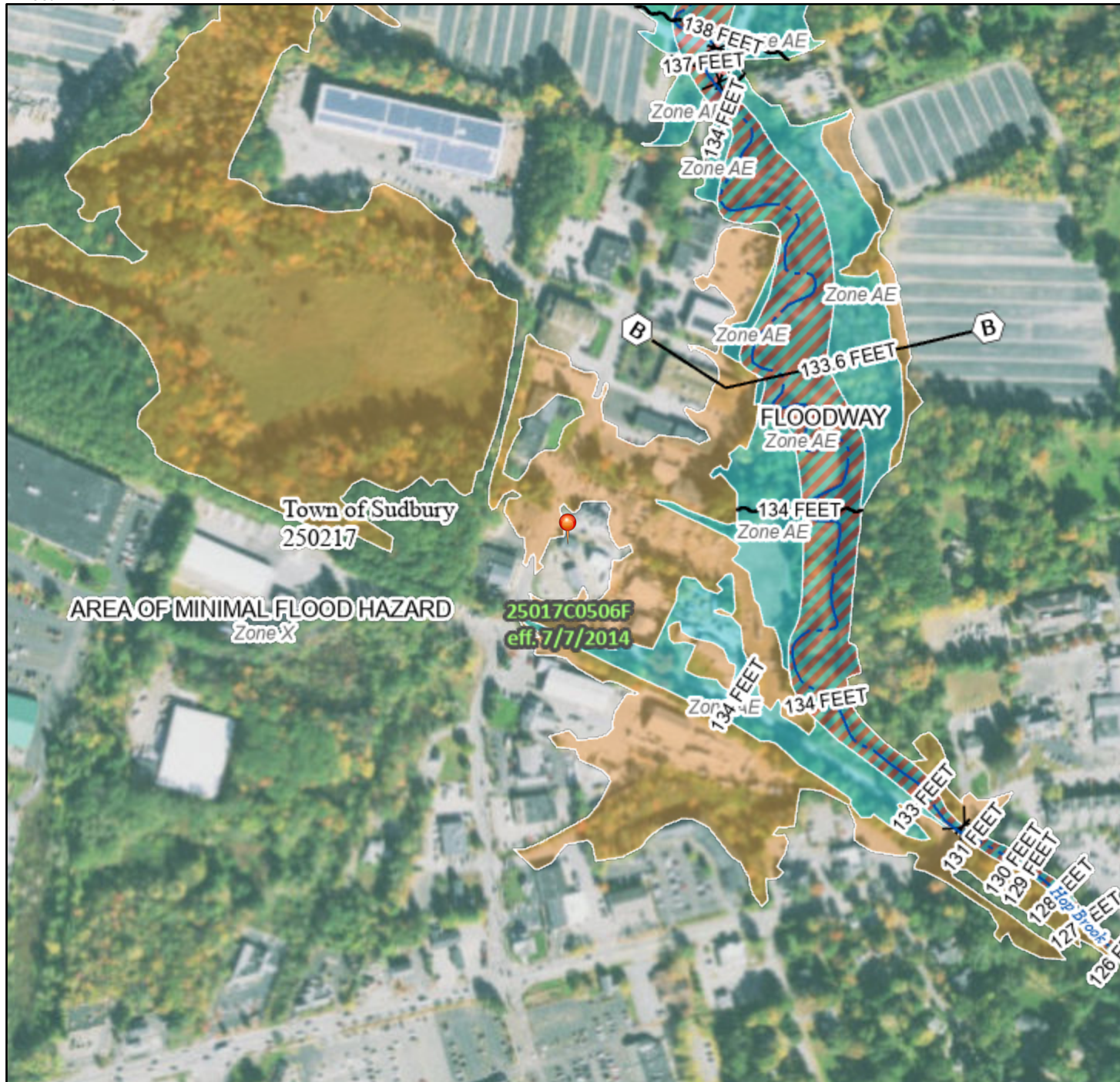




# National Flood Hazard Layer FIRMMette



71°25'36"W 42°22'3"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

71°24'58"W 42°21'36"N

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
MAP PANELS		17.5
		Coastal Transect
OTHER FEATURES		Base Flood Elevation Line (BFE)
		Limit of Study
OTHER FEATURES		Jurisdiction Boundary
		Coastal Transect Baseline
OTHER FEATURES		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

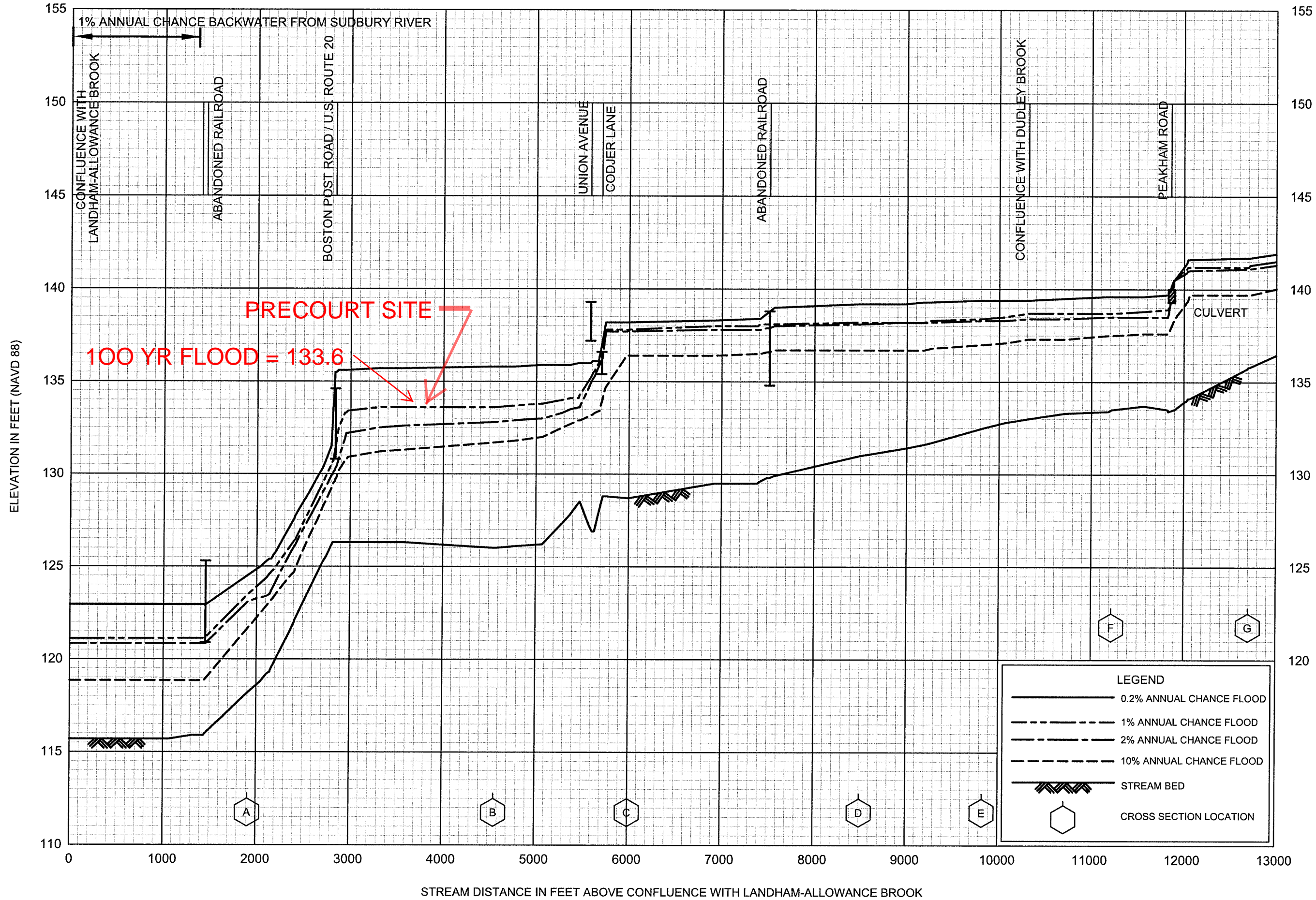
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/18/2021 at 3:54 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.





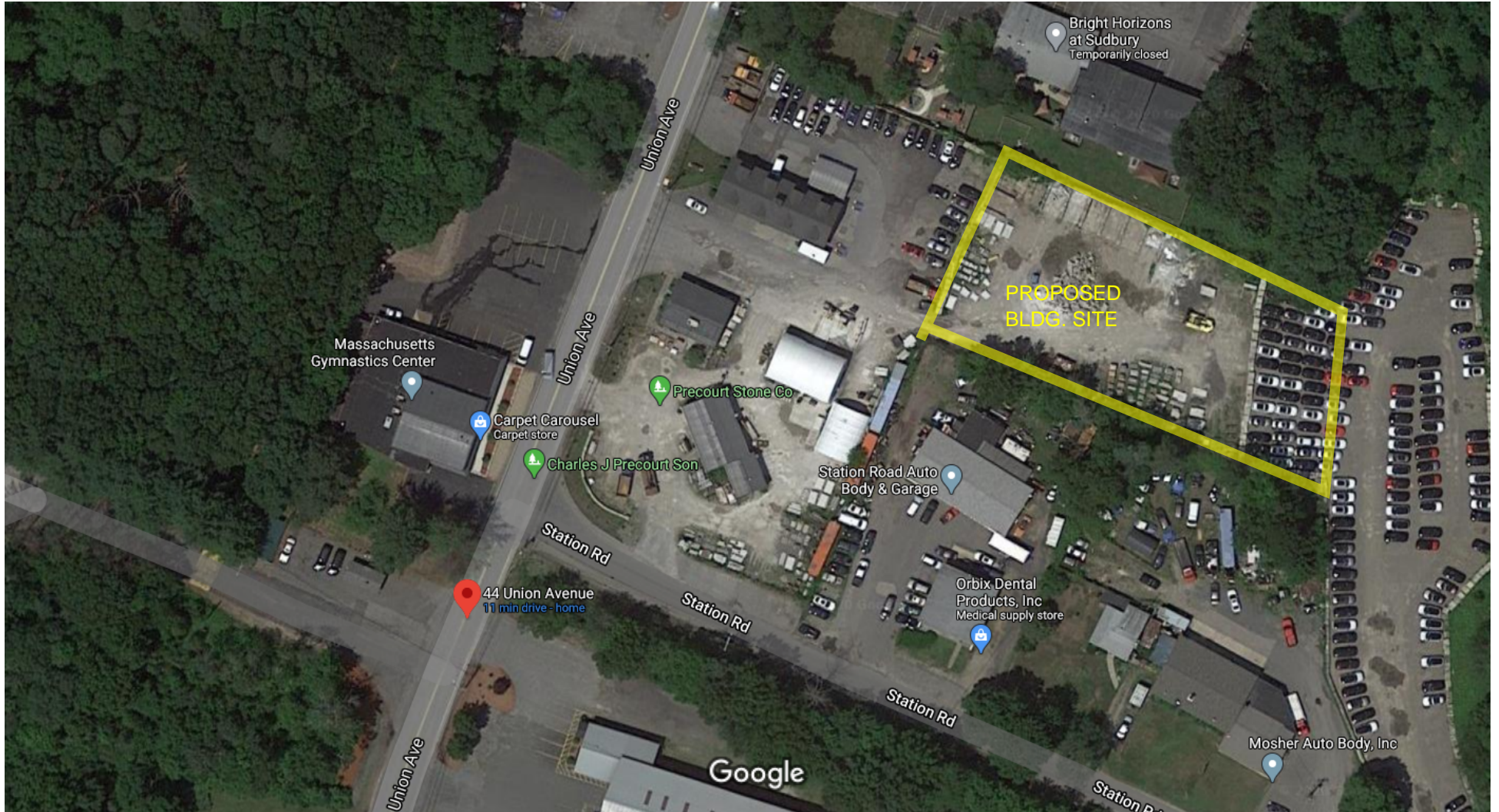
**FLOOD PROFILES**

**HOP BROOK**

FEDERAL EMERGENCY MANAGEMENT AGENCY  
**MIDDLESEX COUNTY, MA**  
 (ALL JURISDICTIONS)



Google Maps 44 Union Ave



Imagery ©2020 MassGIS, Commonwealth of Massachusetts EOE, Maxar Technologies, Map data ©2020 50 ft



# SITE PHOTOS



**NORTHEAST DRAIN DITCH (STREAM)**



**SOUTHEAST DRAIN DITCH (STREAM)**



**ENTRY TO REAR LOT**



**REAR LOT LOOKING EAST**



**REAR LOT LOOKING WEST**



**PHOTO SHOWING STONE PRODUCT STORAGE**

## **ATTACHMENT 2**

**INCLUDES: SUDBURY FILING FEE INFORMATION**  
**COPIES OF FILING CHECKS**

**Sudbury Wetlands Administration Bylaw Fee Payments For All Applications:**

**Category A:** Single minor project -- i.e., house addition, tennis court, swimming pool, or other accessory residential activity **\$25 per project**

**Category B:** New single family dwelling **\$250**

**Category C:** Subdivision--road and utilities only - **\$500 plus \$2 per foot** of road sideline within a resource area

✓ **Category D:** Drainage, detention/retention basins **\$500 plus \$2 per 100 cubic feet of basin within a resource area** **\$ 500.00**  
**(None within Resource Area)**

**Category E:** Multiple Dwelling Structure **\$500 plus \$100/unit**, all or part of which is within a resource area

✓ **Category F:** Commercial and Industrial Projects **\$500 plus \$0.50 per square foot of disturbance** in an undeveloped resource area **\$ 500.00**  
**(Entire site is developed)**

**Category G:** Application filed after Enforcement Order **double** the above fee

**Category H:** Determination of Applicability **no charge**

**Category I:** Remediation of a Contaminated Site or Enhancement of a Degraded Resource (excluding violations) **\$25.00/project**

**Additional Fees:**

**Abbreviated Notice of Resource Area Delineation:**

New Construction: **\$500 plus \$2.00 for each linear foot of resource area subject to the Bylaw**

Existing Developed Single Family Lots: **\$25.00**

**Inspection Fee: \$50.00** for each status inspection conducted as a follow up to a Notice of Violation.

---

**TOTAL FEE**

**\$ 1,000.00**

# **ATTACHMENT 3**

## **ABUTTERS INFORMATION**

**INCLUDES: Copy of Hearing Notice to Abutters**  
**Certified Lists of Abutters**

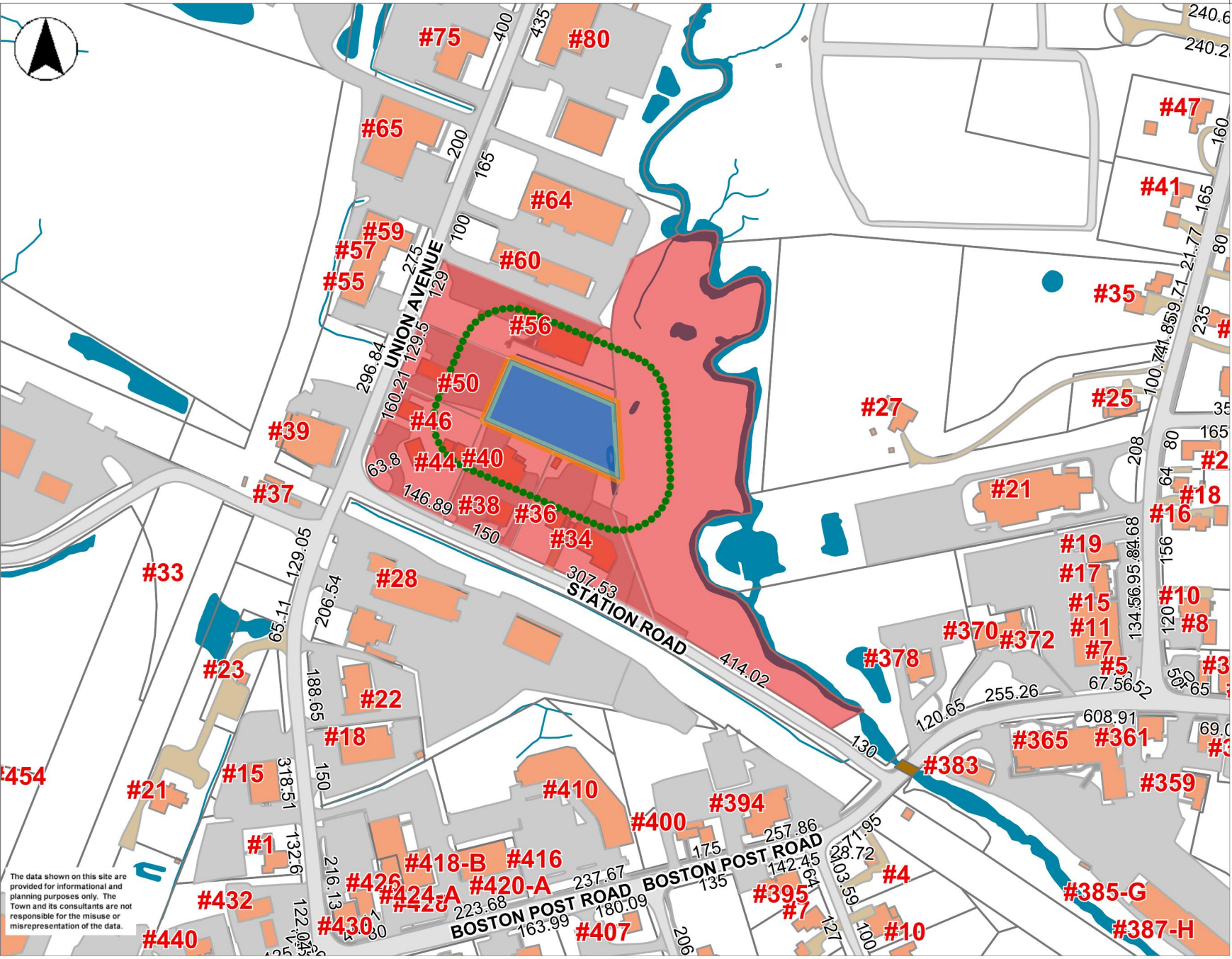
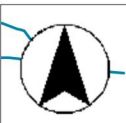


**Notification to Abutters  
Under the Massachusetts Wetlands Protection Act  
and the Sudbury Wetlands Administrative Bylaw**

In accordance with the second paragraph of Massachusetts General Laws Chapter 131,  
Section 40, you are hereby notified of the following:

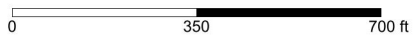
- A. The name of the **Applicant** is Charles J. Precourt & Son, Inc.
- B. The Applicant has filed a Notice of Intent with the Sudbury Conservation Commission seeking permission to work in an Area Subject to Protection (Wetland Resource Area and/or Buffer Zone) under the Massachusetts Wetlands Protection Act (General Laws Chapter 131, Sec.40) and the Town of Sudbury Wetlands Administrative Bylaw.
- C. The **address** of the lot where the activity is proposed: 46 Union Avenue, Sudbury, MA
- D. The **proposed activity** is: Construction of a Workshop Building with associated grading and utilities.
- 
- E. A **Public Hearing** regarding this Notice of Intent will be held on:  
**Monday, March 22, 2021 at 6:30 PM.**
- F. **Public Participation will be via Virtual Means Only** - In light of the ongoing COVID-19 coronavirus outbreak, Governor Baker issued an emergency Order on March 12, 2020, allowing public bodies greater flexibility in utilizing technology in the conduct of meetings under the Open Meeting Law. The Town of Sudbury Conservation Commission greatly values the participation of its citizens in the public meeting process, but given the current circumstances and recommendations at both the state and federal levels to limit or avoid public gatherings, including Governor Baker’s ban on gatherings of more than 10 people, together with the present closure of Sudbury Town Hall and other public buildings to the public, the Town has decided to implement the “remote participation” procedures allowed under Governor Baker’s emergency Order for all boards, committees, and commissions.
- G The public may participate in this meeting via Remote Participation:**
- From your computer, smart phone or tablet:
- TBD
  - Meeting ID: TBD
  - From your phone: **978-639-3366** or **470 250 9358**
- H Copies of the Notice of Intent may be examined by visiting this Website:  
<https://sudbury.ma.us/conservationcommission/meetings/>
- I. Copies of the Notice of Intent may be obtained from either The Applicant, or the Applicant’s representative DGT Associates, by calling this telephone number: 508-879-0030 between the hours of 8:00 am to 4:30 pm Monday - Friday

Note: Public Hearing Notice, including its date, time, and place, will be published at least 5 days in advance in either the Sudbury Crier or MetroWest newspapers (at the applicant’s expense).



- Bridges
- Driveways
- Parking Lots
- Medians
- Sidewalks
- Curbs
- Roads
  - Paved Roads
  - UnPaved Roads
- Parcels
- Streams Ortho
- Streams CIR
- Lake/Reservoir
- Buildings
- MA Highways
  - Interstate
  - US Highway
  - Numbered Routes
- Town Boundary
- Streets

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**Abutters List**[print this list](#)

Date: February 18, 2021

Subject Property Address: OFF UNION AVE Sudbury, MA  
Subject Property ID: K08-0043

Search Distance: 100 Feet

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Prop ID: K08-0038  
Prop Location: 0 STATION RD Sudbury, MA  
Owner: UNION AVENUE REALTY, LLC  
Co-Owner:  
Mailing Address:

46 UNION AV  
SUDBURY, MA 01776

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Prop ID: K08-0039  
Prop Location: 34 STATION RD Sudbury, MA  
Owner: MUTUAL REALTY TRUST OF SUDBURY INC  
Co-Owner:  
Mailing Address:  
34 AUTUMN ST  
SUDBURY, MA 01776

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Prop ID: K08-0039  
Prop Location: 36 STATION RD Sudbury, MA  
Owner: MUTUAL REALTY TRUST OF SUDBURY INC  
Co-Owner:  
Mailing Address:  
34 AUTUMN ST  
SUDBURY, MA 01776

---

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Prop ID: K08-0040  
Prop Location: 38 STATION RD Sudbury, MA  
Owner: STATION RD AUTO BODY & GAR INC  
Co-Owner:  
Mailing Address:  
38-40 STATION RD  
SUDBURY, MA 01776

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Prop ID: K08-0040  
Prop Location: 40 STATION RD Sudbury, MA  
Owner: STATION RD AUTO BODY & GAR INC  
Co-Owner:  
Mailing Address:  
38-40 STATION RD  
SUDBURY, MA 01776

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Prop ID: K08-0041  
Prop Location: 44 UNION AVE Sudbury, MA  
Owner: UNION AVENUE REALTY LLC  
Co-Owner:  
Mailing Address:  
46 UNION AVE  
SUDBURY, MA 01776

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Prop ID: K08-0041  
Prop Location: 46 UNION AVE Sudbury, MA  
Owner: UNION AVENUE REALTY LLC  
Co-Owner:  
Mailing Address:  
46 UNION AVE  
SUDBURY, MA 01776

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Prop ID: K08-0042  
Prop Location: 50 UNION AVE Sudbury, MA  
Owner: SHANNON TIMOTHY L TR  
Co-Owner: ARSENAL AVENUE TRUST  
Mailing Address:  
150 PRIDES CROSSING RD  
SUDBURY, MA 01776

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Prop ID: K08-0044  
Prop Location: 56 UNION AVE Sudbury, MA  
Owner: GRANCO REALTY LLC  
Co-Owner:  
Mailing Address:  
60 UNION AVE  
SUDBURY, MA 01776







- Bridges
- Driveways
- Parking Lots
- Medians
- Sidewalks
- Curbs
- Roads
- Paved Roads
- UnPaved Roads
- Parcels
- Streams Ortho
- Streams CIR
- Lake/Reservoir
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- MA Highways
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- US Highway
- Numbered Routes
- Town Boundary
- Streets

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0 700 1400 ft

Printed on 02/18/2021 at 03:38 PM

MapsOnline

**Abutters List**[print this list](#)

Date: February 18, 2021

Subject Property Address: 44 UNION AVE Sudbury, MA  
Subject Property ID: K08-0041

Subject Property Address: 46 UNION AVE Sudbury, MA  
Subject Property ID: K08-0041

Search Distance: 100 Feet

---

Prop ID: K08-0040  
Prop Location: 38 STATION RD Sudbury, MA  
Owner: STATION RD AUTO BODY & GAR INC  
Co-Owner:  
Mailing Address:

38-40 STATION RD  
SUDBURY, MA 01776

---

---

Prop ID: K08-0040  
Prop Location: 40 STATION RD Sudbury, MA  
Owner: STATION RD AUTO BODY & GAR INC  
Co-Owner:  
Mailing Address:  
38-40 STATION RD  
SUDBURY, MA 01776

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Prop ID: K08-0042  
Prop Location: 50 UNION AVE Sudbury, MA  
Owner: SHANNON TIMOTHY L TR  
Co-Owner: ARSENAL AVENUE TRUST  
Mailing Address:  
150 PRIDES CROSSING RD  
SUDBURY, MA 01776

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Prop ID: K08-0043  
Prop Location: OFF UNION AVE Sudbury, MA  
Owner: UNION AVENUE REALTY LLC  
Co-Owner:  
Mailing Address:

46 UNION AVE  
SUDBURY, MA 01776

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Prop ID: K08-0052  
Prop Location: 57 UNION AVE Sudbury, MA  
Owner: TUCKER PROPERTIES LLC  
Co-Owner:  
Mailing Address:  
75 UNION AVE  
SUDBURY, MA 01776

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Prop ID: K08-0053  
Prop Location: 39 UNION AVE Sudbury, MA  
Owner: CHISWICK PARK LLC  
Co-Owner: C/O PARIS TRUST LLC  
Mailing Address:  
490-B BOSTON POST RD STE 201  
SUDBURY, MA 01776

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Prop ID: K08-0057  
Prop Location: UNION AVE Sudbury, MA  
Owner: CHISWICK PARK LLC  
Co-Owner: C/O PARIS TRUST LLC  
Mailing Address:  
490-B BOSTON POST RD STE 201  
SUDBURY, MA 01776

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Prop ID: K08-5000  
Prop Location: RAILWAY Sudbury, MA  
Owner: MASS BAY TRANSPORTATION  
Co-Owner:  
Mailing Address:  
10 PARK PLAZA  
BOSTON, MA 02116

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Prop ID: K08-5100  
Prop Location: RAILWAY Sudbury, MA  
Owner: EOT

Co-Owner: MASS BAY TRANSPORTATION

Mailing Address:

10 PARK PLAZA  
BOSTON, MA 02116

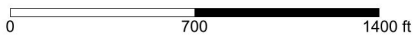
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- Bridges
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- Parking Lots
- Medians
- Sidewalks
- Curbs
- Roads
  - Paved Roads
  - UnPaved Roads
- Parcels
- Streams Ortho
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  - US Highway
  - Numbered Routes
- Town Boundary
- Streets

The data shown on this site are provided for informational and planning purposes only. The Town and its consultants are not responsible for the misuse or misrepresentation of the data.





**Abutters List**[print this list](#)

Date: February 18, 2021

Subject Property Address: 0 STATION RD Sudbury, MA  
Subject Property ID: K08-0038

Search Distance: 100 Feet

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Prop ID: K08-0030  
Prop Location: 27 CONCORD RD Sudbury, MA  
Owner: GOGAN MATTHEW & BARBARA J  
Co-Owner:  
Mailing Address:

27 CONCORD ROAD  
SUDBURY, MA 01776  
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Prop ID: K08-0033  
Prop Location: 21 CONCORD RD Sudbury, MA  
Owner: TOWN OF SUDBURY  
Co-Owner: LIBRARY  
Mailing Address:  
21 CONCORD RD  
SUDBURY, MA 01776  
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Prop ID: K08-0037  
Prop Location: 378 BOSTON POST RD Sudbury, MA  
Owner: SUD REALTY LLC  
Co-Owner:  
Mailing Address:  
3 PLUFF AVENUE  
NORTH READING, MA 01864  
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Prop ID: K08-0039  
Prop Location: 34 STATION RD Sudbury, MA  
Owner: MUTUAL REALTY TRUST OF SUDBURY INC  
Co-Owner:  
Mailing Address:  
34 AUTUMN ST  
SUDBURY, MA 01776  
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Prop ID: K08-0039  
Prop Location: 36 STATION RD Sudbury, MA  
Owner: MUTUAL REALTY TRUST OF SUDBURY INC  
Co-Owner:  
Mailing Address:  
34 AUTUMN ST  
SUDBURY, MA 01776

---

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Prop ID: K08-0043  
Prop Location: OFF UNION AVE Sudbury, MA  
Owner: UNION AVENUE REALTY LLC  
Co-Owner:  
Mailing Address:  
46 UNION AVE  
SUDBURY, MA 01776

---

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Prop ID: K08-0044  
Prop Location: 56 UNION AVE Sudbury, MA  
Owner: GRANCO REALTY LLC  
Co-Owner:  
Mailing Address:  
60 UNION AVE  
SUDBURY, MA 01776

---

---

Prop ID: K08-0045  
Prop Location: 60 UNION AVE Sudbury, MA  
Owner: GRANCO REALTY LLC  
Co-Owner:  
Mailing Address:  
60 UNION AVE  
SUDBURY, MA 01776

---

---

Prop ID: K08-0046  
Prop Location: 64 UNION AVE Sudbury, MA  
Owner: MACOT REALTY TRUST  
Co-Owner:  
Mailing Address:  
15201 MEDICI WAY  
NAPLES, FL 34110

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Prop ID: K08-0047  
Prop Location: 80 UNION AVE Sudbury, MA  
Owner: MKL UNION LLC  
Co-Owner:  
Mailing Address:  
80 UNION AVE  
SUDBURY, MA 01776

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Prop ID: K08-0101  
Prop Location: CONCORD RD Sudbury, MA  
Owner: HUGHES CLIFFORD J  
Co-Owner:  
Mailing Address:  
2 ORCHARD LN  
MANCHESTER, MA 01944

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Prop ID: K08-0304  
Prop Location: OFF CONCORD RD Sudbury, MA  
Owner: CAVICCHIO FAMILY REAL ESTATE  
Co-Owner: LLC  
Mailing Address:  
110 CODJER LANE  
SUDBURY, MA 01776

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---

Prop ID: K08-5000  
Prop Location: RAILWAY Sudbury, MA  
Owner: MASS BAY TRANSPORTATION  
Co-Owner:  
Mailing Address:  
10 PARK PLAZA  
BOSTON, MA 02116

---

# **ATTACHMENT 5**

## **ADDITIONAL RELEVANT DOCUMENTS**

**INCLUDES: Copy of final Stormwater Peer Review  
Report By Horsley Witten Group (1/21/2021)**

**Copy of Major Stormwater Permit issued by  
the Sudbury Planning Board (2/10/21)**

**Response letter to the Sudbury Planning  
Board dated (1/20/2021)**

# Horsley Witten Group

*Sustainable Environmental Solutions*

112 Water Street • 6<sup>th</sup> Floor • Boston, MA 02109  
857-263-8193 • horsleywitten.com



January 21, 2021

Ms. Beth Suedmeyer  
Environmental Planner  
Planning and Community Development  
Town of Sudbury  
278 Old Sudbury Road  
Sudbury, Massachusetts 01776

Re: Second Peer Review Stormwater Management  
Precourt Stone  
44 & 46 Union Avenue  
Sudbury, Massachusetts

Dear Ms. Suedmeyer and Board Members:

The Horsley Witten Group, Inc. (HW) is pleased to provide the Sudbury Planning Board with this letter report summarizing our second review of the proposed development at 44 & 46 Union Avenue. The Project Area includes the Precourt Stone facility office and storage yard, a property owned by the Union Avenue Realty, LLC. The Precourt Stone property covers approximately 5.75 acres over 3 separate parcels. Approximately 0.88 acres comprises the “rear” parcel, a material storage yard where the work is being proposed.

DGT Associates, Inc. prepared a Site Plan and a Stormwater Management Design and Report on behalf of Charles J. Precourt & Son, Inc. (Applicant) to construct a 2,625 square foot (sf) building and a 252-sf shed on the rear storage yard of the Charles J. Precourt & Son property. The stormwater runoff from the proposed roof runoff will be directed into an infiltration drip trench located adjacent to the building. The property includes Bordering Land Subject to Flooding (BLSF), the 100-foot buffer zone of an adjacent wetland resource area, and the 200-foot Riverfront Area of the Hop Brook.

In response to our initial peer review dated January 7, 2021 and the discussion at the Public Hearing on January 13, 2021, the following additional documents and plans, were received by HW:

- Letter to Sudbury Planning Board regarding response to comments, prepared by DGT Associates, dated January 20, 2021 (32 pages).
- Site Plan, Proposed Workshop Building, 46 Union Avenue, Sudbury, Massachusetts, prepared by DGT Associates, revised January 20, 2021, including:
  - Title Sheet C-1
  - Site Overview C-2
  - Site Layout and Grading & Drainage Plan C-3
  - Erosion and Sediment Control Plan C-4
  - Floor Sheet S-1
  - Elevation Sheet S-2

## **Stormwater Review**

HW has reviewed the proposed stormwater management design as per the standards listed in the Massachusetts Stormwater Handbook (MSH) dated February 2008 and the Town of Sudbury Stormwater Management Bylaw Regulations (Stormwater Bylaws), revised January 23, 2013.

In accordance with Section 8.0 of the Stormwater Bylaws, this project is required to comply at a minimum with the performance standards of the MSH. Therefore, we have used the MSH as the basis for organizing our comments. However, in instances where the additional criteria established in Section 8.A.3 of the Stormwater Bylaws requires further recommendations; we have referenced these as well.

The following comments correlate to our initial peer review dated January 7, 2021, follow up comments are provided in **bold font**.

1. *Standard 1: No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*
  - a. The existing site discharges stormwater via overland flow to two separate points of analysis (POA):
    - (1) A northeast drainage ditch (DP-1),
    - (2) A southwest drainage ditch (DP-2),
    - (3) DP-3 noted is the combined DP-1 and DP-2,

Under proposed conditions the Applicant has provided stormwater practices to collect, manage, treat and recharge the stormwater within a portion of the previously developed area of the site. The stormwater runoff from the proposed building has been directed towards a proposed infiltration drip trench located adjacent to the building. The watershed areas and flow rates that continue to discharge towards the POAs have been reduced under proposed conditions. It does not appear that the proposed stormwater management will cause any erosion in wetlands or waters of the Commonwealth.

It appears that the Applicant complies with Standard 1.

**No further comment needed.**

2. *Standard 2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

The Applicant has designed an infiltration trench to capture and mitigate the stormwater runoff from the new roof. HW has the following comments regarding the proposed stormwater design:

- a. HW notes that the HydroCAD model subcatchment numbers are not consistent with the catchment areas illustrated on the Post-Development Watersheds, Figure WSD-PR. HW was able to confirm the watershed areas listed in the HydroCAD model however recommends that Figure WSD-PR be revised for documentation purposes.

**The Applicant has revised Figure WSD-PR as requested. No further comment.**



- b. The Applicant has used an exfiltration rate of 1.02 inches per hour (iph) for the infiltration trenches. The site has been mapped primarily as hydrologic soil group (HSG) B/D, in accordance with the Natural Resources Conservation Service (NRCS) soil maps. The test pits included in the Stormwater Management Report were completed in the area around the proposed workshop with the most restrictive layer being loamy sand. HW agrees that an infiltration rate of 1.02 iph is appropriate for this site.

It appears that the Applicant complies with Standard 2.

**No further comment.**

3. *Standard 3 requires that the annual recharge from post-development shall approximate annual recharge from pre-development conditions.*

- a. The Applicant has conducted 3 test pits within the gravel yard. The estimated seasonal high ground water (ESHGW) elevation is between 130.0 and 130.5. The bottom of the stone trench is at 132.4. HW recommends that during construction the Applicant confirm that the bottom of the trench is located a minimum of 2 feet above the ESHGW. The Planning Board may consider requesting a letter from a soil evaluator confirming the separation at the time of installation.

**The Applicant has raised the bottom of the drip trench 0.4 feet to provide a minimum of 2 feet of separation above the highest ESHGW level recorded. No further comment.**

- b. The Applicant has proposed 2 infiltration practices to retain 1-inch of rainfall over the proposed impervious building. HW agrees with the calculation provided by the Applicant.

**No further comment.**

- c. In accordance with Volume 1, Chapter 1, page 7 of the Massachusetts Stormwater Handbook, "*Infiltration of runoff from a metal roof that is located within the Zone II or Interim Wellhead Protection Area of a public water supply and/or at an industrial site requires pretreatment by means of a BMP capable of removing metals, such as a sand filter, organic filter, filtering bioretention area or equivalent.*" HW recommends that the Applicant confirm the type of proposed roof and verify if pretreatment is required prior to infiltrating.

**The Applicant has clarified the proposed roof material and has provided documentation regarding the "Signature 300" material. The Applicant has stated that this material will be specified for the roof in this location. HW has no further comment.**

4. *Standard 4 requires that the stormwater system be designed to remove 80% Total Suspended Solids (TSS) and to treat 1.0-inch of volume from the impervious area for water quality.*

- a. As noted previously the Applicant has sized the infiltration trench to manage 1-inch over the proposed impervious area to comply with Standard 4.

**No further comment.**

- b. The Applicant has proposed a stormwater management system that consists of infiltration trenches to treat the proposed building roof runoff. The removal rate of the

infiltration system meets the 80% TSS removal requirement.

**No further comment.**

- c. As noted under Standard 3, HW recommends that the Applicant confirm the type of proposed roof and verify if pretreatment is required prior to infiltrating.

**The Applicant has clarified the proposed roof material and has provided documentation regarding the “Signature 300” material. The Applicant has stated that this material will be specified for the roof in this location. HW has no further comment.**

5. *Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).*

- a. The proposed development is in a light industrial area that can be classified as a LUHPPL, therefore Standard 5 is applicable. The stormwater discharge from the proposed building footprint is being infiltrated which is an improvement over the existing condition. The Applicant is proposing to recharge 1 inch of runoff over the proposed impervious area as required per Standard 5.

**No further comment.**

- b. The question remains on the pretreatment of the stormwater runoff from the potential metal roof.

**The Applicant has clarified the proposed roof material and has provided documentation regarding the “Signature 300” material. The Applicant has stated that this material will be specified for the roof in this location. HW has no further comment.**

6. *Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II or an Interim Wellhead Protection Area of a public water supply.*

- a. The site is within the Zone II of the Sudbury Water Supply Wells which is a “Critical Area” per the Regulations. Standard 6 states, “*With the exception of runoff from a non-metal roof, and runoff from metal roofs located outside the Zone II or Interim Wellhead Protection Area of a public water supply or an industrial site, the treatment train shall provide for at least 44% TSS removal prior to discharge to the infiltration structure.*”

The roofing proposed appears to be a 24 GA steel standing seam roof. In accordance with Volume 1, Chapter 1, page 7 of the Massachusetts Stormwater Handbook, “Metal roofs are galvanized steel or copper.” HW recommends that the Applicant address the concern regarding the proposed metal roof.

**The Applicant has clarified the proposed roof material and has provided documentation regarding the “Signature 300” material. The Applicant has stated that this material will be specified for the roof in this location. HW has no further comment.**

7. *Standard 7 is related to projects considered Redevelopment.*

- a. The proposed project is considered a redevelopment and is required meet the Massachusetts Stormwater Standards to the maximum extent practicable. Standard 7 is

applicable. The project appears to comply and improve upon the existing conditions.

It appears that the Applicant complies with Standard 7.

**No further comment.**

8. *Standard 8 requires a plan to control construction related impacts including erosion, sedimentation or other pollutant sources.*

The Applicant has provided an Erosion Control Plan on Sheet C-4 of the plan set including erosion control details.

- a. The Applicant proposes a new workshop and utilities. It does not appear there is a defined limit of disturbance on the site. HW recommends that the Applicant delineate the limit of work on the Site Overview and the Site Layout and Grading & Drainage Plan sheets and confirm that no trees will be removed as part of the proposed development.

**The Applicant has added the limit of work line as requested. No further comment.**

- b. The Applicant has illustrated the 100-foot wetlands buffer as well as the floodplain line but has not shown the limits of the 200-foot Riverfront Area on the plans. HW recommends that the Applicant add the 200-foot Riverfront Area to clarify no work is being conducted within this resource area.

**The Applicant has added the 200-foot Riverfront Area limits as requested. No further comment.**

- c. HW recommends that the Applicant provide additional notes and a delineated stockpile area to prohibit stockpiling within the floodplain, wetland buffer, or riverfront areas.

**The Applicant has provided the erosion control barrier outside of the 200-foot Riverfront Area as well as the 100-year flood plain. The fill proposed to bring the existing surface to greater than 5 feet above the ESHGW is within the 100-foot buffer zone so some stockpiling may need to occur within this area. The Applicant intends to apply for an Order of Conditions from the Sudbury Conservation Commission. No further comment.**

- d. The Applicant has noted a construction entrance at the west side of the site but has not indicated any dimensions. The detail noted does not provide any minimum dimensions for the entrance. HW recommends providing the applicable dimensions.

**The Applicant has provided the applicable dimensions as requested. No further comment.**

9. *Standard 9 requires a Long Term Operation and Maintenance (O & M) Plan to be provided.*

- a. The Applicant has included a Stormwater Operations and Maintenance (O&M) Plan in Appendix 2 of the Stormwater Management Report, the submission including checklists for maintenance.

- b. HW recommends that the Applicant provide a simple stormwater practice location map as part of the Long-Term O&M Plan.

It appears that the Applicant complies with Standard 9.

**No further comment.**

10. *Standard 10 requires an Illicit Discharge Compliance Statement be provided.*

- a. The Applicant has provided a signed Illicit Discharge Compliance Statement signed by the Engineer. HW recommends that this document be signed by the property owner and provided to the Planning Board.

**The Applicant has agreed to provide the signed document. The Planning Board may choose to list this as a condition of approval. No further comment.**

11. *Compliance with Water Resource Protection Overlay District regulations*

- a. The Applicant does not appear to be altering the existing surface elevations. However, in accordance with the test pits provided the existing surface is slightly less than 5 feet to the maximum groundwater elevation in the storage yard. Section 2.2.4.7 of the Rules and Regulations for Special Permits in the Water Resource Protection Overlay District (WRPOD Regulations) states that, *"In no case, shall the minimum distance between the post-development ground surface and the maximum groundwater elevation in Zone II be less than five (5) feet. Demonstration of compliance with Section III.G of the Bylaw shall be provided."* HW recommends that the Planning Board determine if the Applicant is required to raise the elevation of the existing site.

**The Applicant has revised the proposed grading of the site to raise the surface slightly. HW has reviewed the proposed grading and has no further comment.**

- b. HW recommends that the Applicant confirm that the site does not include any existing or proposed water supply wells as well as any wastewater disposal systems.

**The Applicant has confirmed that there are no existing or proposed water supply well. Furthermore, the Applicant has noted that the closest wastewater disposal system is approximately 90 feet from the southwest lot corner of the project parcel.**

- c. The ESHGW elevation is between 130.0 and 130.5. The bottom of the stone trench is at 132.4. In accordance with Section 2.2.6 of the WRPOD Regulations and as noted above, HW recommends that during construction the Applicant confirm that the bottom of the trench is located a minimum of 2 feet above the ESHGW.

**The Applicant has raised the bottom of the drip trench 0.4 feet to provide a minimum of 2 feet of separation above the highest ESHGW level recorded. No further comment.**

- d. The proposed site will maintain the use of the existing site as a storage yard. The majority of the site consists of a gravel base that is considered impervious per the Sudbury Stormwater Regulations. HW defers to the Planning Board whether the Applicant is required to comply with Section 2.27 of the WRPOD Regulations for the existing impervious area of the site. Section 2.27 states that, "All water runoff from impervious surfaces shall at a minimum, be funneled into gas trap catch basins. The first (1st) inch of every storm event shall be directed into a retention pond(s), where it shall be retained for an average of at least three (3) days prior to recharge into the ground or discharge from the site."

**This issue was discussed during the Public hearing. The Applicant has agreed to raise the surface elevation of the site to provide 5 feet of separation to the**



**ESHGW. The Applicant has further agreed to raise the bottom of the drip trench to maintain a minimum of 2 feet of separation to the ESHGW. HW agrees that it would be impractical for this site to funnel all proposed impervious area to a gas trap and retain the stormwater onsite for three days.**

- e. Section 4280. Stormwater Management of the Town of Sudbury Zoning Bylaw states that, "All runoff generated on-site shall be treated prior to recharge or discharge in accordance with the guidelines set forth in the Rules and Regulations for Special Permits in the Water Resource Protection Overlay Districts..." Section 2.2 of the WRPOD Regulations provides a list of the required components of an application within the WRPOD. The Applicant has provided some of these documents however not all of them. HW recommends that the Planning Board determine if the Applicant is required to provide the listed documentation for this redevelopment project.

**HW agrees that the proposed project is quite small. During the Planning Board hearing HW did not hear the Board request additional documentation from the Applicant. However, we defer to the Planning Board for final acceptance.**

### **Conclusions**

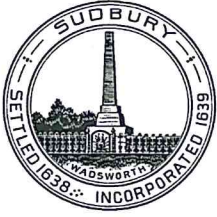
HW is satisfied that the Applicant has adequately responded to our comments. The Applicant is advised that provision of these comments does not relieve him/her of the responsibility to comply with all Town of Sudbury Codes and Bylaws, Commonwealth of Massachusetts laws, and federal regulations as applicable to this project. Please contact Janet Carter Bernardo at 857-263-8193 or at [jbernardo@horsleywitten.com](mailto:jbernardo@horsleywitten.com) if you have any questions regarding these comments.

Sincerely,

HORSLEY WITTEN GROUP, INC.



Janet Carter Bernardo, P.E.  
Senior Project Manager



# Town of Sudbury

## Planning Board

Flynn Building  
278 Old Sudbury Rd  
Sudbury, MA 01776  
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<https://sudbury.ma.us/planning>

February 10, 2021

**DECISION**  
**STORMWATER MANAGEMENT PERMIT**  
**Michael Precourt and Charles J. Precourt & Son, Inc.**  
**44 & 46 Union Avenue, Sudbury, MA**  
**SWMP PERMIT #21-01**

2021 FEB 24 AM 11:27

TOWN CLERK  
SUDBURY, MASS

DECISION of the Planning Board of the Town of Sudbury, Massachusetts (the "Board") on the petition of Michael Precourt and Charles J. Precourt & Son, Inc., (the "Applicant") and Union Avenue Realty, LLC ("Owner"), for approval of a Stormwater Management Permit to construct an approximately 3,000 square foot, one-story, architectural stone manufacturing and processing workshop building with associated improvements, which will disturb approximately 21,300 square feet of land with no proposed net change in impervious area on approximately 5.75 acres located at 44 & 46 Union Avenue and 0 Station Road, Town Assessor's Maps K08-0038, K08-0041, and K08-0043, zoned Industrial-2, Flood Plain Overlay District, and Water Resource Protection Overlay District Zones II and III Zoning Districts.

This decision is in response to an application submitted to the Board on December 14, 2020 by the Applicant for a Stormwater Management Permit (the "Permit") under Article V (F), Section 5.C of the Sudbury Bylaws (the "Bylaw") and the Stormwater Management Bylaw Regulations (the "Regulations").

After causing notice of the time and place of the public hearing and of the subject matter thereof to be published, posted, and mailed to the Applicant, abutters and other parties in interest as required by law, the hearing was called to order on Wednesday, January 13, 2021 and continued to January 27, 2023 and February 10, 2021. The Hearing closed at the end of the February 10, 2021 proceedings. Board members Stephen Garvin, Charles Karustis, John Hincks, and John Sugrue were present throughout the proceedings. Justin Finnicum was present on January 13 and 27, 2021. The record of the proceedings and submissions upon which this Permit is based may be referred to in the office of Planning and Community Development.

Submitted for the Board's consideration were;

1. Stormwater Management Permit Application, 46 Union Avenue (rear), dated December 14, 2020.
2. Stormwater Management and Runoff Calculations Report for Proposed Workshop Building at 46 Union Avenue, prepared by DGT Associates, dated November 9, 2020, (86 pages) including:
  - a. Stormwater Management Narrative
  - b. Stormwater Standards Compliance Summary
  - c. Massachusetts DEP "Checklist for Stormwater Report"
  - d. Illicit Discharge Statement
  - e. Hydraulic Calculations
  - f. Soils Data

- g. Stormwater BMP Operation and Maintenance Plan, last revised January 20, 2021.
- 3. Site Plans, Proposed Workshop Building, 46 Union Avenue, Sudbury, Massachusetts, prepared by DGT Associates, prepared by DGT Associates, dated November 9, 2020, last revised January 20, 2021 (6 sheets) including:
  - a. Title Sheet C-1
  - b. Site Overview C-2
  - c. Site Layout and Grading & Drainage Plan C-3
  - d. Erosion and Sediment Control Plan C-4
  - e. Floor Sheet S-1
  - f. Elevation Sheet S-2.
- 4. Initial Peer Review Stormwater Management Precourt Stone 44 & 46 Union Avenue, prepared by Horsley Witten Group, dated January 7, 2021.
- 5. Letter to Sudbury Planning Board regarding response to comments, prepared by DGT Associates, dated January 20, 2021 (32 pages).
- 6. Second Peer Review Stormwater Management Precourt Stone 44 & 46 Union Avenue, prepared by Horsley Witten Group, dated January 21, 2021.

#### I. BASIS FOR DECISION

The Board bases its Decision on the following:

- A. The drainage system design and controls will protect and maintain the public health, safety, environment and general welfare by controlling the adverse effects of increased post-development stormwater runoff and nonpoint source pollution associated with the proposed development; and shall protect the health, safety, environment and general welfare by controlling runoff and preventing soil erosion and sediment resulting from construction/alteration and development. The project complies with the performance standards of the most recent version of the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Policy, to the maximum extent feasible.
- B. The development and related activities shall maintain, to the maximum extent feasible, the after-development runoff characteristics as equal to or less than the pre-development runoff characteristics from the site in order to avoid flooding, stream bank erosion, siltation, nonpoint source pollution, property damage and to maintain the integrity of stream channels and aquatic habitats.
- C. The development is designed to avoid damages due to increases in volume, velocity, frequency, duration, and peak flow rate of stormwater runoff. The project conforms to the general criteria of the Bylaw and Regulations to the maximum extent feasible.
- D. In addition to structural components, the project design uses nonstructural stormwater management, stormwater better site design practices, or “low impact development practices”, such as the use of stone trenches, minimization of impervious surfaces, and preservation of greenspace and other natural areas, to the maximum extent practicable.
- E. The development plan establishes provisions for the long-term responsibility for and maintenance of structural stormwater control facilities and nonstructural stormwater

management practices to ensure that they continue to function as designed, are maintained, and pose no threat to public safety.

- F. The Applicant has submitted a Stormwater Management and Erosion Control Plan and project description and Operation and Maintenance Plan (the "O&M Plan"), which are satisfactory, with additional conditions.
- G. The subject property covers approximately 5.75 acres over three separate parcels. The parcel at the corner of Union Avenue and Station Road (46 Union Avenue) contains the present office, a shop building, and two tented structures for Charles J. Precourt and Son, Inc. which manufactures and processes architectural stone products. Approximately 0.88 acres comprises the "rear" parcel, a compacted gravel material storage yard where the new building is being proposed. The adjoining parcel (known as Lot 2) is 4 acres in size and is presently being used as a new car storage lot.

THEREFORE, the Board hereby GRANTS the requested Stormwater Management Permit, as requested in the application and shown on the Plan, located in Sudbury, Middlesex County, Massachusetts, with the benefit of the following Plan modifications, conditions and limitations. The approval herein granted is based on the Plan as described above.

## II. CONDITIONS AND REQUIREMENTS

The following conditions of this approval shall be strictly adhered to. Failure to adhere to these conditions or to comply with all applicable laws and Permit conditions shall give the Town the rights and remedies set forth in Section 12 of the Regulations.

- A. **Conformity:** All construction at the Premises shall be in substantial conformity with the Plan, which is on file with the Board.
- B. **Access during Construction:** The Applicant shall ensure safe and convenient vehicular access to the Premises during the entire duration of the construction period. The Board and its representatives shall be permitted access to the Premises to observe and inspect the site and construction progress until such time as the project has been completed.
- C. **Conditions prior to any soil disturbance or construction activities:**
  - 1) This Decision and the Operations and Maintenance Plan shall be recorded in the Middlesex South District Registry of Deeds, within the chain of title of the affected property. The recording information shall be submitted to the Planning Board.
  - 2) An Illicit Discharge Compliance Statement, signed by the Owner, shall be submitted to the Planning Board.
  - 3) Erosion control methods shall be installed, as shown on the plan, and as needed to control erosion.
  - 4) The limit of work shall be clearly delineated on the site so that no work extends beyond the limit of work. Planning and Community Development staff shall review the delineation and erosion control in the field at the pre-construction site inspection.

- 5) The Applicant shall submit \$2,000.00 for the purpose of the Town hiring a construction monitor to perform the inspections set forth in Condition H below. If prior to completion of the project, the Board finds that this initial deposit is not sufficient to cover actual costs incurred by the Town for these purposes, the Applicant shall be required to submit forthwith such additional amount as is deemed required by the Board to cover such costs. If the actual cost incurred by the Town for such purposes is less than the amount on deposit as specified above, the Board shall authorize that such excess amount be refunded to the Applicant concurrently upon issuance of a Certificate of Completion.
- D. A Stormwater Construction Site Inspection Report shall be generated by the Applicant or its representative for this project, at a minimum, every two weeks and after every major storm event, during construction of the system and until the site is stabilized. All reports shall be delivered to the Planning and Community Development Office in a timely manner.
  - E. In accordance with Section 8.B.6.1 of the Stormwater Bylaw, soil stockpiles must be stabilized or covered at the end of each workday. Stockpile side slopes shall not be greater than 2:1. All stockpiles shall be surrounded by sediment controls.
  - F. Prior to completion of the project, a restrictive covenant requiring construction of the stormwater system in accordance with the Plan, and maintenance of the stormwater management system in accordance with the Operation and Maintenance Plan shall be recorded on the Premises. This covenant shall allow for the placement of municipal liens on the Premises if the owner fails to fully construct the system or fails to maintain the system and the Town needs to do so. The Town will provide template to the Applicant, who shall submit the covenant for review and approval of the Board or its representative prior to recording at the Middlesex South District Registry of Deeds.
  - G. Prior to issuance of a Certificate of Completion, the Applicant shall submit the following information to the Board, or its representative, for review and approval:
    - 1) Receipt of the recorded restrictive covenant as noted in Condition F above.
    - 2) The Applicant shall submit an as-built plan, containing all elements listed in Section 11.A.2 of the Regulations, to the Board upon completion of this project and prior to the issuance of the Certificate of Occupancy. The plan shall be signed by the professional engineer of record, who shall certify that the work has been completed in accordance with the approved Plan and the Stormwater Management Permit. As built plans should be submitted to the Board a minimum of 4 weeks prior to the requested date for issuance of the Certificate of Completion/Occupancy.
  - H. Inspections: In accordance with Section 9.B of the Regulations, the Board, or its designee, may inspect the Premises at the following stages, at a minimum. The Applicant shall inform the Board of these stages in construction at least one day prior to commencement or completion, whichever is applicable, for scheduling of an inspection:
    - 1) Pre-Construction Site Inspection – prior to commencement of construction.



- 2) Erosion and Sediment Control Inspection – to ensure erosion control practices during and after construction are in accordance with the approved Plan.
- 3) Construction Inspection – an inspection will be made of the completed stormwater management system, prior to backfilling of any underground drainage or stormwater conveyance structures.
- 4) Final Inspection – after the system has been constructed and before the certificate of occupancy for the building has been issued.

I. The Applicant and its successors and assigns shall be responsible for maintaining the stormwater management system for the development in accordance with the Operation and Maintenance Plan submitted and DEP regulations. Additional requirements include:

- 1) An engineer shall conduct annual inspection and direct operations and maintenance compliance.
- 2) An annual report of activities performed to comply with the Operation and Maintenance Plan and the engineer's inspection report shall be submitted to the Planning Board or their designee.

J. The following source control and pollution prevention measures shall be employed on the Premises to prevent contamination of stormwater runoff:

- 1) Measures shall be taken to control and remove debris and litter on the site.
- 2) Lawn and deicing chemicals shall be stored under cover.
- 3) Slow release nitrogen and low phosphorus fertilizers shall be applied sparingly to prevent wash off.
- 4) No fertilization, herbicide, or pesticide application shall occur in or near any wetland resource area.
- 5) Any use of herbicide or pesticide shall be done with spot treatments as needed and performed by a licensed applicator when other non-chemical approaches are not effective.
- 6) Hazardous wastes shall be used and disposed of properly.
- 7) No vehicle washing shall be allowed on the property.
- 8) Personnel shall be educated on implementation of spill abatement and containment procedures.
- 9) Vehicles shall be maintained and fluid spills/drips shall be cleaned from pavement and concrete areas.
- 10) Septic systems shall be pumped and maintained.
- 11) Alternative deicers such as calcium chloride and magnesium chloride in lieu of sodium based deicers shall be used on the property.
- 12) No coal tar-based pavement sealants shall be used on the property.

K. Certificate of Completion: No land disturbance authorized by this Permit shall be occupied or used, and no activity, except the construction activity authorized by this

Permit, shall be conducted on the site until a Certificate of Completion has been issued by the Board in accordance with Section 11.0 of the Regulations.

- L. Violation of Conditions: Violation of any of the conditions of this Stormwater Management Permit shall be grounds for revocation of this Permit, or of any building or occupancy permit granted hereunder, or both. In the case of violation of the continuing obligations of this Permit, the Town shall notify the owner of such violation and give the owner reasonable time, not to exceed thirty days, to cure the violation. If at the end of said thirty day period, the Applicant has not cured the violation, or, in the case of violations requiring more than thirty days to cure, has not commenced the cure and prosecuted the cure expeditiously, the Board may, after notice to the Applicant or owner of the Premises, conduct a hearing in order to determine whether the failure to abide by the conditions contained herein should result in revocation of the Permit. As an alternative, the Town may enforce compliance with the conditions of this Permit by an action for injunctive relief before any court of competent jurisdiction. The Applicant/Owner agrees to reimburse the Town for its reasonable costs in connection with the enforcement of the conditions of this Permit.
- M. The Applicant by accepting this Permit Decision warrants that the Applicant has included all relevant documentation, reports, and information available to Applicant, in the application submitted and that this information is true and valid to the best of the Applicant's knowledge.
- N. The Applicant shall be responsible for maintaining the stormwater management as shown on the Plan in conformance with the Operation and Maintenance Plan submitted.
- O. The landscaping shall utilize native plants throughout the site.

### III. LIMITATIONS

The authority granted to the Applicant by this Permit is limited as follows:

- A. Applicability of Permit: This Permit applies only to the proposed construction at 44 & 46 Union Avenue and 0 Station Road, Town Assessor's Maps K08-0038, K08-0041, and K08-0043, as shown on the Plan. All construction on the Premises shall be conducted in accordance with the terms of this Permit and shall be limited to improvements shown on the Plan referenced above as amended by the conditions of this decision. Any change of use shall require a new or amended Stormwater Management Permit from the Board.
- B. Limitations of Further Development: There shall be no further development, increase in intensity of use, change in use as per the Sudbury Zoning Bylaw, or modification of the approved development plan, which exceeds the thresholds of the Sudbury Stormwater Management Bylaw without either a new Permit or the written consent of this Board. This does not absolve the Applicant from securing any permits required by other governmental boards, agencies or bodies having jurisdiction related to water quality or quantity.


- C. Other Permits or Approvals: This decision applies only to the requested Stormwater Management Permit. Other permits or approvals required by the Bylaw, other governmental boards, agencies or bodies having jurisdiction shall not be assumed or implied by this decision.
- D. Bylaw Compliance: The foregoing restrictions are stated for the purpose of emphasizing their importance but are not intended to be all inclusive or to negate the remainder of the Bylaw.
- E. Lapse of Permit: Should the land-disturbing activity approved under this Permit not begin within 12 months following Permit issuance, the Board may evaluate the existing stormwater management plan to determine whether the plan still satisfies local program requirements and to verify that all design factors are still valid. If the Board finds the previously filed plan to be inadequate, a modified plan shall be submitted and approved prior to the commencement of land-disturbing activities. If the project associated with an approved Stormwater Management Permit granted under the Bylaw has not been substantially completed within three years of Permit issuance, a new Permit or a Permit extension will be required by the Board.
- F. Appeals: Any person aggrieved by this decision may appeal pursuant to the General Laws, Chapter 249, Section 4.

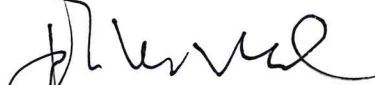
The provisions of this Permit shall be binding upon every owner or owners of the lots and the executors, administrators, heirs, successors and assigns of such owners, and the obligations and restrictions herein set forth shall run with the land, as shown on the Plan, in full force and effect for the benefit of and enforceable by the Town of Sudbury.

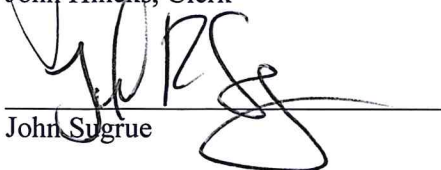
This Permit shall not take effect until a copy of this Decision has been recorded with the Middlesex South District Registry of Deeds and until a certified copy of the recorded document is submitted to the Board.

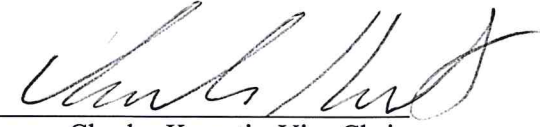
Witness our hands this 10<sup>th</sup> day of February, 2021.

SUDBURY PLANNING BOARD

  
\_\_\_\_\_  
Stephen Garvin, Chair

  
\_\_\_\_\_  
John Hincks, Clerk

  
\_\_\_\_\_  
John Sugrue

  
\_\_\_\_\_  
Charles Karustis, Vice Chair

\_\_\_\_\_  
Justin Finnicum

2021 FEB 24 AM 11:29  
TOWN CLERK  
SUDBURY, MASS

January 20, 2021

19632

Sudbury Planning Board  
Department of Planning and Community Development  
278 Old Sudbury Road  
Sudbury, MA 01776

**VIA: HAND DELIVERY and EMAIL**

RE: Charles J. Precourt & Son - Proposed Workshop Building  
46 Union Avenue (Rear Lot)

Dear Board Members:

Enclosed herewith, please find the Site Plans that have been revised to address the comments made by the Planning Board at the January 13, 2021 Public Hearing, the comments made in the peer review by the Horsley Witten Group dated January 7, 2021 and the comments contained in the Staff Report dated January 13, 2021.

Written information on the changes made and responses to comments are described below:

**Planning Board Comment:**

The main item from the Board was the request that the elevation of the portion the site within the proposed work area be raised to bring that area into conformance with the Water Resources Protection Overlay District (WRPOD) Bylaw Section 4242. j. which states the following prohibition:

*“Permanent removal, or regrading of the existing soil cover, except for excavations for: 1) building foundations; 2) roads or utility works; or 3) the installation of stormwater BMPs subject to approval by any Town board or committee having jurisdiction, which result in a finished grade at a level less than five (5) feet above the historical high groundwater.”*

The major portion of the existing subject property is less than 5 feet above the water table. The “rear lot” is 38,262 sq. ft. and approximately 3,200 sq. ft. (8.4% of the Rear Lot) is not less than 5 feet above the seasonal high water table.

The building as proposed was to be on existing grade and the surrounding grades were to remain essentially unchanged and no excavations were proposed that would have increased the area of the lot that would be less than 5 feet to groundwater. However, to address the request, we looked at raising the elevation of the proposed building and surrounding grade as reasonably feasible to increase the area of the site with the 5 foot separation to groundwater.

The limitations that must be considered is that the site is very flat and the grading would need to continue to allow stormwater runoff to drain to the two existing discharge points to maintain the existing drainage patterns.



RE: Charles J. Precourt & Son - Proposed Workshop Building  
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- A portion of the entry driveway and the abutting property at 50 Union Avenue drains through the southern portion of the Rear Lot to the southeast drainage ditch. This drainage must not be blocked, or be diverted onto the abutting property to the south.
- The northern portion of the project site drains to the northeast drain ditch and must continue without draining onto abutting property to the north.

Given the above, we found that it is feasible to raise the grade of the proposed building floor 0.5 feet higher than previously proposed and raise the grade around the building while maintaining the existing drainage pattern. The filling will vary from 1.2 feet at the east end of the building and 0.9 feet at the western end above existing grade, and will slope gradually away to meet existing grades. The average fill depth as shown on the revised plan would be about 5.5 inches over the filled area. The proposed grading is shown on the revised plan and the following describes the features of this revision.

1. The grading will be raising the existing compacted gravel surface with the same type of gravel material.
2. The grades will maintain a swale on each side to not block or divert the existing drainage pattern.
3. The area around the building will still be reasonably level so that the area can continue to be used for material storage and access.
4. The area equal to or greater than 5 feet above the seasonal high groundwater level will be substantially increased. The increased area will be 10,640 sq. ft. for a total area of 13,840 sq. ft. in compliance. This is an increase from 8.4% of the Lot, to 36.2%. See Attachment 1 of this report for a figure showing this area.
5. The area of alteration is increased from the previous area of the proposed building, drip trenches and the entry areas to the building (previously approximately 4,500 sq. ft.) to the limits of filling that will now cover approximately 21,300 sq. ft.
6. The computed amount of fill material (not including the floor slabs) to bring the site to the proposed new grades is 360 cubic yards. The previous plan that used the existing grades resulted in the need to remove 144 cubic yards of soil from the site due to the displacement of the foundation volume. This means that the project would now be a net fill site. Therefore, no soil materials are anticipated to be removed from the site. This eliminates the need for an earth removal permit.
7. There is no change in groundcover type and drainage patterns, so no changes are required to the stormwater runoff calculations previously provided.

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8. The elevations of the drip trench systems were raised 0.4 feet above the previous design. This provides assurance that there will be more than 2 feet of separation from the highest groundwater level to the bottom of the infiltration trenches.

### **Response to Comments in the Horsley Witten Group Report:**

The following are responses to comments and questions posed by Horsley Witten Group in their review report dated January 7, 2021 that require further information or corrections. For context, we have included the actual text or paraphrased comments in italics:

#### Standard 2

- a. In the Stormwater report *Subcatchment numbers are not consistent with the catchment areas illustrated on the Post-Development Watersheds Figure WSD-PR. HW was able to confirm the watershed areas listed in the HydroCAD model however recommends that Figure WSD-PR be revised for documentation purposes.*

RESPONSE: DGT agrees with HW and we have corrected the figure for record. It is attached as Attachment 2.

#### Standard 3

- a. HW points out that the bottom of the drip trench systems is very close to the elevation of two feet above the seasonal high groundwater level based on the testing performed. Given that, HW suggests *“The Planning Board may consider requesting a letter from a soil evaluator confirming the separation at the time of installation.”*

RESPONSE: DGT and the Applicant have no objection to providing that test at the time of installation as recommended if desired by the Planning Board. Please note that the building and drip trenches have been raised 0.4 feet which now places the systems more than 2 feet above the highest groundwater elevation determined in the area from the tests performed in the area.

#### Standards 3. c; Standard 4. c; Standard 5. b; and Standard 6:

HW points out in these Sections that stormwater runoff from certain metal roofs cannot be discharged directly to recharge BMPs without pre-treatment per the Mass. Stormwater Management Regulations. This is due to wash off of metals that can be toxic at high concentrations and is a very important consideration in water supply aquifers. HW is asking for information on the roof being proposed in this case.

#### RESPONSE:

The question posed is quite justified and we are providing the following to address this concern. The metal roof types of concern in the regulations are copper roofs and non-coated galvanized roofs. The roof being proposed here is a galvalume coated steel roof.

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Galvalume is a type of galvanizing product that contains zinc. The concern is the potential wash-off of zinc into the environment. The galvalume process reduces the wash-off of zinc, but some studies show that the amounts can remain detectable at 0.06 mg/L.

To address this, the manufacturer has coatings that are applied (baked on) at the factory that reduces the wash-off of zinc to non-detectible levels and have been found to qualify as “non-polluting impervious surfaces”. The application material is called “Signature 300” which is a fluoropolymer coating that is baked on at the factory and comes with a 40 year warranty. Given the location of this project in an Aquifer Zone II, this material will be specified for the roof in this project. We have included the applicable information on this material in Attachment 3.

Standard 8.a.

*It does not appear that there is a defined limit of disturbance on the site. HW recommends that the Applicant delineated the limit of work on the Site Overview and the Site Layout and Grading and Plan sheets and confirm that no trees will be removed as part of the proposed development.*

RESPONSE: We have added the Limit of Work Line on the plan sheets requested plus the Erosion and Sediment Control Plan. Note that the limit of work area is larger in this revision to address the Planning Board comment as discussed earlier in this letter.

Also, there are no trees within the limit of work and the entire area within the limit is a compacted gravel surface.

Standard 8.b

*HW recommends that the Applicant add the 200 foot Riverfront Area line to clarify that no work is being conducted within this resource area.*

RESPONSE: The Riverfront boundary line is on the Overview Sheet, and we have now added the line to the Site Layout and Grading and Drainage Plan and the Erosion and Sediment Control Plan.

Standard 8.c.

*HW recommends that the Applicant provide additional notes and a delineated stockpile area to prohibit stockpiling within the floodplain, wetland buffer zone or riverfront area.*

RESPONSE: To address this, we have added a label on the Erosion and Sediment Control Plan to prohibit stockpiling in the flood plain area. We have also added the LIMIT OF WORK notes to that plan that prohibit alterations beyond the Limit of Work line and within the Flood Plain and Riverfront Area. Note that to address the Planning Board comment above, grading work is now proposed within a portion of the wetland buffer zone, so some short term stockpiling of gravel borrow will likely be necessary when that grading work is

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on-going. We will be filing a Notice of Intent with the Conservation Commission for this project.

Standard 8. d.

*The Applicant has noted a construction entrance at the west side of the site but has not indicated any dimensions on the plan or detail. HW recommends providing the dimensions.*

RESPONSE: Dimensions have been added to the plan view and detail on the Erosion and Sediment Control sheet.

Standard 9.b.

*HW recommends that the Applicant provide a simple stormwater practice location map as part of the Long Term O&M Plan.*

RESPONSE: As recommended, we have added a Stormwater Management Practice Diagram showing the location of the stormwater management features. Attachment 3 is the revised Stormwater O&M Plan with the diagram added.

Standard 10.a.

HW recommends that the Illicit Discharge Statement be signed by the property owner and provided to the Planning Board.

RESPONSE: Agreed. That will be provided.

**11. Compliance with Water Resource Protection District Regulations**

- 11.a. *In accordance with the test pit provided, the existing surface is slightly less than 5 feet to the maximum groundwater elevation in the storage yard.....HW recommends that the Planning Board determine if the Applicant is required to raise the elevation of the existing site.*

RESPONSE: This was discussed at the public hearing on January 13<sup>th</sup> and we have proposed raising a portion of the site. This is discussed in detail above in the first topic of this letter.

- 11.b. *HW recommends that the Applicant confirm that the site does not include any existing or proposed water supply wells as well as wastewater disposal systems.*

RESPONSE: This is to confirm that there are no existing or proposed water supply wells on the subject site. The existing septic two systems for the Precourt Stone facility is located on the corner lot at 46 Union Avenue. The nearest septic system is located approximately 90 feet from the southwest lot corner of the project lot (Rear Lot). No septic system is proposed for the proposed workshop building.

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- 11.c. *HW recommends that during construction the Applicant confirm that the bottom of the stone infiltration trench is 2 feet above the ESHGW.*

RESPONSE: See response to Standard 3.a. above.

- 11.d. *The proposed site will maintain the use of the existing site as a storage yard. The majority of the site consists of a gravel base that is considered impervious per the Sudbury Stormwater Regulations. HW defers to the Planning Board whether the Applicant is required to comply with Section 2.27 of the WRPOD Regulations for the existing impervious area of the site. Section 2.27 states that "All water runoff from impervious surfaces shall at a minimum, be funneled into gas trap catch basins. The first inch of every storm event shall be directed into a retention pond(s) where it shall be retained for an average of at least three (3) days prior to recharge into the ground or discharge from the site.*

RESPONSE:

Given the scope of the project, the applicant is providing groundwater recharge in accordance with the Massachusetts and Sudbury Stormwater Management Regulations for the new building. This is a "Redevelopment Project" under the Stormwater Regulations and the project is meeting the requirements for the new construction portion and making an improvement overall to the extent practicable. A minimum of 1 inch of clean runoff from the building roof will be captured and recharged to the ground. The overflow will discharge to the surface and drain overland to the existing discharge points as it presently does. Peak flows and volumes of runoff will be slightly reduced during all storm events. There is no increase in impervious surface. The project is therefore providing benefits to both the Zone II aquifer and surface water discharge and no detrimental impact to the wetland resource areas.

Capturing an inch of runoff from the entire compacted gravel surface and holding it for a minimum of three days would not be practicable. This would require construction of a basin to hold 2,800 cubic feet of water in the western portion of the lot. Due to the depth to groundwater, infiltration would not be possible per the regulations and controlling a surface discharge at such a slow rate (1.5 gallons per minute) could not be done by simple gravity controls.

As requested by the Planning Board, the Applicant is also proposing to raise a portion of the site to bring a substantial portion of the existing site into conformance with the 5 foot to groundwater rule.

Given this, the Applicant is asking your consideration of approving the project as now planned as meeting the intent of the Bylaw to the extent practicable.



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- 11.e. Section 2.2 of the WRPOD Regulations provides a list of the required components of an application within the WRPOD. The applicant has provided some of these documents however not all of them. HW recommends that the Planning Board determine if the applicant is required the listed documentation for this redevelopment project.

RESPONSE: The scope of the project is quite small, with no increase in impervious surfaces. Some of the application requirements of the WRPOD regulations appear to be for large projects that may have regional significance to the WRPOD and possible negative impacts to the Town water supply.

It is our contention that the application documentation provided includes sufficient information to determine that the project will not be a degradation to the District, will result in a net benefit, fits the scope of the project and meet the intent of the Regulations.

**Fire Department Comment received:**

The Assistant Fire Chief has commented that, due to the needed disturbance of the access drive to the project site for utility installations, they request a paved surface to improve access.

RESPONSE: A portion of the access drive is paved and a portion of compacted gravel. We agree that portions will be disturbed and are agreed that the area should be paved upon completion. The Applicant will meet with the Fire Officials to determine the area to be paved that will satisfy the Department's needs and agree to provide the necessary pavement. This decision may best be finalized when the utility work is completed to see what the limits of new pavement will be necessary.

Since this will also not increase the impervious area on the access way to the site, we ask that this be a condition of the approval. This would be consistent with the Planning staff recommendations in the Staff Report 1/13/2021.

**Planning & Community Development Department Staff Report**

Upon review of the Staff report dated 1/13/2021, we find that the comments, findings and recommendations of the report to be very thorough and completely describes the project. We have only a few minor comments regarding the recommended approval conditions which the applicant can discuss with the Board.

The one exception is due to the revision to raise the grade to bring the Rear Lot into closer conformance with the WRPOD than existing conditions. This now may not require an Earth Removal Permit.

19632



RE: Charles J. Precourt & Son - Proposed Workshop Building  
46 Union Avenue (Rear Lot)

January 20, 2021

We look forward to the continued hearing on January 27<sup>th</sup> to discuss this project. Please do not hesitate to contact me or the Applicants should you have any questions or need additional information.

Sincerely yours,  
**DGT Associates**

*Fredric W. King*

Fredric W. King, PE  
Senior Engineer

CC: Michael Precourt  
Harrison Precourt

- ATTACHMENTS:
1. Figure Showing Existing and Proposed Area of Site with not less than 5 feet to Seasonal High Groundwater.
  2. WSD-PR Revised Watershed Map.
  3. Metal Roof Information
  4. Stormwater Operation & Maintenance Plan with added BMP Diagram.



LOT 2  
Now or Formerly  
Union Avenue Realty, LLC  
Book 1456, Page 81

BENCHMARK:  
CHISELED X ON TOP OF  
CONCRETE RETAINING WALL  
ELEV. = 135.96 NAVD 1988

TOTAL AREA OF LOT TO BE > 5 FT. TO ESHGW = 13,840  
= 36.2% OF LOT

FIGURE SHOWING EXISTING AND PROPOSED  
AREAS WITH NOT LESS THAN 5 FT. TO ESHGW

EXISTING AREA OF SITE > 5 FT TO ESHGW = 3,200 SF  
= 8.4% OF LOT

PROPOSED NEW AREA  
OF SITE TO BE > 5 FT  
TO ESHGW = 10,640 SF,  
= 27.8%  
OF LOT

LOT AREA  
38,262 Sq. Ft. ±  
(0.88 Acres ±)

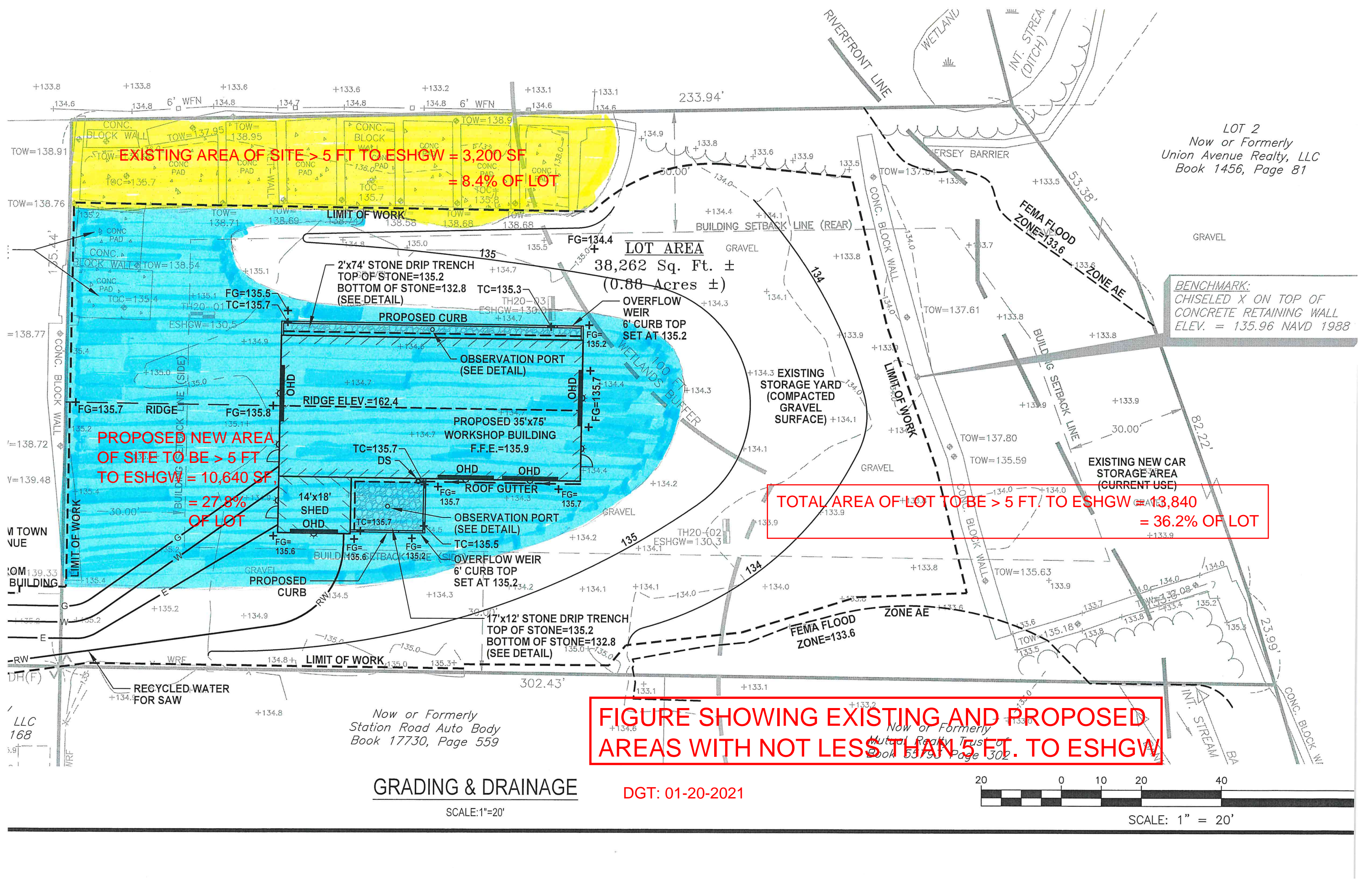
Now or Formerly  
Station Road Auto Body  
Book 17730, Page 559

Now or Formerly  
Mutual Realty Trust of  
Book 53190, Page 302

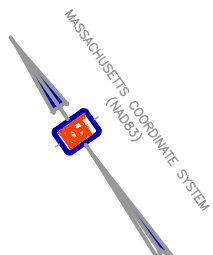
GRADING & DRAINAGE

DGT: 01-20-2021

SCALE: 1" = 20'


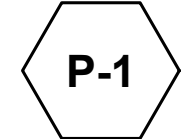

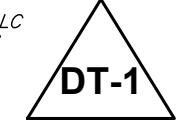


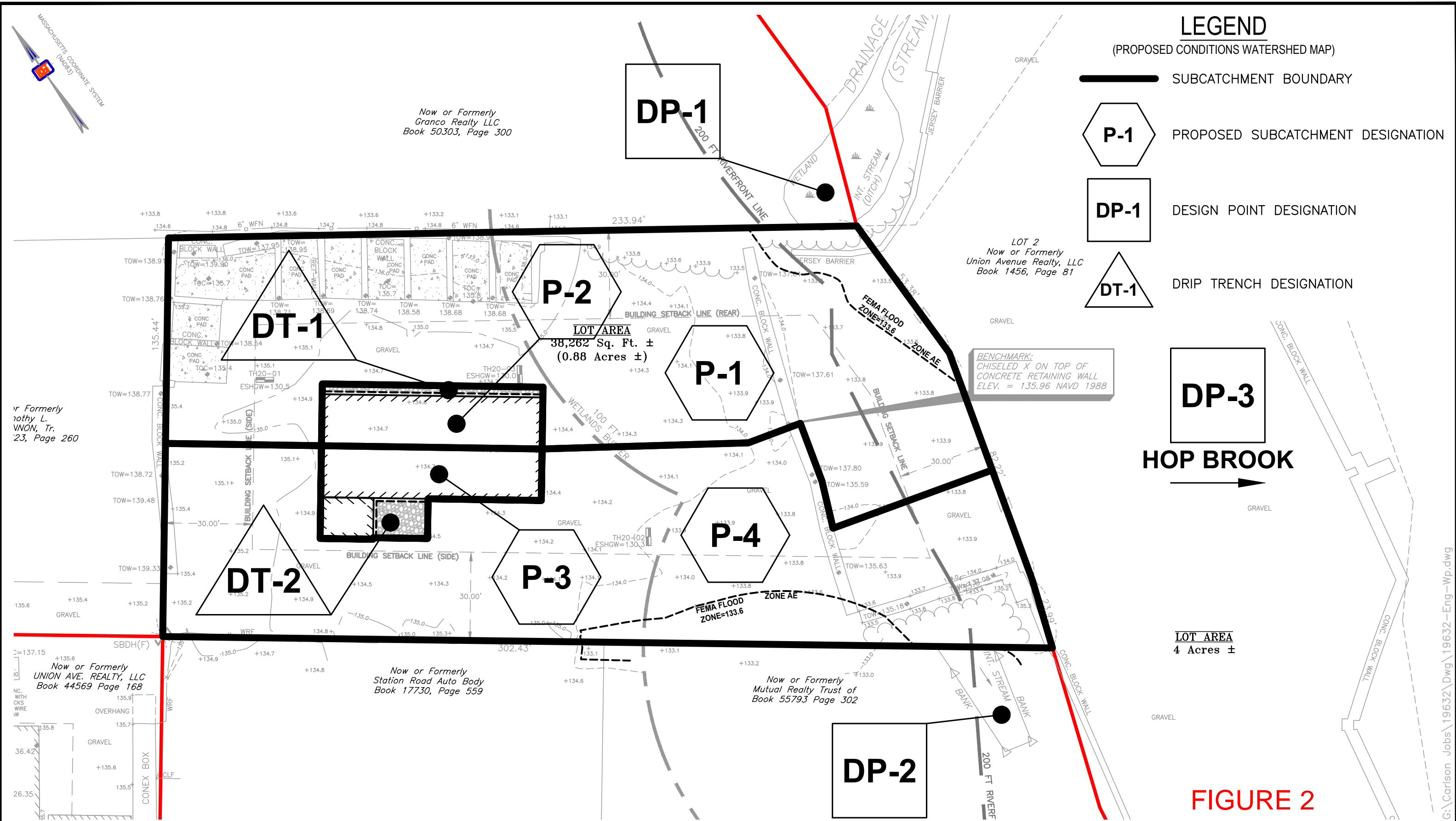





# LEGEND

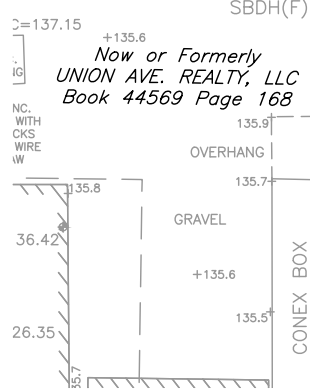
(PROPOSED CONDITIONS WATERSHED MAP)

-  SUBCATCHMENT BOUNDARY
-  PROPOSED SUBCATCHMENT DESIGNATION
-  DESIGN POINT DESIGNATION
-  DRIP TRENCH DESIGNATION



**DP-3**  
**HOP BROOK**  


## FIGURE 2



SCALE: 1" = 30'



**DGT Associates**  
 1071 Worcester Road  
 Framingham, MA 01701  
 508-879-0030  
 www.DGTassociates.com

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PROPOSED CONDITIONS WATERSHED MAP  
 AT  
 46 UNION AVENUE (REAR)  
 IN  
 SUDBURY, MA 01776

REVISED:	1/20/2021
DRAFTED BY:	FJS
SCALE:	1" = 30'

**WSD-PR**  
 19632

G:\Carlison Jobs\19632\19632-Eng-Wp.dwg

19632

RE: Charles J. Precourt & Son - Proposed Workshop Building  
46 Union Avenue (Rear Lot)

January 20, 2021

## **ATTACHMENT 3**

### **METAL ROOF INFORMATION**





Metal Roof and Wall Systems

# Signature<sup>®</sup> 300 and Signature<sup>®</sup> 300 Metallic SPECIFICATIONS

## SPECIFICATIONS

### Product Name

Signature<sup>®</sup> 300 and Signature<sup>®</sup> 300 Metallic, a premium fluoropolymer low gloss coating, produced with 70% Polyvinylidene Fluoride PVDF resin.

### Product Description

**Basic Uses:** Signature<sup>®</sup> 300 coatings are specified by leading architects and used by manufacturers of metal curtain wall and other building products as a longlife exterior finish for aluminum, galvanized steel and Galvalume<sup>®</sup>. The liquid coating is factory applied and oven baked on properly prepared and primed substrates. Signature<sup>®</sup> 300 coatings typically are used as exterior finishes for metal roofing, siding, louvers, fascia, curtain wall, spandrel paneling and column covers. The building components can be post-formed from pre-coated coil stock.

**Limitations:** Since Signature<sup>®</sup> 300 coatings require baking to cure, they cannot be field applied. Signature<sup>®</sup> 300 coatings are not approved for use on hot or cold rolled bare steel substrates intended for exterior exposure.

**Composition and Materials:** Signature<sup>®</sup> 300 coatings are based on 70% PVDF fluoropolymer resin. They also are formulated with highly durable pigments and solvents

blended for optimum application properties.

**Color:** Signature<sup>®</sup> 300 coatings are available in a wide range of standard, field-proven colors. Special colors are available (minimum quantity requirements may apply) if approved by manufacturer.

**Technical Data**  
See Chart Below.

### Installation

Signature<sup>®</sup> 300 coatings may be coil coated on HDG steel, Aluminum or Galvalume<sup>®</sup> substrates that have been pretreated and primed according to manufacturer specifications. The entire system is applied in the factory and oven baked. Topcoat dry film thicknesses are within the 0.9-1.1 mil range (Note: which refers to the combination of primer and the Signature<sup>®</sup> 300 protective coating) for coil coated applications. The pretreated substrate is primed with 0.2 - 0.30 mil of a high performance primer. The Signature<sup>®</sup> 300 protective coating is applied over the primed substrate at 0.7 - 0.8 mil. The flexibility of the system permits coilcoated stock to be post-formed by either a roll former or press brake. All applicators of Signature<sup>®</sup> 300 coatings must have the approval of manufacturer. A list of approved applicators is available upon request.

### Warranty

The Signature<sup>®</sup> 300 warranty is backed by the strictest production specifications and is one of the strongest in the industry. Details and further information are available by contacting manufacturer.

### Maintenance

Signature<sup>®</sup> 300 coatings are virtually maintenance free and non-staining. If necessary, surface residue may be removed by conventional cleaning solvents or detergents. Minor scratches may be touched-up with a specially formulated, field-applied coating of the same color.

Signature<sup>®</sup> 300 coatings can be used in conjunction with conventional sealants and caulking compounds. Mortar, plaster, etc. will neither adhere to nor stain the surface.

### Technical Assistance

Complete technical information and literature is available from manufacturer.

Signature<sup>®</sup> is a registered trademark of NCI Group, Inc. GALVALUME<sup>®</sup> is a registered trademark of BIEC International Inc.

## TECHNICAL DATA

### PHYSICAL PROPERTIES Signature<sup>®</sup> 300

Property	Value	Test Designation
<b>Gloss @ 85°</b>	8-15	ASTM D523
<b>Film Hardness</b>	HB-Min (Eagle Turq.)	ASTM D3363 (NCCA II-12) (2)
<b>Impact Resistance, .5" Ball Indenter, 3x Metal Thickness</b>	(8) Acceptable	ASTM D2794
<b>Formability:</b>	(1) Acceptable	ASTM D522
<b>180° bend around 1/8" mandrel</b>	(2) Acceptable	ASTM D3359 (NCCA II-5)
<b>Adhesion</b>	67 Liters	ASTM D968
<b>Abrasion Resistance, Falling Sand</b>	(3) Acceptable	ASTM D4587, G53, or G154
<b>Accelerated Weathering, 5,000 hrs. exposure</b>	(4) Acceptable	ASTM D2247, Apparatus A1
<b>Humidity, 3,000 hrs.</b>	(5) Acceptable	ASTM B117 (NCCA III-2)
<b>Salt Spray, 2,000 hrs.</b>	(6) Acceptable	ASTM D5894
<b>Cyclic Salt Fog/UV exposure, 3,000 hrs.</b>	(7) Acceptable	ASTM D1308
<b>Chemical Spot Test</b>		

- (1) No evidence of cracking, and no loss of adhesion to the point of metal rupture.
- (2) No removal of finish after 1/16-inch cross-hatching to bare metal, to impact limits or point of metal rupture.
- (3) No cracking, peeling, blistering, loss of adhesion or corrosion of base metal. Chalk rating of 8 per ASTM D4214. Color change less than 5ΔE per ASTM D2244.
- (4) Rating of 10, no blistering, cracking, creepage or corrosion per ASTM D1654.
- (5) No more than 5/32-inch average creepage from scribed line rating of 7, field test rating of 8 per ASTM D1654.
- (6) No more than 1/32-inch creepage from scribed line, rating of 8. No blistering, rating of 10 per ASTM D1654.
- (7) 10% Hydrochloric acid solution 24 hours no visible changes. 25% sodium hydroxide 1 hour test no color change, no blistering.
- (8) Reverse impact and direct impact, no cracking or loss of adhesion.

Descriptions and specifications contained herein were in effect at the time this publication was approved for printing. We reserve the right to discontinue products at any time or change specifications and/or designs without notice and without incurring obligation.



Metal Roof and Wall Systems

Houston, TX 877-713-6224  
Adel, GA 888-446-6224  
Atlanta, GA 877-512-6224  
Atwater, CA 800-829-9324

Dallas, TX 800-653-6224  
Indianapolis, IN 800-735-6224  
Lubbock, TX 800-758-6224  
Memphis, TN 800-206-6224

Oklahoma City, OK 800-597-6224  
Omaha, NE 800-458-6224  
Phoenix, AZ 888-533-6224  
Richmond, VA 800-729-6224

Rome, NY 800-559-6224  
Salt Lake City, UT 800-874-2404  
San Antonio, TX 800-598-6224



**Precoated SIGNATURE<sup>®</sup> 300 Panel  
PRECOATED 70% FLUOROPOLYMER PANEL  
LIMITED WARRANTY**

MBCI, a division of NCI Group, Inc. (hereinafter referred to as "Manufacturer") warrants the panels, effective from the date of shipment, will perform in accordance to the following Signature<sup>®</sup> 300 Warranty:

**PERFORMANCE SUMMARY**

- A. **FILM INTEGRITY:** The paint film WILL NOT crack, check, or peel for a period of forty (40) years for Wall and Roof panels, except Brite Red, in which case thirty (30) years, and Copper Metallic and Silver Metallic, in which case twenty-five (25) years. Cracking is defined as breaks in the flat coating as opposed to breaks in the film caused by metal forming, which is not warranted hereunder.
- B. **CHALK AND FADE:** The paint film WILL NOT;
- (1) For a period of thirty (30) years, chalk in excess of a numerical rating of 8 for vertical or non-vertical panel applications when measured in accordance with the standard procedures as defined by the "Standard Methods of Evaluating Degree of Chalking of Exterior Paints", ASTM D4214, except; Brite Red, Copper Metallic and Silver Metallic in which case for a period of twenty-five (25) years, chalk in excess of a numerical rating of 6, or
- (2) For a period of thirty (30) years, fade or change in color in excess of 5 color difference units, for vertical or non-vertical panel applications, measured in accordance with ASTM D2244 on the exposed painted surfaces which have been cleaned of external deposits and chalk and the corresponding values measured on the original (unexposed) painted surfaces, except; Brite Red, in which case for a period of twenty-five (25) years, fade or change in color in excess of 10 and Copper Metallic and Silver Metallic, in which case the warranty for fade does not apply. It is understood that fading or color changes may not be uniform if the surfaces are not equally exposed to the sun and elements.

**TERMS AND CONDITIONS**

1. This warranty covers the material exposed to normal atmospheric conditions (which term excludes exposure to saltwater/marine atmospheres or corrosive or aggressive atmospheres such as, but not limited to, those contaminated with chemical fumes) in the continental United States, Alaska or Canada, unless Manufacturer agrees otherwise in writing. This warranty shall not apply where material failure is the result of fire, other accident or casualty, vandalism, salt spray, atomic radiation, harmful fumes or foreign substances in the atmosphere, acts of God, or other such occurrences beyond Manufacturer's control.
2. This warranty will not extend to or cover damages to the material due to improper packaging, shipping or processing as specified in the National Coil Coaters Association Technical Bulletin No. IV- (7), improper handling (whether pre-erection or during erection), improper storage, improper erection, or improper installation (which includes failure to permit drainage of standing water.)
3. Microscopic crazing of the film on formed radii is considered normal and is not to be construed as film cracking.
4. This warranty does not apply in the event of deterioration to the panels caused directly or indirectly by panel contact with inferior fasteners. Selection of suitable long-lasting fasteners to be used with Manufacturer's extended life panels rests solely with the Purchaser.
5. The improper use of Manufacturer's seaming equipment or use of seaming equipment obtained from a party other than the Manufacturer may result in this and all warranties being void.
6. This warranty will not extend to or cover:
  - a) Damage to the coating occasioned by moisture or other contamination detrimental to the coating because of improper storage of the coated Metal prior to installation.
  - b) Water damage to any materials after they leave the possession of the Manufacturer.
  - c) Damage to the prepainted metal caused by shipping, handling, and/or installation, storing, erecting and/or handling of the panels on the job site and/or any act or acts of negligence of the customer or any third party after the panels leave the possession of the Manufacturer.
  - d) Damage to the coated Metal as a result of standing water in non-vertical application.
  - e) Damage to the prepainted metal caused by cascading water.
  - f) Damage to the coated Metal caused by contact with, or water run-off from, lead, copper, graphite or other dissimilar material. This includes, but is not limited to, A/C condensation and treated wood.
  - g) Damage to the coated Metal caused by contact with corrosive substances, or allowing panel cut edges to be in continual contact with water, damp insulation, soil or vegetation i.e. setting wall panels directly on the concrete sheeting notch or base trim.
  - h) This warranty does not apply to products, materials, accessories, parts, or attachments which are not produced by the Manufacturer. In addition, all items not specifically listed as included are hereby excluded from this warranty.
7. Customer shall exercise diligence in inspection of materials as received from Manufacturer prior to use so as to mitigate expense involved to Manufacturer under this warranty.
8. This warranty does not apply to the interior or reverse side finish nor does it extend to pre-painted materials used in interior (not atmospherically exposed) applications.
9. This warranty does not apply to perforated material.
10. This warranty applies only to the paint film on the material and does not cover in any way any other aspect of the material.
11. If the panel finish fails to perform as indicated under the terms of Performance outlined above, Manufacturer shall have no liability with respect thereto except, at its sole option to repaint, replace, or restore the failed material, which shall be the purchaser's sole and exclusive remedy. When Manufacturer chooses to replace the defective coated Metal, its sole obligation is for the replacement of the material only. Manufacturer shall not be liable for any expenses connected with labor for the replacement of the defective material or any consequential damages. Repainting shall not necessarily be with 70% PVF2/PVDF. In no event, however, shall Manufacturer's responsibility extend to any consequential damages, or for any special, indirect, or consequential loss of profits or any other incidental, general, special, or compensatory damages to anyone because such panels may have been nonconforming. In all cases Manufacturer reserves the right to approve and negotiate the contract for such repainting or restoring. The warranty on any repainted, replaced or restored coated material supplied hereunder shall be for the unexpired portion of the warranty period applicable to the original coated material.

**Precoated SIGNATURE® 300 Panel**  
**PRECOATED 70% FLUOROPOLYMER PANEL LIMITED WARRANTY**

**TERMS AND CONDITIONS (CONT.)**

12. Claims must be reported in writing to Manufacturer within thirty (30) days after discovery of nonconformance. Adequate identification of the material involved in the claim, including date of installation, Manufacturer order number, Manufacturer invoice number, and date of shipment must be established by Buyer. A copy of this document must be presented to Manufacturer at time of claim. All notices given under or pursuant to this Agreement shall be in writing and sent by registered mail, postage prepaid, return receipt requested to:

NCI Group, Inc.  
P.O. Box 692055  
Houston, TX 77269-2055  
Attn: Claims Department

13. No terms or conditions other than those stated herein and no agreement or understanding, oral or written in any way purporting to modify this warranty shall be binding on Manufacturer unless made in writing and signed by the President of Manufacturer.
14. This warranty shall not become effective and Manufacturer shall not have any obligation under any warranty until all invoices issued by Manufacturer, Manufacturer's customer, and the Roofing Contractor have been paid in full, in accordance with their terms, without offset, deduction or credit and all installation deficiencies listed in any Manufacturer inspection report have been corrected and all Manufacturer procedures have been followed.
15. This warranty shall extend to the original Building Owner and is non-assignable and/or non-transferable. Should the Owner become insolvent, bankrupt, make an assignment for the benefit of its creditors, or for any reason discontinue its normal or regular business practices, this warranty shall forthwith become null and void and of no legal effect.
16. Any party seeking to enforce claims under this Warranty hereby acknowledges and agrees that (i) all matters relating to the validity, performance, interpretation, and/or enforcement of this Warranty shall be governed by and construed in accordance with the laws of the State of Texas, (ii) any and all claims, actions, proceedings or causes of action relating to the validity, performance, interpretation, and/or enforcement hereof must be submitted to a court of competent jurisdiction in Houston, Harris County, Texas, (iii) this Warranty is capable of being performed in Harris County, Texas, (iv) it irrevocably submits itself to the jurisdiction of the state and federal courts in Harris County, Texas, (v) service of process may be made upon it in any legal proceeding in connection with this Warranty or any other agreement as provided by Texas law, (vi) it irrevocably waives, to the fullest extent permitted by law, any objection that it may now or hereafter have to the laying of venue of any litigation arising out of or in connection with this Warranty or any other agreement or transaction brought in any such court, (vii) it irrevocably waives any claims that litigation brought in any such court has been brought in an inconvenient forum, and (viii) it irrevocably consents to the service of process out of any of the aforementioned courts by the mailing of copies thereof by Certified Mail, Return Receipt Requested, postage prepaid, and its address set forth herein. The scope of each of the foregoing waivers is intended to be all encompassing. Each party acknowledges that this waiver is a material inducement to the agreement of each party hereto to enter into a business relationship, and that each has already relied on this waiver in entering into this Warranty. Each party warrants and represents that it has reviewed these waivers with its legal counsel, and that it knowingly and voluntarily agrees to each such waiver following consultation therewith.
17. **FORCE MAJEURE. UNDER NO CIRCUMSTANCES SHALL MANUFACTURER BE LIABLE IN ANY WAY TO THE BUILDING OWNER OR ANY OTHER PARTY FOR DELAYS, FAILURE IN PERFORMANCE, OR LOSS OR DAMAGE DUE TO FORCE MAJEURE CONDITIONS INCLUDING, WITHOUT LIMITATION: FIRE; LIGHTNING; STRIKE; EMBARGO; EXPLOSION; POWER SURGE OR FAILURE; ACTS OF GOD; WAR; LABOR OR EMPLOYMENT DISPUTES; CIVIL DISTURBANCES; ACTS OF CIVIL OR MILITARY AUTHORITY; INABILITY TO SECURE MATERIALS, FUEL, PRODUCTS OR TRANSPORTATION FACILITIES; ACTS OR OMISSIONS OF SUPPLIERS, OR ANY OTHER CAUSES BEYOND ITS REASONABLE CONTROL, WHETHER OR NOT SIMILAR TO THE FOREGOING.**
18. Notwithstanding the foregoing, the warranty coverage provided above by Manufacturer shall be expressly limited to and shall include only such warranty coverage on coatings applied to Manufacturer's panel materials by the original supplier(s) thereof. Any and all such warranty coverage available from Manufacturer shall apply only to the same extent that such warranty coverage is available from the original supplier thereof. To the extent that warranty coverage from such supplier(s) is unavailable for any reason whatsoever, Manufacturer shall not have any further liability to purchaser or any other party.

**DISCLAIMER-EXCEPT AS EXPRESSLY STATED HEREIN, THE ABOVE WARRANTY PROVISIONS DO NOT COVER COATINGS, PRODUCTS, ACCESSORIES, PARTS OR ATTACHMENTS THAT ARE NOT PRODUCED BY MANUFACTURER. EXCEPT AS OTHERWISE EXPRESSLY STATED, THERE IS NO WARRANTY, REPRESENTATION OR CONDITION OF ANY KIND AND ANY WARRANTY, EXPRESS OR IMPLIED, IS HEREBY EXCLUDED AND DISCLAIMED INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE. NOTWITHSTANDING ANYTHING ELSE CONTAINED HEREIN TO THE CONTRARY, IT IS EXPRESSLY UNDERSTOOD AND AGREED THAT MANUFACTURER'S LIABILITY AND PURCHASER'S SOLE REMEDY, WHETHER IN CONTRACT, UNDER ANY WARRANTY, IN TORT (INCLUDING NEGLIGENCE), IN STRICT LIABILITY OR OTHERWISE SHALL NOT EXCEED THE COST OF THE AMOUNT OF THE MATERIALS, EXPRESSLY EXCLUDING LABOR COSTS AND EXPENSES, COSTS OF RENTING REPLACEMENTS AND ANY OTHER ADDITIONAL EXPENSES. UNDER NO CIRCUMSTANCES SHALL MANUFACTURER BE LIABLE FOR ANY SPECIAL, INCIDENTAL, LIQUIDATED OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, PERSONAL INJURY, PROPERTY DAMAGE, DAMAGE TO OR LOSS OF EQUIPMENT, LOST PROFITS OR REVENUE, LABOR COSTS AND EXPENSES, COSTS OF RENTING REPLACEMENTS AND OTHER ADDITIONAL EXPENSES, EVEN IF MANUFACTURER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. MANUFACTURER WILL NOT BE LIABLE FOR ANY DAMAGES, LOSSES OR EXPENSES AS A RESULT OF PURCHASER'S (OR ANY OTHER PARTY'S) NEGLIGENCE, WHETHER DEEMED ACTIVE OR PASSIVE AND WHETHER OR NOT ANY SUCH NEGLIGENCE IS THE SOLE OR PARTIAL CAUSE OF ANY SUCH DAMAGE, LOSS OR EXPENSE. IN ADDITION, UNDER NO CIRCUMSTANCES SHALL MANUFACTURER BE LIABLE FOR ANY DAMAGES, LOSSES OR EXPENSES WHATSOEVER AS A RESULT OF ANY OTHER PARTY'S MATERIALS OR PRODUCTS WHICH CAUSE OR ALLEGEDLY CAUSE, IN WHOLE OR IN PART, DAMAGE, LOSS OR DETERIORATION TO THE MANUFACTURER'S WALL AND/OR ROOF PANELS.**

Signature® is a registered trademark of NCI Group, Inc. This warranty applies to the following Signature 300 colors only: Harbor Blue, Colonial Red, Medium Bronze, Pacific Blue, Natural Patina, Snow White, Slate Gray, Almond, Midnight Bronze, Classic Green, Everglade, Brownstone, Tundra, Spruce, Hunter Green, Brite Red, Bone White, Silver Metallic and Copper Metallic. Please contact your sales representative for any other non-standard or custom color.

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Project Name

---

Manufacturer's Job #

---

Color(s)



**BETHLEHEM STEEL CORPORATION**  
Safety, Health and Environment  
Environmental Affairs

15 August 2000

**FROM:** S. T. Herman

**TO:** E. D. Melcher

**SUBJECT:** Testing of Painted Galvanized, Bare Galvalume®, and Bare Galvalume Plus®, Metal Roofing Panels – King County, Washington Test Procedure

**Reference:** Letter, LKulzer, Senior Water Quality Specialist, King County, Washington, Test Procedure, Testing Metal Roof Materials for Leaching, June 14, 1999

### SUMMARY AND CONCLUSIONS

Roofing panels manufactured from: 1.) painted galvanized, 2.) bare Galvalume®, and 3.) bare Galvalume Plus® were subjected to the Referenced test procedure to determine metals released from the panels in simulated rainwater runoff. The runoff from the sheets was analyzed for mercury, arsenic, cadmium, copper, lead, nickel, and zinc. All of the metal concentrations in the runoff were below detection limits with the exception of zinc in the runoff from the bare Galvalume®, which analyzed at 0.06 mg/liter. Based on the results of these tests, we believe that all six of the roofing panels tested qualify as non-polluting impervious surfaces.

### INTRODUCTION

King County in the state of Washington requires water quality facilities to treat the runoff from new and/or replaced pollution-generating impervious surfaces (PGIS) and pollution generating pervious surfaces. Metal roofs are considered to be PGIS unless they are treated to prevent leaching. The Reference describes the King County test procedure used to determine if roofing materials are pollution generating. Roofing panels manufactured from painted galvanized (silicon-modified, polyester based paint), bare Galvalume®, and bare Galvalume Plus® were subjected to the test procedure in the Reference.

### DISCUSSION AND RESULTS

#### Test Procedures

##### Environmental Test Chamber

The Reference describes in general terms the procedure for testing roofing material to determine if rainfall runoff from the roof will contain harmful levels of arsenic, cadmium, copper, lead, nickel, zinc, and mercury. A controlled-environment chamber to contain the test stands and panels was constructed indoors at Bethlehem Steel's Homer Research Laboratories in Bethlehem, Pennsylvania. The framework for the walls of the 17-foot by 18.5-foot by 8-foot tall chamber is constructed of two by fours on 16-inch centers. The roof of the chamber is constructed of two by sixes on 16-inch centers. The interior of the chamber, including the ceiling, is covered with white fiberglass panels to prevent moisture damage. Three doorways covered with hanging plastic air seals provide entry to the chamber. The interior walls are sealed to the floor to prevent water from flowing under them. There is a drain channel across the floor to carry away water. A flow of about 1,000 cubic feet per minute of filtered, outside air is introduced into the chamber to maintain a positive pressure. Four, moisture resistant, double bulb, fluorescent fixtures provide lighting. This chamber is necessary to prevent any contamination from small quantities of zinc that

may be present in the building air, e.g. from galvanized ductwork. Wooden test frames were built inside the controlled- environment chamber that could be raised and lowered to provide slopes from ¼-inch per foot to one inch per foot. A slope of ¼-inch per foot was used for this test series. In order to assure that any surface contamination was removed from the panels prior to testing (e.g., traces of vanishing oil applied prior to forming the panel), each panel was washed with a solution of laboratory soap and tap water. After washing, the panels were thoroughly rinsed first with tap water and then with deionized water. The panels were then hand dried with absorbent material to remove any standing water droplets.

### **Water Used for Testing**

The water used for the tests is produced by passing Bethlehem City water through the following steps:

- a carbon filter
- a standard water softener to remove calcium and magnesium
- a reverse osmosis unit
- two de-ionization columns in series

The effluent from the de-ionization columns flows to a plastic, 200-gallon tank. Water from the 200-gallon tank is continuously recirculated through the two de-ionization columns. The water as applied to the strips had a pH of 5.1. That compares reasonably well with the recent average pH of the rainfall in the northwest portion of the state of Washington as shown in Attachment 1.

### **Application of Water to the Panels**

Magnetically-coupled, polypropylene, model BC-3C-MD, centrifugal pumps manufactured by March Industries were used to transport the water to the test panels. All piping was standard PVC or Tygon® tubing. Water was applied to the strips by pumping it at a pressure of about 9.0 psig through two Spraying System Company, model 23360-1-OG, stainless steel, full-jet nozzles. The tank used to contain the applied water was constructed of polypropylene. The spray nozzles were located to one side of the test panels (one foot and three feet from the lower edge of the roofing panels) and were angled upward to provide droplets that fell by gravity onto the test sheets to simulate rainfall. The water flowed off the end of the panel and dropped into a PVC catch basin (a section of 3-inch PVC pipe cut in half with each end closed by PVC sheet glued in place). The water flowed from the PVC catch basin through Tygon® tubing to the floor drain. Figure 1 is a photograph of the test stands under operation. The flow rate from the PVC catch basin was measured twice during each 30-minute test. The average flow rates for each test and the square feet of wetted panel are shown in Table 1. The flow rates vary depending upon the geometry of the individual test panel. Wider panels provide a larger wetted surface and collect more water than narrow ones.

### **Sampling and Analysis Procedures**

After the water had been applied to the panels for 30 minutes, the runoff samples were collected by placing the end of the Tygon® tubing from the PVC catch basin into an acid cleaned Erlenmeyer flask. Approximately 2,000 milliliters of runoff were collected from each panel. The collected sample was split into three, 500-milliliter, acid-cleaned, plastic sample bottles and immediately preserved with double distilled nitric acid. One of the samples was submitted for the metals analysis and the other two samples were retained in case any reanalysis was necessary. Samples of the deionized water were collected by placing Tygon® tubing over one of the spray nozzles and directing the flow into an acid cleaned Erlenmeyer flask. That sampling procedure assured that any contaminants that entered the water from the tank, pump, and piping were included in the sample to be analyzed. The applied water samples were split and preserved in the same manner as the runoff samples. The samples were submitted to Gascoyne



Laboratories, 2101 Van Deman Street, Baltimore, Maryland 21224. Gascoyne Laboratories maintains accreditation to ISO Guide 25 – the American Association for Laboratory Accreditation and the National Institute of Standards and Technology through their National Voluntary Laboratory Accreditation Program. The quality assurance and quality control data from Gascoyne Laboratories for the analyses are on file. There were two slight deviations from the sampling and analysis procedures listed in the Reference. The collected samples were shipped to the laboratory in a single batch after all panels were tested (two days) instead of having same day delivery. Also, method 245.1 CVAA (automated sample injection) was used for the analysis of mercury instead of Method 245.2 CVAA (manual sample injection). Neither of these modifications to the Referenced methods should have any effect on the results. Tables 2 and 3 list the results of the analyses of the applied water and the runoff from the panels. All of the results for the samples of the water applied to the roofing panels are less than the minimum metal detection limits with the exception of the water applied to the bare Galvalume® which showed a copper concentration of 0.006 mg/liter. The metal concentrations in the roof runoff samples were all below detection limits with the exception of zinc in the runoff from the bare Galvalume®, which analyzed at 0.06 mg/liter.

Based on the results of these tests, we believe that all six of the roofing panels tested qualify as non-polluting impervious surfaces. If you have any questions about this information, please call me at extension 6476 in Bethlehem.

*S. T. Herman*  
*EDM*

S. T. Herman

bcc: WJRiley  
EGLaver  
TCSimpson  
BEBachman  
JBartosh  
RTSewald  
ZJLezoche

**Figure 1. Test Stand Operation  
Roofing Panel Simulated Rainwater Test**

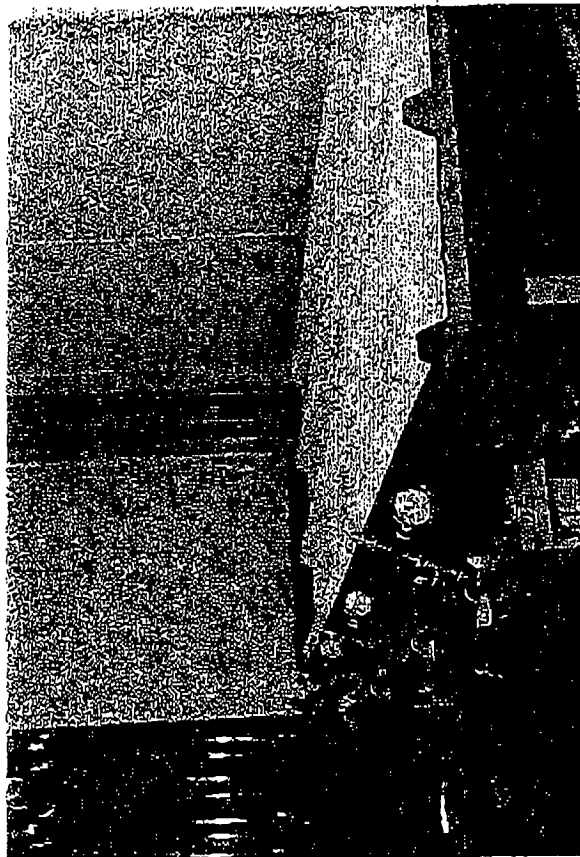


Table 1. Water Application Rates to Roofing Panels

Sample	Wetted Width - * inches	Wetted Area sq. ft.	Flow Rate	
			ml/min	in/hour
Painted Galvanized - Blue (Silicon-Modified Polyester)	39	22.8	570	0.64
Painted Galvanized - Green (Silicon-Modified Polyester)	39	22.8	553	0.62
Painted Galvanized - Red (Silicon-Modified Polyester)	39	22.8	525	0.59
Painted Galvanized - White (Silicon-Modified Polyester)	39	22.8	557	0.62
Bare Galvalume	39	22.8	615	0.69
Bare Galvalume Plus	39	22.8	510	0.57

\* - Wetted width includes ridges in the panels, not just the measured width of the panel.

Table 2. Metal Analysis of Synthetic Rainfall Applied to Roofing Panels

Sample	Mercury	Arsenic	Cadmium	Copper	Lead	Nickel	Zinc
	mg/liter	mg/liter	mg/liter	mg/liter	mg/liter	mg/liter	mg/liter
Painted Galvanized - Blue (SMP <sup>a</sup> )	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.01
Painted Galvanized - Green (SMP <sup>a</sup> )	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.01
Painted Galvanized - Red (SMP <sup>a</sup> )	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.01
Painted Galvanized - White (SMP <sup>a</sup> )	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.01
Galvalume	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.01
Galvalume Plus	< 0.002	< 0.005	< 0.0005	0.006	< 0.005	< 0.005	< 0.01

<sup>a</sup> silicon-modified polyester (SMP) paint system



Table 3. Metal Analysis of Runoff from Roofing Panels

Sample	Mercury mg/liter	Arsenic mg/liter	Cadmium mg/liter	Copper mg/liter	Lead mg/liter	Nickel mg/liter	Zinc mg/liter
Painted Galvanized - Blue (SMP*)	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.01
Painted Galvanized - Green (SMP*)	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.01
Painted Galvanized - Red (SMP*)	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.01
Painted Galvanized - White (SMP*)	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.01
Galvalume	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	0.06
Galvalume Plus	< 0.002	< 0.005	< 0.0005	< 0.005	< 0.005	< 0.005	< 0.01

\* silicon-modified polyester (SMP) paint system

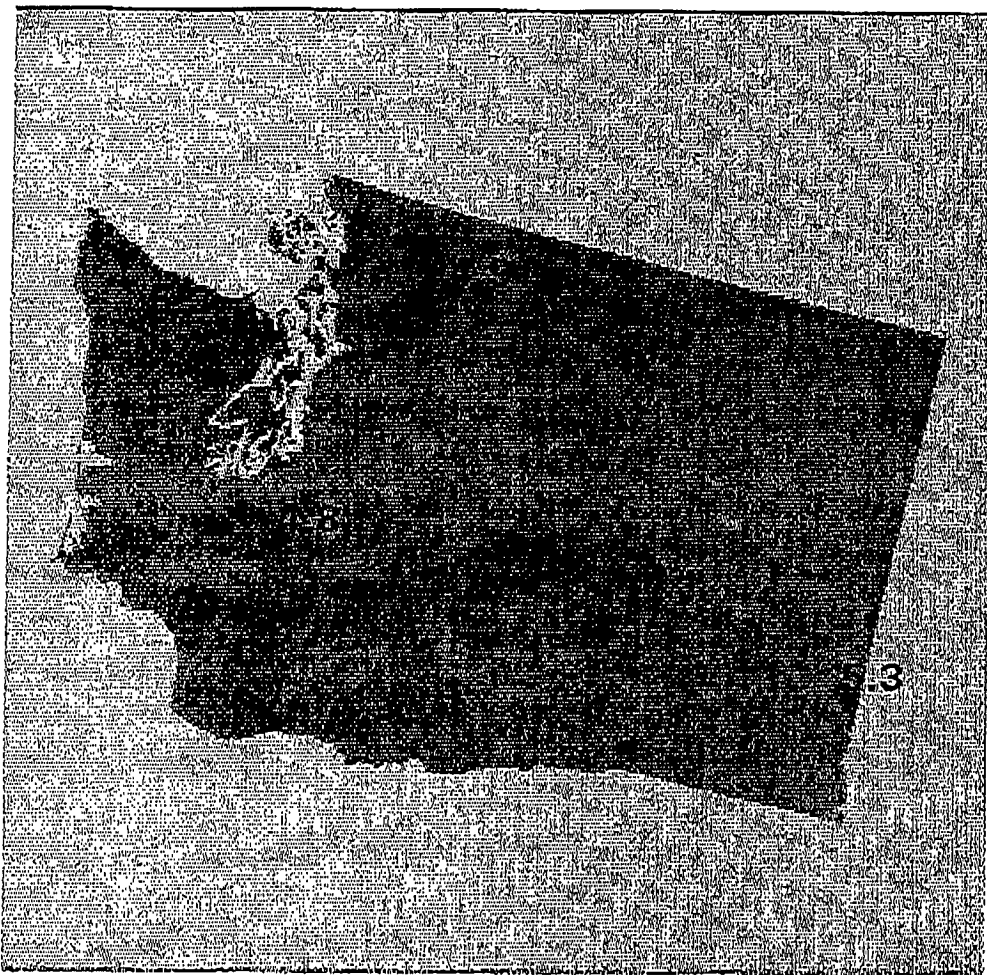


## ATTACHMENT 1

# National Water Conditions

U.S. Geological Survey  
Environment Canada Climate Information Branch

## Sites in Washington (pH units)



[Access additional data or other site-specific information provided by the National Atmospheric Deposition Program/National Trends Network \(NADP/NTN\)](#)

**[Return to pH of Precipitation Map]**

19632

RE: Charles J. Precourt & Son - Proposed Workshop Building  
46 Union Avenue (Rear Lot)

January 20, 2021

## **ATTACHMENT 4**

### **STORMWATER OPERATION AND MAINTENANCE PLAN WITH BMP DIAGRAM ADDED**

## **APPENDIX 2**

# **Stormwater Operations and Maintenance Plan**

Operation and Maintenance Information  
Inspection Forms  
Stormwater System Maintenance Record

for

### **Precourt Stone – Rear Lot Workshop**

46 Union Avenue  
Sudbury, MA 01776

Revised January 20, 2021

NOTE THAT THIS DOCUMENT IS INCLUDED  
IN THE REVISED STORMWATER REPORT  
FEBRUARY 24, 2021 (NOI ATTACHMENT 4)

# STORMWATER MANAGEMENT DESIGN AND RUNOFF CALCULATIONS REPORT

for

## PROPOSED WORKSHOP BUILDING

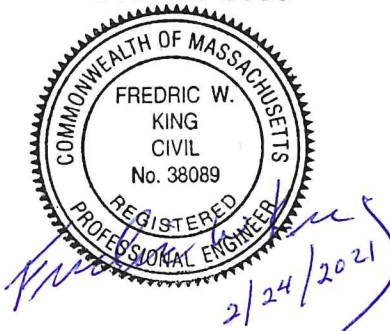
Precourt Stone  
46 Union Avenue  
Sudbury, MA 01776

### Report Prepared for:

Charles J. Precourt & Son, Inc.  
46 Union Avenue  
Sudbury, MA 01776

### Report Prepared by:

DGT Associates – Project Civil Engineer  
1071 Worcester Road  
Framingham, MA 01701  
508-879-0030



November 9, 2020  
Revised February 24, 2021



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<b>Section 3</b>	<b>Existing Conditions Stormwater Model</b> showing Stormwater Flows and Flood Routing Computations using HydroCAD version 10.00 Existing Conditions Watershed Map	<b>14 pages</b>
<b>Section 4</b>	<b>Proposed Conditions Stormwater Model</b> showing Stormwater Flows and Flood Routing Computations using HydroCAD version 10.00 Proposed Conditions Watershed Map	<b>24 pages</b>

## APPENDICIES

<b>Appendix 1</b>	<b>Soils Data</b> 1. Soils Summary by DGT Associates 2. NRCS Soils Information	<b>14 pages</b>
<b>Appendix 2</b>	<b>Stormwater BMP Operation and Maintenance Plan</b> Operation & Maintenance Plan Inspection Forms Stormwater System Maintenance Record	<b>7 pages</b>

# **SECTION 1**

## **Stormwater Management Report Narrative and Summary**

for

## **Proposed Workshop Building Precourt Stone**

46 Union Avenue and Station Road  
Sudbury, MA 01776

# **PRECOURT STONE WORKSHOP PROJECT STORMWATER MANAGEMENT NARRATIVE SUMMARY**

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This report contains the hydrologic computations and design information relative to the existing and proposed stormwater runoff conditions for the proposed workshop site and associated site improvements at the Precourt Stone facility in Sudbury, MA. It includes information on the stormwater management system design, assessment of stormwater impacts and compliance with the Massachusetts Department of Environmental Protection (Mass. DEP) Stormwater Management Regulations and the Town of Sudbury Stormwater Management Bylaw and Regulations for the proposed project. This report is also relative to the Sudbury Water Resources Protection Bylaw Regulations.

## **Existing Property Description**

The overall Precourt Stone property covers a total of 5.75 acres in three parcels. The parcel at the corner of Union Avenue and Station Road (46 Union Ave.) contains the present office, a shop building and two tented structures. The rear parcel is a materials storage yard that is 0.88 acres in area, and the adjoining parcel (known as Lot 2) is 4 acres in area and is presently being used as a new car storage lot. The latter parcel has 414 feet of frontage on Station Road and the easterly property line of that parcel is the center line of Hop Brook. 2.75 acres of that parcel along the brook is in a Conservation Restriction. The boundary between the Conservation Restriction and new car storage yard is marked by a concrete block barrier. The new car storage area and the materials storage yard on the rear lot have compacted gravel surfaces.

The portion of the property for the proposed project is the 0.88 acre “Rear Parcel” that is a materials storage yard. The northerly corner of the parcel contains a series of storage bins constructed of large concrete block dividers and concrete paved floors. A concrete block divider in the eastern portion of the site separates the storage yard from the new car storage area. With the exception of some small vegetated areas in the northeast and southeast corners and paved storage bins, the ground is a compacted gravel surface.

The property is within the Sudbury Water Resource Protection District (WRPD) of the Zoning Bylaw and a small portion of the eastern section of the “Rear Parcel” is within the current FEMA Flood Zone AE of Hop Brook. This is the 100 year Flood Plain and is identified as Elevation 133.6 and shown on the Site Plans.

Stormwater runoff from the Rear Parcel presently drains to two existing drain ditches. Approximately half of the area drains to a drain ditch off the northeast corner that flows through the Lot 2 parcel to Hop Brook. The south half of the Rear Lot drains to the ditch off the southeast corner of the Lot to a ditch that flows southerly through abutting property to a Town culvert under Station Road. The culvert discharges to a Town drain ditch on the south side of the Road that

flows easterly to Hop Brook. These ditches and associated wetlands are classified as Wetland Resource Area under the Mass. Wetland Protection Act and Sudbury Wetlands Administration Bylaw.

### **Soils and Groundwater**

The NRCS classifies the soils at the site as being in the Udorthents-Urban Land Complex soil series. These soils are generally areas altered by grading, filling and development so the surface soils are likely not original. The underlying soils tend to be well drained to excessively drained sandy loams or loamy sand. The hydrologic soil group varies depending on the surface conditions.

On-site soil testing was conducted by DGT Associates for this project on June 18, 2020. The testing consisted of 3 deep hole test pits to determine soil consistency, texture and the Estimated Seasonal High Groundwater depth (ESHGW). The testing revealed a relatively shallow ESHGW ranging from 43 to 56 inches below the surface. Soils are a gravelly/stony fill over the natural sand and loamy sand subsoils. In some areas there is a buried sandy loam layer that was the former topsoil, now below the fill. The testing showed that the soils are relatively consistent over the site. The complete soils report with NRCS information and test logs is contained in Appendix 1 of this report. The Site Plans show the surveyed test hole locations, surface and groundwater elevations.

To be conservative, based on the testing and observed site conditions, DGT will use a Hydrologic Soil Group C for runoff calculations for this site. For determination of infiltration rates for infiltrating stormwater management BMPs, the Rawls Rate of 1.02 inches per hour (for sandy loam) will be used.

### **Project Description**

The project is the construction of a new workshop building for stone cutting and product preparation that will be located in the middle of the compacted gravel storage yard. The building will be a 75 foot long by 35 foot steel barn with a 14 ft. x 18 ft. attached shed. This covers a total area 2,877 sq. ft. The storage yard around the building will remain as it is today and will continue to be used for material storage.

The project will not increase the area of impervious surfaces on the site as defined in the Sudbury Zoning Bylaw and Stormwater Management Bylaw as compacted gravel surfaces are defined as impervious. The runoff Curve Number (CN) of the compacted gravel surface is 96 where the paved area and roofs have a CN of 98. So there would be a slight increase in runoff without some stormwater management to mitigate the increase

The following Stormwater Best Management Practice is proposed in order to mitigate small increase in runoff and to provide improvement over existing conditions with regard to recharge to the Aquifer Zone II (WRPD):

- The roof runoff from the building will be directed to stone drip trenches at the perimeter of the building. These are sized to capture and infiltrate at least one full inch of runoff from the roof area. Once the drip trenches are full during a storm event, the overflow is

to the existing gravel surface. Roof runoff is classified as clean, so no pretreatment is necessary. This system provides an increase in the volume of groundwater recharge of clean runoff to the aquifer, while decreasing both surface runoff volumes and peak rates to the downstream areas.

The existing and proposed stormwater flows from the site are shown in the tables at the end of this Narrative. Design calculations for the system is included in Section 2.

### **Stormwater Management Objectives**

For organizational purposes, the descriptions and design calculations for the components of the stormwater management system are contained in Section 2 of this report. The hydrologic and flood routing computer modeling calculations and watershed maps for the existing and proposed conditions are included in Section 3 and Section 4 of this report, respectively. The watershed modeling was performed using computer software “HydroCAD” version 10.0 by Applied Microcomputer Systems.

The intent of the design is to provide stormwater management improvements that will meet the requirements of the Sudbury Stormwater Management Bylaw and Regulations and the Water Resources Protection District. Per the requirements, the design of the Best Management Practices (BMP) are in accordance with the Mass. Stormwater Management Handbook.

The existing drainage patterns for the watersheds for this project are maintained. The subject site drains from west to east to two existing drainage ditches. There is a ridge down the middle of the site and the northern half of the site drains to the existing drainage ditch off the northeast corner and the southern half of the site drains to the ditch off the southeast corner. The proposed subcatchment boundaries to the two locations remain same as the existing conditions. In the watershed model, the northeast drain ditch is identified as Design Point 1 (DP-1), and the drain ditch off the southwest corner is Design Point 2 (DP-2). Design Point 3 (DP-3) is the combined flows of DP-1 and DP-2 to show the total flows from this site to the downstream area (Hop Brook).

The results of the hydrologic analysis for the existing and proposed conditions have been computed for the 1 inch, and the 2, 10, 25 and 100-year storm events and the rainfall depths used in the analysis are as specified in the Stormwater Management Bylaw Regulations Section 8.0 A. 3. f.

The following describes how the project meets the Design and Performance Criteria per Section 8.0 A.3. of the Stormwater Bylaw Regulations. The paraphrased text of the Bylaw Regs is included in *Italics* for context:

8.0 A.3.a. *The design shall, to the maximum extent feasible, employ environmentally sensitive site design as outlined in the DEP Handbook and shall attempt to reproduce the natural hydrologic conditions with respect to ground and surface waters:*

RESPONSE: The design includes the following features that address this criteria:

- The roof runoff will drain to stone drip trenches for infiltration of a minimum of one inch of clean runoff. This is a Limited Impact Design (LID) practice.
- The project will raise the central portion of the site slightly to conform with the Water Resource Protection District requirements, but the existing drainage patterns will be maintained. The project is entirely within the existing impervious surface. There is no alteration of existing vegetated surfaces.
- As detailed further below, the results of the hydrologic model show that the project will not increase peak rates of runoff and will result in less runoff volume at all storm events due to the increased groundwater recharge being provided.
- The minimum required recharge per the DEP Stormwater Handbook in order to reproduce groundwater recharge conditions is 0.25 inches for HSG C soils. In this case, the minimum recharge provided is 1.0 inch to meet the Water Quality Volume per the Bylaw regulations.
- Under the Mass. Stormwater Management Regulations, this project would be classified as a “Re-development” which would allow some reductions in meeting the standards. The project is only for the construction of a workshop building on an existing developed impervious surface. The remainder of the site will remain essentially in the current condition and use. The project has not utilized the allowable reductions and the entire area of the building meets the full standards for new construction as it is practicable in this case. The Stormwater Management requirements for the new building will decrease the storage facility surface and provide groundwater recharge of clean runoff meeting the full standards. This provides a net improvement from existing conditions.

8.0 A.3.b. *Evaluation of Low Impact Development practices is required and implementation of such practices is required to the maximum extent practicable.....*

RESPONSE: The stormwater management BMPs (roof drain drip trenches) for this project is a standard LID technique.

8.0 A.3.c. *The Stormwater Management Plan shall incorporate source controls of contaminants and employ BMPs to minimize stormwater pollution.*

RESPONSE: The runoff from the roof is clean runoff that does not require treatment before discharge. This results in reduced runoff from the gravel surface.

An Operation and Maintenance plan for the stormwater management system components is included on Appendix 2 of this report to keep the BMPs in good operating condition. Also being a gravel parking lot, street sweeping is not required. This expanded facility will continue to be kept in similar conditions and use.

8.0 A.3.d. *The Water Quality Volume for Sizing BMPs shall be based on 1 inch of runoff....*

RESPONSE: They are designed on 1 inch minimum of runoff. See Section 2 calculations.



8.0 A.3.e. *Hydrologic analyses using TR55/TR20 methodology shall be performed for the entire project site including any off-site areas that drain to or through the project site.*

RESPONSE: The hydrologic model has been done for the entire area of the Rear Lot draining to the two existing ditches. A small area of off-site abutting land to the west of the project area does drain through the site, but this drainage will not be affected by the project. All runoff from the project area is accounted for. TR55/TR20 has been utilized and explained in the Watershed Modeling section below in this narrative.

8.0 A.3.f. *The analysis shall be for the 1 inch, 2, 10, 25 and 100 year design storms under pre-development and post-development conditions. (The 24 hour rainfall amounts to be used are specified in this section).*

RESPONSE: We have performed the analysis using the specified storms and the rainfall amounts as required. The tabulated results for the flows at the design points is included at the end of this Narrative.

8.0 A.3.g. *The analysis is to be performed on a pre-and post-watershed basis with designated control points at each location where water leaves the site.*

RESPONSE: The model is set up to meet this requirement. See Sections 3 and 4 for the watershed maps and Hydrologic Model.

8.0 A.3.h. *The same land area shall be used in the analysis to facilitate comparison of existing and proposed conditions.*

RESPONSE: The existing and proposed watershed areas in the analysis are the same.

8.0 A.3.i. *The total volume of discharge as well as peak rate shall be evaluated at each control point.*

RESPONSE: This has been done and summarized in the Table at the end of this Narrative.

8.0 A.3.j. *Redevelopment Standards:*

RESPONSE: As explained earlier in this narrative, Redevelopment Standards were not utilized as the project was designed to meet the standards for new construction for the new building on existing impervious surface.

**Sudbury Water Resources Protection District (WRPD) Section 4200 of the Zoning Bylaw.**  
The subject site is all within the Zone II of the Town water supply wells. Under the WRPD Bylaw, a Special Permit is required for “*Enlargement or alteration of pre-existing uses prohibited under Section 4242 of the Bylaw.*” Under existing conditions, 39% of the subject site (Rear Lot and Lot 2) is in impervious cover per the definition impervious under the Bylaw. The maximum allowed

is 15%, so the proposed site alteration requires a Special Permit. (Note that a WRPD Special Permit has been issued for this project by the Sudbury Planning Board for this project.)

Per Section 4243 b this may be allowed as follows: *“Uses that will render impervious more than 15% of any lot, or 2,500 square feet, whichever is greater, provided it is demonstrated that a net improvement to existing conditions is made with respect to water quality and groundwater recharge”.*

As described in this report, the project meets the intent of this section and summarized as follows:

- The proposed project will not increase the impervious surfaces on the site.
- Water quality is improved by the reduction of the outdoor gravel storage area and replacement with roof area that provides clean runoff.
- Groundwater recharge is increased by directing the clean roof runoff to stone drip trenches with a capacity to infiltrate at least 1 inch of runoff to the aquifer. The actual infiltration volumes for each storm event is contained on this report.

### **Watershed Modeling and Best Management Practices Design**

The hydrologic analysis of the existing conditions and proposed watershed is based on the nationally recognized watershed modeling techniques developed by the USDA, Soil Conservation Service (SCS). The techniques and runoff models are described in the following SCS publications:

- “Urban Hydrology for Small Watersheds, Technical Release Number 55”, 1986 and Technical Release 20.
- National Engineering Handbook, Hydrology, Section 4, 1972.
- “A Method for Estimating Volume and Rate of Runoff in Small Watersheds, Technical Release No. 149” 1973.
- “Hydrology Handbook for Conservation Commissions” March 2002, Mass. DEP.
- The watershed modeling was performed using computer software “HydroCAD” version 10.0 by Applied Microcomputer Systems, which is based on the publications referenced above.
- Best Management Practices were designed based on the guidance provided in the DEP “Stormwater Management Standards Handbook”, February, 2008.

### **Construction Period Erosion and Sediment Controls**

Included with the plans for this filing are Erosion and Sediment Control Plans and Details that show the practices to be implemented to protect abutting properties, including public roadways from sedimentation and the downstream stormwater system.

This project is not subject to the U.S. EPA’s Construction General Permit under the NPDES Program. Therefore, a Stormwater Pollution Prevention Plan (SWPPP) and a Notice of Intent filing with the EPA are not required. The Erosion and Sediment Control Plans show the initial

erosion controls, general BMPs and detailed information as to the responsibilities of the Contractor.

**Design Point #1 - North Ditch**

Storm Event	24 hr Rainfall	Peak Flow (cfs)		Volume (acre feet)	
		Existing	Proposed	Existing	Proposed
1-inch	1.0 in	0.31	0.29	0.022	0.021
2 Year	3.2 in	1.37	1.29	0.103	0.097
10 Year	4.8 in	2.13	2.06	0.165	0.157
25 Year	6.0 in	2.70	2.69	0.211	0.202
100 Year	8.6 in	3.92	3.91	0.312	0.302

**Design Point #2 - South Ditch**

Storm Event	24 hr Rainfall	Peak Flow (cfs)		Volume (acre feet)	
		Existing	Proposed	Existing	Proposed
1-inch	1.0 in	0.27	0.25	0.019	0.018
2 Year	3.2 in	1.20	1.10	0.090	0.082
10 Year	4.8 in	1.87	1.70	0.144	0.133
25 Year	6.0 in	2.36	2.19	0.185	0.172
100 Year	8.6 in	3.43	3.41	0.273	0.259

**Design Point #3 - Combined Total to Hop Brook**

Storm Event	24 hr Rainfall	Peak Flow (cfs)		Volume (acre feet)	
		Existing	Proposed	Existing	Proposed
1-inch	1.0 in	0.58	0.54	0.041	0.038
2 Year	3.2 in	2.58	2.38	0.194	0.179
10 Year	4.8 in	4.00	3.75	0.309	0.290
25 Year	6.0 in	5.06	4.85	0.396	0.375
100 Year	8.6 in	7.34	7.32	0.586	0.560

## **SECTION 2**

### **COMPLIANCE CALCULATIONS**

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Stormwater Standards Compliance Summary  
MassDEP “Checklist for Stormwater Report”  
Illicit Discharge Statement  
DEP Stormwater Management Standards Narrative  
Standard 3 – Recharge Design Calculations  
And Drawdown Time

for

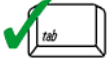
**Proposed Workshop Building**  
**Precourt Stone**  
41 Union Avenue  
Sudbury, MA 01776



# Checklist for Stormwater Report

## A. Introduction

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.<sup>1</sup> This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8<sup>2</sup>
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

<sup>1</sup> The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

<sup>2</sup> For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.





# Checklist for Stormwater Report

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## B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

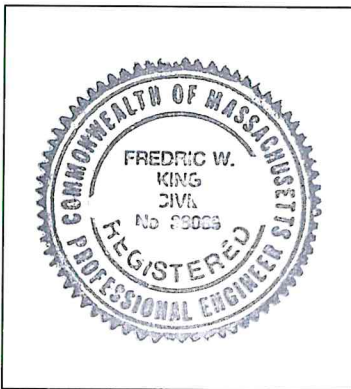
A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

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### Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



*Fredric W. King* 11/9/2020  
Signature and Date

---

## Checklist

**Project Type:** Is the application for new development, redevelopment, or a mix of new and redevelopment?

- New development
- Redevelopment
- Mix of New Development and Redevelopment



# Checklist for Stormwater Report

---

## Checklist (continued)

**LID Measures:** Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- No disturbance to any Wetland Resource Areas
- Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- Reduced Impervious Area (Redevelopment Only)
- Minimizing disturbance to existing trees and shrubs
- LID Site Design Credit Requested:
  - Credit 1
  - Credit 2
  - Credit 3
- Use of "country drainage" versus curb and gutter conveyance and pipe
- Bioretention Cells (includes Rain Gardens)
- Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- Treebox Filter
- Water Quality Swale
- Grass Channel
- Green Roof
- Other (describe): Roof Drain infiltration trench

### Standard 1: No New Untreated Discharges

- No new untreated discharges
- Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

### Standard 3: Recharge

- Soil Analysis provided.
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
  - Static
  - Simple Dynamic
  - Dynamic Field<sup>1</sup>
- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - Site is comprised solely of C and D soils and/or bedrock at the land surface
  - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
  - Solid Waste Landfill pursuant to 310 CMR 19.000
  - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

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<sup>1</sup> 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 3: Recharge (continued)

- The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

### Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
  - Provisions for storing materials and waste products inside or under cover;
  - Vehicle washing controls;
  - Requirements for routine inspections and maintenance of stormwater BMPs;
  - Spill prevention and response plans;
  - Provisions for maintenance of lawns, gardens, and other landscaped areas;
  - Requirements for storage and use of fertilizers, herbicides, and pesticides;
  - Pet waste management provisions;
  - Provisions for operation and management of septic systems;
  - Provisions for solid waste management;
  - Snow disposal and plowing plans relative to Wetland Resource Areas;
  - Winter Road Salt and/or Sand Use and Storage restrictions;
  - Street sweeping schedules;
  - Provisions for prevention of illicit discharges to the stormwater management system;
  - Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
  - Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
  - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
  - Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
    - is within the Zone II or Interim Wellhead Protection Area
    - is near or to other critical areas
    - is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
    - involves runoff from land uses with higher potential pollutant loads.
  - The Required Water Quality Volume is reduced through use of the LID site Design Credits.
  - Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 4: Water Quality (continued)

- The BMP is sized (and calculations provided) based on:
  - The ½" or 1" Water Quality Volume or
  - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

### Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

- The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- The NPDES Multi-Sector General Permit does **not** cover the land use.
- LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- All exposure has been eliminated.
- All exposure has **not** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

### Standard 6: Critical Areas

- The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- Critical areas and BMPs are identified in the Stormwater Report.



# Checklist for Stormwater Report

---

## Checklist (continued)

### Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

- The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
  - Limited Project
  - Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
  - Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
  - Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
  - Bike Path and/or Foot Path
- Redevelopment Project
- Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

### Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
  - Construction Period Operation and Maintenance Plan;
  - Names of Persons or Entity Responsible for Plan Compliance;
  - Construction Period Pollution Prevention Measures;
  - Erosion and Sedimentation Control Plan Drawings;
  - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
  - Vegetation Planning;
  - Site Development Plan;
  - Construction Sequencing Plan;
  - Sequencing of Erosion and Sedimentation Controls;
  - Operation and Maintenance of Erosion and Sedimentation Controls;
  - Inspection Schedule;
  - Maintenance Schedule;
  - Inspection and Maintenance Log Form.
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.





# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

- The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has **not** been included in the Stormwater Report but will be submitted **before** land disturbance begins.
- The project is **not** covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

### Standard 9: Operation and Maintenance Plan

- The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
  - Name of the stormwater management system owners;
  - Party responsible for operation and maintenance;
  - Schedule for implementation of routine and non-routine maintenance tasks;
  - Plan showing the location of all stormwater BMPs maintenance access areas;
  - Description and delineation of public safety features;
  - Estimated operation and maintenance budget; and
  - Operation and Maintenance Log Form.
- The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
  - A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
  - A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

### Standard 10: Prohibition of Illicit Discharges

- The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- An Illicit Discharge Compliance Statement is attached;
- NO Illicit Discharge Compliance Statement is attached but will be submitted **prior to** the discharge of any stormwater to post-construction BMPs.

**STORMWATER STANDARDS COMPLIANCE SUMMARY  
MASS. STORMWATER MANAGEMENT REGULATIONS  
AND  
SUDBURY STORMWATER BYLAW**

**PROPOSED WORKSHOP BUILDING  
PRECOURT STONE  
SUDBURY, MA**

**Standard 1: (Untreated Discharges)**

---

There are no new stormwater conveyances proposed that discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The stormwater will discharge to the same two location as the existing conditions at less than or the same rates and less volume. The receiving areas are existing stormwater ditched with no erosion issues. As such, there will be no impacts at the discharge location. The runoff from the proposed building is classified as clean, not requiring any pre-treatment prior to discharge.

**Standard 2: (Peak Rate Control and Flood Protection)**

---

There will be no increase in peak rate of discharge and volumes for all storms up to and including the 100-year storm event.

The computations have been made for the 1 inch, 2, 10, 25, and 100-year storms. The computations for the peak rates of runoff and volumes are contained in Section 3 and Section 4 of this report and a summary table is included in Section 1 Narrative

**Standard 3: (Recharge to Groundwater)**

---

To meet the current DEP Stormwater Regulations, Standard 3 requires that a minimum 0.25 inches of runoff from the impervious surfaces must be recharged to the ground for hydrologic soil groups (HSG) C for the subject site. This is the minimum amount required for impervious surfaces to maintain the natural recharge hydrology of the area.

The runoff from the entire new roof area will discharge to stone infiltration trenches that are designed to infiltrate a minimum of 1 inch of runoff from the area of the roof infiltrating 4 times the minimum required for this Standard.

The project as designed meets this standard. Detailed calculations demonstrating compliance with this standard are included at the end of this section.

**Standard 4: (80% TSS Removal)**

---

The runoff from the proposed building roof is classified as clean and does not require pre-treatment.

This project is a redevelopment of a portion of a compacted gravel (impervious) outdoor storage area. No changes to the surrounding area is proposed and the storage area use will remain. The replacement of existing compacted gravel storage area with roof area will result in some improvement of runoff water quality at the site.

In compliance with Standard 4, a long-term Stormwater Operation and Maintenance Plan is included in Appendix 2.

**Standard 5: (Land Use with Higher Potential Pollutant Load)**

---

The project is in an area presently used for outdoor storage of stone materials for making architectural cut stone products and for finished stone materials. The materials are natural stone and no hazardous chemicals or materials are included. As a light industrial use, the area could be classified as a LUHPPL, however, the proposed project will reduce the size of the area used for outdoor storage, thereby reducing the LUHPPL area.

The roof runoff is classified as clean, so no pretreatment is necessary for the roof infiltration system.

**Standard 6: (Critical Areas)**

The site is within the Zone II of the Sudbury Water Supply Wells which is a “Critical Area” per the Regulations. The stormwater runoff from the roof is the only runoff being recharged. This is classified as clean and increases the recharge to the Zone II aquifer as a positive improvement at the site.

**Standard 7: (Redevelopment)**

---

This project is considered a redevelopment. The entire project is within an existing impermeable surface. To meet the requirements for Redevelopment the following apply:

- Standards 1 for existing discharges must be met only to the maximum extent practicable.
- Standards 2 and 3 must be met to the maximum extent practicable.
- Standards 4, 5 and 6: Require pre-treatment requirements be met.
- Standards 7, 8, 9 and 10 must be fully met.

The proposed building is a very small portion of the overall site. All requirements relative to the new building are being fully met. See the information on each section relative to compliance with the Redevelopment Standards.

**Standard 8: (Erosion, Sediment Control)**

---

Erosion and sediment control BMPs are included in the Erosion and Sediment Control Plan contained in the plan set. This plan includes details and information regarding the responsibilities for the Contractor in managing the site in compliance with applicable permits.

This project will alter less than one acre so it is not subject to the NPDES Phase II requirements for construction sites. Coverage under the NPDES Construction General Permit and preparation of a full Stormwater Pollution Prevention Plan are not required.

**Standard 9: (Operation & Maintenance)**

---

An Operation and Maintenance Plan for the stormwater system is included in Appendix 2 to meet this Standard.

**Standard 10: (Illicit Discharges)**

---

There are no illicit discharges designed or proposed for this project. No illicit discharges are known to exist. An Illicit Discharge Statement is included in this Section 2.

November 9, 2020

19632

Sudbury Planning & Community Development  
278 Old Sudbury Road  
Sudbury, MA 01776

RE: Illicit Discharge Compliance Statement

In accordance with Standard 10 of the Massachusetts Stormwater Regulations, the following statement is made regarding the proposed Workshop Building Project at the Precourt Stone Site at 41 Union Avenue in Sudbury, MA:

- There are no illicit discharges designed or proposed for this project. No illicit discharges are known to exist.

Please feel free to contact me if you have any questions.

Sincerely yours,  
**DGT Associates**

*Fredric W. King*

Fredric W. King, P.E.  
Senior Engineer



## RECHARGE CALCULATIONS

STANDARD 3.

$$HSG = C$$

MIN. RECHARGE = 0.25 inches over  
THE IMPERVIOUS SURFACE  
(ROOF AREA)

PROVIDE - 1.0 INCHES PER STORMWATER BYLAW  
AND TO IMPROVE RECHARGE  
CONDITIONS FOR THE WATER  
RESOURCES PROTECTION DISTRICT  
(ZONE II).





RECHARGE DESIGN CALCULATIONS

DESIGN CALCULATIONS FOR ROOF DRIP TRENCHES

- CRITERIA: - CAPACITY TO INFILTRATE 1 INCH OF RUNOFF FROM THE ROOF AND INCLUDING THE DRIP TRENCH WITHOUT OVERFLOW

- SOIL INFILTRATION RATE (SANDY LOAM) = 1.02 INCH/HOUR RAWLS RATE
- SIMPLE DYNAMIC METHOD

NORTH TRENCH

$$\begin{aligned} \text{ROOF AREA} &= 1,312.5 \text{ FT}^2 \\ \text{TRENCH AREA} &= 3 \times 74' = 222 \text{ FT}^2 \\ \hline \text{TOTAL} &= 1,534.5 \text{ FT}^2 \end{aligned}$$

$$1'' = \frac{1,534.5 \text{ FT}^2}{12.17/\text{FT}} = 128 \text{ FT}^3$$

$$\begin{aligned} \text{TOP OF TRENCH} &= 134.8 \\ \text{BOTTOM OF TRENCH} &= 132.4 \quad \left. \vphantom{\begin{matrix} \text{TOP OF TRENCH} \\ \text{BOTTOM OF TRENCH} \end{matrix}} \right\} 2.4' \\ \text{AREA} &= 2' \times 74' = 148 \text{ FT}^2 \end{aligned}$$

$$\text{VOLUME} = (2.4 \text{ FT})(148 \text{ FT}^2)(0.4) \leftarrow \text{STONE WOOD RATIO} = 142 \text{ FT}^3$$

$$2 \text{ hours of Recharge} = (2' \times 74' \left( \frac{1.02 \text{ IN}}{12.17/\text{FT}} \right)) (2 \text{ hrs}) = 25.2 \text{ FT}^3$$

$$\text{TOTAL CAPTURE VOLUME} = 167 \text{ FT}^3 > 128 \text{ OK}$$



SOUTH TRENCH

ROOF AREA MAIN =  $1312.5 \text{ ft}^2$   
ROOF AREA SHED =  $18 \times 14 = 252 \text{ ft}^2$   
TRENCH AREA =  $17 \times 13.5 = 229.5 \text{ ft}^2$

TOTAL AREA =  $1794 \text{ ft}^2$

1" RUNOFF =  $1794 \text{ ft}^2 / 12 \text{ in/ft} = 149.5$

TRENCH AREA =  $12.5 \times 17 = 212.5$

TOP OF TRENCH = 134.8  
BOTTOM OF TRENCH = 132.4 } 2.4'

VOLUME =  $(2.4 \text{ ft})(212.5 \text{ ft}^2)(0.4) = 212.5 \text{ ft}^3$

2 hours of recharge =  $(212.5 \text{ ft}^3) \left( \frac{1.02 \text{ in}}{12 \text{ in/ft}} \right) (2 \text{ hrs}) = 36 \text{ ft}^3$

TOTAL CAPTURE VOL =  $248 \text{ ft}^3 > 149.5 \text{ ft}^3$  OK

TRENCH DRAIN TIME FOLLOWING STORM

$\frac{(2.4 \text{ ft})(12 \text{ in/ft})}{1.02 \text{ in/hr}} = 28.2 \text{ hrs} < 72 \text{ OK}$

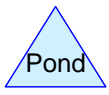
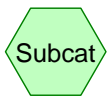
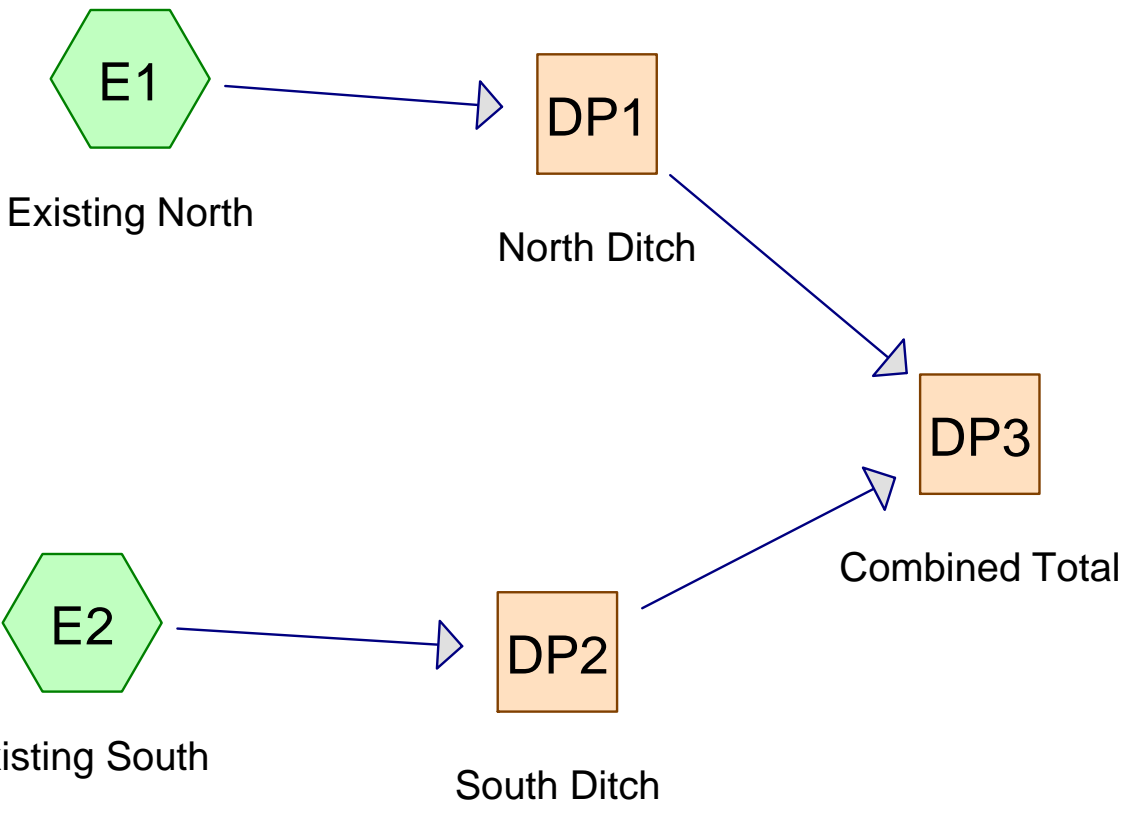
## **SECTION 3**

**Existing Conditions Stormwater Model  
showing Stormwater Flows and Flood Routing  
Computations using HydroCAD version 10.00**

**Existing Conditions Watershed Map:**

for

**Proposed Workshop Building Project  
Precourt Stone**  
41 Union Avenue  
Sudbury, MA 01776



**Precourt-Rear Lot-Existing**

Prepared by Schofield Brothers LLC

HydroCAD® 10.00-24 s/n 01078 © 2018 HydroCAD Software Solutions LLC

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Page 2

**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.733	96	Gravel surface, HSG C (E1, E2)
0.100	98	Paved parking, HSG C (E1, E2)
0.046	70	Woods, Good, HSG C (E1, E2)
<b>0.878</b>	<b>95</b>	<b>TOTAL AREA</b>

## Precourt-Rear Lot-Existing

Prepared by Schofield Brothers LLC

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DGT Associates

Type III 24-hr 1 inch Rainfall=1.00"

Printed 12/11/2020

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### Summary for Subcatchment E1: Existing North

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.022 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 1 inch Rainfall=1.00"

Area (sf)	CN	Description
15,715	96	Gravel surface, HSG C
* 3,636	98	Paved parking, HSG C
1,057	70	Woods, Good, HSG C
20,408	95	Weighted Average
16,772		82.18% Pervious Area
3,636		17.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Seg 1

### Summary for Subcatchment E2: Existing South

Runoff = 0.27 cfs @ 12.09 hrs, Volume= 0.019 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 1 inch Rainfall=1.00"

Area (sf)	CN	Description
16,216	96	Gravel surface, HSG C
705	98	Paved parking, HSG C
933	70	Woods, Good, HSG C
17,854	95	Weighted Average
17,149		96.05% Pervious Area
705		3.95% Impervious Area

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

### Summary for Reach DP1: North Ditch

Inflow Area = 0.469 ac, 17.82% Impervious, Inflow Depth = 0.56" for 1 inch event

Inflow = 0.31 cfs @ 12.09 hrs, Volume= 0.022 af

Outflow = 0.31 cfs @ 12.09 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs



**Precourt-Rear Lot-Existing**

Prepared by Schofield Brothers LLC

HydroCAD® 10.00-24 s/n 01078 © 2018 HydroCAD Software Solutions LLC

DGT Associates

Type III 24-hr 1 inch Rainfall=1.00"

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**Summary for Reach DP2: South Ditch**

Inflow Area = 0.410 ac, 3.95% Impervious, Inflow Depth = 0.56" for 1 inch event  
Inflow = 0.27 cfs @ 12.09 hrs, Volume= 0.019 af  
Outflow = 0.27 cfs @ 12.09 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Reach DP3: Combined Total**

Inflow Area = 0.878 ac, 11.35% Impervious, Inflow Depth = 0.56" for 1 inch event  
Inflow = 0.58 cfs @ 12.09 hrs, Volume= 0.041 af  
Outflow = 0.58 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Precourt-Rear Lot-Existing

Prepared by Schofield Brothers LLC

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DGT Associates

Type III 24-hr 2 Year Rainfall=3.20"

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### Summary for Subcatchment E1: Existing North

Runoff = 1.37 cfs @ 12.08 hrs, Volume= 0.103 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Year Rainfall=3.20"

Area (sf)	CN	Description
15,715	96	Gravel surface, HSG C
* 3,636	98	Paved parking, HSG C
1,057	70	Woods, Good, HSG C
20,408	95	Weighted Average
16,772		82.18% Pervious Area
3,636		17.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Seg 1

### Summary for Subcatchment E2: Existing South

Runoff = 1.20 cfs @ 12.08 hrs, Volume= 0.090 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Year Rainfall=3.20"

Area (sf)	CN	Description
16,216	96	Gravel surface, HSG C
705	98	Paved parking, HSG C
933	70	Woods, Good, HSG C
17,854	95	Weighted Average
17,149		96.05% Pervious Area
705		3.95% Impervious Area

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

### Summary for Reach DP1: North Ditch

Inflow Area = 0.469 ac, 17.82% Impervious, Inflow Depth = 2.64" for 2 Year event

Inflow = 1.37 cfs @ 12.08 hrs, Volume= 0.103 af

Outflow = 1.37 cfs @ 12.08 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Precourt-Rear Lot-Existing**

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Type III 24-hr 2 Year Rainfall=3.20"

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**Summary for Reach DP2: South Ditch**

Inflow Area = 0.410 ac, 3.95% Impervious, Inflow Depth = 2.64" for 2 Year event  
Inflow = 1.20 cfs @ 12.08 hrs, Volume= 0.090 af  
Outflow = 1.20 cfs @ 12.08 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Reach DP3: Combined Total**

Inflow Area = 0.878 ac, 11.35% Impervious, Inflow Depth = 2.64" for 2 Year event  
Inflow = 2.58 cfs @ 12.08 hrs, Volume= 0.194 af  
Outflow = 2.58 cfs @ 12.08 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Precourt-Rear Lot-Existing

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Type III 24-hr 10 Year Rainfall=4.80"

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### Summary for Subcatchment E1: Existing North

Runoff = 2.13 cfs @ 12.08 hrs, Volume= 0.165 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Year Rainfall=4.80"

Area (sf)	CN	Description
15,715	96	Gravel surface, HSG C
* 3,636	98	Paved parking, HSG C
1,057	70	Woods, Good, HSG C
20,408	95	Weighted Average
16,772		82.18% Pervious Area
3,636		17.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Seg 1

### Summary for Subcatchment E2: Existing South

Runoff = 1.87 cfs @ 12.08 hrs, Volume= 0.144 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Year Rainfall=4.80"

Area (sf)	CN	Description
16,216	96	Gravel surface, HSG C
705	98	Paved parking, HSG C
933	70	Woods, Good, HSG C
17,854	95	Weighted Average
17,149		96.05% Pervious Area
705		3.95% Impervious Area

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

### Summary for Reach DP1: North Ditch

Inflow Area = 0.469 ac, 17.82% Impervious, Inflow Depth = 4.22" for 10 Year event

Inflow = 2.13 cfs @ 12.08 hrs, Volume= 0.165 af

Outflow = 2.13 cfs @ 12.08 hrs, Volume= 0.165 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Precourt-Rear Lot-Existing**

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Type III 24-hr 10 Year Rainfall=4.80"

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**Summary for Reach DP2: South Ditch**

Inflow Area = 0.410 ac, 3.95% Impervious, Inflow Depth = 4.22" for 10 Year event  
Inflow = 1.87 cfs @ 12.08 hrs, Volume= 0.144 af  
Outflow = 1.87 cfs @ 12.08 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Reach DP3: Combined Total**

Inflow Area = 0.878 ac, 11.35% Impervious, Inflow Depth = 4.22" for 10 Year event  
Inflow = 4.00 cfs @ 12.08 hrs, Volume= 0.309 af  
Outflow = 4.00 cfs @ 12.08 hrs, Volume= 0.309 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Precourt-Rear Lot-Existing

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Type III 24-hr 25 Year Rainfall=6.00"

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### Summary for Subcatchment E1: Existing North

Runoff = 2.70 cfs @ 12.08 hrs, Volume= 0.211 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Year Rainfall=6.00"

Area (sf)	CN	Description
15,715	96	Gravel surface, HSG C
* 3,636	98	Paved parking, HSG C
1,057	70	Woods, Good, HSG C
20,408	95	Weighted Average
16,772		82.18% Pervious Area
3,636		17.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Seg 1

### Summary for Subcatchment E2: Existing South

Runoff = 2.36 cfs @ 12.08 hrs, Volume= 0.185 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Year Rainfall=6.00"

Area (sf)	CN	Description
16,216	96	Gravel surface, HSG C
705	98	Paved parking, HSG C
933	70	Woods, Good, HSG C
17,854	95	Weighted Average
17,149		96.05% Pervious Area
705		3.95% Impervious Area

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

### Summary for Reach DP1: North Ditch

Inflow Area = 0.469 ac, 17.82% Impervious, Inflow Depth = 5.41" for 25 Year event

Inflow = 2.70 cfs @ 12.08 hrs, Volume= 0.211 af

Outflow = 2.70 cfs @ 12.08 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs



**Precourt-Rear Lot-Existing**

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Type III 24-hr 25 Year Rainfall=6.00"

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**Summary for Reach DP2: South Ditch**

Inflow Area = 0.410 ac, 3.95% Impervious, Inflow Depth = 5.41" for 25 Year event  
Inflow = 2.36 cfs @ 12.08 hrs, Volume= 0.185 af  
Outflow = 2.36 cfs @ 12.08 hrs, Volume= 0.185 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Reach DP3: Combined Total**

Inflow Area = 0.878 ac, 11.35% Impervious, Inflow Depth = 5.41" for 25 Year event  
Inflow = 5.06 cfs @ 12.08 hrs, Volume= 0.396 af  
Outflow = 5.06 cfs @ 12.08 hrs, Volume= 0.396 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

## Precourt-Rear Lot-Existing

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Type III 24-hr 100 Year Rainfall=8.60"

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### Summary for Subcatchment E1: Existing North

Runoff = 3.92 cfs @ 12.08 hrs, Volume= 0.312 af, Depth= 8.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Year Rainfall=8.60"

Area (sf)	CN	Description
15,715	96	Gravel surface, HSG C
* 3,636	98	Paved parking, HSG C
1,057	70	Woods, Good, HSG C
20,408	95	Weighted Average
16,772		82.18% Pervious Area
3,636		17.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Seg 1

### Summary for Subcatchment E2: Existing South

Runoff = 3.43 cfs @ 12.08 hrs, Volume= 0.273 af, Depth= 8.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Year Rainfall=8.60"

Area (sf)	CN	Description
16,216	96	Gravel surface, HSG C
705	98	Paved parking, HSG C
933	70	Woods, Good, HSG C
17,854	95	Weighted Average
17,149		96.05% Pervious Area
705		3.95% Impervious Area

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

### Summary for Reach DP1: North Ditch

Inflow Area = 0.469 ac, 17.82% Impervious, Inflow Depth = 8.00" for 100 Year event

Inflow = 3.92 cfs @ 12.08 hrs, Volume= 0.312 af

Outflow = 3.92 cfs @ 12.08 hrs, Volume= 0.312 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Precourt-Rear Lot-Existing**

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Type III 24-hr 100 Year Rainfall=8.60"

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**Summary for Reach DP2: South Ditch**

Inflow Area = 0.410 ac, 3.95% Impervious, Inflow Depth = 8.00" for 100 Year event  
Inflow = 3.43 cfs @ 12.08 hrs, Volume= 0.273 af  
Outflow = 3.43 cfs @ 12.08 hrs, Volume= 0.273 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs




**Summary for Reach DP3: Combined Total**

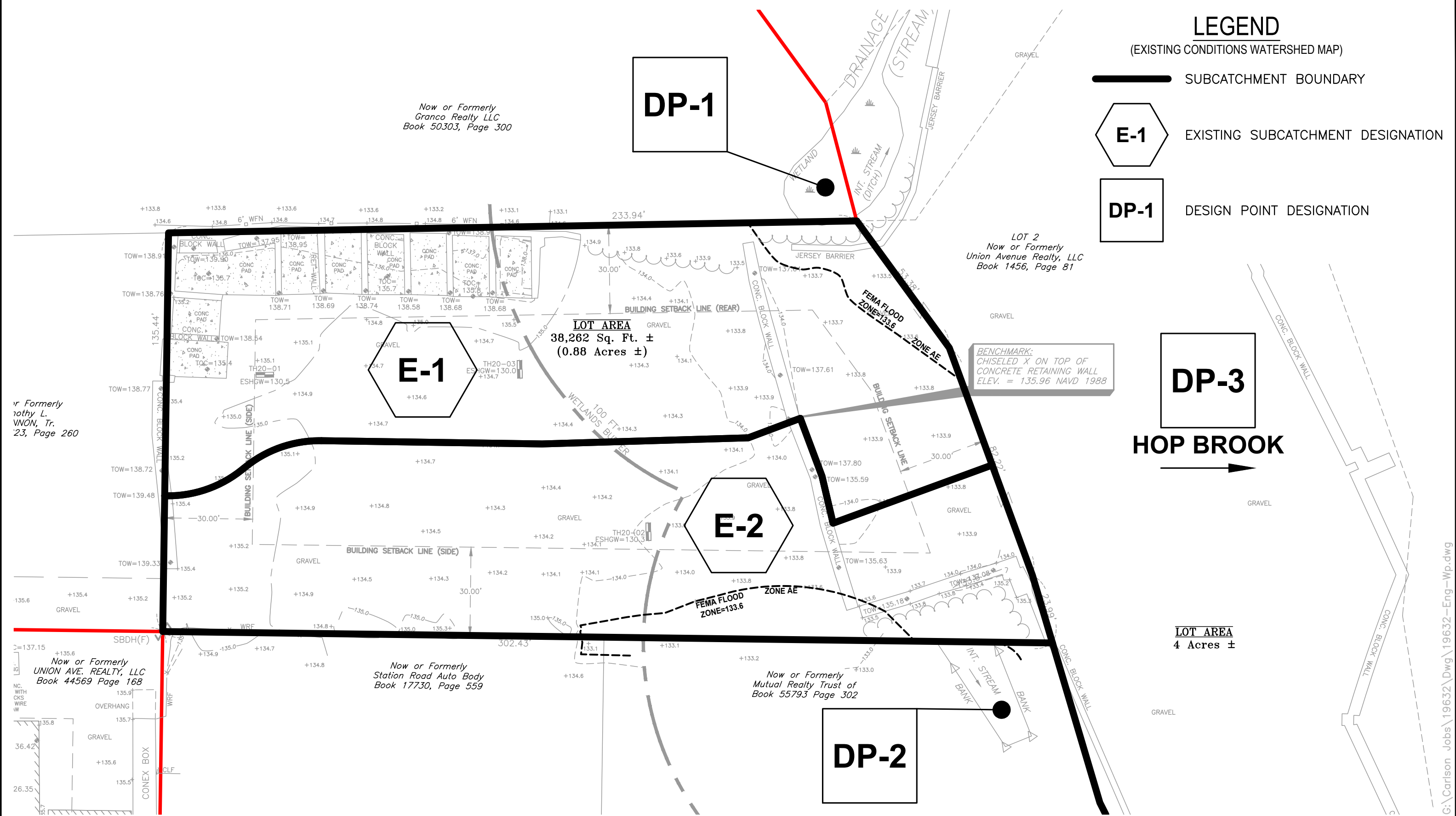
Inflow Area = 0.878 ac, 11.35% Impervious, Inflow Depth = 8.00" for 100 Year event  
Inflow = 7.34 cfs @ 12.08 hrs, Volume= 0.586 af  
Outflow = 7.34 cfs @ 12.08 hrs, Volume= 0.586 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

# LEGEND

(EXISTING CONDITIONS WATERSHED MAP)

-  SUBCATCHMENT BOUNDARY
-  **E-1** EXISTING SUBCATCHMENT DESIGNATION
-  **DP-1** DESIGN POINT DESIGNATION



**BENCHMARK:**  
CHISELED X ON TOP OF  
CONCRETE RETAINING WALL  
ELEV. = 135.96 NAVD 1988



SCALE: 1" = 30'



**DGT Associates**  
1071 Worcester Road  
Framingham, MA 01701  
508-879-0030  
www.DGTassociates.com

EXISTING CONDITIONS WATERSHED MAP  
AT  
46 UNION AVENUE (REAR)  
IN  
SUDBURY, MA 01776

DATE:	12/10/2020
DRAFTED BY:	FJS
SCALE:	1" = 30'

**WSD-EX**  
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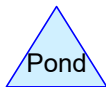
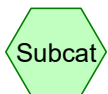
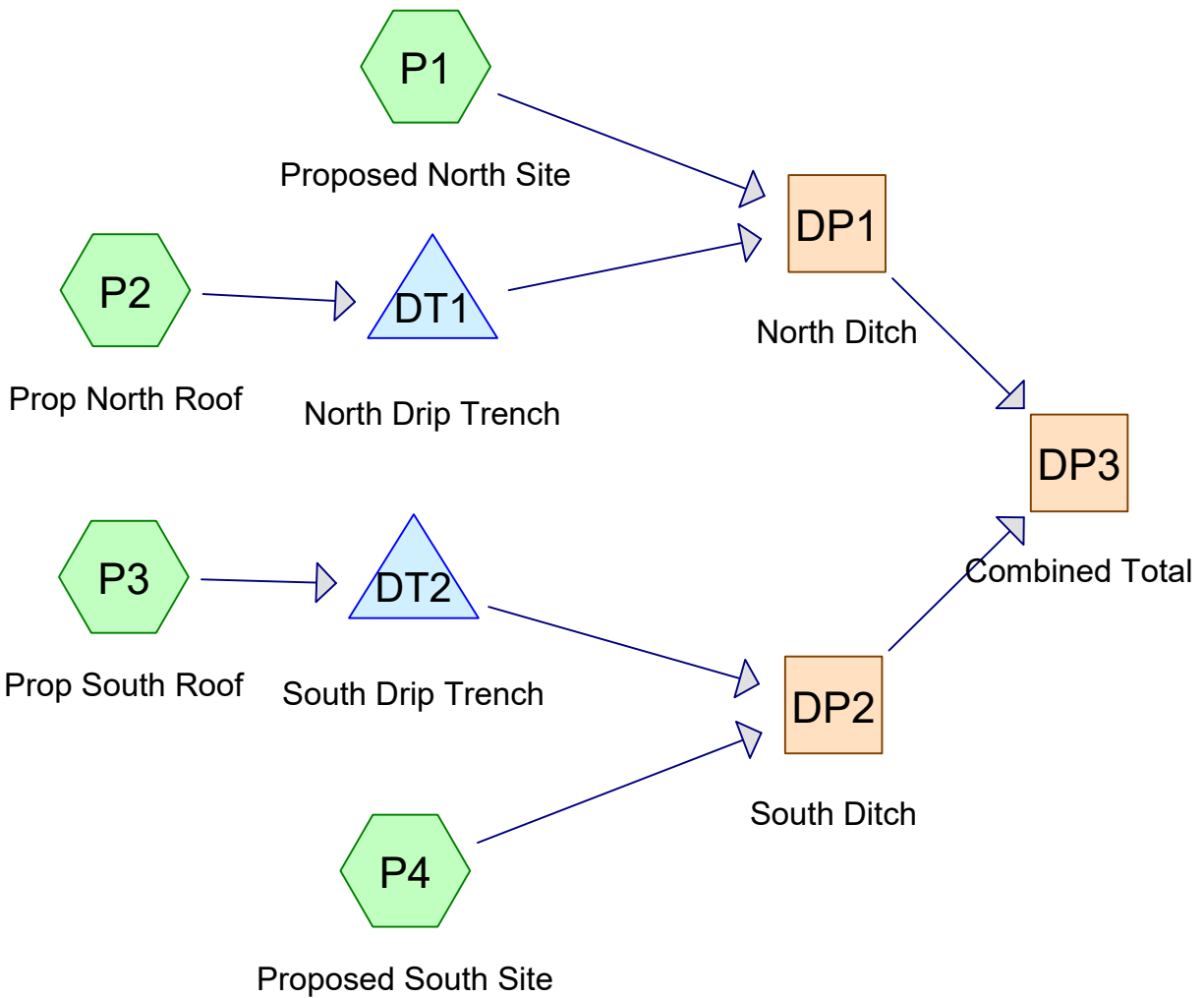
## **SECTION 4**

**Proposed Conditions Stormwater Model  
showing Stormwater Flows and Flood Routing  
Computations using HydroCAD version 10.00**

**Proposed Conditions Watershed Map:**

for

**Proposed Workshop Building Project  
Precourt Stone**  
41 Union Avenue  
Sudbury, MA 01776



# Precourt-Rear Lot-Proposed

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## Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.667	96	Gravel surface, HSG C (P1, P4)
0.100	98	Paved parking, HSG C (P1, P4)
0.066	98	Roofs, HSG C (P2, P3)
0.046	70	Woods, Good, HSG C (P1, P4)
<b>0.878</b>	<b>95</b>	<b>TOTAL AREA</b>



**Precourt-Rear Lot-Proposed**

Type III 24-hr 1 inch Rainfall=1.00"

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**Summary for Subcatchment P1: Proposed North Site**

Runoff = 0.29 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 1 inch Rainfall=1.00"

Area (sf)	CN	Description
14,402	96	Gravel surface, HSG C
* 3,636	98	Paved parking, HSG C
1,057	70	Woods, Good, HSG C
19,095	95	Weighted Average
15,459		80.96% Pervious Area
3,636		19.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Seg 1</b>

**Summary for Subcatchment P2: Prop North Roof**

Runoff = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 1 inch Rainfall=1.00"

Area (sf)	CN	Description
1,313	98	Roofs, HSG C
1,313		100.00% Impervious Area

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

**Summary for Subcatchment P3: Prop South Roof**

Runoff = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 1 inch Rainfall=1.00"

Area (sf)	CN	Description
1,564	98	Roofs, HSG C
1,564		100.00% Impervious Area

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

**Precourt-Rear Lot-Proposed**

Type III 24-hr 1 inch Rainfall=1.00"

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**Summary for Subcatchment P4: Proposed South Site**

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.018 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 1 inch Rainfall=1.00"

Area (sf)	CN	Description
14,652	96	Gravel surface, HSG C
705	98	Paved parking, HSG C
933	70	Woods, Good, HSG C
16,290	95	Weighted Average
15,585		95.67% Pervious Area
705		4.33% Impervious Area

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

**Summary for Reach DP1: North Ditch**

Inflow Area = 0.469 ac, 24.25% Impervious, Inflow Depth = 0.53" for 1 inch event  
Inflow = 0.29 cfs @ 12.09 hrs, Volume= 0.021 af  
Outflow = 0.29 cfs @ 12.09 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Reach DP2: South Ditch**

Inflow Area = 0.410 ac, 12.71% Impervious, Inflow Depth = 0.51" for 1 inch event  
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 0.018 af  
Outflow = 0.25 cfs @ 12.09 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Reach DP3: Combined Total**

Inflow Area = 0.878 ac, 18.86% Impervious, Inflow Depth = 0.52" for 1 inch event  
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.038 af  
Outflow = 0.54 cfs @ 12.09 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Pond DT1: North Drip Trench**

Inflow Area = 0.030 ac, 100.00% Impervious, Inflow Depth = 0.79" for 1 inch event  
Inflow = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af  
Outflow = 0.00 cfs @ 11.69 hrs, Volume= 0.002 af, Atten= 87%, Lag= 0.0 min  
Discarded = 0.00 cfs @ 11.69 hrs, Volume= 0.002 af  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

**Precourt-Rear Lot-Proposed**

Type III 24-hr 1 inch Rainfall=1.00"

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Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
 Peak Elev= 133.28' @ 12.63 hrs Surf.Area= 148 sf Storage= 28 cf

Plug-Flow detention time= 56.2 min calculated for 0.002 af (100% of inflow)  
 Center-of-Mass det. time= 56.2 min ( 844.1 - 787.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	132.80'	142 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 355 cf Overall x 40.0% Voids
#2	135.20'	22 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		164 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.80	148	0	0
135.20	148	355	355

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.20	222	0	0
135.30	222	22	22

Device	Routing	Invert	Outlet Devices
#1	Primary	135.20'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	132.80'	<b>1.020 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.00 cfs @ 11.69 hrs HW=132.83' (Free Discharge)  
 ↑2=Exfiltration (Exfiltration Controls 0.00 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.80' (Free Discharge)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond DT2: South Drip Trench**

Inflow Area = 0.036 ac, 100.00% Impervious, Inflow Depth = 0.79" for 1 inch event  
 Inflow = 0.03 cfs @ 12.08 hrs, Volume= 0.002 af  
 Outflow = 0.01 cfs @ 11.76 hrs, Volume= 0.002 af, Atten= 83%, Lag= 0.0 min  
 Discarded = 0.01 cfs @ 11.76 hrs, Volume= 0.002 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
 Peak Elev= 133.12' @ 12.55 hrs Surf.Area= 230 sf Storage= 30 cf

Plug-Flow detention time= 35.4 min calculated for 0.002 af (100% of inflow)  
 Center-of-Mass det. time= 35.4 min ( 823.3 - 787.9 )

**Precourt-Rear Lot-Proposed**

Type III 24-hr 1 inch Rainfall=1.00"

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Volume	Invert	Avail.Storage	Storage Description
#1	132.80'	221 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 552 cf Overall x 40.0% Voids
#2	135.20'	24 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		244 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.80	230	0	0
135.20	230	552	552

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.20	236	0	0
135.30	236	24	24

Device	Routing	Invert	Outlet Devices
#1	Primary	135.20'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	132.80'	<b>1.020 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 11.76 hrs HW=132.83' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.80' (Free Discharge)  
 ↑**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Precourt-Rear Lot-Proposed**

Type III 24-hr 2 Year Rainfall=3.20"

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**Summary for Subcatchment P1: Proposed North Site**

Runoff = 1.29 cfs @ 12.08 hrs, Volume= 0.097 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Year Rainfall=3.20"

Area (sf)	CN	Description
14,402	96	Gravel surface, HSG C
* 3,636	98	Paved parking, HSG C
1,057	70	Woods, Good, HSG C
19,095	95	Weighted Average
15,459		80.96% Pervious Area
3,636		19.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Seg 1</b>

**Summary for Subcatchment P2: Prop North Roof**

Runoff = 0.09 cfs @ 12.08 hrs, Volume= 0.007 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Year Rainfall=3.20"

Area (sf)	CN	Description
1,313	98	Roofs, HSG C
1,313		100.00% Impervious Area

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

**Summary for Subcatchment P3: Prop South Roof**

Runoff = 0.11 cfs @ 12.08 hrs, Volume= 0.009 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Year Rainfall=3.20"

Area (sf)	CN	Description
1,564	98	Roofs, HSG C
1,564		100.00% Impervious Area

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

**Precourt-Rear Lot-Proposed**

Type III 24-hr 2 Year Rainfall=3.20"

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**Summary for Subcatchment P4: Proposed South Site**

Runoff = 1.10 cfs @ 12.08 hrs, Volume= 0.082 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Year Rainfall=3.20"

Area (sf)	CN	Description
14,652	96	Gravel surface, HSG C
705	98	Paved parking, HSG C
933	70	Woods, Good, HSG C
16,290	95	Weighted Average
15,585		95.67% Pervious Area
705		4.33% Impervious Area

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

**Summary for Reach DP1: North Ditch**

Inflow Area = 0.469 ac, 24.25% Impervious, Inflow Depth = 2.48" for 2 Year event  
Inflow = 1.29 cfs @ 12.08 hrs, Volume= 0.097 af  
Outflow = 1.29 cfs @ 12.08 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Reach DP2: South Ditch**

Inflow Area = 0.410 ac, 12.71% Impervious, Inflow Depth = 2.41" for 2 Year event  
Inflow = 1.10 cfs @ 12.08 hrs, Volume= 0.082 af  
Outflow = 1.10 cfs @ 12.08 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Reach DP3: Combined Total**

Inflow Area = 0.878 ac, 18.86% Impervious, Inflow Depth = 2.45" for 2 Year event  
Inflow = 2.38 cfs @ 12.08 hrs, Volume= 0.179 af  
Outflow = 2.38 cfs @ 12.08 hrs, Volume= 0.179 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Pond DT1: North Drip Trench**

Inflow Area = 0.030 ac, 100.00% Impervious, Inflow Depth = 2.97" for 2 Year event  
Inflow = 0.09 cfs @ 12.08 hrs, Volume= 0.007 af  
Outflow = 0.02 cfs @ 12.54 hrs, Volume= 0.007 af, Atten= 83%, Lag= 27.4 min  
Discarded = 0.01 cfs @ 12.50 hrs, Volume= 0.007 af  
Primary = 0.01 cfs @ 12.54 hrs, Volume= 0.000 af

**Precourt-Rear Lot-Proposed**

Type III 24-hr 2 Year Rainfall=3.20"

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Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.20' @ 12.54 hrs Surf.Area= 370 sf Storage= 143 cf

Plug-Flow detention time= 320.5 min calculated for 0.007 af (100% of inflow)  
 Center-of-Mass det. time= 320.6 min ( 1,077.0 - 756.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	132.80'	142 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 355 cf Overall x 40.0% Voids
#2	135.20'	22 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		164 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.80	148	0	0
135.20	148	355	355

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.20	222	0	0
135.30	222	22	22

Device	Routing	Invert	Outlet Devices
#1	Primary	135.20'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	132.80'	<b>1.020 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 12.50 hrs HW=135.20' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.00 cfs @ 12.54 hrs HW=135.20' (Free Discharge)  
 ↑**1=Broad-Crested Rectangular Weir**(Weir Controls 0.00 cfs @ 0.15 fps)

**Summary for Pond DT2: South Drip Trench**

Inflow Area = 0.036 ac, 100.00% Impervious, Inflow Depth = 2.97" for 2 Year event  
 Inflow = 0.11 cfs @ 12.08 hrs, Volume= 0.009 af  
 Outflow = 0.01 cfs @ 10.25 hrs, Volume= 0.009 af, Atten= 95%, Lag= 0.0 min  
 Discarded = 0.01 cfs @ 10.25 hrs, Volume= 0.009 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
 Peak Elev= 134.74' @ 14.26 hrs Surf.Area= 230 sf Storage= 178 cf

Plug-Flow detention time= 275.0 min calculated for 0.009 af (100% of inflow)  
 Center-of-Mass det. time= 275.0 min ( 1,031.4 - 756.4 )



**Precourt-Rear Lot-Proposed**

Type III 24-hr 2 Year Rainfall=3.20"

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Volume	Invert	Avail.Storage	Storage Description
#1	132.80'	221 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 552 cf Overall x 40.0% Voids
#2	135.20'	24 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		244 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.80	230	0	0
135.20	230	552	552

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.20	236	0	0
135.30	236	24	24

Device	Routing	Invert	Outlet Devices
#1	Primary	135.20'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	132.80'	<b>1.020 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 10.25 hrs HW=132.83' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=132.80' (Free Discharge)  
 ↑**1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

# Precourt-Rear Lot-Proposed

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Type III 24-hr 10 Year Rainfall=4.80"

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## Summary for Subcatchment P1: Proposed North Site

Runoff = 2.00 cfs @ 12.08 hrs, Volume= 0.154 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Year Rainfall=4.80"

Area (sf)	CN	Description
14,402	96	Gravel surface, HSG C
* 3,636	98	Paved parking, HSG C
1,057	70	Woods, Good, HSG C
19,095	95	Weighted Average
15,459		80.96% Pervious Area
3,636		19.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Seg 1

## Summary for Subcatchment P2: Prop North Roof

Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Year Rainfall=4.80"

Area (sf)	CN	Description
1,313	98	Roofs, HSG C
1,313		100.00% Impervious Area

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

## Summary for Subcatchment P3: Prop South Roof

Runoff = 0.17 cfs @ 12.08 hrs, Volume= 0.014 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Year Rainfall=4.80"

Area (sf)	CN	Description
1,564	98	Roofs, HSG C
1,564		100.00% Impervious Area

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

## Precourt-Rear Lot-Proposed

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Type III 24-hr 10 Year Rainfall=4.80"

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### Summary for Subcatchment P4: Proposed South Site

Runoff = 1.70 cfs @ 12.08 hrs, Volume= 0.132 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Year Rainfall=4.80"

Area (sf)	CN	Description
14,652	96	Gravel surface, HSG C
705	98	Paved parking, HSG C
933	70	Woods, Good, HSG C
16,290	95	Weighted Average
15,585		95.67% Pervious Area
705		4.33% Impervious Area

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

### Summary for Reach DP1: North Ditch

Inflow Area = 0.469 ac, 24.25% Impervious, Inflow Depth = 4.01" for 10 Year event  
Inflow = 2.06 cfs @ 12.10 hrs, Volume= 0.157 af  
Outflow = 2.06 cfs @ 12.10 hrs, Volume= 0.157 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### Summary for Reach DP2: South Ditch

Inflow Area = 0.410 ac, 12.71% Impervious, Inflow Depth = 3.89" for 10 Year event  
Inflow = 1.70 cfs @ 12.08 hrs, Volume= 0.133 af  
Outflow = 1.70 cfs @ 12.08 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### Summary for Reach DP3: Combined Total

Inflow Area = 0.878 ac, 18.86% Impervious, Inflow Depth = 3.96" for 10 Year event  
Inflow = 3.75 cfs @ 12.09 hrs, Volume= 0.290 af  
Outflow = 3.75 cfs @ 12.09 hrs, Volume= 0.290 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### Summary for Pond DT1: North Drip Trench

Inflow Area = 0.030 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10 Year event  
Inflow = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af  
Outflow = 0.13 cfs @ 12.12 hrs, Volume= 0.011 af, Atten= 10%, Lag= 2.4 min  
Discarded = 0.01 cfs @ 12.08 hrs, Volume= 0.009 af  
Primary = 0.12 cfs @ 12.12 hrs, Volume= 0.002 af

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Type III 24-hr 10 Year Rainfall=4.80"

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Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.24' @ 12.12 hrs Surf.Area= 370 sf Storage= 150 cf

Plug-Flow detention time= 247.9 min calculated for 0.011 af (100% of inflow)  
 Center-of-Mass det. time= 247.9 min ( 996.6 - 748.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	132.80'	142 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 355 cf Overall x 40.0% Voids
#2	135.20'	22 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		164 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.80	148	0	0
135.20	148	355	355

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.20	222	0	0
135.30	222	22	22

Device	Routing	Invert	Outlet Devices
#1	Primary	135.20'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	132.80'	<b>1.020 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 12.08 hrs HW=135.21' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.11 cfs @ 12.12 hrs HW=135.24' (Free Discharge)  
 ↑**1=Broad-Crested Rectangular Weir**(Weir Controls 0.11 cfs @ 0.53 fps)

**Summary for Pond DT2: South Drip Trench**

Inflow Area = 0.036 ac, 100.00% Impervious, Inflow Depth = 4.56" for 10 Year event  
 Inflow = 0.17 cfs @ 12.08 hrs, Volume= 0.014 af  
 Outflow = 0.07 cfs @ 12.30 hrs, Volume= 0.014 af, Atten= 61%, Lag= 13.0 min  
 Discarded = 0.01 cfs @ 12.24 hrs, Volume= 0.012 af  
 Primary = 0.06 cfs @ 12.30 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.22' @ 12.30 hrs Surf.Area= 466 sf Storage= 226 cf

Plug-Flow detention time= 289.2 min calculated for 0.014 af (100% of inflow)  
 Center-of-Mass det. time= 289.2 min ( 1,037.9 - 748.7 )

**Precourt-Rear Lot-Proposed**

Type III 24-hr 10 Year Rainfall=4.80"

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Volume	Invert	Avail.Storage	Storage Description
#1	132.80'	221 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 552 cf Overall x 40.0% Voids
#2	135.20'	24 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		244 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.80	230	0	0
135.20	230	552	552

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.20	236	0	0
135.30	236	24	24

Device	Routing	Invert	Outlet Devices
#1	Primary	135.20'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	132.80'	<b>1.020 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 12.24 hrs HW=135.21' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.05 cfs @ 12.30 hrs HW=135.22' (Free Discharge)  
 ↑**1=Broad-Crested Rectangular Weir**(Weir Controls 0.05 cfs @ 0.40 fps)

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Type III 24-hr 25 Year Rainfall=6.00"

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**Summary for Subcatchment P1: Proposed North Site**

Runoff = 2.53 cfs @ 12.08 hrs, Volume= 0.198 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Year Rainfall=6.00"

Area (sf)	CN	Description
14,402	96	Gravel surface, HSG C
* 3,636	98	Paved parking, HSG C
1,057	70	Woods, Good, HSG C
19,095	95	Weighted Average
15,459		80.96% Pervious Area
3,636		19.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Seg 1</b>

**Summary for Subcatchment P2: Prop North Roof**

Runoff = 0.18 cfs @ 12.08 hrs, Volume= 0.014 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Year Rainfall=6.00"

Area (sf)	CN	Description
1,313	98	Roofs, HSG C
1,313		100.00% Impervious Area

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

**Summary for Subcatchment P3: Prop South Roof**

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Year Rainfall=6.00"

Area (sf)	CN	Description
1,564	98	Roofs, HSG C
1,564		100.00% Impervious Area

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

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Type III 24-hr 25 Year Rainfall=6.00"

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**Summary for Subcatchment P4: Proposed South Site**

Runoff = 2.15 cfs @ 12.08 hrs, Volume= 0.169 af, Depth= 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Year Rainfall=6.00"

Area (sf)	CN	Description
14,652	96	Gravel surface, HSG C
705	98	Paved parking, HSG C
933	70	Woods, Good, HSG C
16,290	95	Weighted Average
15,585		95.67% Pervious Area
705		4.33% Impervious Area

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

**Summary for Reach DP1: North Ditch**

Inflow Area = 0.469 ac, 24.25% Impervious, Inflow Depth = 5.18" for 25 Year event  
Inflow = 2.69 cfs @ 12.08 hrs, Volume= 0.202 af  
Outflow = 2.69 cfs @ 12.08 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Reach DP2: South Ditch**

Inflow Area = 0.410 ac, 12.71% Impervious, Inflow Depth = 5.05" for 25 Year event  
Inflow = 2.19 cfs @ 12.11 hrs, Volume= 0.172 af  
Outflow = 2.19 cfs @ 12.11 hrs, Volume= 0.172 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Reach DP3: Combined Total**

Inflow Area = 0.878 ac, 18.86% Impervious, Inflow Depth = 5.12" for 25 Year event  
Inflow = 4.85 cfs @ 12.08 hrs, Volume= 0.375 af  
Outflow = 4.85 cfs @ 12.08 hrs, Volume= 0.375 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

**Summary for Pond DT1: North Drip Trench**

Inflow Area = 0.030 ac, 100.00% Impervious, Inflow Depth = 5.76" for 25 Year event  
Inflow = 0.18 cfs @ 12.08 hrs, Volume= 0.014 af  
Outflow = 0.18 cfs @ 12.10 hrs, Volume= 0.014 af, Atten= 1%, Lag= 0.8 min  
Discarded = 0.01 cfs @ 11.97 hrs, Volume= 0.010 af  
Primary = 0.17 cfs @ 12.10 hrs, Volume= 0.005 af



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Type III 24-hr 25 Year Rainfall=6.00"

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Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.25' @ 12.10 hrs Surf.Area= 370 sf Storage= 152 cf

Plug-Flow detention time= 216.3 min calculated for 0.014 af (100% of inflow)  
 Center-of-Mass det. time= 216.4 min ( 961.5 - 745.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	132.80'	142 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 355 cf Overall x 40.0% Voids
#2	135.20'	22 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		164 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.80	148	0	0
135.20	148	355	355

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.20	222	0	0
135.30	222	22	22

Device	Routing	Invert	Outlet Devices
#1	Primary	135.20'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	132.80'	<b>1.020 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 11.97 hrs HW=135.20' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.16 cfs @ 12.10 hrs HW=135.25' (Free Discharge)  
 ↑**1=Broad-Crested Rectangular Weir**(Weir Controls 0.16 cfs @ 0.60 fps)

**Summary for Pond DT2: South Drip Trench**

Inflow Area = 0.036 ac, 100.00% Impervious, Inflow Depth = 5.76" for 25 Year event  
 Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.017 af  
 Outflow = 0.18 cfs @ 12.13 hrs, Volume= 0.017 af, Atten= 14%, Lag= 3.0 min  
 Discarded = 0.01 cfs @ 12.10 hrs, Volume= 0.013 af  
 Primary = 0.17 cfs @ 12.13 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
 Peak Elev= 135.25' @ 12.13 hrs Surf.Area= 466 sf Storage= 232 cf

Plug-Flow detention time= 252.1 min calculated for 0.017 af (100% of inflow)  
 Center-of-Mass det. time= 252.1 min ( 997.2 - 745.1 )

**Precourt-Rear Lot-Proposed**

Type III 24-hr 25 Year Rainfall=6.00"

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Volume	Invert	Avail.Storage	Storage Description
#1	132.80'	221 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 552 cf Overall x 40.0% Voids
#2	135.20'	24 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		244 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.80	230	0	0
135.20	230	552	552

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.20	236	0	0
135.30	236	24	24

Device	Routing	Invert	Outlet Devices
#1	Primary	135.20'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	132.80'	<b>1.020 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 12.10 hrs HW=135.22' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.17 cfs @ 12.13 hrs HW=135.25' (Free Discharge)  
 ↑**1=Broad-Crested Rectangular Weir**(Weir Controls 0.17 cfs @ 0.60 fps)

**Precourt-Rear Lot-Proposed**

Type III 24-hr 100 Year Rainfall=8.60"

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**Summary for Subcatchment P1: Proposed North Site**

Runoff = 3.66 cfs @ 12.08 hrs, Volume= 0.292 af, Depth= 8.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Year Rainfall=8.60"

Area (sf)	CN	Description
14,402	96	Gravel surface, HSG C
* 3,636	98	Paved parking, HSG C
1,057	70	Woods, Good, HSG C
19,095	95	Weighted Average
15,459		80.96% Pervious Area
3,636		19.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Seg 1</b>

**Summary for Subcatchment P2: Prop North Roof**

Runoff = 0.25 cfs @ 12.08 hrs, Volume= 0.021 af, Depth= 8.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Year Rainfall=8.60"

Area (sf)	CN	Description
1,313	98	Roofs, HSG C
1,313		100.00% Impervious Area

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

**Summary for Subcatchment P3: Prop South Roof**

Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.025 af, Depth= 8.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Year Rainfall=8.60"

Area (sf)	CN	Description
1,564	98	Roofs, HSG C
1,564		100.00% Impervious Area

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

## Precourt-Rear Lot-Proposed

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Type III 24-hr 100 Year Rainfall=8.60"

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### Summary for Subcatchment P4: Proposed South Site

Runoff = 3.13 cfs @ 12.08 hrs, Volume= 0.249 af, Depth= 8.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Year Rainfall=8.60"

Area (sf)	CN	Description
14,652	96	Gravel surface, HSG C
705	98	Paved parking, HSG C
933	70	Woods, Good, HSG C
16,290	95	Weighted Average
15,585		95.67% Pervious Area
705		4.33% Impervious Area

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

### Summary for Reach DP1: North Ditch

Inflow Area = 0.469 ac, 24.25% Impervious, Inflow Depth = 7.73" for 100 Year event  
Inflow = 3.91 cfs @ 12.08 hrs, Volume= 0.302 af  
Outflow = 3.91 cfs @ 12.08 hrs, Volume= 0.302 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### Summary for Reach DP2: South Ditch

Inflow Area = 0.410 ac, 12.71% Impervious, Inflow Depth = 7.58" for 100 Year event  
Inflow = 3.41 cfs @ 12.08 hrs, Volume= 0.259 af  
Outflow = 3.41 cfs @ 12.08 hrs, Volume= 0.259 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### Summary for Reach DP3: Combined Total

Inflow Area = 0.878 ac, 18.86% Impervious, Inflow Depth = 7.66" for 100 Year event  
Inflow = 7.32 cfs @ 12.08 hrs, Volume= 0.560 af  
Outflow = 7.32 cfs @ 12.08 hrs, Volume= 0.560 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs

### Summary for Pond DT1: North Drip Trench

Inflow Area = 0.030 ac, 100.00% Impervious, Inflow Depth = 8.36" for 100 Year event  
Inflow = 0.25 cfs @ 12.08 hrs, Volume= 0.021 af  
Outflow = 0.25 cfs @ 12.09 hrs, Volume= 0.021 af, Atten= 1%, Lag= 0.6 min  
Discarded = 0.01 cfs @ 11.60 hrs, Volume= 0.012 af  
Primary = 0.24 cfs @ 12.09 hrs, Volume= 0.009 af

**Precourt-Rear Lot-Proposed**

Type III 24-hr 100 Year Rainfall=8.60"

Prepared by Microsoft

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Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Peak Elev= 135.26' @ 12.09 hrs Surf.Area= 370 sf Storage= 155 cf

Plug-Flow detention time= 174.6 min calculated for 0.021 af (100% of inflow)  
Center-of-Mass det. time= 174.6 min ( 914.9 - 740.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	132.80'	142 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 355 cf Overall x 40.0% Voids
#2	135.20'	22 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		164 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.80	148	0	0
135.20	148	355	355

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.20	222	0	0
135.30	222	22	22

Device	Routing	Invert	Outlet Devices
#1	Primary	135.20'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	132.80'	<b>1.020 in/hr Exfiltration over Surface area</b>

**Discarded OutFlow** Max=0.01 cfs @ 11.60 hrs HW=135.20' (Free Discharge)  
↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.24 cfs @ 12.09 hrs HW=135.26' (Free Discharge)  
↑**1=Broad-Crested Rectangular Weir**(Weir Controls 0.24 cfs @ 0.68 fps)

**Summary for Pond DT2: South Drip Trench**

Inflow Area = 0.036 ac, 100.00% Impervious, Inflow Depth = 8.36" for 100 Year event  
 Inflow = 0.30 cfs @ 12.08 hrs, Volume= 0.025 af  
 Outflow = 0.30 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 1%, Lag= 0.6 min  
 Discarded = 0.01 cfs @ 11.89 hrs, Volume= 0.016 af  
 Primary = 0.29 cfs @ 12.09 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 0.00-35.00 hrs, dt= 0.01 hrs  
Peak Elev= 135.27' @ 12.09 hrs Surf.Area= 466 sf Storage= 236 cf

Plug-Flow detention time= 203.3 min calculated for 0.025 af (100% of inflow)  
Center-of-Mass det. time= 203.5 min ( 943.8 - 740.3 )

**Precourt-Rear Lot-Proposed**

Type III 24-hr 100 Year Rainfall=8.60"

Prepared by Microsoft

Printed 3/3/2021

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Volume	Invert	Avail.Storage	Storage Description
#1	132.80'	221 cf	<b>Custom Stage Data (Prismatic)</b> Listed below 552 cf Overall x 40.0% Voids
#2	135.20'	24 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		244 cf	Total Available Storage

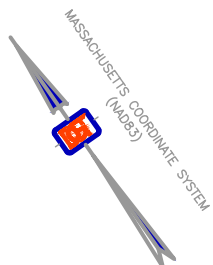
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.80	230	0	0
135.20	230	552	552

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
135.20	236	0	0
135.30	236	24	24

Device	Routing	Invert	Outlet Devices
#1	Primary	135.20'	<b>6.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	132.80'	<b>1.020 in/hr Exfiltration over Surface area</b>


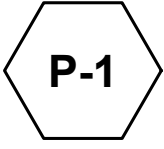


**Discarded OutFlow** Max=0.01 cfs @ 11.89 hrs HW=135.20' (Free Discharge)  
 ↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)

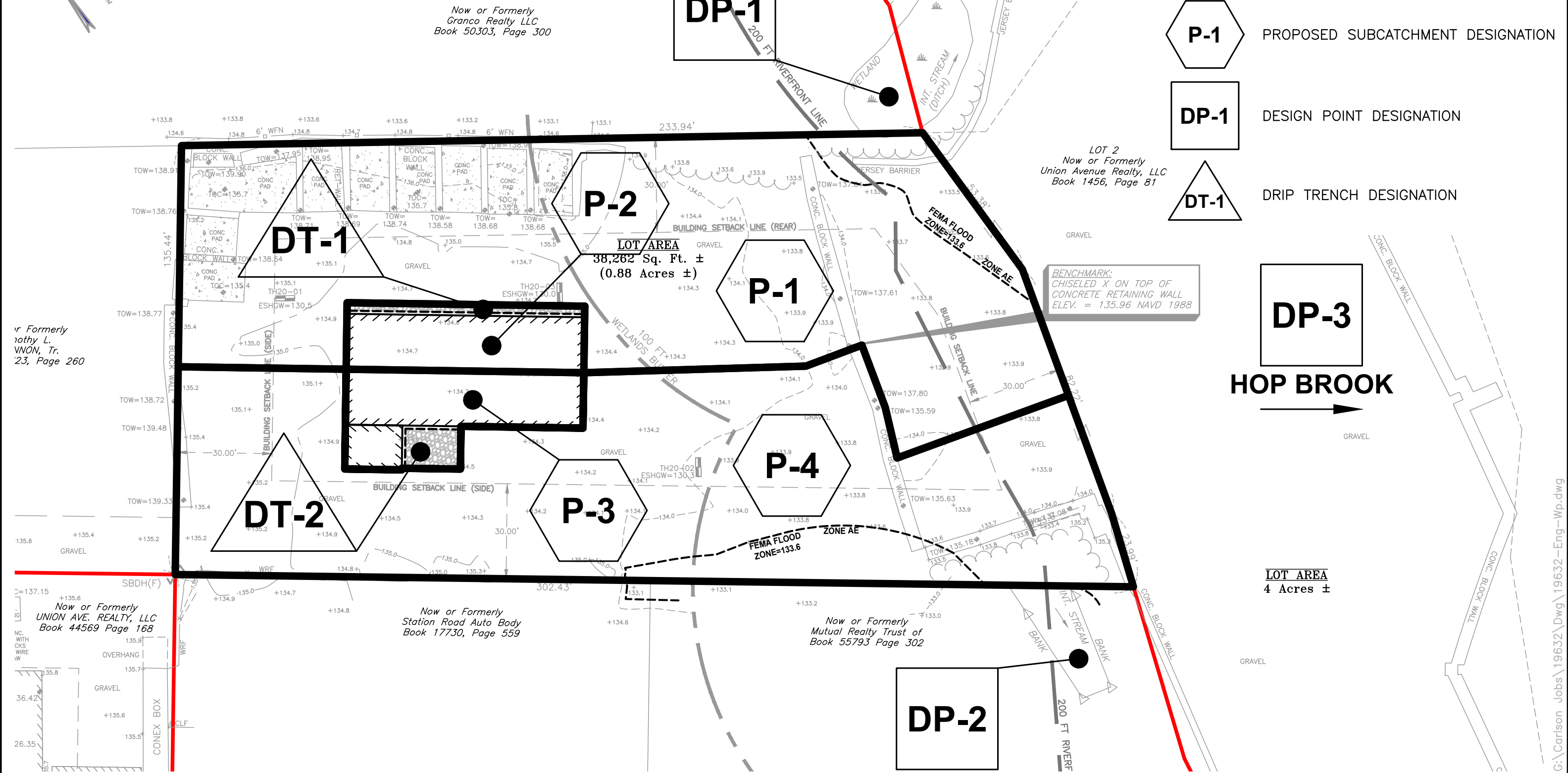
**Primary OutFlow** Max=0.29 cfs @ 12.09 hrs HW=135.27' (Free Discharge)  
 ↑**1=Broad-Crested Rectangular Weir**(Weir Controls 0.29 cfs @ 0.72 fps)



# LEGEND

(PROPOSED CONDITIONS WATERSHED MAP)

-  SUBCATCHMENT BOUNDARY
-  PROPOSED SUBCATCHMENT DESIGNATION
-  DESIGN POINT DESIGNATION
-  DRIP TRENCH DESIGNATION



Now or Formerly  
rothy L.  
VNON, Tr.  
23, Page 260

Now or Formerly  
Granco Realty LLC  
Book 50303, Page 300

LOT 2  
Now or Formerly  
Union Avenue Realty, LLC  
Book 1456, Page 81

BENCHMARK:  
CHISELED X ON TOP OF  
CONCRETE RETAINING WALL  
ELEV. = 135.96 NAVD 1988

Now or Formerly  
UNION AVE. REALTY, LLC  
Book 44569 Page 168

Now or Formerly  
Station Road Auto Body  
Book 17730, Page 559

Now or Formerly  
Mutual Realty Trust of  
Book 55793 Page 302

LOT AREA  
4 Acres ±



**DGT Associates**  
1071 Worcester Road  
Framingham, MA 01701  
508-879-0030  
www.DGTassociates.com

PROPOSED CONDITIONS WATERSHED MAP  
AT  
46 UNION AVENUE (REAR)  
IN  
SUDBURY, MA 01776

REVISED:	1/20/2021
DRAFTED BY:	FJS
SCALE:	1" = 30'

**WSD-PR**  
19632



SCALE: 1" = 30'

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# **APPENDIX 1**

## **Soils Data**

**Soils Summary by DGT Associates**

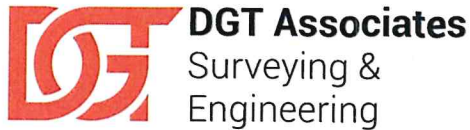
**Natural Resource Conservation Service Soils Information**

**On-Site Soil Testing**

for

**Precourt Stone-Rear Lot**

46 Union Avenue  
Sudbury, MA 01776



1071 Worcester Rd.  
Framingham, MA 01701  
508.879.0030  
[www.dgtassociates.com](http://www.dgtassociates.com)

July 6, 2020

Job: 19632-2019

Charles J. Precourt and Sons, Inc  
Attn: Mr. Harry Precourt  
46 Union Avenue  
Sudbury, MA 01776

RE: 44 & 46 Union Avenue, Sudbury – Soil Testing

Dear Mr. Precourt:

This report contains the results of the on-site soil testing conducted by DGT Associates on June 18, 2020 at the subject properties in Sudbury, Massachusetts. The testing consisted of three (3) deep hole test pits. Santucci Construction, Inc. provided the backhoe services. Attachment 3 contains a map showing the locations of the soil test pits.

The purpose of the testing was to assess the suitability of the soils for stormwater management design for the proposed development. Testing was performed by Massachusetts Licensed Soil Evaluator (Joseph A. Losanno, EIT) of DGT.

According to the Natural Resources Conservation Service (NRCS) Soils Mapping, the soil in the area of testing is Udorthents-Urban land complex and Freetown muck. The testing generally confirmed the NRCS data. Attachment 2 contains the NRCS Map for the site and descriptions of the soil type.

Generally, the testing revealed a sandy fill material, over a silt loam buried topsoil, over a sand to loamy sand substratum. Deep observation hole logs are contained in Attachment 1.


The Estimated Seasonal High Groundwater Table (ESHGWT) was determined by the presence of redoximorphic features found in each test hole between 43" and 56" during the testing. Weeping and standing groundwater was also observed in each test hole. Weeping groundwater was observed between 62" – 76" and standing groundwater was observed between 92" – 100".

No ledge / bedrock / refusal was encountered during the soil exploration.

Cave-in and saturated natural substratum soils were present in each of the test pits therefore an in-situ permeability test was unable to be conducted. Soil samples were gathered while on-site and sieve analyses can be run if requested by regulatory agencies. Based on our finding, DGT is currently basing our design permeability rate on the RAWLS rate published in the Massachusetts Stormwater Handbook for loamy sand (2.41 inches per hour).

Please contact me if you have any questions regarding this report.

Sincerely,  
DGT Associates

  
Joseph A. Losanno, EIT (SE 13870)  
Project Engineer

Attachments:

1. Deep Observation Hole Test Logs
2. NRCS Soils Map and Information
3. Soil Test Hole Location Plan
4. USGS Surficial Geology Map

Location Address or Lot No. 44 & 46 Union Avenue, Sudbury, MA 01776

**On-site Soil Testing Review**

Deep Hole Number TH 20-01 Date: 06/18/20 Time: A.M. Weather 75° Sunny

Location (identify on site plan) see sketch

Land Use Gravel Storage Yard Slope (%) 0-3 Surface Stones None

Vegetation Gravel

Landform Ground Moraine

Position on landscape (sketch on the back) see sketch

Distances from:

Open Water Body See sketch Feet Drainageway See sketch Feet  
 Possible Wet Area See sketch Feet Property Line See sketch Feet  
 Drinking Water Well See sketch Feet Other \_\_\_\_\_

DEEP OBSERVATION HOLE LOG					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0 – 45"	Fill	-	-	-	Gravel, stumps & stones
45 – 50"	A <sub>b</sub>	Silt Loam	10 YR 2/1	None Observed	Massive-Friable
50 – 55"	B <sub>wb</sub>	Sandy Loam (Fine)	10 YR 3/4	None Observed	Massive-Friable
55 – 80"	C <sub>1</sub>	Sand (Fine)	2.5 Y 5/3	>5% @ 55"	Loose-Single Grained
80 – 102"	C <sub>2</sub>	Sand (Fine)	2.5 Y 4/1		Loose-Single Grained

Parent Material (geologic) sandy glaciofluvial deposits over loamy glaciolacustrine deposits Depth to Bedrock: None Observed

Depth to Groundwater: Standing Water in the Hole: @ 100" Weeping from Pit Face: @ 72"

Estimated Seasonal High Ground Water: @ 55" based on soil morphology



Location Address or Lot No. 44 & 46 Union Avenue, Sudbury, MA 01776

**On-site Soil Testing Review**

Deep Hole Number TH 20-02 Date: 06/18/20 Time: A.M. Weather 75° Sunny

Location (identify on site plan) see sketch

Land Use Gravel Storage Yard Slope (%) 0-3 Surface Stones None

Vegetation Gravel

Landform Ground Moraine

Position on landscape (sketch on the back) see sketch

Distances from:

Open Water Body See sketch Feet Drainageway See sketch Feet  
 Possible Wet Area See sketch Feet Property Line See sketch Feet  
 Drinking Water Well See sketch Feet Other \_\_\_\_\_

DEEP OBSERVATION HOLE LOG					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0 – 43"	Fill	-	-	-	Gravel, buried topsoil w/ wavy boundaries & stones
43 – 62"	C <sub>1</sub>	Sand (Fine)	2.5 Y 5/4	>5% @ 43"	Loose-Single Grained
62 – 78"	C <sub>2</sub>	Sand (Medium - Course)	2.5 Y 5/4		Loose Single Grained
78 – 100"	C <sub>3</sub>	Loamy Sand	2.5 Y 6/1		Massive-Friable

Parent Material (geologic) sandy glaciofluvial deposits over loamy glaciolacustrine deposits Depth to Bedrock: None Observed

Depth to Groundwater: Standing Water in the Hole: @ 100" Weeping from Pit Face: @ 62"

Estimated Seasonal High Ground Water: @ 43" based on soil morphology



Location Address or Lot No. 44 & 46 Union Avenue, Sudbury, MA 01776

**On-site Soil Testing Review**

Deep Hole Number TH 20-03 Date: 06/18/20 Time: A.M. Weather 75° Sunny

Location (identify on site plan) see sketch

Land Use Gravel Storage Yard Slope (%) 0-3 Surface Stones None

Vegetation Gravel

Landform Ground Moraine

Position on landscape (sketch on the back) see sketch

Distances from:

Open Water Body See sketch Feet Drainageway See sketch Feet

Possible Wet Area See sketch Feet Property Line See sketch Feet

Drinking Water Well See sketch Feet Other \_\_\_\_\_

**DEEP OBSERVATION HOLE LOG**

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0 – 38"	Fill	-	-	-	Gravel, stumps & stones
38 – 56"	A <sub>b</sub>	Sandy Loam (Fine)	10 YR 2/1	None Observed	Massive-Friable
56 – 62"	C <sub>1</sub>	Sand (Fine – Medium)	2.5 Y 5/4	>5% @ 56"	Loose-Single Grained
62 – 84"	C <sub>2</sub>	Loamy Sand	2.5 Y 4/1		Massive-Friable
84 – 105"	C <sub>3</sub>	Sand (Fine)	2.5 Y 4/1		Loose-Single Grained Note: From C <sub>2</sub> down hole consisted of wavy boundaries of C <sub>2</sub> & C <sub>3</sub> material. Hole was very wet and due to no color change between layers exact depths may be variable.

Parent Material (geologic) sandy glaciofluvial deposits over loamy glaciolacustrine deposits Depth to Bedrock: None Observed

Depth to Groundwater: \_\_\_\_\_ Standing Water in the Hole: @ 92" Weeping from Pit Face: @ 76"

Estimated Seasonal High Ground Water: @ 56" based on soil morphology






































Soil Map—Middlesex County, Massachusetts



## MAP LEGEND

-  Area of Interest (AOI)
-  Area of Interest (AOI)
- Soils**
-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points
-  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
-  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 1:25,000.

**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: Middlesex County, Massachusetts  
 Survey Area Data: Version 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 28, 2019—Aug 15, 2019

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
53A	Freetown muck, ponded, 0 to 1 percent slopes	1.0	16.7%
656	Udorthents-Urban land complex	5.1	83.3%
<b>Totals for Area of Interest</b>		<b>6.2</b>	<b>100.0%</b>

## Middlesex County, Massachusetts

### 656—Udorthents-Urban land complex

#### Map Unit Setting

*National map unit symbol:* 995k  
*Elevation:* 0 to 3,000 feet  
*Mean annual precipitation:* 32 to 54 inches  
*Mean annual air temperature:* 43 to 54 degrees F  
*Frost-free period:* 110 to 240 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Udorthents and similar soils:* 40 percent  
*Urban land:* 40 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Udorthents

##### Setting

*Parent material:* Loamy alluvium and/or sandy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy marine deposits and/or loamy basal till and/or loamy lodgment till

##### Properties and qualities

*Slope:* 0 to 15 percent  
*Depth to restrictive feature:* More than 80 inches  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None

#### Description of Urban Land

##### Setting

*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Excavated and filled land

#### Minor Components

##### Canton

*Percent of map unit:* 10 percent  
*Landform:* Hills  
*Landform position (two-dimensional):* Backslope, toeslope  
*Landform position (three-dimensional):* Side slope, base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex

*Hydric soil rating:* No

**Merrimac**

*Percent of map unit:* 5 percent

*Landform:* Terraces, plains

*Landform position (two-dimensional):* Shoulder

*Landform position (three-dimensional):* Tread, rise

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

**Paxton**

*Percent of map unit:* 5 percent

*Landform:* Hillslopes

*Landform position (two-dimensional):* Backslope, summit

*Landform position (three-dimensional):* Head slope, side slope

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

## Data Source Information

Soil Survey Area: Middlesex County, Massachusetts

Survey Area Data: Version 19, Sep 12, 2019

## Middlesex County, Massachusetts

### 53A—Freetown muck, ponded, 0 to 1 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2t2qc  
*Elevation:* 0 to 1,140 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:* Not prime farmland

#### Map Unit Composition

*Freetown, ponded, and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Freetown, Ponded

##### Setting

*Landform:* Marshes, kettles, swamps, bogs, depressions, depressions  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread, dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Highly decomposed organic material

##### Typical profile

*Oe - 0 to 2 inches:* mucky peat  
*Oa - 2 to 79 inches:* muck

##### Properties and qualities

*Slope:* 0 to 1 percent  
*Percent of area covered with surface fragments:* 0.0 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Very poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):*  
Moderately low to high (0.14 to 14.17 in/hr)  
*Depth to water table:* About 0 to 6 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* Frequent  
*Available water storage in profile:* Very high (about 19.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 5w  
*Hydrologic Soil Group:* B/D  
*Hydric soil rating:* Yes

### Minor Components

#### Whitman, ponded

*Percent of map unit:* 5 percent  
*Landform:* Depressions on ground moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

#### Swansea, ponded

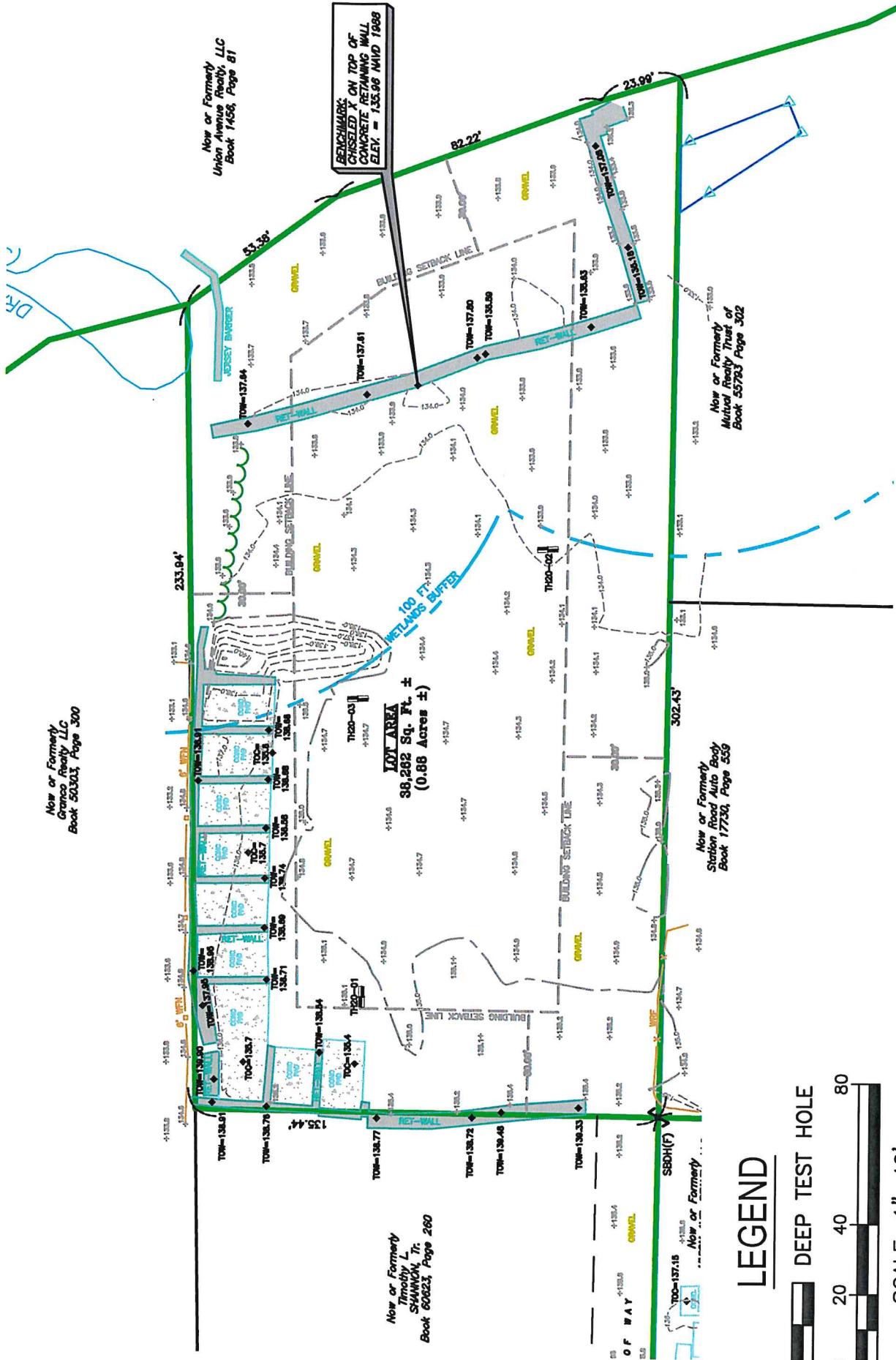
*Percent of map unit:* 5 percent  
*Landform:* Kettles, depressions, depressions, marshes, swamps, bogs  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Tread, dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

#### Scarboro

*Percent of map unit:* 5 percent  
*Landform:* Depressions, drainageways  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope, tread, dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

## Data Source Information

Soil Survey Area: Middlesex County, Massachusetts  
Survey Area Data: Version 20, Jun 9, 2020



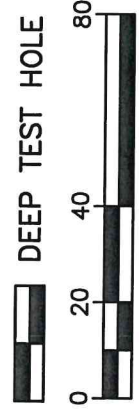
Now or Formerly  
Garnco Realty LLC  
Book 50303, Page 300

Now or Formerly  
Union Avenue Realty, LLC  
Book 1488, Page 81

BENCHMARK:  
CHISELED 'X' ON TOP OF  
CONCRETE RETAINING WALL  
ELEV. = 135.98 MVD 1989

Now or Formerly  
Timothy L. Smith, Tr.  
Book 60223, Page 260

**LEGEND**



**DGT Associates**  
1071 Worcester Road  
Framingham, MA 01701  
508-879-0030  
www.DGTassociates.com

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SOIL TEST HOLE LOCATION PLAN  
AT  
44 & 46 UNION AVENUE  
IN  
SUDBURY, MA 01776

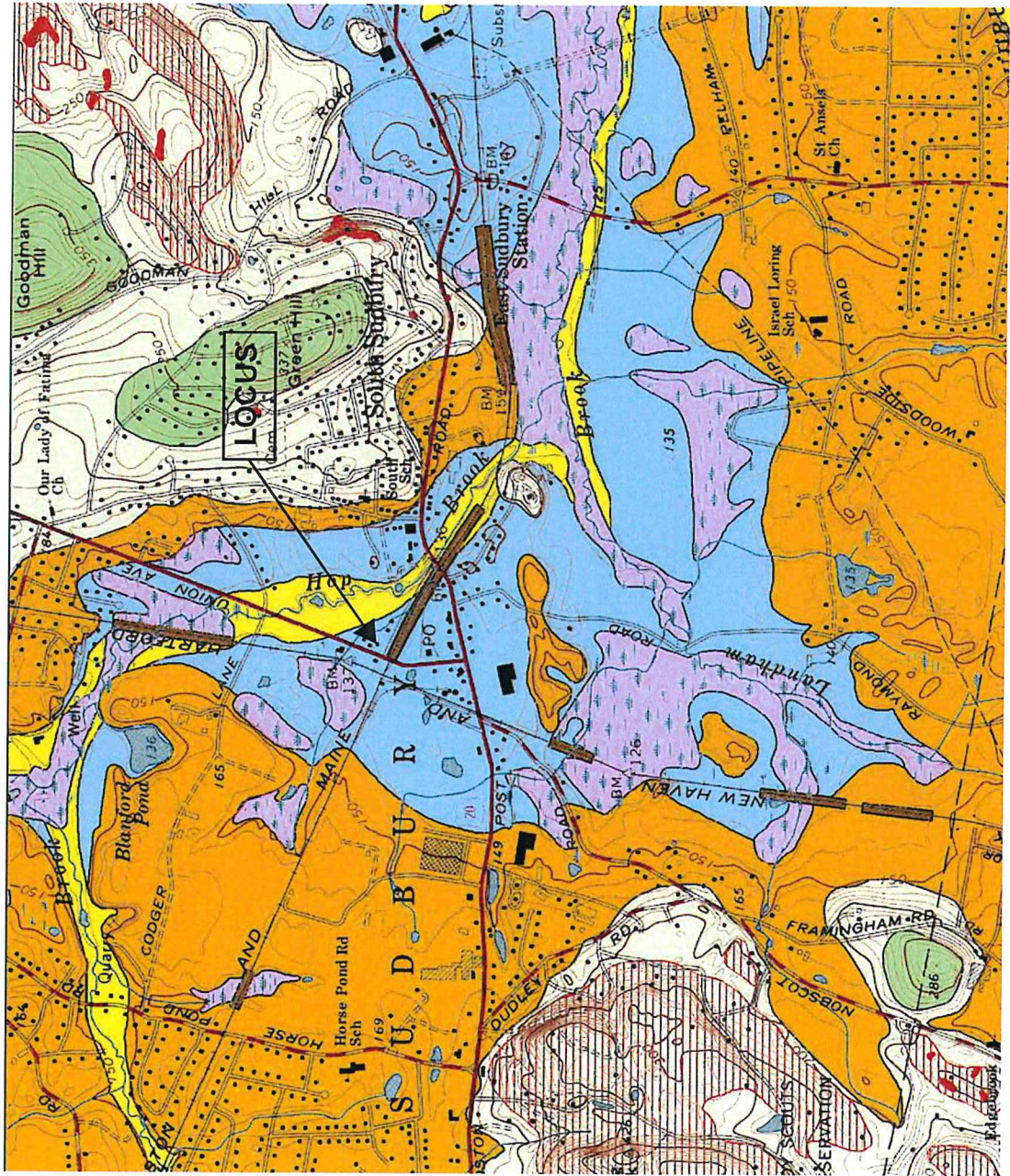
DATE: JULY 8, 2020  
DRAFTED BY: JAL

SCALE: 1" = 40'

**ST-1**

19632







## **APPENDIX 2**

# **Stormwater Operations and Maintenance Plan**

Operation and Maintenance Information  
Inspection Forms  
Stormwater System Maintenance Record

for

### **Precourt Stone – Rear Lot Workshop**

46 Union Avenue  
Sudbury, MA 01776

## **APPENDIX 2**

# **Stormwater Operations and Maintenance Plan**

Operation and Maintenance Information  
Inspection Forms  
Stormwater System Maintenance Record

for

### **Precourt Stone – Rear Lot Workshop**

46 Union Avenue  
Sudbury, MA 01776

Revised January 20, 2021

# **STORMWATER MANAGEMENT SYSTEM OPERATION AND MAINTENANCE PLAN**

## **Precourt Stone – Rear Lot Workshop 46 Union Avenue in Sudbury, MA**

### **INTRODUCTION**

The Stormwater Management System for the proposed workshop building area (Rear Lot) at 46 Union Avenue in Sudbury, MA contains “Stormwater Best Management Practices” (BMP’s) that have been designed to protect the environment from stormwater related impacts to surface waters and groundwater. Stormwater Best Management Practices are defined as devices that temporarily store, treat and convey stormwater runoff to reduce flooding, remove pollutants, and provide other amenities for the protection of surface and groundwater resources and the general environment.

As with any stormwater BMP, it must be inspected and maintained on a regular basis in order for the system to function properly as designed. Good maintenance practices help ensure that the stormwater BMP’s are in proper working order when they are needed to perform under storm conditions and will maximize the useful life of the facilities. BMP’s that are not properly maintained soon become less effective and may lead to costly repairs to bring the BMP’s back to a good condition. Proper maintenance also helps avoid failures of the systems and resulting environmental damage or long-term degradation of valuable natural resource areas.

This manual has been prepared for the operation and maintenance of the planned stormwater management system. At the completion of the project, the responsibility for the maintenance and operation of the system will be the Owner / Operator of the property as follows:

**Charles J, Precourt & Son, Inc.  
46 Union Avenue, Sudbury, MA 01776**

The Stormwater BMP at his site consists of two stone roof drain drip trenches that will receive rain runoff and snow melt from the roof of the Workshop and attached shed. Routine inspections and some of the routine maintenance tasks will be performed by the owner. Outside contractors may be hired for some items such as major repairs and replacement of the surface stone.

This manual is intended to be used as the management document for the system. It contains specific plans of the components of the stormwater management system, descriptions of the purpose and function of each component, inspection and maintenance requirements and check lists and report forms for record keeping. The manual also contains background information, descriptions of environmental concerns and information necessary for an understanding of the reasons for the proper management of the stormwater management system.

The first step in the process of implementing the operation and maintenance requirements needs to include the following:

1. Training of Personnel
2. Administration Tasks: Budget Planning, Resource Allocation, etc.
3. Preparation of an as-built plan or site map that shows the built location of the facility.

### **TOWN OF SUDBURY REQUIREMENTS**

Note that the Town of Sudbury Planning Board or its designee shall be allowed to enter the property at reasonable times and in a reasonable manner for the purpose of inspection. A copy of this O&M Manual shall remain on file with the Planning Board and Conservation Commission.

A copy of the regular inspection reports shall be submitted to and maintained by the Planning Board or its designated Reviewing Agent as may be required under the various permits and approvals issued for the Workshop project.

The owner of the stormwater management system must notify the Planning Board or its designated Reviewing Agent of any changes in ownership or assignment of financial responsibility as may be required under the various permits and approvals issued for the Workshop Project.

### **MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS**

Following construction of the Stormwater Management System, the Operation and Maintenance Plan must be implemented for the system to remain in compliance with the Stormwater Management Standards and Town of Sudbury requirements.

### **STORMWATER BEST MANAGEMENT PRACTICES (BMP's)**

The Stormwater BMP's designed into the project include the following:

<u>STORMWATER BMP's</u>	<u># Units</u>
Roof Drain Infiltration Trench (Drip Trench)	2

The following pages describe the inspection, routine maintenance and non routine maintenance which are required for each BMP. The inspection and maintenance requirements are based on the recommendations from the Stormwater Management Standards Handbook, Volume 1, 2, 3, February 2008, MassDEP.

### **BUDGET:**

Due to the simple nature of the system, the routine O& M costs for this item can be part of the regular site maintenance for the facility with no significant additional cost.

## **STORMWATER MANAGEMENT SYSTEM OPERATION & MAINTENANCE**

The stormwater management system designed for the Proposed Workshop on the Rear Lot of the Precourt Stone facility in Sudbury, MA is a passive system that does not require any operational procedures to be followed during a storm event to operate as intended. There are no valves to turn, weirs to set, pumps to be turned on, or other manual activity required. What is necessary to assure that the system functions properly are the performance of regular inspections and maintenance tasks.

The Best Management Practice for this area consists of two simple infiltration trenches (Roof Drain Drip Trenches) located at the perimeter of the building. They will receive runoff from only the roof area and precipitation that falls directly onto the trenches. No run-on from other areas is permitted. The Operation and Maintenance requirements for this system involve the following:

- |                |   |
|----------------|---|
| Inspections    | A process by which you can evaluate if the BMP's are in acceptable condition and are still effective.   |
| Maintenance    | Tasks required for the upkeep and repair of the BMP's to keep them in good working order. This is broken down into routine maintenance tasks, and non-routine maintenance and repairs.  |
| Record Keeping | Documentation of the Inspections and Maintenance that has been performed. This is important and useful for: <ol style="list-style-type: none"><li>1.) Proving that the tasks are performed.</li><li>2.) Use in scheduling and planning of repairs and maintenance.</li><li>3.) Documenting possible future problems and recommending corrective measures.</li><li>4.) Planning manpower and equipment needs and for O&amp;M Budget Preparation.</li><li>5.) Making adjustments to the O&amp;M Plan where warranted for the stormwater system to function as intended.</li></ol> |

The inspection and maintenance requirements for each stormwater BMP are based on the recommendations contained in the MassDEP Stormwater Management Handbook, Volume Two, Chapter 2, Structural BMP Specifications; February 2008. It is recommended that the procedures described for each BMP be followed strictly for the first two years of operation. During that initial two-year period, the observations and experience gained from monitoring this stormwater management system will provide the information necessary to adjust the O&M procedures for the most efficient management of the system. Adjustment of the Operation and Maintenance Procedures will require the approval from the Town of Sudbury.

Note that the descriptions of the maintenance requirements include the basic items needed or required for the tasks. The inspectors and maintenance personnel must also be made aware of other work-related safety precautions and regulations such as OSHA confined space rules, traffic safety, protective clothing, and safety equipment that must be utilized in the performance of the prescribed tasks.

## **INSPECTION AND MAINTENANCE REQUIREMENTS FOR BMP's**

### **ROOF DRAIN INFILTRATION TRENCHES**

---

#### **GENERAL INFORMATION**

These systems are stone drip trenches that receive stormwater and snowmelt runoff from the roof area and precipitation that falls directly onto the trenches. The water entering the system is relatively clean and the trench system infiltrates at least one inch of the runoff from the contributing area into the ground. An overflow is provided for excess volume that drains onto the existing compacted gravel ground surface. Maintenance is relatively simple and consists of keeping the surface stone and overflow clear of debris and any clogging.

#### **INSPECTIONS**

The level spreaders and pipe outlets should be inspected every 6 months, and after significant rain events. Inspect the general condition of the area including the amount of debris and sediment on the surface of the stone. The thorough 6 month inspections should be in the fall after the leaves have dropped, and in the spring. During those inspection, check the filter fabric under the top stone layer for clogging, condition of the stone, perimeter curbing and overflow curb section.

For the south trench system, also check the condition of the roof drain gutters and downspouts for condition and clogging.

#### **ROUTINE MAINTENANCE**

The level spreaders and pipe outlets should be cleaned a minimum of two time per year and additionally if necessary, based on the results of the inspections. Cleaning consists of the removal of accumulated sediment and debris from the surface stone and clearing the overflow curb. Cleaning the roof drain gutters and downspouts are also part of the system maintenance.

#### **NON-ROUTINE MAINTENANCE**

These are structural repairs and replacement of system components. Typical items for this BMP may include:

- Removing the surface stone, cleaning and replacement of the filter fabric the surface stone
- Repair any erosion from overflow outlet
- Adjustment leveling of outfall curb and perimeter curb.

#### **MAINTENANCE EQUIPMENT**

Hand tools for cleaning trash and sediment from the surface.





# ROOF DRAIN INFILTRATION TRENCH

## Routine Inspection Checklist

Inspections - Twice Anually and after significant rains.

Date \_\_\_\_\_

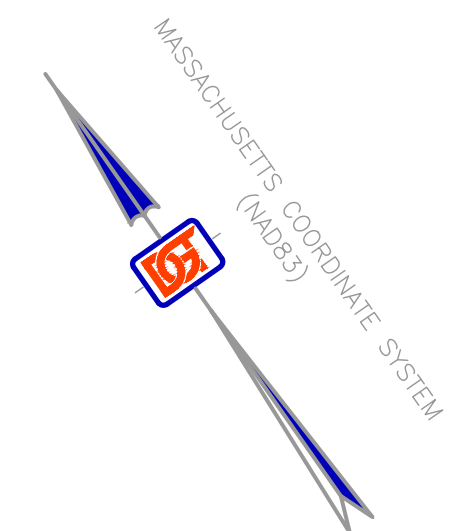
	Surface Stone	Sediment Depth	Debris	Perimeter Curbs	Outlet	Roof Gutters
<u>North Infiltration Trench</u>	_____	_____	_____	_____	_____	NA
<u>South Infiltration Trench</u>	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____

COMMENTS









**ZONING**

ZONING DISTRICT: INDUSTRIAL (ID)  
 OVERLAY DISTRICTS: WATER RESOURCES PROTECTION DISTRICT (WRPD)  
 FLOOD PLAIN DISTRICT

**INDUSTRIAL DISTRICT DIMENSIONAL TABLE**

	REQUIRED	EXISTING	PROPOSED
LOT AREA:	NA SF	212,573 SF	212,573 SF
LOT FRONTAGE:	50 FT	414.02 FT	414.02 FT
FRONT YARD SETBACK:	20 FT	NA FT	NA FT
SIDE YARD SETBACK:	30 FT	NA FT	47.9 FT
REAR YARD SETBACK:	30 FT	NA FT	54.0 FT
MAXIMUM BUILDING HEIGHT:	2 STORIES	NA STORIES	1 STORY
MAXIMUM BUILDING HEIGHT:	35 FT	NA FT	26.9 FT
MAXIMUM BUILDING COVERAGE:	60 %	0 %	1.4 %

**SITE DATA**

	EXISTING	PROPOSED
BUILDING FOOTPRINT	0 SF	2877 SF
COMPACT GRAVEL SURFACE	75,438 SF	72,561 SF
CONCRETE BLOCK WALLS	1,830 SF	1,830 SF
PAVED	2,503 SF	2,503 SF
TOTAL IMPERVIOUS SURFACE**	79,771 SF	79,771 SF
PERCENT IMPERVIOUS (ALLOWED)	15 %*	37.5 %

\*MAY BE INCREASED BY SPECIAL PERMIT  
 \*\*IMPERVIOUS SURFACE AREA AS DEFINED IN THE SUDBURY ZONING BYLAWS AND THE SUDBURY STORMWATER MANAGEMENT BYLAW

**PARCEL AREAS**

LOT	ACRES	ASSESSORS PARCEL ID
LOT 1	0.88 ACRES	K08-0043
LOT 2	4± ACRES	K08-0038
TOTAL AREA	4.88± ACRES	
46 UNION AVE	0.87 ACRES	K08-0041

**WETLANDS**

WETLANDS AND RIVERFRONT BOUNDARIES SHOWN ON THIS PLAN ARE FROM THE PLAN ENTITLED "CONSERVATION RESTRICTION PLAN OF LAND IN SUDBURY, MASSACHUSETTS" PREPARED FOR CHARLES J. PRECOURT & SON INC, DATED JUNE 10, 2019.



Framingham  
 Boston • Worcester

1071 Worcester Road  
 Framingham, MA 01701  
 508-879-0030

www.DGTassociates.com

APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
 BUILDING INSPECTOR:

DPW DIRECTOR: \_\_\_\_\_

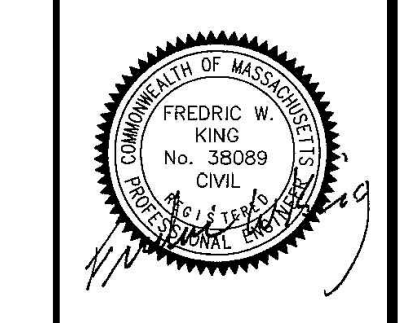
DIRECTOR OF PLANNING AND  
 COMMUNITY DEVELOPMENT: \_\_\_\_\_

PLANNING BOARD: \_\_\_\_\_

ISSUED FOR:

PERMITTING

APPLICANT:  
 CHARLES J. PRECOURT & SON INC.  
 46 UNION AVENUE  
 SUDBURY, MA 01776



1	FWK	1/20/2021	PER PLANNING BD
---	-----	-----------	-----------------

NO.	APP	DATE	DESCRIPTION
1	FWK	1/20/2021	PER PLANNING BD

DATE: NOVEMBER 9, 2020

SCALE: 1" = 50'

DESIGNED FWK	DRAFTED FJS	APPROVED: FWK
-----------------	----------------	------------------

**SITE PLAN**

PROJECT TITLE:

**PROPOSED WORKSHOP BUILDING**

46 UNION AVENUE (REAR)  
 SUDBURY, MA 01776

SHEET TITLE:

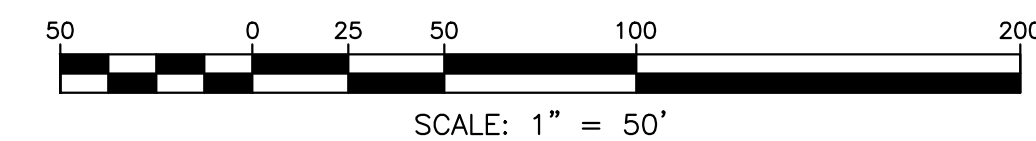
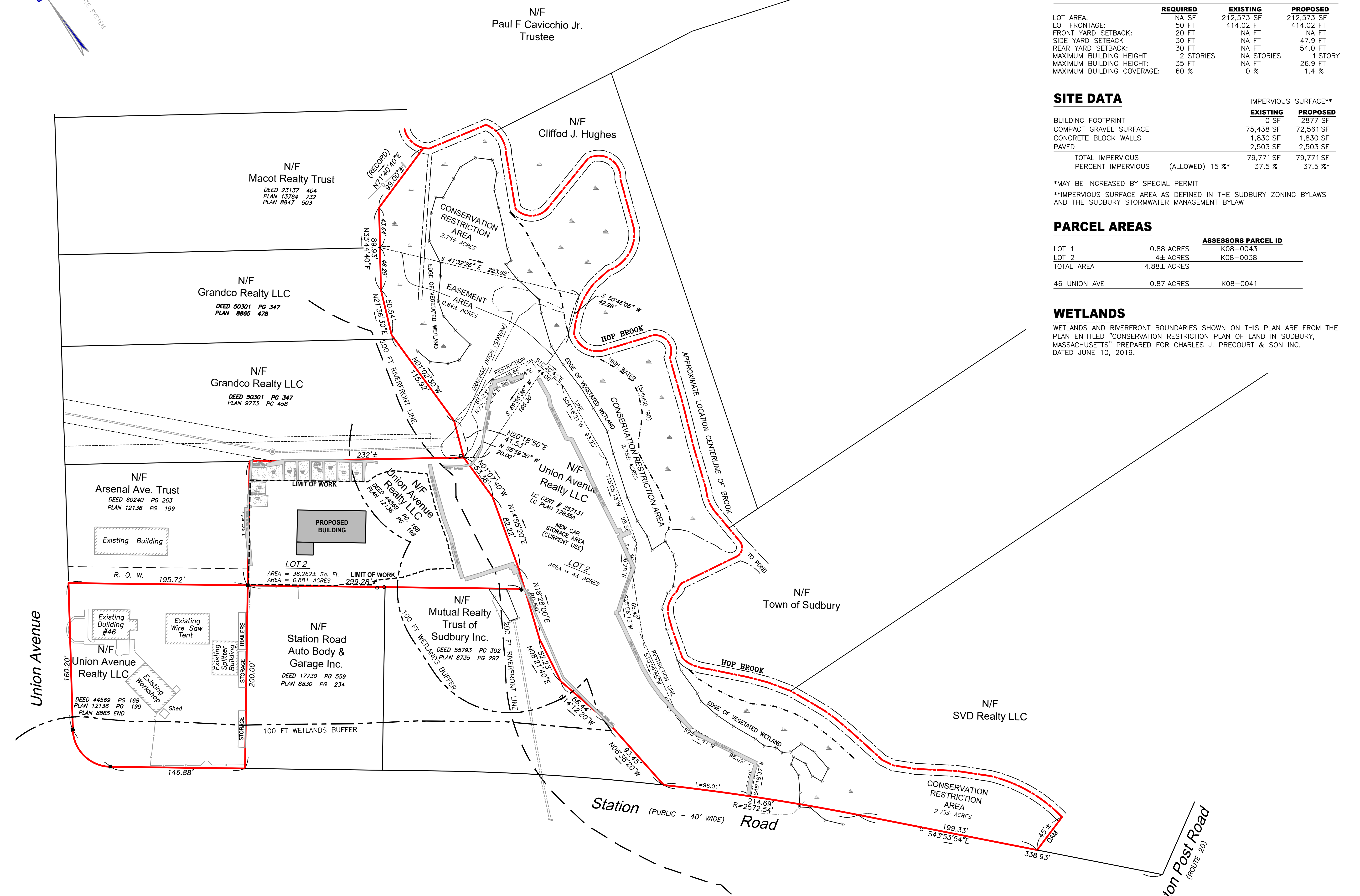
**SITE OVERVIEW**

SHEET:  
2 OF 4

PROJECT NO.:  
19632

C-2

G:\Carson Jobs\19632\Correspondence\To Client\2021-01-20 (Revision #7)\19632-Site Plan.dwg





APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
BUILDING INSPECTOR:

DPW DIRECTOR: \_\_\_\_\_

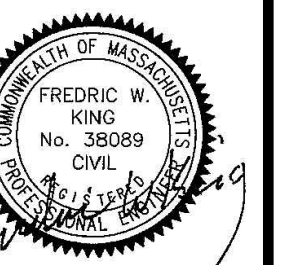
DIRECTOR OF PLANNING AND  
COMMUNITY DEVELOPMENT: \_\_\_\_\_

PLANNING BOARD: \_\_\_\_\_

ISSUED FOR:

PERMITTING

APPLICANT:  
**CHARLES J. PRECOURT & SON INC.**  
46 UNION AVENUE  
SUDBURY, MA 01776



1	FWK	1/20/2021	PER PLANNING BD
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NO.	APP	DATE	DESCRIPTION
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DATE: NOVEMBER 9, 2020

SCALE: AS NOTED

DESIGNED:	DRAFTED:	APPROVED:
FWK	FJS	FWK

**SITE PLAN**

PROJECT TITLE:

**PROPOSED WORKSHOP BUILDING**

46 UNION AVENUE (REAR)  
SUDBURY, MA 01776

SHEET TITLE:

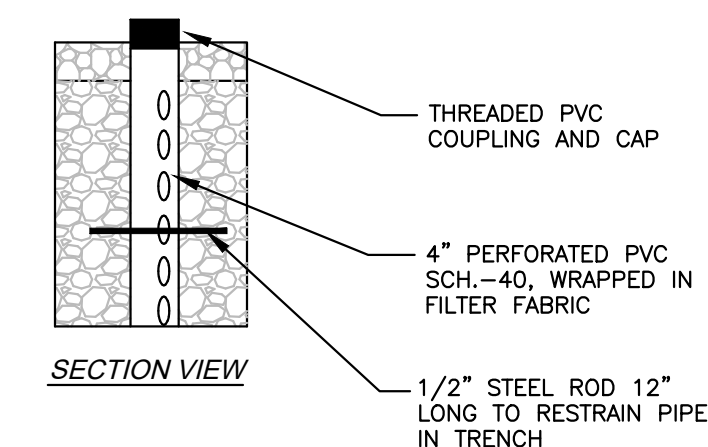
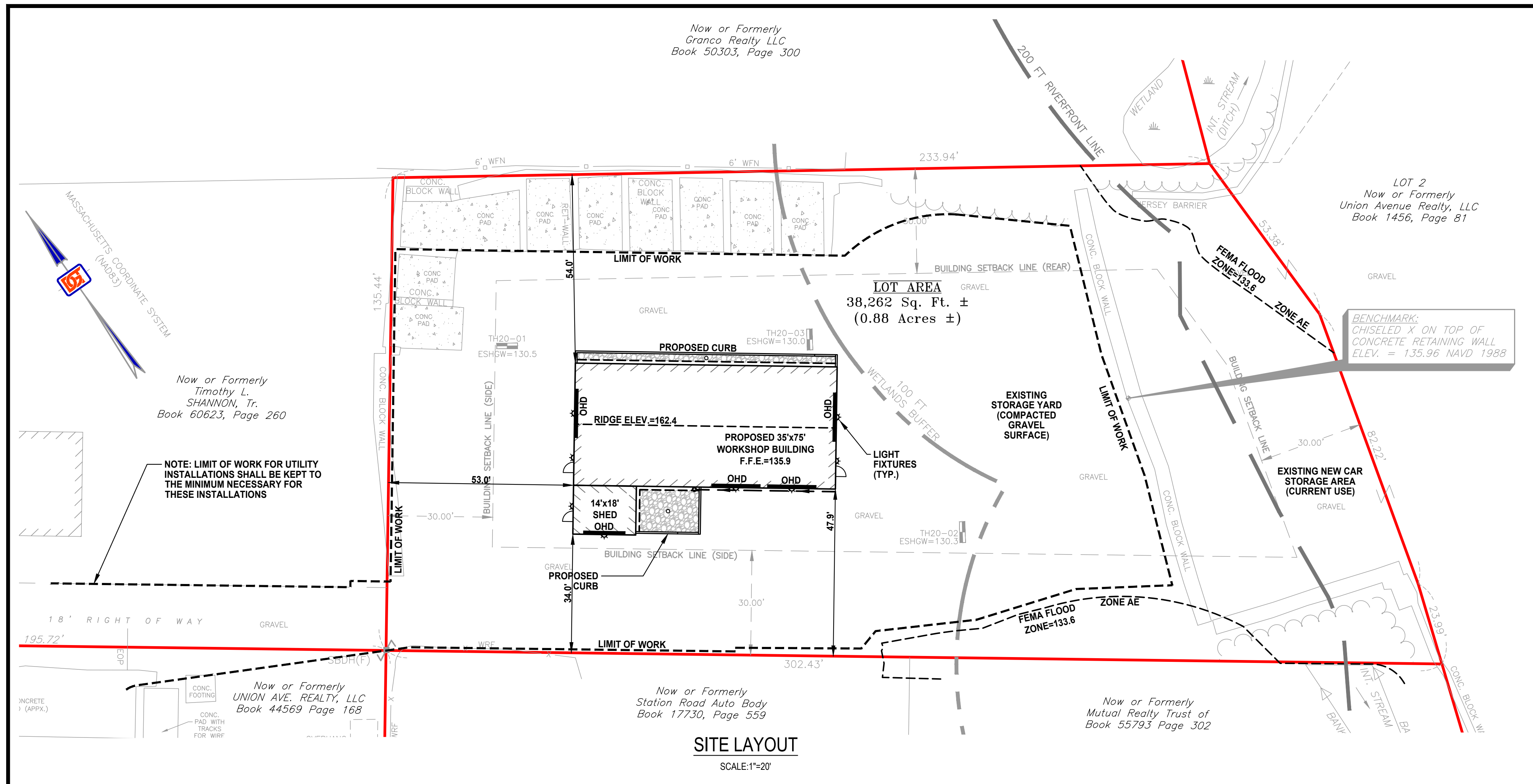
**SITE LAYOUT AND GRADING & DRAINAGE PLAN**

SHEET:  
3 OF 4

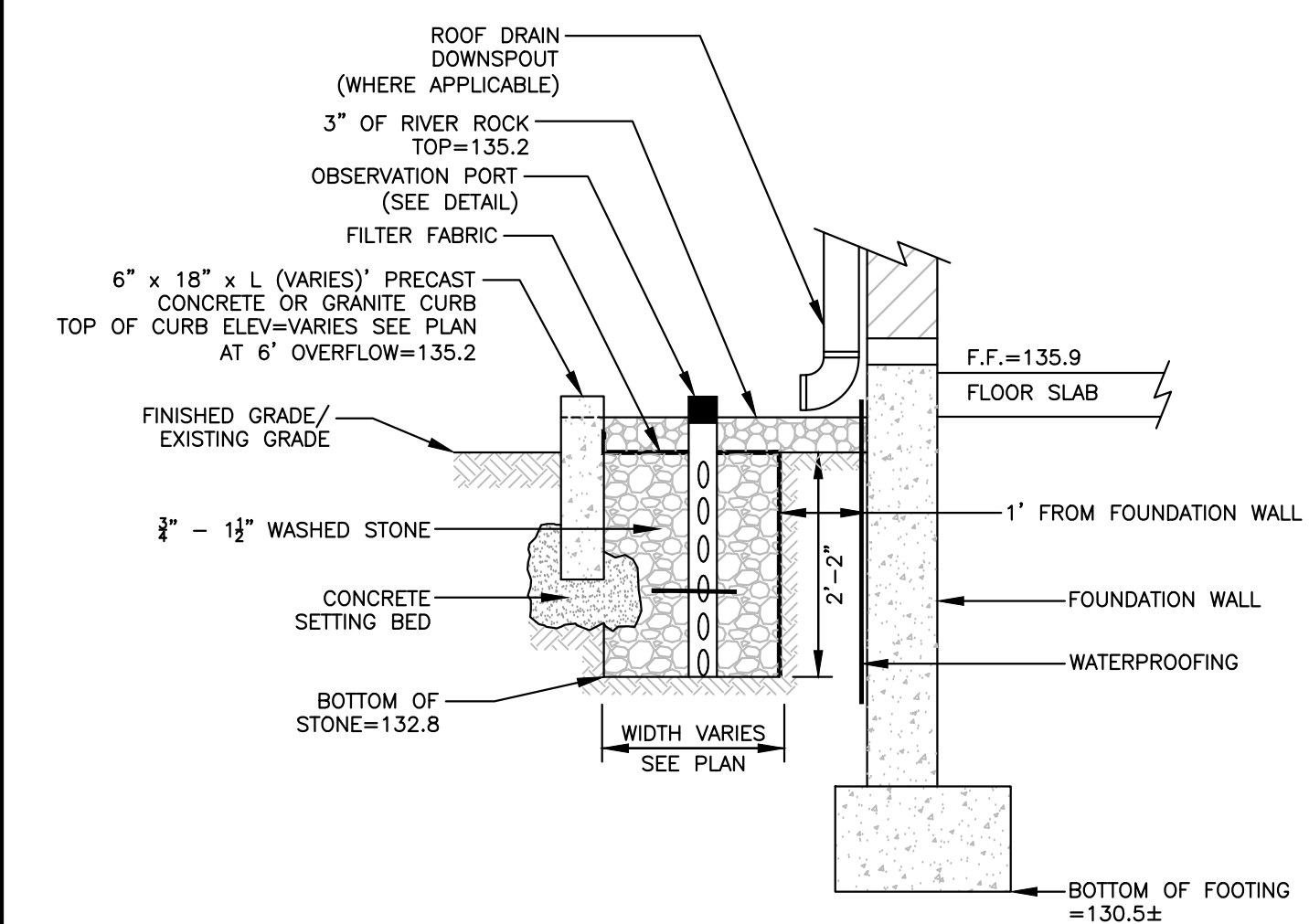
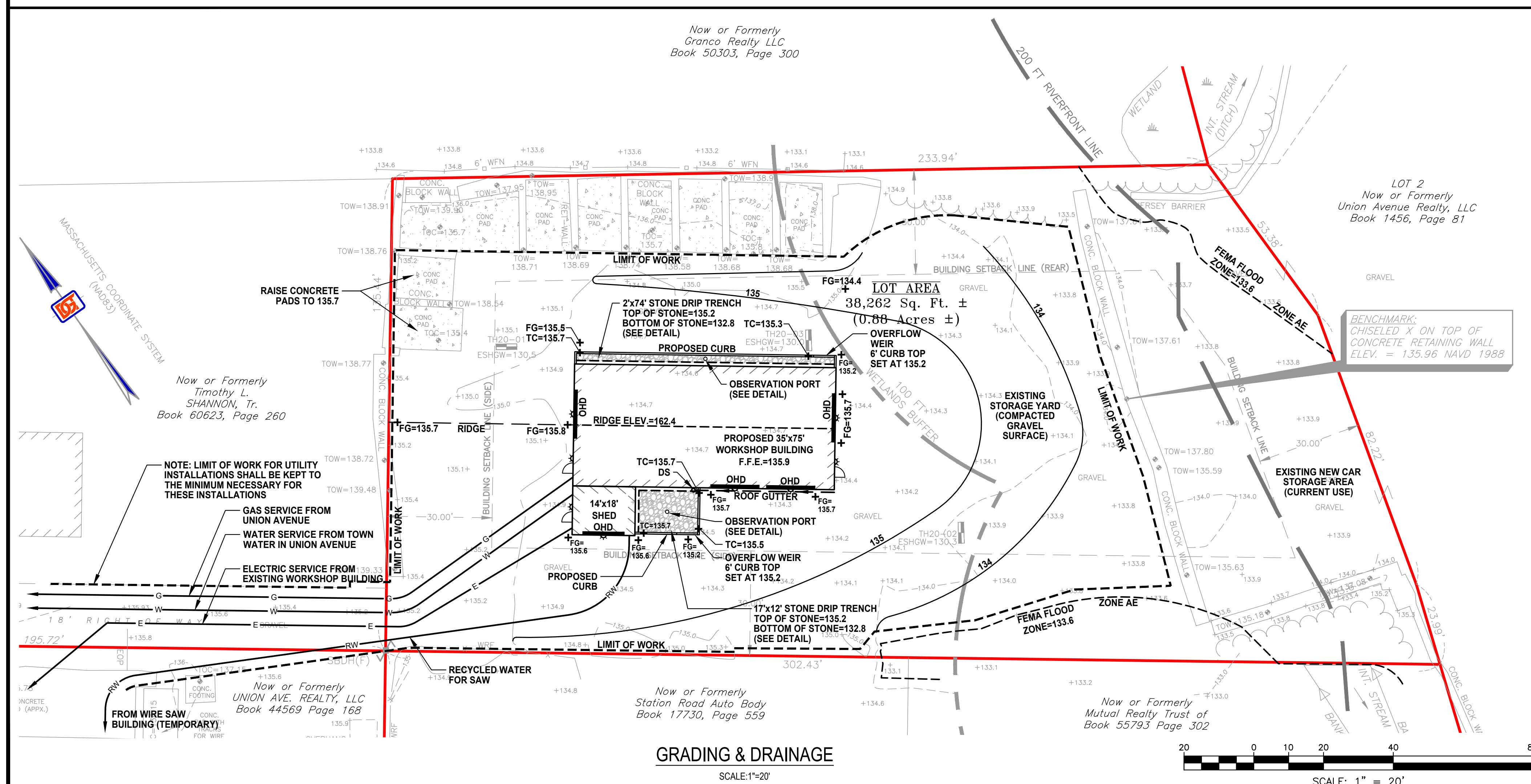
PROJECT NO.:  
19632

**C-3**

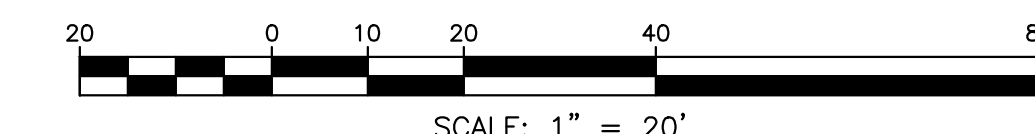
G:\Carson Jobs\19632\Correspondence\To Client\2021-01-20 (Revision #7)\19632-Site Plan.dwg



**OBSERVATION PORT**  
(NO SCALE)



**STONE DRIP TRENCH**  
(NO SCALE)





**GENERAL PERFORMANCE STANDARDS**

1. THE CONTRACTOR SHALL INSTALL, ROUTINELY INSPECT AND MAINTAIN ALL SEDIMENT AND EROSION CONTROLS SUCH THAT THEY ARE IN PROPER WORKING ORDER AT ALL TIMES DURING THE CONSTRUCTION PROJECT UNTIL SUCH TIME AS ALL AREAS OF THE SITE TRIBUTARY TO THOSE EROSION CONTROLS ARE IN A PERMANENTLY STABILIZED CONDITION.
2. THE CONTRACTOR SHALL MANAGE THE SITE SUCH THAT EROSION AND SEDIMENT FROM RUNOFF AND WIND BLOWN DUST ARE CONTROLLED AND MINIMIZED AT ALL TIMES. THE EROSION CONTROLS SHOWN ON THIS PLAN INCLUDE THE INITIAL SETUP OF EROSION CONTROLS AND BASIC INFORMATION TO MEET THE REQUIREMENT OF BEST MANAGEMENT PRACTICES. THE CONTRACTOR MUST MANAGE THE SITE PROPERLY WHICH MAY INCLUDE, BUT NOT BE LIMITED TO: MINIMIZING AREAS OF EXPOSED SOILS; INSTALLING TEMPORARY COVER; MAKE NECESSARY ADJUSTMENTS TO THE EROSION AND SEDIMENT CONTROL INSTALLATIONS TO IMPROVE FUNCTION; INSTALL ADDITIONAL EROSION CONTROL WHERE NECESSARY.
3. THE EROSION CONTROL WORK SHOWN ON THIS PLAN MAY BE SUBJECT TO OTHER STATE AND LOCAL APPROVALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE CONDITIONS AND REQUIREMENTS OF THOSE PERMITS.
4. DESIGN, INSTALLATION AND MAINTENANCE OF SEDIMENT AND EROSION CONTROLS SHALL BE IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES FOLLOWING THE GUIDELINES INCLUDED IN THE FOLLOWING:
  - "STORMWATER MANAGEMENT FOR CONSTRUCTION ACTIVITIES, DEVELOPING POLLUTION PREVENTION PLANS AND BEST MANAGEMENT PRACTICES" U.S. ENVIRONMENTAL PROTECTION AGENCY, OCTOBER 1992.
  - "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, A GUIDE FOR PLANNERS, DESIGNERS AND MUNICIPAL OFFICIALS", MASS. EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS, MAY 2003.
  - U.S.D.A. NATURAL RESOURCES AND CONSERVATION SERVICES (NRCS) GUIDELINES.

**FEDERAL NPDES PHASE II COMPLIANCE**

1. THIS PROJECT IS NOT SUBJECT TO THE FEDERAL CLEAN WATER ACT REQUIREMENTS FOR CONSTRUCTION SITES ADMINISTERED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA). THE PREPARATION OF A COMPLETE "STORMWATER POLLUTION PREVENTION PLAN" (SWPPP) AND FILING A NOTICE OF INTENT WITH THE EPA IS NOT REQUIRED.

**PERIMETER SEDIMENT BARRIER AND LIMIT OF WORK**

1. PRIOR TO ANY DISTURBANCE OR ALTERATIONS OF ANY AREA ON THE SITE, A SEDIMENT BARRIER SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLAN.
2. IN THOSE AREAS WHERE THE TOPOGRAPHY INDICATES THAT STORMWATER RUNOFF WILL BE CONCENTRATED (AT LOW POINTS), ADDITIONAL SEDIMENT BARRIER (SILT FENCE OR EQUAL) SHALL BE STAKED ON THE UPGRADE SIDE FOR ADDED FILTRATION AND PROTECTION. THE REQUIRED LOCATIONS FOR THE ADDITIONAL SEDIMENT BARRIER INSTALLATION WILL BE SELECTED BY THE ENGINEER AND / OR THE AUTHORIZED INSPECTOR UPON COMPLETION OF THE SEDIMENT BARRIER INSTALLATION. SEE DETAILS.
3. ONCE INSTALLED, THE SEDIMENT BARRIER SHALL BE MAINTAINED IN PLACE UNTIL ALL AREAS UPGRADE FROM THE BARRIERS HAVE BEEN PERMANENTLY STABILIZED.
4. THE SEDIMENT BARRIER IS ALSO A LIMIT OF WORK. ALL AREAS OUTSIDE THE LIMIT ARE TO BE LEFT UNDISTURBED. DURING THE SITE WORK, ALL PERSONS AND EQUIPMENT SHALL STAY OUT OF THESE AREAS TO PRESERVE THE EXISTING VEGETATION AND SOIL COVER. SEE ALSO LIMIT OF WORK BELOW.

**CONSTRUCTION ENTRANCE**

1. AT THE START OF SITE WORK, A STONE CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT THE ACCESS TO THE SITE FROM THE ROADWAY TO CONTROL THE TRACKING OF MUD OFF THE SITE. THE ENTRANCE SHALL BE MAINTAINED UNTIL THE SITE IS IN A STABILIZED CONDITION WHEN THE POSSIBILITY OF VEHICLES TRACKING MUD OFF SITE HAS BEEN ELIMINATED.
2. THE CONTRACTOR SHALL RELOCATE THE CONSTRUCTION ENTRANCE AS THE LOCATIONS CHANGE THROUGHOUT THE DURATION OF CONSTRUCTION.
3. THE CONTRACTOR SHALL SWEEP THE ADJACENT ROADWAYS WHEN MUD, DUST, DIRT, DEBRIS, ETC. HAS SHOWN SIGNS OF BUILDUP ON THE ROADWAYS AT THE ENTRANCE OF THE SITE. THE CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO THIS MATTER AND IMMEDIATE ATTENTION IS ALWAYS REQUIRED.

**DEWATERING OF EXCAVATIONS**

1. DISCHARGE FROM DEWATERING PUMPS OR TEMPORARY TRENCH OR EXCAVATION DRAINS SHALL NOT BE DISCHARGED DIRECTLY TO ANY DRAINAGE SYSTEMS. DISCHARGES SHALL BE DIRECTED TO A TREATMENT SYSTEM CONSISTING OF A SEDIMENT BASIN, STRAW BALE SEDIMENT BASIN, FILTER BAG SYSTEM OR OTHER APPROVED METHOD TO FILTER THE DISCHARGE WATER AND PREVENT EROSION.
2. ALL DEWATERING DRAINAGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES MUST FIRST OBTAIN ANY APPLICABLE DEWATERING DRAINAGE PERMIT. SUCH DISCHARGES SHALL COMPLY WITH THE MUNICIPAL REQUIREMENTS, UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, MASSACHUSETTS DEP AND OTHER APPROPRIATE AGENCIES.
3. UNDER NO CIRCUMSTANCE SHALL DEWATERING DRAINAGE BE DISCHARGED INTO A SANITARY SEWER.
4. THE DEWATERING PRACTICE SHALL NOT BE PLACED WITHIN THE WETLAND RESOURCE AREAS, THE RIVERFRONT AREA, OR THE BUFFER ZONES AS SHOWN ON THE PLAN.

**SOIL STOCKPILES**

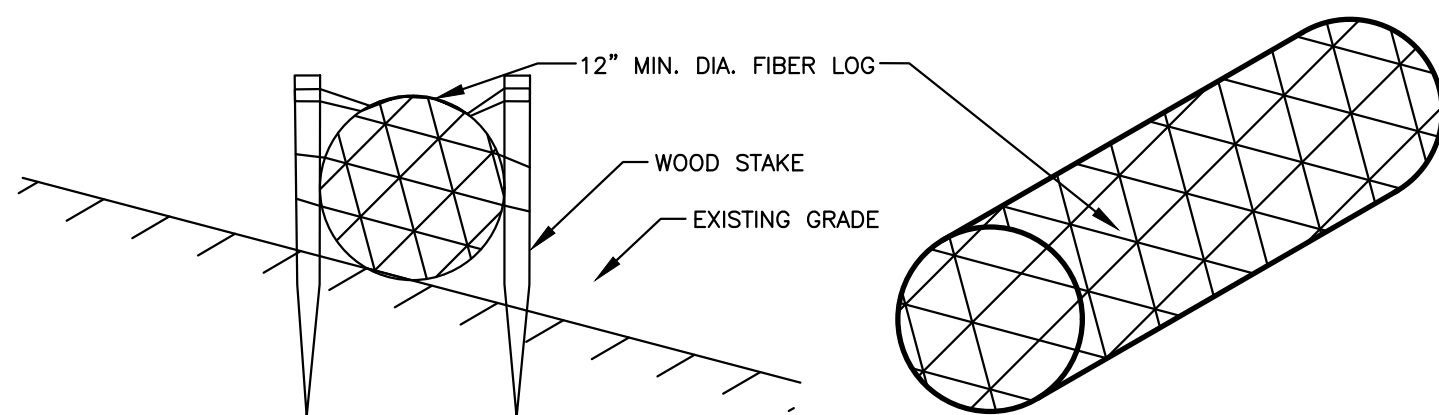
1. STOCKPILES OF SOIL MATERIALS SHALL BE SURROUNDED BY PROPER SILT FENCING, FIBER LOGS, OR STAKED STRAW BALES.
2. STOCKPILES THAT ARE TO BE IN PLACE FOR EXTENDED PERIODS OF TIME (MORE THAN 30 DAYS) SHALL BE COVERED OR OTHERWISE TEMPORARILY STABILIZED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES.

**DUST CONTROL**

1. THE CONTRACTOR SHALL TAKE APPROPRIATE MEASURES DURING SITE WORK TO MINIMIZE WIND BLOWN DUST FROM EXPOSED SOIL SURFACES. MEASURES INCLUDE BUT ARE NOT LIMITED TO:
  - SPRINKLING WATER ON EXPOSED SURFACES
  - APPLICATION OF TEMPORARY COVER SUCH AS HYDRO MULCH AND TACIFIER, STRAW MATTING, JUTE NETTING ETC.

**LIMIT OF WORK**

1. ALL SITE ALTERATIONS, BOTH TEMPORARY AND PERMANENT FOR THIS PROJECT SHALL REMAIN WITHIN THE LIMIT OF WORK SHOWN ON THE PLAN.
2. LIMIT OF WORK FOR THE INSTALLATIONS OF UTILITIES THAT ARE BEYOND THE AREA SHOWN ON THIS PLAN SHALL BE KEPT TO THE MINIMUM NECESSARY FOR THOSE INSTALLATIONS.
3. NO TEMPORARY OR PERMANENT ALTERATIONS ARE ALLOWED WITHIN THE FLOOD PLAN OR RIVERFRONT AREAS AS SHOWN ON THE PLAN.

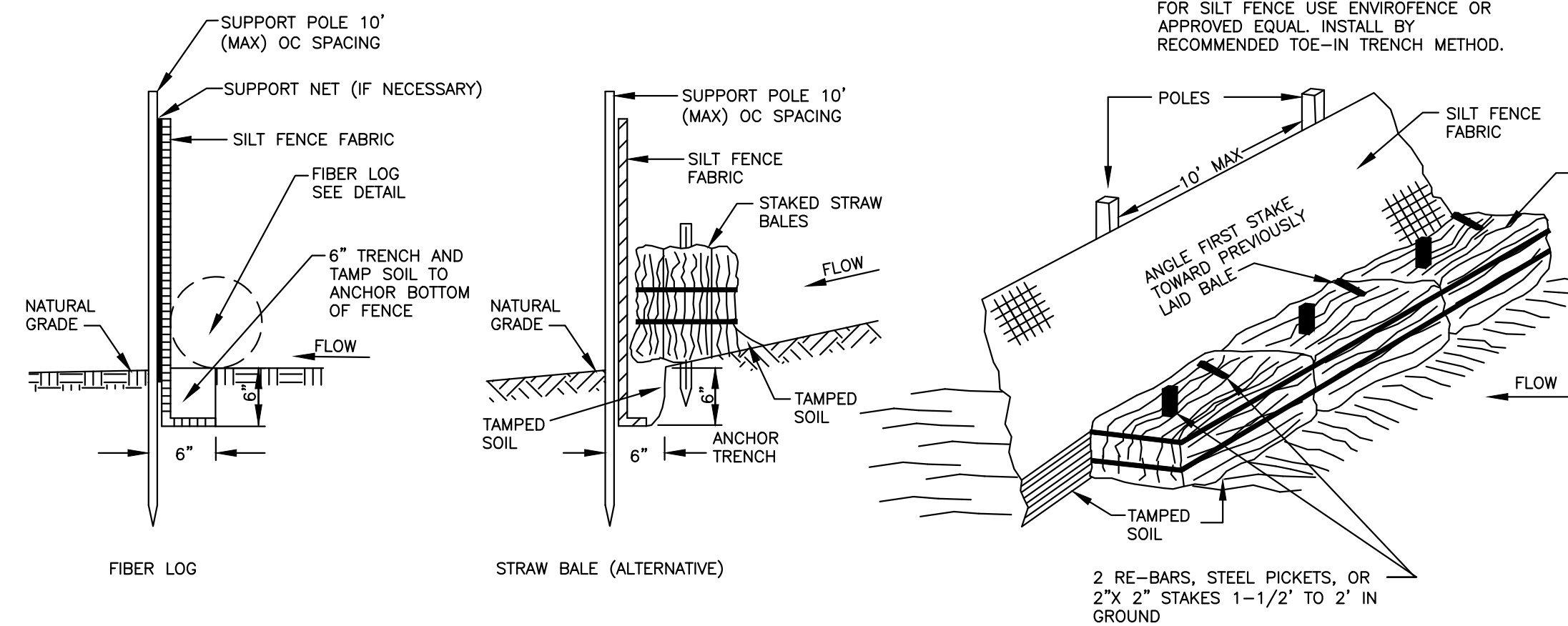


**INSTALLATION NOTES FOR FIBER LOGS:**

1. INSTALL APPROXIMATELY 4-6 WOOD STAKES PER 10 FEET OF FIBER LOG THROUGH THE TWINE/NETTING ALONG THE FIBER LOG AS NEEDED TO HOLD THE LOG IN PLACE.
2. DRIVE THE STAKE INTO THE GROUND DEEP ENOUGH TO HOLD THE LOG.
3. IN PAVED AREAS, SECURE FIBER LOG WITH CONCRETE BLOCKS OR SAND BAGS.
4. FIBER LOG SHALL BE 12 INCHES (MIN) IN DIAMETER UNLESS OTHERWISE NOTED ON THE PLANS AND SHALL BE A COMPOST FILLED FILTER SOCK MEETING THE MUNICIPAL ENGINEERING DEPARTMENT STANDARDS.

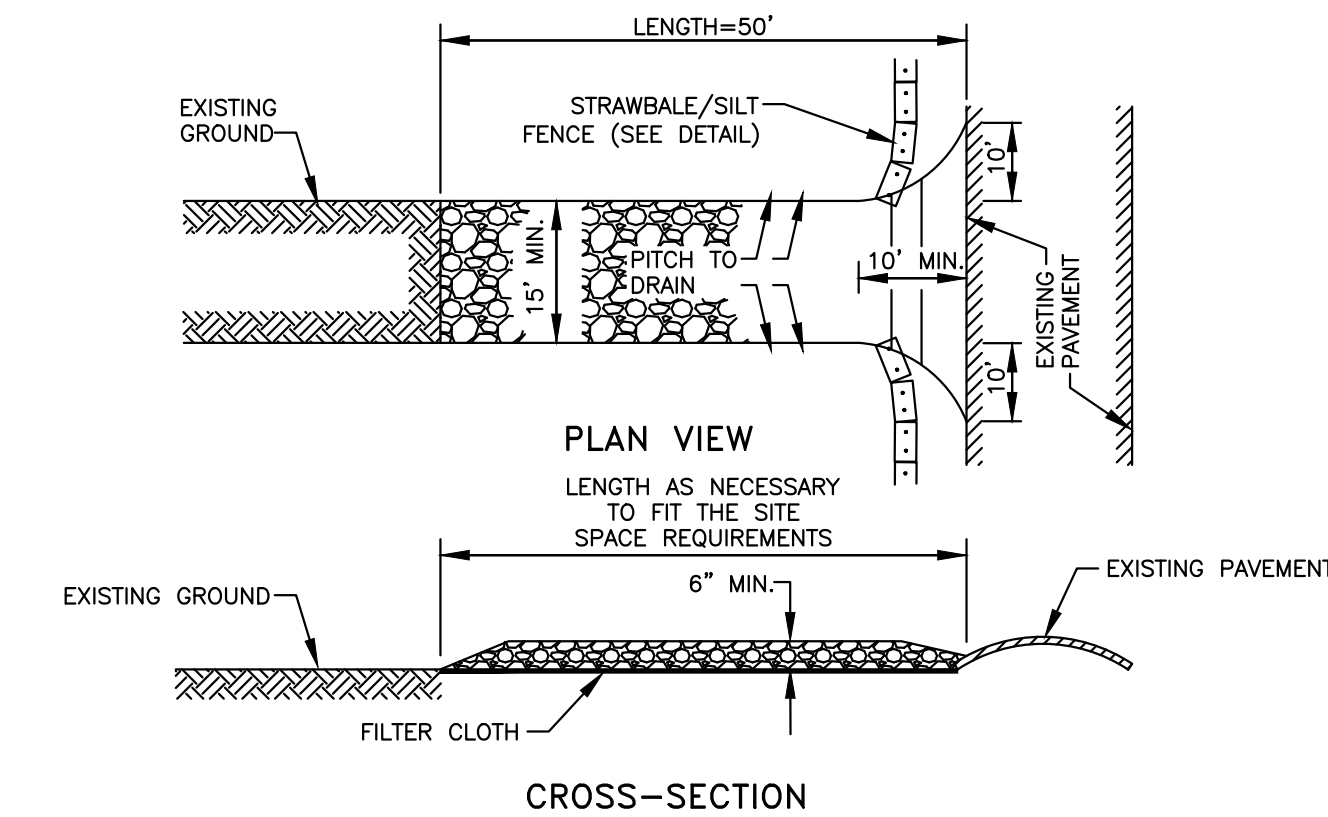
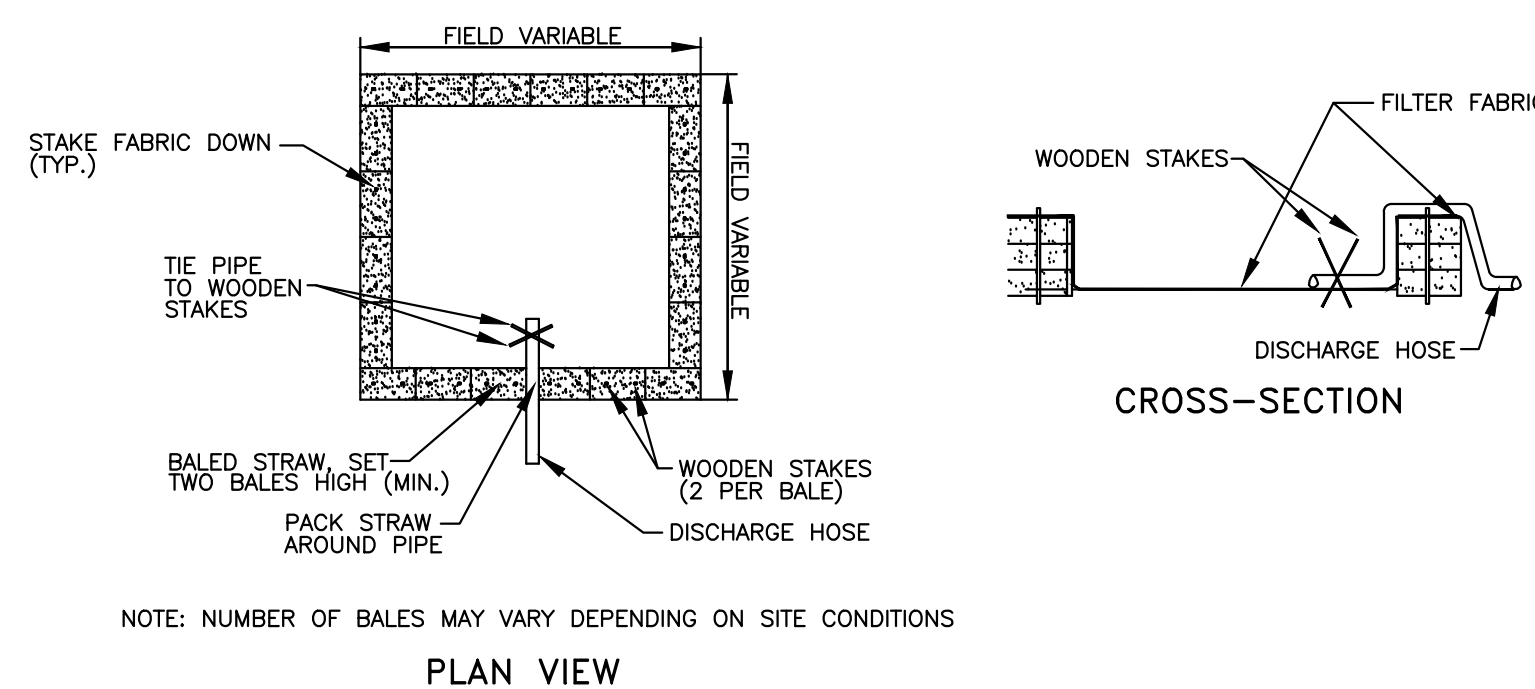
**FIBER LOG DETAIL**

(NO SCALE)



**PERIMETER EROSION CONTROLS  
STAKED FIBER LOG/STRAW BALE AND SILT FENCE  
SEDIMENT BARRIER DETAIL**

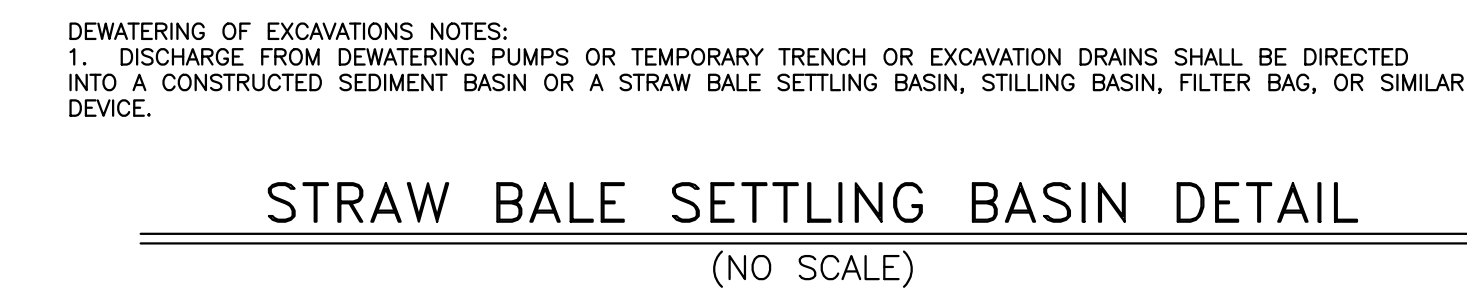
(NO SCALE)



- CONSTRUCTION SPECIFICATIONS:**
1. STONE SIZE - USE 3" TO 6" WASHED, ANGULAR STONE
  2. THICKNESS - NOT LESS THAN SIX (6) INCHES.
  3. WIDTH - FIFTEEN (15) FEET MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
  4. FILTER CLOTH - SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
  5. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF WAY MUST BE REMOVED IMMEDIATELY.
  6. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED.

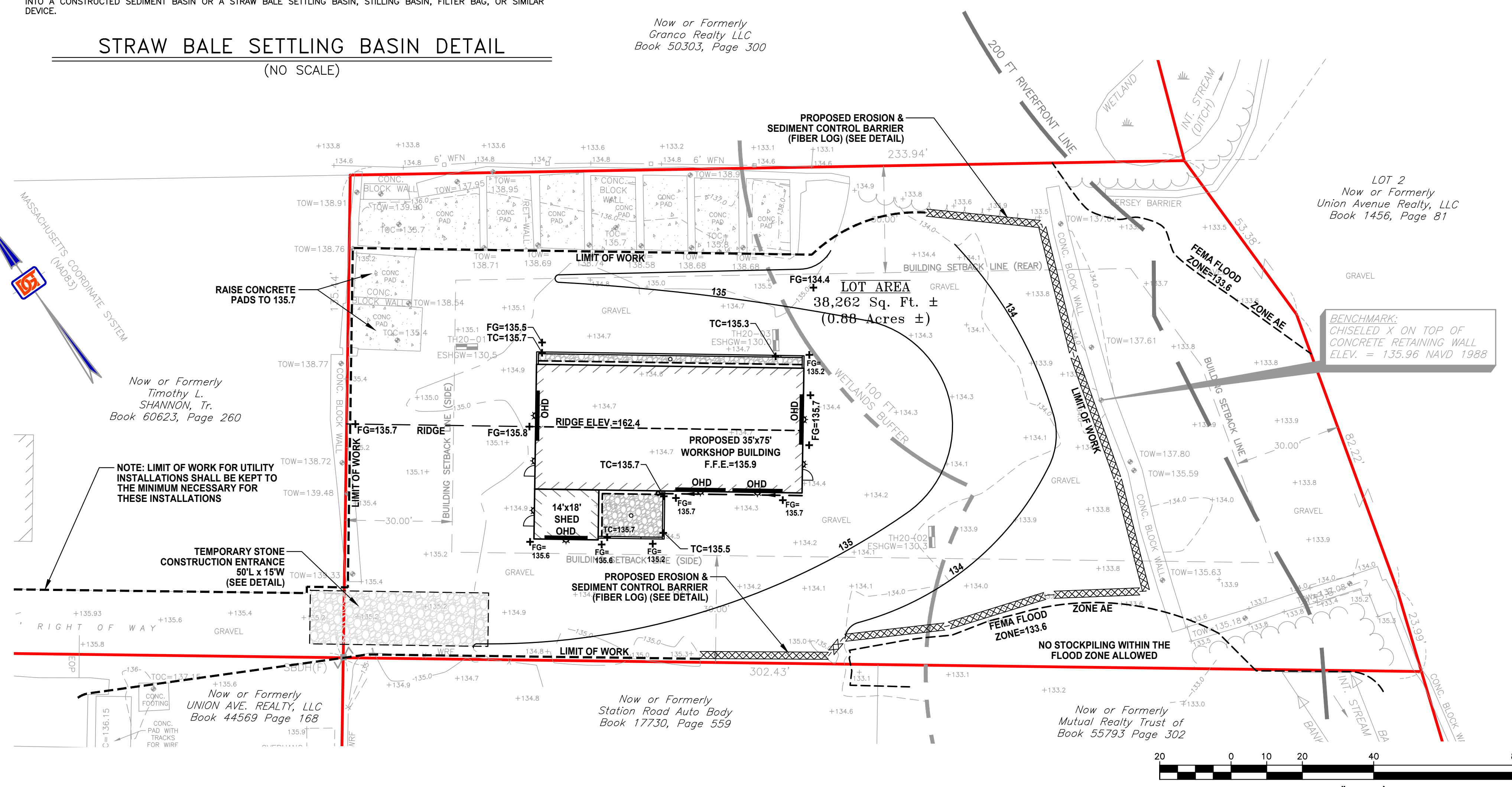
**STABILIZED CONSTRUCTION ENTRANCE DETAIL**

(NO SCALE)

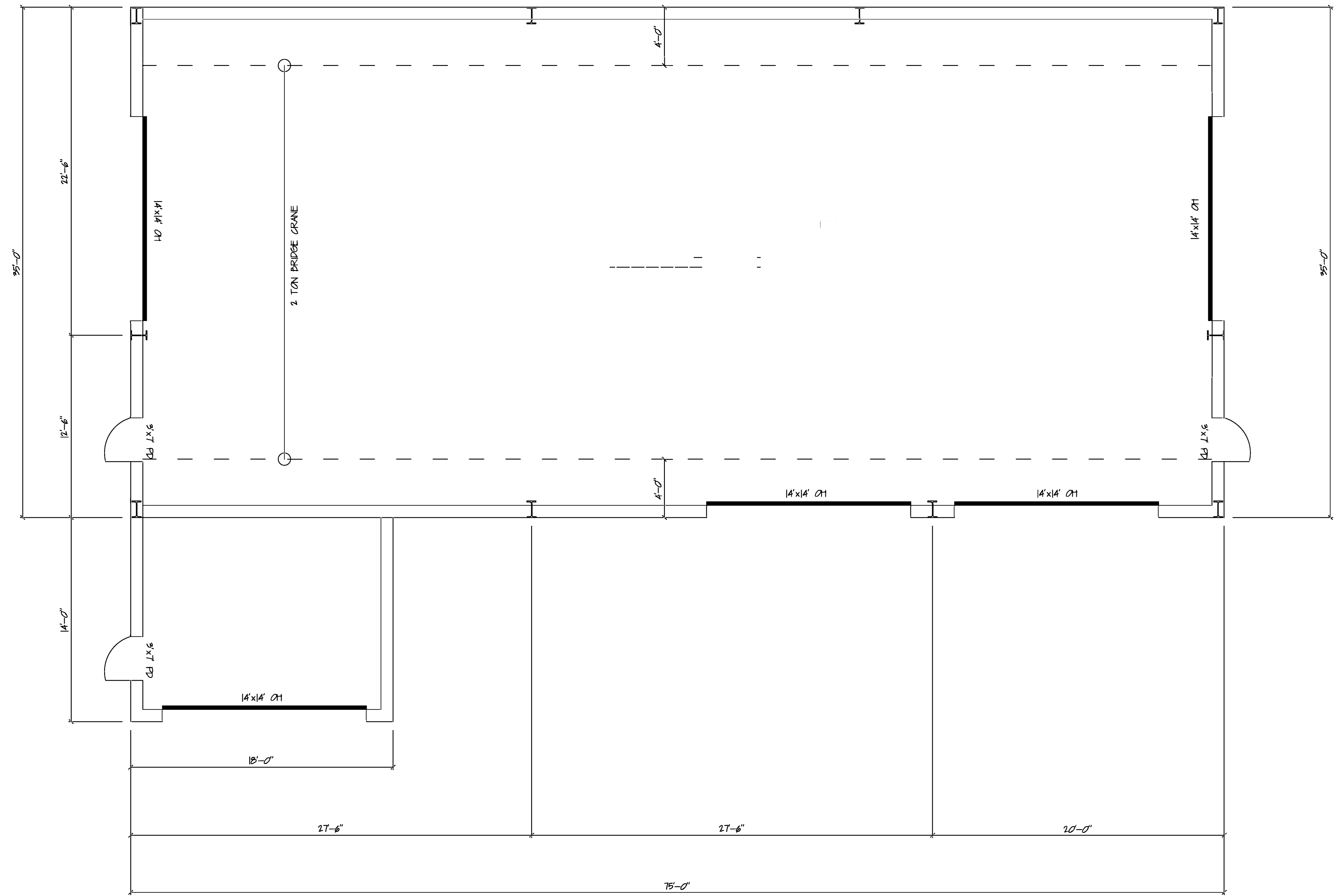


**STRAW BALE SETTLING BASIN DETAIL**

(NO SCALE)







FLOOR PLAN

General Notes

TED GREENLAW  
 183 COLUMBIA STREET  
 HANOVER, MA

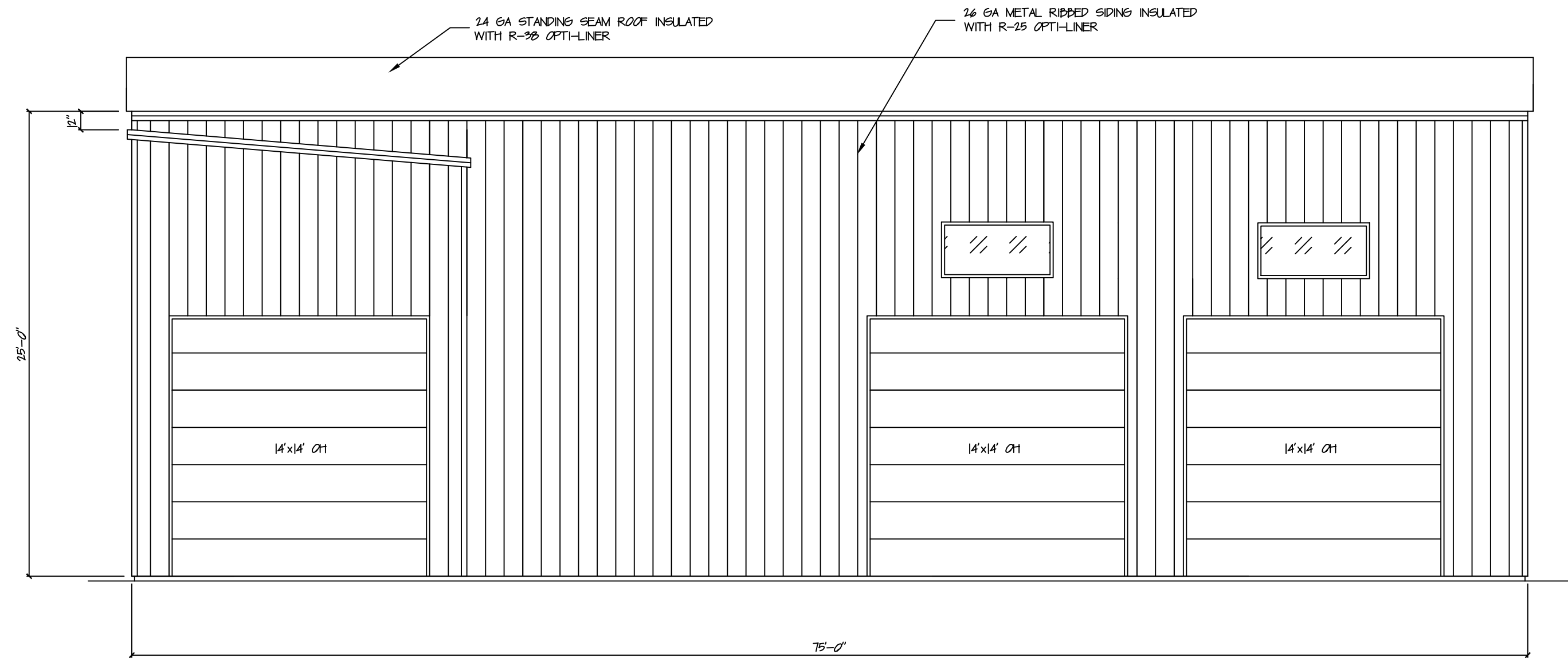
No.	Revision/Issue	Date

Firm Name and Address  
 PRIGGEN STEEL  
 133 FRANKLIN STREET  
 WRENTHAM, MA

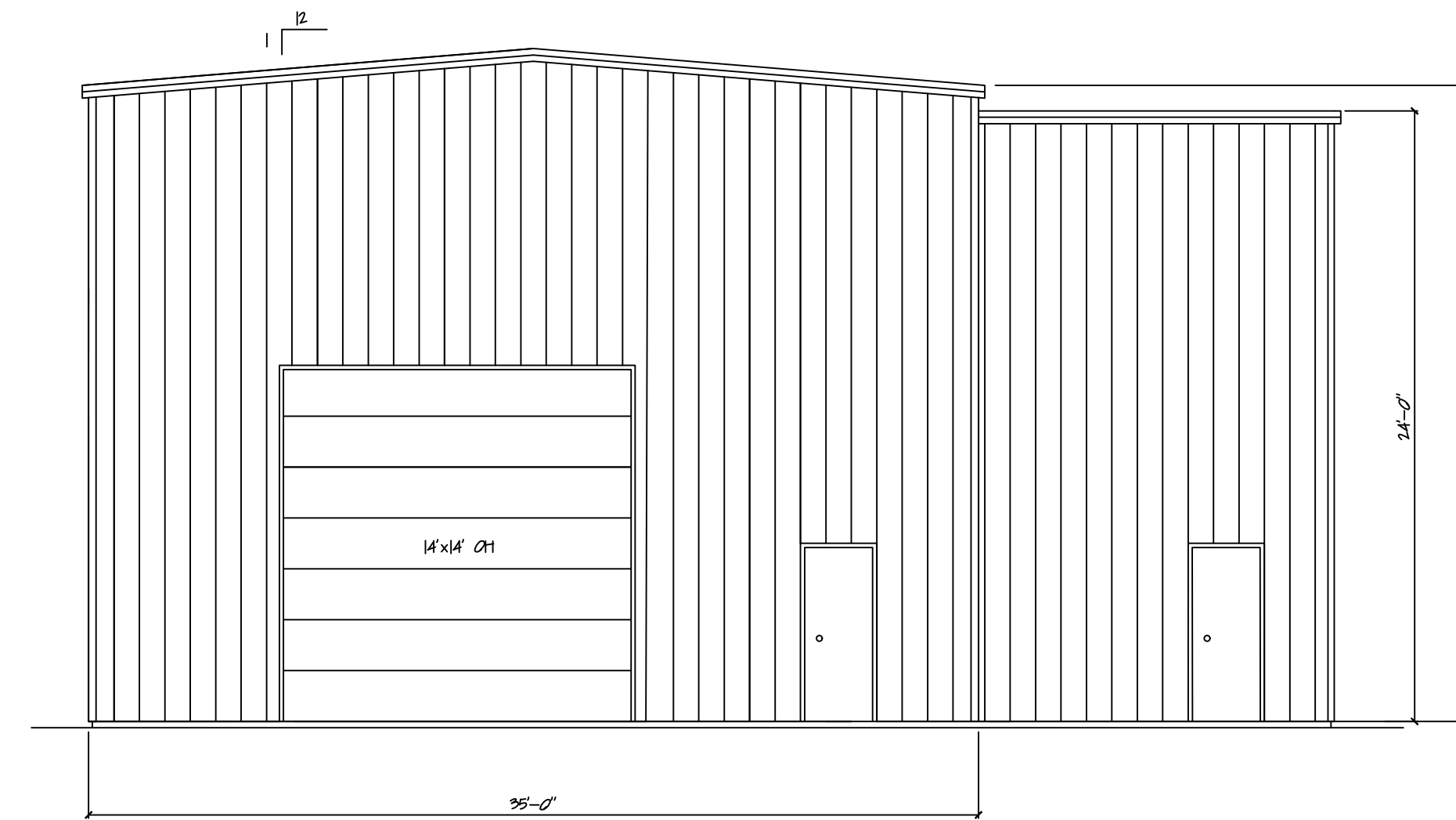
Project Name and Address  
 PRECOURT  
 46 UNION AVE  
 SUDBURY, MA

Project FLOOR	Sheet S-1
Date 11/9/20	
Scale 3/8" = 1'-0"	

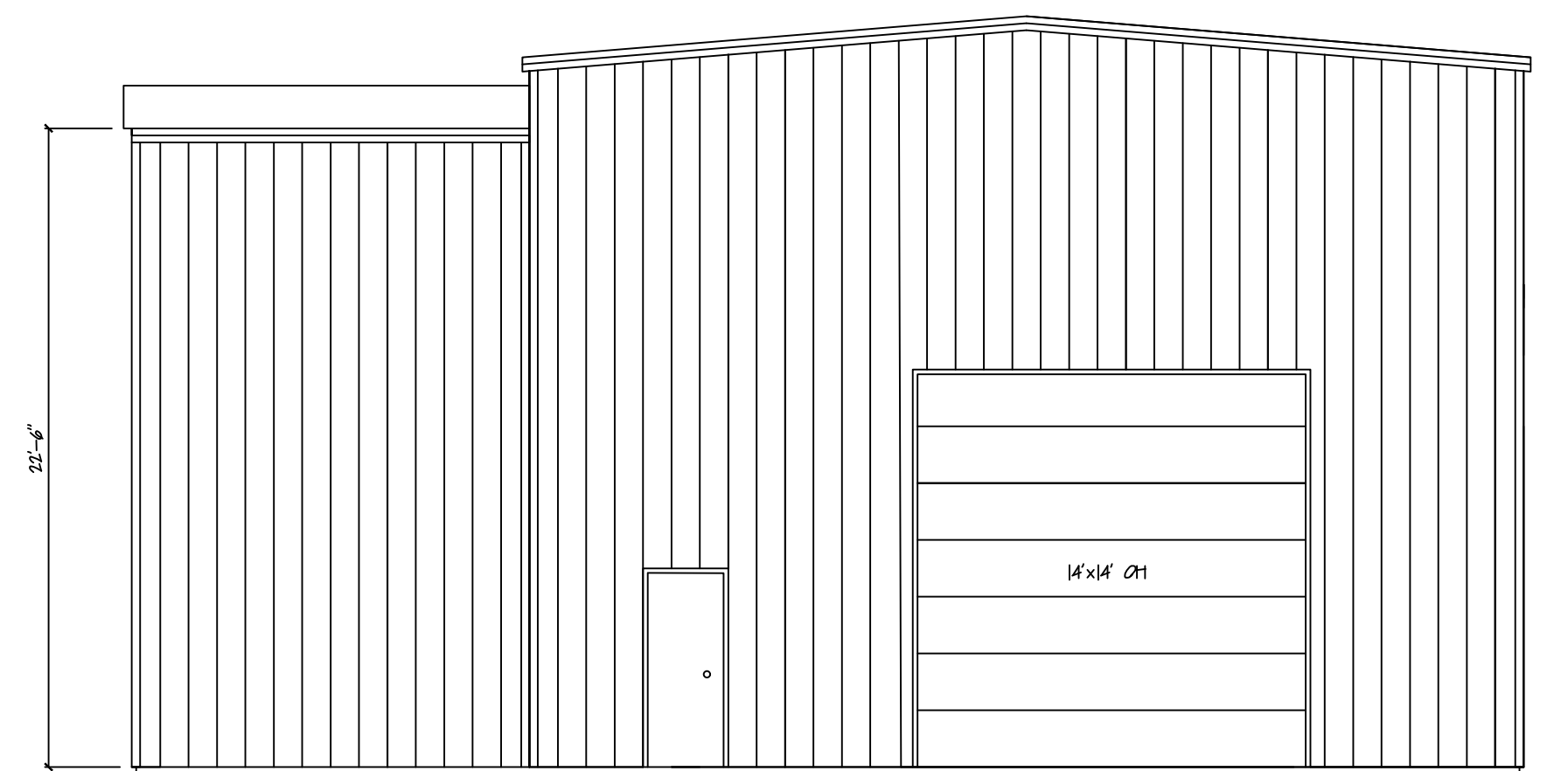




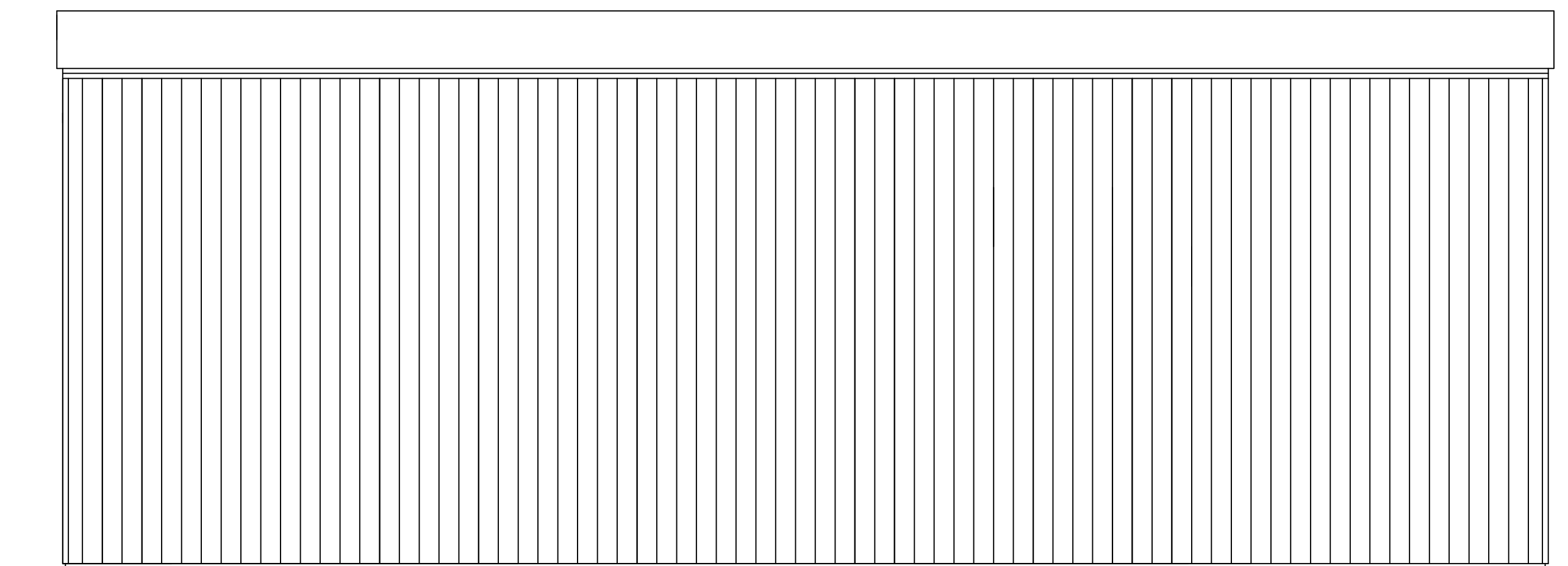
FRONT ELEVATION



LEFT ELEVATION



RIGHT ELEVATION



REAR ELEVATION

General Notes

TED GREENLAW  
183 COLUMBIA STREET  
HANOVER, MA

No.	Revision/Issue	Date

Firm Name and Address  
PRIGGEN STEEL  
133 FRANKLIN STREET  
WRENTHAM, MA

Project Name and Address  
PRECOURT  
46 UNION AVE  
SUDBURY, MA

Project ELEVATION	Sheet S-2
Date 11/9/20	
Scale 3/16" = 1'-0"	