



Bureau of Resource Protection - Wetlands

Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act (M.G.L. c.131 s.40)

Reading Wetland Protection Bylaw, Section 7.1

Reading Center for Active Living (ReCAL) & Outdoor Community Pickleball Courts

0 East of Haverhill Street Reading, MA

Submitted to:

Reading Conservation Commission

16 Lowell Street

Reading, MA 01867

MassDEP Northeast Regional Office

150 Presidential Way

Woburn, MA 01801

Prepared for:

Town of Reading

16 Lowell Street

Reading, MA 01867

Prepared by:

Epsilon Associates, Inc.

3 Mill & Main Place, Suite 250

Maynard, MA 01754

July 9, 2025



25-0303/TOR, NOI

July 7, 2025

Reading Conservation Commission
Attn: Charles Tirone, Conservation Administrator
Town of Reading
16 Lowell Street
Reading, MA 01867

Subject: NOTICE OF INTENT: Reading Center for Active Living (ReCAL), Town of Reading, 0 East of Haverhill Street (Assessors Map 35, Parcel 133), Reading, MA.

Dear Commissioners:

On behalf of the property owner, The Town of Reading (the "Applicant"), Epsilon Associates, Inc. ("Epsilon") is pleased to submit this Notice of Intent ("NOI") to the Reading Conservation Commission. The NOI was prepared in accordance with the Massachusetts Wetland Protection Act (MGL c.131 § 40) and implementing Regulations (310 CMR 10.00) (the "Act"), and Section 7.1 of the Reading General Bylaws ("Bylaw") and implementing Wetlands Protection Regulations ("Regulations").

The Applicant is proposing to create the Reading Center for Active Living ("ReCAL"), off Range Road, on a town owned parcel identified as 0 East of Haverhill Street, Assessors Map 35, Parcel 133. Activities include the construction of a community center building, pickle ball courts, lighting, ADA accessible walkways, a paved parking lot, and stone dust ADA accessible pathway. The Project also proposes improvements to an existing roadway, installation of utilities, stormwater management areas, and landscaping improvements. There will be no direct impact to jurisdictional wetland resource areas, and all activities proposed within jurisdictional areas are within the 100-foot Buffer Zone to Bordering Vegetated Wetlands ("BVW"). Additional information describing the Project is provided in the NOI application.

We have enclosed two (2) copies of the NOI, Site Plans, and Stormwater Report. We understand that the Commission will prepare the public notice and submit to Epsilon for publication in the local newspaper at least five days prior to the hearing date and that the Applicant is responsible for the publication fee.

This NOI is being submitted for the Commission's review at the **July 23, 2025**, public hearing. If the Commission would like to conduct a site walk prior to that date or has any questions regarding this NOI, please do not hesitate to contact me directly at (978) 461-6218 or via email at ghochmuth@epsilonassociates.com.

Sincerely,

EPSILON ASSOCIATES, INC.



Greg J. Hochmuth, PWS, CWS, RS
Senior Scientist

Encl.

CC: MassDEP, NERO
Stephen Crisafulli, RLA, Activitas, Inc.

NOTICE OF INTENT

**Massachusetts Wetlands Protection Act (M.G.L. c.131 §.40)
Reading Wetland Protection Bylaw (Section 7.1)**

Reading Center for Active Living (ReCAL) & Outdoor Community Pickleball Courts

Applicant:

Town of Reading
16 Lowell Street
Reading, MA 01867

Prepared By:

Epsilon Associates, Inc.
3 Mill and Main Place, Suite 250
Maynard, MA 01754

July 9, 2025



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WPA Form 3 – Notice of Intent



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
& Reading Wetland Protection Bylaw (Section 7.1)

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Reading

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>0 East of Haverhill Street</u>	<u>Reading</u>	<u>01867</u>
a. Street Address	b. City/Town	c. Zip Code
Latitude and Longitude:		
<u>35</u>	<u>42.539486</u>	<u>-71.081022</u>
f. Assessors Map/Plat Number	d. Latitude	e. Longitude
	<u>133</u>	
	g. Parcel /Lot Number	

2. Applicant:

<u>Ryan</u>	<u>Percival, PE, Town Engineer</u>	
a. First Name	b. Last Name	
<u>Town of Reading</u>		
c. Organization		
<u>16 Lowell Street</u>		
d. Street Address		
<u>Reading</u>	<u>MA</u>	<u>01867</u>
e. City/Town	f. State	g. Zip Code
<u>781-942-6690</u>	<u>rpercival@ci.reading.ma.us</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></u>	<u></u>	
a. First Name	b. Last Name	
<u></u>		
c. Organization		
<u></u>		
d. Street Address		
<u></u>	<u></u>	<u></u>
e. City/Town	f. State	g. Zip Code
<u></u>	<u></u>	<u></u>
h. Phone Number	i. Fax Number	j. Email address

4. Representative (if any):

<u>Greg</u>	<u>Hochmuth</u>	
a. First Name	b. Last Name	
<u>Epsilon Associates, Inc.</u>		
c. Company		
<u>3 Mill & Main Place, Suite 250</u>		
d. Street Address		
<u>Maynard</u>	<u>MA</u>	<u>01754</u>
e. City/Town	f. State	g. Zip Code
<u>978-461-6218</u>	<u>ghochmuth@epsilonassociates.com</u>	
h. Phone Number	i. Fax Number	j. Email address

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

<u>Fee Exempt (Municipal Project)</u>	<u></u>	<u></u>
a. Total Fee Paid	b. State Fee Paid	c. City/Town Fee Paid



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Provided by MassDEP:	
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A. General Information (continued)

6. General Project Description:

To construct a 28,650 square foot community center building, pickleball courts, install utilities, construct a paved parking lot, conduct roadway improvements, construct a walking trail, and conduct landscaping within the 100-foot Buffer Zone to Bordering Vegetated Wetlands.

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:

Middlesex South	
a. County	b. Certificate # (if registered land)
73040	267
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.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
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 _____	

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
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) - specify coastal or inland _____	

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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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. 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. Project Involves Stream Crossings

_____	_____
a. number of new stream crossings	b. number of replacement stream crossings



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Provided by MassDEP:	
MassDEP File Number	_____
Document Transaction Number	_____
Reading	_____
City/Town	_____

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

- 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.

- 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**

08/2021
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*

- Percentage/acreage of property to be altered:
 - (a) within wetland Resource Area _____ percentage/acreage
 - (b) outside Resource Area _____ percentage/acreage

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

- 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 - Bourne to Rhode Island border, and
the Cape & Islands:

North Shore - Plymouth 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

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: 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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Provided by MassDEP:	
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Online Users:
Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

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.



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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.

Reading Center for Active Living (ReCAL) + Outdoor Community Pickleball Courts

a. Plan Title

Activitas Inc.

Megan Buczynski, P.E.

b. Prepared By

c. Signed and Stamped by

July 9, 2025

1" = 30'

d. Final Revision Date

e. Scale

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:

2. Municipal Check Number

3. Check date

4. State Check Number

5. Check date

6. Payor name on check: First Name

7. Payor name on check: Last Name



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Provided by MassDEP:

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MassDEP File Number

Document Transaction Number

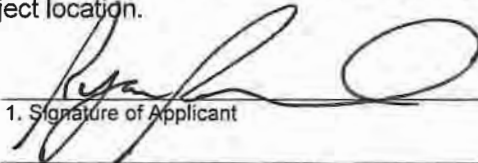
Reading

City/Town

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

7-1-25

2. Date

3. Signature of Property Owner (if different)



4. Date

7/1/2025

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.

Attachment A

Project Narrative

ATTACHMENT A – PROJECT NARRATIVE

1.0 Introduction

On behalf of Town of Reading (the “Applicant”), Epsilon Associates, Inc. (“Epsilon”) is pleased to submit this Notice of Intent (“NOI”) to the Reading Conservation Commission (the “Commission”) for work associated with the construction of a 28,650 s.f. community center building and pickleball courts off Range Road on a town owned parcel identified as 0 East of Haverhill Street, assessors map 35, parcel 133, by the Reading Assessors office. This NOI was prepared in accordance with the Reading Wetland Protection Bylaw (Section 7.1) (“the Bylaw”) and Implementing Regulations and the Massachusetts Wetlands Protection Act (“WPA”) and implementing Regulations (310 CMR 10.00).

The purpose of this project is to create the Reading Center for Active Living (“ReCAL”). Activities include the construction of a community center building, pickle ball courts, lighting, ADA accessible walkways, a paved parking lot, and stone dust ADA accessible pathway through wooded areas of the property. The Project also proposes improvements to an existing roadway, installation of utilities, stormwater management areas, and landscaping improvements. There will be no direct impact to jurisdictional wetland resource areas, and all activities proposed within jurisdictional areas are within the 100-foot Buffer Zone to Bordering Vegetated Wetlands (“BVW”). Additional information describing the Project is provided in the balance of this narrative.

2.0 Existing Site Conditions

The subject property is a landlocked parcel, approximately 15.2 acres in size, identified as 0 East of Haverhill Street, located south of Burbank Ice Arena, which is located at 51 Symonds Way. The Project Area is bordered on the east by Reading Rifle and Revolver Club, to the north by Burbank Ice Arena, to the south by an extensive wetland system known as South Cedar Swamp, and to the west by residential properties with frontage on Haverhill Street. The land surrounding the subject property includes residential and commercial. Land use within the Project Area includes deciduous forest, abandoned dumping grounds, and a paved access road known as Range Road that provides access to the gun range to the east, see USGS Locus Map provided in Figure 1 of Attachment B.

According to the Natural Heritage and Endangered Species Program (“NHESP”), the Project is not located within mapped Priority Habitat of Rare Species or Estimated Habitat of Rare Wildlife under the Massachusetts Endangered Species Act (Natural Heritage Atlas, August 1, 2021). There are also no NHESP-mapped certified or potential vernal pools in the Project Area, (see also Attachment B, Figure 4).

According to the current Federal Emergency Management Agency Flood Insurance Rate Map (“FEMA-FIRM”) Community Panel Number 25017C0312E, effective date June 4, 2010, the Study Area is located within a Zone ‘X’, 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.

The Study Area is not within a Special Flood Hazard Area, Zone A or Zone AE 100-year floodplain (see Attachment B, Figure 4).

3.0 Wetland Resource Areas and Buffer Zones

The project limits include an extensive BVW system to the south, known as South Cedar Swamp, which borders on Bear Meadow Brook to the east, and Range Road to the North. Wetland resource areas within or adjacent to the Project Area were delineated by Epsilon on June 10, 2025. Wetland resource areas were delineated in accordance with the U.S. Army Corps of Engineers Wetland Delineation Manual (USACE, 1987), the “Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0” (2012), the Massachusetts Wetlands Protection Act (“WPA”) and implementing Regulations (310 CMR 10.00), Massachusetts Department of Environmental Protection (“MassDEP”), Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands (MassDEP, 2nd Edition, September 2022); and the Town of Reading Conservation Commission Wetlands Protection Regulations (Revised December, 2023). The local, state, and federal delineation methodologies generally prescribe a multi-parameter approach, where hydrophytic vegetation, hydrology and hydric soils are reviewed in conjunction with one another to demarcate the wetland – upland boundary.

3.1 Wetland Resource Area Description

The BVW is located southwest of Bear Meadow Brook, which is located approximately 1,000 feet northeast from the northeast corner of the subject property. Upland portions on the parcel are comprised of mixed deciduous forest, located north of the edge of the delineated BVW boundary; the species observed included white pine (*Pinus strobus*), white oak (*Quercus alba*), red oak (*Quercus rubra*), highbush blueberry (*Vaccinium corymbosum*), glossy buckthorn (*Frangula alnus*), cinnamon fern (*Osmundastrum cinnamomeum*), partridge berry (*Mitchella repens*), star flower (*Lysimachia borealis*), Canada mayflower (*Maianthemum canadense*), bracken fern (*Pteridium aquilinum*), and wild sarsaparilla (*Aralia nudicaulis*).

According to U.S. Department of Agriculture (“USDA”) Natural Resources Conservation Service (“NRCS”) mapping information, soils in the Study Area include Udorthents, sandy (653), Freetown muck (53A & 52A), & Scarboro mucky fine sandy loam (6A). See Attachment B, Figure 5 for additional detail. Udorthents, sandy have an undermined drainage class, however, observations made during the resource area delineation showed predominantly well drained soils within the upland areas. Both Scarboro and Freetown are classified as very poorly drained. Observations made by Epsilon confirm this mapping.

3.2 Bordering Vegetated Wetlands

BVW is defined at 310 CMR 10.55 and, BVWs generally include freshwater wetlands that border on creeks, rivers, streams, ponds, and lakes. Types of freshwater wetlands include wet meadows, marshes, swamps, and bogs. BVWs are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The ground and surface water

regime and the plant community that occur in each type of freshwater wetland are specified in the Act. The boundary of BVW is the line within which 50 percent or more of the plant community, based on visual inspection, consists of wetland indicator plants and saturated and inundated conditions exist. Pursuant to the WPA, there is a 100-foot buffer zone associated with BVW. The Bylaw prescribes a 25-foot minimum Zone of Natural Vegetation (“ZNV”). Bordering Wetlands within the vicinity of the Project Area include:

BVW Series A (Flags A1-A63)

The A-Series BVW is a toe-of-slope wetland that generally parallels a steep slope leading up to upland areas. Epsilon classified the A-Series as a Palustrine forested¹ wetland, (PFO1F), see Attachment F for photos of the BVW. Hydrologic indicators observed included raised roots, saturated soils, and standing water within 12-inches of the soil surface. Dominant wetland vegetation includes red maple (*Acer rubrum*), red oak, white pine, pepperbush (*Clethra alnifolia*), highbush blueberry, royal fern (*Osmunda spectabilis*), cinnamon fern, three-leaf goldthread (*Coptis trifolia*), Canada mayflower, and star flower.

4.0 Project Description

The Project is to create the Reading Center for Active Living (“ReCAL”), which includes the construction of a 28,650 s.f. community center building, seven (7) pickle ball courts, lighting, ADA accessible walkways, a paved parking lot, and stone dust ADA accessible pathway through wooded areas of the property. The Project also proposes improvements to an existing roadway, installation of utilities, stormwater management areas, and landscaping improvements. see Attachment G for permit drawings. The project is intended to support the town’s Elder & Human Services, Recreation, and Veterans' Divisions. The project will foster health, wellness, and social interaction for the community, providing a hub for programs and services for all ages primarily focused on the 60+ aged residents, equipped with universal accessibility throughout the project site.

The location at Symonds Way was unanimously chosen by the Town of Reading Select board. Of the six sites considered, the subject property was deemed optimal because the residences are within a close distance, and additional parking is available in the parking lot located behind Burbank Ice Arena to the north. There will be no direct impact on jurisdictional wetland resource areas, and all activities proposed within jurisdictional areas are within the 100-foot Buffer Zone to BVW

¹ Cowardin, L. et al. (1979). Classification of Wetlands and Deepwater Habitats of the United States, United States Fish and Wildlife Service, Biological Services Program, Washington, D.C., FWS/OBS-79/31.

4.1 Reading Center for Active Living (“ReCAL”)

The Reading Center for Active Living was accepted by the Town of Reading’s Permanent Building Committee. The ReCAL was deemed necessary by the Town’s consultants, serving the growing 60+ population in Reading. The building is proposed to be two (2) stories and 28,650 square feet, consisting of a gymnasium, a fitness room, multipurpose rooms, and other community spaces.

The ReCAL building is designed to support the town’s growing population of residents aged 60+. The new center features a senior hub with amenities such as a gym with an overhead walking track, a café area, a lounge, a card/game room, and program and fitness rooms. Senior programming would get priority to meet the needs of the 60+ community. The center will also hold organized enrichment sport programs for elementary students, programs for middle and high school students, and parent/grandparent programs for infant toddlers. The new center features an outdoor fitness and patio area, located on the north side of the building. The boundaries of the ReCAL building were designed to align on its western and southern sides away from the wetlands to the maximum extent practicable.

4.2 Pickleball Complex

The proposed pickle ball complex will consist of seven lighted courts, defined as a need by the community. The Reading Pickleball Players Association (“RPPA”) had approached the town expressing this need for new pickleball courts and began fundraising for the construction of new courts. Since the site is constrained away from residences, it became apparent that it would be ideal for courts; previous pickleball projects cited issues with noise levels.

The proposed courts will be lit with dark sky-compliant lights, utilizing the same lighting as the parking lot. The courts will be fitted with 6’ chain link fencing. The courts are designed to use post-tension concrete, estimated to last 20-30 years and require only moderate updates to the surface. The boundary of the courts was designed to be shifted away from the wetlands to the maximum extent possible.

4.3 Stone Dust Pathway

The Project proposes to construct an ADA accessible stone dust pathway designed to parallel the BVW boundary to allow the public to experience the natural features that exist in the wooded buffer zone. Efforts were made to minimize grading and vegetation clearing to construct the path. No alteration of BVW is proposed to construct the path; however, portions of the path are located within the 25-foot Zone of Natural Vegetation. A variance is being proposed in accordance with Section 2 E. of the Town of Reading Wetlands Protection Regulations to allow portions of the path to be constructed within the 25-foot Zone of Natural Vegetation.

4.4 Parking Lot Development

The paved parking lot is being proposed in the middle portion of the Project Area, south of Range Road, east of the ReCAL building, and west of the pickleball complex. The parking lot is proposed

outside of the 35-foot No Build Zone. Two (2), two-way entrances are proposed into the parking lot from Range Road. The parking lot will provide spaces for 90 cars including 2 electric vehicle spaces, 4 designated regular ADA spaces, 2 van sized ADA spaces, and a drop-off area next to the boundary of the parking lots was designed to be shifted away from the wetlands to the maximum extent possible.

4.5 *Landscaping Improvements*

The Project proposes a robust landscaping plan that incorporates native plantings throughout the Project Area. In addition to the native plantings, native seed mixes are proposed to be broadcast throughout the site, see sheet L301 & L302 in Attachment G for details regarding the landscaping. Most of the Project Area appears to have been used historically as an abandoned dumping ground and to stockpile materials. The incorporation of native plantings will help increase the biodiversity in the area and be an improvement over existing conditions.

4.6 *Stormwater Management*

The Project is considered new construction. The proposed stormwater management system has been designed to comply with the MassDEP stormwater management standards and the Town of Reading Stormwater Regulations.

The Project will disturb approximately 158,172 s.f. (3.63 acres) and will increase the impervious area within the limit of work by 84,254 s.f. Refer to the existing conditions plan in Attachment G set for specific information on the existing topography and features of the site. Information on the site's soil conditions has been included in the Stormwater Report in Attachment H.

More specifically, the proposed stormwater management system has been designed to meet or exceed the referenced standards including but not limited to; 80% suspended solid ("TSS") removal; phosphorus treatment; required groundwater recharge volumes; and erosion and sediment control measures are provided to control construction-related impacts until the Project site is stabilized.

Key features of Low Impact Development (LID) stormwater management systems include implementing practices that maintain a site's existing hydrology, using decentralized practices to manage stormwater close to the source of generation, and maximizing onsite infiltration to reduce runoff and landscape watering requirements. LID techniques Best Management Practices are specified in the proposed development program to mitigate the increase in stormwater runoff from the site.

A comprehensive Long-Term Pollution Prevention Operations and Maintenance ("O&M") program has also been developed for the proposed stormwater BMPs. The O&M program includes regular pavement sweeping, catch basin cleaning, and other measures.

The proposed BMPs are depicted on the enclosed permit drawing set and described in further detail in the accompanying Stormwater Management Report provided in Attachment G.

5.0 Summary of Proposed Mitigation Measures

5.1 *Erosion and Sediment Controls*

Erosion and sedimentation control measures will be in place prior to the beginning of the site work and will remain in place until the site work is complete and the final ground cover is established. Mulch sock will be installed as shown on the design plans. Stockpiles will be surrounded by mulch sock. Catch basins within the Project Area will be protected with typical inlet protection measures. Erosion controls cleaned/repared as needed throughout all phases of construction.

5.2 *Stockpiles and Staging*

Woody debris and loam will be removed and disposed of off-site in accordance with all federal, state, and local requirements during site clearing. Removed topsoil will be temporarily stockpiled for use on-site. Stockpiles shall be surrounded by erosion controls.

5.3 *Construction Access*

Construction access to the site will be across Range Road. This entrance will be lined with coarse aggregate and maintained in a condition which will prevent tracking or flowing of sediment outside the parcel. Construction entrance shall be inspected weekly in accordance with the NPDES monitoring requirements. Any sediment that is tracked into the public roadway will be removed immediately.

5.4 *Spill Prevention and Containment*

During construction, a spill containment kit will be kept on site at all times. Personnel will be available to respond quickly in the event of a leak or spill. Equipment will be kept in a condition that prevents leakage or discharge of pollutants. Fuel, oil, hydraulic fluids, petroleum products and/or other chemicals will be stored in water-tight containers to minimize their exposure to precipitation and storm water. In the event that there is an accidental release of petroleum product during construction, the Reading Conservation Commission will be notified after the appropriate emergency response agencies.

5.5 *Dewatering Protocols*

The discharge of turbid groundwater or accumulated stormwater that is removed from excavations, trenches, foundations, or other similar points of accumulation is prohibited, unless such waters are first effectively managed by appropriate controls, including, but not limited to, sediment basins or traps, sediment socks, dewatering (frac) tanks, and other Best Management Practice (“BMPs”) that are designed to remove sediment. To the extent dewatering is determined to be necessary, the type of dewatering BMP will be selected by the site contractor at the time of construction based on site specific factors and the volume of water to be collected and treated.

The site contractor will also be required to adhere to the following minimum performance standards:

- Do not discharge visible floating solids,
- Do not discharge directly into adjacent wetlands (or catch basins that in turn discharge into adjacent wetlands), and
- Velocity dissipation devices (e.g., check dams, riprap) shall be used as necessary to provide a non-erosive flow velocity at any outlet where dewatering water is discharged.

5.6 Construction Monitoring

The Project requires the development of a Stormwater Pollution Prevention Plan (“SWPPP”) that identifies the controls to be implemented to mitigate the potential for erosion and sedimentation from soil disturbance within the Project site. A qualified environmental inspector will perform site inspections and ensure compliance with the construction procedures and environmental policies, the Project SWPPP, and with federal, state, and local permit requirements and conditions.

6.0 Compliance with Town of Reading Wetlands Protection Bylaw (Section 7.1)

All activities within the Buffer Zone are proposed within areas that appear to have been historically used as a dumping ground and/or to stockpile various materials, including pre-cast drainage structures, piping, and concrete retaining wall blocks.

To create the ADA compliant stone dust pedestrian path, alteration is proposed within the 25-foot Zone of Natural Vegetation. Efforts were made to minimize impact within this zone to the maximum extent practicable. A variance is being proposed in accordance with Section 2. E. of the Wetlands Protection Regulations.

No permanent structures are proposed within the 35-foot No Build Zone.

All side slopes within 100 feet of the IVW will have a finish grade that is flatter than 3:1 and be stabilized with loam and seed.

The Project is subject to the Tree Replacement Policy² put forward by the Town of Reading’s Conservation Commission on March 11th, 2025, in accordance with the Reading Wetland Protection Bylaw Section 7.1. The bylaw states that tree removal will be reviewed by Commission, and upon mutual agreement an appropriate replacement ratio will be established. The Project team is hoping to work with the Commission to come up with a mutual agreed upon replacement ratio.

² <https://www.readingma.gov/DocumentCenter/View/2271/Tree-Replacement-Policy-PDF>

6.1 Variance Request

The Project is requesting a variance in accordance with Section 2 E. of the Town of Reading Wetlands Protection Regulations, which states that the Conservation Commission may grant a variance from strict compliance with these regulations for a proposed activity when the Commission finds that:

- a) There are no reasonable conditions or alternatives that would allow the project to proceed in compliance with the performance standards in the Regulations; and
- b) Mitigation measures are proposed that will allow the project to be conditioned so as to have no adverse impact upon the wetland values set forth in Section 7.1 of the Reading General Bylaws; and
- c) The request for a variance is necessary to accommodate an overriding community, regional state, or national public interest. In the case of owner occupied single- or two-family residences, mitigation which improves the resource area quality may be considered to accommodate the public interest.

The intent of the proposed path is to allow the public to enjoy the wooded portions of the buffer zone. Moving the path outside of the 25-foot ZNV would require the project to be reduced in size to allow for the path to be within wooded areas. The current layout would put the path on the proposed edge of clearing and eliminate the whole intent to provide a wooded experience. It is important to note that the areas within the 25-foot ZNV proposed to be altered, are currently areas that have been historically used as dumping grounds and stockpile areas for various materials. There are even two cars within the BVW that are proposed to be removed during the construction of the Project.

Mitigation is proposed in the form of native plantings and native seed mixes. Erosion controls are proposed to be installed prior to the construction of the path and will remain in place until all areas are stabilized, and permission is granted for their removal.

There is an overriding community interest in constructing this complex for all the reasons discussed in Section 4.0 of this narrative.


7.0 Conclusions

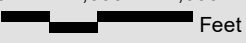
The information presented in this NOI and the accompanying site plans describe the site, proposed work, mitigation measures, and effort to protect the interest of the Bylaw. The Applicant therefore respectfully requests that the Commission issue an Order of Conditions approving the Project with appropriate conditions to protect the interests identified in the Bylaw.


Attachment B

Figures

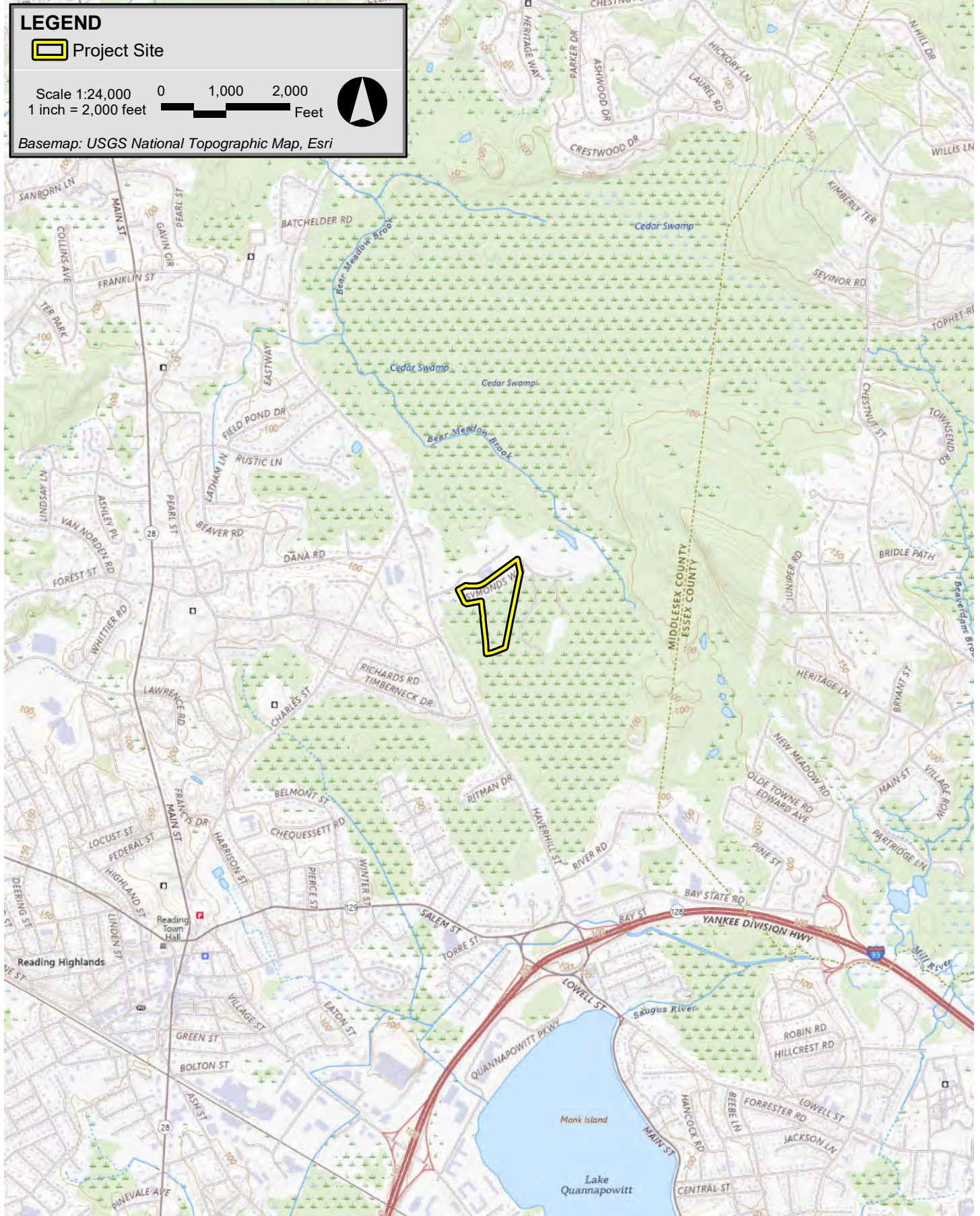
LEGEND

 Project Site

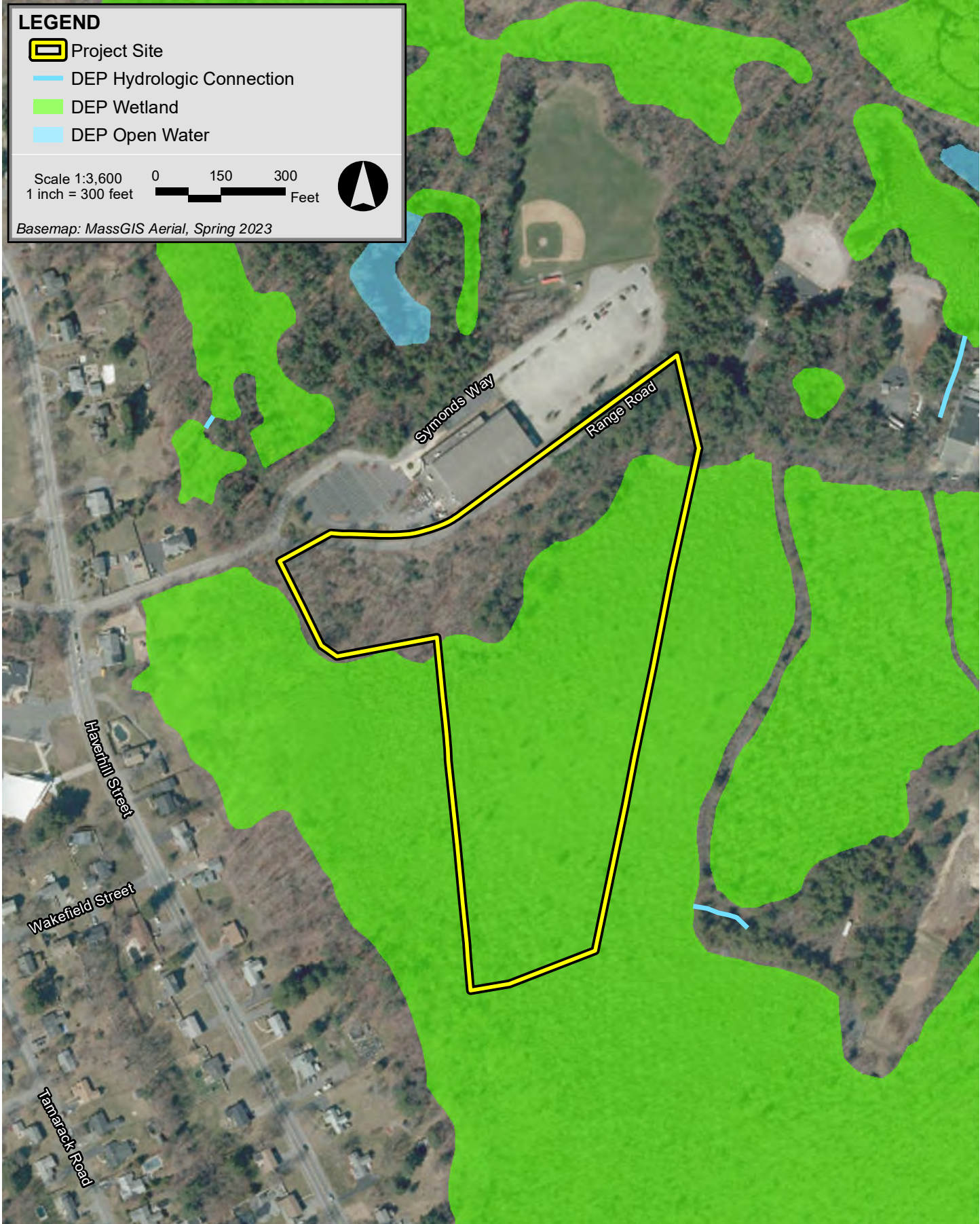
Scale 1:24,000 0 1,000 2,000
 1 inch = 2,000 feet  Feet



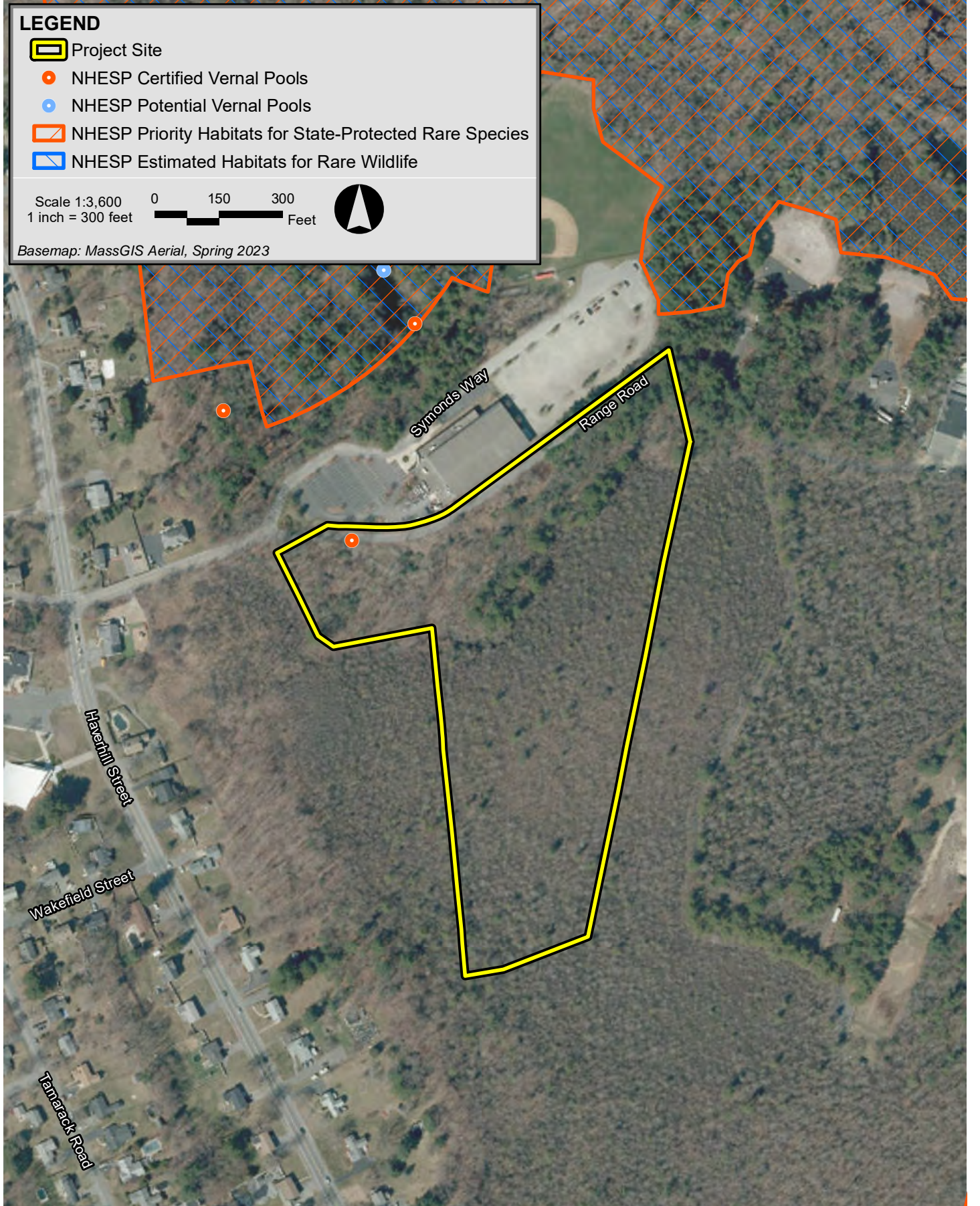
Basemap: USGS National Topographic Map, Esri



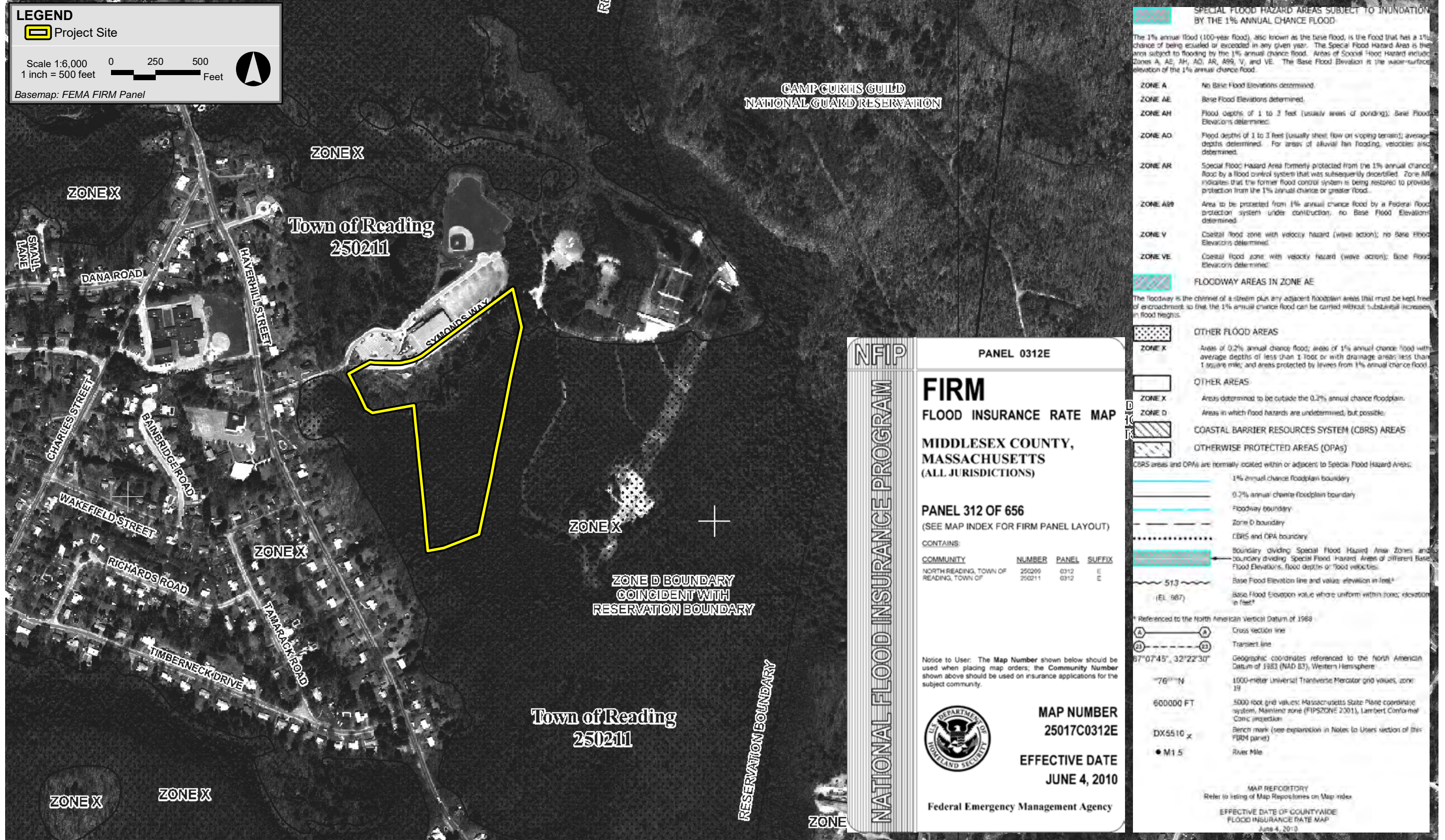
Activitas Reading Reading, Massachusetts



Activitas Reading Reading, Massachusetts



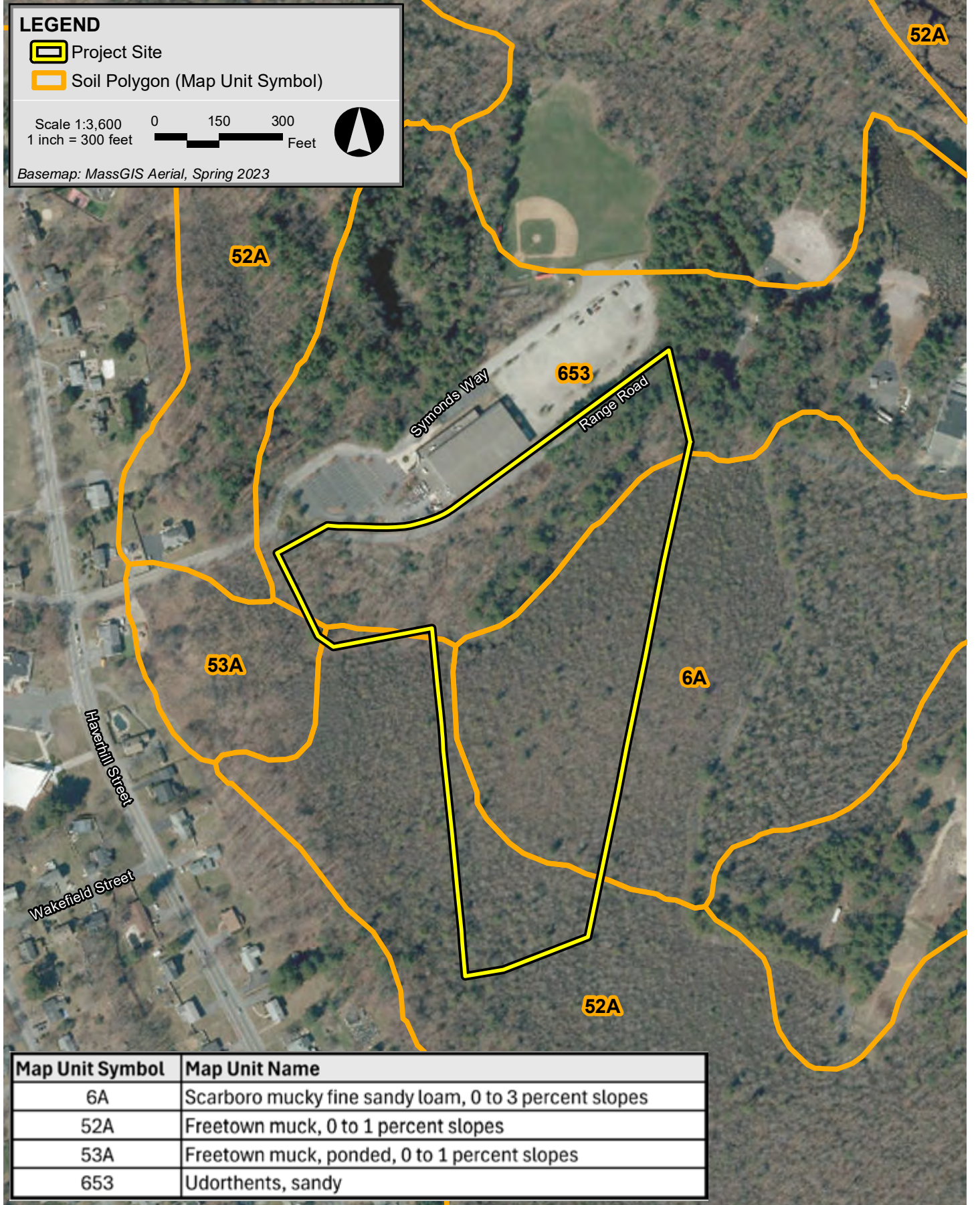
Activitas Reading Reading, Massachusetts



Activitas Reading Reading, Massachusetts



Figure 4
FEMA FIRM Panel 25017C0312E



Activitas Reading Reading, Massachusetts

Attachment C

Abutter Information



**TOWN OF READING
16 LOWELL STREET
READING, MA 01867-2693**

BOARD OF ASSESSORS

TEL.: 781-942-9027

FAX: 781-942-9037

January 2025

To whom it may concern:

In an effort to streamline our business practices and desire to decrease turnaround time for taxpayers and other municipal departments, please be advised that effective this date, we the Board of Assessors for the Town of Reading hereby delegate to the Town Chief Assessor of the Assessing Department signatory authority of all Certified Abutters Lists as compiled by the department.

Sincerely,

Reading Board of Assessors



Michael E. Golden

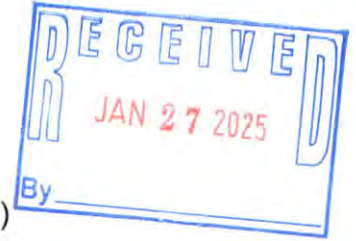
Brendan Zarechian



Jean Paul Plouffe

TOWN OF READING

REQUEST FOR CERTIFIED ABUTTERS LIST



SUBJECT PROPERTY:

ADDRESS: 0 E of Haverhill Street ("Parcel B" 0:10035.0-0000-0133.0)

Assessors' Map Number: 35 Lot Number: 133

APPLICANT/AGENT:

Name: Town of Reading - Represented By Activitas, Inc.

Address: 70 Milton Street Dedham MA 02026

Telephone: 401-450-1587 Email: src@activitas.com

Board or Commission for which this request is made (check all that are applicable):

Community Planning and Development Commission:

- Site Plan Review (300 feet)
Special Permit (300 feet)
Subdivision (300 feet)

Conservation Commission:

- Request for Determination (300 feet)
Abbreviated Notice of Resource Area Delineation (300 feet)
Notice of Intent (300 feet)

Zoning Board of Appeals:

- Appeal (300 feet)
Special Permit (300 feet)
Variance (300 feet)

- Building Department: Immediate Abutters
Health Department: Immediate Abutters
Historic District Commission (300 feet)
Historical Commission (300 feet)
Other:

Brief description of request: Abutter's lists for ReCAL and Pickleball
(Town) Project Permitting Requirements

Applicant/Agent Signature: [Signature] Date: 1/27/2025

The Assessors' Office may require up to three weeks in order to process and approve this request.

Authorized Signature: [Signature] Date: 1/27/25
Must be signed by the Public Services Department



TOWN OF READING
16 LOWELL STREET
READING, MA 01867-2693

BOARD OF ASSESSORS
781-942-9027
FAX: 781-942-9037

ABUTTERS LIST
CERTIFICATION
FOR BOARD OF ASSESSORS

VICTOR P. SANTANIELLO, CHIEF ASSESSOR

DATE

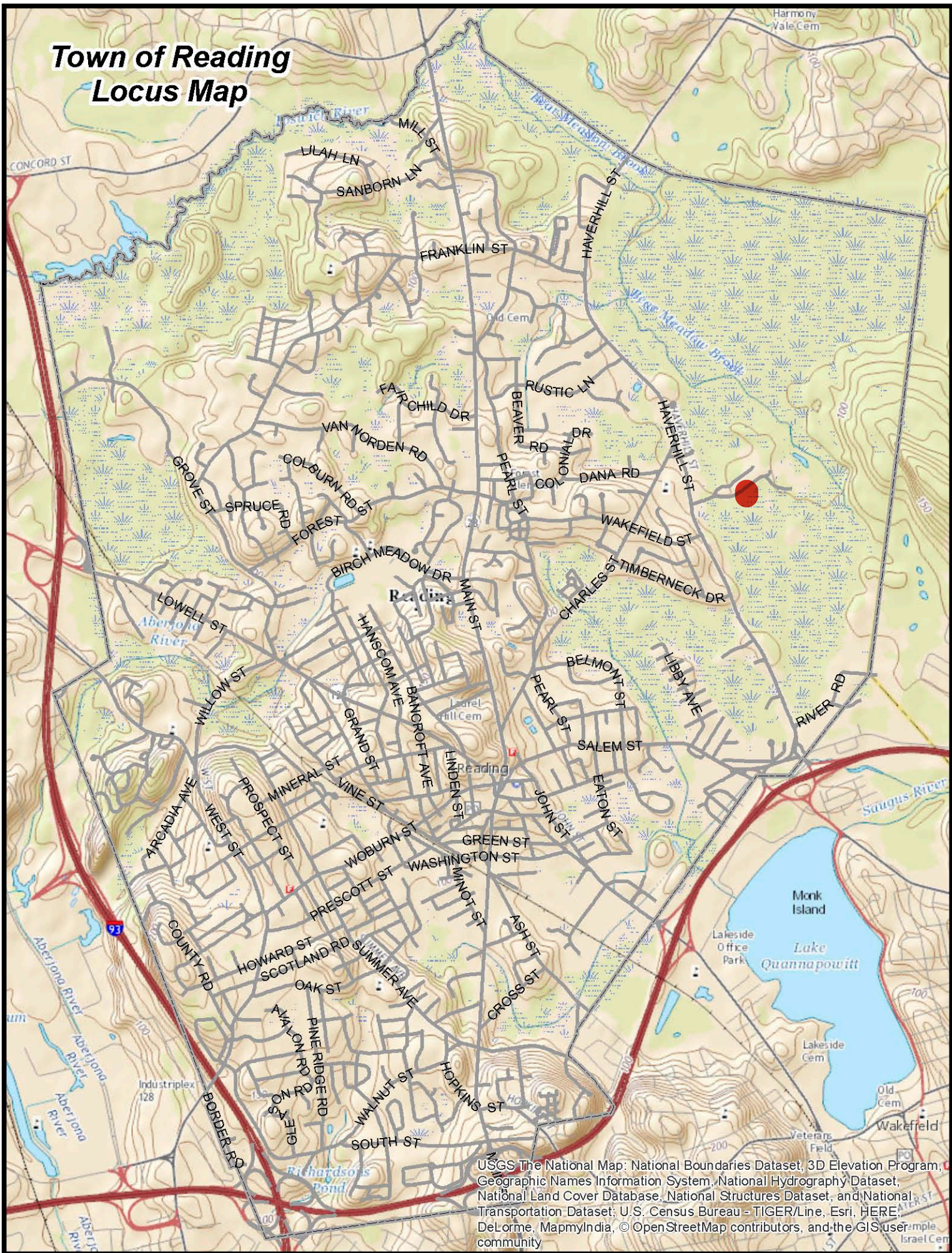
M. Keohan

1/28/25

MICHELE L. KEOHAN, ASSISTANT ASSESSOR

DATE

Town of Reading Locus Map



USGS The National Map: National Boundaries Dataset, 3D Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; U.S. Census Bureau - TIGER/Line, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act, M.G.L., c.131, s.40 and Reading General Bylaws, Section 7.1

(To be submitted to the Conservation Commission when filing a Notice of Intent or Abbreviated Notice of Resource Area Delineation or Request for Determination of Applicability)

I, _____(Name), hereby certify under the pains and penalties of perjury that on _____(Date), I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws, c.131, s.40, and the **DEP Guide to Abutter Notification** dated April 8, 1994, and Reading General Bylaws, Section 7.1 in connection with the following matter:

(Check the applicable form.)

_____ Notice of Intent

_____ Abbreviated Notice of Resource Area Delineation

_____ Request for Determination of Applicability

filed under M.G.L., c.131, s.40 and R.G.B., s.7.1 by

_____ (Applicant) with the Town of Reading

Conservation Commission on _____ (Date) for

property located at _____ (Location).

The form of the notification and list of abutters to whom it was given and their addresses are attached to this Affidavit of Service.



Name

July 9, 2025

Date

Notification to Abutters

By Hand Delivery, Certified Mail (return receipt requested), or Certificates of Mailing

This is a notification required by law. You are receiving this notification because you have been identified as the owner of land abutting another parcel of land for which certain activities are proposed. Those activities require a permit under the Reading Wetland Protection Bylaw (Section 7.1).

In accordance with the Town of Reading Wetlands Protection Regulations, you are hereby notified that:

- A. A Notice of Intent was filed with the Reading Conservation Commission on July 9, 2025, seeking permission to remove, fill, dredge, or alter an area subject to protection under the Reading Wetland Protection Bylaw. The following is a description of the proposed activity/activities:

To construct a 28,650 square foot community center building, pickleball courts, install utilities, construct a paved parking lot, conduct roadway improvements, construct a walking trail, and conduct landscaping improvements within the 100-foot Buffer Zone to Bordering Vegetated Wetlands.

- B. The name of the applicant is: Town of Reading
- C. The address of the land where the activity is proposed is: 0 East of Haverhill Street, (Assessors Map 35, Parcel 133), Reading, MA, 01867.
- D. Copies of the Notice of Intent may be examined or obtained at the office of the Reading Conservation Commission, located at 16 Lowell Street Reading, MA, 01867. The regular business hours of the Commission are Monday, Wednesday and Thursday, 7:30 AM to 5:30 PM, Tuesday 7:30 AM to 7 PM, and is closed on Friday. The Commission may be reached at 781-942-6616. Copies of the Notice of Intent may also be obtained from the applicant or their representative by calling Greg Hochmuth at 978.461.6218. An administrative fee may be applied for providing copies of the NOI and plans.
- E. Information regarding the date, time, and location of the public hearing regarding the Notice of Intent may be obtained from the Reading Conservation Commission. Notice of the public hearing will be published at least five business days in advance, in the Daily Times Chronicle.

Notification provided pursuant to the above requirement does not automatically confer standing to the recipient to request Departmental Action for the underlying matter. See 310 CMR 10.05(7)(a)4.



Patriot Properties

01/28/2025

9:46:13AM

Reading

Abutters List

Filter Used: DataProperty.AccountNumber in
(7594,7575,6868,6898,7576,7599,6899,6867,6026,7573,7590,6865,7592,6863,6864,6866,7591,6900,8906,8905,8907)

Reading Abutters List

Subject Parcel ID: 0 E OF HAVERHILL ST

Subject Property Location:

ParcelID	Location	Owner	Co-Owner	Mailing Address	City	State	Zip
030.0-0000-0001.0	HAVERHILL ST	TOWN OF READING	CONSERVATION	16 LOWELL ST	READING	MA	01867
035.0-0000-0094.0	267 HAVERHILL ST	VIRGIN KYLE	VIRGIN ELIZABETH TE	267 HAVERHILL ST	READING	MA	01867
035.0-0000-0095.0	259 HAVERHILL ST	DISCIULLO JOSEPH E ETAL (LE)	MICHAEL DISCIULLO	259 HAVERHILL ST	READING	MA	01867
035.0-0000-0096.0	251 HAVERHILL ST	DIVITO MARIE A	WEATHERBEE DIANE	251 HAVERHILL STREET	READING	MA	01867
035.0-0000-0097.0	243 HAVERHILL ST	KING ROBERT N TRUSTEE ETAL	KING FAMILY REV TRUST	243 HAVERHILL ST	READING	MA	01867
035.0-0000-0098.0	239 HAVERHILL ST	MARKS RICHARD H		239 HAVERHILL ST	READING	MA	01867
035.0-0000-0099.0	233 HAVERHILL ST	GILLESPIE KEVIN A ETAL TRUSTE	GILLESPIE IRREVOCABLE T	233 HAVERHILL ST	READING	MA	01867
035.0-0000-0132.0	293 HAVERHILL ST	STINSON CARL W TRUSTEE ETAL	C B REALTY TRUST	293 HAVERHILL ST	READING	MA	01867
035.0-0000-0133.0	E OF HAVERHILL S	TOWN OF READING		16 LOWELL STREET	READING	MA	01867
035.0-0000-0134.0	EAST OF HAVERHILL	READING RIFLE & REVOLVER CL	C/O ROBERT H. STONE	PO BOX 212	READING	MA	01867
035.0-0000-0135.0	EAST OF HAVERHILL	TOWN OF READING	CONSERVATION COMMISSI	16 LOWELL ST	READING	MA	01867
035.0-0000-0136.0	HAVERHILL ST	READING RIFLE & REVOLVER CL		PO BOX 212	READING	MA	01867
035.0-0000-0137.0	HAVERHILL ST	READING RIFLE & REVOLVER CL		PO BOX 212	READING	MA	01867
041.0-0000-0037.0	311 HAVERHILL ST	M & M GRIMMER LLC		311 HAVERHILL ST	READING	MA	01867
041.0-0000-0039.0	18 SYMONDS WAY	CAMPBELL KERRY C	EDWARD J DONNELLY III	18 SYMONDS WAY	READING	MA	01867
041.0-0000-0040.0	329 HAVERHILL ST	BAMBERG JOSEPH L	BAMBERG JESSICA D	329 HAVERHILL ST	READING	MA	01867
041.0-0000-0054.0	51 SYMONDS WAY	TOWN OF READING	ICE ARENA	16 LOWELL ST	READING	MA	01867
041.0-0000-0055.0	E OF HAVERHILL S	READING RIFLE & REVOLVER CL	C/O ROBERT H. STONE	PO BOX 212	READING	MA	01867
041.0-0000-0056.0	E S OF HAVERHILL	TOWN OF READING		16 LOWELL ST	READING	MA	01867
041.0-0000-0058.0	62 RANGE RD	READING RIFLE & REVOLVER CL	C/O ROBERT H. STONE	PO BOX 212	READING	MA	01867
042.0-0000-0004.0	CEDAR SWAMP	READING RIFLE & REVOLVER CL		PO BOX 212	READING	MA	01867

Parcel Count: 21

End of Report

12/26/2024

STONEHAM PLANNING BOARD	35 CENTRAL ST	STONEHAM	MA	02180
WAKEFIELD PLANNING BOARD	1 LAFAYETTE STREET	WAKEFIELD	MA	01880
LYNNFIELD PLANNING BOARD	55 SUMMER STREET	LYNNFIELD	MA	01940
MASS DEPT OF HOUSING & COM. DEV.	100 CAMBRIDGE STREET, SUITE 300	BOSTON	MA	02114
WILMINGTON PLANNING BOARD	121 GLEN ROAD	WILMINGTON	MA	01887
NORTH READING PLANNING BOARD	235 NORTH STREET	NORTH READING	MA	01864
WOBURN PLANNING BOARD	10 COMMON STREET	WOBURN	MA	01801
METRO AREA PLANNING COUNCIL	60 TEMPLE PLACE	BOSTON	MA	02111

PROPERTY LOCATION

Table with columns: No, Alt No, Direction/Street/City. Value: E OF HAVERHILL S, READING

OWNERSHIP

Table with columns: Owner 1-3, Street 1-2, TwN/City, St/Prov, Postal, Own Occ, Type.

PREVIOUS OWNER

Table with columns: Owner 1-2, Street 1, TwN/City, St/Prov, Postal.

NARRATIVE DESCRIPTION

This Parcel contains 15.2 ACRES of land mainly classified as MUNICPL

OTHER ASSESSMENTS

Table with columns: Code, Descrip/No, Amount, Com. Int.

PROPERTY FACTORS

Table with columns: Item, Code, Description, %, Item, Code, Description. Includes Census, Flood Haz, D, s, t.

LAND SECTION (First 7 lines only)

Table with columns: Use Code, Description, LUC Fact, No of Units, Depth / PriceUnits, Unit Type, Land Type, LT Factor, Base Value, Unit Price, Adj, Neigh, Neigh Infl, Neigh Mod, Infl 1, %, Infl 2, %, Infl 3, %, Appraised Value, Alt Class, %, Spec Land, J Code, Fact, Use Value, Notes.

IN PROCESS APPRAISAL SUMMARY

Table with columns: Use Code, Land Size, Building Value, Yard Items, Land Value, Total Value. Includes Total Card, Total Parcel, Source, Total Value per SQ unit /Card, /Parcel.

PREVIOUS ASSESSMENT

Table with columns: Tax Yr, Use, Cat, Bldg Value, Yrd Items, Land Size, Land Value, Total Value, Asses'd Value, Notes, Date.

SALES INFORMATION

Table with columns: Grantor, Legal Ref, Type, Date, Sale Code, Sale Price, V, Tst, Verif, Notes.

BUILDING PERMITS

Table with columns: Date, Number, Descrip, Amount, C/O, Last Visit, Fed Code, F. Descrip, Comment.

Table with columns: Legal Description, User Acct, GIS Ref, Entered Lot Size, Total Land, Land Unit Type.

Parcel ID

Table with columns: Parcel ID, Date.

PAT ACCT.

Table with columns: Date, Time.

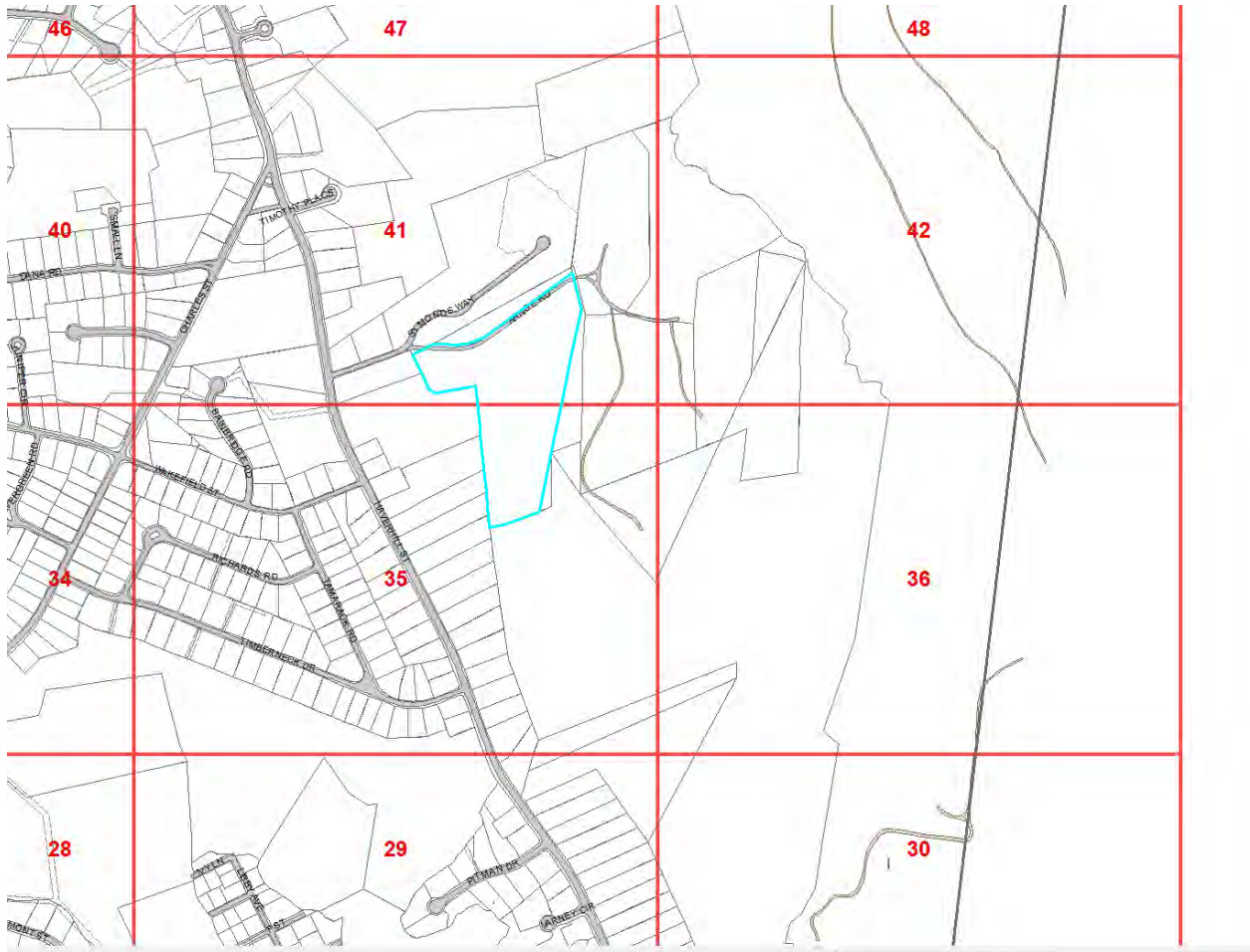
ACTIVITY INFORMATION

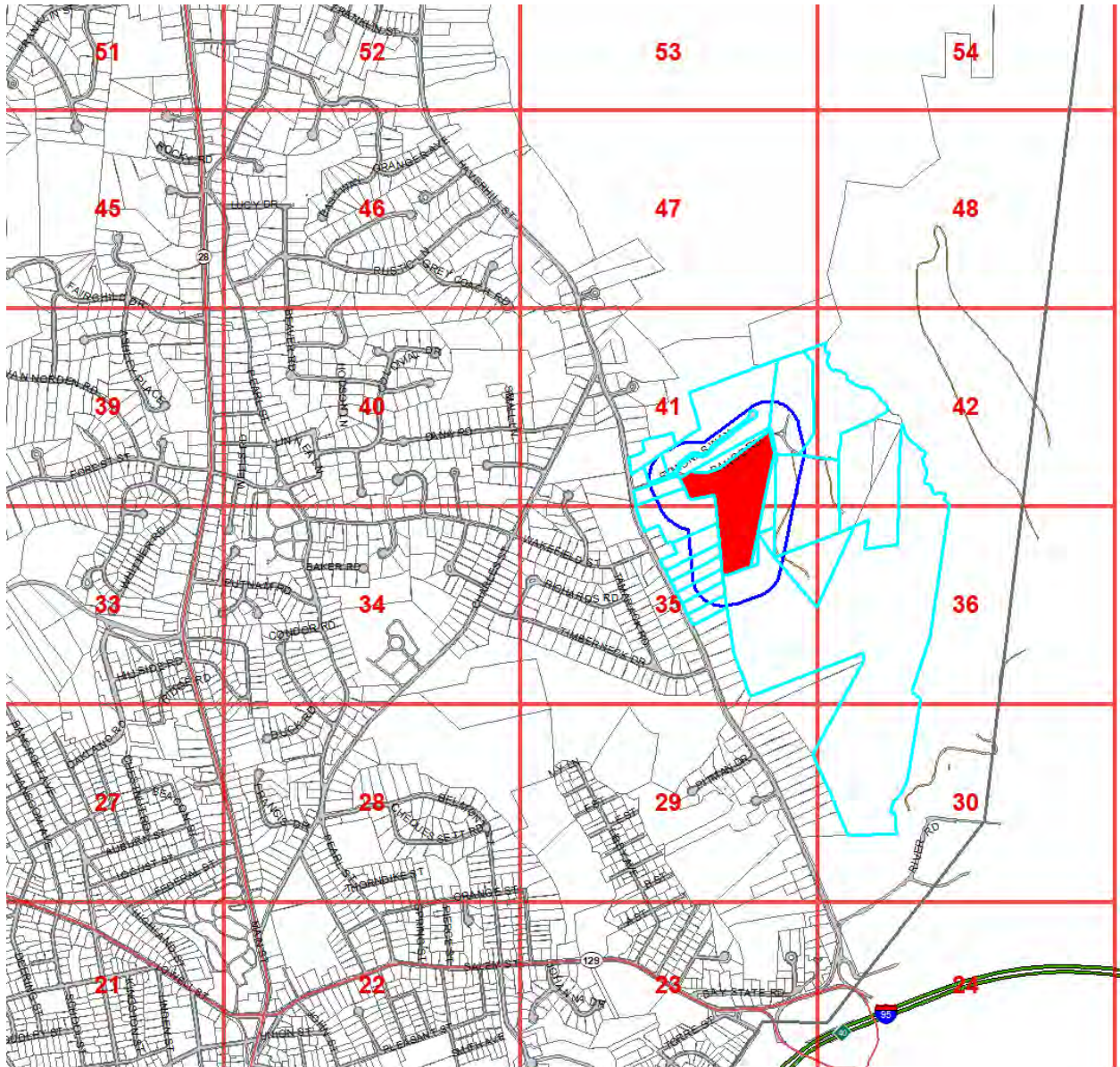
Table with columns: Date, Result, By, Name.

Sign: VERIFICATION OF VISIT NOT DATA



Table with columns: USER DEFINED, Prior Id # 1-3, ASR Map, Fact Dist, Reval Dist, Year, LandReason, BldReason, CivilDistrict, Ratio.





BAMBERG JOSEPH L
BAMBERG JESSICA D
329 HAVERHILL ST
READING. MA 01867

READING RIFLE & REVOLVER CL
C/O ROBERT H. STONE
PO BOX 212
READING. MA 01867

VIRGIN KYLE
VIRGIN ELIZABETH TE
267 HAVERHILL ST
READING. MA 01867

CAMPBELL KERRY C
EDWARD J DONNELLY III
18 SYMONDS WAY
READING. MA 01867

READING RIFLE & REVOLVER CL
PO BOX 212
READING. MA 01867

DISCIULLO JOSEPH E ETAL (LE)
MICHAEL DISCIULLO
259 HAVERHILL ST
READING. MA 01867

READING RIFLE & REVOLVER CL
PO BOX 212
READING. MA 01867

DIVITO MARIE A
WEATHERBEE DIANE
251 HAVERHILL STREET
READING. MA 01867

READING RIFLE & REVOLVER CL
PO BOX 212
READING. MA 01867

GILLESPIE KEVIN A ETAL TRUSTEE
GILLESPIE IRREVOCABLE TRUST
233 HAVERHILL ST
READING. MA 01867

STINSON CARL W TRUSTEE ETAL
C B REALTY TRUST
293 HAVERHILL ST
READING. MA 01867

KING ROBERT N TRUSTEE ETAL
KING FAMILY REV TRUST
243 HAVERHILL ST
READING. MA 01867

TOWN OF READING
CONSERVATION
16 LOWELL ST
READING. MA 01867

M & M GRIMMER LLC
311 HAVERHILL ST
READING. MA 01867

TOWN OF READING
16 LOWELL STREET
READING. MA 01867

MARKS RICHARD H
239 HAVERHILL ST
READING. MA 01867

TOWN OF READING
ICE ARENA
16 LOWELL ST
READING. MA 01867

READING RIFLE & REVOLVER CL
C/O ROBERT H. STONE
PO BOX 212
READING. MA 01867

TOWN OF READING
16 LOWELL ST
READING. MA 01867

READING RIFLE & REVOLVER CL
C/O ROBERT H. STONE
PO BOX 212
READING. MA 01867

TOWN OF READING
CONSERVATION COMMISSION
16 LOWELL ST
READING. MA 01867

Attachment D

Filing Fee Information

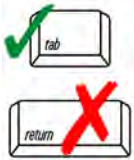
Reading Wetlands Protection Bylaw Fee Calculation Form

Type of Activity	NOI Filing Fee	Calculated Fee
A. Each addition to or accessory use activity Associated with an existing single-family or Multi-family residential dwelling, including but not limited to driveways, sheds, swimming pools, athletic courts, additions to existing houses, grading, and landscaping	\$125.00 plus all applicable fees listed in lines F through K	
B. Each new single-family dwelling, including associated driveway, utilities, grading, landscaping, and drainage structures	\$600.00 plus all applicable fees listed in lines F through K	
C. Each new multi-family dwelling	\$600.00 plus \$125.00 per unit located in any Resource Area or Buffer Zone, plus all applicable fees listed in lines F through K	
D. Each subdivision roadway, or other roadway, or driveway (other than for a single-family dwelling), and all associated drainage structures, utilities, grading, curbing, landscaping, and other associated work exclusive of dwellings	\$1,000.00 plus \$600.00 per house, plus all applicable fees listed in lines F through K	
E. Each commercial, industrial, institutional or other non-residential project	\$1,000.00 , plus all applicable fees listed in lines F through K	Fee Exempt
F. Boundary delineation for any Resource Area	\$1.25 per linear foot of Resource Area boundary, up to a maximum of \$125 for a single-family lot and \$1,250 for any other lot.	Fee Exempt
G. Temporary and /or permanent alteration of land within the Buffer Zone	\$1.25 per square foot of Buffer Zone altered for any temporary or permanent alteration within 25 feet of a Resource Area or any permanent structure within 35 feet of a Resource Area	
H. Work in Floodplain	\$1.25 per square foot of Floodplain temporarily or permanently altered outside of any other Resource Area and Buffer Zone	
I. Work in Vernal Pool habitat	\$11.00 per square foot of Vernal Pool habitat temporarily or permanently altered.	
J. Work in Freshwater Wetland, Wet Meadow, Bog, Swamp, Marsh, Creek, River, Stream, Pond, Lake, Land Under Waterbody	\$11.00 per square foot of Resource Area temporarily or permanently altered	
K. Work in Bank	\$11.00 per linear foot of Bank temporarily or permanently altered	
	Total Fee Calculated	\$ <u>Fee Exempt</u>



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

0 East of Haverhill Street Reading
 a. Street Address b. City/Town
 Fee Exempt (Municipal Project)
 c. Check number d. Fee amount

2. Applicant Mailing Address:

Ryan Percival, PE, Town Engineer
 a. First Name b. Last Name
 Town of Reading
 c. Organization
 16 Lowell Street
 d. Mailing Address
 Reading MA 01867
 e. City/Town f. State g. Zip Code
 781-942-6690 rpercival@ci.reading.ma.us
 h. Phone Number i. Fax Number j. Email Address

3. Property Owner (if different):

a. First Name b. Last Name
 c. Organization
 d. Mailing Address
 e. City/Town f. State g. Zip Code
 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).



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
NOI Wetland Fee Transmittal Form
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Fee Exempt (Municipal Project)			

Step 5/Total Project Fee: Fee Exempt

Step 6/Fee Payments:

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

Attachment E

Wetland Delineation Forms

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: 0 East of Haverhill Street (Map 35, Parcel 133) City/Town: Reading Sampling Date: 6/10/2025

Applicant/Owner: Town of Reading Sampling Point or Zone: WF A60 Upland

Investigator(s): Greg J. Hochmuth, PWS, CWS Latitude / Longitude: 42.54124 / -71.08324

Soil Map Unit Name: 653 - Udorthents NWI or DEP Classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)

Are Vegetation , Soil , or Hydrology significantly disturbed? (If yes, explain in Remarks)

Are Vegetation , Soil , or Hydrology naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?
Hydic Soils criterion met?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetlands hydrology present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks, Photo Details, Flagging, etc.:			
None at this time.			

HYDROLOGY

Field Observations:		
Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> Depth (inches) _____
Water Table Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/> Depth (inches) <u>16.00</u>
Saturation Present (including capillary fringe)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> Depth (inches) _____
Wetland Hydrology Indicators		
Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
<input type="checkbox"/> Water-stained leaves <input type="checkbox"/> Evidence of aquatic fauna <input type="checkbox"/> Iron deposits <input type="checkbox"/> Algal mats or crusts <input type="checkbox"/> Oxidized rhizospheres/pore linings <input type="checkbox"/> Thin muck surfaces <input type="checkbox"/> Plants with air-filled tissue (aerenchyma) <input type="checkbox"/> Plants with polymorphic leaves <input type="checkbox"/> Plants with floating leaves <input type="checkbox"/> Hydrogen sulfide odor	<input type="checkbox"/> Hydrological records <input type="checkbox"/> Free water in a soil test hole <input type="checkbox"/> Saturated soil <input type="checkbox"/> Water marks <input type="checkbox"/> Moss trim lines <input type="checkbox"/> Presence of reduced iron <input type="checkbox"/> Woody plants with adventitious roots <input type="checkbox"/> Trees with shallow root systems <input type="checkbox"/> Woody plants with enlarged lenticels	<input type="checkbox"/> Direct observation of inundation <input type="checkbox"/> Drainage patterns <input type="checkbox"/> Drift lines <input type="checkbox"/> Scoured areas <input type="checkbox"/> Sediment deposits <input type="checkbox"/> Surface soil cracks <input type="checkbox"/> Sparsely vegetated concave surface <input type="checkbox"/> Microtopographic relief <input type="checkbox"/> Geographic position (depression, toe of slope, fringing lowland)
Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):		
None at this time.		

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

VEGETATION – Use both common and scientific names of plants.

<u>Tree Stratum</u>		Plot size <u>1,500 s.f.</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. White Pine	Pinus strobus	FACU	38.0	Yes	No
2. White Oak	Quercus alba	FACU	38.0	Yes	No
3. Red Oak	Quercus rubra	FACU	20.5	Yes	No
4.					
5.					
6.					
7.					
8.					
9.					
<u>96.5</u> = Total Cover					
<u>Shrub/Sapling Stratum</u>		Plot size <u>1,500 s.f.</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. High Bush Blueberry	Vaccinium corymbosum	FACW	20.5	Yes	Yes
2. Glossy Buckthorn	Rhamnus frangula	FACW	20.5	Yes	Yes
3. White Pine	Pinus strobus	FACU	20.5	Yes	No
4.					
5.					
6.					
7.					
8.					
9.					
<u>61.5</u> = Total Cover					
<u>Herb Stratum</u>		Plot size <u>1,500 s.f.</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. Cinnamon Fern	Osmunda cinnamomea	FACW	10.5	Yes	Yes
2. Partridgeberry	Mitchella repens	FACU	3.0	No	
3. Star Flower	Trientalis borealis	FAC	3.0	No	
4. Canada Mayflower	Mainthemum canadensis	FACU	10.5	Yes	No
5. Bracken Fern	Pteridium aquilinum	FACU	10.5	Yes	No
6. Wild Sarsaparilla	Aralia nudicaulis	FACU	3.0	No	
7.					
8.					
9.					
10.					
11.					
12.					
<u>40.5</u> = Total Cover					

VEGETATION – continued.

<u>Woody Vine Stratum</u>	Plot size <u>1,500 s.f.</u>				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1.					
2.					
3.					
4.					
<u>0.0</u> = Total Cover					

Rapid Test: Do all dominant species have an indicator status of OBL or FACW?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Dominance Test:	Number of dominant species 9	Number of dominant species that are wetland indicator plants 3	Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Prevalence Index:	Total % Cover (all strata)	Multiply by:	Result
	OBL species	X 1	= 0.00
	FACW species	X 2	= 0.00
	FAC species	X 3	= 0.00
	FACU species	X 4	= 0.00
	UPL species	X 5	= 0.00
	Column Totals	(A) 0	(B) 0
Prevalence Index		B/A = 0.00	Is the Prevalence Index ≤ 3.0? Yes <input type="checkbox"/> No <input type="checkbox"/>
Wetland vegetation criterion met?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Definitions of Vegetation Strata

- Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height
- Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall
- Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall
- Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: 0 East of Haverhill Street (Map 35, Parcel 133) City/Town: Reading Sampling Date: 6/10/2025
 Applicant/Owner: Town of Reading Sampling Point or Zone: WF A60 Wetland
 Investigator(s): Greg J. Hochmuth, PWS, CWS Latitude / Longitude: 42.54124 / -71.08324
 Soil Map Unit Name: 653 - Udorthents NWI or DEP Classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks)
 Are Vegetation , Soil , or Hydrology significantly disturbed? (If yes, explain in Remarks)
 Are Vegetation , Soil , or Hydrology naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydic Soils criterion met?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetlands hydrology present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks, Photo Details, Flagging, etc.: None at this time.			

HYDROLOGY

Field Observations:		
Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/> Depth (inches) _____
Water Table Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/> Depth (inches) <u>10.00</u>
Saturation Present (including capillary fringe)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/> Depth (inches) <u>8.00</u>
Wetland Hydrology Indicators		
Reliable Indicators of Wetlands Hydrology <input type="checkbox"/> Water-stained leaves <input type="checkbox"/> Evidence of aquatic fauna <input type="checkbox"/> Iron deposits <input type="checkbox"/> Algal mats or crusts <input type="checkbox"/> Oxidized rhizospheres/pore linings <input type="checkbox"/> Thin muck surfaces <input type="checkbox"/> Plants with air-filled tissue (aerenchyma) <input type="checkbox"/> Plants with polymorphic leaves <input type="checkbox"/> Plants with floating leaves <input type="checkbox"/> Hydrogen sulfide odor	Indicators that can be Reliable with Proper Interpretation <input type="checkbox"/> Hydrological records <input checked="" type="checkbox"/> Free water in a soil test hole <input checked="" type="checkbox"/> Saturated soil <input type="checkbox"/> Water marks <input type="checkbox"/> Moss trim lines <input type="checkbox"/> Presence of reduced iron <input type="checkbox"/> Woody plants with adventitious roots <input checked="" type="checkbox"/> Trees with shallow root systems <input type="checkbox"/> Woody plants with enlarged lenticels	Indicators of the Influence of Water <input type="checkbox"/> Direct observation of inundation <input type="checkbox"/> Drainage patterns <input type="checkbox"/> Drift lines <input type="checkbox"/> Scoured areas <input type="checkbox"/> Sediment deposits <input type="checkbox"/> Surface soil cracks <input type="checkbox"/> Sparsely vegetated concave surface <input type="checkbox"/> Microtopographic relief <input type="checkbox"/> Geographic position (depression, toe of slope, fringing lowland)
Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available): None at this time.		

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

VEGETATION – Use both common and scientific names of plants.

<u>Tree Stratum</u>		Plot size <u>1,500 s.f.</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. White Pine	Pinus strobus	FACU	20.5	No	
2. Red Maple	Acer rubrum	FAC	63.0	Yes	Yes
3. Red Oak	Quercus rubra	FACU	38.0	Yes	No
4.					
5.					
6.					
7.					
8.					
9.					
<u>121.5</u> = Total Cover					
<u>Shrub/Sapling Stratum</u>		Plot size <u>1,500 s.f.</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. High Bush Blueberry	Vaccinium corymbosum	FACW	20.5	Yes	Yes
2. Pepperbush	Clethra alnifolia	FAC	20.5	Yes	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					
<u>41.0</u> = Total Cover					
<u>Herb Stratum</u>		Plot size <u>1,500 s.f.</u>			
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
1. Cinnamon Fern	Osmunda cinnamomea	FACW	10.5	Yes	Yes
2. Royal Fern	Osmunda regalis	OBL	10.5	Yes	
3. Star Flower	Trientalis borealis	FAC	3.0	No	
4. Canada Mayflower	Mainthemum canadensis	FACU	3.0	No	Yes
5. Goldthread	Coptis trifolia	FACW	10.5	Yes	Yes
6.					
7.					
8.					
9.					
10.					
11.					
12.					
<u>37.5</u> = Total Cover					

VEGETATION – continued.

<u>Woody Vine Stratum</u>		Plot size <u>1,500 s.f.</u>			
		Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indicator? (yes/no)
Common name	Scientific name				
1.					
2.					
3.					
4.					
<u>0.0</u> = Total Cover					

Rapid Test: Do all dominant species have an indicator status of OBL or FACW?			Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Dominance Test:	Number of dominant species <u>7</u>	Number of dominant species that are wetland indicator plants <u>6</u>	Do wetland indicator plants make up ≥ 50% of dominant plant species? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Prevalence Index:		Total % Cover (all strata)	Multiply by:
	OBL species		X 1 = 0.00
	FACW species		X 2 = 0.00
	FAC species		X 3 = 0.00
	FACU species		X 4 = 0.00
	UPL species		X 5 = 0.00
	Column Totals	(A) <u>0</u>	(B) <u>0</u>
Prevalence Index		B/A = 0.00	
			Is the Prevalence Index ≤ 3.0? Yes <input type="checkbox"/> No <input type="checkbox"/>
Wetland vegetation criterion met? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			

Definitions of Vegetation Strata

- Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height
- Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall
- Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall
- Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Attachment F

Site Photos



Photo 1: View of A-Series BVW from WF A-12 looking south.



Photo 2: View of A-Series BVW from WF A-51 looking south.

0 East of Haverhill Street, Reading, MA



Photo 3: View of Buffer Zone, facing north from WF A-58



Photo 4: View of Buffer Zone facing north from WF A-9

0 East of Haverhill Street, Reading, MA



Photo 5: Photo of upland soil plot



Photo 6: Photo of wetland soil plot

0 East of Haverhill Street, Reading, MA

Attachment G

Permit Drawings

Reading Center for Active Living (ReCAL) + Outdoor Community Pickleball Courts

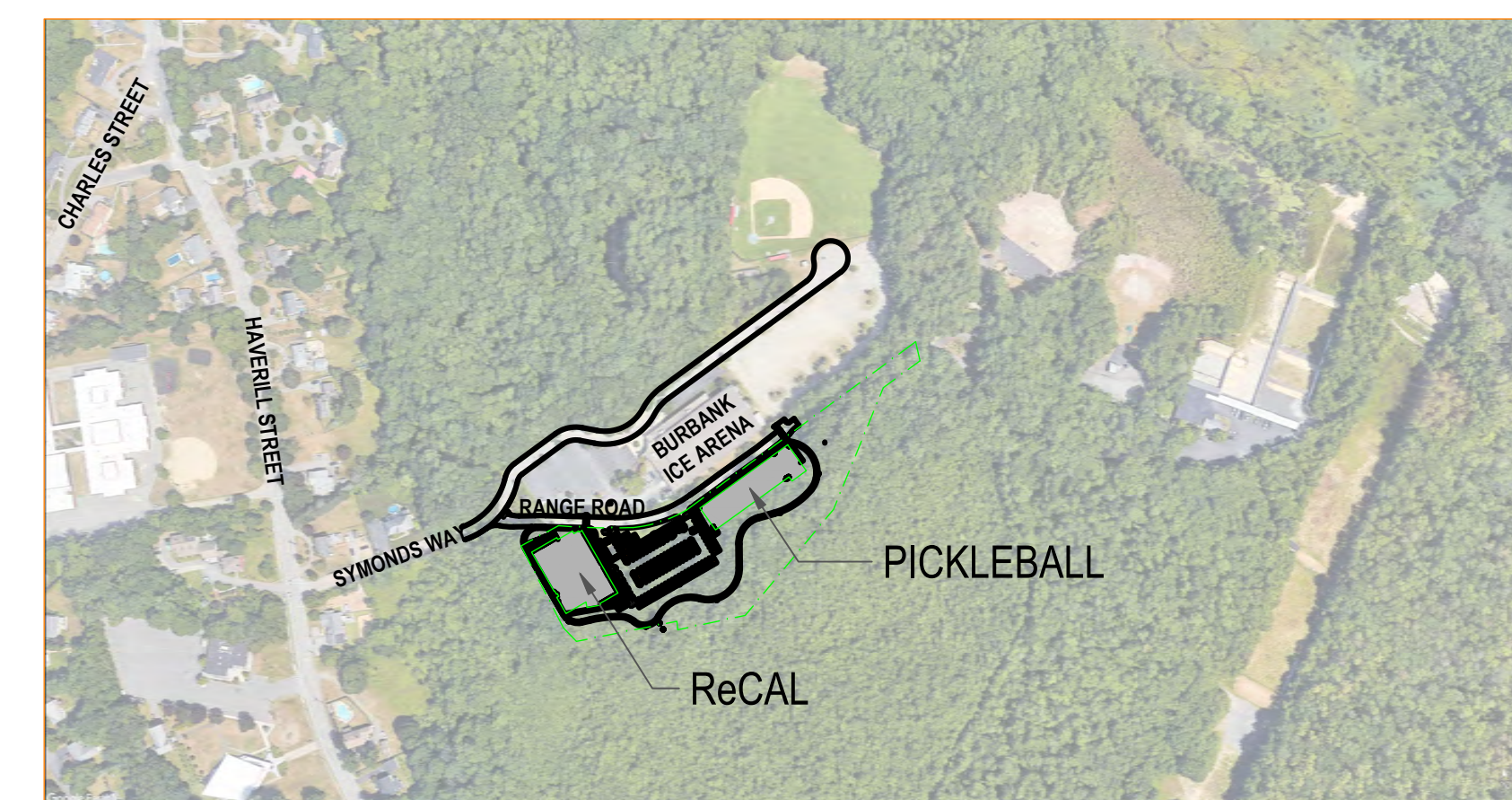
Drawing List

Cover Sheet
Master Plan

- Survey Boundary & Wetland Location Survey 1 of 1
- Survey Boundary, Partial Topographic & Utility Survey 1 of 2
- Survey Boundary, Partial Topographic & Utility Survey 2 of 2

- SP101 Site Preparation and Erosion Control Plan
- SP102 Site Preparation and Erosion Control Detail Sheet
- L101 Layout and Materials Plan
- L102 Grading and Utility Plan
- L202 Utility Detail Sheet I
- L203 Utility Detail Sheet II
- L301 Planting Plan
- L302 Planting Detail Sheet and Planting Schedule
- L401 Snow Storage Plan
- L501 Detail Sheet I
- L502 Detail Sheet II
- L503 Detail Sheet III
- L504 Detail Sheet IV

- E001 Electrical Site Plan
- E002 Electrical Site Plan
- E003 Electrical Site Plan



Locus Plan
1" = 400'-0"

Notice Of Intent Review Submission

NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION

ARCHITECT

bh+a

Bargmann Hendrie + Archetype, Inc.
9 Channel Center Street, Suite 300
Boston, MA 02210
617 350 0450

PROJECT NAME

Reading Center for Active Living (ReCAL) +

Outdoor Community Pickleball Courts

Symonds Way
Reading, MA 01867

CLIENT

Town of Reading

16 Lowell Street
Reading, MA 01867

PROJECT TEAM

Civil and Landscape Engineer

Activitas
70 Milton Street
Dedham, MA 02026
(781) 326-2600

Structural Engineer

Foley Buhl Roberts & Associates, Inc.
2227 Washington Street
Newton, MA 02462
(617) 527-9600

MEFP Engineer

Allied Consulting Engineering
270 Littleton Road, Suite 11
Westford, MA 01886
(978) 443-7888

AV / IT / Security

Building Technology Consulting
982 Bedford St.
Bridgewater, MA 02324
(617) 799-4309

Food Service

Colburn Guyette
100 Ledgewood Pl #104
Rockland, MA 02370
(781) 826-5522

Wetland Scientist

Epsilon Associates, Inc.
3 Mill and Main Place, Suite 250
Maynard, MA 01754
(978) 897-7100

REVISIONS

NO.	DATE	DESCRIPTION

DRAWING TITLE

Cover Sheet

DRAWING INFORMATION

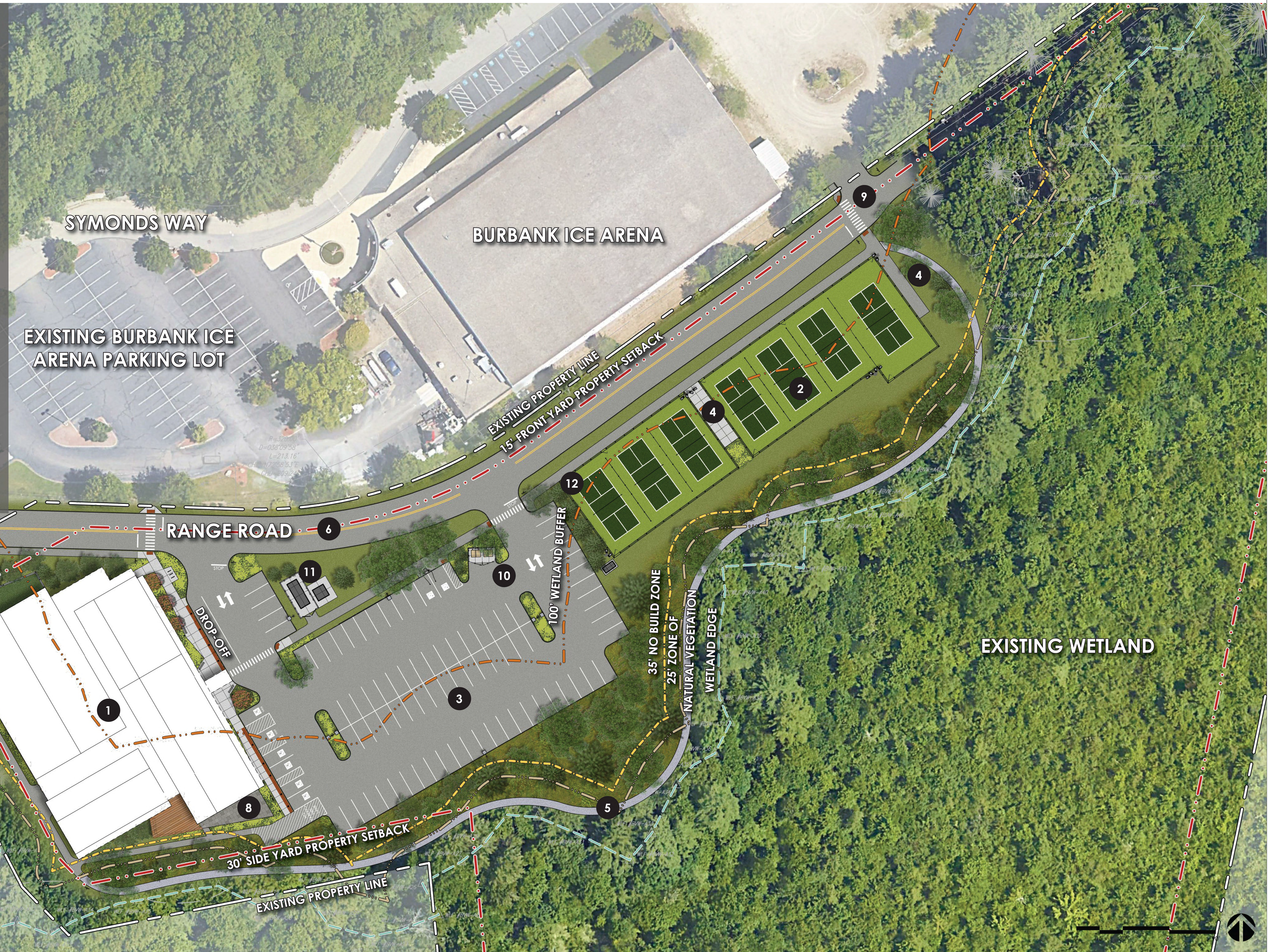
07/09/2025	DATE OF ISSUE
	NOTICE OF INTENT DESCRIPTION
1"=30'-0"	AJA SCALE
3513	PROJECT #
	FILE NAME

DRAWING NUMBER

Cover

MASTER PLAN LEGEND

- 1 CENTER FOR ACTIVE LIVING | ± 27,600 SF
- 2 PICKLEBALL COURTS | 7 TOTAL COURTS
6 RECREATION SIZED COURTS
1 ACCESSIBLE SIZED COURT
- 3 RECAL PARKING LOT
89 TOTAL PROPOSED SPACES
- 4 PICKLEBALL WAITING/VIEWING AREA
- 5 STONE DUST TRAIL
- 6 RANGE ROAD EXPANSION | 24' WIDE
PROPOSED 40' WIDE RIGHT OF WAY
- 7 NON-INFILLED SYNTHETIC TURF MULTI-USE SPACE
- 8 OUTDOOR PATIO
- 9 ACCESSIBLE CONNECTION TO BURBANK ICE ARENA
REAR PARKING LOT FOR PICKLEBALL PARKING
- 10 DUMPSTER ENCLOSURE WITH SOLID WOOD FENCING
- 11 GENERATOR ENCLOSURE WITH SOLID WOOD FENCING AND PAD MOUNTED TRANSFORMER
- 12 EVERGREEN SCREENING AND ACOUSTI-BLOK SOUNDPROOF PANELING AT END OF PICKLEBALL COURT FENCING



NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION

ARCHITECT

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Bargmann Hendrie + Archetype, Inc.
9 Channel Center Street, Suite 300
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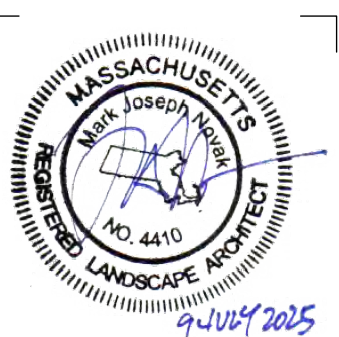
REVISIONS

NO.	DESCRIPTION	DATE

DRAWING TITLE

Master Plan

DRAWING INFORMATION



07/09/2025

DATE OF ISSUE

NOTICE OF INTENT

DESCRIPTION

MTS/0'-0"

SCALE

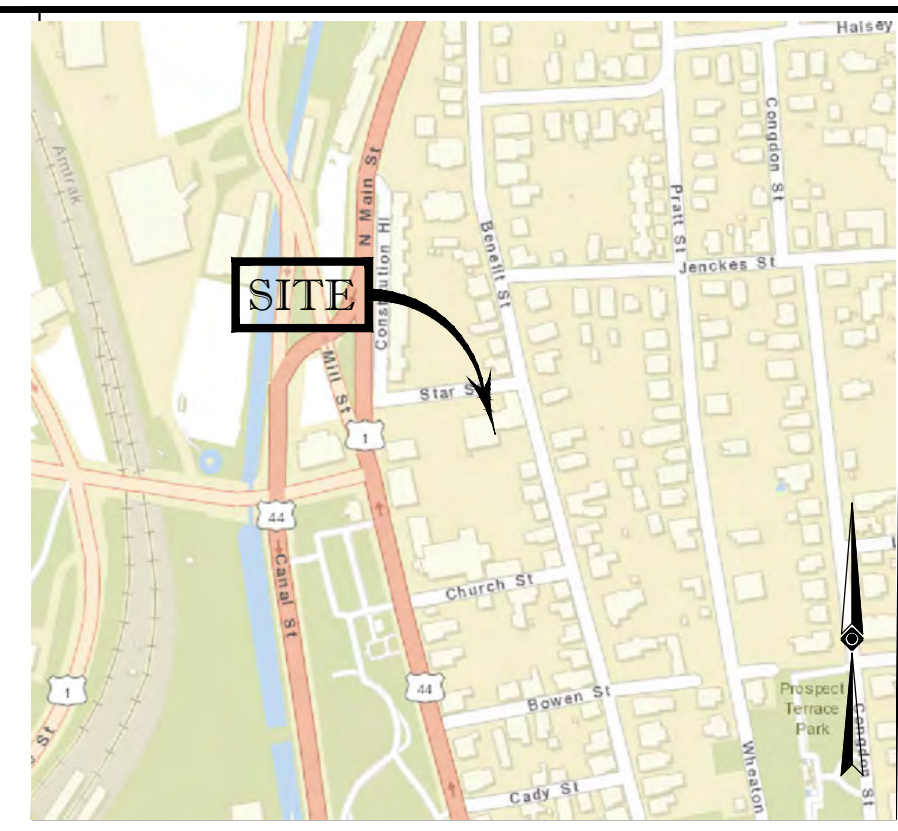
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PROJECT #

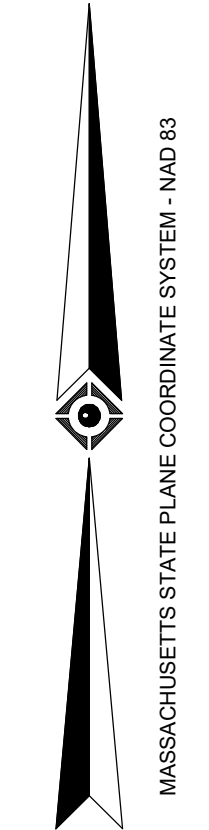
DRAWING NUMBER

Master Plan

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LOCUS MAP
©2013 ESRI WORLD STREET MAPS
NOT TO SCALE



Haverhill Street
Public-50' Wide

Symonds Way
30' Wide (Per Ref #4)

Symonds Way
30' Wide (Per Ref #4)

Access & Utility Easement
(A.K.A. Range Road Per Ref #3)

Approximate Location of Existing Flood Zone Line (See Note #2)

LEGEND
 ▲ DELINEATION FLAG
 POB POINT OF BEGINNING

NOTES:

- PROPERTY KNOWN AS LOT 133 AS SHOWN ON THE TOWN OF READING, MIDDLESEX COUNTY, COMMONWEALTH OF MASSACHUSETTS, MAP NO. 35.
- AREA = 646,026 SQUARE FEET OR 14,831 ACRES.
- UNDERGROUND UTILITIES HAVE NOT BEEN SHOWN BEFORE ANY SITE EVALUATION, PREPARATION OF DESIGN DOCUMENTS OR EXCAVATION IS TO BEGIN, THE LOCATION OF UNDERGROUND UTILITIES SHOULD BE VERIFIED BY THE PROPER UTILITY COMPANIES.
- THIS PLAN IS BASED ON INFORMATION PROVIDED BY CLIENT, A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC., AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
- THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN. IT IS STRONGLY RECOMMENDED THAT A COMPLETE TITLE SEARCH BE PROVIDED TO THE SURVEYOR FOR REVIEW PRIOR TO THE PLACEMENT OF OR ALTERATION TO IMPROVEMENTS ON THE PROPERTY.
- EXISTING FIRM: BY GRAPHIC PLOTTING ONLY PROPERTY IS LOCATED IN FLOOD HAZARD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN), ZONE X SHADED (AREAS OF 0.2% ANNUAL CHANCE FLOOD), AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE, AND AREAS PROTECTED BY LEVES FROM 1% ANNUAL CHANCE FLOOD, PER REF. #2.
- THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
- THE DELINEATION LINE WAS PLACED IN THE FIELD BY WESTON & SAMPSON ON 03/23/2022, AND FIELD LOCATED BY CONTROL POINT ASSOCIATES, INC. ON 03/31/2022.

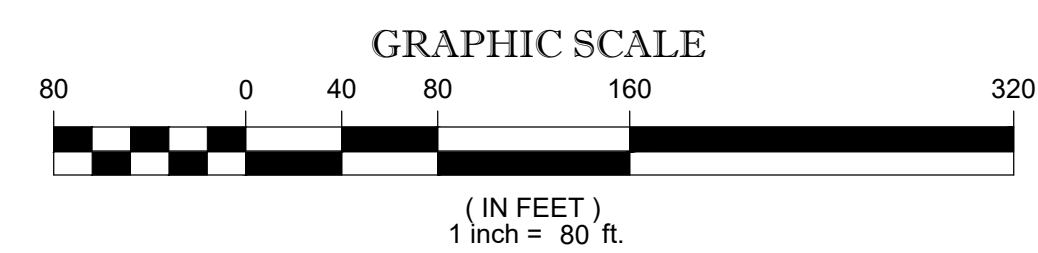
REFERENCES:

- THE TAX ASSESSOR'S MAP OF READING, MIDDLESEX COUNTY, MAP 35, LOT 133.
- MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, TOWN OF NORTH READING, TOWN OF READING, MIDDLESEX COUNTY, PANEL 312 OF 656," MAP NUMBER 25017C03I2E, EFFECTIVE JUNE 4, 2010.
- MAP ENTITLED "PLAN OF LAND IN READING, MASS. OWNED BY: READING RIFLE & REVOLVER CLUB, INC. P.O. BOX 212 READING, MA. 01867 PREPARED BY GARRIT CONSULTING LAND SURVEYOR - SITE PLANNING, DATED OCT. 9, 1991 AND FILED IN MIDDLESEX REGISTRY OF DEEDS SOUTHERN DISTRICT, PLAN NO. 49-(1-3) OF 1996 REC'D BOOK 25987 PAGE 226.
- MAP ENTITLED "TOWN OF READING MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS STREET ACCEPTABLE PLAN SYMONDS WAY," PREPARED BY ENGINEERING DIVISION, DATED MARCH 1995, RECORDED IN THE MIDDLESEX REGISTRY OF DEEDS SOUTHERN DISTRICT AS PLAN NO.922 OF 2003.

CONTROL POINT ASSOCIATES, INC. ALL RIGHTS RESERVED. ORIGINAL PROJECT OR COPY OF THIS PLAN IS THE PROPERTY OF CONTROL POINT ASSOCIATES, INC. AND IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREON. ANY REPRODUCTION OR TRANSMISSION OF THIS PLAN WITHOUT THE WRITTEN PERMISSION OF CONTROL POINT ASSOCIATES, INC. IS PROHIBITED.



THE COMMONWEALTH OF MASSACHUSETTS REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.



THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, BELIEF, AND INFORMATION, THIS SURVEY HAS BEEN PERFORMED IN ACCORDANCE WITH CURRENTLY ACCEPTED ACCURACY STANDARDS.
 NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL



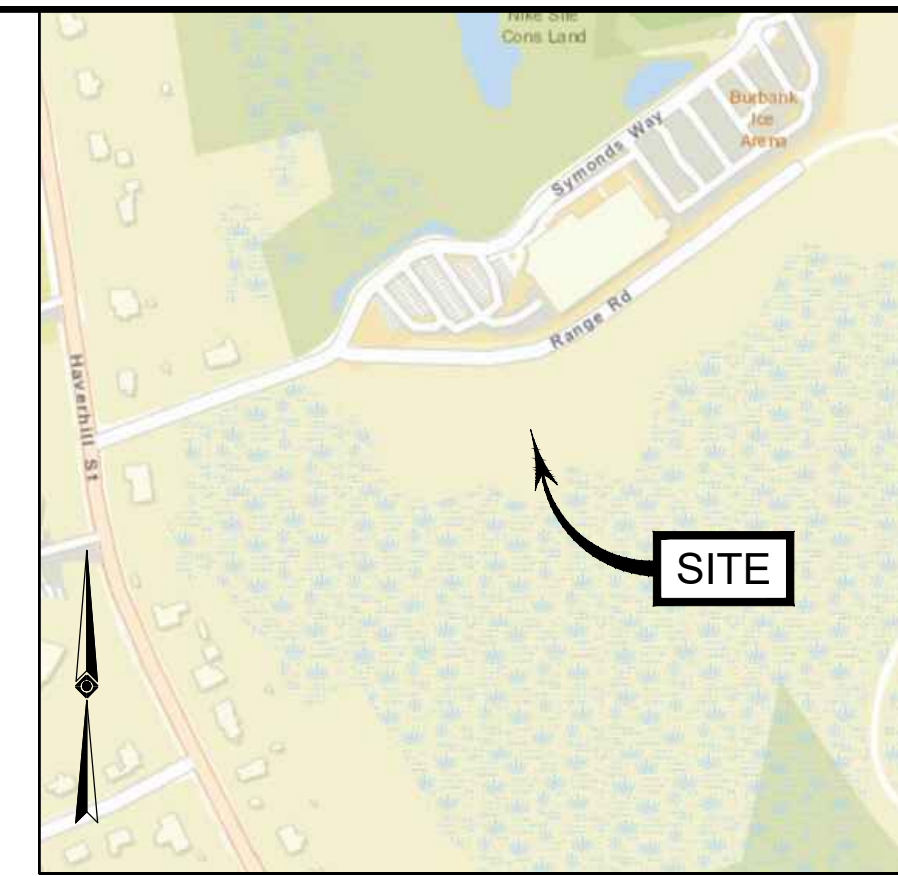
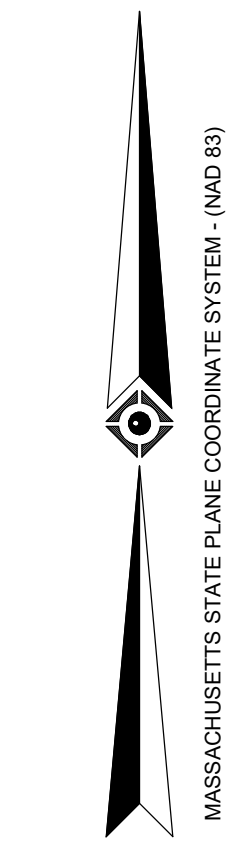
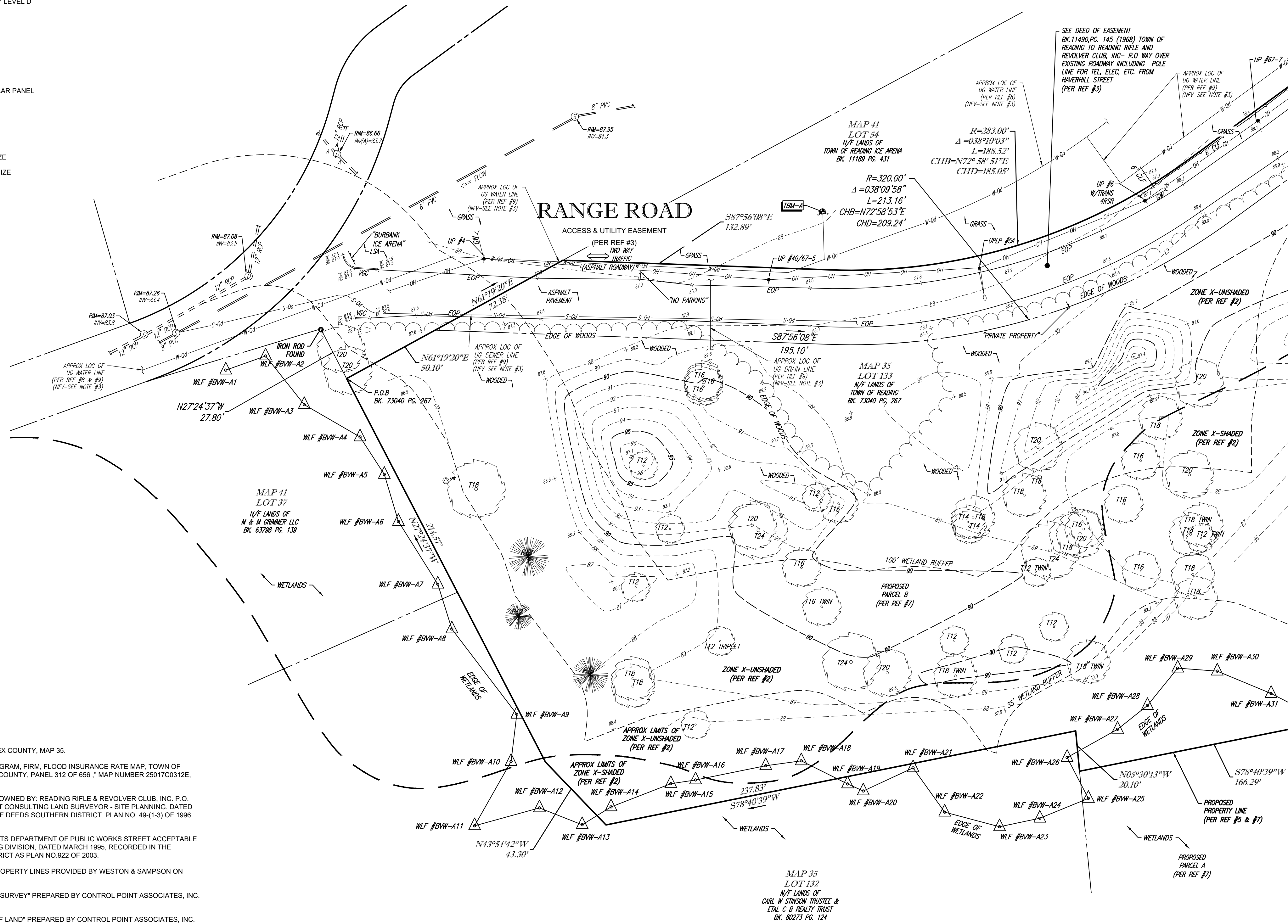
GERRY L. HOLDRIGHT, PLS
 MASSACHUSETTS PROFESSIONAL LAND SURVEYOR #49211

5-06-2022
 DATE

FIELD DATE	03/03/2022	BOUNDARY & WETLAND LOCATION SURVEY			
FIELD BOOK NO.	22	WESTON & SAMPSON			
FIELD BOOK PG.	22MA	HAVERHILL STREET LOT 133, MAP 35 TOWN OF READING, MIDDLESEX COUNTY COMMONWEALTH OF MASSACHUSETTS			
FIELD CREW	CWZC	CONTROL POINT ASSOCIATES, INC.			
DRAWN:	DLR	ALBANY, NY 518-217-5010 CHALFONT, PA 215-712-8800 HAUPPAUGE, NY 631-880-2845 MANHATTAN, NY 646-780-0411 MT LAUREL, NJ 609-657-3999 WARREN, NJ 908-668-0999			
REVIEWED:	BAV/ELOC	APPROVED:	GLH	DATE:	5-06-2022
SCALE:	1"=80'	FILE NO.:	03-220120-00	DWG. NO.:	1 OF 1

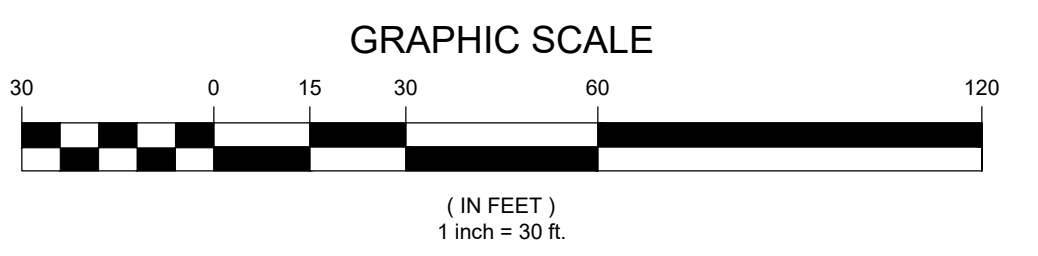
LEGEND

- 124 EXISTING CONTOUR
125 EXISTING SPOT ELEVATION
123.45 EXIST. TOP OF CURB ELEVATION
122.85 EXIST. BOTTOM OF CURB ELEVATION
OH OVERHEAD WIRES
APPROX. LOC. UNDERGROUND WATER LINE
S APPROX. LOC. UNDERGROUND SANITARY LINE
-0.4 SUBSURFACE UTILITY QUALITY LEVEL D
HYDRANT
SANITARY/SEWER MANHOLE
DRAINAGE/STORM MANHOLE
MONITORING WELL
UTILITY POLE
UTILITY POLE/LIGHT POLE/SOLAR PANEL
GUY WIRE
INVERT ELEVATION
SIGN
GATE POST
DECIDUOUS TREE & TRUNK SIZE
CONIFEROUS TREE & TRUNK SIZE
CHAIN LINK FENCE
EDGE OF PAVEMENT
UNKNOWN TERMINUS
DELINEATION FLAG
VERTICAL GRANITE CURB



- NOTES:
1. PROPERTY KNOWN AS LOT 133 AS SHOWN ON THE TOWN OF READING, MIDDLESEX COUNTY, COMMONWEALTH OF MASSACHUSETTS, MAP NO. 35.
2. AREA = EXISTING LOT 133 AREA = 646,023 SQUARE FEET OR 14.831 ACRES.
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD...

- REFERENCES:
1. THE TAX ASSESSOR'S MAP OF READING, MIDDLESEX COUNTY, MAP 35.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, TOWN OF NORTH READING, TOWN OF READING, MIDDLESEX COUNTY, PANEL 312 OF 656..."



THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, BELIEF, AND INFORMATION, THIS SURVEY HAS BEEN PERFORMED IN ACCORDANCE WITH CURRENTLY ACCEPTED ACCURACY STANDARDS.



GERRY L. HOLDRIGHT
MASSACHUSETTS PROFESSIONAL LAND SURVEYOR 49211

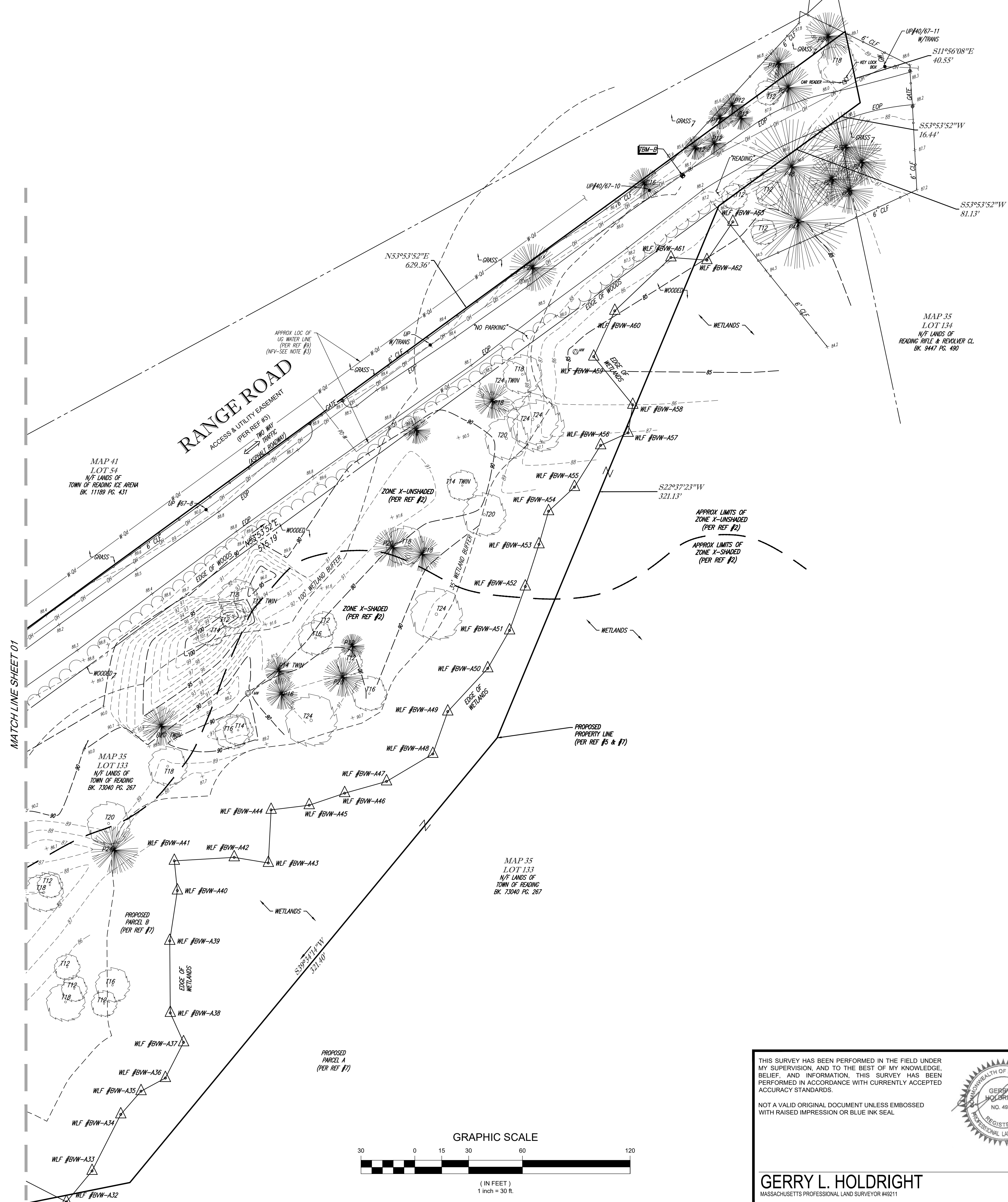
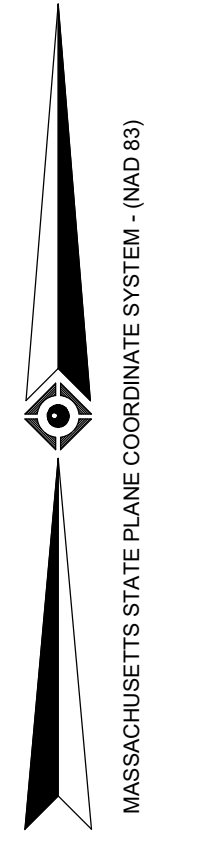
Table with project details: FIELD DATE (01-21-2025), FIELD BOOK NO (24-12 MA), FIELD BOOK PG (46), FIELD CREW (J.S.A./B.S.B.), DRAWN (L.M.M.), APPROVED (G.L.H.), DATE (02-18-2025), SCALE (1" = 30'), FILE NO (03-220120-01), SHEET (1 OF 2).

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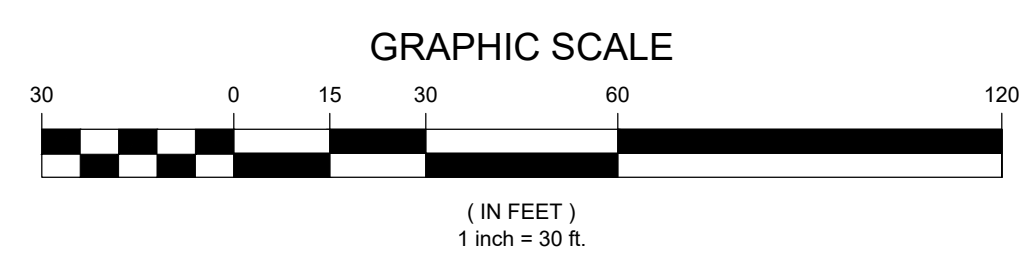
- LEGEND**
- 124 --- EXISTING CONTOUR
 - 125 EXISTING SPOT ELEVATION
 - + 123.45 EXIST. TOP OF CURB ELEVATION
 - + BC 122.95 EXIST. BOTTOM OF CURB ELEVATION
 - OH OVERHEAD WIRES
 - APPROX. LOC. UNDERGROUND WATER LINE
 - APPROX. LOC. UNDERGROUND SANITARY LINE
 - 0.0' SUBSURFACE UTILITY QUALITY LEVEL D
 - HYDRANT
 - SANITARY/SEWER MANHOLE
 - DRAINAGE/STORM MANHOLE
 - MONITORING WELL
 - UTILITY POLE
 - UTILITY POLE/LIGHT POLE/SOLAR PANEL
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 - INV INVERT ELEVATION
 - SIGN
 - GATE POST
 - DECIDUOUS TREE & TRUNK SIZE
 - CONIFEROUS TREE & TRUNK SIZE
 - CHAIN LINK FENCE
 - EDGE OF PAVEMENT
 - UNKNOWN TERMINUS
 - △ DELINEATION FLAG
 - VC VERTICAL GRANITE CURB



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NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR BLUE INK SEAL.



GERRY L. HOLDRIGHT
 MASSACHUSETTS PROFESSIONAL LAND SURVEYOR #49211

02-18-2025
 DATE

FIELD DATE	01-21-2025	BOUNDARY, PARTIAL TOPOGRAPHIC & UTILITY SURVEY			
FIELD BOOK NO.	24-12 MA	BARGMANN HENDRIE & ARCHETYPE, INC			
FIELD BOOK PG.	46	51 SYMONDS WAY			
FIELD CREW	J.S.A./B.S.B.	MAP 35, LOT 133			
DRAWN	L.M.M.	TOWN OF READING, MIDDLESEX COUNTY			
REVIEWED	R.J.K.	COMMONWEALTH OF MASSACHUSETTS			
APPROVED	G.L.H.	DATE	02-18-2025	SCALE	1" = 30'
FILE NO.	03-220120-01	SHEET	2 OF 2		

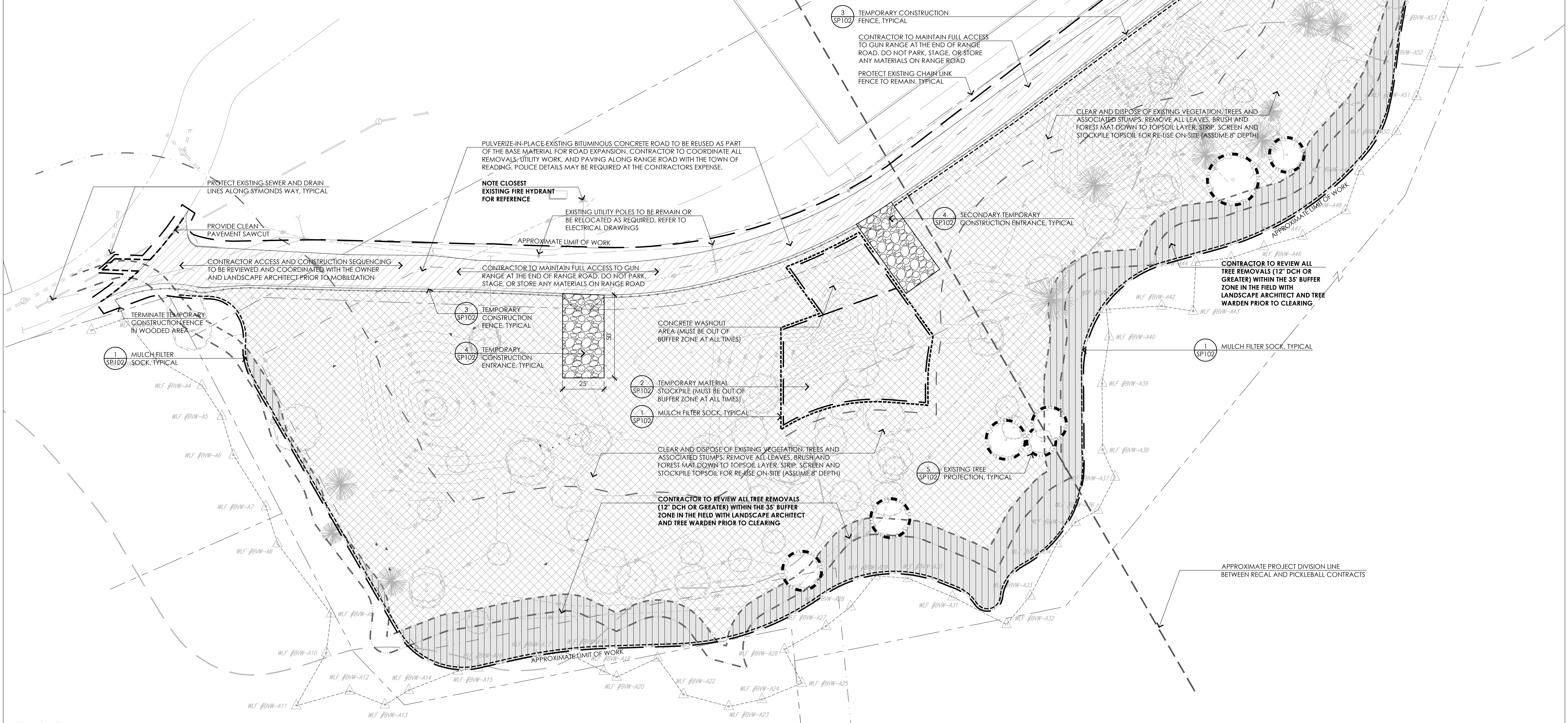
CONTROL POINT ASSOCIATES, INC.
 55 TURNPIKE ROAD
 SOUTHBOROUGH, MA 01772
 508.945.3000
 WWW.CPASURVEY.COM

SITE PREPARATION AND EROSION CONTROL LEGEND

- APPROXIMATE LIMIT OF WORK
- PROPERTY LINE
- PROPERTY SETBACK
- WETLAND EDGE
- 25' ZONE OF NATURAL VEGETATION
- 35' NO BUILD ZONE
- 100' WETLAND BUFFER
- EXISTING FIRE HYDRANT
- TEMPORARY CONSTRUCTION FENCE
- REMOVE AND DISPOSE OF EXISTING FENCE/CURB
- MULCH FILTER SOCK
- PAVEMENT SAWCUT
- PULVERIZE-IN-PLACE EXISTING PAVEMENT
- CLEAR AND DISPOSE OF EXISTING VEGETATION, TREES AND ASSOCIATED STUMPS
- SELECTIVE TREE REMOVALS WITHIN 35' BUFFER ZONE
- PROTECT EXISTING TREE TO REMAIN

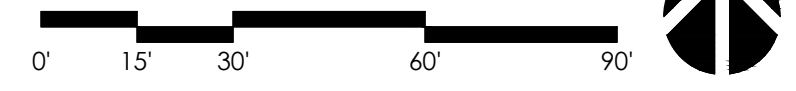
SITE PREPARATION AND EROSION CONTROL NOTES

1. EXISTING CONDITIONS INFORMATION IS REPRODUCED FROM THE BOUNDARY AND WETLAND LOCATION SURVEY PREPARED BY CONTROL POINT ASSOCIATES, INC., LOCATED AT 352 TURNPIKE ROAD, SOUTHBOROUGH, MA, AND DATED JUNE 4TH, 2025.
2. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES BETWEEN PLANS, SPECIFICATIONS, AND ACTUAL CONDITIONS TO THE LANDSCAPE ARCHITECT/CIVIL ENGINEER FOR CLARIFICATION AND RESOLUTION PRIOR TO STARTING WORK.
3. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING CONDITIONS TO REMAIN THAT ARE DUE TO CONTRACTOR OPERATIONS.
4. ALL ITEMS TO BE REMOVED THAT ARE NOT STOCKPILED FOR LATER REUSE ON THE PROJECT OR FOR DELIVERY TO THE OWNER SHALL BE LEGALLY DISPOSED OF OFF SITE BY THE CONTRACTOR.
5. THE LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON THE SURVEY REFERENCED. THE CONTRACTOR SHALL CONTACT DIGSAFE AND THE PROPER LOCAL AUTHORITIES OR RESPECTIVE UTILITY COMPANIES TO CONFIRM THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. ANY DAMAGE DUE TO FAILURE OF THE CONTRACTOR TO CONTACT THE PROPER AUTHORITIES SHALL BE BORNE BY THE CONTRACTOR.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS EFFORTS OF THE DEMOLITION WITH ALL TRADES.
7. THE CONTRACTOR SHALL COORDINATE ALL ADJUSTMENTS OR ABANDONMENT OF UTILITIES WITH THE RESPECTIVE UTILITY COMPANY.
8. THE CONTRACTOR SHALL MAINTAIN OR ADJUST TO NEW FINISH GRADE (AS NECESSARY) ALL UTILITY AND SITE STRUCTURES SUCH AS MANHOLES, CATCH BASINS, ETC. FROM MAINTAINED UTILITY AND SITE SYSTEMS UNLESS OTHERWISE NOTED OR DIRECTED BY THE LANDSCAPE ARCHITECT.
9. THE CONTRACTOR SHALL INSTALL CONSTRUCTION FENCING PER THE PLANS AND SPECIFICATIONS. CONTRACTOR MUST TAKE APPROPRIATE MEASURES TO MAINTAIN A SECURE SITE THROUGHOUT THE PROJECT.
10. CONTRACTOR SHALL REVIEW EROSION CONTROL INSTALLATION METHOD AND SEQUENCING FOR ALL AREAS WITHIN WETLAND BUFFER ZONE PRIOR TO MOBILIZATION. REPRESENTATIVES FROM THE TOWN OF READING CONSERVATION COMMISSION SHALL BE INCLUDED IN PRE-CONSTRUCTION MEETING AND MAY BE ON-SITE WITH LANDSCAPE ARCHITECT DURING THE INSTALLATION OF EROSION CONTROL AND SITE PREPARATION. REFER TO PROJECT SPECIFICATIONS APPENDIX FOR TOWN OF READING CONSERVATION COMMISSION'S ORDER OF CONDITIONS DATED X/1X/2025.
11. EXISTING DRAINAGE SYSTEM BASINS SHALL REMAIN OPERATIONAL AS LONG AS POSSIBLE. UPON REMOVAL OF EXISTING BASINS, CONTRACTOR SHALL PROVIDE TEMPORARY INFILTRATION AREAS TO INFILTRATE CONSTRUCTION RUNOFF. CONTRACTOR SHALL FOCUS ON GETTING PROPOSED DRAINAGE SYSTEMS OPERATIONAL AS SOON AS POSSIBLE. CONTRACTOR SHALL ENSURE ALL STORMWATER FLOWING TO NEW BASINS IS TREATED STORMWATER THAT WILL NOT NEGATIVELY AFFECT THE FINAL SYSTEMS.
12. ALL TREE REMOVALS AND TREE PROTECTION WITHIN THE 35' BUFFER ZONE TO BE REVIEWED IN THE FIELD WITH TOWN TREE WARDEN AND LANDSCAPE ARCHITECT PRIOR TO MOBILIZATION.
13. TRUCKS LEAVING THE SITE SHALL HAVE THEIR WHEELS WASHED PRIOR TO LEAVING THE CONSTRUCTION AREA. ANY TRACKING OUTSIDE THE PROJECT LIMIT OF WORK SHALL BE STREET SWEEP AS NECESSARY (MINIMUM SWEEP PARKING LOT DAILY).
14. ATTENTION IS CALLED TO RECORD DRAWINGS AND AS-BUILT DRAWING REQUIREMENTS IN THE SPECIFICATIONS. CONTRACTOR SHALL DOCUMENT ALL UTILITY STUBS AND ABANDONED UNDERGROUND UTILITIES FOUND IN THE FIELD IN THE AS-BUILT AND RECORD DRAWINGS.
15. DUE TO PROJECT PROXIMITY TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL MITIGATE AND CONTROL DUST DURING EARTHWORK OPERATIONS AND THROUGHOUT THE PROJECT AS DEEMED NECESSARY BY THE TOWN AND LANDSCAPE ARCHITECT.
16. EXCESS MATERIAL FROM EXISTING BITUMINOUS CONCRETE PAVEMENT PULVERIZATION SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.
17. REFER TO L101 FOR NOTES FROM TOWN COUNSEL REGARDING RANGE ROAD.



CONTACT DIGSAFE: UNDERGROUND UTILITIES SHOWN ON THE PLAN ARE COMPILED FROM PLANS AND FIELD SURVEY. UTILITY LOCATIONS SHOULD BE CONSIDERED APPROXIMATE ONLY. DIGSAFE AND/OR THE OTHER RESPECTIVE UTILITY COMPANIES SHALL BE CONTACTED 72 BUSINESS HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS. PHONE DIGSAFE 1-888-344-7233.

NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION



ARCHITECT
bh+a
 Bargmann Hendrie + Archetype, Inc.
 9 Channel Center Street, Suite 300
 Boston, MA 02210
 617 350 0450

PROJECT NAME
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Town of Reading
 16 Lowell Street
 Reading, MA 01867

PROJECT TEAM

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Wetland Scientist
 Epsilon Associates, Inc.
 3 Mill and Main Place, Suite 250
 Maynard, MA 01754
 (978) 897-7100

REVISIONS

NO.	DATE	DESCRIPTION

DRAWING TITLE

Site Preparation and Erosion Control Plan

DRAWING INFORMATION

07/09/2025
 DATE OF ISSUE

NOTICE OF INTENT
 DESCRIPTION

1"=30'-0"
 SCALE
 AJA
 DRAWN BY

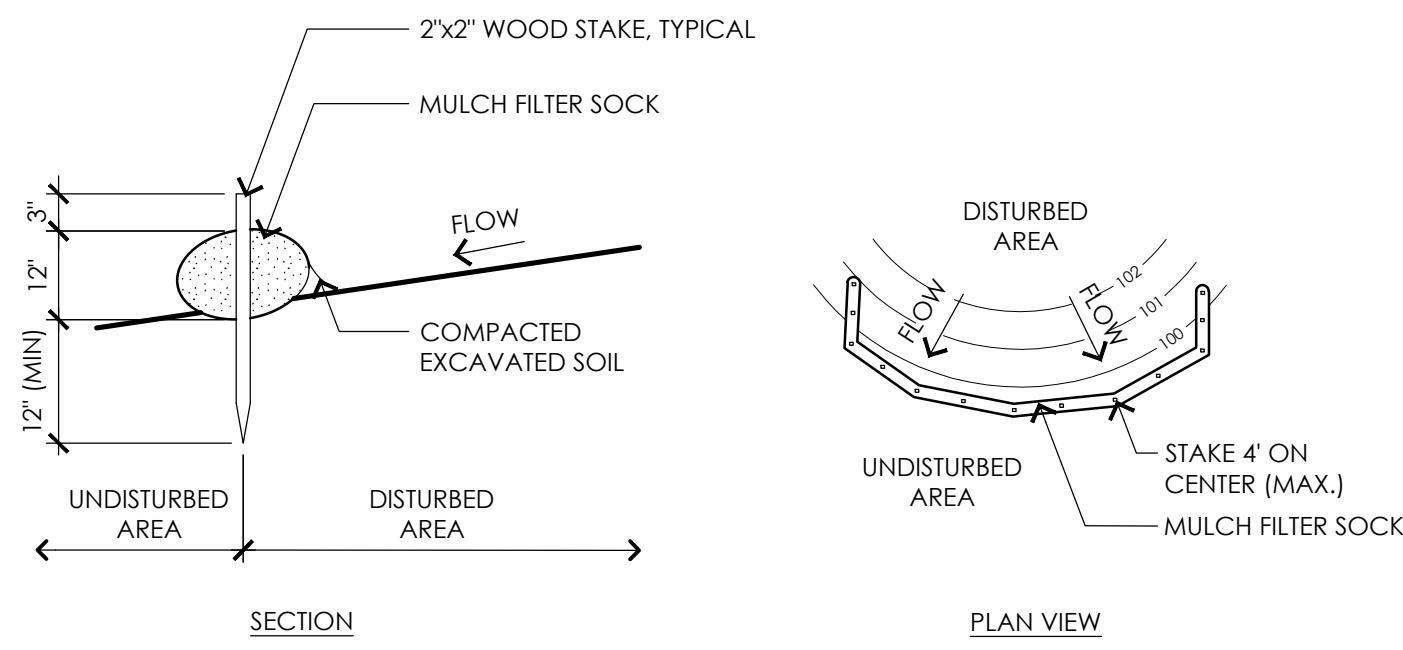
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 FILE NAME

DRAWING NUMBER

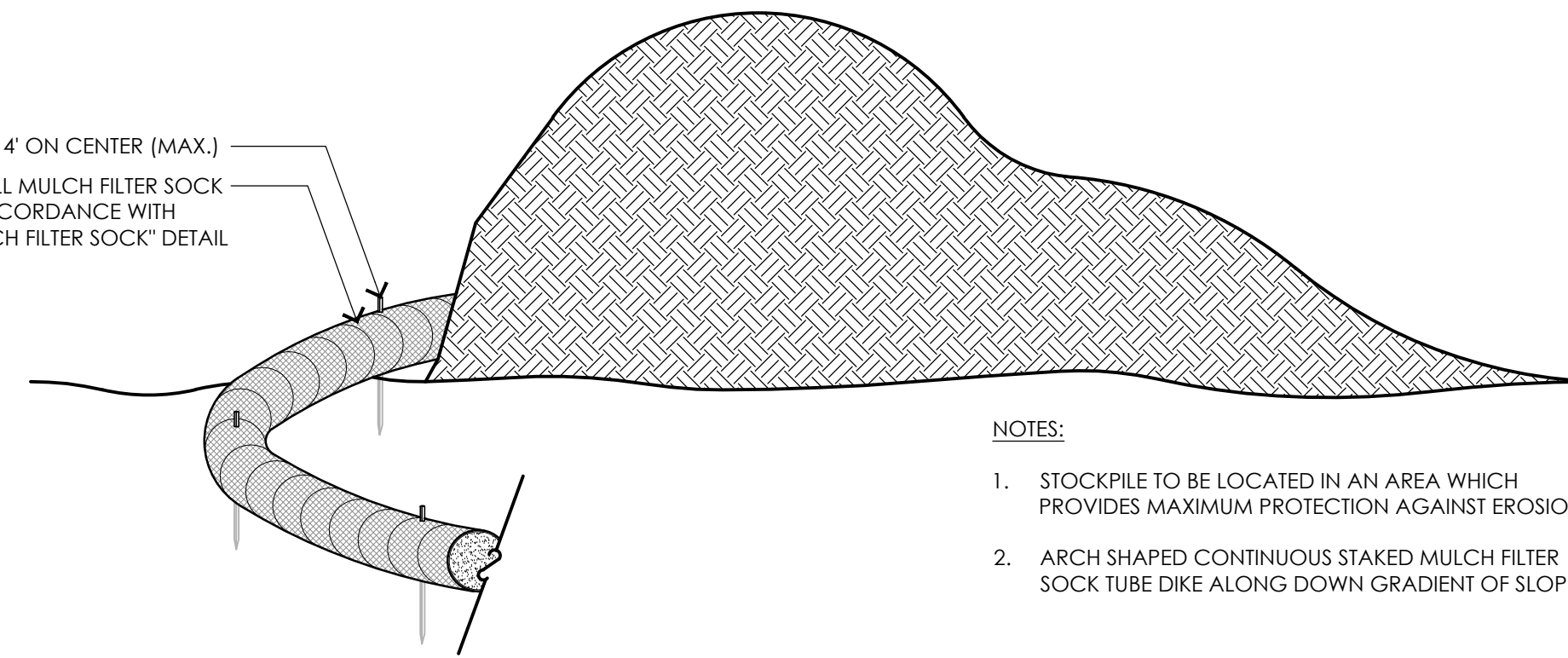
MEGAN E. BUCZYNSKI
 CIVIL
 No. 47392
 REGISTERED PROFESSIONAL ENGINEER

Mj 7/9/2025 *Symachi*

SP101



- NOTES:
1. PLACE MULCH FILTER SOCK ON LEVEL GRADE. EXTEND BOTH ENDS OF THE TUBE AT LEAST 8'-0" UPSLOPE AT 45 DEGREES TO THE MAIN ALIGNMENT.
 2. REMOVE DEPOSITS WHEN SEDIMENT ACCUMULATION IS ONE THIRD THE HEIGHT OF THE EXPOSED MULCH FILTER SOCK OR ONE HALF OF THE EXPOSED FILTER SOCK.
 3. MULCH FILTER SOCK SHALL REMAIN IN WORKING ORDER UNTIL THE SITE IS STABILIZED. ADDITIONAL EROSION CONTROLS SHALL BE INSTALLED AS NEEDED TO PREVENT SILT FROM LEAVING THE SITE AT NO ADDITIONAL COST TO THE OWNER.
 4. ALL CONTROLS SHALL BE SET 5' FROM BOTTOM TOE OF SLOPE



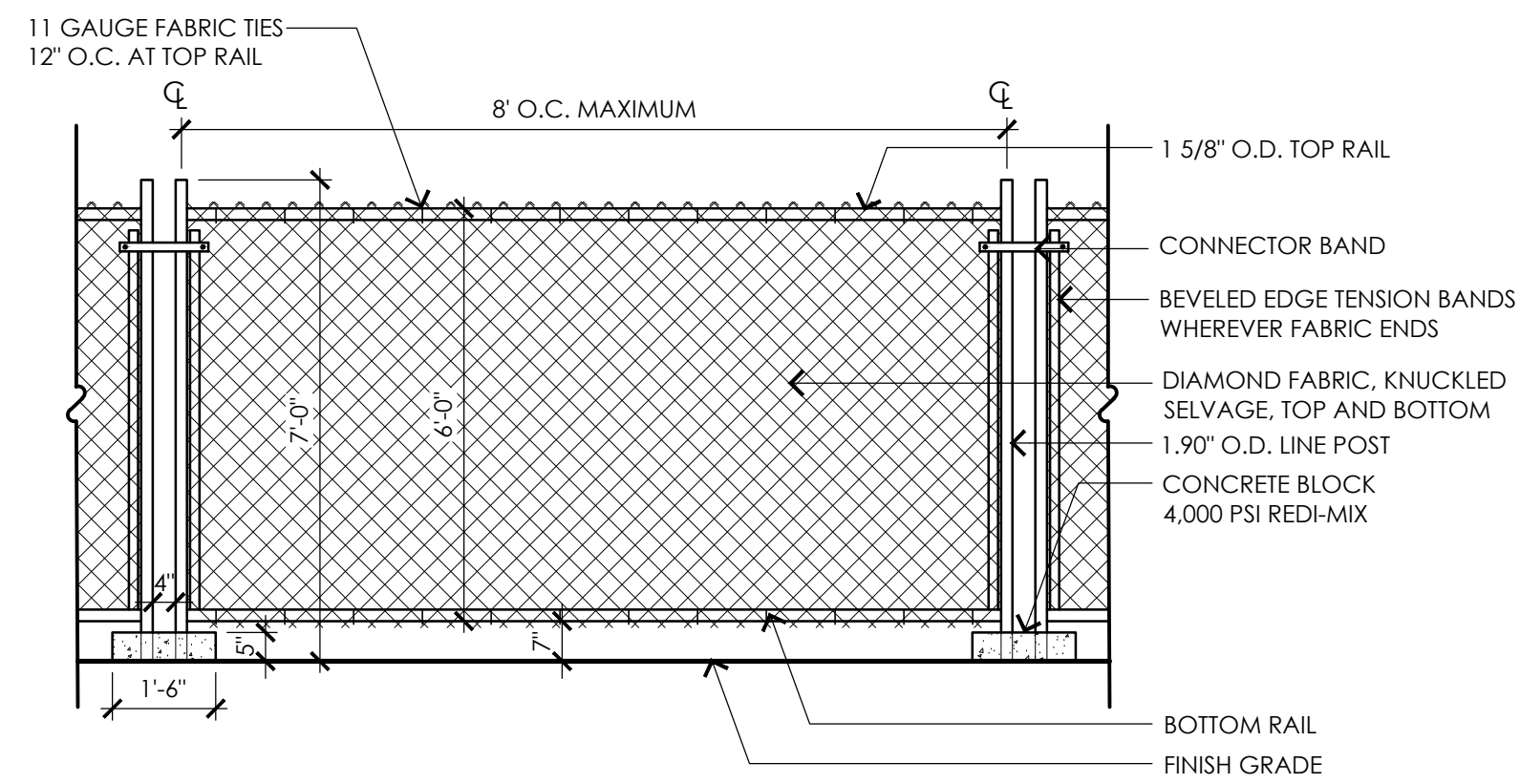
- NOTES:
1. STOCKPILE TO BE LOCATED IN AN AREA WHICH PROVIDES MAXIMUM PROTECTION AGAINST EROSION.
 2. ARCH SHAPED CONTINUOUS STAKED MULCH FILTER SOCK TUBE DIKE ALONG DOWN GRADIENT OF SLOPE.

1 MULCH FILTER SOCK

NOT TO SCALE

NOTES:

1. TEMPORARY CONSTRUCTION FENCE SHALL BE PROVIDED AT PROJECT LIMITS AS SHOWN ON THE SITE PREPARATION PLAN AND AS SPECIFIED. CONTRACTOR PROPOSED MODIFICATIONS TO TEMPORARY CONSTRUCTION FENCE, SUCH AS BUT NOT LIMITED TO THE USE OF SNOW FENCE (OR SIMILAR) WILL NOT BE CONSIDERED, UNLESS OTHERWISE NOTED.
2. POST SPACING SHALL BE EQUIDISTANT.
3. CONTRACTOR SHALL MAINTAIN A SECURE SITE AT ALL TIMES. CONTRACTOR SHALL PROVIDE ADDITIONAL TEMPORARY CONSTRUCTION FENCE AT NO ADDITIONAL COST TO THE OWNER IF NECESSARY TO PROPERLY SECURE THE SITE.

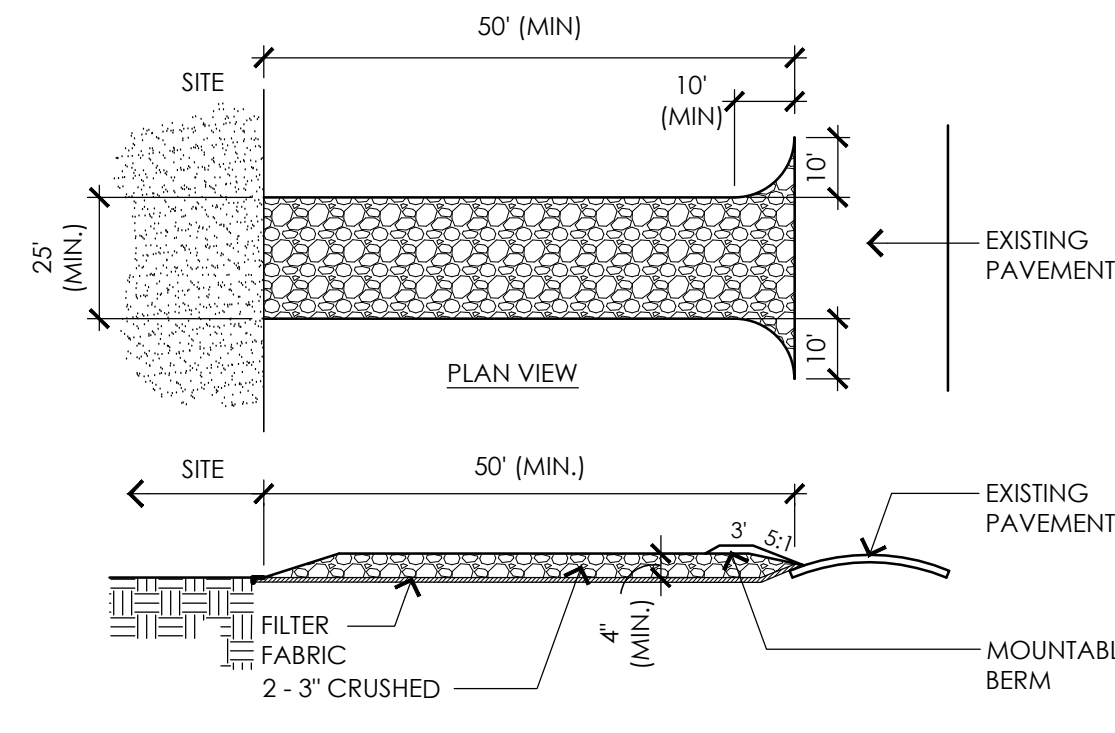


3 TEMPORARY CONSTRUCTION FENCE

NOT TO SCALE

NOTES:

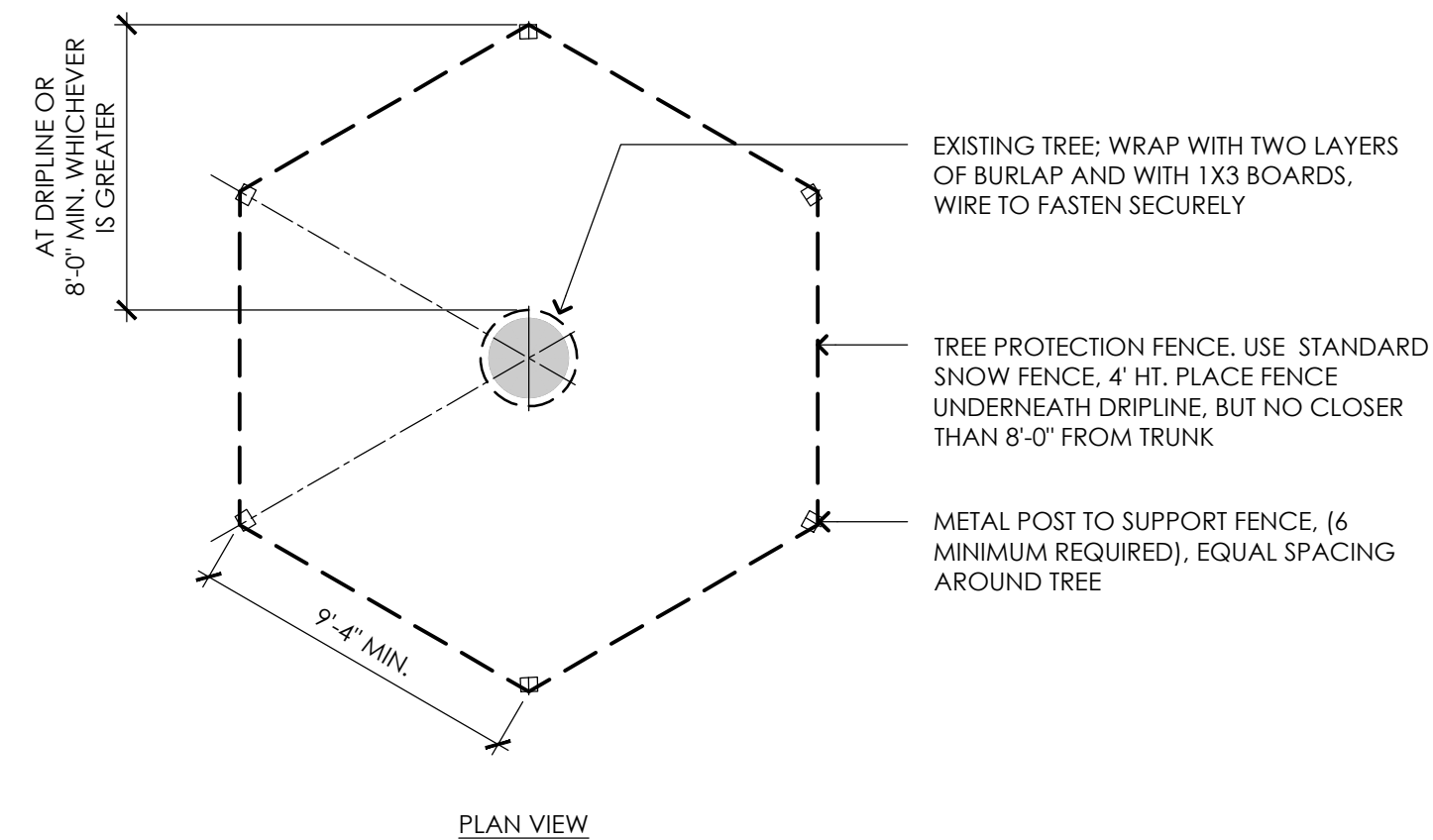
1. ENTRANCE WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. CONTRACTOR SHALL REVIEW FINAL LOCATION AND SIZE ON TEMPORARY CONSTRUCTION ENTRANCE WITH OWNER AND LANDSCAPE ARCHITECT PRIOR TO MOBILIZATION.
2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT INTO RIGHT-OF-WAY OR ADJACENT PARKING AREAS AND DRIVES. 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 AND/OR TRACKED ONTO PUBLIC RIGHTS-OF-WAYS OR ADJACENT PARKING AREAS AND DRIVES MUST BE REMOVED IMMEDIATELY. MOUNTABLE BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED.
3. CONTRACTOR SHALL WASH WHEELS OF VEHICLES AT CONSTRUCTION ENTRANCE PRIOR TO VEHICLES EXITING SITE TO PREVENT SOIL MATERIAL FROM BEING TRACKED FROM THE SITE.
4. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED.



4 TEMPORARY CONSTRUCTION ENTRANCE

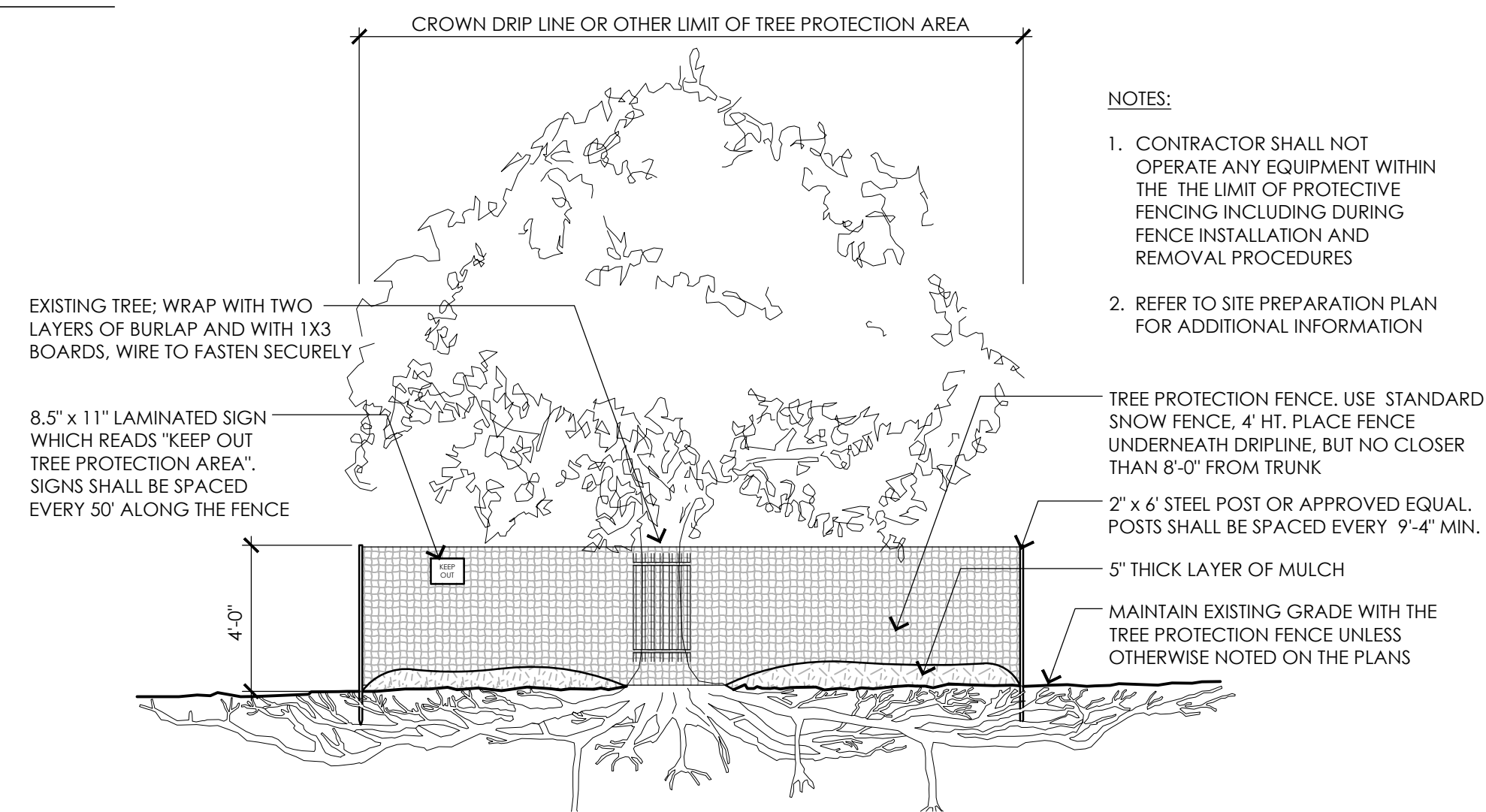
NOT TO SCALE

ALL TREE PROTECTION AND PROPOSED REMOVALS TO BE REVIEWED IN THE FIELD WITH TOWN TREE WARDEN AND LANDSCAPE ARCHITECT PRIOR TO MOBILIZATION



5 EXISTING TREE PROTECTION

NOT TO SCALE



NOTES:

1. CONTRACTOR SHALL NOT OPERATE ANY EQUIPMENT WITHIN THE LIMIT OF PROTECTIVE FENCING INCLUDING DURING FENCE INSTALLATION AND REMOVAL PROCEDURES
2. REFER TO SITE PREPARATION PLAN FOR ADDITIONAL INFORMATION

- TREE PROTECTION FENCE, USE STANDARD SNOW FENCE, 4' HT. PLACE FENCE UNDERNEATH DRIPLINE, BUT NO CLOSER THAN 8'-0" FROM TRUNK
- 2" x 6' STEEL POST OR APPROVED EQUAL, POSTS SHALL BE SPACED EVERY 9'-4" MIN.
- 5" THICK LAYER OF MULCH
- MAINTAIN EXISTING GRADE WITH THE TREE PROTECTION FENCE UNLESS OTHERWISE NOTED ON THE PLANS

ARCHITECT

bh+a

Bargmann Hendrie + Archetype, Inc.
9 Channel Center Street, Suite 300
Boston, MA 02210
617 350 0450

PROJECT NAME
Reading Center for Active Living (ReCAL) +

Outdoor Community Pickleball Courts

Symonds Way
Reading, MA 01867

CLIENT
Town of Reading

16 Lowell Street
Reading, MA 01867

PROJECT TEAM

Civil and Landscape Engineer

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REVISIONS

NO.	DATE	DESCRIPTION

DRAWING TITLE

Site Preparation and Erosion Control Detail Sheet

DRAWING INFORMATION



07/09/2025

DATE OF ISSUE

NOTICE OF INTENT

DESCRIPTION

AS NOTED

SCALE

PROJECT #

FILE NAME

DRAWING NUMBER

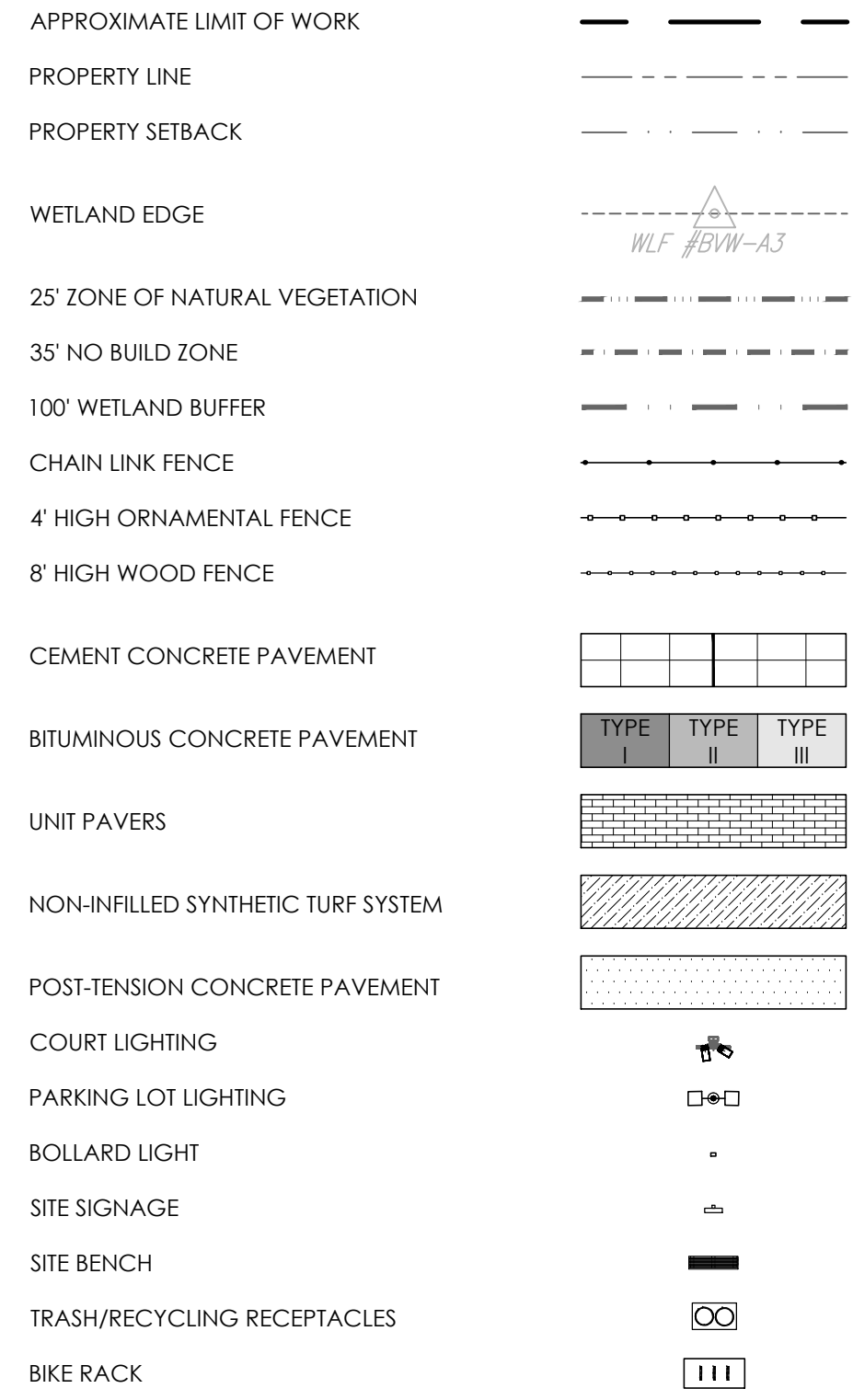
SP102

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LAYOUT AND MATERIALS LEGEND



PARKING COUNT

ACCESSIBLE VAN	2	*DROP-OFF STAGING	5 VEHICLES
ACCESSIBLE STANDARD	4		
ELECTRIC VEHICLE	2		
STANDARD	81		
TOTAL SPACES	89		

LAYOUT AND MATERIALS NOTES

- EXISTING CONDITIONS INFORMATION IS REPRODUCED FROM THE BOUNDARY AND WETLAND LOCATION SURVEY PREPARED BY CONTROL POINT ASSOCIATES, INC., LOCATED AT 352 TURNPIKE ROAD, SOUTHBOROUGH, MA, AND DATED JUNE 4TH, 2025.
- THE LOCATIONS OF UNDERGROUND UTILITIES SHOWN ARE BASED ON THE SURVEY REFERENCED ABOVE. THE CONTRACTOR SHALL NOTIFY DIGSAFE AND THE PROPER LOCAL AUTHORITIES OR RESPECTIVE UTILITY COMPANIES TO CONFIRM THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. ANY DAMAGE DUE TO FAILURE OF THE CONTRACTOR TO CONTACT THE PROPER AUTHORITIES SHALL BE BORNE BY THE CONTRACTOR.
- CONTRACTOR(S) SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL CONSTRUCTION DOCUMENTS, SPECIFICATIONS, AND SITE CONDITIONS PRIOR TO BIDDING AND PRIOR TO CONSTRUCTION.
- ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS, AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION AND RESOLUTION PRIOR TO BIDDING OR CONSTRUCTION.
- WHILE THE CONTRACTOR MAY USE THE ELECTRONIC DRAWINGS FOR LAYOUT PURPOSES, IT IS HIS RESPONSIBILITY TO CHECK ALL LAYOUT IN THE FIELD TO CONFIRM CONFORMITY WITH THE PROJECT DRAWINGS, SPECIFICATIONS, AND APPROVED SHOP DRAWINGS AND SUBMITTALS. USE OF ONLY THE ELECTRONIC DRAWINGS WITHOUT A SITE CHECK OF LAYOUT IS NOT ACCEPTABLE.
- REFER TO DETAIL SHEET L501 FOR DIFFERENCES IN BITUMINOUS CONCRETE PAVEMENT TYPES III.

POST-TENSION CONCRETE NOTES (PICKLEBALL COURTS)

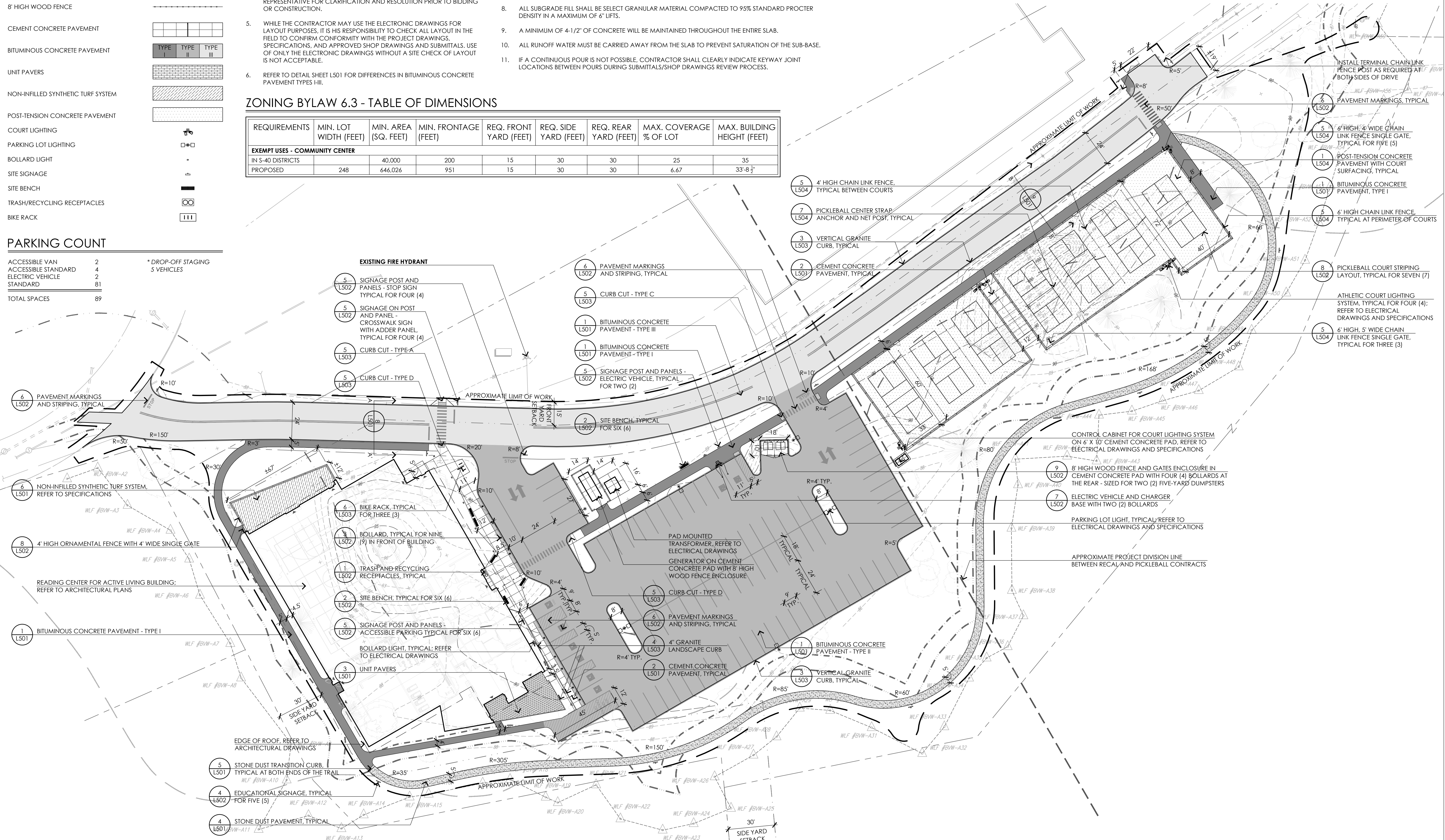
- COORDINATE INITIAL STRESSING WITHIN 24 HOURS WITH CONCRETE STRENGTH.
- ALL CONVENTIONAL REINFORCING STEEL SHALL MEET ASTM-A615 (GRADE 60), REINFORCING STEEL SHALL BE DETAILED AND ACCESSORIES PROVIDED IN ACCORDANCE WITH THE LATEST "ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".
- REINFORCEMENT SHALL HAVE 3" COVER IN THE GRADE BEAM BOTTOMS, 2" COVER IN THE BEAM SIDES AND TOP, 1-1/2" COVER IN THE SLAB TOP AND BOTTOMS, UNLESS NOTED OTHERWISE.
- TENDONS AND BARS SHALL BE SECURELY SUPPORTED TO PREVENT BOTH VERTICAL AND HORIZONTAL MOVEMENT DURING CONCRETE PLACING. NO TENDON WILL BE UNSUPPORTED FOR MORE THAN 5 FEET.
- CONCRETE SHALL BE WELL CONSOLIDATED ESPECIALLY IN THE VICINITY OF THE TENDON ANCHORS.
- CONTRACTOR TO REMOVE ALL FORM WORK WITHOUT DAMAGE TO THE TENDONS PRIOR TO STRESSING OF TENDONS.
- LOADING OF THE SLAB PRIOR TO TENSIONING SHALL NOT BE DONE WITHOUT THE APPROVAL AND DIRECTION OF THE DESIGN ENGINEER.
- ALL SUBGRADE FILL SHALL BE SELECT GRANULAR MATERIAL COMPACTED TO 95% STANDARD PROCTER DENSITY IN A MAXIMUM OF 6" LIFTS.
- A MINIMUM OF 4-1/2" OF CONCRETE WILL BE MAINTAINED THROUGHOUT THE ENTIRE SLAB.
- ALL RUNOFF WATER MUST BE CARRIED AWAY FROM THE SLAB TO PREVENT SATURATION OF THE SUB-BASE.
- IF A CONTINUOUS POUR IS NOT POSSIBLE, CONTRACTOR SHALL CLEARLY INDICATE KEYWAY JOINT LOCATIONS BETWEEN POURS DURING SUBMITTALS/SHOP DRAWINGS REVIEW PROCESS.

RANGE ROAD NOTES (FROM TOWN COUNSEL)

- FROM OUR REVIEW, IT APPEARS THAT THE TOWN OWNS THE FEE INTEREST IN RANGE ROAD FROM ITS INTERSECTION WITH SYMONDS WAY TO THE EASTERN EDGE OF ASSESSOR'S PARCEL 35.0-0133.0 (0 E OF HAVERHILL STREET). HOWEVER, THE TOWN HAS YET TO LAY OUT THE WAY AS A PUBLIC WAY. THE TOWN SHOULD LAY OUT THE WAY AS A PUBLIC WAY AS PART OF ITS DEVELOPMENT OF THE SITE.
- THE CENTRAL QUESTION IS THEREFORE WHEN TO LAY OUT THE WAY, WHILE THE TOWN COULD LAY OUT THE WAY AS A PUBLIC WAY BASED ON THE CURRENT BOUNDARIES OF RANGE ROAD, IF THE ROAD NEEDS TO BE RELOCATED OR EXPANDED AS PART OF THE SENIOR CENTER OR PICKLEBALL COURT PROJECT, A NEW LAYOUT WILL BE REQUIRED. ACCORDINGLY, THE PREFERRED PATH MAY BE TO WAIT UNTIL FINALIZATION OF THE PLANS FOR THE WAY BEFORE GOING THROUGH THE LAYING OUT PROCESS. IF YOU DISAGREE, WE CAN CERTAINLY LAY THE WAY OUT NOW, AND AMEND THE LAYOUT IN THE FUTURE, IF NEEDED.
- THE PROCESS IS AS FOLLOWS:
 - SELECT BOARD VOTES SEND THE LAYOUT REQUEST TO THE PLANNING BOARD.
 - PLANNING BOARD HAS 45 DAYS FROM THE DATE OF REFERRAL BY THE SELECT BOARD TO HOLD A HEARING AND SUBMIT ITS REPORT REGARDING THE LAYING OUT OF THE WAY TO TOWN MEETING.
 - AT LEAST 7 DAYS PRIOR TO TOWN MEETING, A PLAN SHOWING THE MEETS AND BOUNDS OF THE WAY MUST BE FILED WITH THE TOWN CLERK.
 - AT LEAST 7 DAYS PRIOR TO TOWN MEETING, THE SELECT BOARD MUST HOLD A HEARING TO VOTE ON THE LAYING OUT OF THE WAY.
 - A COPY OF THE SELECT BOARD'S VOTE MUST BE FILED WITH THE TOWN CLERK AT LEAST 7 DAYS PRIOR TO TOWN MEETING.
 - TOWN MEETING VOTES TO LAY OUT THE WAY.
 - WITHIN 10 DAYS OF THE CLOSE OF TOWN MEETING, THE SELECT BOARD TRANSMIT THE LAYING OUT DOCUMENTS TO THE TOWN CLERK.
- THE ABOVE PROCESS ASSUMES THAT ALL LAND NECESSARY FOR THE LAYING OUT IS CURRENTLY OWNED BY THE TOWN. IF THE TOWN WISHES TO EXTEND THE PUBLIC WAY PAST THE BOUNDS OF ITS PROPERTY, WE SHOULD DISCUSS WHAT STEPS ARE NEEDED TO ACQUIRE THE PROPERTY INTEREST FROM THE GUN CLUB.

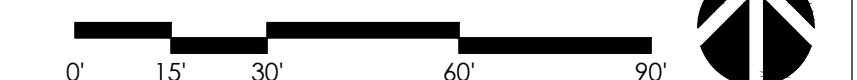
ZONING BYLAW 6.3 - TABLE OF DIMENSIONS

REQUIREMENTS	MIN. LOT WIDTH (FEET)	MIN. AREA (SQ. FEET)	MIN. FRONTAGE (FEET)	REQ. FRONT YARD (FEET)	REQ. SIDE YARD (FEET)	REQ. REAR YARD (FEET)	MAX. COVERAGE % OF LOT	MAX. BUILDING HEIGHT (FEET)
EXEMPT USES - COMMUNITY CENTER								
IN S-40 DISTRICTS	248	40,000	200	15	30	30	25	35
PROPOSED		646,026	951	15	30	30	6.67	33'-8 1/2"



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NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION



ARCHITECT

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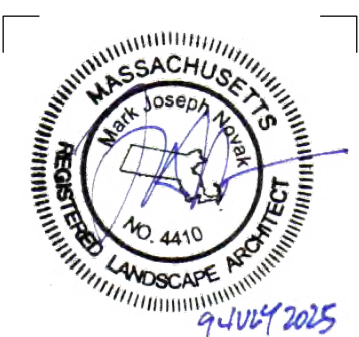
REVISIONS

NO.	DATE	DESCRIPTION

DRAWING TITLE

Layout and Materials Plan

DRAWING INFORMATION



07/09/2025

DATE OF ISSUE

NOTICE OF INTENT

DESCRIPTION

1"=30'-0"

SCALE

3513

PROJECT #

DRAWING NUMBER

L101

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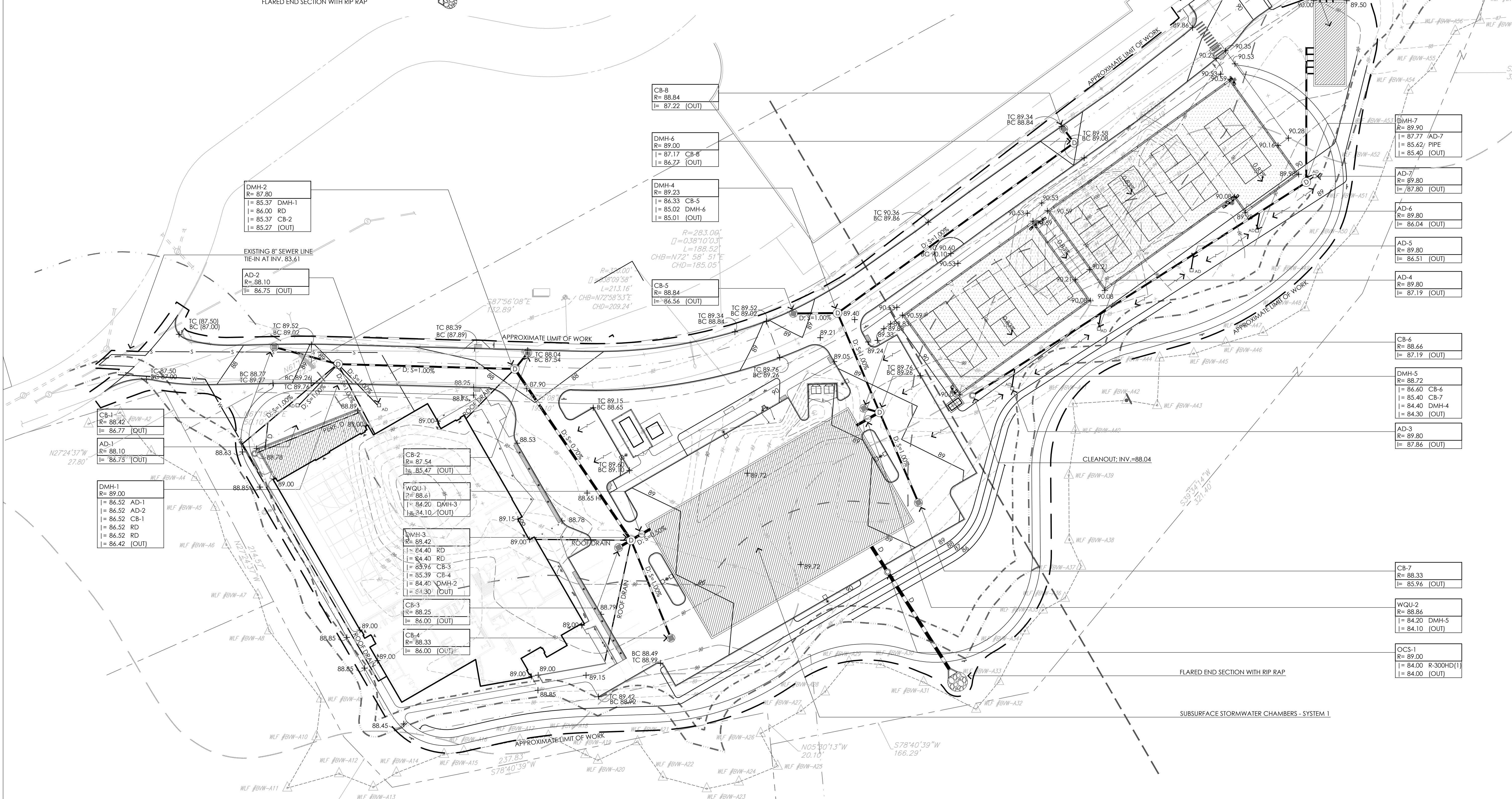
V.3.0

GRADING AND UTILITY LEGEND

APPROXIMATE LIMIT OF WORK		PROPOSED WATER LINE	
PROPERTY LINE		PROPOSED SEWER LINE	
PROPERTY SETBACK		PROPOSED SUBSURFACE DETENTION AREA	
WETLAND EDGE		PROPOSED AREA DRAIN	
25' ZONE OF NATURAL VEGETATION		PROPOSED CATCH BASIN	
35' NO BUILD ZONE		OUTLET CONTROL STRUCTURE	
100' WETLAND BUFFER		DRAIN MANHOLE	
EXISTING 1' CONTOUR		WATER QUALITY UNIT	
PROPOSED 1' CONTOUR		CLEANOUT	
PROPOSED SPOT GRADE		SEWER MANHOLE	
PROPOSED SLOPE DIRECTION		FLARED END SECTION WITH RIP RAP	
PROPOSED SOLID DRAIN PIPE			
PROPOSED PERFORATED DRAIN PIPE			

GRADING AND UTILITY NOTES

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- CONTRACTOR SHALL VERIFY EXISTING GRADES AND NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION OF THE CONFLICT.
- THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF ALL ELECTRIC, TELEPHONE, AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANY.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION, AT THE CONTRACTOR'S EXPENSE.
- PROTECT AND MAINTAIN EXISTING ON-SITE DRAINAGE STRUCTURES AND PIPES UNLESS OTHERWISE NOTED, REFER TO UTILITY PLANS.
- WHERE PROPOSED GRADES MEET EXISTING GRADES, CONTRACTOR SHALL BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW WORK. PONDING AT TRANSITION AREAS WILL NOT BE ALLOWED.
- CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS, STRUCTURES AND PLANTING BEDS.
- REFER TO L101 FOR NOTES FROM TOWN COUNSEL REGARDING RANGE ROAD.



CONTACT DIGSAFE:
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REVISIONS

NO.	DATE	DESCRIPTION

DRAWING TITLE

Grading and Utility Plan

DRAWING INFORMATION



07/09/2025

DATE OF ISSUE

NOTICE OF INTENT

DESCRIPTION

1"=30'-0"

SCALE

3513

PROJECT #

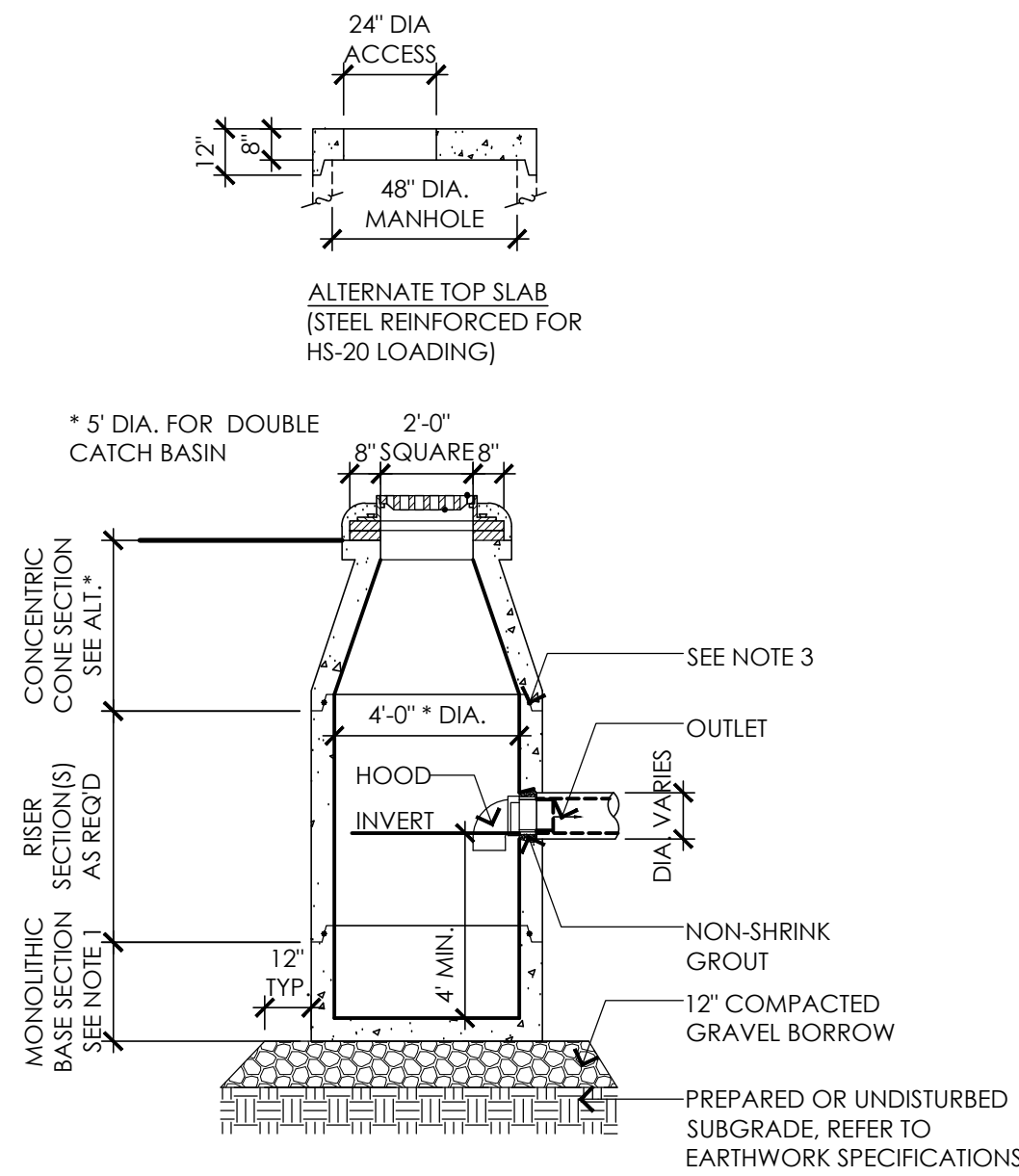
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L201

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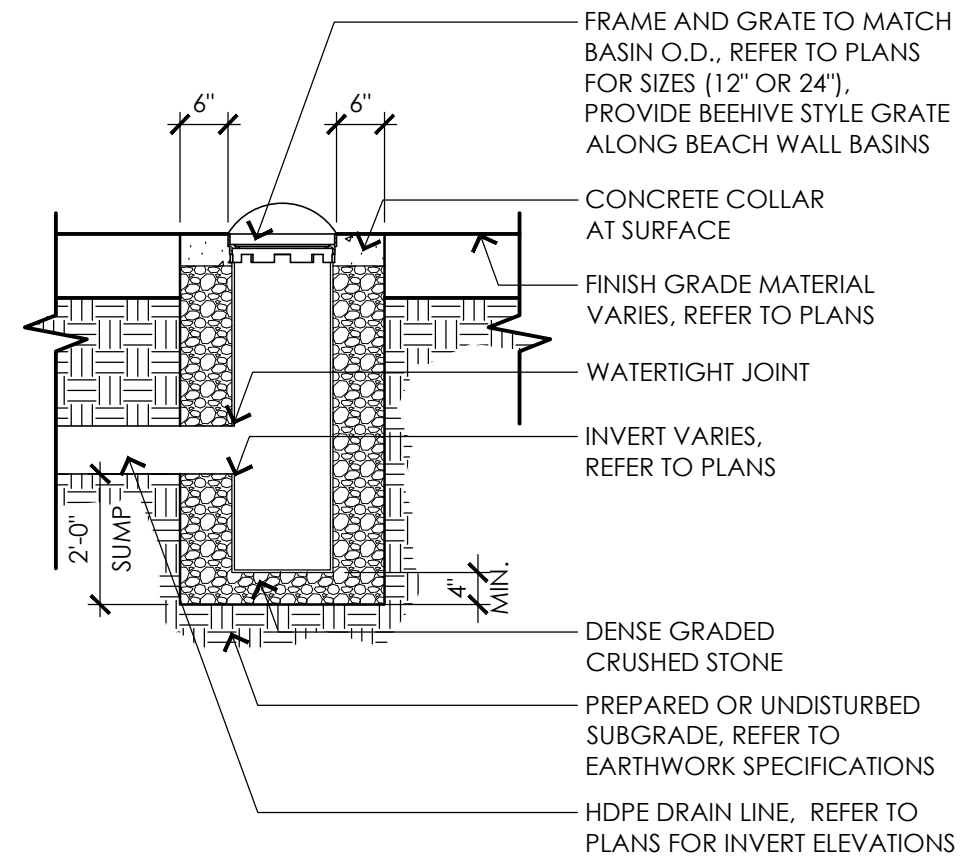
V.3.0

- NOTES:
- ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
 - PROVIDE "V" KNOCKOUTS FOR PIPES WITH 1" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
 - JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PERFORMED BUTYL RUBBER.
 - CATCH BASIN FRAME SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR. (2 BRICK COURSES MIN., 5 BRICK COURSES MAX.)



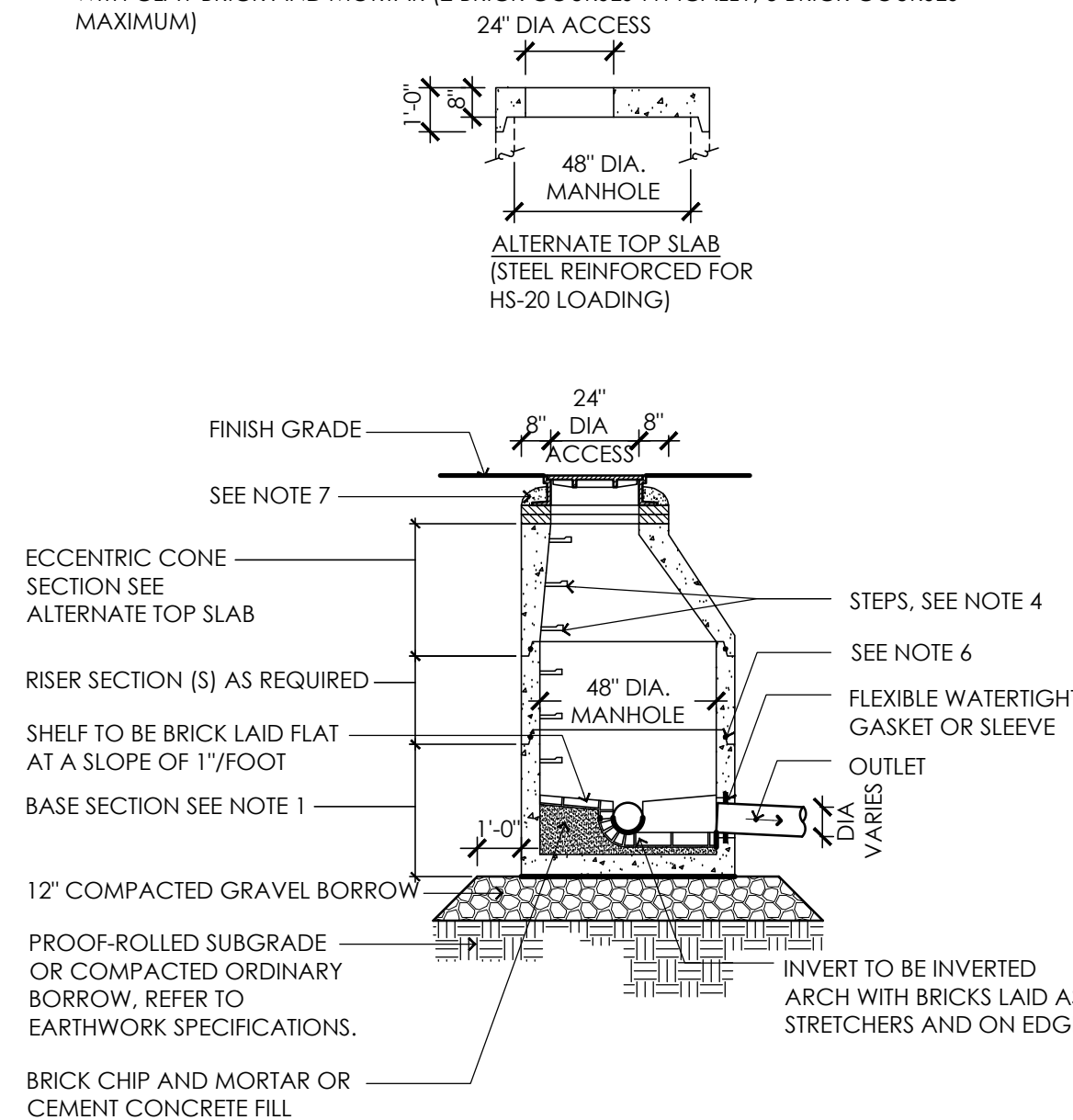
1 CATCH BASIN
NOT TO SCALE

- NOTES:
- GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE.



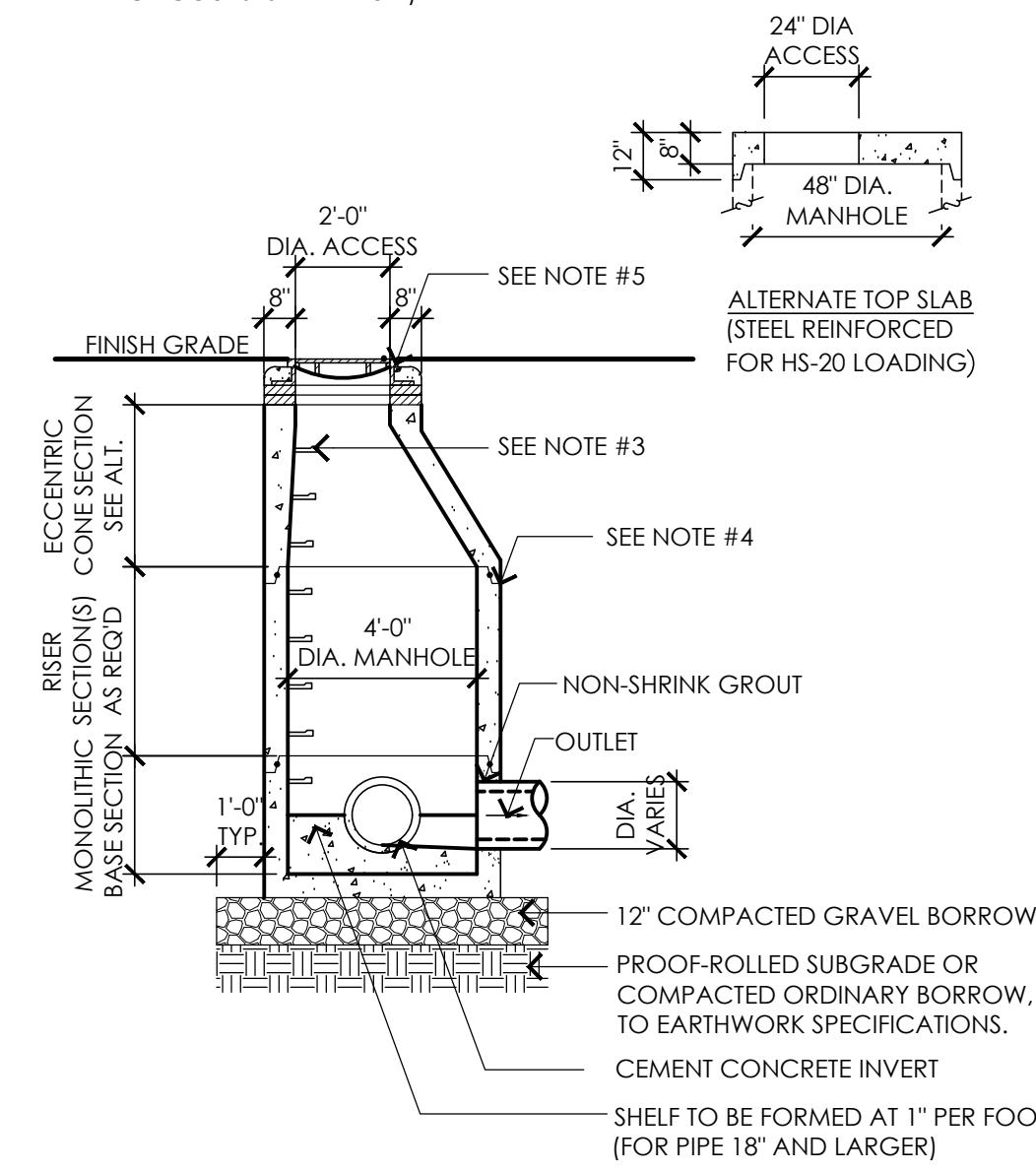
2 AREA DRAIN
NOT TO SCALE

- NOTES:
- BASE SECTION SHALL BE MONOLITHIC WITH A 48" INSIDE DIAMETER.
 - ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
 - CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI TYPE I | CEMENT.
 - COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
 - ALL EXTERIOR SURFACES SHALL BE GIVEN TWO COATS OF BITUMINOUS WATER-PROOFING MATERIAL.
 - JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PERFORMED BUTYL RUBBER.
 - STANDARD SEWER MANHOLE FRAME SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)



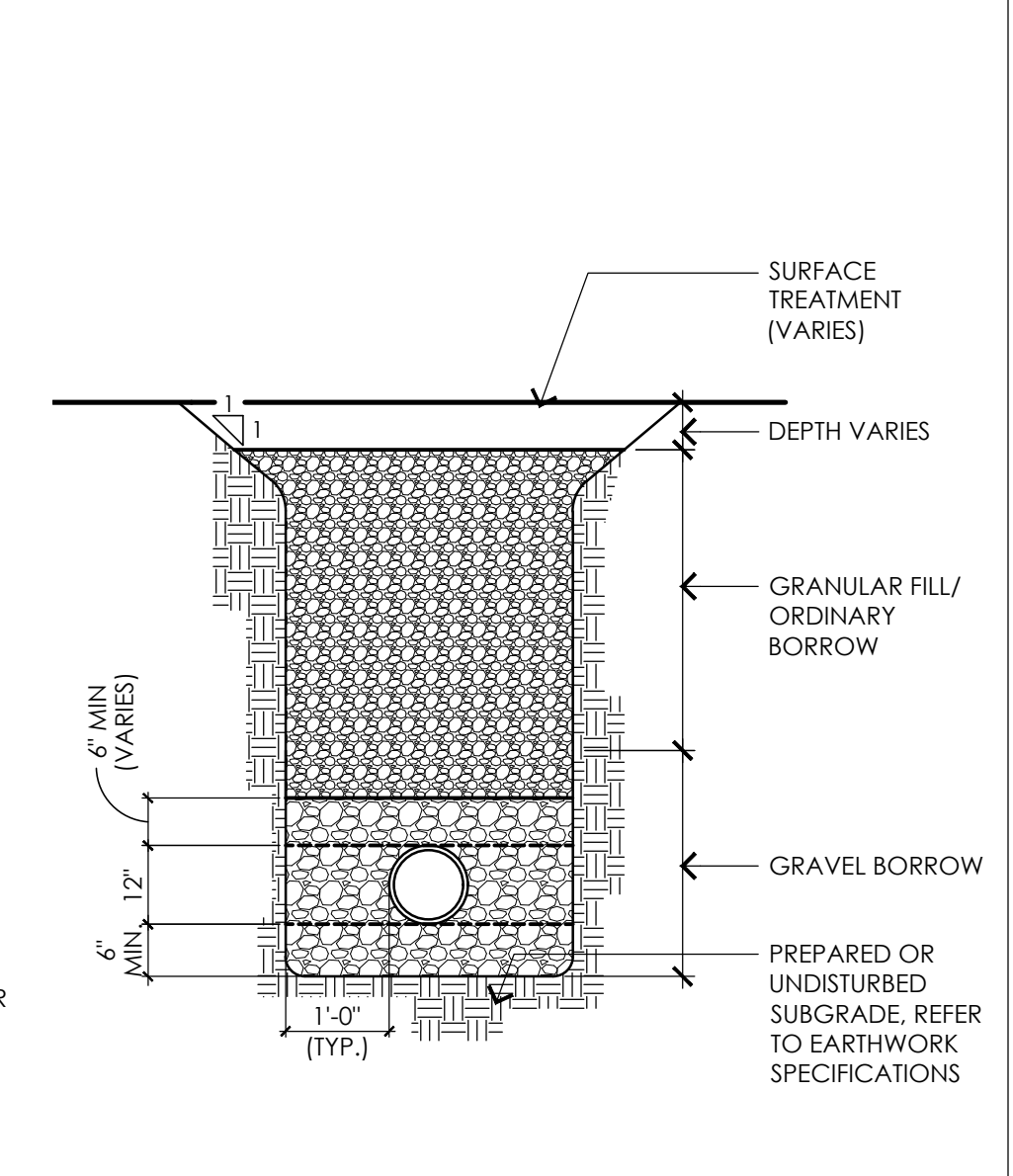
3 SEWER MANHOLE
NOT TO SCALE

- NOTES:
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 - COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
 - JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PERFORMED BUTYL RUBBER.
 - DRAIN MANHOLE FRAME SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES MINIMUM 5 BRICK COURSES MAXIMUM)



4 DRAIN MANHOLE
NOT TO SCALE

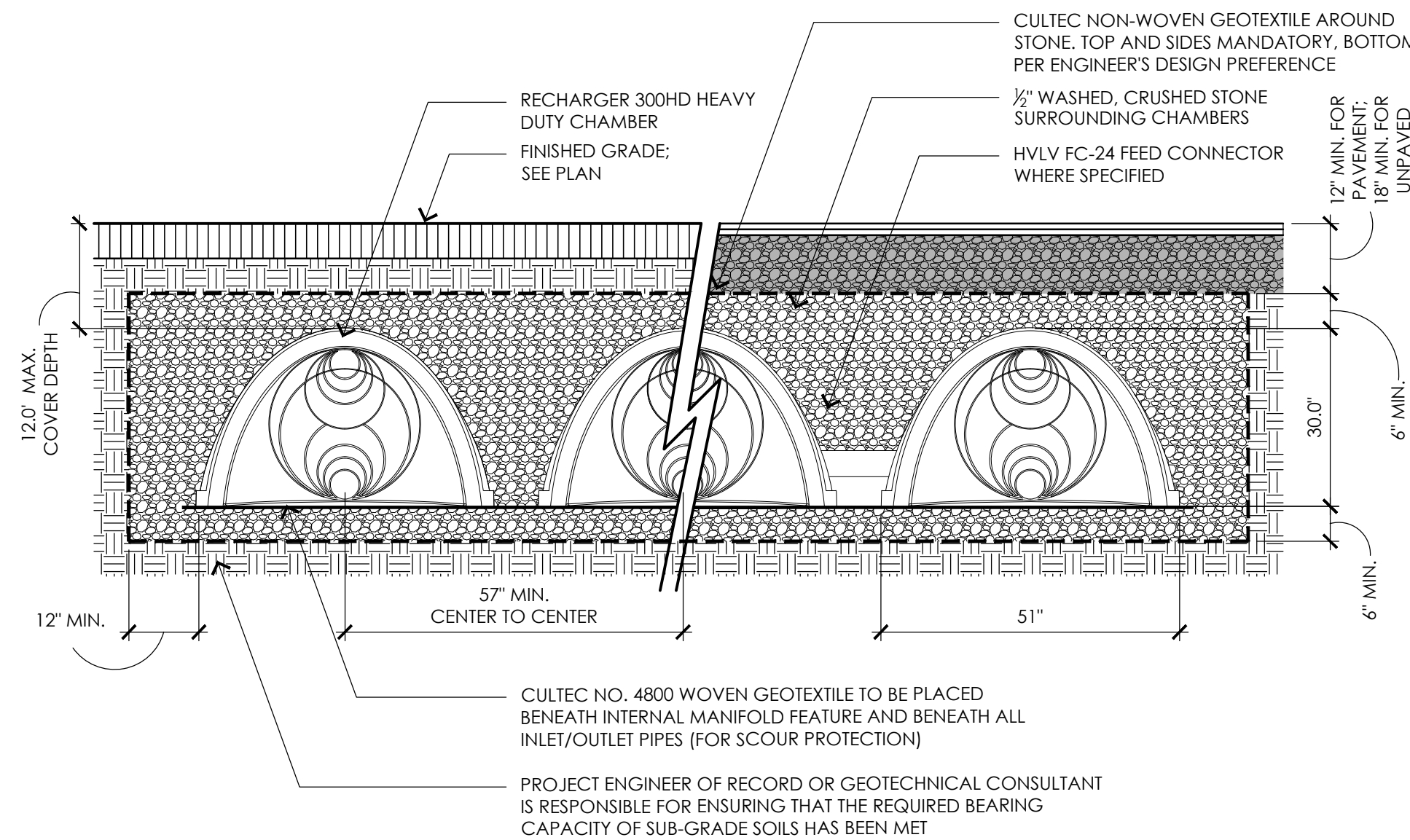
- NOTE:
- PROVIDE APPROPRIATE CAUTION TAPE AS REQUIRED PER CODE



5 UTILITY TRENCH
NOT TO SCALE

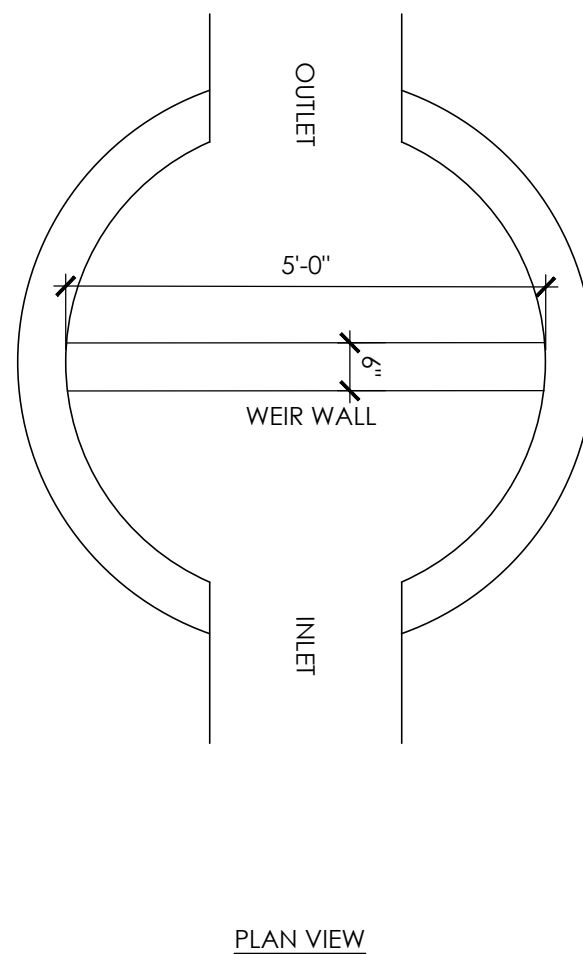
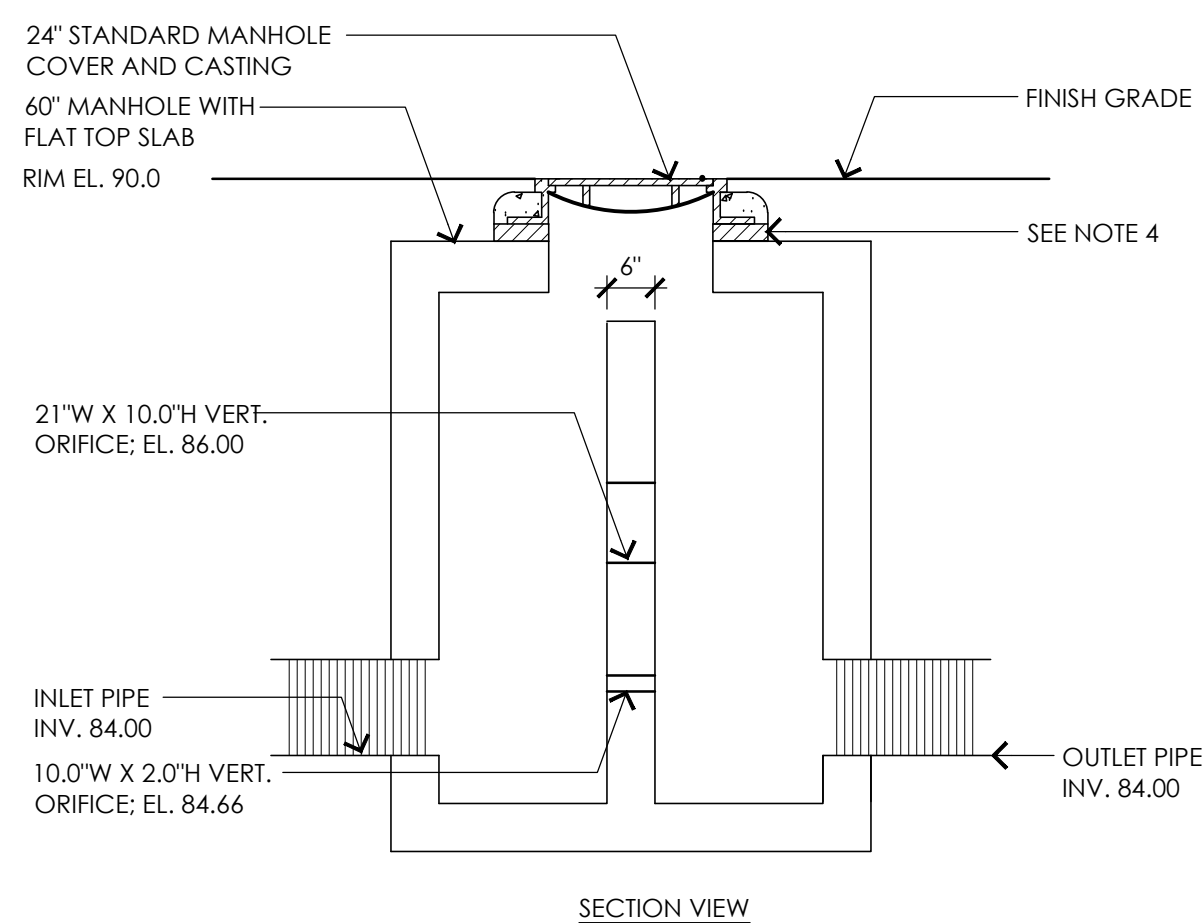
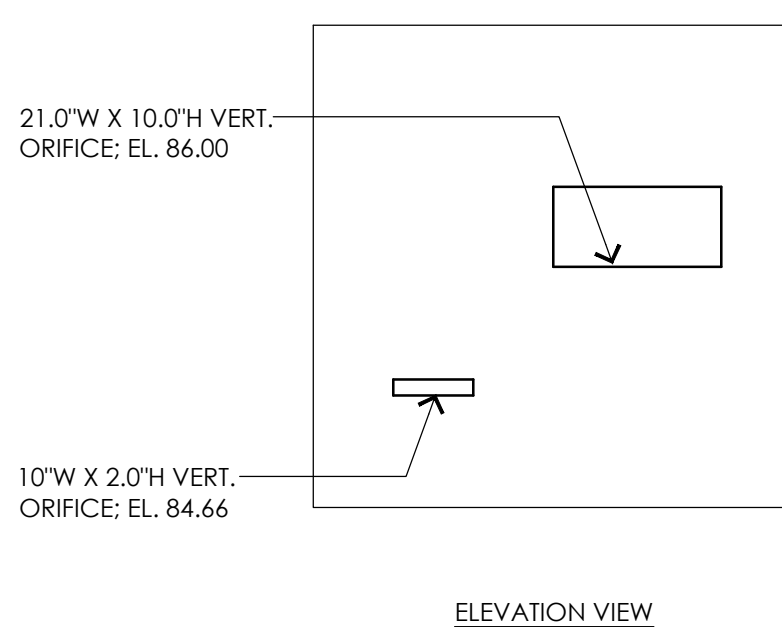
SYSTEM CALCULATIONS	SYSTEM 1	SYSTEM 2
OVERALL FOOTPRINT	82.25' X 145.27'	20.50' X 53.18'
TOTAL STORAGE VOLUME	23,614 CF	2,064 CF
STONE VOID RATIO	30%	30%
ESTIMATED # OF UNITS	340	28
UNIT TYPE	R-300HD	R-300HD

SYSTEM ELEVATIONS	SYSTEM 1	SYSTEM 2
SYSTEM COMPONENT	ELEVATION	ELEVATION
GROUNDWATER	81.50	81.50
BOTTOM OF STONE	83.50	84.50
BOTTOM OF CULTecs	84.00	85.00
TOP OF CULTecs	86.50	87.50
TOP OF STONE	87.00	88.00
FINISHED GRADE	VARIABLES	VARIABLES



6 SUBSURFACE STORMWATER CHAMBERS
NOT TO SCALE

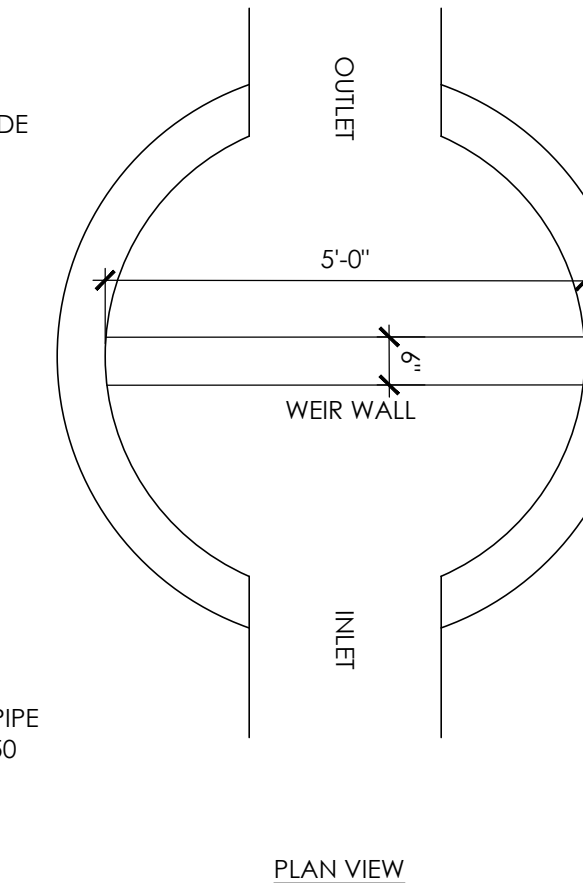
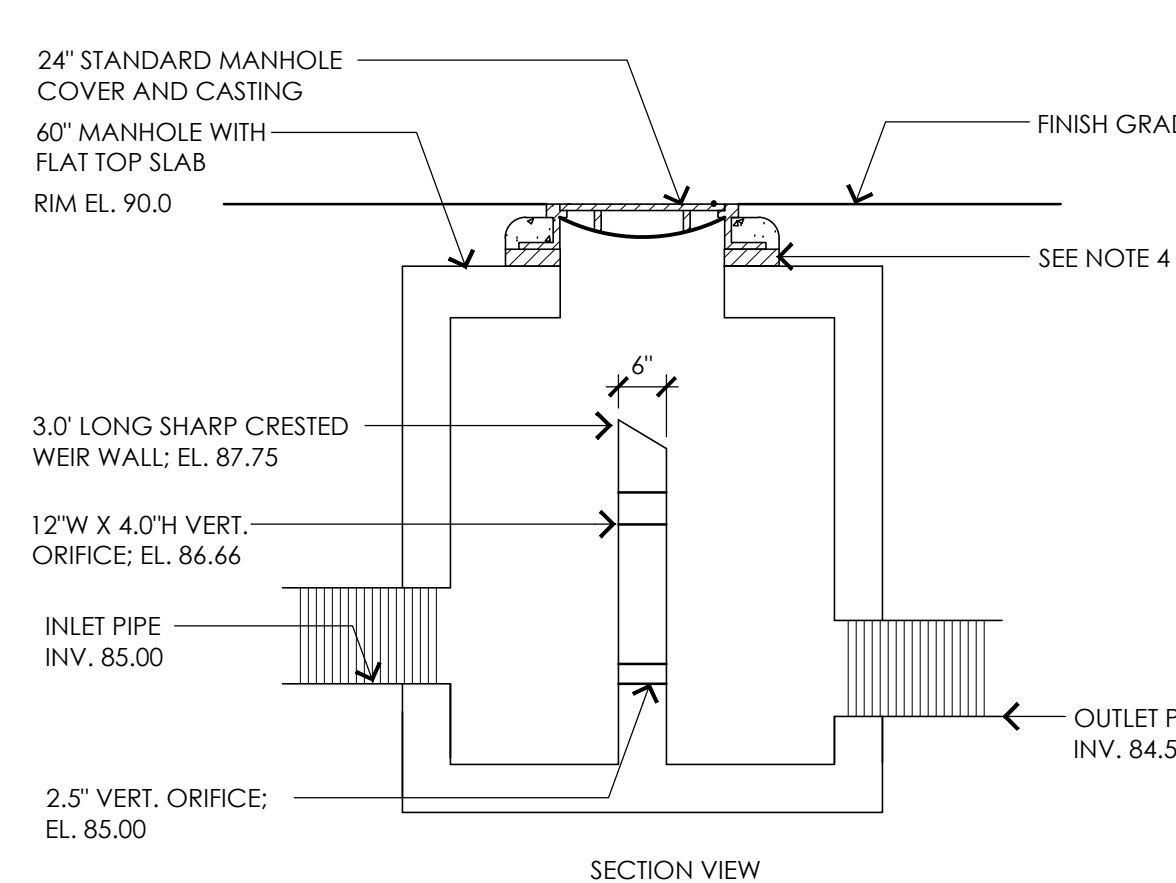
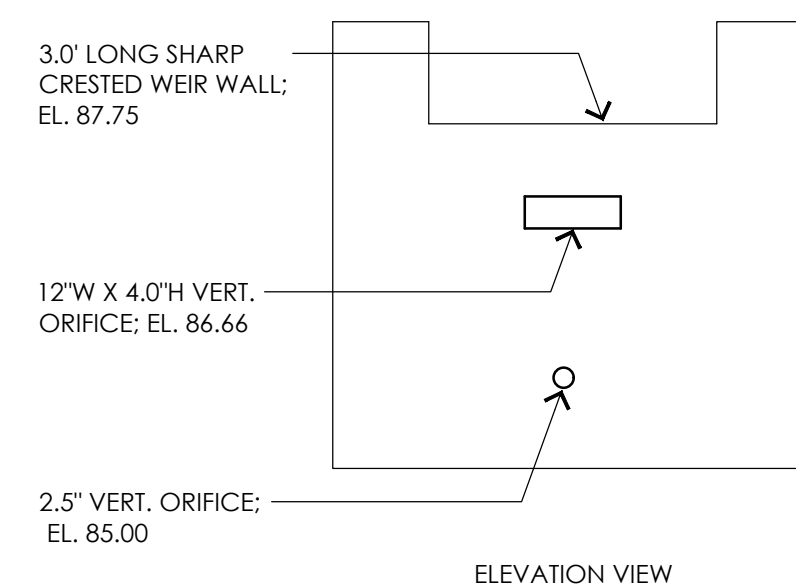
- NOTES:
- ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
 - PROVIDE "V" KNOCKOUTS FOR PIPES WITH 1" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
 - JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PERFORMED BUTYL RUBBER.
 - ADJUST RIM WITH CLAY BRICK AND MORTAR TO SIT FLUSH WITH FINISH GRADE



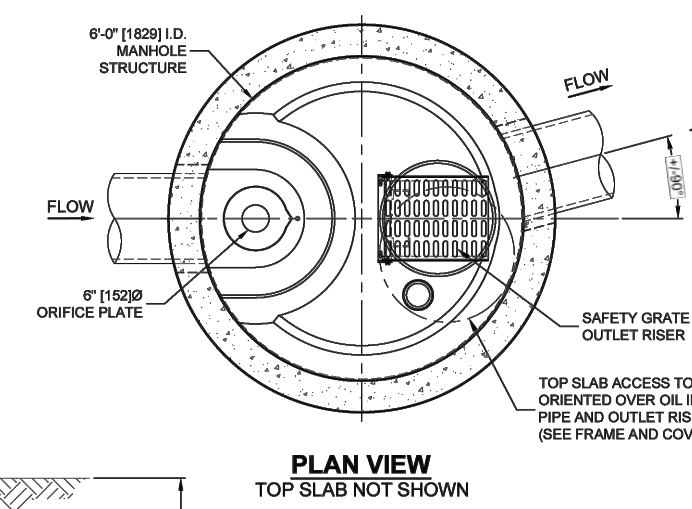
9 OUTLET CONTROL STRUCTURE - 1
NOT TO SCALE

7 WATER QUALITY UNIT
NOT TO SCALE

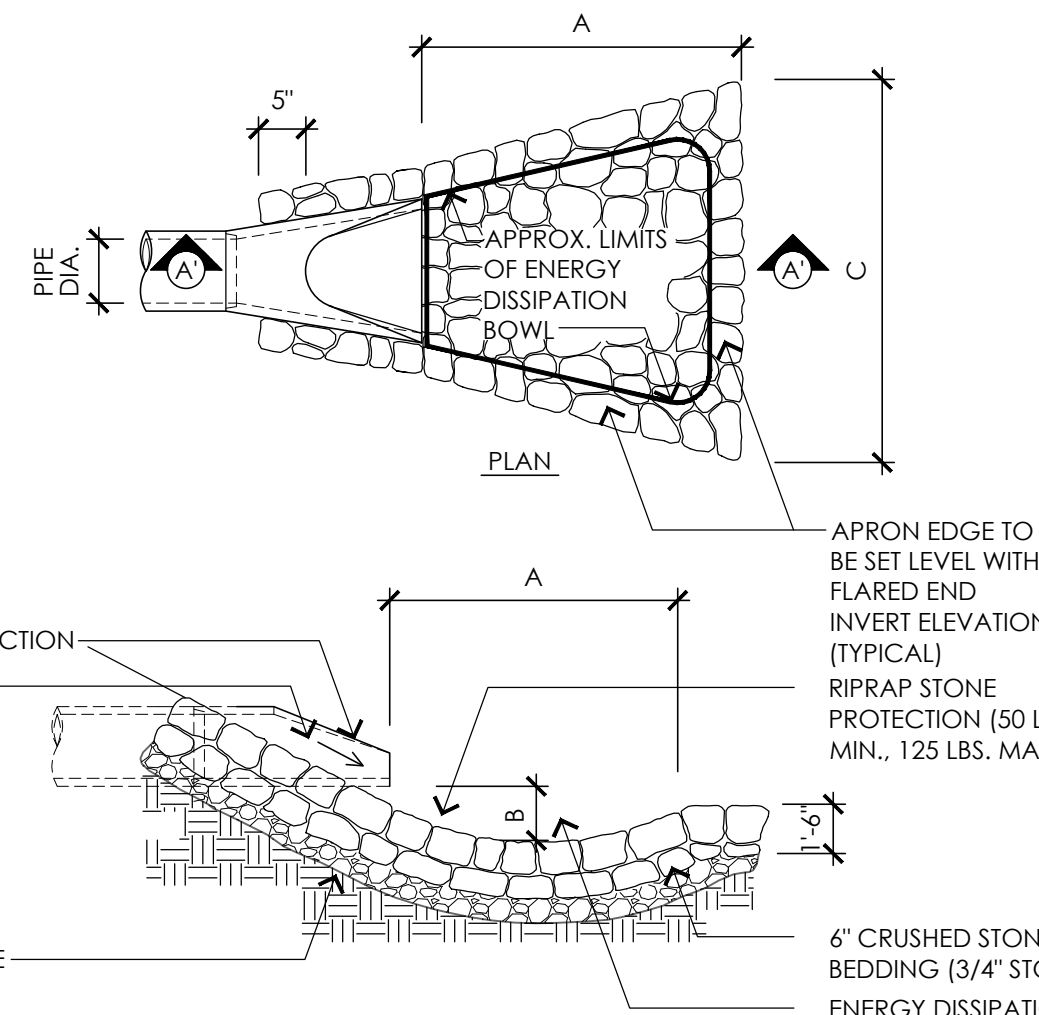
- NOTES:
- ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
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 - ADJUST RIM WITH CLAY BRICK AND MORTAR TO SIT FLUSH WITH FINISH GRADE



10 OUTLET CONTROL STRUCTURE - 2
NOT TO SCALE



PIPE DIA.	A	B	C
8" D	3'	1.5'	5'
12" D	4'	1.5'	6'
15" D	5'	1.5'	7'
24" D	8'	1.5'	11'



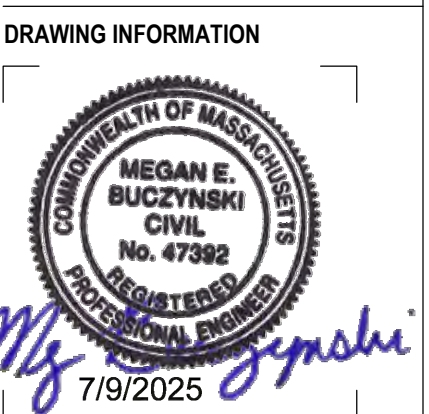
8 FLARED END SECTION WITH RIP RAP
NOT TO SCALE

REVISIONS

NO.	DATE	DESCRIPTION

DRAWING TITLE

Grading and Utility Detail Sheet I

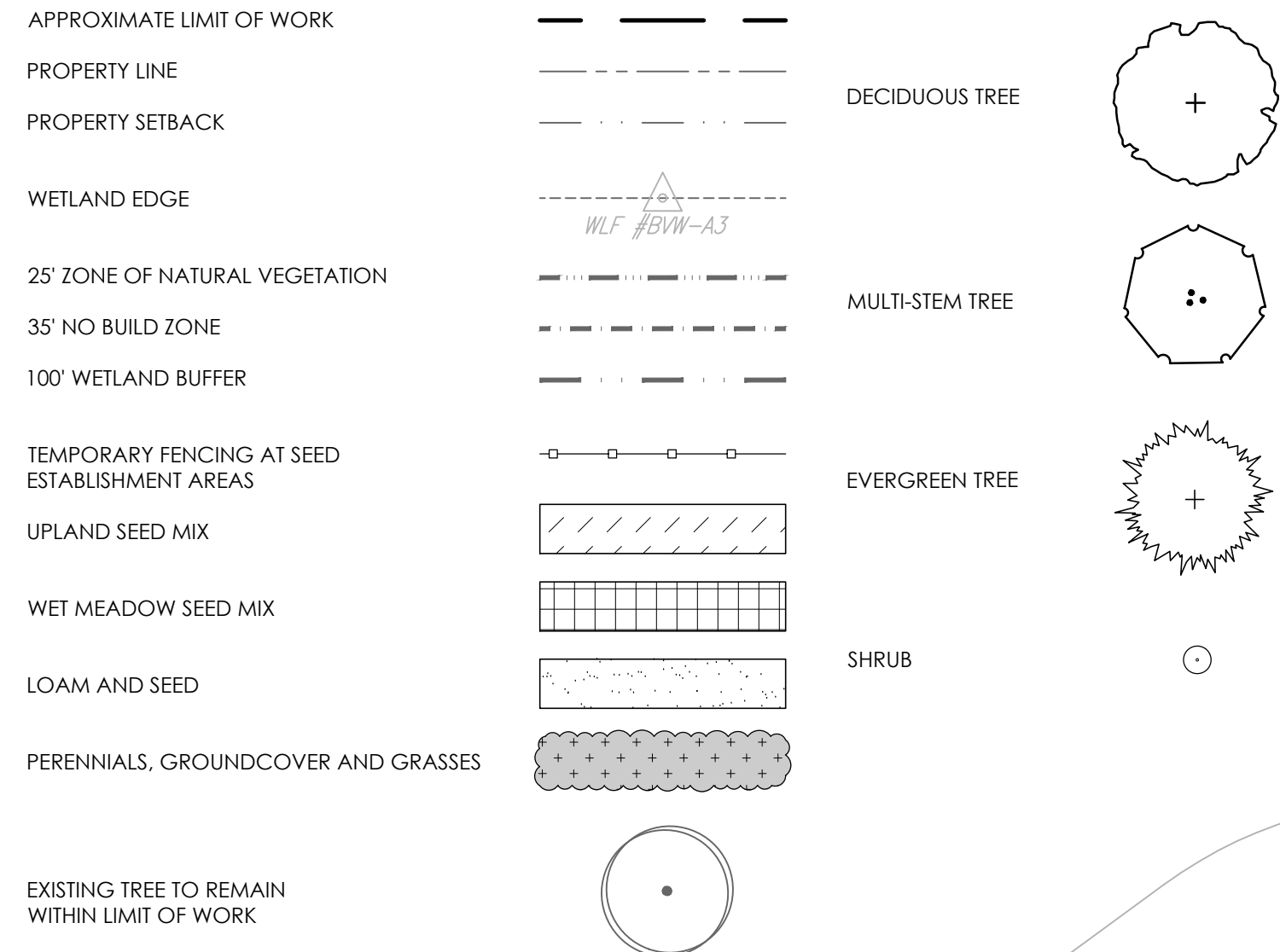


07/09/2025
DATE OF ISSUE
NOTICE OF INTENT
DESCRIPTION
AS NOTED
SCALE
3513
PROJECT #
FILE NAME

DRAWING NUMBER

L202

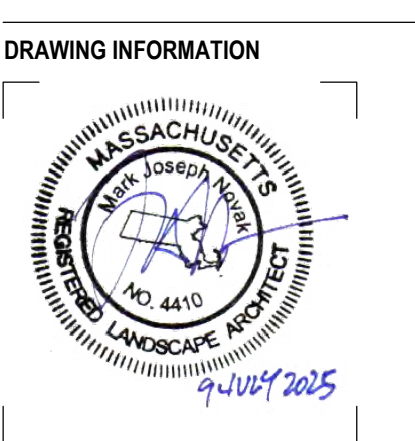
PLANTING LEGEND



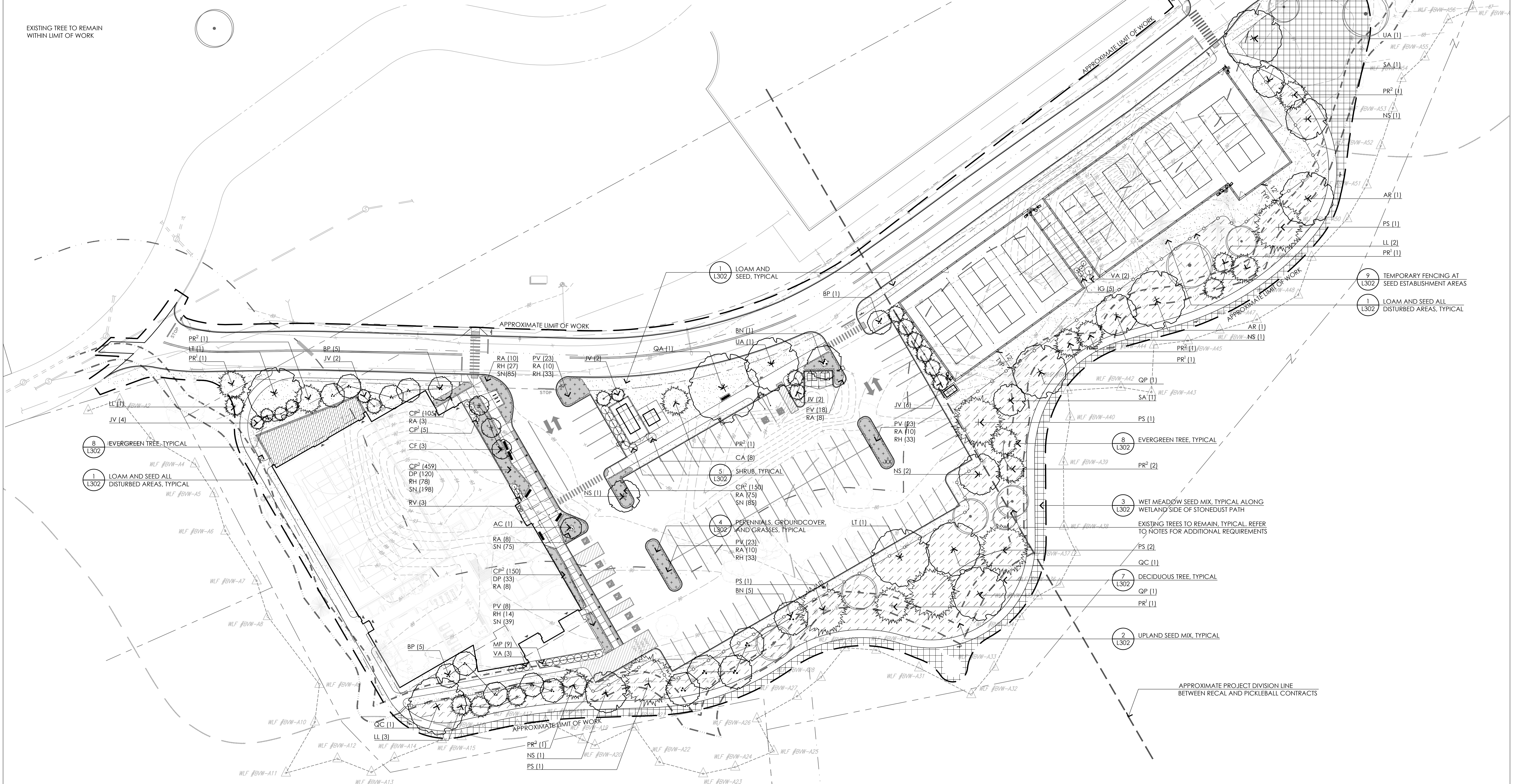
PLANTING NOTES

- EXISTING CONDITIONS INFORMATION IS REPRODUCED FROM THE BOUNDARY AND WETLAND LOCATION SURVEY PREPARED BY CONTROL POINT ASSOCIATES, INC., LOCATED AT 352 TURNPIKE ROAD, SOUTHBOROUGH, MA, AND DATED JUNE 4TH, 2025.
- THE LOCATIONS OF UNDERGROUND UTILITIES SHOWN ARE BASED ON THE SURVEY REFERENCED ABOVE. THE CONTRACTOR SHALL NOTIFY DIGSAFE AND THE PROPER LOCAL AUTHORITIES OR RESPECTIVE UTILITY COMPANIES TO CONFIRM THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. ANY DAMAGE DUE TO FAILURE OF THE CONTRACTOR TO CONTACT THE PROPER AUTHORITIES SHALL BE BORNE BY THE CONTRACTOR.
- CONTRACTOR SHALL BEGIN MAINTENANCE IMMEDIATELY AFTER PLANTING AND WILL CONTINUE UNTIL FINAL WRITTEN ACCEPTANCE OF PLANT MATERIAL. REFER TO SPECIFICATIONS FOR ADDITIONAL MAINTENANCE REQUIREMENTS.
- CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM PROPOSED BUILDING, STRUCTURES, AND PLANTING BEDS.
- THE LANDSCAPE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE ALL PLANTINGS SHOWN ON THIS DRAWING.
- ALL MATERIALS SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
- ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISH GRADE AS TO ORIGINAL GRADES BEFORE DIGGING.
- FINAL LAYOUT OF PLANTINGS WILL BE IN THE FIELD PER THE DIRECTION OF THE LANDSCAPE ARCHITECT. PROVIDE A MINIMUM FORTY-EIGHT (48) HOURS NOTICE PRIOR TO BEGINNING FINAL LAYOUT AND PLANTING OPERATIONS.
- ALL PLANTS TO BE BALLED IN BURLAP OR CONTAINERIZED.
- ALL PLANTED AREAS TO BE EDGED AND MULCHED WITH PARTIALLY DECOMPOSED ORGANIC MULCH AND FREE OF WOOD CHIPS THICKER THAN 1/4 INCH.
- LANDSCAPE ISLAND PLANTING SOIL MIX: UTILIZE EXISTING SITE LOAM FROM STOCKPILES, THOROUGHLY INCORPORATE WITH COMPOST AS NEEDED PER SOILS ANALYSIS. FERTILIZE PER RECOMMENDED RATES IN SOIL ANALYSIS.
- THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIALS FOR ONE (1) FULL YEAR FROM DATE OF ACCEPTANCE.
- ALL PLANT MATERIALS ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT, AT THE NURSERY, AND AT THE SITE.
- ALL AREAS OF THE SITE WHICH HAVE BEEN DISTURBED AND NOT OTHERWISE DEVELOPED SHALL BE LOAMED AND SEEDED WITH A MINIMUM DEPTH OF 12" DEPTH TOPSOIL UNLESS OTHERWISE NOTED.
- SLOPES 3:1 AND GREATER SHALL RECEIVE STRAW BLANKET PRIOR TO SEEDING.
- REFER TO SHEET L302 FOR PLANTING AND SEED MIX SCHEDULE.
- EXISTING TREES WITHIN LIMIT OF WORK TO REMAIN SHALL BE PRUNED AND INSPECTED BY A LICENSED ARBORIST. APPLY 2"-4" OF ORGANIC MULCH BENEATH THE CANOPY OF THE TREE KEEPING IT OFF THE ROOT FLARE AT THE BASE OF THE STEM.

Planting Plan

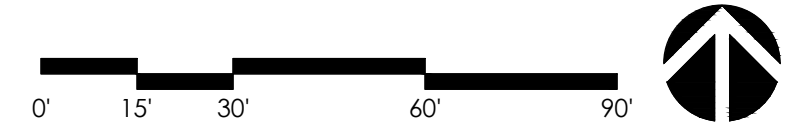


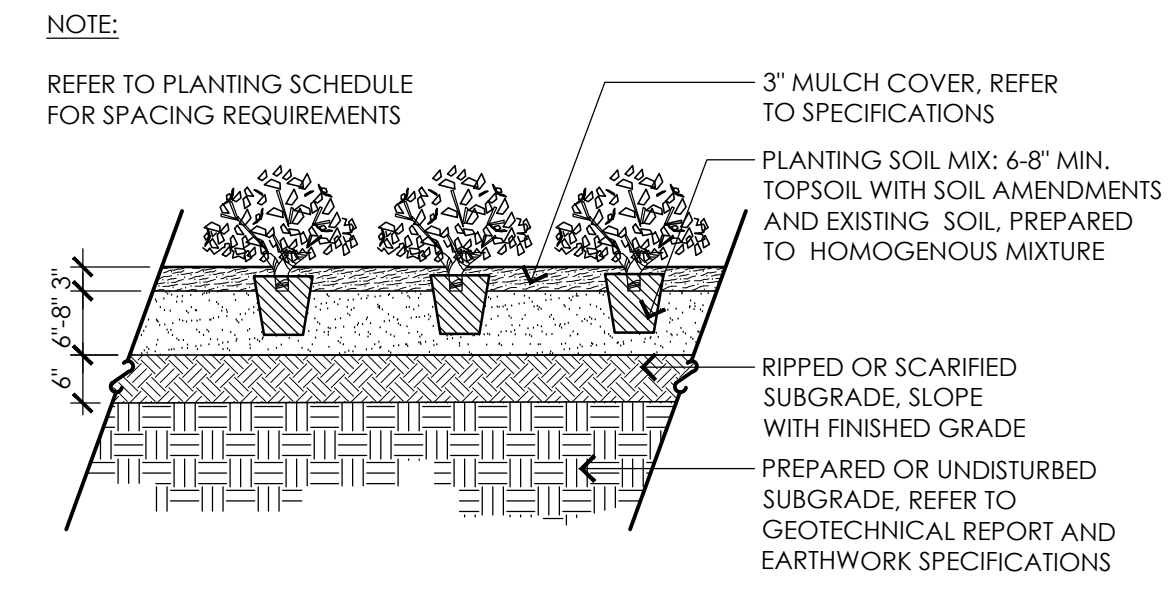
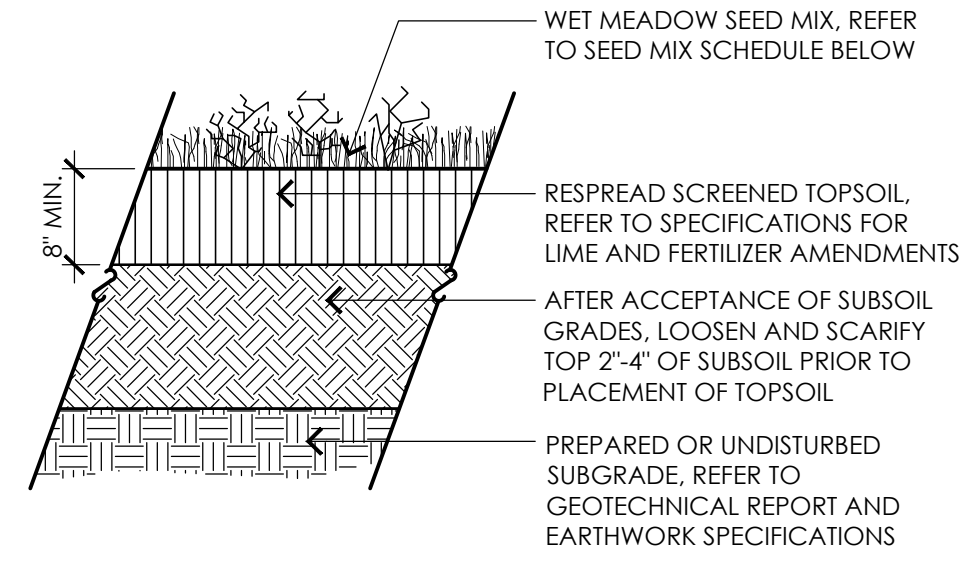
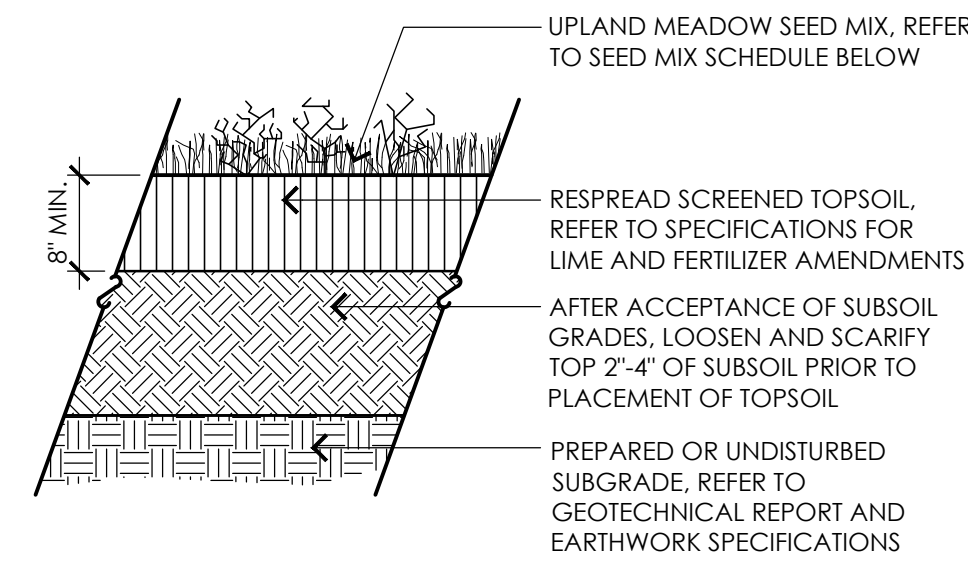
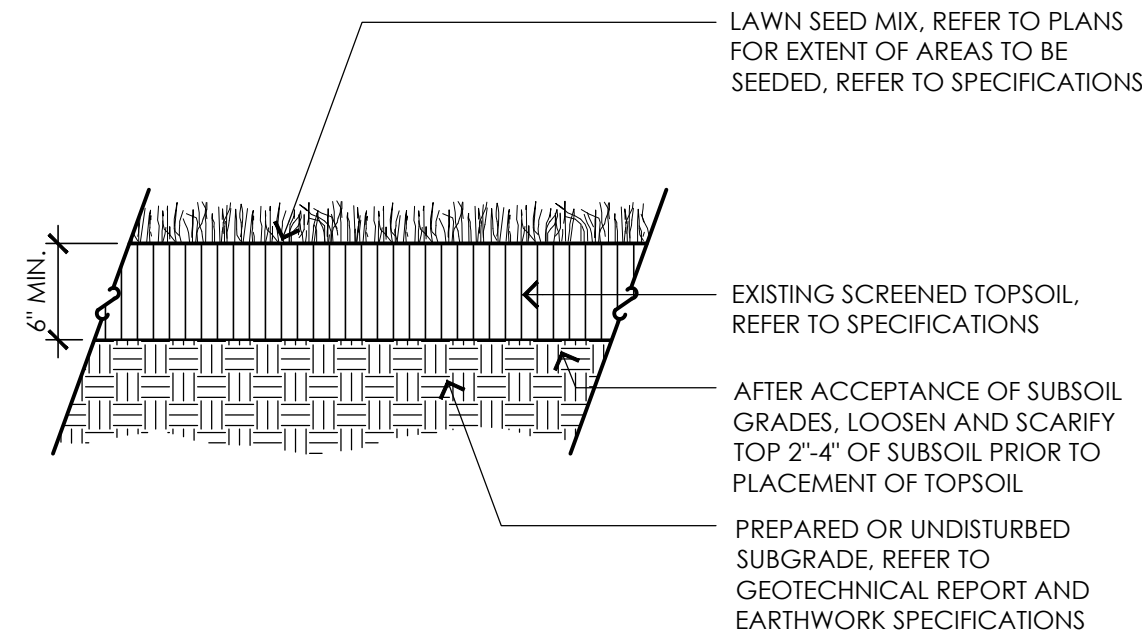
L301



CONTACT DIGSAFE:
UNDERGROUND UTILITIES SHOWN ON THE PLAN ARE COMPILED FROM PLANS AND FIELD SURVEY. UTILITY LOCATIONS SHOULD BE CONSIDERED APPROXIMATE ONLY. DIGSAFE AND/OR THE OTHER RESPECTIVE UTILITY COMPANIES SHALL BE CONTACTED 72 BUSINESS HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS. PHONE DIGSAFE 1-888-344-7233.

NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION





1 LOAM AND SEED

NOT TO SCALE

2 UPLAND SEED MIX

NOT TO SCALE

3 WET MEADOW SEED MIX

NOT TO SCALE

4 PERENNIALS, GROUNDCOVER, AND GRASSES

NOT TO SCALE

NOTES:

- TREE SHALL BEAR SAME RELATIONSHIP TO FINISHED GRADE AS IT BORE TO NURSERY OR FIELD GRADE.
- FOR TREES IN PLANT BEDS, PROVIDE 3" MULCH CONTINUOUS TO CUT EDGES OF PLANT BEDS.
- INSTALL WOOD STAKES AND TREE TIES IF THE FOLLOWING APPLY:
 - THE PLANTING LOCATION IS IN AN OPEN AREA AND IS SUSCEPTIBLE TO HIGH WINDS.
 - THE TREE IS SUBSTANTIAL IN SIZE.
 - THE PLANTING SOILS AREA SANDY OR LOOSE IN TEXTURE.
- TREE STAKES AND TIES SHALL BE REMOVED AFTER ONE YEAR.
- REMOVE ALL LABELS, TAGS, AND FOREIGN MATERIALS FROM LIMBS.

NOTES:

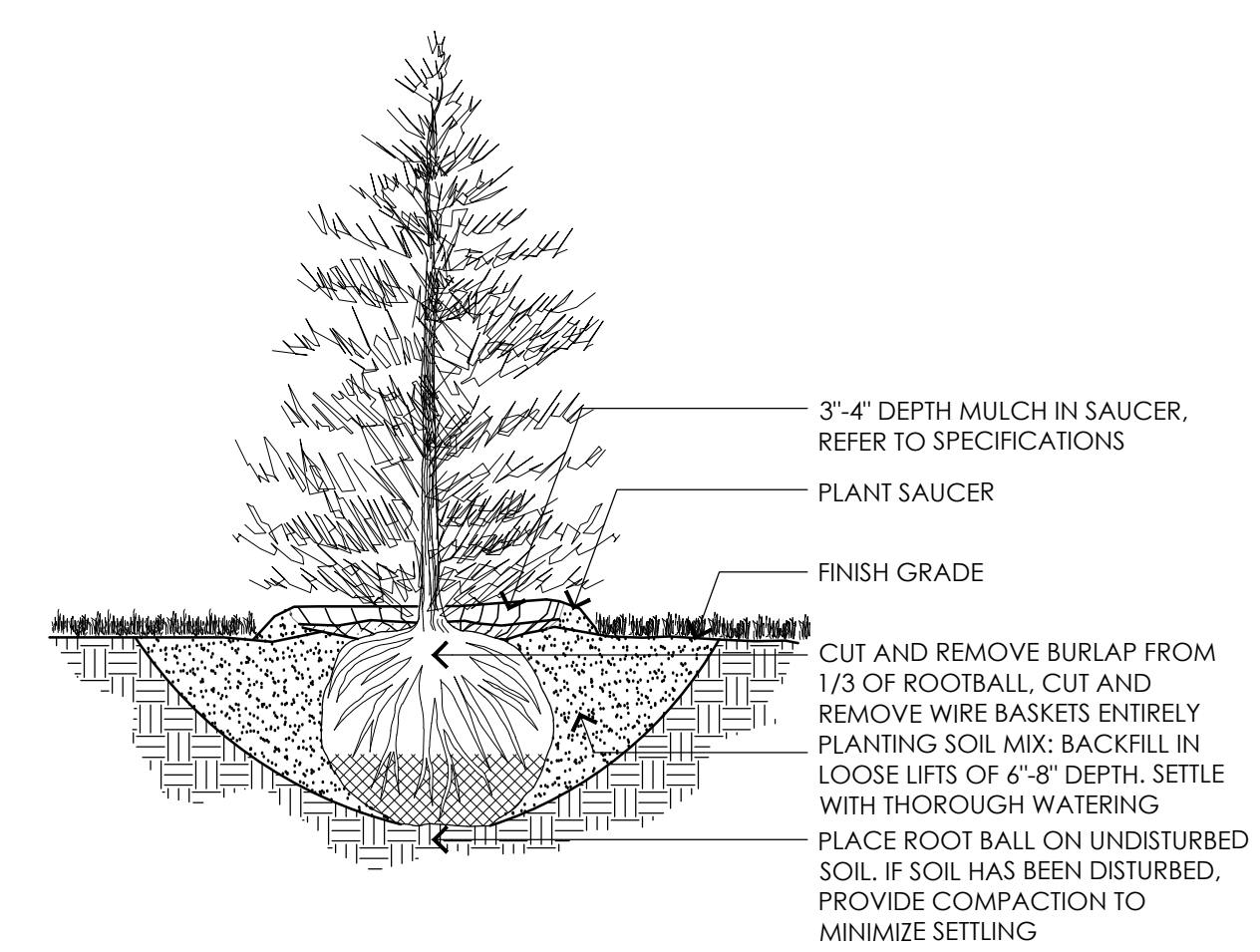
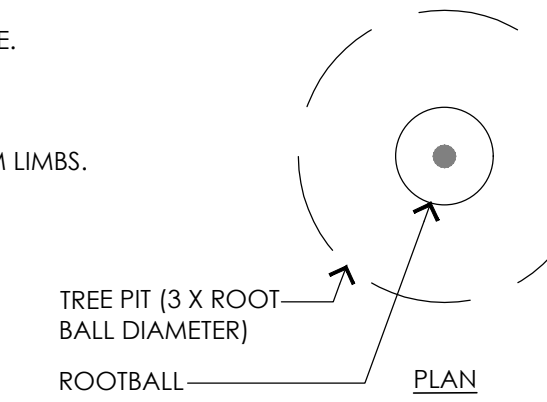
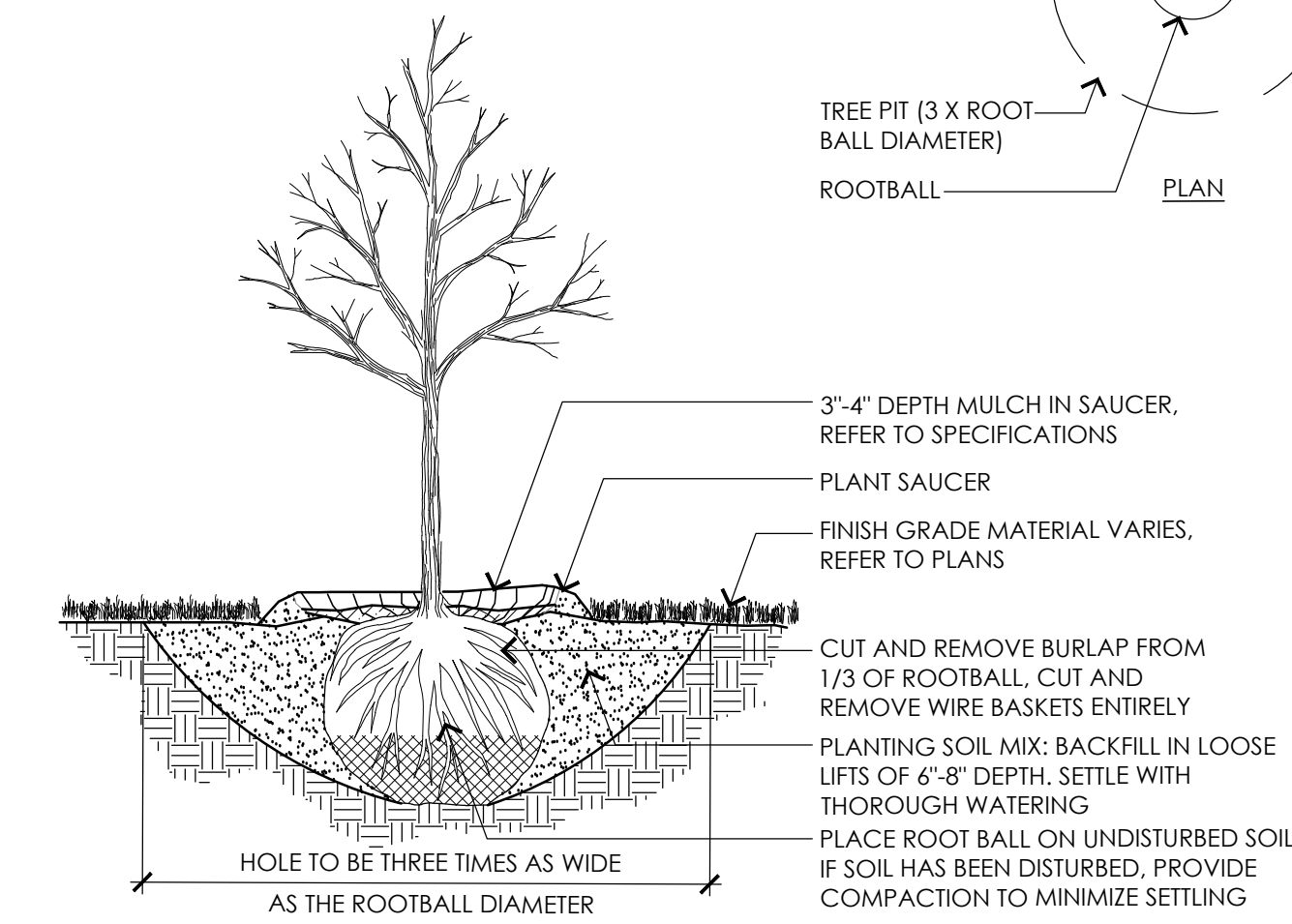
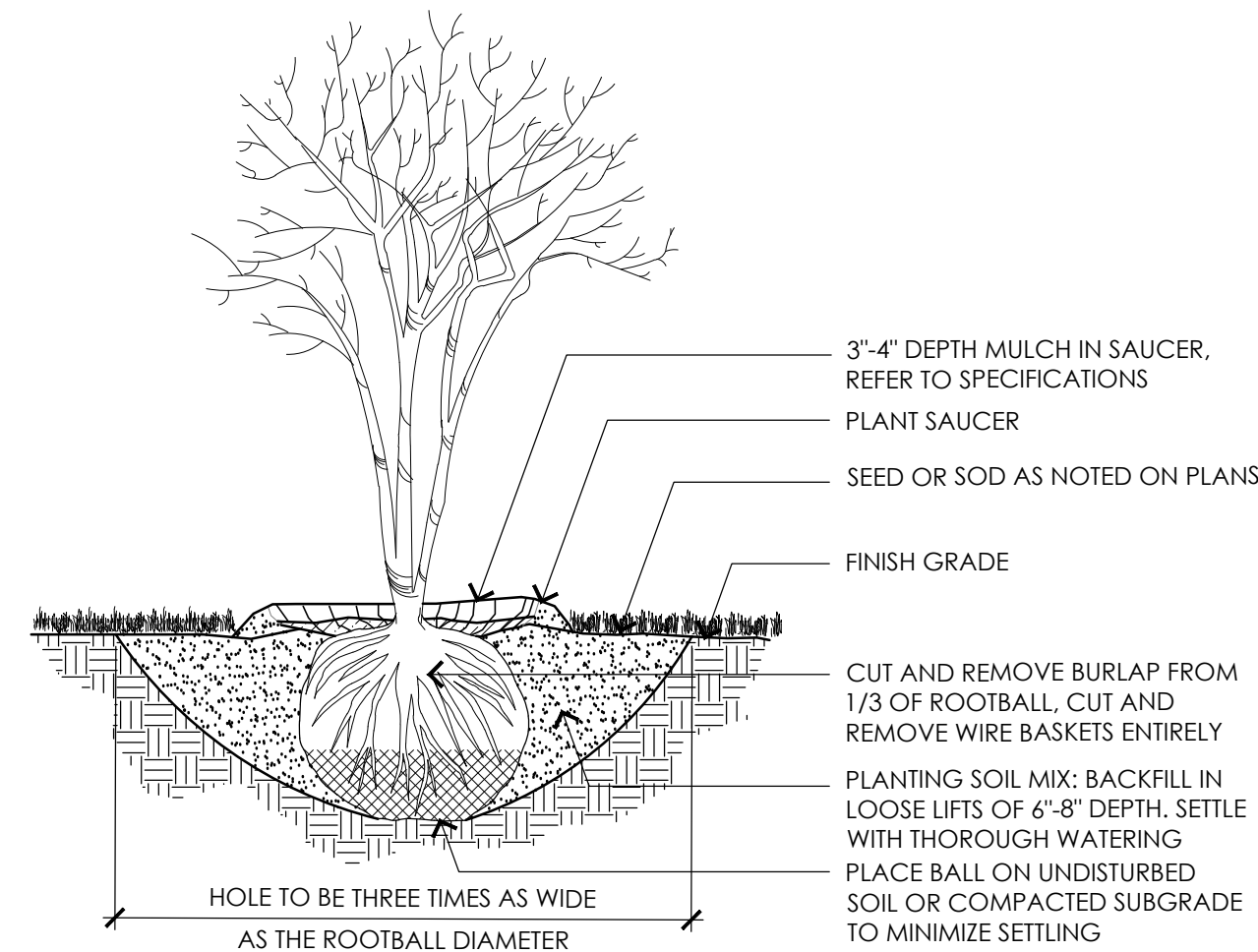
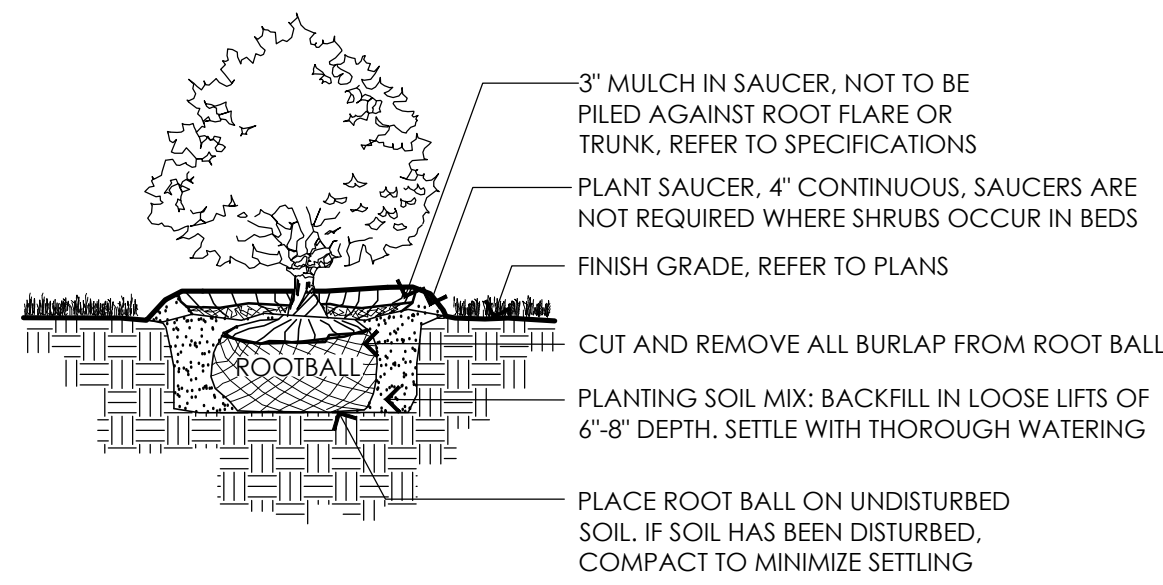
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- TREE STAKES AND TIES SHALL BE REMOVED AFTER ONE YEAR.
- REMOVE ALL LABELS, TAGS, AND FOREIGN MATERIALS FROM LIMBS.

NOTES:

- SHRUB SHALL BEAR SAME RELATIONSHIP TO FINISHED GRADE AS IT BORE TO NURSERY OR FIELD GRADE.
- WHERE SHRUBS OCCUR IN GROUPINGS IN PLANT BEDS, PROVIDE 2'-FOOT DEEP CONTINUOUS LOAM BED AND 3" MULCH CONTINUOUS TO CUT EDGES OF PLANT BED



5 SHRUB

NOT TO SCALE

6 MULTI-STEM TREE

NOT TO SCALE

7 DECIDUOUS TREE

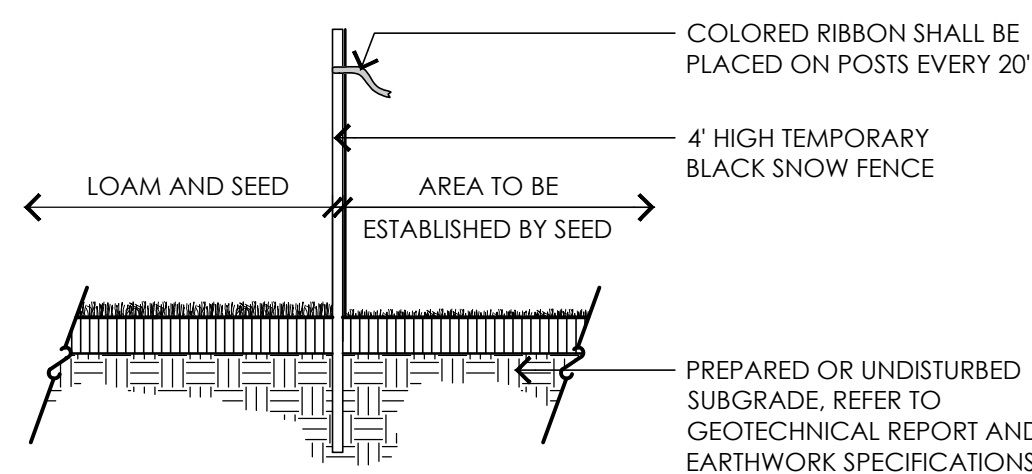
NOT TO SCALE

8 EVERGREEN TREE

NOT TO SCALE

NOTE:

- CONTRACTOR SHALL PROVIDE 18"x24" TEMPORARY VINYL SIGNS SECURED TO SNOW FENCE, TYPICAL FOR TWO (4) SIGNS, GRAPHICS TO BE PROVIDED BY LANDSCAPE ARCHITECT.



9 TEMPORARY FENCING AT SEED ESTABLISHMENT AREAS

NOT TO SCALE

PLANTING SCHEDULE

SYMBOL	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	COMMENTS
DECIDUOUS TREES					
AR	ACER RUBRUM	RED MAPLE	2	2-2.5' CAL	B&B
AC	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	1	2-2.5' CAL	B&B; MULTI-STEM
BP	BETULA POPULIFOLIA	GRAY BIRCH	11	8'-10' HT	B&B; MULTI-STEM
BN	BETULA NIGRA	RIVER BIRCH	6	8'-10' HT	B&B; MULTI-STEM
CF	CORNUS FLORIDA	FLOWERING DOGWOOD	3	2-2.5' CAL	B&B
LT	LIRIODENDRON TULIPIFERA	YELLOW POPLAR	2	2-2.5' CAL	B&B
NS	NYSSA SYLVATICA	BLACK TUPELO	5	2-2.5' CAL	B&B
QA	QUERCUS ALBA	WHITE OAK	1	2-2.5' CAL	B&B
QC	QUERCUS COCCINEA	SCARLET OAK	2	2-2.5' CAL	B&B
QP	QUERCUS PALAISTRUS	PIN OAK	2	2-2.5' CAL	B&B
SA	SASSAFRAS ALBIDUM	SASSAFRAS	2	2-2.5' CAL	B&B
UA	ULMUS AMERICANA 'PRINCETON'	PRINCETON ELM	1	2-2.5' CAL	B&B
EVERGREEN TREES					
JV	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	14	6'-8' HT	B&B
LL	LARIX LARICINA	TAMARAK	5	6'-8' HT	B&B
PR ¹	PINUS RESINOSA	RED PINE	4	6'-8' HT	B&B
PR ²	PINUS RIGIDA	PITCH PINE	5	6'-8' HT	B&B
PS	PINUS STROBUS	EASTERN WHITE PINE	6	8'-10' HT	B&B
SHRUBS					
CA	CORYLUS AMERICANA	AMERICAN HAZELNUT	8	3 GAL	AS SHOWN
CP ¹	COMPTONIA PEREGRINA	SWEET FERN	5	3 GAL	AS SHOWN
MP	MYRICA PENNSYLVANICA	BAYBERRY	9	3 GAL	AS SHOWN
IG	ILEX GLABRA 'COMPACTA'	INKBERRY	5	3 GAL	AS SHOWN
VA	VIBURNUM ACERIFOLIUM	MAPLE LEAF VIBURNUM	5	3 GAL	AS SHOWN
PERENNIALS, GROUNDCOVER, AND GRASSES					
CP ²	CAREX PENNSYLVANICA	SEDGE	729	1 GAL	SPACE 12" O.C.
DP	DENNSTAEDTIA PUNCTILOBULA	HAY SCENTED FERN	153	1 GAL	SPACE 24" O.C.
PV	PANICUM VIRGATUM	SWITCH GRASS	95	1 GAL	SPACE 36" O.C.
RA	RHUS AROMATICA 'GRO LOW'	FRAGRANT SUMAC	75	1 GAL	SPACE 48" O.C.
RH	RUDBECKIA HIRTA	BLACK-EYED SUSAN	218	1 GAL	SPACE 30" O.C.
SN	SALVIA NEMOROSA	WOODLAND SAGE	465	1 GAL	SPACE 18" O.C.

UPLAND SEED MIX

BOTANICAL NAME	COMMON NAME	
NEW ENGLAND ROADSIDE MATRIX UPLAND SEED MIX		
ELYMUS CANADENSIS	CANADA WILD RYE	FACW+
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	FACU
FESTUCA RUBRA	CREeping RED FESCUE	FACU
ANDROPOGON GERARDII	BIG BLUESTEM	FAC
SORGHASTRUM NUTANS	INDIAN GRASS	UPL
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	FACU
PANICUM VIRGATUM	SWITCHGRASS	FAC
RHUS TYPHINA	STAGHORN SUMAC	
CORNUS AMOMIUM	SILKY DOGWOOD	FACW
CORNUS RACEMOSA	GREY DOGWOOD	FAC
ASCLEPIAS SYRIACA	COMMON MILKWEED	FACU-
ZIZIA AUREA	GOLDEN ALEXANDERS	FAC
DESMODIUM CANADENSE	SHOWY TICK TREFOIL	FAC
LESPEDEZA CAPITATA	BUSH CLOVER	FACU-
HELIOPSIS HELIANTHOIDES	OX EYE SUNFLOWER	UPL
MONARDA FISTULOSA	WILD BERGAMOT	UPL
RUDBECKIA HIRTA	BLACK EYED SUSAN	FACU-
ASTER LAEVIS	SMOOTH BLUE ASTER	UPL
EUTHAMIA GRAMINIFOLIA	GRASS LEAVED GOLDENROD	FAC
SOLIDAGO JUNCEA	EARLY GOLDENROD	

APPLY 18LBS/ACRE: 1250 SF/LB

NOTES:

- SEED MIXES SHALL BE EQUIVALENT TO THE SEED MIXES SHOWN AS DESIGNED AND SUPPLIED BY NEW ENGLAND WETLAND PLANTS, INC., AMHERST, MA (413) 548-8000.
- CONTRACTOR SHALL SUBMIT ALL SEED MIXES TO LANDSCAPE ARCHITECT FOR REVIEW PRIOR TO PLACING ORDER.

UPLAND SEED MIX | 50:50 Blend of Upland Seed Mix and Wet Meadow Seed Mix Quantity:
Site Development Areas (±21,706 sf) 1 lb/1250 sf (qty. ±18 lbs)

WETLAND MEADOW SEED MIX | 50:50 Blend of Upland Seed Mix and Wet Meadow Seed Mix Quantity:
Site Development Areas (±8,410 sf) 1 lb/1250 sf (qty. ±7 lbs)

WET MEADOW SEED MIX

BOTANICAL NAME	COMMON NAME	
NEW ENGLAND ROADSIDE MATRIX WET MEADOW SEED MIX		
ELYMUS RIPARIUS	RIVERBANK WILD RYE	FACW
FESTUCA RUBRA	CREeping RED FESCUE	FACU
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	FACW-
BIDENS ARISTOSA	TICKSEED SUNFLOWER	FACW
PANICUM DICHOTOMIFLORUM	SMOOTH PANIC GRASS	FACW-
PANICUM VIRGATUM	SWITCHGRASS	FAC
CORNUS AMOMIUM	SILKY DOGWOOD	FACW
VERBENA HASTATA	BLUE VERVAIN	FACW
CAREX LURIDA	LURID SEDGE	OBL
CAREX SCOPARIA	BLUNT BROOM SEDGE	FACW
HELENIUM AUTUMNALE	COMMON SNEEZEWEED	FACW+
VIBURNUM DENTATUM	ARROW WOOD VIBURNUM	FAC
ASCLEPIAS INCARNATA	SWAMP MILKWEED	OBL
ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	FACW-
EUPATORIUM MACULATUM	SPOTTED JOE WEED	FACW
EUPATORIUM PERFOLIATUM	BONASET	FACW
AGROSTIS SCABRA	ROUGH BENTGRASS/TICKLEGRASS	FAC
SCIRPUS ATROVIRENS	GREEN BULRUSH	OBL
SAMBUCUS CANADENSIS	ELDERBERRY	FACW-

APPLY 18LBS/ACRE: 1250 SF/LB

ARCHITECT

bh+a

Bargmann Hendrie + Archetype, Inc.
9 Channel Center Street, Suite 300
Boston, MA 02210
617 350 0450

PROJECT NAME

Reading Center for Active Living (ReCAL) + Outdoor Community Pickleball Courts
Symonds Way
Reading, MA 01867

CLIENT

Town of Reading
16 Lowell Street
Reading, MA 01867

PROJECT TEAM

Civil and Landscape Engineer
Activitas
70 Milton Street
Dedham, MA 02026
(781) 326-2600

Structural Engineer
Foley Buhl Roberts & Associates, Inc.
2227 Washington Street
Newton, MA 02462
(617) 527-9600

MEPPF Engineer

Allied Consulting Engineering
270 Littleton Road, Suite 11
Westford, MA 01886
(978) 443-7888

AV / IT / Security

Building Technology Consulting
992 Bedford St.
Bridgewater, MA 02324
(617) 799-4309

Food Service

Colburn Guyette
100 Ledgewood Pl #104
Rockland, MA 02370
(781) 826-5522

Wetland Scientist

Epsilon Associates, Inc.
3 Mill and Main Place, Suite 250
Maynard, MA 01754
(978) 897-7100

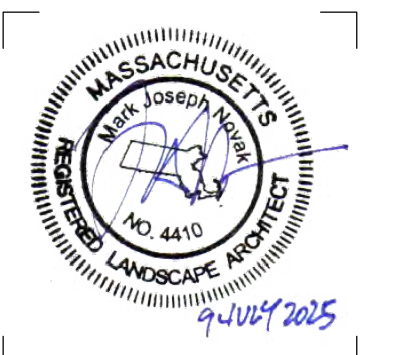
REVISIONS

NO.	DESCRIPTION	DATE

DRAWING TITLE

Planting Detail Sheet and Planting Schedule

DRAWING INFORMATION



07/09/2025
DATE OF ISSUE

NOTICE OF INTENT
DESCRIPTION

AS NOTED
SCALE

AJA
DRAWN BY

3513
PROJECT #

FILE NAME

DRAWING NUMBER

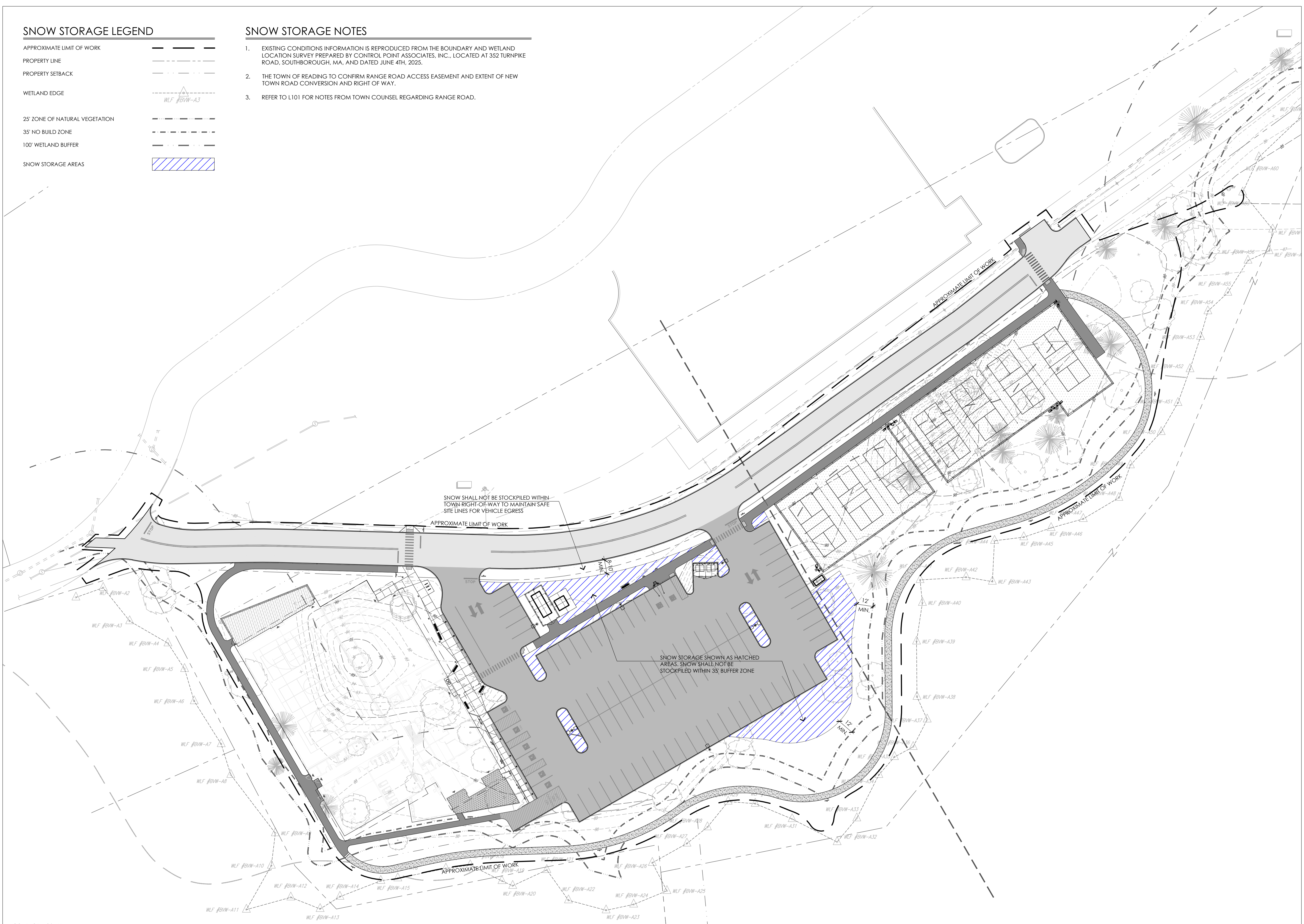
L302

SNOW STORAGE LEGEND

- APPROXIMATE LIMIT OF WORK
- PROPERTY LINE
- PROPERTY SETBACK
- WETLAND EDGE WLF #BW-A3
- 25' ZONE OF NATURAL VEGETATION
- 35' NO BUILD ZONE
- 100' WETLAND BUFFER
- SNOW STORAGE AREAS

SNOW STORAGE NOTES

1. EXISTING CONDITIONS INFORMATION IS REPRODUCED FROM THE BOUNDARY AND WETLAND LOCATION SURVEY PREPARED BY CONTROL POINT ASSOCIATES, INC., LOCATED AT 352 TURNPIKE ROAD, SOUTHBOROUGH, MA, AND DATED JUNE 4TH, 2025.
2. THE TOWN OF READING TO CONFIRM RANGE ROAD ACCESS EASEMENT AND EXTENT OF NEW TOWN ROAD CONVERSION AND RIGHT OF WAY.
3. REFER TO L101 FOR NOTES FROM TOWN COUNSEL REGARDING RANGE ROAD.



REVISIONS

NO.	DATE	DESCRIPTION

DRAWING TITLE
Snow Storage Plan

DRAWING INFORMATION

Megan E. Buczynski
7/9/2025

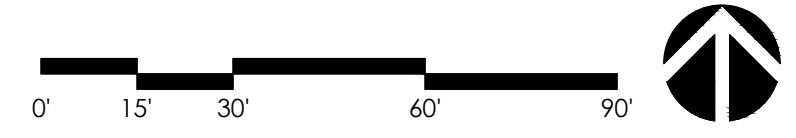
07/09/2025
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AJA DRAWN BY
3513 PROJECT # FILE NAME

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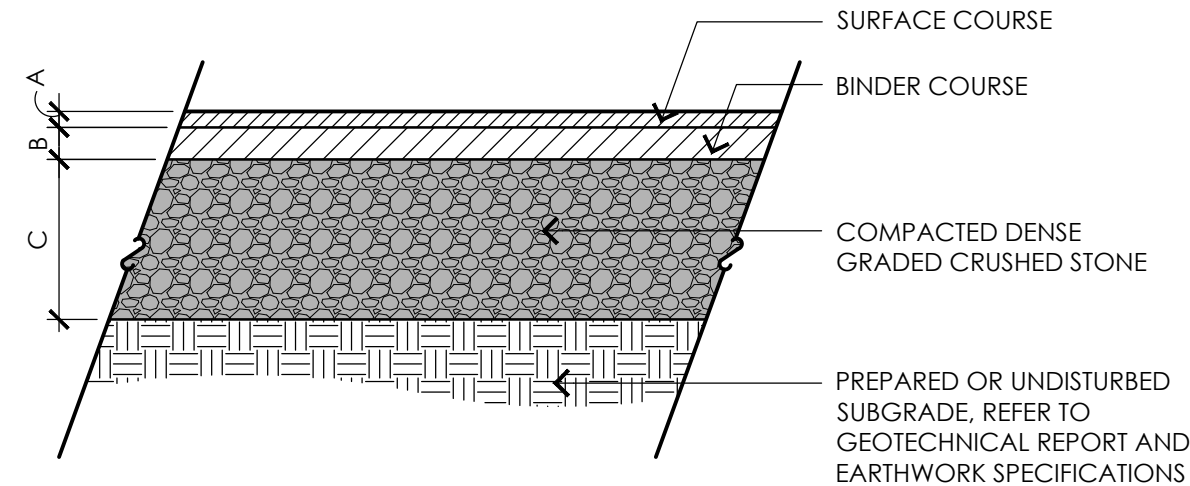
L401

CONTACT DIGSAFE:
UNDERGROUND UTILITIES SHOWN ON THE PLAN ARE COMPILED FROM PLANS AND FIELD SURVEY. UTILITY LOCATIONS SHOULD BE CONSIDERED APPROXIMATE ONLY. DIGSAFE AND/OR THE OTHER RESPECTIVE UTILITY COMPANIES SHALL BE CONTACTED 72 BUSINESS HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS. PHONE DIGSAFE 1-888-344-7233.

NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION

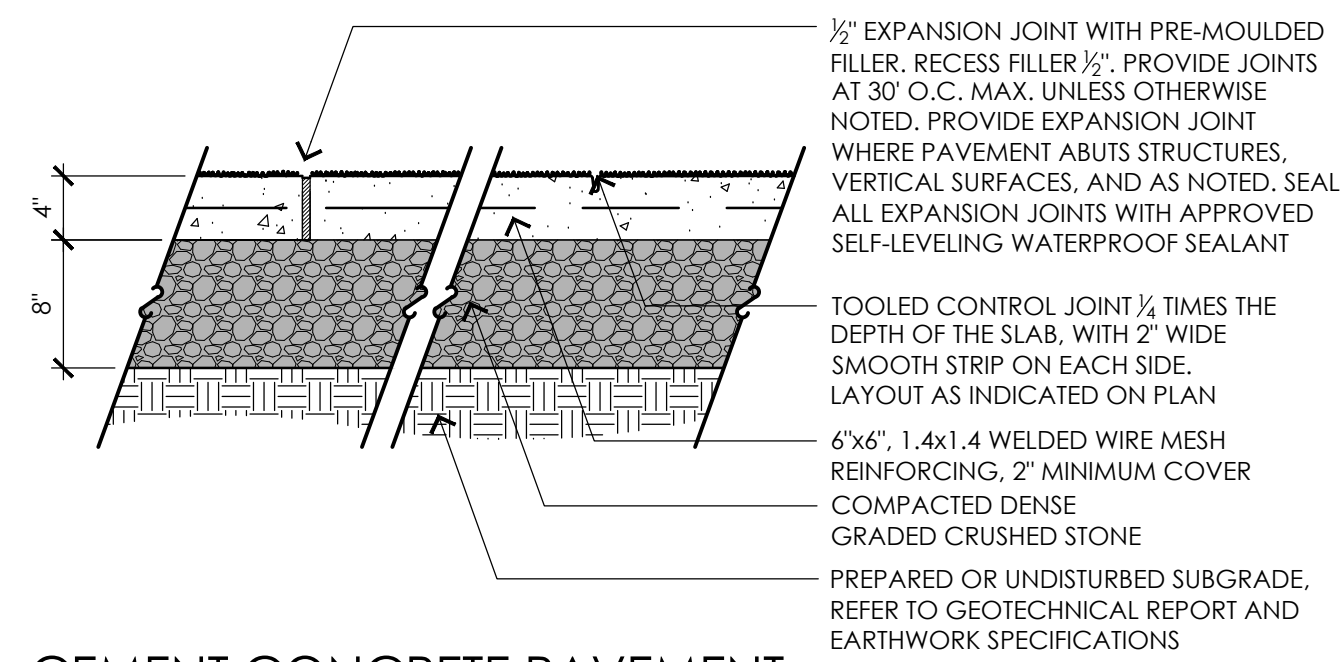


TYPE	DESCRIPTION	A	B	C
1	WALKWAYS	1-1/2"	1-3/4"	10"
2	PARKING LOT	1-3/4"	1-3/4"	12"
3	ROADWAY	1-1/2"	2-1/2"	12"

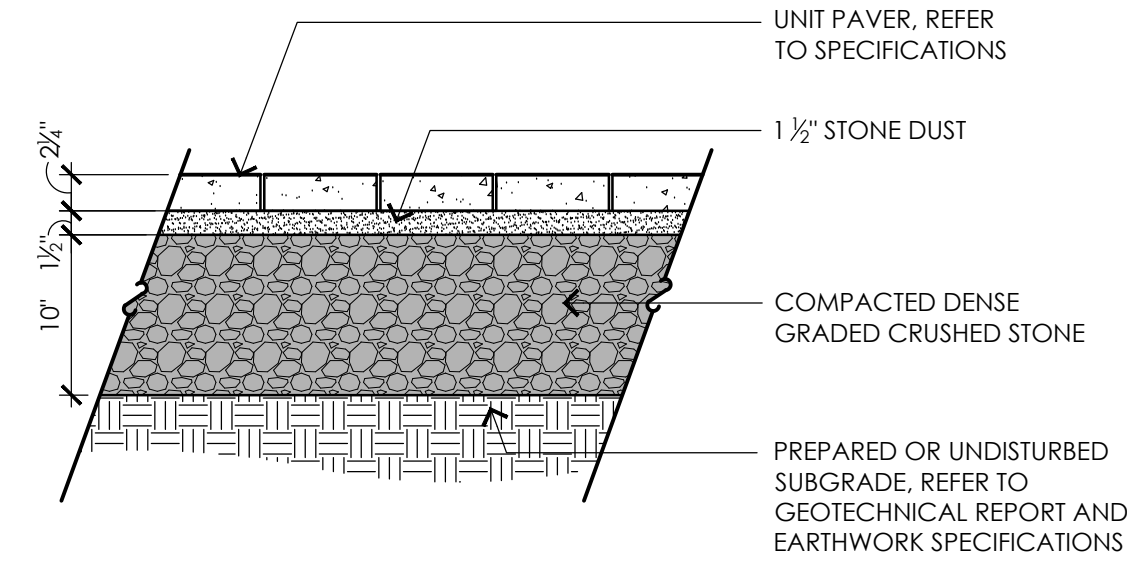


1 BITUMINOUS CONCRETE PAVEMENT
NOT TO SCALE

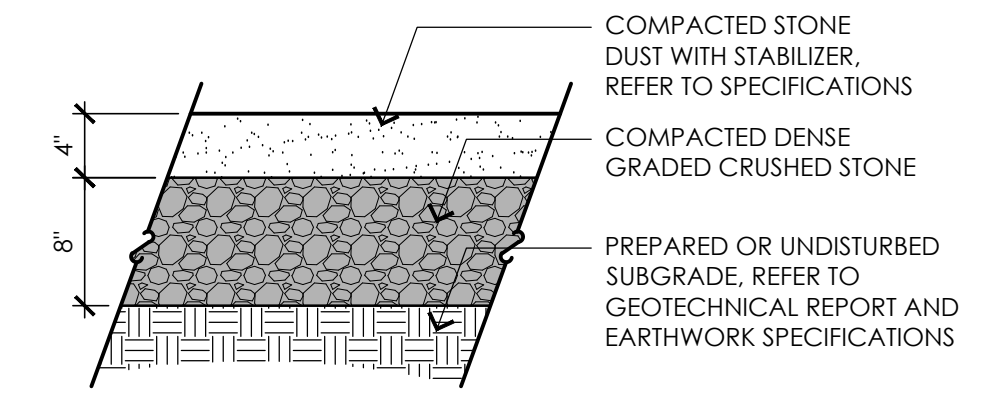
NOTE:
1. PROVIDE LIGHT BROOM FINISH PERPENDICULAR TO FLOW OF TRAFFIC.



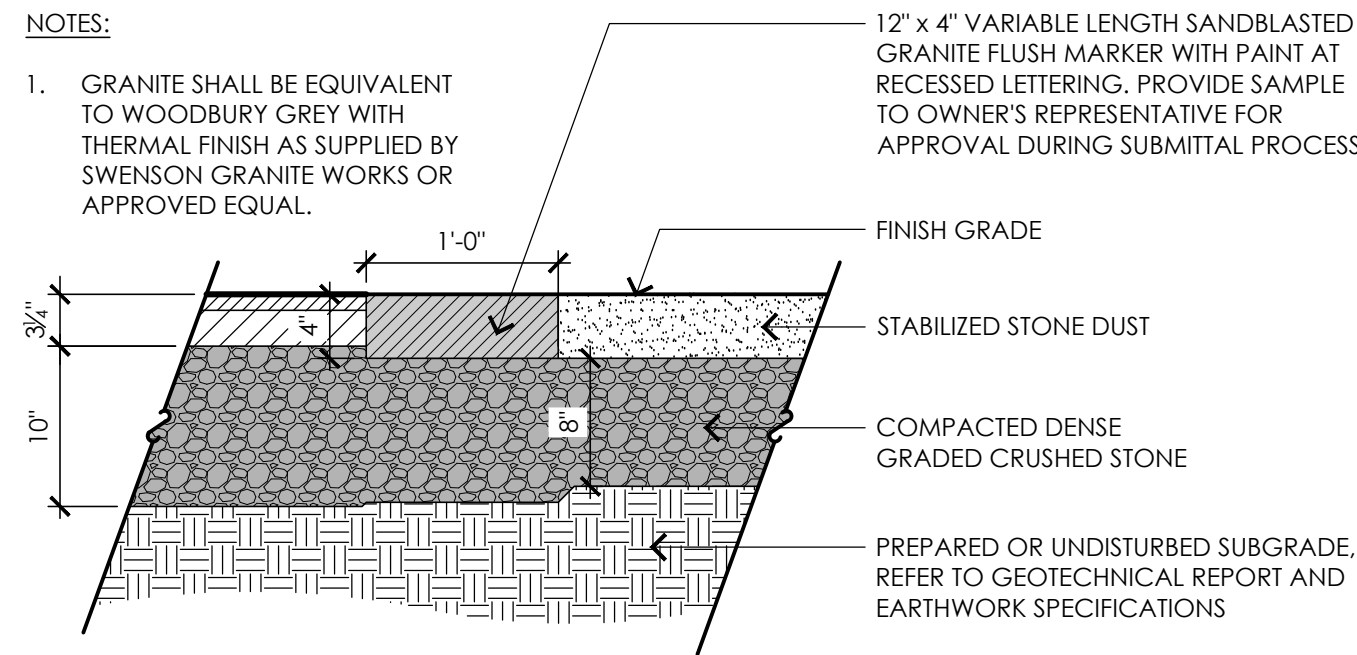
2 CEMENT CONCRETE PAVEMENT
NOT TO SCALE



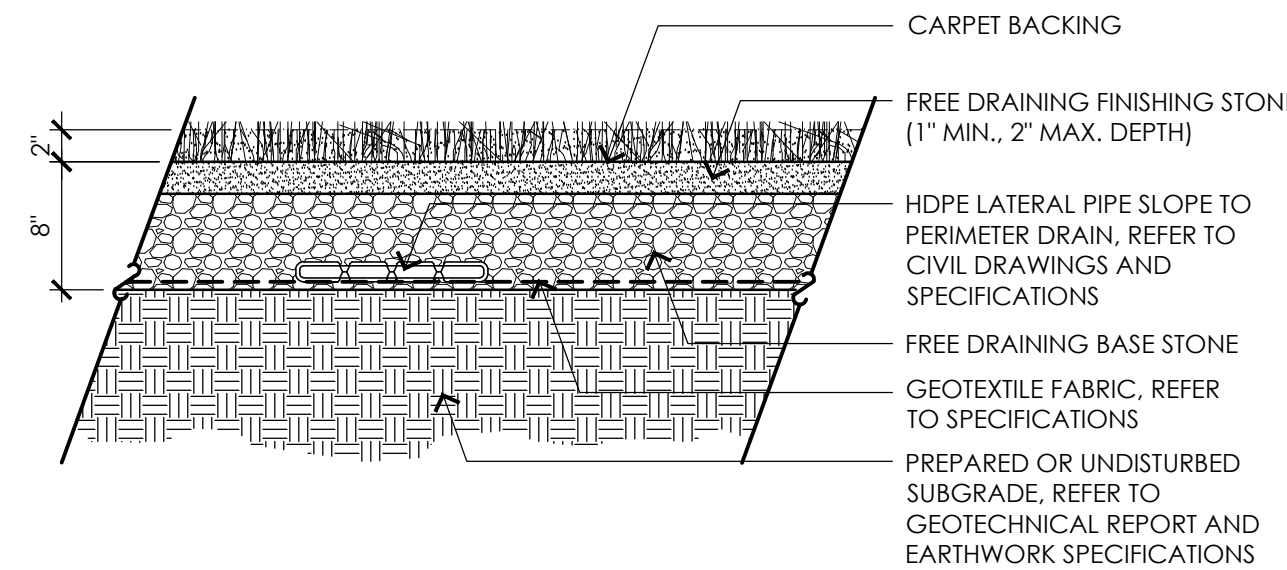
3 UNIT PAVERS
NOT TO SCALE



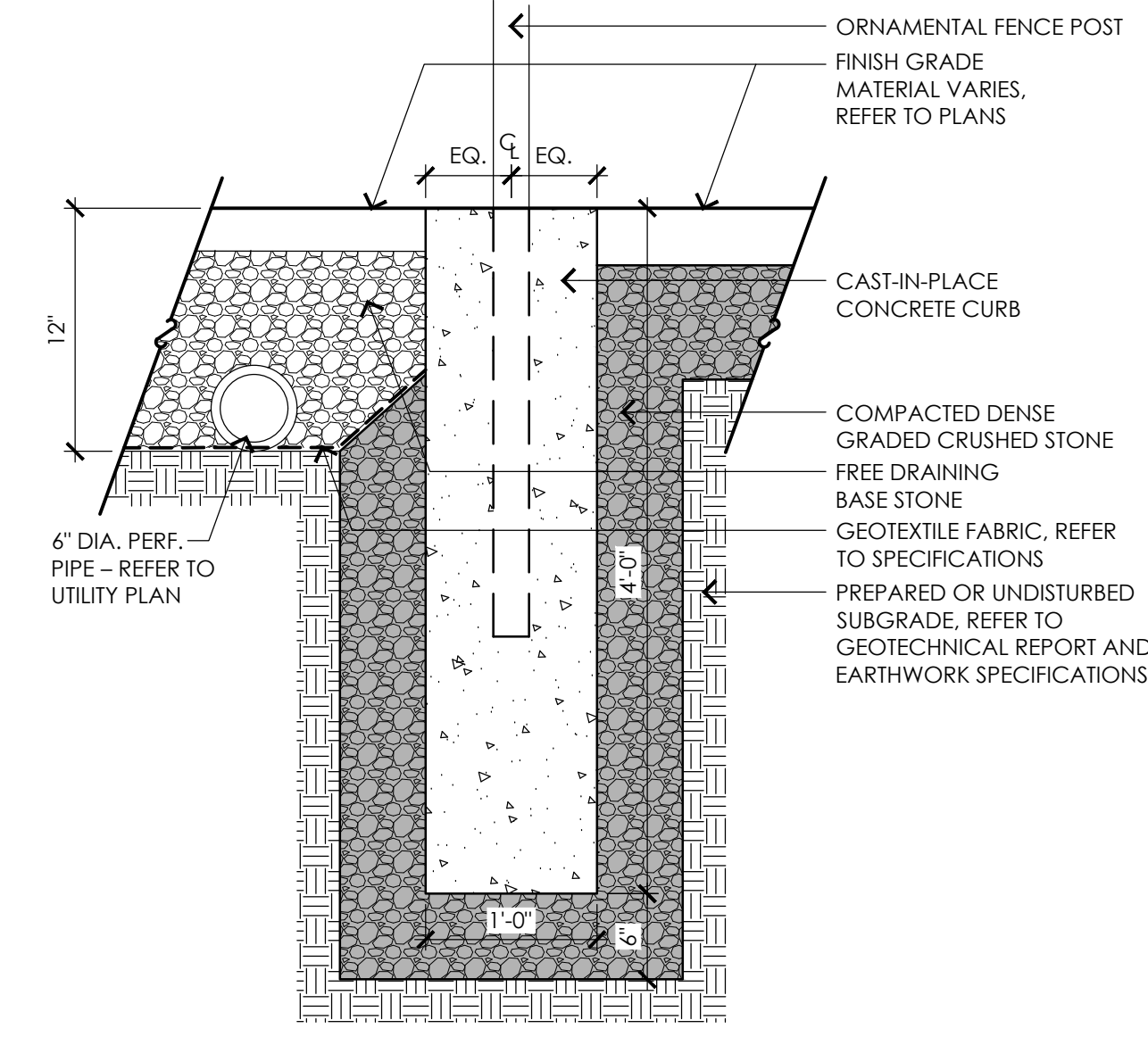
4 STABILIZED STONE DUST PAVEMENT
NOT TO SCALE



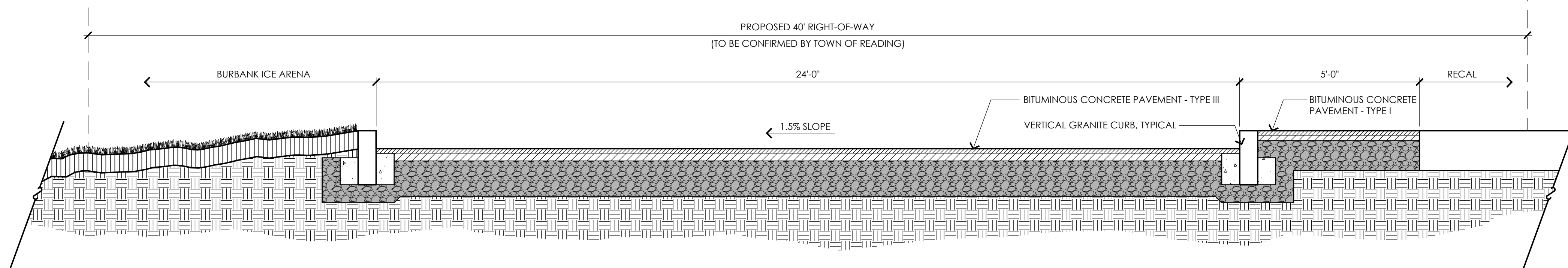
5 STONE DUST TRANSITION CURB
NOT TO SCALE



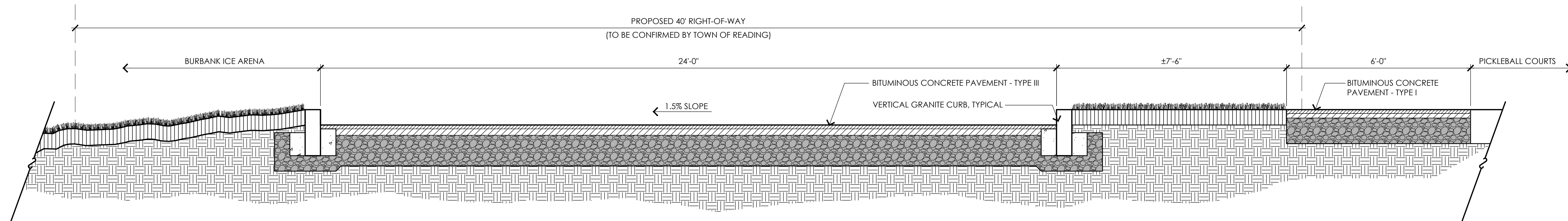
6 NON-INFILLED SYNTHETIC TURF SYSTEM
NOT TO SCALE



7 CEMENT CONCRETE TURF ANCHOR
NOT TO SCALE



8 RANGE ROAD CORSS SECTION A - A'
NOT TO SCALE



9 RANGE ROAD CORSS SECTION B - B'
NOT TO SCALE

NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION

ARCHITECT

bh+a

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9 Channel Center Street, Suite 300
Boston, MA 02210
617 350 0450

PROJECT NAME
Reading Center for Active Living (ReCAL) + Outdoor Community Pickleball Courts
Symonds Way
Reading, MA 01867

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REVISIONS

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Detail Sheet I

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07/09/2025

DATE OF ISSUE

NOTICE OF INTENT

DESCRIPTION

AS NOTED

SCALE

PROJECT #

DRAWING NUMBER

DATE

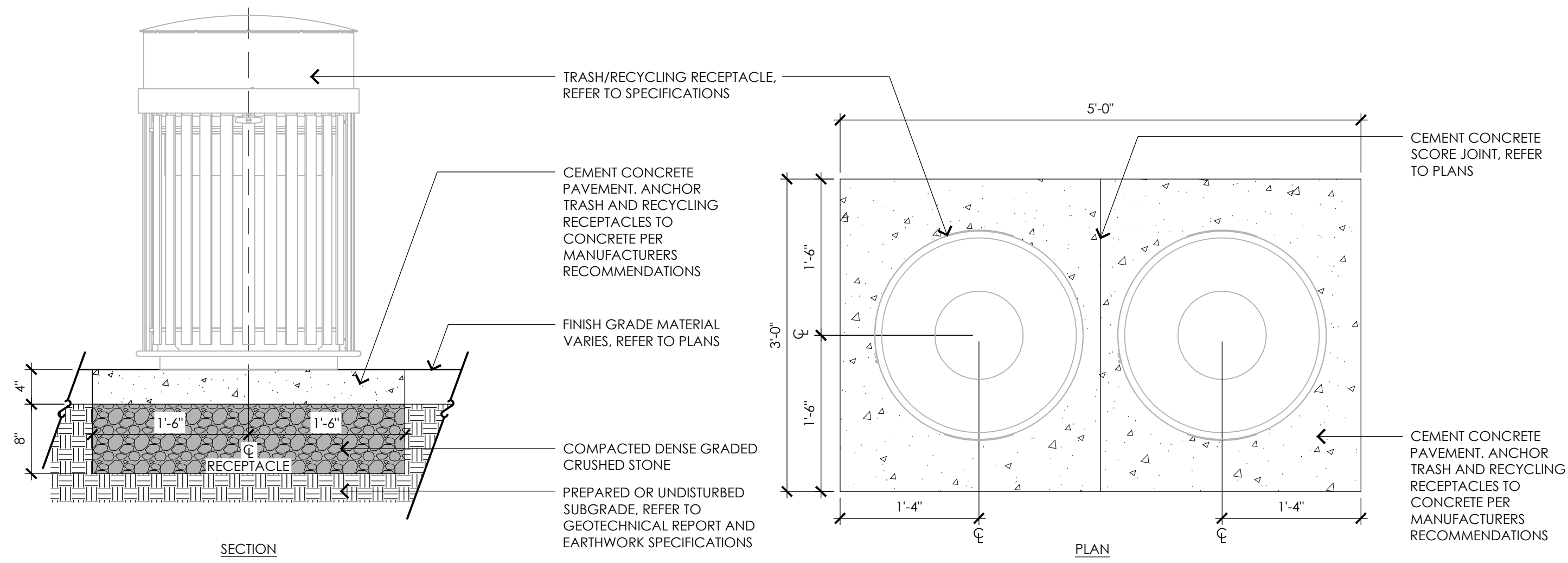
FILE NAME

DRAWING NUMBER

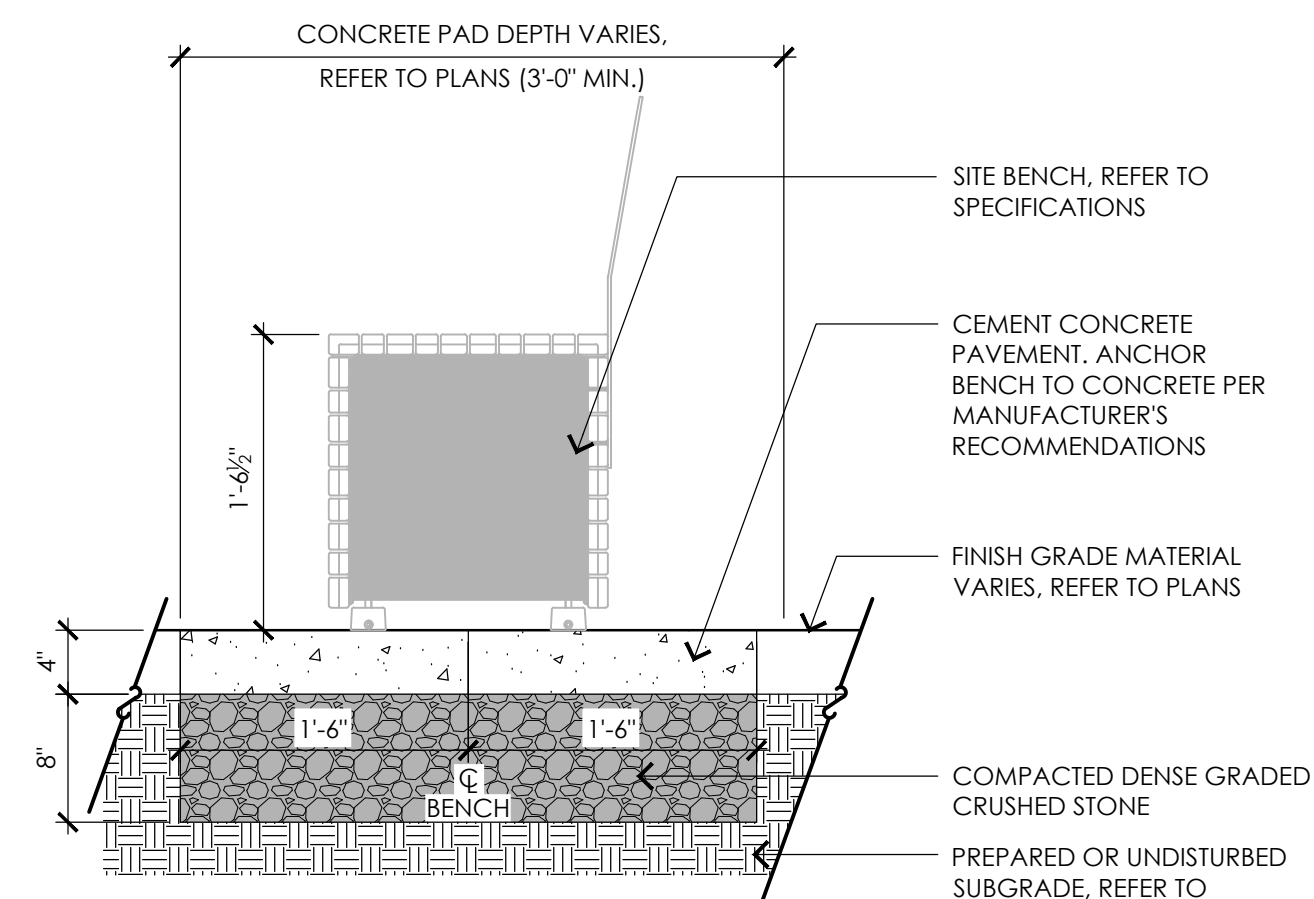
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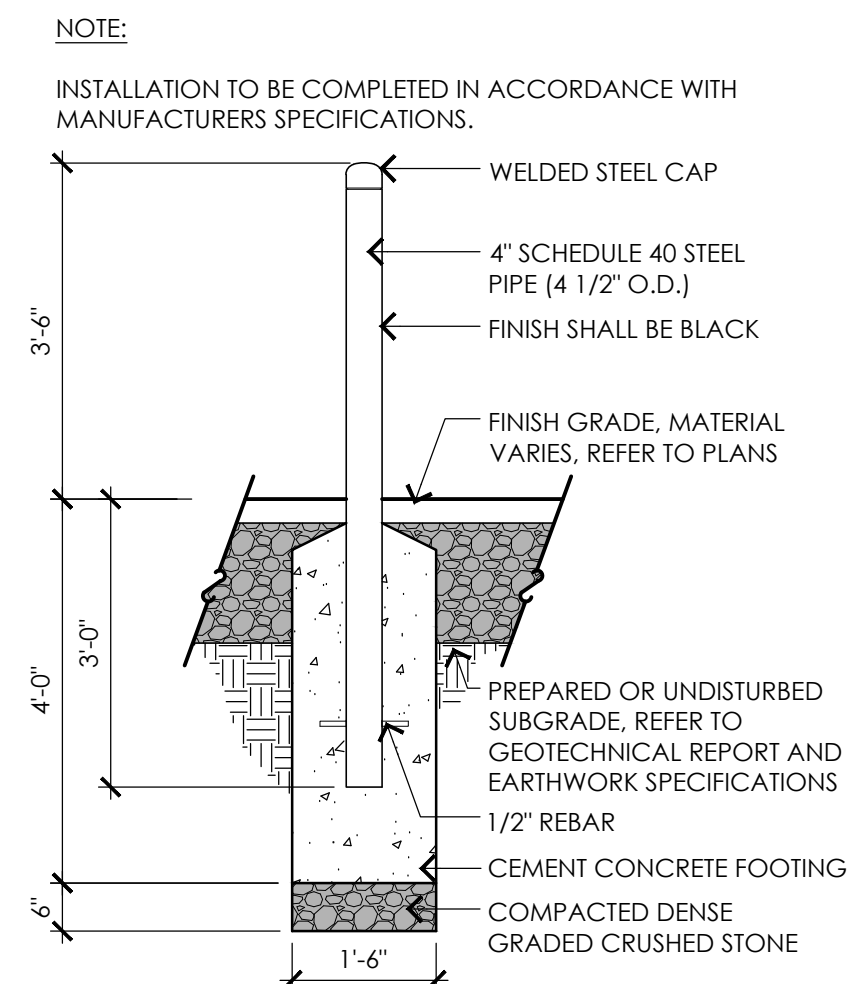
V.3.0



1 TRASH/RECYCLING RECPTACLES ON CEMENT CONCRETE PAD
NOT TO SCALE

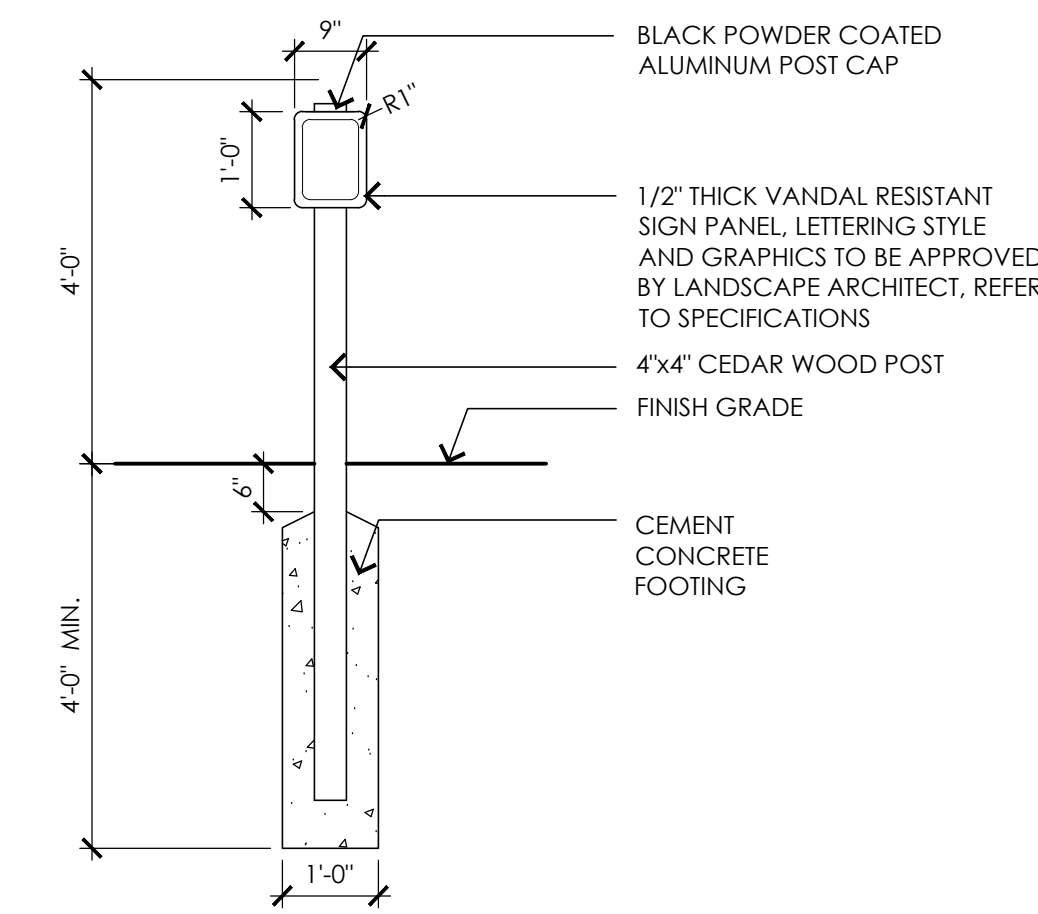


2 SITE BENCH
NOT TO SCALE



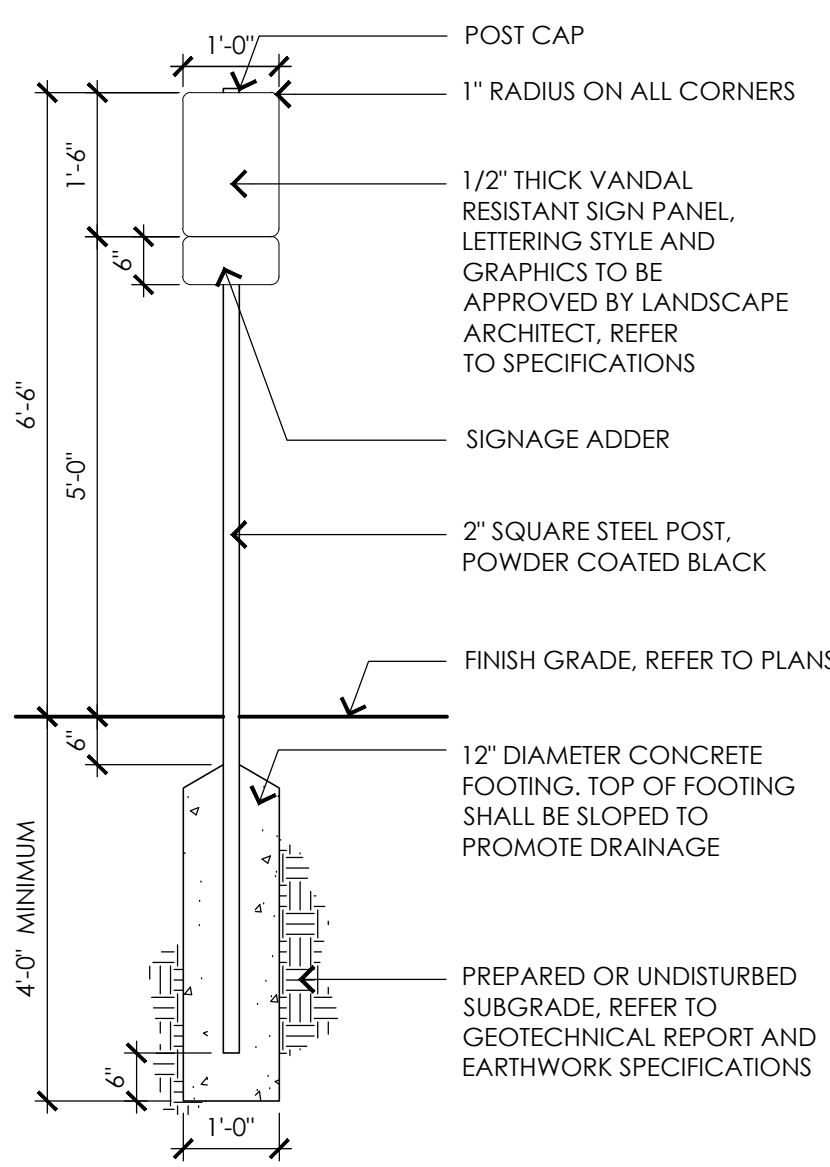
3 BOLLARD
NOT TO SCALE

- NOTES:**
1. GRAPHICS AND LETTERING STYLE SHALL BE SUPPLIED BY THE LANDSCAPE ARCHITECT AND COPY TO BE APPROVED BY LANDSCAPE ARCHITECT.
 2. ALL TEXT, COLORS, FONTS, AND DIMENSIONS SHALL BE REVIEWED BY LANDSCAPE ARCHITECT AND THE OWNER.
 3. CONTRACTOR SHALL SUBMIT MOUNTING METHOD FOR APPROVAL.
 4. ALL SIGN MOUNTING MECHANISMS SHALL BE PAINTED BLACK.

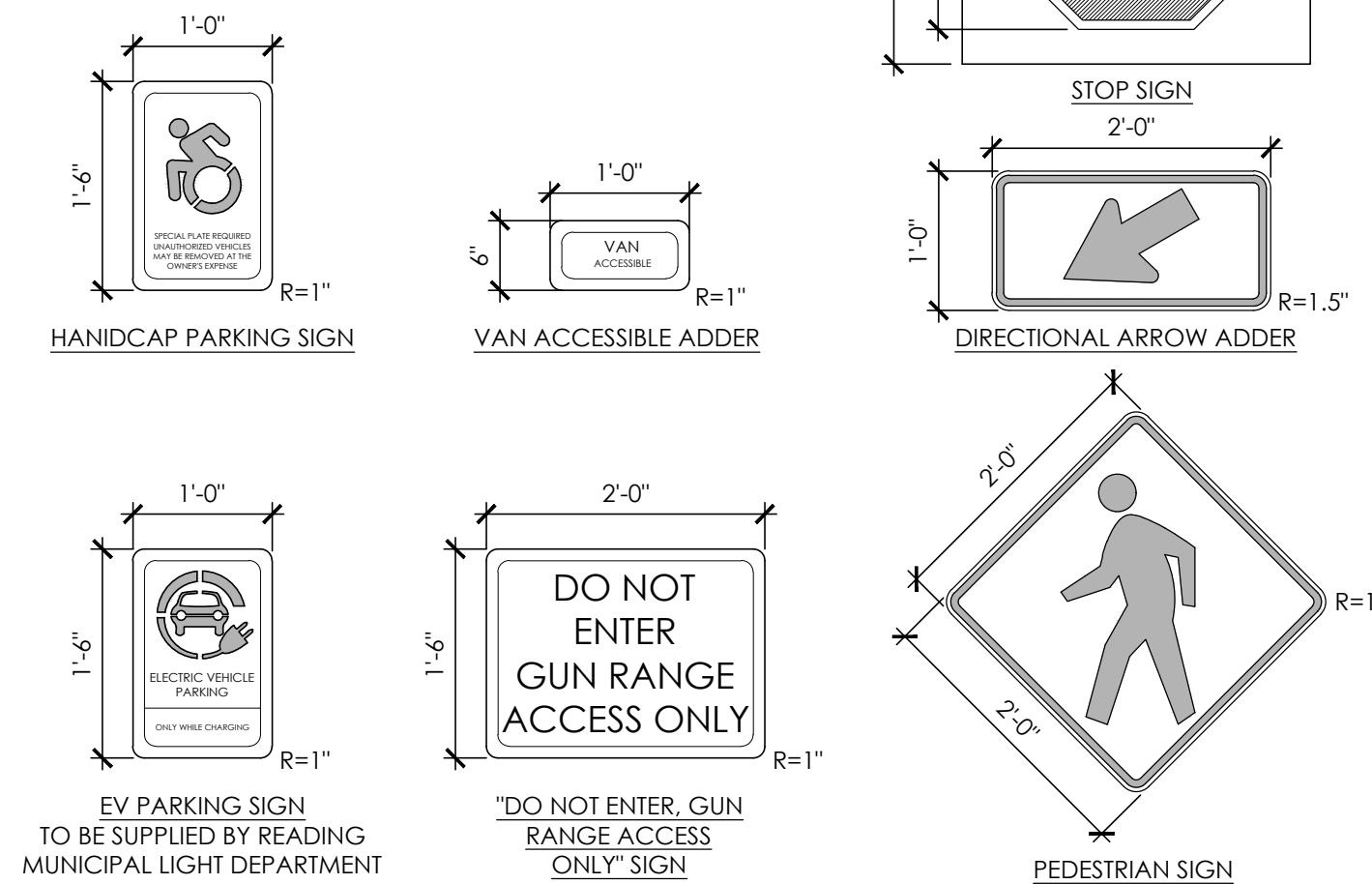


4 EDUCATIONAL SIGNAGE
NOT TO SCALE

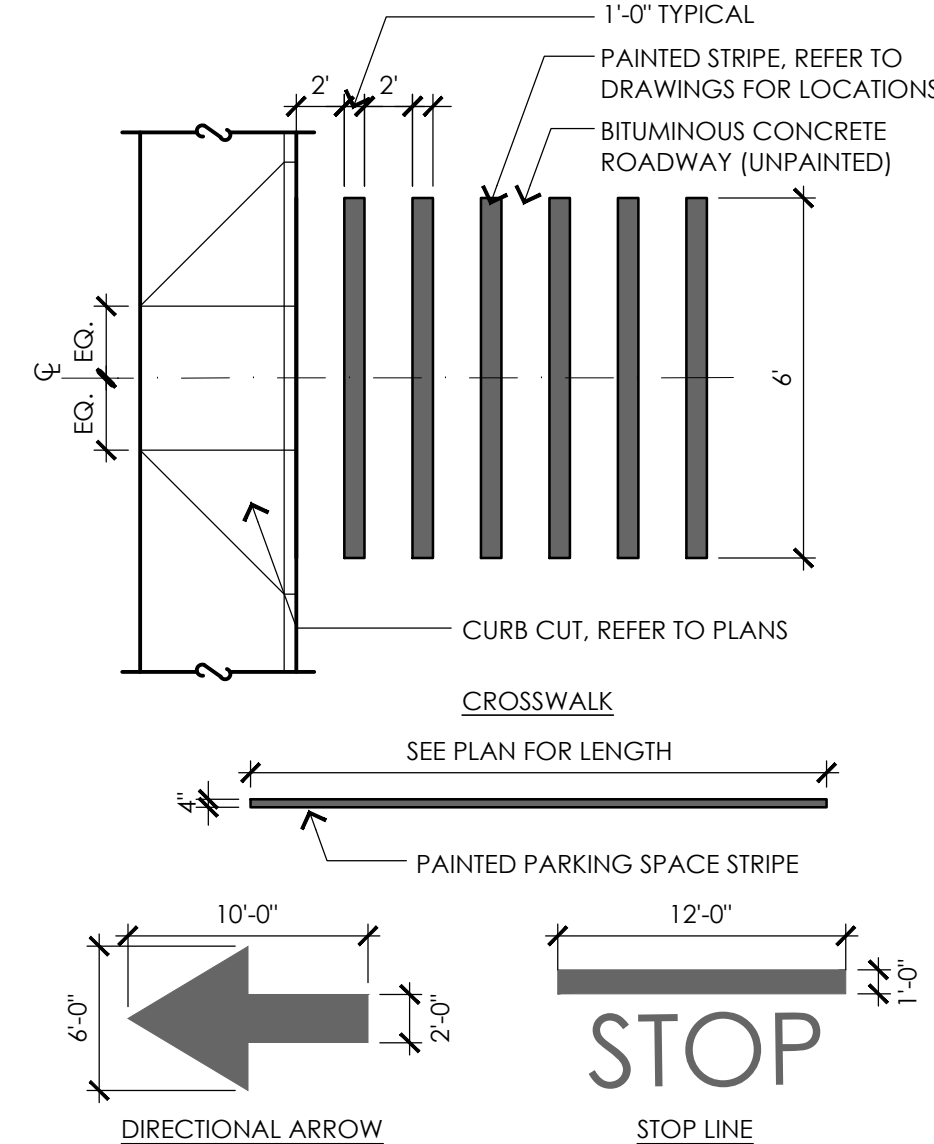
- NOTES:**
1. GRAPHICS AND LETTERING STYLE SHALL BE SUPPLIED BY THE LANDSCAPE ARCHITECT AND COPY TO BE APPROVED BY LANDSCAPE ARCHITECT.
 2. ALL TEXT, COLORS, FONTS, AND DIMENSIONS SHALL BE REVIEWED BY LANDSCAPE ARCHITECT AND THE OWNER.
 3. CONTRACTOR SHALL SUBMIT MOUNTING METHOD FOR APPROVAL.
 4. ALL SIGN MOUNTING MECHANISMS SHALL BE PAINTED BLACK.



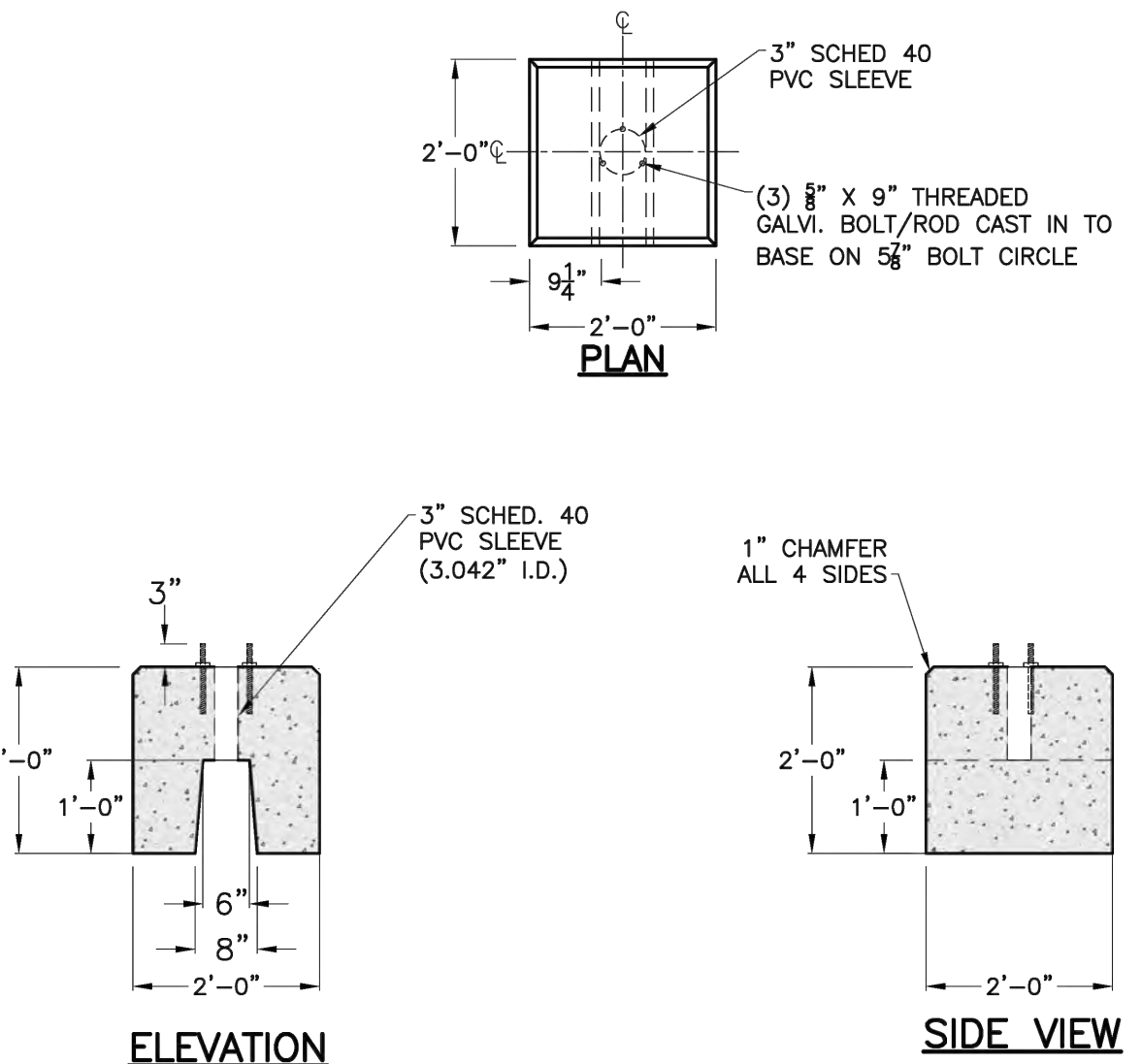
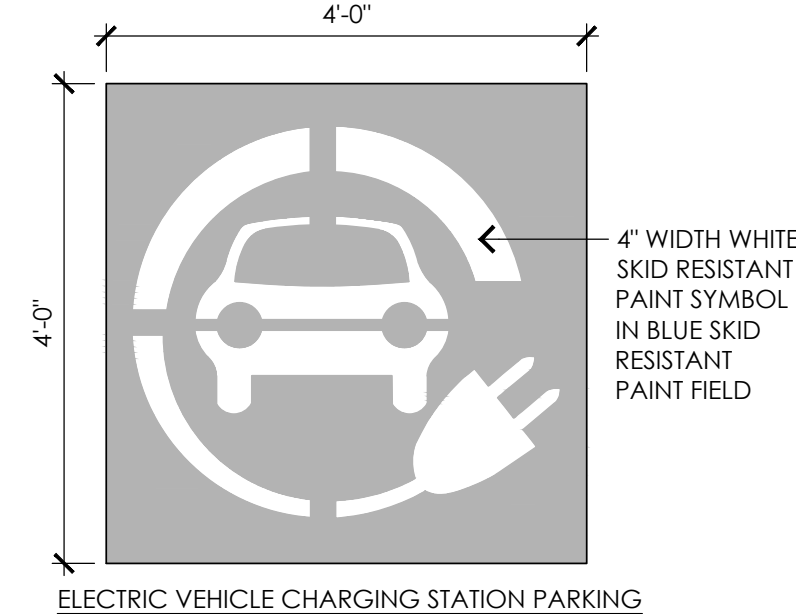
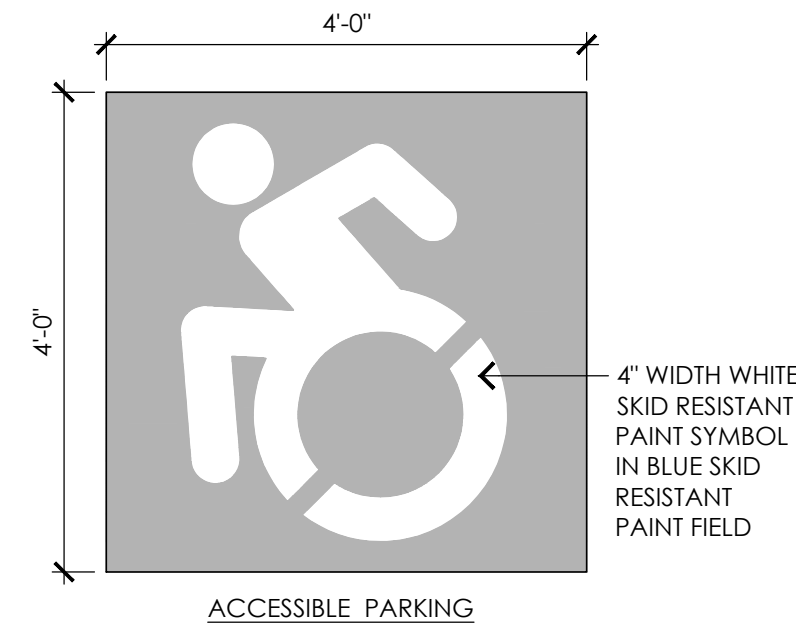
5 SIGNAGE ON POST AND PANELS
NOT TO SCALE



- NOTE:**
1. ALL ROADWAY MARKING SHALL BE DONE WITH HIGH VISIBILITY PAINT.
 2. CONTRACTOR TO CHECK ALL ROADWAY MARKINGS AND REVIEW WITH OWNER AND LANDSCAPE ARCHITECT PRIOR TO PAINTING.

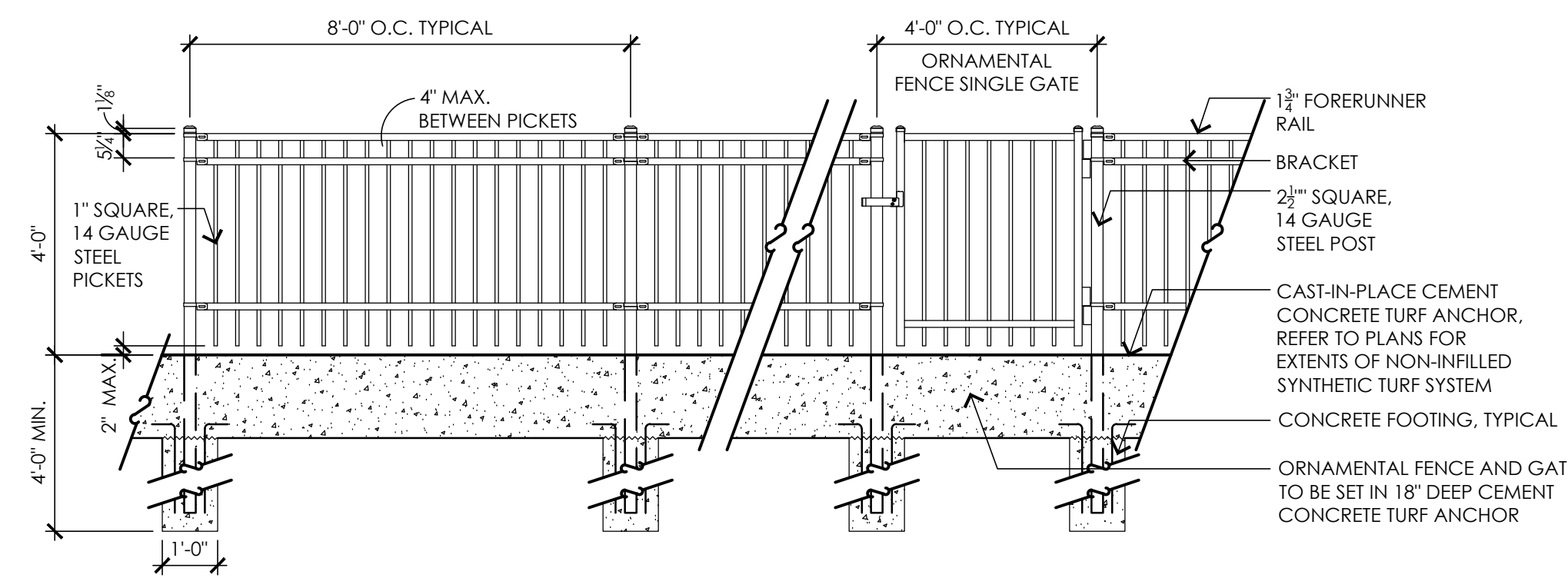


6 PAVEMENT MARKINGS
NOT TO SCALE

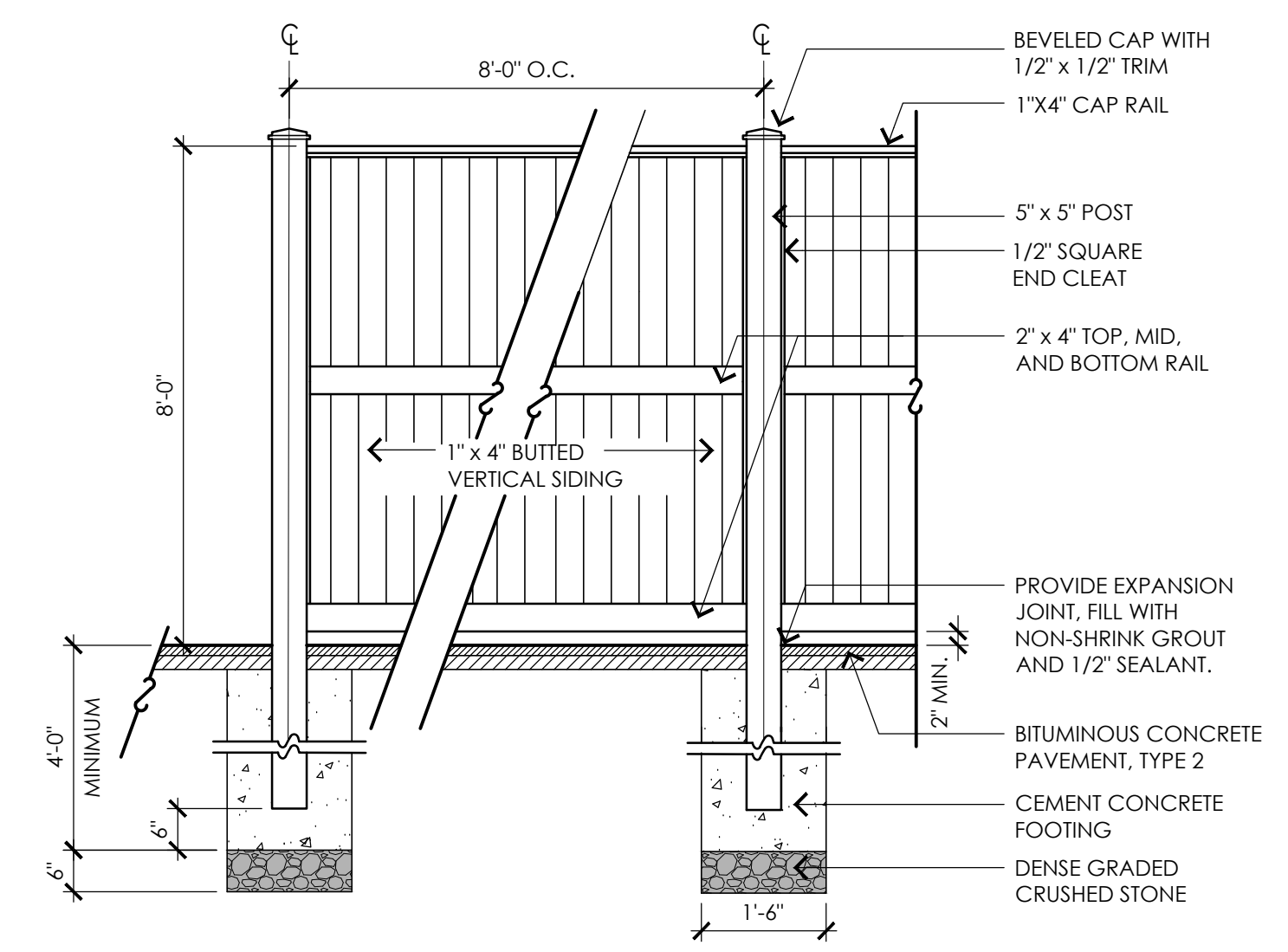


7 ELECTRIC VEHICLE CHARGING BASE
NOT TO SCALE

- NOTES:**
1. REFER TO SPECIFICATIONS FOR ACCEPTABLE ORNAMENTAL FENCE MANUFACTURER AND MODEL.
 2. MAINTAIN TOP OF PICKETS 4'-0" ABOVE GRADE. ALL PICKETS AND POSTS SHALL REMAIN PLUMB; NO STEPPING.
 3. ALL ORNAMENTAL FENCE, POSTS, GATES AND ASSOCIATED HARDWARE SHALL BE POWDER COATED BLACK, UNLESS OTHERWISE NOTED.



8 4' HIGH ORNAMENTAL FENCE AND GATES
NOT TO SCALE



9 8' HIGH WOOD FENCE AND GATES
NOT TO SCALE

NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION

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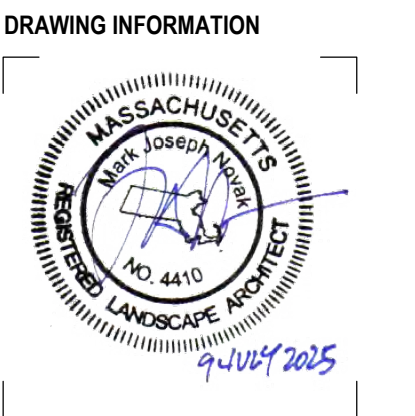
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REVISIONS

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Detail Sheet II



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07/09/2025
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DESCRIPTION

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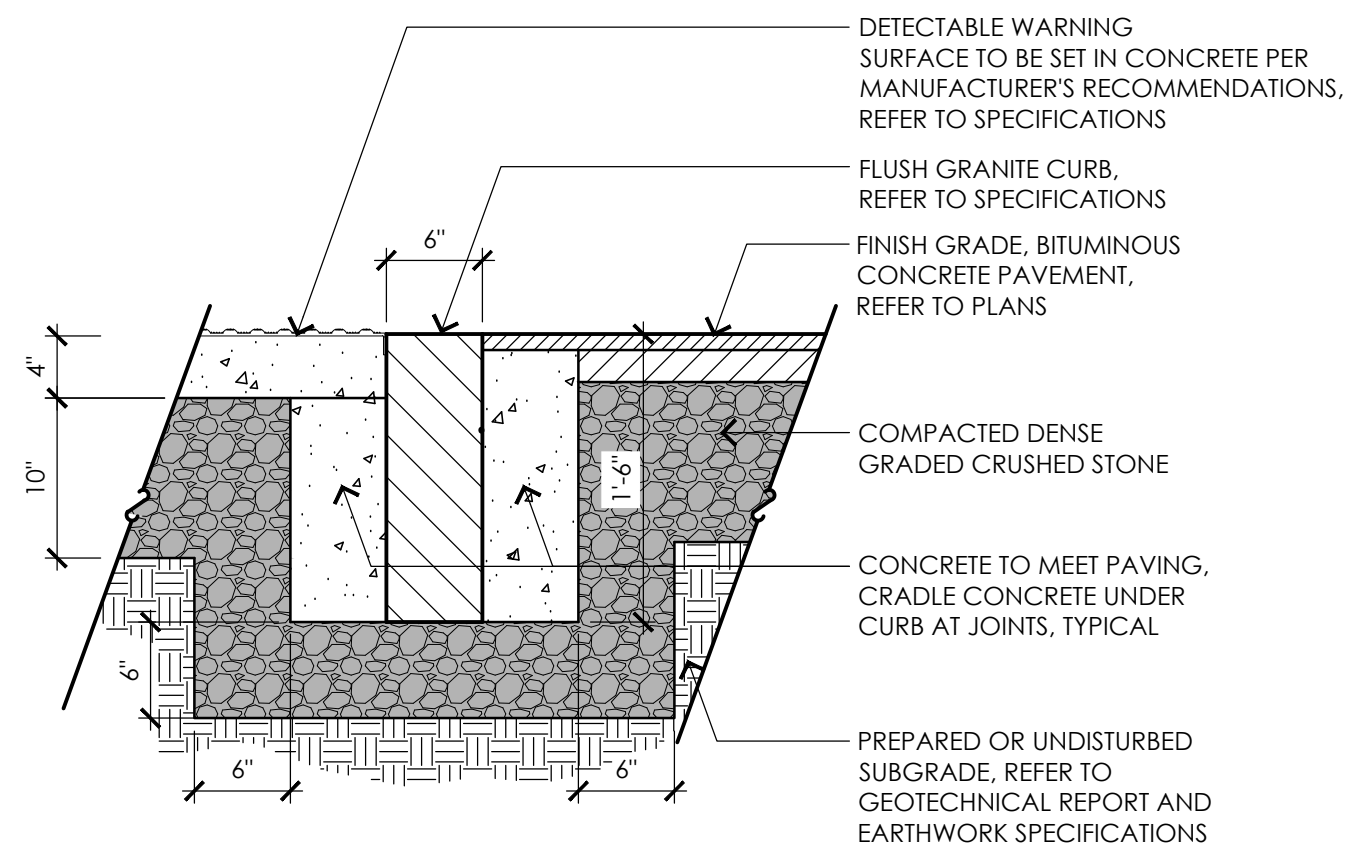
AJA
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3513
PROJECT #

FILE NAME

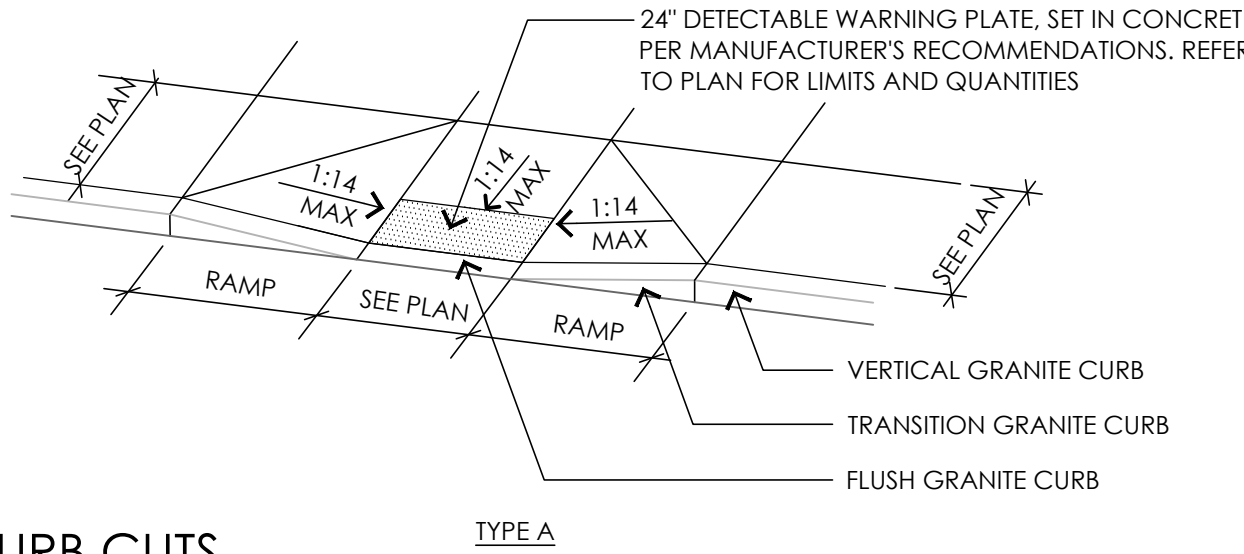
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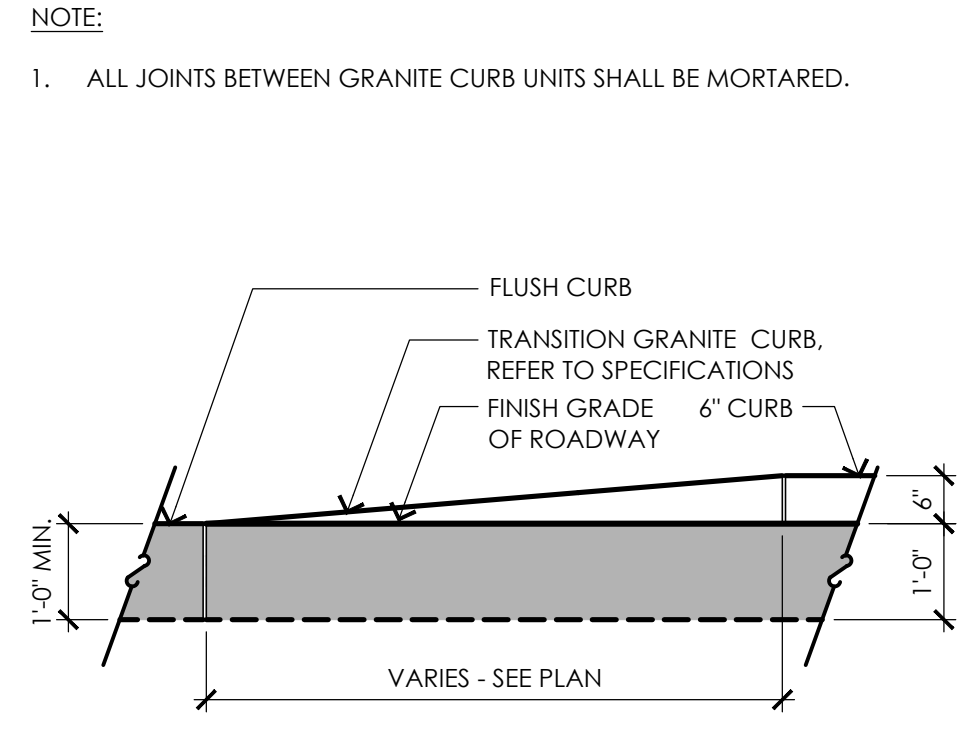


1 FLUSH GRANITE CURB WITH DETECABLE WARNING STRIP
NOT TO SCALE

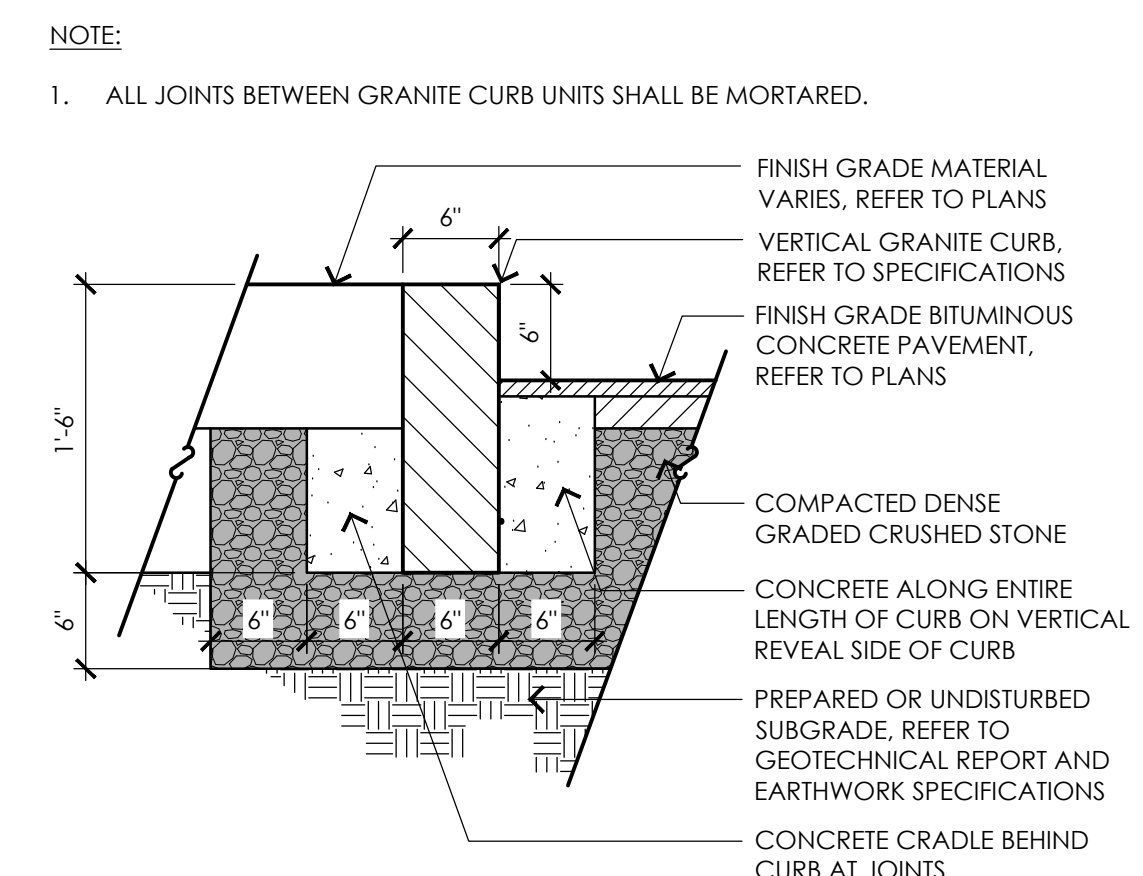
- NOTES:
- RAMP CROSS SECTION TO BE THE SAME AS ADJACENT SIDEWALK; I.E. DEPTH OF SURFACE AND FOUNDATION.
 - DIMENSIONS ARE SUBJECT TO CHANGE IN FIELD. ALL SLOPES AND DIMENSIONS TO COMPLY WITH A.D.A. AND MAAB REQUIREMENTS.
 - PROVIDE EXPANSION JOINT AT TOPS OF RAMP AND AT BACK OF WALK AT INTERFACE OF GRANITE CURB.
 - PROVIDE HEAVY BROOM FINISH ON RAMP AND SIDE SLOPES PERPENDICULAR TO FLOW OF TRAFFIC.
 - MINIMUM WALK DIMENSIONS ARE FROM BACK OF GRANITE CURB.
 - TRANSITION GRANITE CURB LENGTH AS REQUIRED TO MEET CODE.
 - FIXED OBJECTS (I.E. UTILITY POLES, HYDRANTS ETC.) MUST NOT ENCR OACH ON ANY PART OF A WHEELCHAIR RAMP, INCLUDING TRANSITION SLOPES.
 - AT NO TIME IS ANY PART OF THE WHEELCHAIR RAMP, EXCLUDING GRANITE CURB TRANSITIONS, TO BE LOCATED OUTSIDE OF THE CROSSWALK.



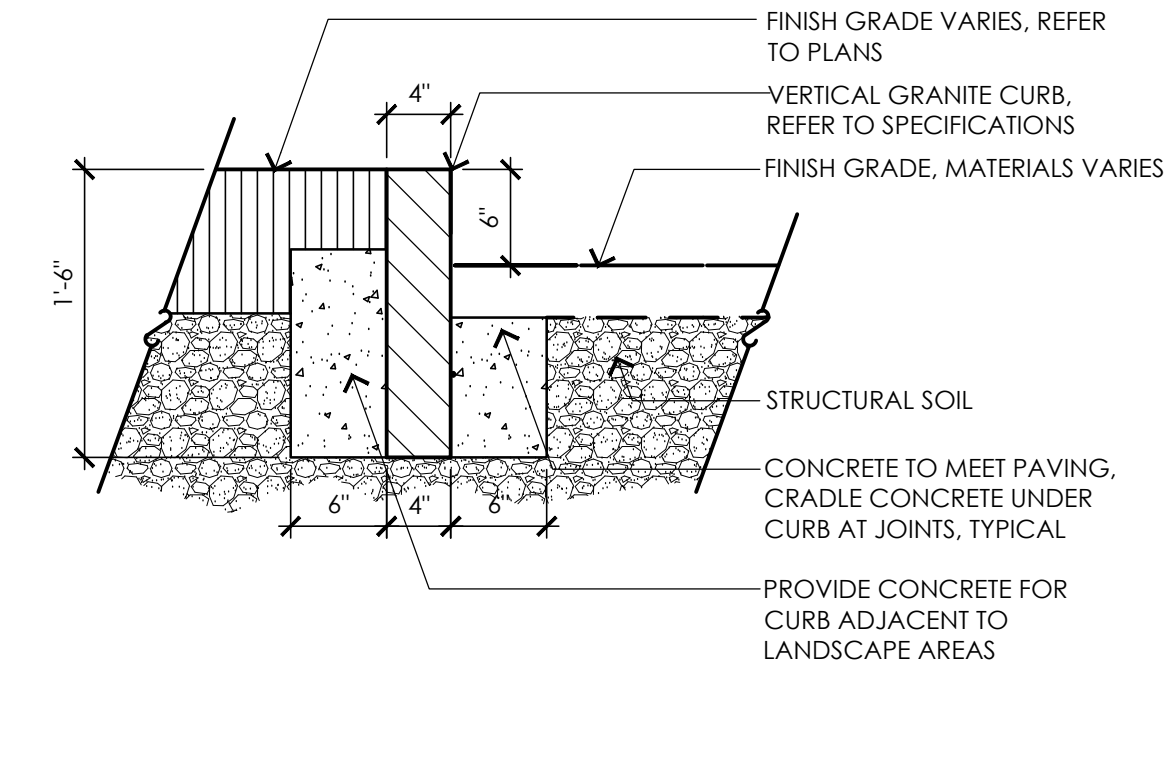
5 CURB CUTS
NOT TO SCALE



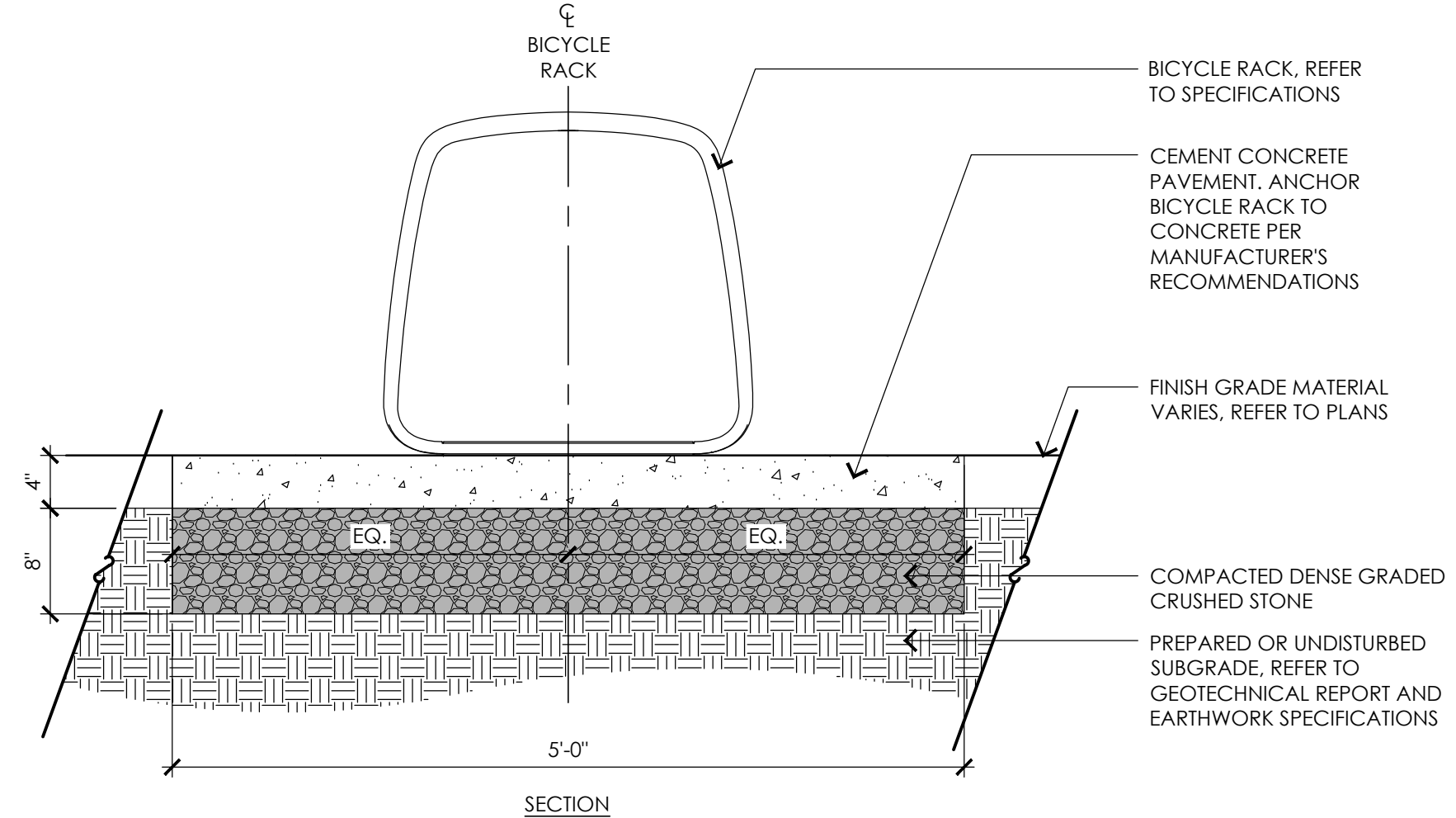
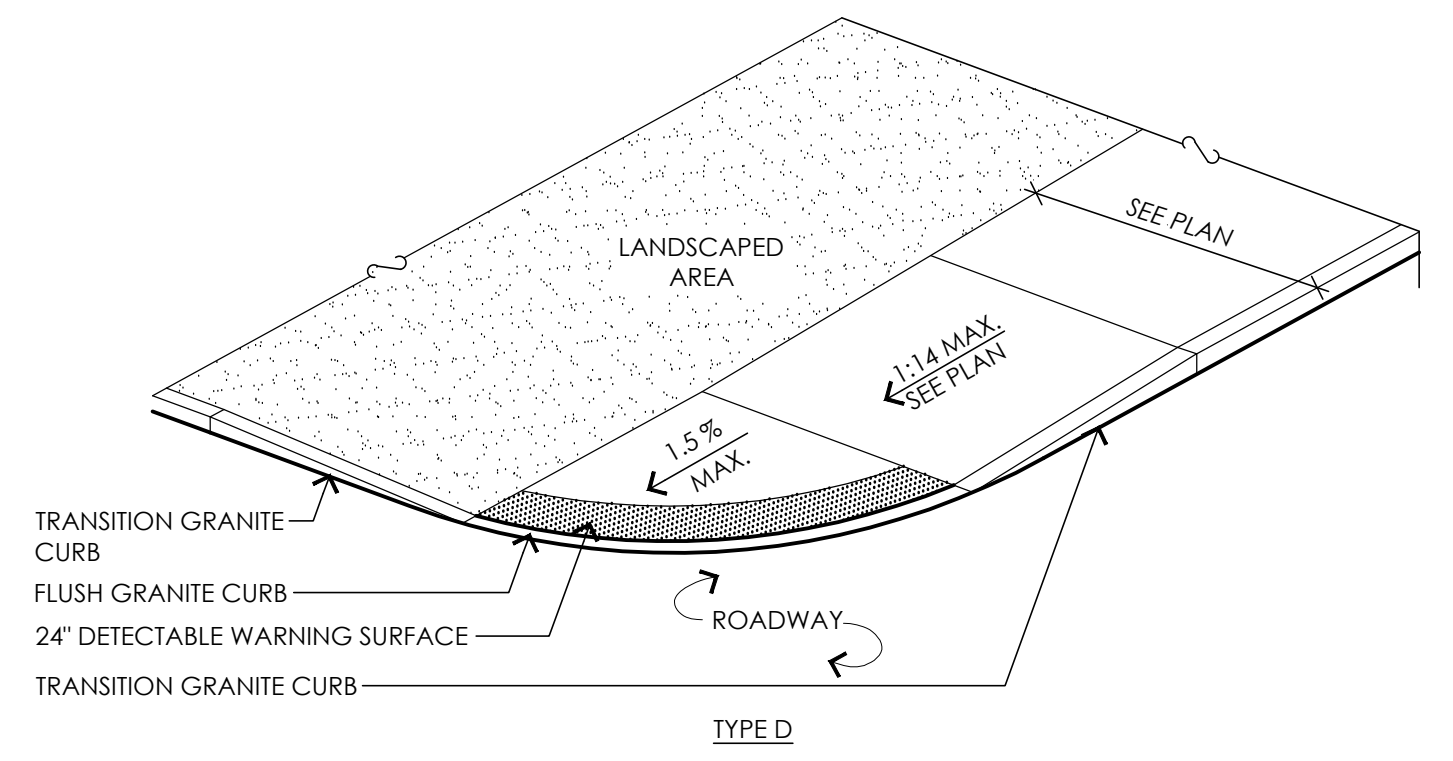
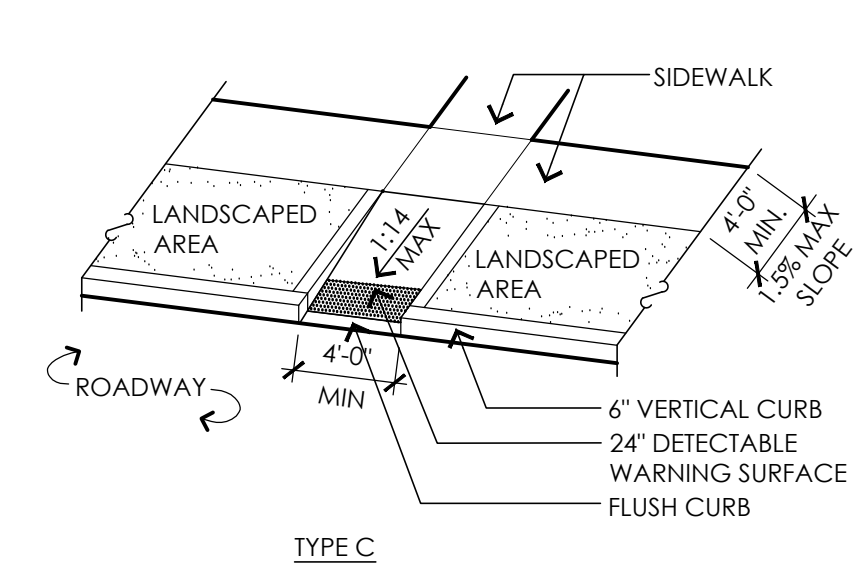
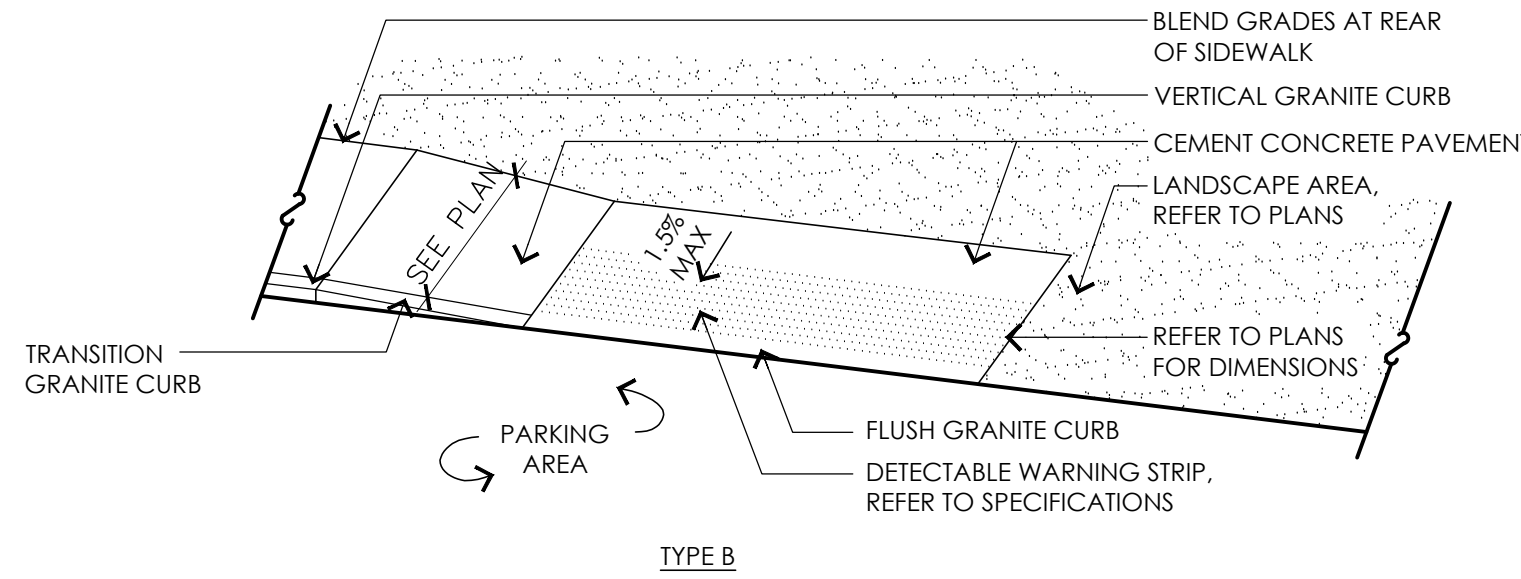
2 TRANSITION GRANITE CURB
NOT TO SCALE



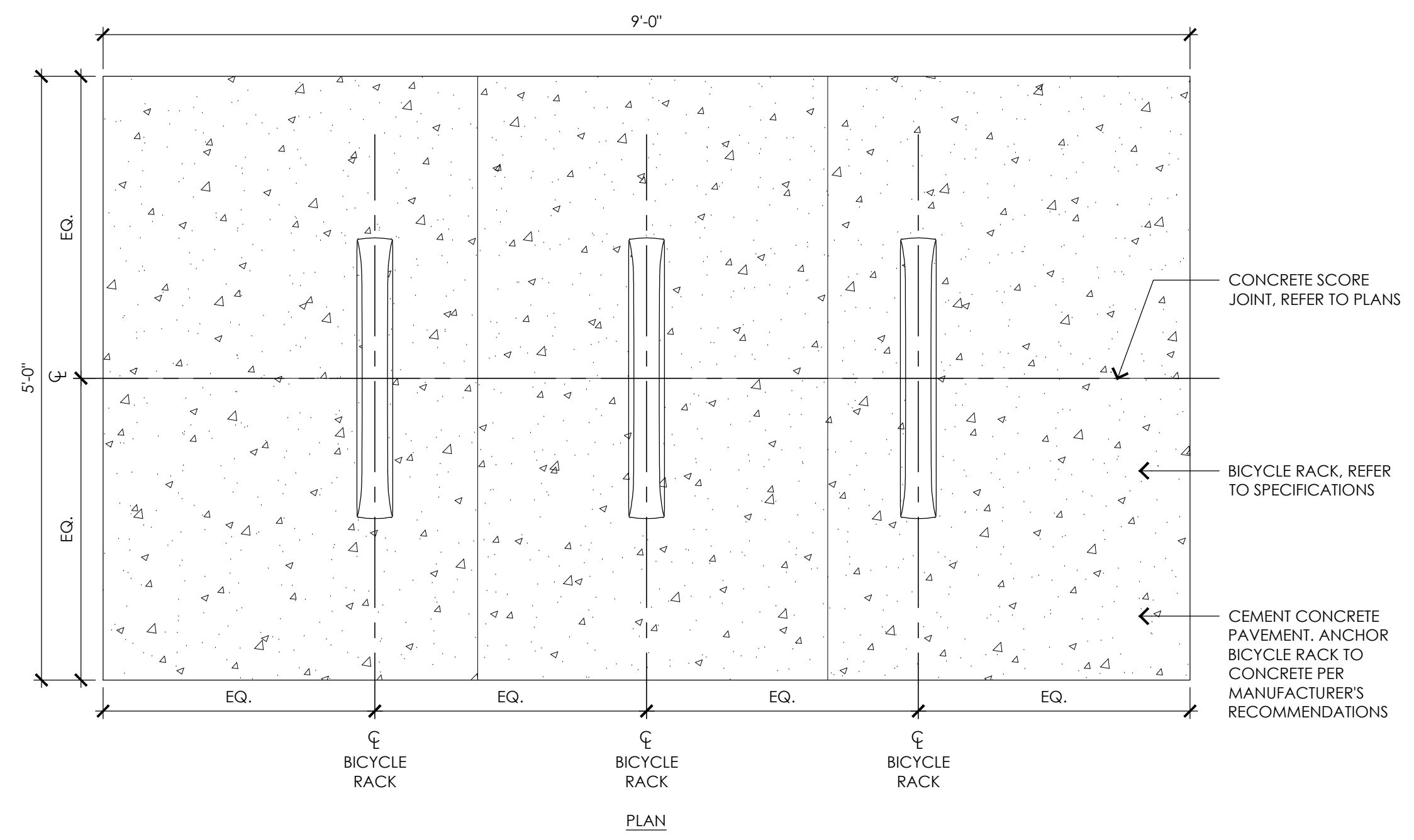
3 VERTICAL GRANITE CURB
NOT TO SCALE



4 4" WIDE LANDSCAPE GRANITE CURB
NOT TO SCALE



6 BIKE RACK
NOT TO SCALE



NOTE:
1. ALL JOINTS BETWEEN GRANITE CURB UNITS SHALL BE MORTARED.

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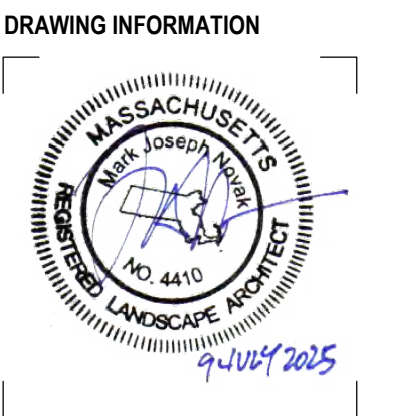
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REVISIONS

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Detail Sheet III



07/09/2025
DATE OF ISSUE

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DESCRIPTION

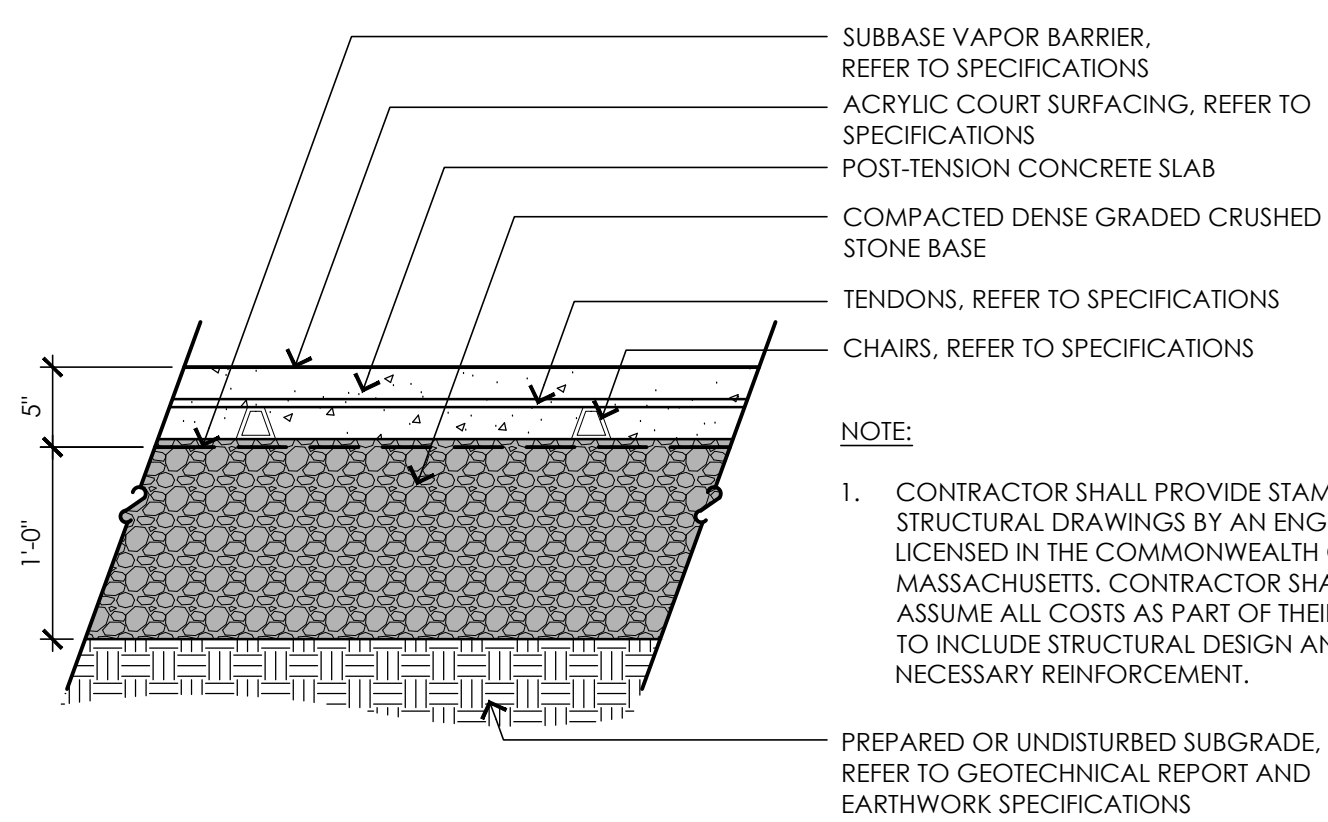
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SCALE DRAWN BY

3513 PROJECT # FILE NAME

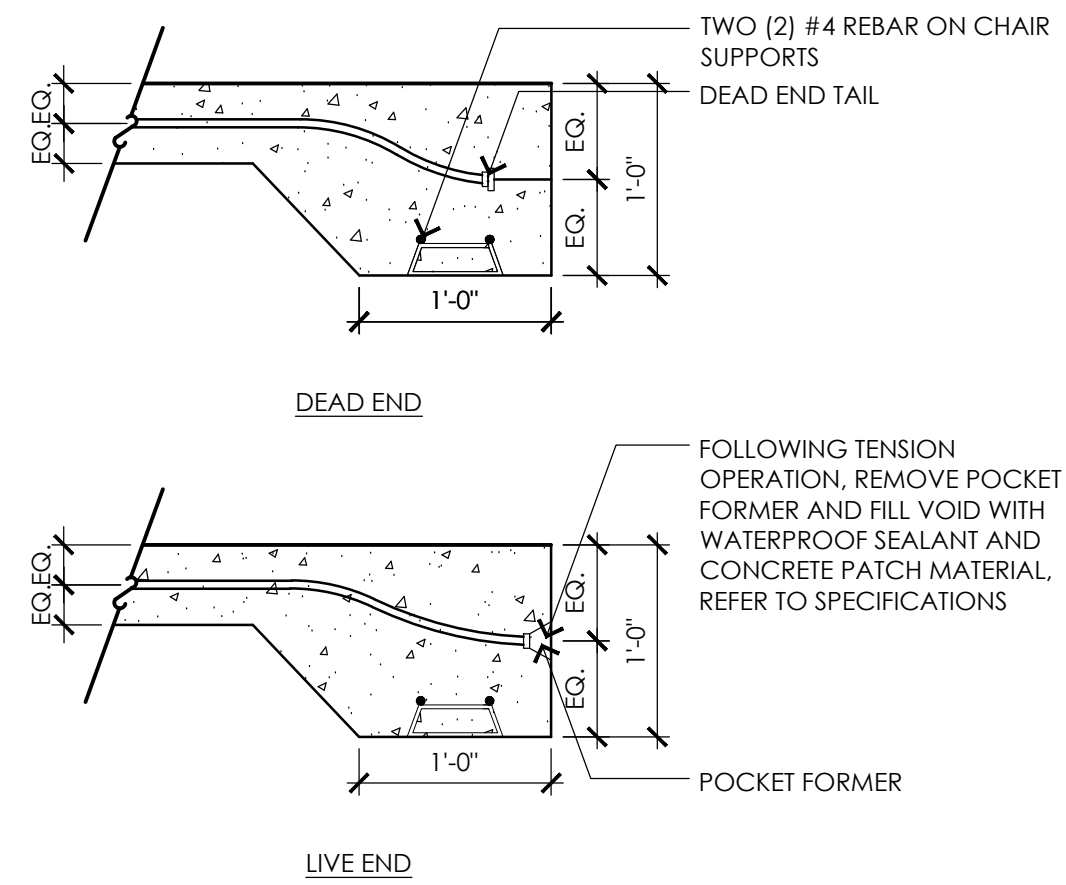
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L503

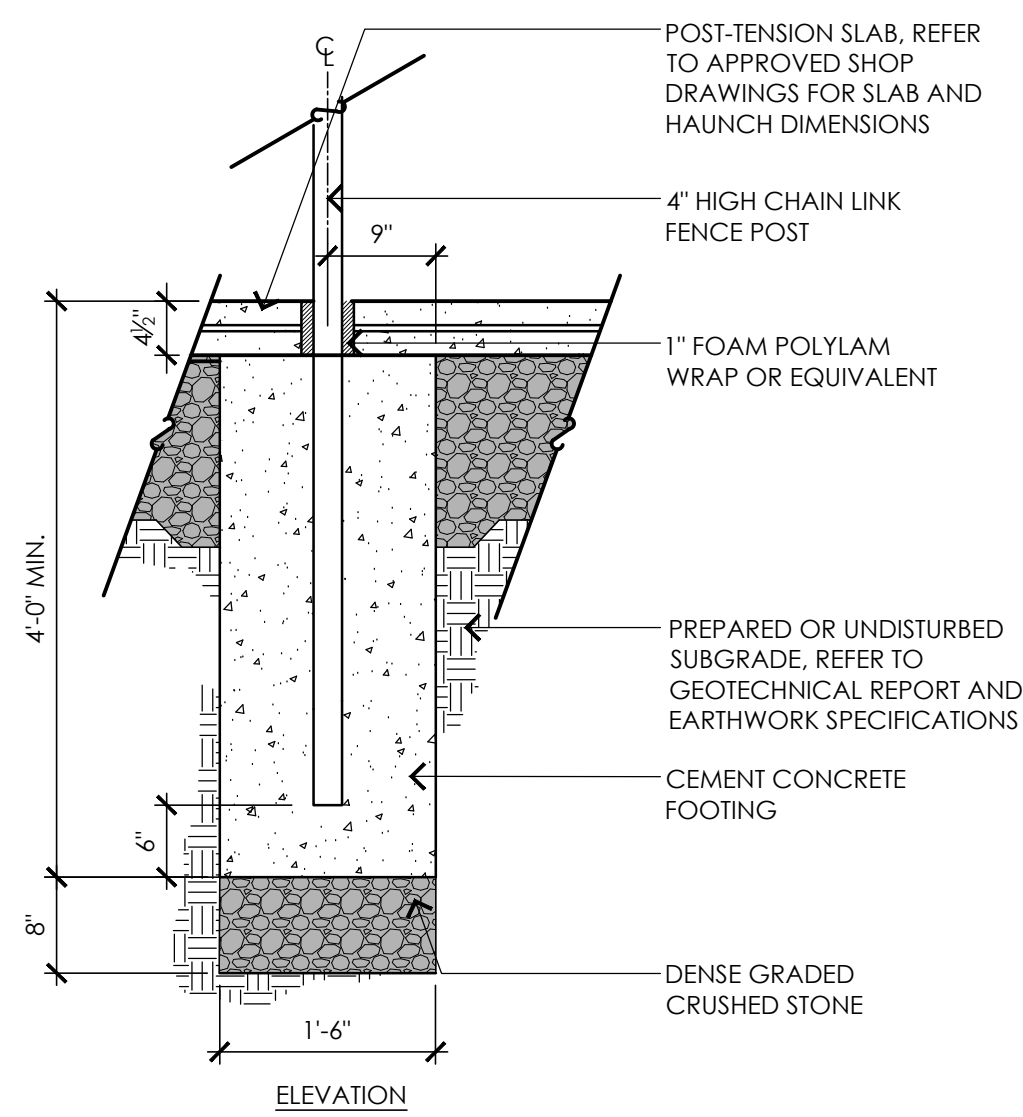
NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION



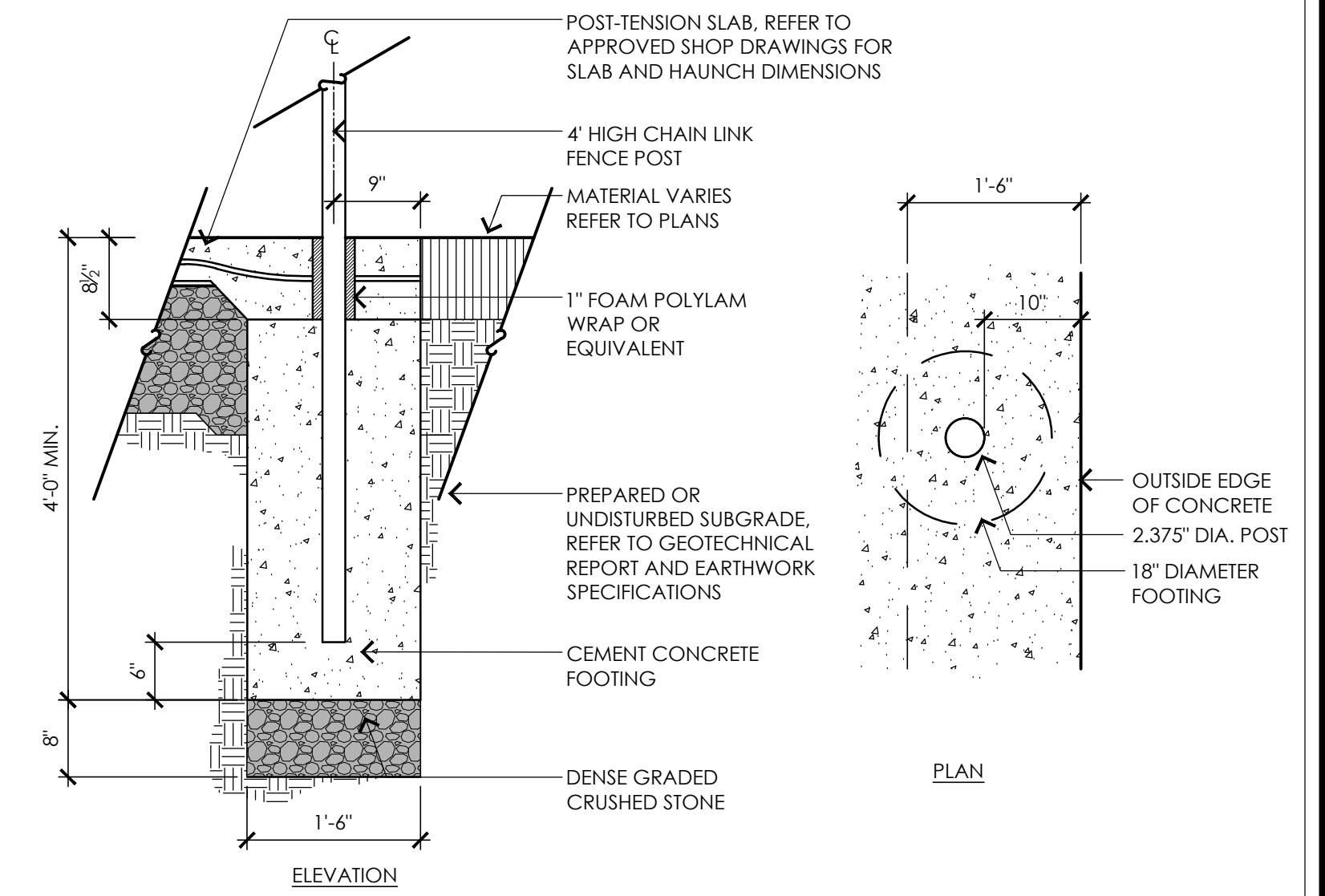
1 POST-TENSION CONCRETE PAVEMENT
 NOT TO SCALE



2 POST-TENSION CONCRETE EDGE
 NOT TO SCALE



3 4' HIGH CHAIN LINK DIVIDER FENCE
 NOT TO SCALE

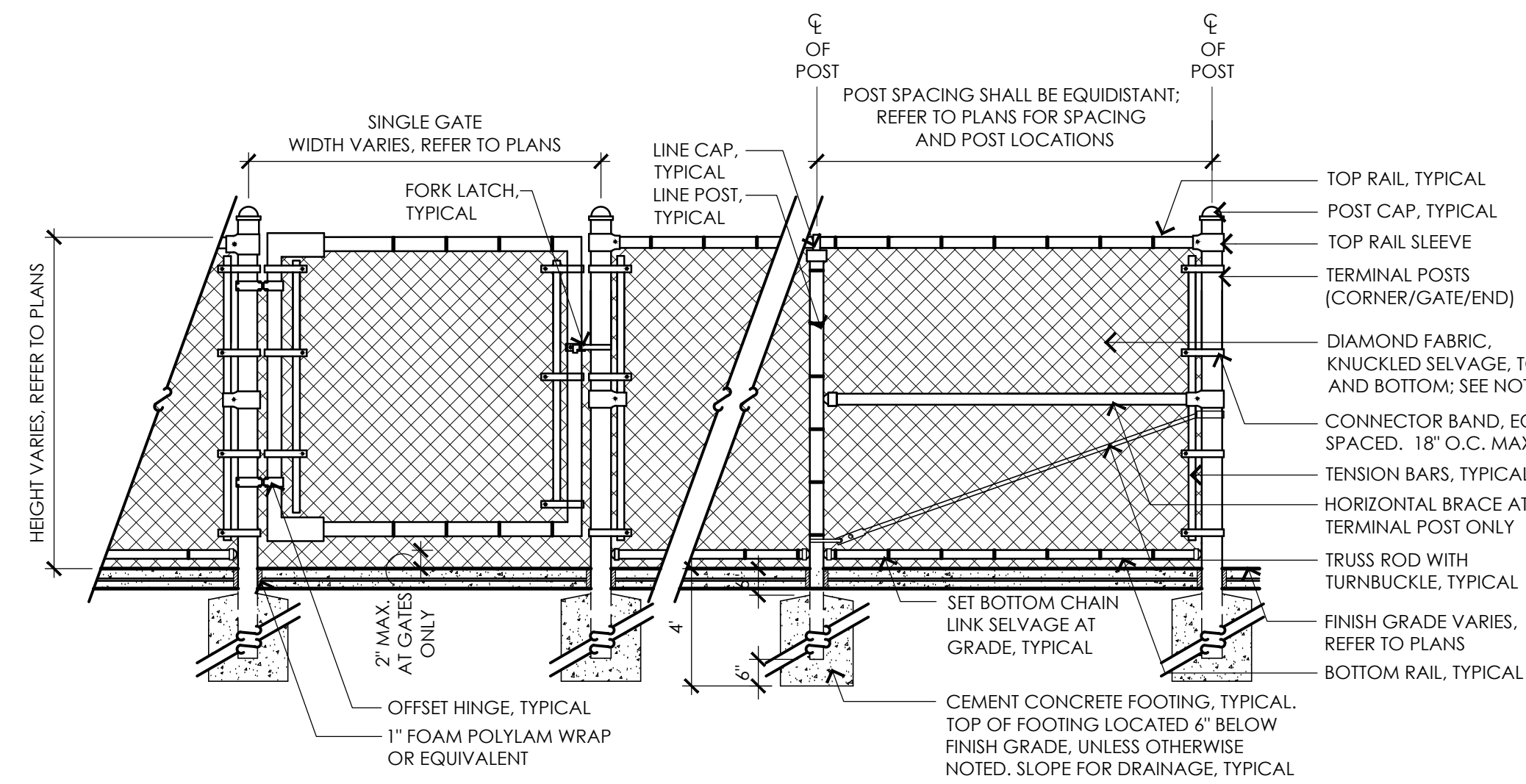


4 6' HIGH CHAIN LINK FENCE POST AT PERIMETER OF PICKLEBALL COURT
 NOT TO SCALE

- NOTES:
- FENCE FABRIC TOP SHALL BE EVEN WITH TOP OF TOP RAIL.
 - TOP OF CONCRETE FENCE POST FOOTING TO HAVE SLOPE TO PROMOTE POSITIVE DRAINAGE.
 - GATES SHALL SWING 180° DEGREES SO THAT WHEN FULLY OPEN GATE PANELS SHALL BE PARALLEL TO CHAIN LINK FENCE.
 - REFER TO SPECIFICATIONS FOR MATERIAL GAUGE.

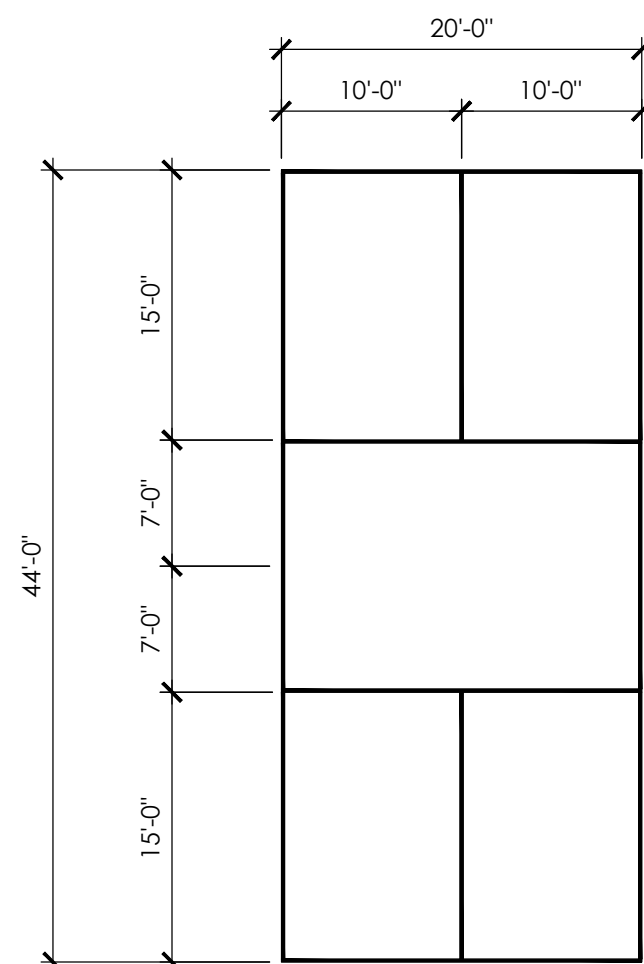
CONCRETE FOOTING DEPTH X WIDTH	
H	W
TERMINAL	48"x18"
LINE	48"x15"

	DIAMETER	
TERMINAL POSTS	4'-0"	6'-0"
LINE POSTS	1.90	1.90
TOP RAIL	1.660	1.660
BOTTOM RAIL	1.660	1.660
CENTER RAIL	N/A	N/A
HORIZONTAL BRACE	N/A	1.660
TRUSS ROD	N/A	1/2"

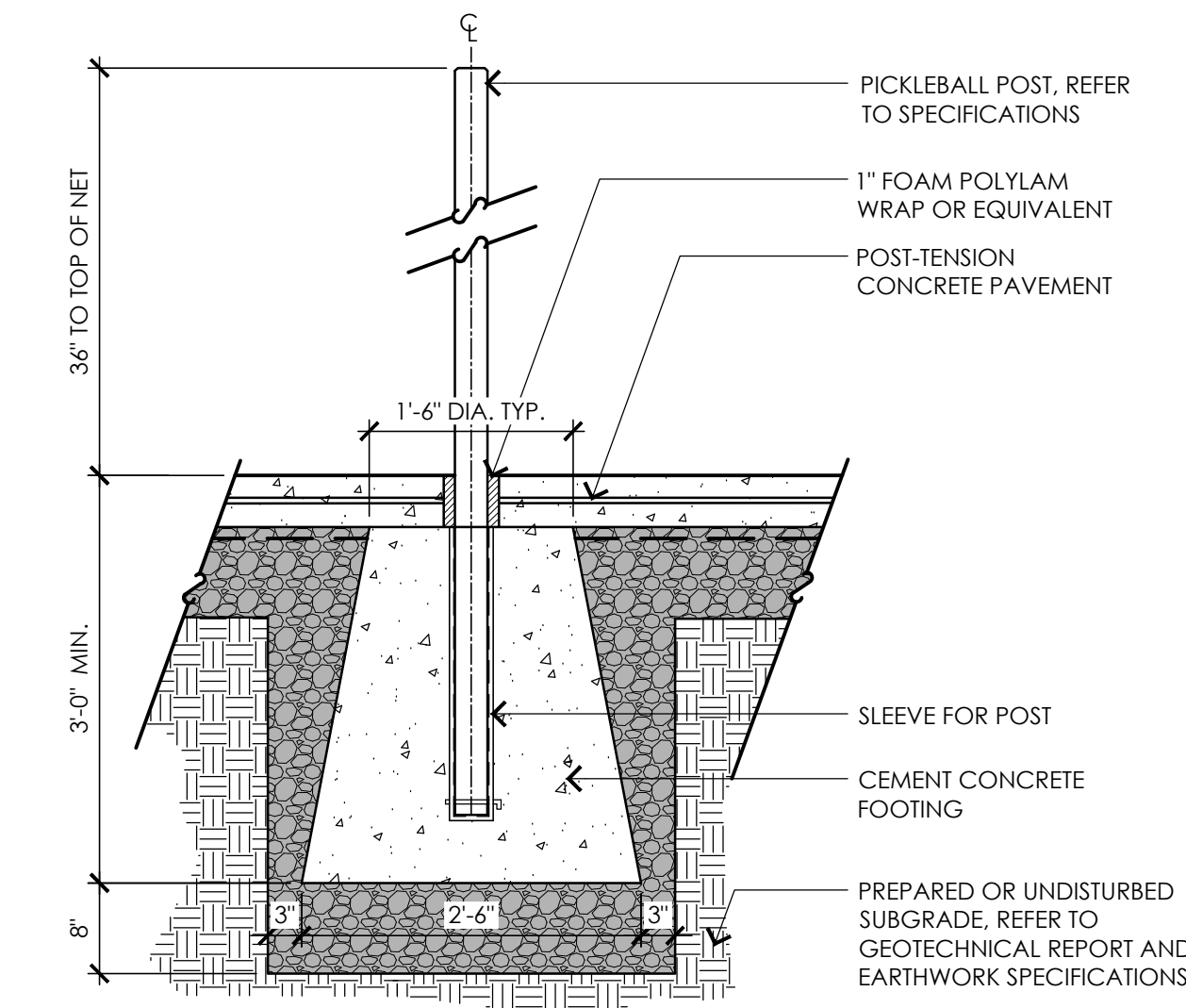


5 CHAIN LINK FENCE AND GATES
 NOT TO SCALE

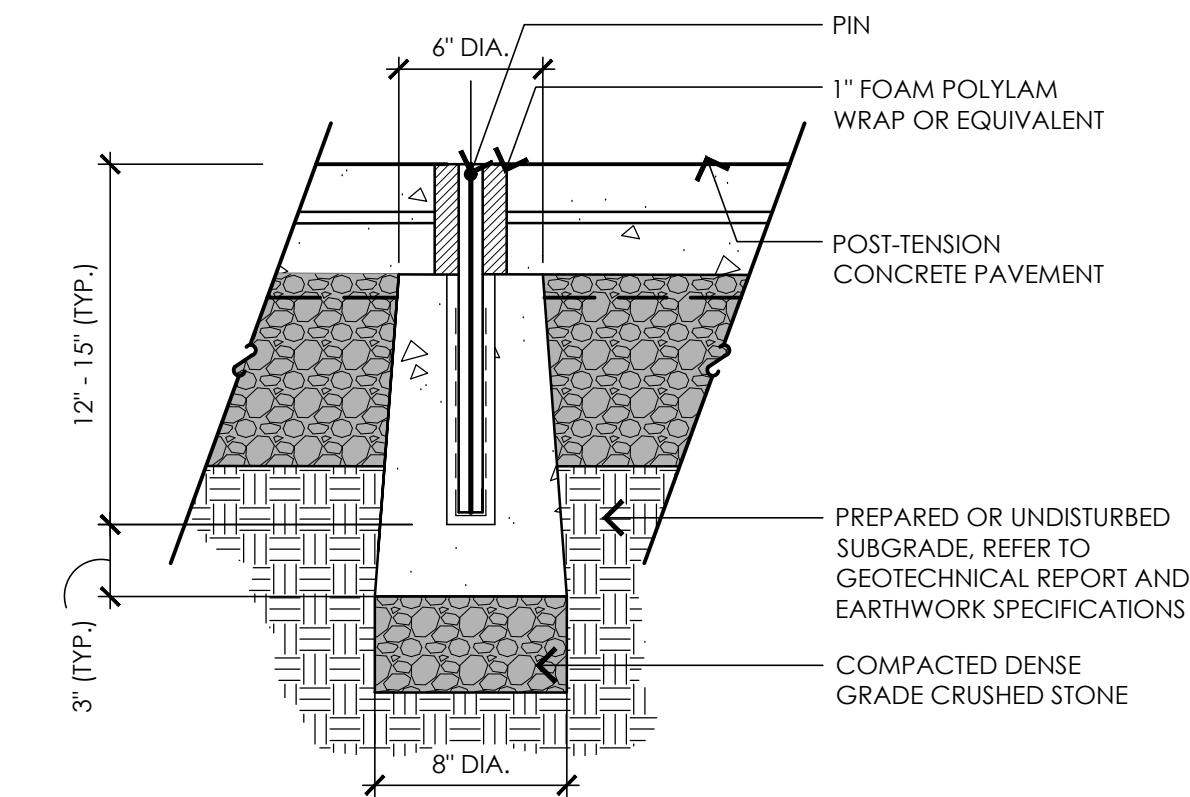
- NOTES:
- LINES SHALL BE 2" WIDE. COLOR TO BE SELECTED BY OWNER.
 - MEASUREMENTS TAKEN FROM OUTSIDE TO OUTSIDE WITH EXCEPTION OF CENTER LINES WHICH ARE OUTSIDE TO CENTER.
 - REFER TO SPECIFICATIONS FOR COURT COLORING REQUIREMENTS.



8 PICKLEBALL COURT STRIPING LAYOUT
 NOT TO SCALE

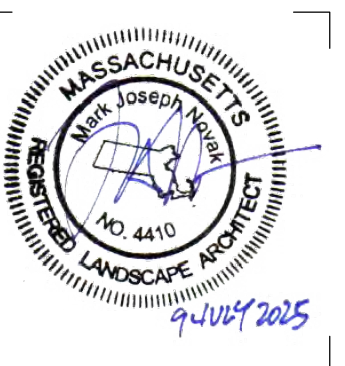


6 PICKLEBALL NET POST
 NOT TO SCALE



7 PICKLEBALL CENTER STRAP ANCHOR
 NOT TO SCALE

NO.	DATE	DESCRIPTION



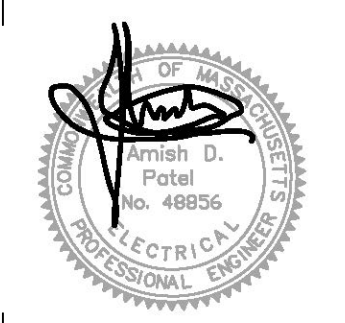
REVISIONS

NO.	DATE	DESCRIPTION

DRAWING TITLE

ELECTRICAL Site Plan

DRAWING INFORMATION



07/07/2025
 DATE OF ISSUE

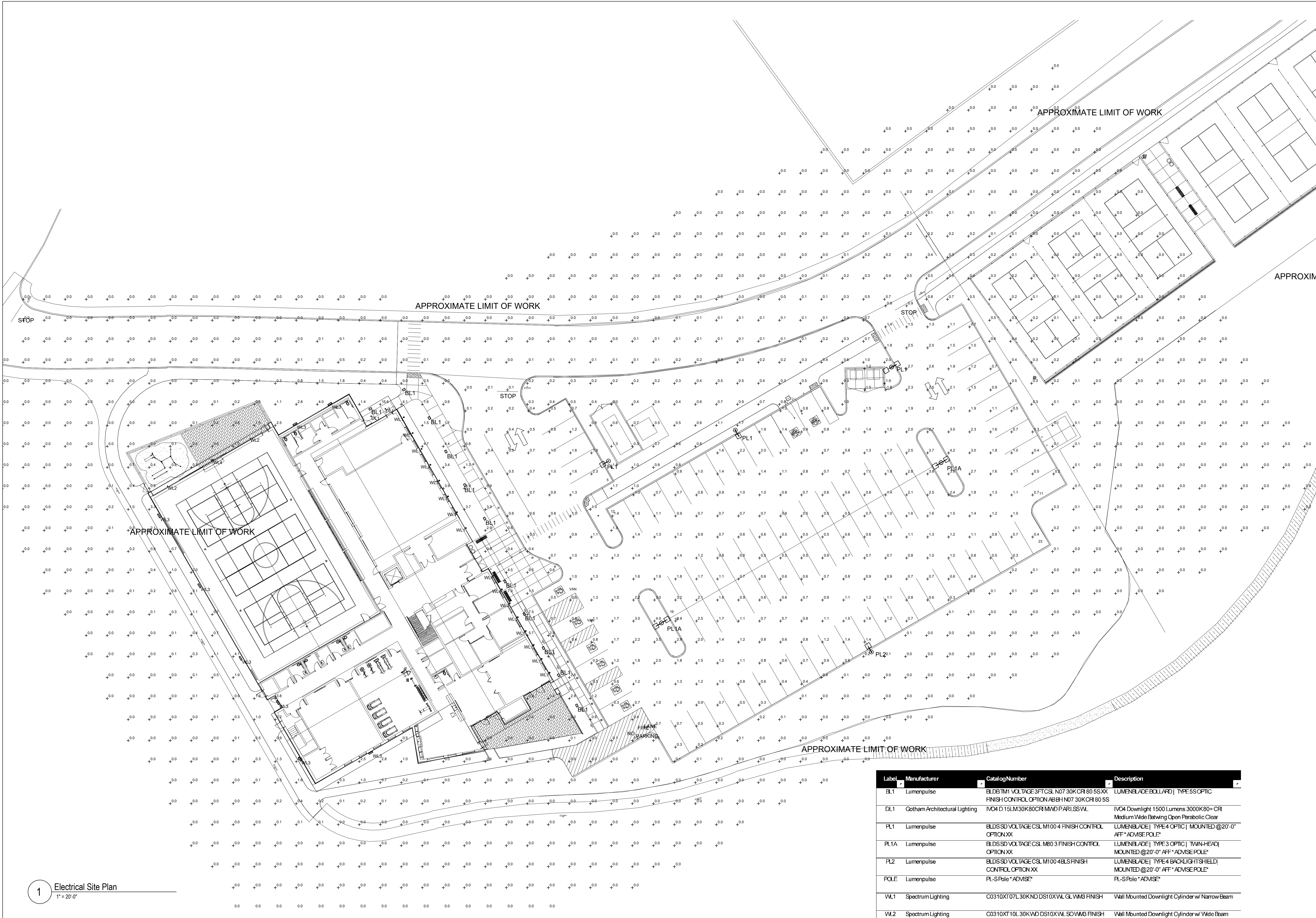
NOTICE OF INTENT
 DESCRIPTION

1" = 20'-0"
 SCALE

AP/IB
 DRAWN BY

3513
 PROJECT #

64310-E001.dwg
 FILE NAME



1 Electrical Site Plan
 1" = 20'-0"

CONTACT DIGSAFE:
 UNDERGROUND UTILITIES SHOWN ON THE PLAN ARE COMPILED FROM PLANS AND FIELD SURVEY. UTILITY LOCATIONS SHOULD BE CONSIDERED APPROXIMATE ONLY. DIGSAFE AND/OR THE OTHER RESPECTIVE UTILITY COMPANIES SHALL BE CONTACTED 72 BUSINESS HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS. PHONE DIGSAFE 1-888-344-7233.

NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION

PROJECT TEAM

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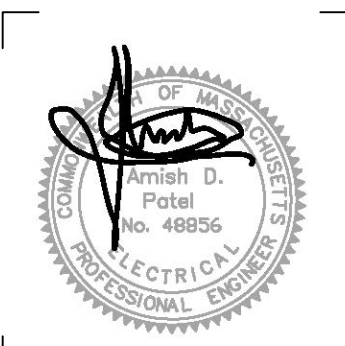
REVISIONS

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**ELECTRICAL SITE
PLAN**

DRAWING INFORMATION



07/07/2025

DATE OF ISSUE

NOTICE OF INTENT

DESCRIPTION

1"=20'-0"

SCALE

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PROJECT #

64282-E002.dwg

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E002

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LEGEND

UE	ELECTRICAL POWER CONDUITS WITH PULLSTRINGS, 36" BELOW GRADE (24" FOR LIGHTING CIRCUITS), SIZE AS SHOWN ON PLANS. PRIMARY FEEDERS (WIRES) BY UTILITY (INCLUDE COST IN BID PRICE). SECONDARY FEEDERS SIZED FOR POWER RISK. TELECOMMUNICATIONS CONDUIT WITH PULL STRING, 24" BELOW GRADE. TELECOMMUNICATIONS SERVICE BY VERIZON/COMCAST (INCLUDE COST IN BID PRICE).
UT	TELECOMMUNICATIONS SERVICE BY VERIZON/COMCAST (INCLUDE COST IN BID PRICE).

INCLUDE WARNING TAPE (12" BELOW FINISHED GRADE) ABOVE ALL UNDERGROUND FEEDS:
RED "DANGER - HIGH VOLTAGE" METALLIC WARNING TAPE FOR POWER
YELLOW METALLIC WARNING TAPE TO READ "WARNING - BURIED TELECOMM. CABLE" FOR TELECOMM.

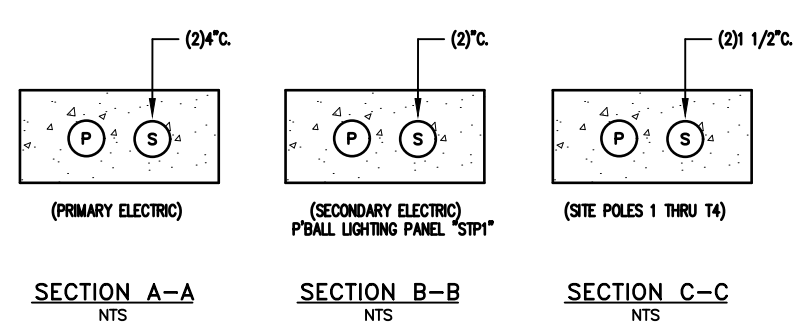
GENERAL NOTES:

1. THE ELECTRICAL CONTRACTOR IS TO COORDINATE THE LOCATION OF ALL UNDERGROUND UTILITIES WITH THE CIVIL PLANS AND IN THE FIELD. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE OF EXISTING WORK DURING TRENCHING/EXCAVATION PERFORMED FOR THE WORK SHOWN ON THIS PLAN.
2. ALL EXTERIOR CONTRACTOR SUPPLIED EQUIPMENT IS TO BE NEMA-4X AND CONCEALED APPROPRIATELY.

ALL LIGHT POLE BASES TO BE PROVIDED AND INSTALLED BY THE GENERAL CONTRACTOR IN COORDINATION WITH THE ELECTRICAL CONTRACTOR.

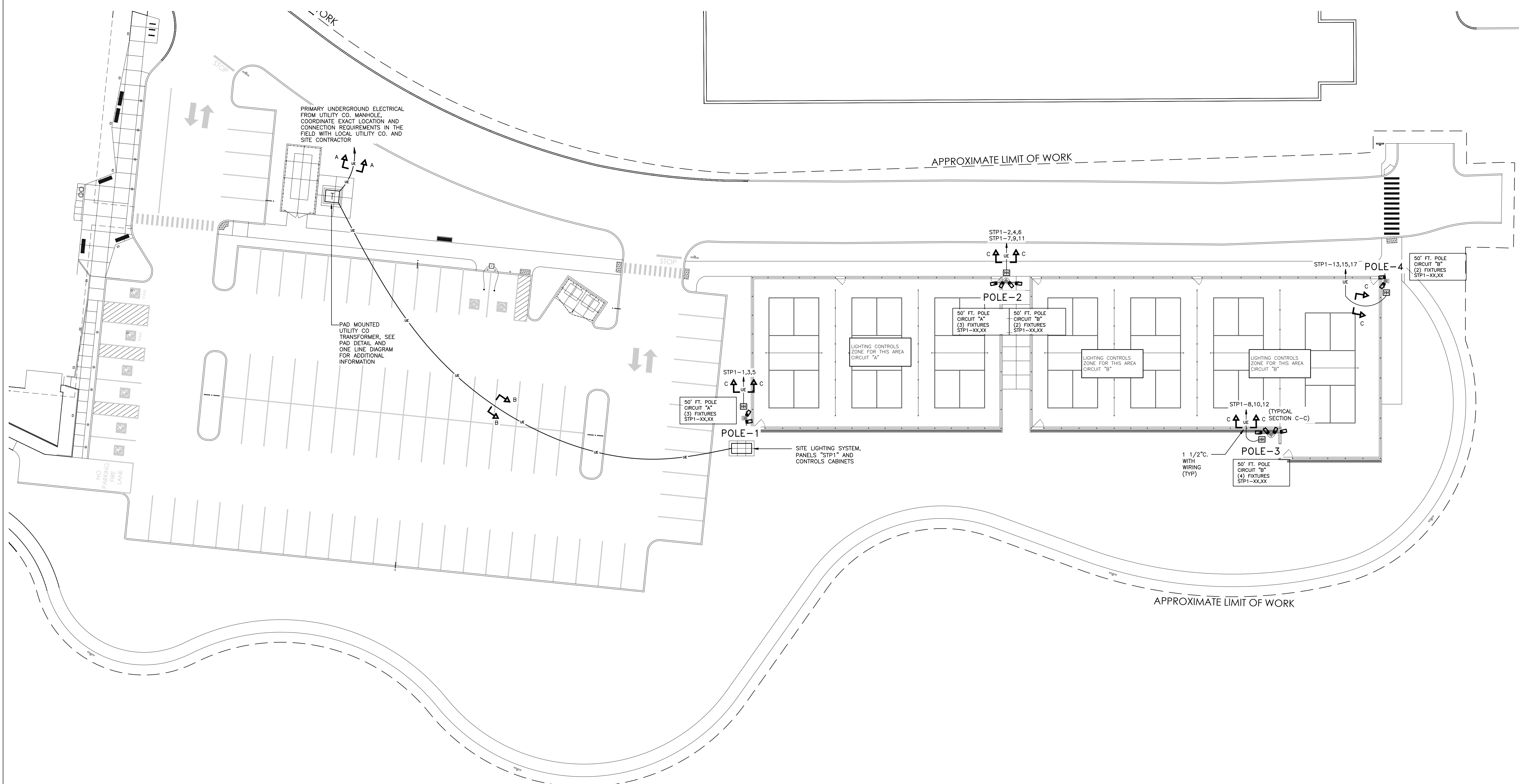
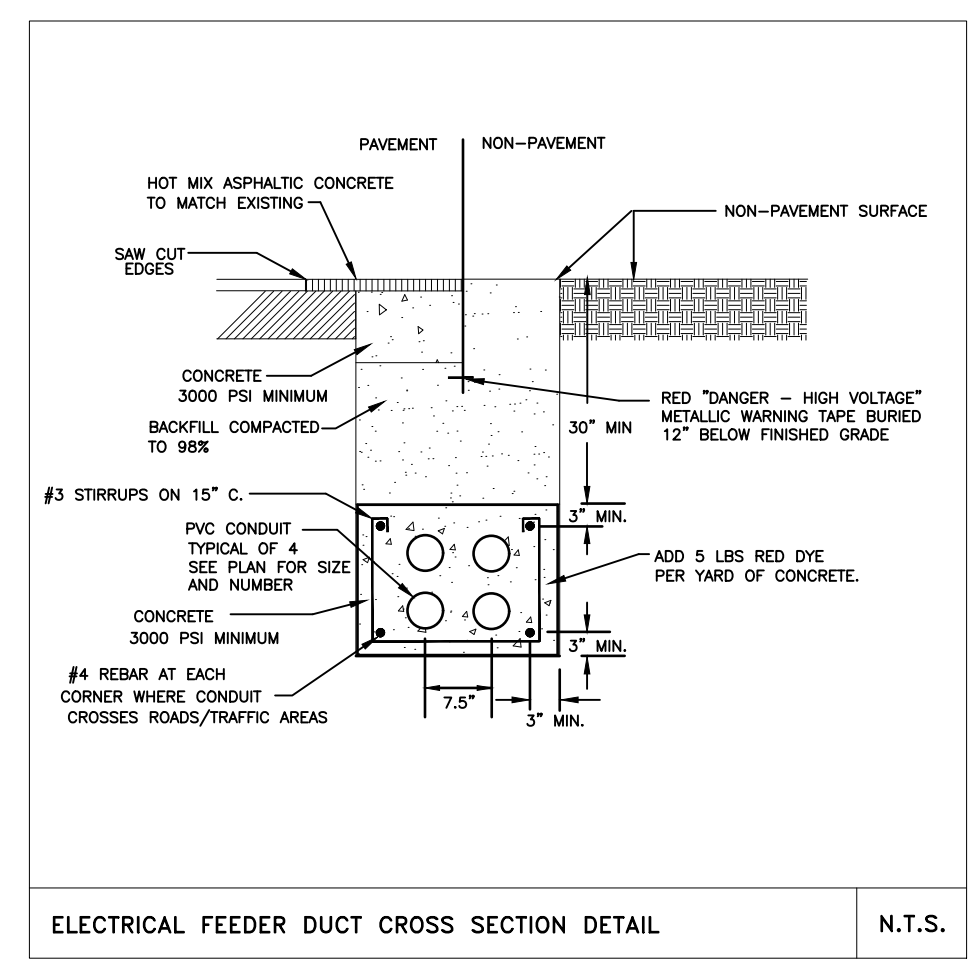
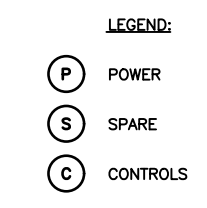
ALL DUCT-BANKS TO BE PROVIDED AND INSTALLED BY THE GENERAL CONTRACTOR IN COORDINATION WITH THE ELECTRICAL CONTRACTOR. CONDUITS/FITTINGS BY ELECTRICAL CONTRACTOR.

ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUITS AND WIRING EXTENDING FROM TRANSFORMER TO ELECTRICAL CABINETS. PATHWAYS SHALL BE CONFIRMED WITH BOTH ARCHITECT AND UTILITY. EC SHALL TAKE BEST ROUTE TO AVOID FOOTINGS AND OTHER SYSTEMS. CONDUIT SHALL BE CAPPED. CONFORM ALL REQUIREMENTS WITH POWER COMPANY REPRESENTATIVE PRIOR TO ROUGH-IN.



DUCTBANK NOTES:

1. SEE TYPICAL DUCTBANK DETAILS AND NOTES FOR TYPICAL LAYOUTS, DIMENSIONS AND ADDITIONAL INSTALLATION REQUIREMENTS.
2. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH PULLSTRING CAPPED.
3. PROVIDE 4" COMPACTED SAND ALL AROUND CONDUIT WHERE BELOW ROADWAYS OR PARKING PROVIDE TYPICAL CONCRETE ENCASUREMENT.
4. SITE LIGHTING CONDUIT(S) SHALL BE LOCATED 24" BELOW GRADE.
5. ALL BURIED CONDUITS SHALL HAVE WARNING TAPE ENTIRE LENGTHS.



CONTACT DIGSAFE:
UNDERGROUND UTILITIES SHOWN ON THE PLAN ARE COMPILED FROM PLANS AND FIELD SURVEY. UTILITY LOCATIONS SHOULD BE CONSIDERED APPROXIMATE ONLY. DIGSAFE AND/OR THE OTHER RESPECTIVE UTILITY COMPANIES SHALL BE CONTACTED 72 BUSINESS HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS. PHONE DIGSAFE 1-888-344-7233.

NOTICE OF INTENT PERMITTING SET ONLY - NOT FOR CONSTRUCTION

Attachment H

Stormwater Report

Stormwater Report

Town of Reading
Center for Active Living
and
Community Pickleball Courts

0 Haverhill Street / Symonds Way
Reading, MA, 01867

Owner:

Town of Reading
16 Lowell Street
Reading, MA 01867

Submitted To:

Town of Reading
16 Lowell Street
Reading, MA 01867

Community Planning and
Development Commission

Conservation Commission

Civil Engineer/ Landscape Architect:

Activitas, Inc.
70 Milton Street
Dedham, MA 02026
(781) 355-7040

Surveyor:

Reed Land Surveying, Inc.
109 Rhode Island Road, Suite 4A
Lakeville, MA 02347
(508) 923-1181

Architect:

Bargmann Hendrie + Archetype, Inc.
9 Channel Center Street
Suite 300
Boston, MA 02210
(617) 350-0450

July 7, 2025



Town of Reading

16 Lowell Street, Reading, MA 01867

Community Planning & Development Commission
Stormwater Permit Application

Applicability:

A Stormwater Permit is required if the proposed activity:

- Results in the disturbance of one or more acres of land OR
- Is part of a larger Common Plan of Development or sale that will ultimately disturb one or more acres of land

Exempt Activities:

- Normal maintenance and improvement of land in agricultural or aqua cultural use, as defined by MGL Chapter 131 Section 40 and 310 CMR 10.04
- Normal maintenance of lawns and landscaping

Projects Within Conservation Commission Jurisdiction:

In order to avoid duplicative permitting proceedings, for activities regulated that will be undertaken wholly or partly within the jurisdiction of the Reading Conservation Commission and require stormwater review under 310 CMR 10.00 or the Reading Wetlands Bylaw, the Conservation Commission shall serve as the permitting authority for the stormwater permit.

Procedures:

Applicants shall submit the following:

- Two (2) full size (24x36) copies of the required site plans
- Three (3) half size (11x17) copies of the required site plans
- Two (2) copies of the application form, narratives & any other supporting materials
- Electronic submittal of all documents

Applicants are strongly encouraged to double-side whenever possible. All plans must be to scale.

The Community Development Director shall make a determination of completeness within ten (10) days of receipt of an application for a Stormwater Permit, in accordance with the Checklist for a Stormwater Permit, and shall notify the Applicant of the determination. Upon a favorable determination of completeness, the Community Development Director shall distribute the submitted plans and supporting materials to the Town Engineer, DPW Director, Conservation Administrator, and other staff as may be appropriate, and shall schedule the Application on the next available CPDC agenda (allowing sufficient time for public notice).

When an Application for a Stormwater Permit is submitted in conjunction with a Subdivision Plan, Site Plan Review, or other Special Permit within the jurisdiction of the CPDC, the Community Development Director may combine the hearings to streamline the process as applicable. In that event, public notice of the hearings may be combined as well.



Town of Reading

16 Lowell Street, Reading, MA 01867

Community Planning & Development Commission
Stormwater Permit Application

Stormwater Permit Application

Property Address: _____

Assessors Map: _____ Lot: _____

Applicant: _____

Address: _____

Phone Number: _____ Email: _____

Owner (if not Applicant): _____

Address: _____

Phone Number: _____ Email: _____

Engineer: _____

Address: _____

Phone Number: _____ Email: _____

Attorney: _____

Address: _____

Phone Number: _____ Email: _____

Architect: _____

Address: _____

Phone Number: _____ Email: _____

Current use of Property:

Proposed Use of Property:

Brief Description of the Project / Acres to be Disturbed:

Certifications:

The undersigned Applicant hereby certifies:

1. That the aforementioned requisite number of copies of the application, plans and all attachments have been delivered (or are being delivered herewith) to the Planning Division, and that all information in that application is correct to the best of their knowledge.
2. That a Certified List of Abutters within 300 feet of the subject property together with a stamped, plain (NO RETURN ADDRESS) envelope addressed to each abutter and interested party has been delivered to the Public Services Department.
3. That a Certified Check for the required Application Fee in the amount of \$ _____ has been delivered to the Public Services Department.
4. That they understand and hereby agree that, in addition to the Application Fee identified in Item 3 above, if the Community Development Director or the Community Planning and Development Commission determines that review of all or any part of this proposed project by an outside consultant of the Community Development Director's sole choosing is necessary for proper evaluation of this project, that they shall promptly provide a certified check(s) in an amount equal to the estimated cost of the consultant services to the Planning Division. In addition, that they further understand and hereby agree that the Town of Reading shall not issue any Certificate of Occupancy for this project until any and all such consultant fees which have been duly imposed subject to the Stormwater Management and Erosion Control Regulations have been paid in full;
5. That they understand and hereby agree that no Building Permit shall be issued by the Town of Reading until this Application is approved or approved with modifications and/or conditions; that no Certificate of Occupancy shall be issued until the project has been duly certified as completed in full accordance with approved plans, or that the remainder of the work has been bonded to the Town by the Applicant to guarantee such completion; and that the subject property shall not be occupied or used until said Certificate of Occupancy is issued, or such bonding provided;
6. That they understand and hereby agree that pursuant to law, notification of this Application and required public hearing(s) must be placed in a local newspaper at the Applicant's expense.

Applicant's Signature: _____ Date: _____

The undersigned Property Owner hereby certifies: I am the owner of the parcel identified as Reading Assessor's Map _____, Lot _____, or the authorized signatory for the entity that is the owner of that parcel. I hereby attest that I have knowledge of, and give my consent to, this application. I authorize the CPDC and its authorized agents to enter the aforementioned parcel to verify the information contained in this application and associated documents and, if a permit is granted, to inspect for compliance with permit conditions.

Owner Signature: _____ Date: _____

Date of Receipt of Application: _____

This application is Complete in accordance with Section 7.9.5 of the Reading General Bylaw and the Stormwater Management and Erosion Control Regulations, and authorized for filing with the Town Clerk.

Community Development Director, as Clerk to CPDC:

Date _____

Fee Schedule:

1. Municipal Projects (carried out by or for the Town of Reading): No fee
2. Single-Family Home: \$500.00
3. Other Residential: \$500.00 + \$200.00 per acre of land-disturbing activity
4. Commercial or Industrial: \$500.00 + \$500.00 per acre of land-disturbing activity
5. Other: \$500.00 + \$200.00 per acre of land-disturbing activity

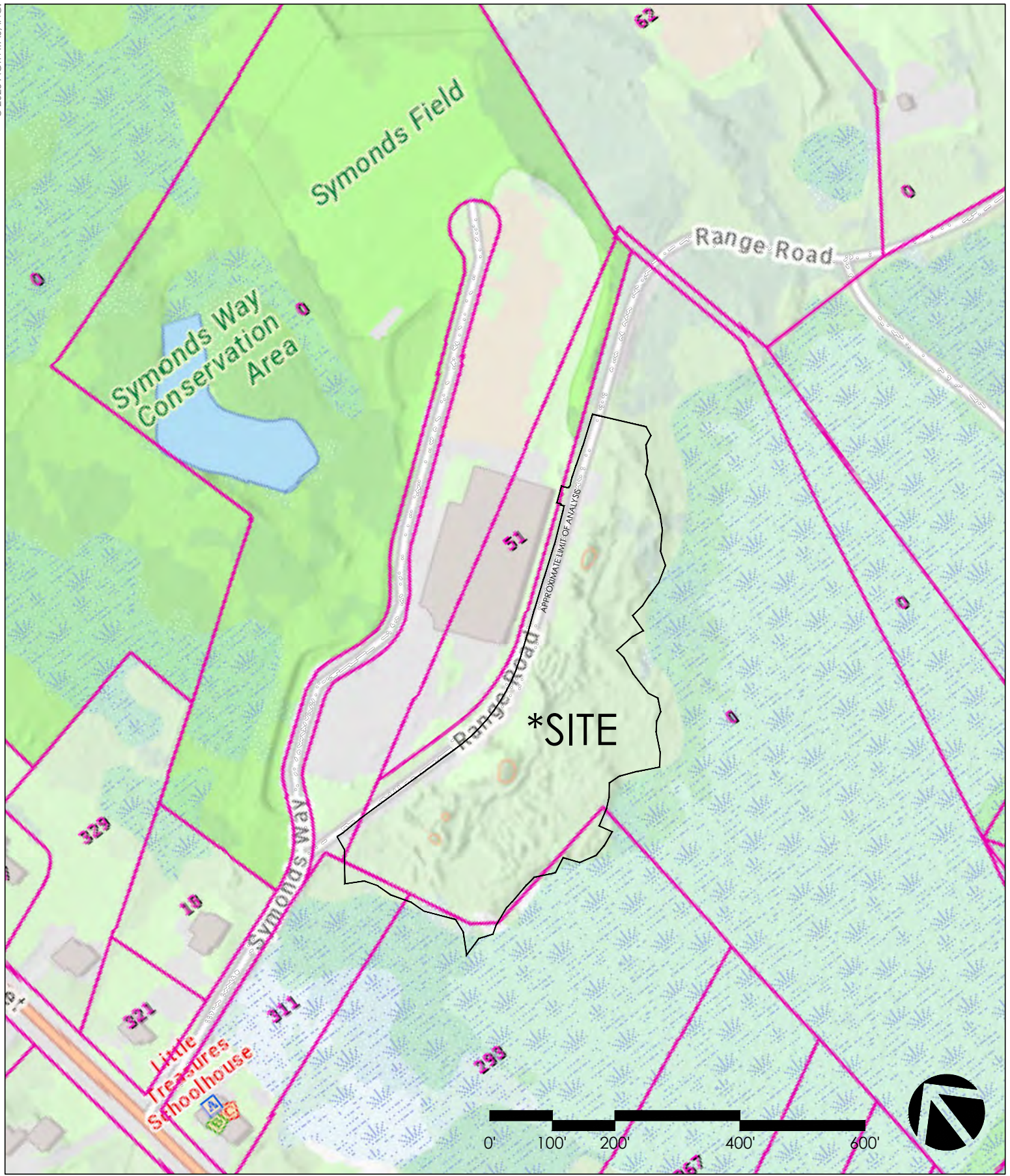
Determination of category of application shall be in the sole discretion of the Community Development Director.

Fees may be waived or reduced for government agencies or qualified non-profit organizations at the discretion of the CPDC.

Checklist for a Stormwater Permit				Provided	Waived
A Stormwater Permit Application – Completed & Signed					
B Fee (Certified Check)				<input type="checkbox"/>	<input type="checkbox"/>
C Certified Abutters List				<input type="checkbox"/>	<input type="checkbox"/>
D Plain White Envelopes Labeled with Abutters' Addresses (no return address)				<input type="checkbox"/>	<input type="checkbox"/>
E Erosion and Sediment Control Plan (per 7.9.6)				<input type="checkbox"/>	<input type="checkbox"/>
1	Narrative containing sufficient information to describe the nature and purpose of the proposed activity, pertinent conditions of the site and adjacent areas, proposed erosion and sedimentation controls, and any other proposed pollution prevention measures			<input type="checkbox"/>	<input type="checkbox"/>
2	Site plan containing the following information:			<input type="checkbox"/>	<input type="checkbox"/>
	a	Stamped by MA P.E. or Certified Professional in ESC		<input type="checkbox"/>	<input type="checkbox"/>
	b	Names, addresses, numbers of owner, applicant, design team		<input type="checkbox"/>	<input type="checkbox"/>
	c	Title, date, north arrow, scale, legend, locus map		<input type="checkbox"/>	<input type="checkbox"/>
	d	Locations of watercourses and water bodies		<input type="checkbox"/>	<input type="checkbox"/>
	e	Lines of existing abutting streets showing drainage (including catch basins), driveway locations and curb cuts		<input type="checkbox"/>	<input type="checkbox"/>
	f	Property lines of entire site with delineation and number of SF to be disturbed		<input type="checkbox"/>	<input type="checkbox"/>
	g	Drainage patterns and approximate slopes anticipated after major grading activities (construction phase grading plans)		<input type="checkbox"/>	<input type="checkbox"/>
	h	Location and details of ESC measures, including structural and non-structural measures, interim grading, material stockpiling areas		<input type="checkbox"/>	<input type="checkbox"/>
	l	Location, description of, and implementation schedule for temporary and permanent seeding, vegetative controls, and other stabilization measures		<input type="checkbox"/>	<input type="checkbox"/>
F Stormwater Management Plan (per General Bylaw 7.9.7 and SMEC Regulations 4.1.4)				<input type="checkbox"/>	<input type="checkbox"/>
1	Narrative describing the measures proposed by the Applicant for reducing adverse post-construction impacts from stormwater and how those measures meet the relevant Massachusetts Stormwater Management Standards			<input type="checkbox"/>	<input type="checkbox"/>
2	Hydrologic calculations shall use NOAA Atlas 14, Vol 1, or newest volume			<input type="checkbox"/>	<input type="checkbox"/>
3A	For sites discharging stormwater into impaired waters where phosphorus has been identified as a source of impairment (including all sites within the Aberjona watershed), specify BMPs optimized for phosphorous removal and calculations for phosphorous loading and removal			<input type="checkbox"/>	<input type="checkbox"/>
3B	For sites discharging stormwater into impaired waters where solids have been identified as a source of impairment (including all sites within the Aberjona watershed), systems in commercial or industrial land use shall incorporate designs that allow for shutdown and containment			<input type="checkbox"/>	<input type="checkbox"/>
4A	Systems on new sites are designed to meet 90% TSS removal and 60% TP removal, as related to the post-construction impervious surface area			<input type="checkbox"/>	<input type="checkbox"/>
4B	Systems on redevelopment sites are designed to meet 80% TSS removal and 50% TP removal, as related to the post-construction impervious surface area			<input type="checkbox"/>	<input type="checkbox"/>
5	Site plan containing the following information:			<input type="checkbox"/>	<input type="checkbox"/>

	A	Stamped by MA P.E.	<input type="checkbox"/>	<input type="checkbox"/>
	B	Names, addresses, numbers of owner, applicant, design team	<input type="checkbox"/>	<input type="checkbox"/>
	C	Title, date, north arrow, scale, legend, locus map	<input type="checkbox"/>	<input type="checkbox"/>
	D	Existing and proposed topography at 2-foot contour intervals	<input type="checkbox"/>	<input type="checkbox"/>
	E	Existing site hydrology, conveyances, impoundments	<input type="checkbox"/>	<input type="checkbox"/>
	F	Estimated seasonal high groundwater elevation (Nov – April) in areas to be used for retention, detention or infiltration	<input type="checkbox"/>	<input type="checkbox"/>
	G	Existing and proposed vegetation and ground surfaces with runoff coefficient for each	<input type="checkbox"/>	<input type="checkbox"/>
	H	Drainage area map showing pre- and post-construction watershed boundaries, drainage area, stormwater flow paths	<input type="checkbox"/>	<input type="checkbox"/>
	I	Drawings of all proposed drainage system components	<input type="checkbox"/>	<input type="checkbox"/>
G Operation and Maintenance Plan (per 7.9.8)			<input type="checkbox"/>	<input type="checkbox"/>
1		Name and signature of each owner of the project parcel(s)	<input type="checkbox"/>	<input type="checkbox"/>
2		Maintenance specifications and a schedule for all drainage structures, swales, ponds, components requiring maintenance	<input type="checkbox"/>	<input type="checkbox"/>
3		For stormwater BMPs serving more than one parcel, the information required by Section 7.9.8.2 of the Bylaw	<input type="checkbox"/>	<input type="checkbox"/>

Site Locus Map



Massachusetts Stormwater Report Checklist



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.¹ 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 8²
- 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.

¹ 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.

² 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

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.

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



M. Buczynski

7/2/2025

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): _____

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

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 Field¹
- 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.

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



Checklist for Stormwater Report

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

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 proprietary 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

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.

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Project Overview

The Town of Reading proposes to construct a new Center for Active Living Facility and Outdoor Community Pickleball Courts at an undeveloped area to the south of Burbank Ice Arena. The following are the program elements associated with this project.

CENTER FOR ACTIVE LIVING (BUILDING)

The proposed project includes the construction of a new building (+/- 27,600 sf) that supports community recreation. Building program spaces include but are not limited to a gymnasium with an indoor walking track, fitness rooms, multi-purpose gathering areas, kitchens, dining areas, and restrooms.

COMMUNITY PICKLEBALL COURTS

The proposed project will include the construction of seven (7) new pickleball courts, paved accessible walkways, outdoor athletic lighting, and associated drainage improvements. Access to the proposed pickleball courts will be provided in the form of an ADA accessible walkway between Range Road and the proposed pickleball courts.

NEW PARKING LOT AREA

A parking lot area to support both the Center for Active living and the Community Pickleball Courts is proposed between the two facilities. The proposed parking lot contains six (6) accessible parking spaces (including two van spaces) and associated access aisles. Additionally, the proposed parking lot contains two (2) electric vehicle charging stations. The total number of parking spaces provided in the proposed parking lot is 89 spaces.

OTHER IMPROVEMENTS

Additional improvements include:

- The widening of Range Road to provide improved access to the project site and adjacent properties;
- Accessible walkways between the site elements and to the Burbank ice Arena site;
- Utility infrastructure including stormwater, sewer, electric, and tel/data systems;
- Landscape and plantings;
- And a new stone dust walking trail along the BVW edge.

The proposed project will disturb approximately 158,172 sf (3.63 acres) and will increase the impervious area within the limit of work by 83,166 square feet. Portions of the proposed project work are located within the 100' buffer zone to the bordering vegetated wetland and within some of the Town's 25' Zone of Natural Vegetation plus the 10' No Structure Zone (35' offset shown on the plan set).

Compliance with Stormwater Standards

The Town of Reading utilizes the policy, criteria and information including specifications and standards of the Massachusetts Department of Environmental Protection Stormwater Handbook (MA Stormwater Handbook dated 2/2008). The proposed project is considered new development under the Stormwater Standards. The project has been designed in accordance with the "Massachusetts Stormwater Handbook", the Town of Reading's Wetland Protection Regulations dated December 2023, and the Town of Reading's Stormwater Management and Erosion Control Regulations dated December 2021.

LID Measures

Key features of Low Impact Development (LID) stormwater management systems include implementing practices that maintain a site's existing hydrology, using decentralized practices to manage stormwater close to the source of generation, and maximizing onsite infiltration to reduce runoff.

The following LID techniques Best Management Practices are specified in the proposed development program to mitigate the increase in stormwater runoff from the site.

BMPs Used:

- No disturbance to any Wetland Resource Areas

Standard 1: No New Untreated Discharges

The MA Stormwater Handbook requires that projects demonstrate that there are no new untreated discharges and that new discharges will not cause erosion or scour to downstream wetlands or water of the Commonwealth.

Computations and strategies shown for Standards 4 through 6 in this report demonstrate that there will be no new untreated discharges from the site.

Standard 2: Peak Rate Attenuation

Standard 2 requires that stormwater management systems be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates for the 2-yr, 10-yr, and 100-yr storm events. The following section outlines the procedure for determining the peak rates for the existing condition as well as the methods for attenuating the peak flows and volumes in the proposed condition.

2.1 Methodology

2.1.1 Hydrologic Model Description

The drainage analysis was performed using the Soil Conservation Service (SCS) TR-55 and TR-20 methodologies and the computer program HydroCAD 10.20-6a by HydroCAD Software Solutions, LLC.

2.1.2 Soil Conditions

The National Resources Conservation Service (NRCS) soil report identifies the majority of soils within the area of analysis having a map unit/name 653/Udorthents Sandy, which is not given a hydrologic rating. In reviewing the surrounding areas to the site, the hydrologic ratings vary from A to B/D, with the majority of soils having a hydrologic rating of A. Soil borings were also conducted as part of this project. The soil borings note the seasonal high groundwater elevation at 81.5 and confirm the soils on site being coarse to fine sands. To be conservative, a B hydrologic rating has been carried throughout the hydrological analysis. The soil borings and web soil survey can be found in the Appendix.

Table 1: NRCS Soil Types

Map Designation	Soil Name	Soil Group
6A	Scarboro Mucky Fine Sandy Loam	A/D
52A	Freetown Muck	B/D
53A	Freetown Muck, Poned	B/D
235D	Hinckley Loamy Sand	A
626B	Merrimack-Urban Land Complex	A
653	Udorthents, Sandy	B*
656	Udorthents-Urban Land	B*

*Soil group based on findings from the surrounding NRCS soils.

2.1.3 Design Storms

The analysis was performed on the 2-, 10-, and 100-year frequency rainfall events. The events were based on the 24-hour Type-III duration storms.

2.1.4 Time of Concentration

Time of Concentration (Tc) values were calculated using Average Velocities for Overland Flow, found in SCS TR-55 Urban Hydrology for Small Watersheds. The minimum Tc used was six (6) minutes as this is the minimum that HydroCAD defaults to in the calculations.

2.1.5 Curve Numbers

Curve numbers were developed for each of the different use categories and hydrologic soil group types within each sub-area. The curve numbers were based on the SCS TR-55 methodology and are included in the HydroCAD input and output found in the Attachments Section.

2.1.6 Rainfall

Rainfall data is taken from NOAA Atlas 14 Volume 10 for the project location. The following depths were used in the HydroCAD model for the 2-, 10-, and 100-yr storm events:

Table 2: Rainfall Data

Storm Event	Rainfall Depth
2-yr	3.09"
10-yr	4.65"
100-yr	8.36"

2.2 Existing Conditions

The project area limit of work is about 3.63 acres. However, for the drainage analysis a larger Area of Analysis (AOA) is used to more adequately quantify and compare the runoff in the existing and proposed conditions. The AOA is about 4.09-acres, and it includes the portions of area between the project area and the offsite wetland that are ultimately conveyed to the offsite wetland; modeled as DP-1.

2.2.1 Existing Drainage Areas

The existing project area contains one drainage area, Subcatchment-1, that flows to one Discharge Point, DP-1. See the Pre-Development Plan Attachment (Fig. 1). DP-1 is the bordering vegetated wetlands (BVW).

Subcat-1 is a 178,246-sf area that contains, grassed areas, wooded areas, and an existing paved road (Range Road). North of the project area is the Burbank Ice Arena and associated parking lot. South of the project area is the existing bordering vegetated wetland (BVW). East of the project area is the Reading Rifle and Revolver Club. Residential homes along Haverhill Street are located to the west.

2.3 Proposed Conditions

The proposed work consists of constructing a new Center for Active Living (ReCAL) Facility and Community Pickleball Courts. The proposed ReCAL facility includes a new indoor recreation building, a new seven (7) court pickleball facility with athletic lighting, construction of a new parking area, accessible walkways providing access throughout the facility, utility improvements, and new stormwater BMPs. Clearing and earthwork operations will be necessary to construct the new building, courts,

walkways, parking area, and associated infrastructure. The Area of Analysis remains the same in the proposed condition with the same discharge point (DP-1).

2.3.1 Proposed Drainage Areas

The proposed project area contains three (3) drainage areas, Subcatchment 10, Subcatchment 11, and Subcatchment 12 that flow to the Discharge Point, DP-1. See the Post-Development Plan Attachment (Fig. 2).

Subcatchment-10 is a 92,574-sf area that consists of the proposed ReCAL building, parking lot area, paved road (Range Road), a portion of the paved accessible walkways, and associated landscaped and grassed areas. Overland runoff is collected by catch basins and areas drains where it flows to water quality units that discharge into a proposed infiltration basin at the south side of the parking lot, modeled as Pond 1P. Pond 1P is designed to meet the Massachusetts Stormwater Standards as well as the Town of Reading's Stormwater Management Regulations. The underground infiltration/detention basin outlets to an outlet control structure which ultimately outlets to the existing offsite wetland to the south of the site via an outlet pipe to a rip rap basin. The wetland has been modeled as DP-1, see HydroCAD report for details.

Subcatchment-11 is an 16,253-sf area that consists of seven (7) new pickleball courts, a portion of the paved accessible walkways, and landscaped areas. Runoff flows overland and is collected by area drains along the edge of the pickleball courts. The runoff is then conveyed to a proposed underground infiltration basin, modeled as pond 2P. Pond 2P is designed to meet the Massachusetts Stormwater Standards as well as the Town of Reading's Stormwater Management Regulations. The underground infiltration basin outlets to an outlet control structure which ultimately outlets to the wetland. See Table 3 for a summary of the area take offs for the hydrologic analysis of the proposed conditions.

Subcatchment-12 is a 69,419-sf area that consists of a stone dust walkway, cement concrete pads, and grassed/planted areas. Runoff flows overland directly to the wetland. See Table 3 for a summary of the area take offs for the hydrologic analysis of the proposed conditions.

Table 3: Existing & Proposed Conditions Takeoff Areas (SF)

	Impervious CN=98	Gravel CN=96	Grass CN=61	Woods/Brush Good CN=55	Total Area	Weighted CN
EX. Subcat-1	11,975 sf	-	11,833 sf	154,438 sf	178,246 sf	59
EX. - TOTAL	11,975 sf	-	11,833 sf	154,438 sf	178,246 sf	59
PR. Subcat-10	78,975 sf	-	13,598 sf	-	92,574 sf	93
PR. Subcat-11	16,105 sf	-	147 sf	-	18,040 sf	98
PR. Subcat-12	60 sf	4,401 sf	43,243 sf	21,715 sf	69,419 sf	61
PR. - TOTAL	95,140 sf	4,401 sf	56,988 sf	21,715 sf	178,246 sf	

2.4 Peak Discharge Runoff Rates

The peak flows were calculated for the 2-, 10-, and 100-year storm events under the existing and proposed conditions to compare. Table 4 summarizes the rates of runoff.

Table 4: Summary of Runoff Rates (cfs)

		2 Year	10 Year	100 Year
DISCHARGE POINTS	DP-1E	0.65 cfs	3.29 cfs	12.90 cfs
	DP-1P	0.54 cfs	2.76 cfs	12.56 cfs

As demonstrated in the table, the proposed project decreases the rates in the proposed conditions for the 2-, 10-, and 100-year storms when compared to the existing conditions and therefore this standard is met.

Standard 3: Stormwater Recharge

3.1 Stormwater Recharge

The Stormwater Standards indicate that at a minimum, the annual recharge from the post development site shall approximate the annual recharge from pre-development conditions.

3.1.1 Stormwater Recharge; Pond-1P

Required Recharge Volume:

The proposed subcatchment-10 will add 67,000 sf of impervious to the project site.

$$R_v = F \times \text{Impervious Area Increase}$$

*F for Stormwater Standards is 0.35-inch (B-Soils)

$$R_v = (0.35in) \times \left(\frac{1ft}{12in}\right) \times (67,000 sf)$$

$$R_v = 1954.16 cf$$

Recharge of the runoff generated from the increase in impervious area will be provided in the underground detention system. The Simple Dynamic Method was used to show the required volume will recharge. The HydroCAD model associated with these calculations can be found in the Appendix. The model utilizes a storm depth that will generate the required recharge volume over the impervious areas (1,954.16 cf). The model shows that when this volume is run through the infiltration basin there is no outlet of stormwater from the system with the exception of exfiltration, meaning the full required recharge volume will recharge, and therefor this standard is met.

3.1.2 Stormwater Recharge; Pond-2P

Required Recharge Volume:

The proposed subcatchment-11 will add 16,105 sf of impervious to the project site.

$$R_v = F \times \text{Impervious Area Increase}$$

*F for Stormwater Standards is 0.35-inch (B-Soils)

$$R_v = (0.35in) \times \left(\frac{1ft}{12in}\right) \times (16,105 sf)$$

$$R_v = 469.72 cf$$

Recharge of the runoff generated from the increase in impervious area will be provided in the underground detention system. The Simple Dynamic Method was used to show the required volume will recharge. The HydroCAD model associated with these calculations can be found in the Appendix. The model utilizes a storm depth that will generate the required recharge volume over the impervious areas (469.72 cf). The model shows that when this volume is run through the infiltration basin there is no outlet of stormwater from the system with the exception of exfiltration, meaning the full required recharge volume will recharge, and therefore this standard is met.

3.2 Drawdown Time

The MA Stormwater Handbook requires that recharge volume have a drawdown time of 72 hours or less. The time required to dewater a recharge system may be estimated by the following equation:

$$Time_{drawdown} = \frac{V_{RS}}{(K) \times \left(\frac{1ft}{12in}\right) \times (A_R)}$$

V_{RS} = Volume of recharge storage system (cf)

K = Rawls Rate $\left(\frac{in}{hr}\right)$

A_R = Surface area of recharge system (sf)

The drawdown time of the entire underground infiltration system (Pond 1P; assuming full capacity) is calculated as the following:

$$Time_{drawdown} = \frac{23,614 \text{ cf}}{\left(1.02 \frac{in}{hr}\right) \times \left(\frac{1ft}{12in}\right) \times (11,948 \text{ sf})}$$

$$Time_{drawdown} = 23.25 \text{ hours}$$

The drawdown time of 23.25 hours for Pond-1P is under the 72-hour maximum.

The drawdown time of the entire underground infiltration system (Pond 2P; assuming full capacity) is calculated as the following:

$$Time_{drawdown} = \frac{2,066 \text{ cf}}{\left(\frac{1.02 \text{ in}}{hr}\right) \times \left(\frac{1ft}{12in}\right) \times (1,090 \text{ sf})}$$

$$Time_{drawdown} = 22.29 \text{ hours}$$

The drawdown time of 22.29 hours for Pond-2P is under the 72-hour maximum.

The drawdown time for Pond-1P and Pond 2-P are both under the 72-hour maximum and therefore the standard is met.

3.3 Mounding Analysis

The proposed Infiltration Basins will be used to mitigate peak flow in the 10-year and above. However, there is less than 4' separation to groundwater and as such a mounding analysis has been completed showing compliance. Please refer to appendix for Mounding Analysis calculations.

Standard 4: Required Water Quality Volumes

4.1 Total Suspended Solids (TSS) Removal

Reading requires 90% TSS removal per the Town of Reading's Wetland Protection Regulations dated December 2023, and the Town of Reading's Stormwater Management and Erosion Control Regulations dated December 2021. The MA Stormwater Handbook states that this standard is met when:

1. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan and thereafter are implemented and maintained.
2. Structural stormwater best management practices are sized to capture the required water quality volume as determined in accordance with the Massachusetts Stormwater Handbook; and
3. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook

4.1.1 Subcatchment-10

The proposed parking area and road will be paved and is anticipated to generate TSS. TSS removal at Subcatchment 10 will be achieved through the following treatment train: road / parking lot sweeping -> collection of stormwater in deep sump catch basins -> flow of stormwater through a Stormceptor (or equivalent) -> flow to a subsurface infiltration basin. This treatment train achieves 97% TSS removal. Calculations showing the treatment train can be found in the appendix. The water quality unit will be sized to treat the required water quality volume which is calculated below:

$$\text{Subcatchment 10 Impervious Area Generating TSS} = 81,402 \text{ sf}$$

$$\text{Required ater Quality Volume} = (0.5\text{in}) * \left(\frac{1\text{ft}}{12\text{in}}\right) * (81,402 \text{ sf})$$

$$\text{Required Water Quality Volume} = 3,391.75 \text{ cf}$$

As noted in Standard 3, the subsurface system associated with Subcatchment-10 is sized for a much larger volume.

4.1.2 Subcatchment-11

The MA Stormwater Handbook does not provide guidance in differentiating between a typical development project which would likely have roadways, driveways, and parking lots, which generate greater amounts of TSS, and a landscape project like this which is renovating basketball courts and installing accessible pedestrian walkways that will not be treated in the winter. The proposed project has both conditions of a typical development project (parking area) and a landscape project.

The pickleball courts and adjacent walkway will not generate TSS loads comparable to a typical development project, which is what the Stormwater Handbook is aimed at regulating. The Town of Reading does not anticipate treating the pickleball courts or adjacent walkway in this project and vehicle use on any of the surfaces will be limited to maintenance vehicles which will access these surfaces on a minimum basis. TSS removal at Subcatchment 11 can be modeled through the following treatment train: road / parking lot sweeping -> collection of stormwater in deep sump catch basins -> flow to a subsurface infiltration basin. This treatment train achieves 87% TSS removal. Although street sweeping and deep sump catch basins are not provided as part of the pickleball stormwater infrastructure and maintenance plan, they can be modeled as part of the TSS removal calculations because these pollutants are not generated at this area. Calculations showing the treatment train can

be found in the appendix. In consideration of the impervious surface type and use, runoff from these surfaces already meet the intent of Standard 4.

A long-term pollution prevention plan is required to identify practices taken for source control and pollution prevention. This information has been provided as a part of the Operation and Maintenance Plan and can be found in the Attachments Section.

4.2 Phosphorus Removal

Reading requires 60% phosphorus removal per the Town of Reading's Wetland Protection Regulations dated December 2023, and the Town of Reading's Stormwater Management and Erosion Control Regulations dated December 2021.

The existing phosphorus loading at project site produces an annual phosphorus load of 0.96 lb/year, see attached phosphorus loading calculations.

Massachusetts MS4 General Permit provides guidance on calculating phosphorus load reductions for stormwater control devices. The proposed stormwater detention/infiltration basins (Pond 1P and Pond 2P) both achieve a reduction in the cumulative phosphorus load through the storage capacity of the basins from runoff generating from impervious areas. The phosphorus load from subcatchment-10 is expected to be exfiltrated in the subsurface detention/infiltration system in a rainfall event with an average of 2.0" of rainfall over the impervious areas and therefore has not been included in the total proposed conditions phosphorus loading. The phosphorus load from subcatchment-11 is expected to be exfiltrated in the subsurface detention/infiltration system in a rainfall event with an average of 0.60" of rainfall over the impervious areas. An 86% cumulative phosphorus load reduction has been applied to subcatchment-11, see attached phosphorus loading calculations. The phosphorus load from subcatchment-12 is not reduced due to the runoff not being detained in a stormwater control device. The proposed project will achieve 64.2% phosphorus removal, and therefore this standard is met.

Standard 5: Land Uses with Higher Potential Pollutant Loads

This project is not considered a land use with Higher Potential Pollutant loads therefore Standard 5 is not applicable to this project.

Standard 6: Critical Areas

Runoff from this project does not discharge to any critical areas and therefore is not subject to additional treatment required by Standard 6.

Standard 7: Redevelopment

For the purposes of the Stormwater Management Standards, redevelopment projects are defined to include development, rehabilitation, and expansion on previously developed sites provided the redevelopment results in no net increase in impervious area. The project proposed a net increase in impervious area on site and is therefore not considered redevelopment. As such, the project has been designed in full compliance with the Massachusetts Stormwater Standards.

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

Construction period pollution prevention and erosion and sedimentation control will be implemented at the project site to control construction related impacts during construction and land disturbance activities. Refer to the Site Preparation Plan for location of erosion and sediment controls. The general contractor for the project will be responsible for the implementation of the construction period controls.

The project scope will disturb approximately 3.63-acres of land during the construction process and will require a NPDES Construction General Permit issued by the Environmental Protection Agency. As a result, a stormwater pollution prevention plan (SWPPP) will be required. The SWPPP document will satisfy the requirements of the Construction General Permit, and the construction period erosion, sedimentation and pollution prevention plan requirements outlined in Standard 9 of the Massachusetts Stormwater Handbook. A draft SWPPP has been developed and is included as part of the Stormwater Report. The SWPPP will be finalized with the awarded General Contractor for the project.

Standard 9: Operation and Maintenance Plan

The proposed project is owned by the Town of Reading. Stormwater structures and other stormwater best management practices should be maintained as directed in the Operations and Maintenance Plan. An Operation and Maintenance Plan has been included with this Stormwater Report.

Standard 10: Prohibition of Illicit Discharges

Illicit Discharge Compliance Statement

“Per the requirements of Standard 10 of the Massachusetts Stormwater Management Standards it shall be stated that No Illicit Discharges exist at the Reading Center for Active Living and Community Pickleball Courts project site located at Symonds Way, Reading, Massachusetts.”

Attachments:

- NRCS Soil Report/Soil Boring Logs
- Pre-Development Plan
- Post-Development Plan
- HydroCAD Report – Peak Rate
- HydroCAD Report - Recharge
- Mounding Analysis
- TSS Removal Calculations
- Operation & Maintenance Plan - DRAFT
- SWPPP - DRAFT
- Phosphorus Loading Calculations

NRCS Soil Report/Soil Boring Logs



United States
Department of
Agriculture

NRCS

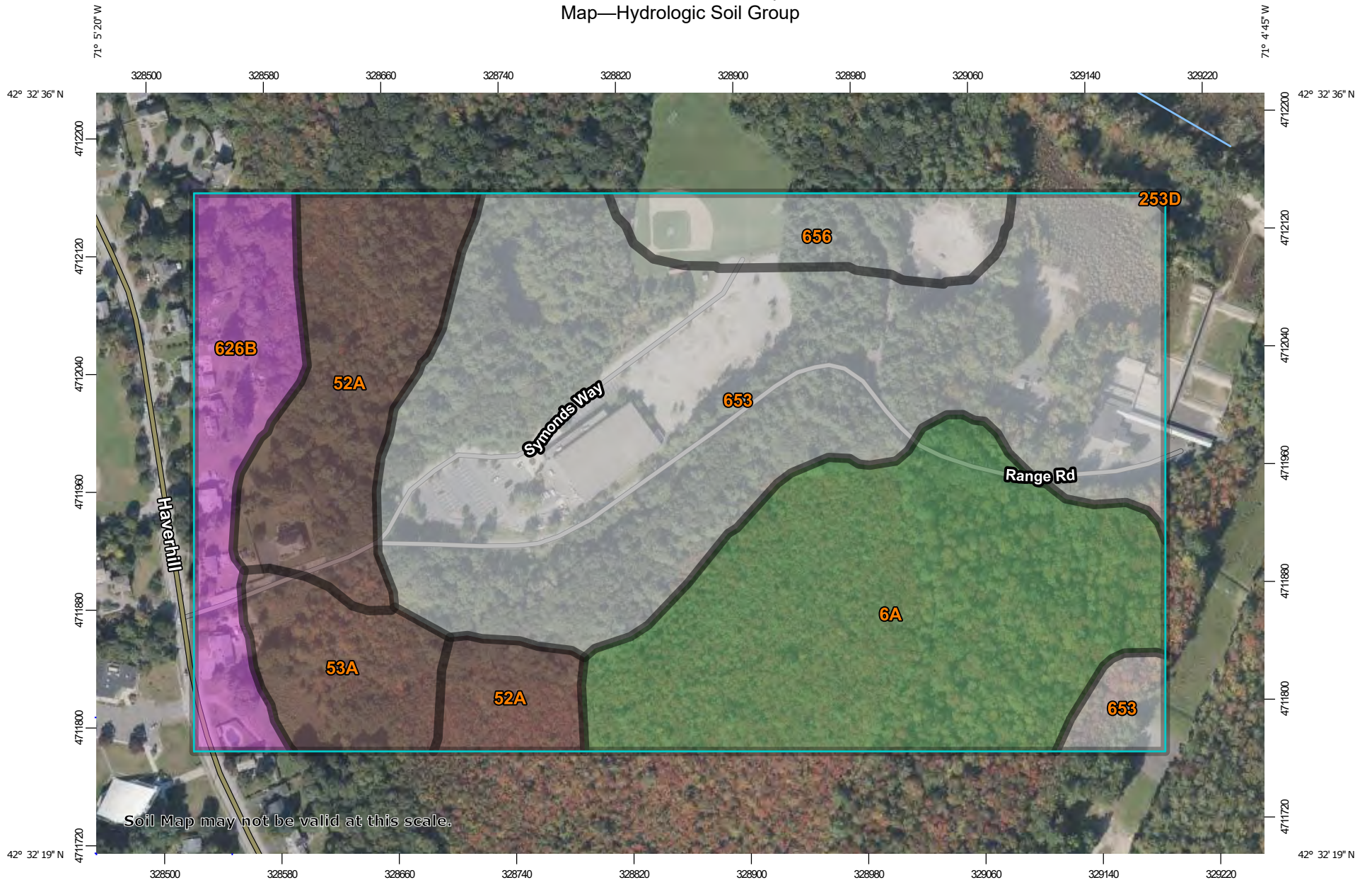
Natural
Resources
Conservation
Service

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

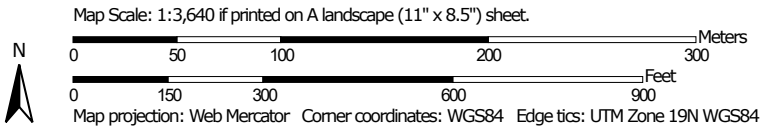
Custom Soil Resource Report for Middlesex County, Massachusetts




Custom Soil Resource Report
Map—Hydrologic Soil Group



Soil Map may not be valid at this scale.











MAP LEGEND









Area of Interest (AOI)
 Area of Interest (AOI)

Soils





Soil Rating Polygons

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available


Soil Rating Lines

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available






Soil Rating Points

-  A
-  A/D
-  B
-  B/D


Water Features

-  Streams and Canals





Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

-  Aerial Photography

Soils

-  C
-  C/D
-  D
-  Not rated or not available

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Middlesex County, Massachusetts
 Survey Area Data: Version 24, Aug 27, 2024

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
6A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	A/D	15.5	24.9%
52A	Freetown muck, 0 to 1 percent slopes	B/D	8.2	13.2%
53A	Freetown muck, ponded, 0 to 1 percent slopes	B/D	3.3	5.2%
253D	Hinckley loamy sand, 15 to 25 percent slopes	A	0.0	0.0%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	A	4.9	7.8%
653	Udorthents, sandy		27.1	43.5%
656	Udorthents-Urban land complex		3.3	5.3%
Totals for Area of Interest			62.3	100.0%

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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Lisa R. Casselli, PE Principal - A WBE Firm

**Subsurface Exploration
Foundation Specialty Systems**

**Laboratory Soil Testing
Ground Improvement**

**Geothermal Testing
Earthwork Testing**

27 November 2024
File No. 2436

Town of Reading
c/o Bargmann Hendrie Archetype
9 Channel Center Street – Suite 300
Boston, MA 02210

Attention: Mason Brunnick - COO

Subject: **Geotechnical Data Summary Report**
Proposed Community Center
Range Road
Reading, Massachusetts 01867

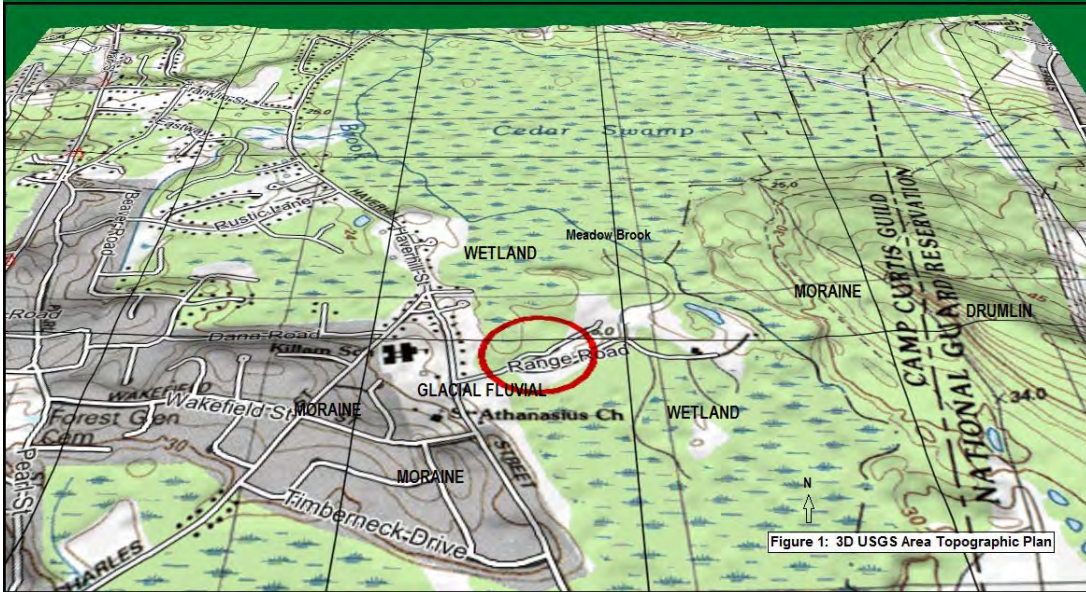
Dear Mason:

This geotechnical data summary report gives our site background data review, subsurface explorations (soil, groundwater), field soil testing, engineering data summary, analyses and calculations for the proposed new construction on Range Road in Reading, Massachusetts (*Figure 1A*).



45 New Ocean Street – Suite A
Swampscott, MA 01907
Tel. 781/646-6982

354 Ashburnham Street
Fitchburg, MA 01420
Tel. 617/201-0914

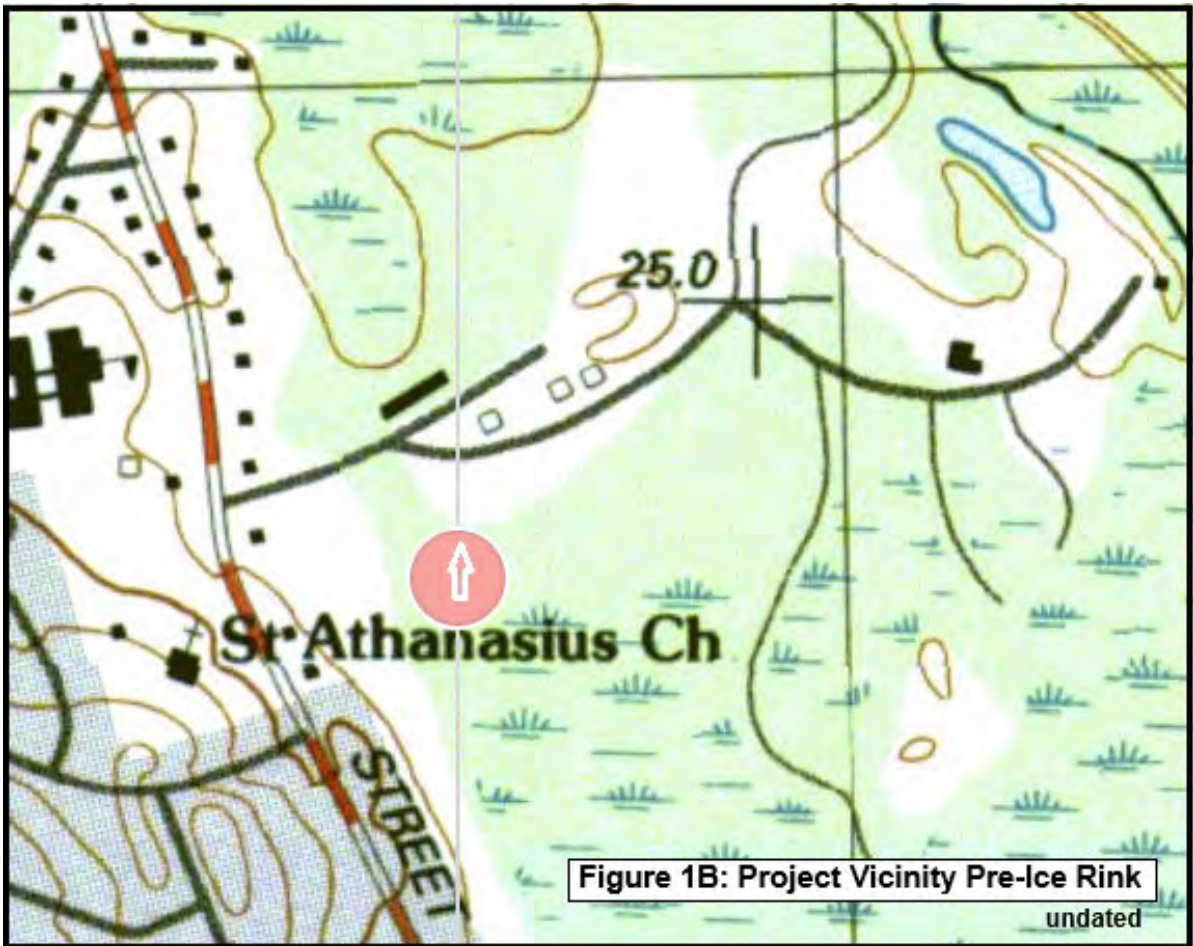


I. Proposed Construction:

Existing Conditions:

- Plan reference:
 - *Approval Not Required Plan of Land – Haverhill Street Lot 133 Map 35 Town of Reading, Middlesex County, Commonwealth of Massachusetts; prepared by Control Point Associates, Inc. of South Marlborough, MA; dated 22 June 2022.*
 - No site utilities survey was required as the property is raw woodland.
- Direction, Datum, Elevation and Coordinates:
 - Direction:
 - Plan north: *Figure 1A, Figure 1*
 - Called north for this review: in the general direction of Symonds Way.
 - Elevation and datum:
 - Vertical elevations:
 - Site topographic elevations were provided on the site survey plan.
 - The proposed new community center building footprint is relatively level with site elevations ranging from El. 86 ft.+/- to El. 88 ft.+/-.
 - Elevation datum: NAV88.
 - Site coordinates:
 - Latitude: 42.5412° N
 - Longitude: -71.0850° W
- Existing Site Conditions:
 - No attempt has been made to undertake a detailed history of this site. Historic review is included in research for Phase I environmental site assessments.
 - No useful site area mapping was found except an undated map which showed three structures directly across Range Road (*Figure 1B*). The subject site was undeveloped.
 - During the 1950s a missile launch site was created directly across the street on Range Road. This launch site was decommissioned in 1963. A 1977 aerial map seems to show remnants of the launch site. The subject site remained undeveloped.
 - By 1994 the launch site had been redeveloped as the Burbank Ice Arena and parking area, which remain today. The subject site remained undeveloped (*Figure 1A*).

- Immediate site area topography is slightly to moderately sloping (*Figure 1*).
- Site underground utilities (water, sewer) are not relevant as this is a raw woodland property. Even so, an area utilities list is held by us.

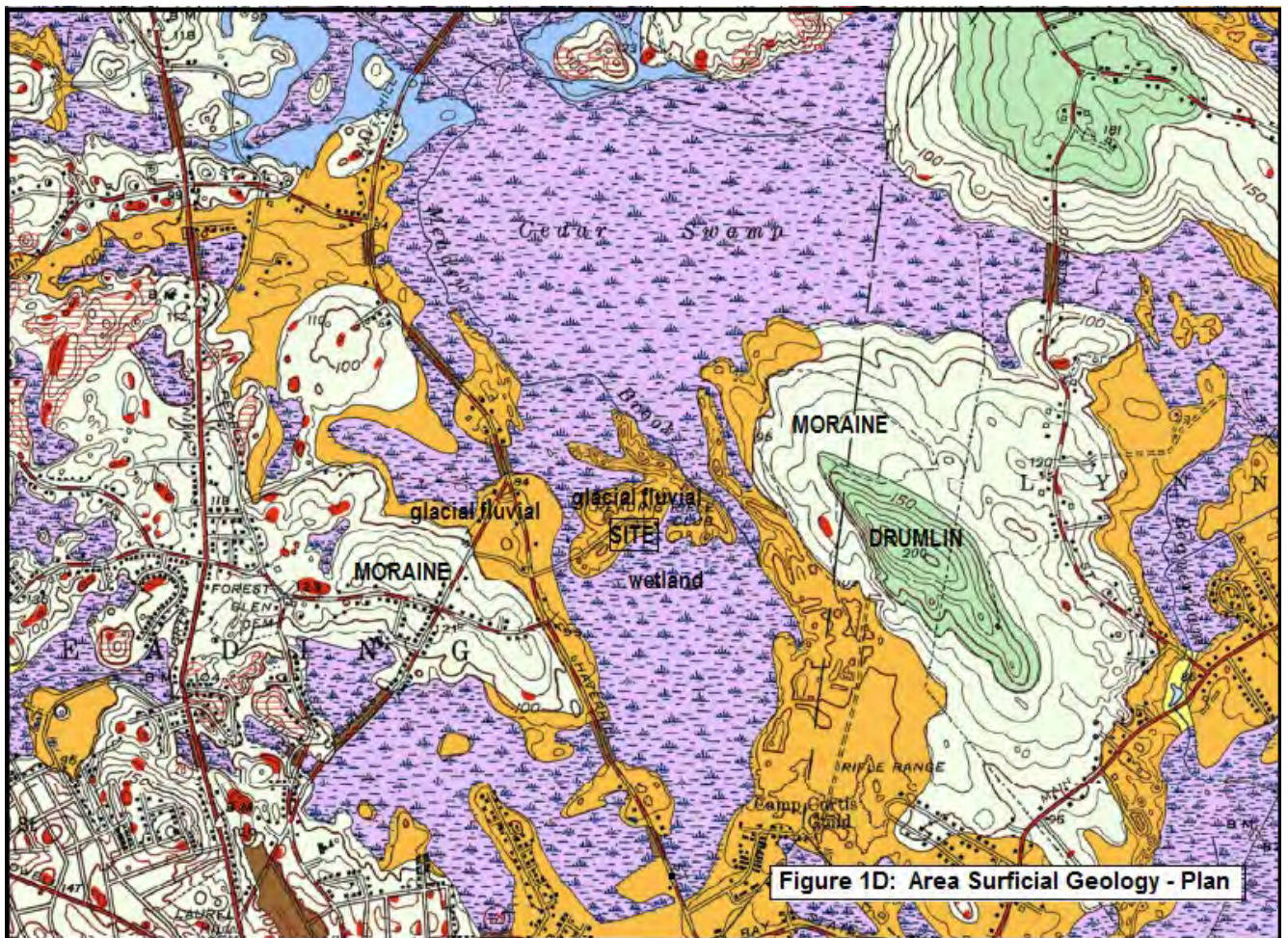


Anticipated New Construction:

- Plan Reference:
 - *Reading CAL – Town of Reading*; prepared by Bargmann Hendrie & Archetype of Boston, MA, dated 1 November 2024.
- New Building Structural Information: *Figure 1C*
 - New construction:
 - Above-grade floor levels: two (2)
 - Below-grade floor level: none currently planned
 - Elevator included in design: one (1) conventional
 - Footings:
 - Applied loads: assumed maximum
 - Columns: 100 K
 - Exterior walls: 4 KLF
 - Bottom of footing (BOF):
 - Exterior: at minimum at recommended frost depth
 - Interior: 2 feet below first floor finish floor slab
 - Ground floor elevation: assumed 1st floor FFE at El. 88 ft.+/- (NAV88).



- Ground floor loads (assumed):
 - Mechanical and storage areas: 150 PSF applied total load
 - Public use areas: 150 PSF applied total load
 - Interior equipment parking area: 450 PSF, if any are planned.
- Elevator pit: pit base at 5 ft. below 1st floor FFE; El. 83 ft.+/- (NAV88)

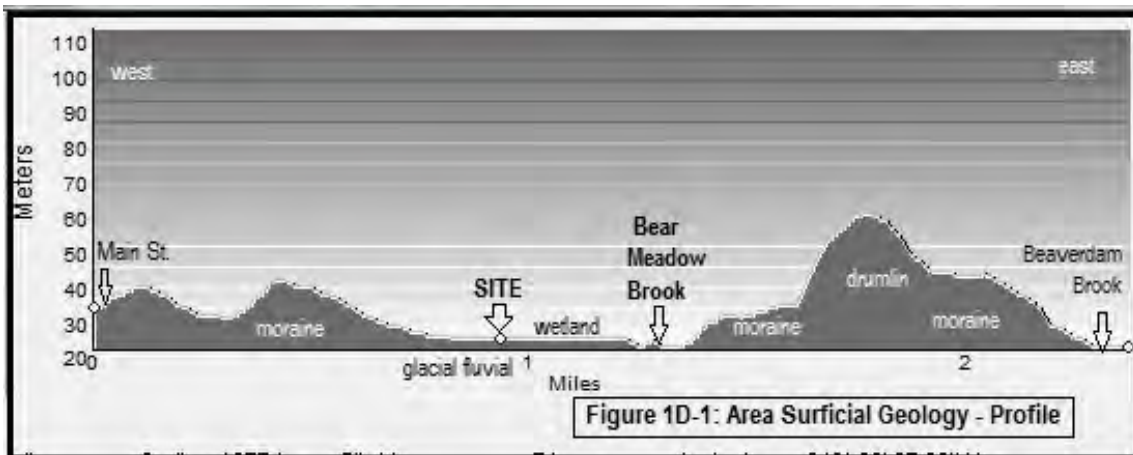


II. Subsurface Conditions:

Topographic Data:

- Elevation Range: the immediate site area is slightly to moderately sloping (Figure 1D-1, Figure 1).

- Area Surficial Geology:
 - Area surficial geology is the result of a series of glacial advances and retreats with possible occasional intrusive marine action.
 - The result in the general area was land dotted with glacial moraines and glacial drumlins with adjacent extensive low-lying glacial outwash (glacial fluvial) plains (*Figure 1D*). In this area the outwash is overshadowed by extensive wetland.
 - Glacial drumlin and moraine formations were left behind by glacial scour and melt.
 - Areas near rivers also had alluvial (river flood) sediment contributions within their lowland formation (alluvial land; Bear Meadow Brook, northeast) as contrasted with sedimentation within glacial outwash plains (*Figure 1D-1*).
 - Glacial upland formations (drumlins, moraines) can contain extensive mapped adjacent glacial outwash soil deposits as shown in this area in *Figure 1D*.
 - Glacial moraines are an accumulation by deposition of glacial drift (silt, sand and gravel) within a glaciated region. Thrust of glacial ice (bulldozed material) occurred frequently. Exposed bedrock is common.
 - Glacial drumlins are oval hills of clay, silt, sand and gravel compacted under pressure at the base of hundreds of vertical feet of glacial ice. A drumlin's axis indicates the direction of ice movement (compacted material).
 - An alluvial plain is formed by granular soil left behind by repeated river flooding providing silt, sand and gravel commonly found in the relatively level areas beyond the river. Outwash plain soils are similarly formed within glacial meltwater.
 - According to *Figure 1D*, the site lies within mapped glacial outwash. Subsoils associated with this formation would largely include a mix of gravel, sand and silt.
 - According to area surficial geologic mapping utilizing the site latitude and longitude coordinates [*Massachusetts GIS, Surficial Geology; Commonwealth of Massachusetts Office of Geographic Information; September 2012; updated 2018*] the site was predicted to be situated upon one or more of the following surficial native soil units:
 - Glacial outwash (water placed silt, sand and gravel); glacial fluvial
 - Glacial till

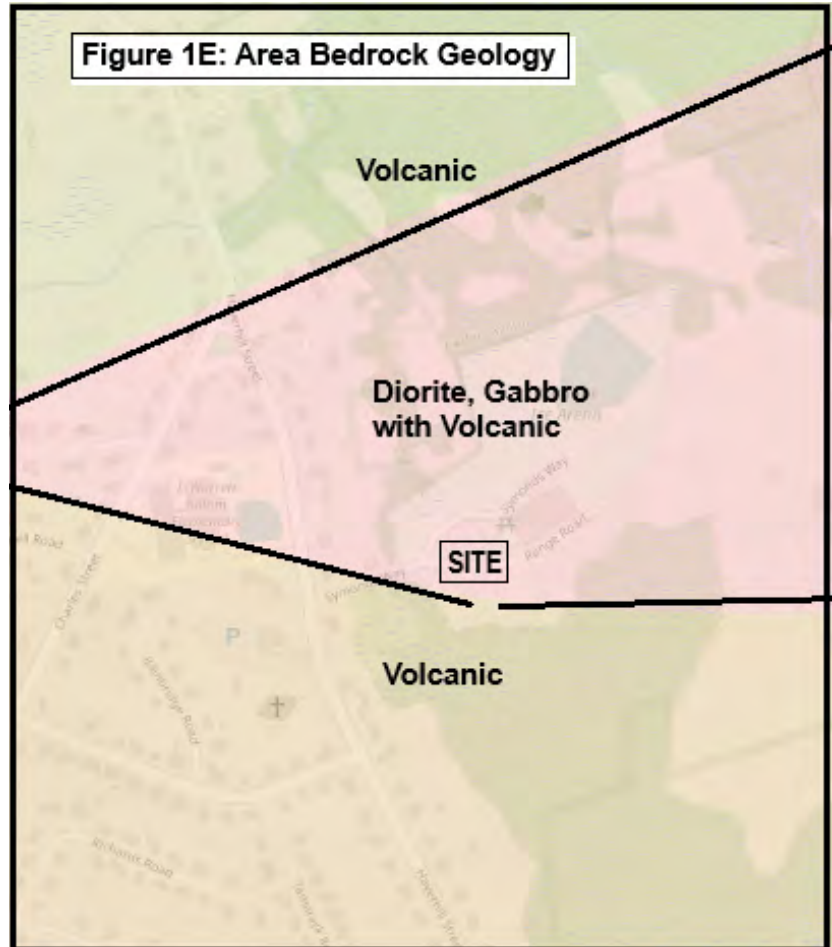


- Water Bodies:
 - The following mapped water bodies are closest to the subject site:
 - Pond: 1760 ft. northeast.
 - Bear Brook: 1860 ft. northeast
 - No other significant project area water bodies (ponds, lakes, rivers, streams) are mapped on *Figure 1* within a 1-mile radius of the subject site.
 - Wetlands
 - South Cedar Swamp: adjacent south, east
 - Cedar Swamp: 500 ft. north

- **Anticipated Site Substrata:** Based upon the collected geologic and topographic data, anticipated native site substrata were considered to potentially include:
 - Man-placed fill
 - Organic soil (peat, organic silt)
 - Glacial outwash (water sorted silt, sand and gravel)
 - Glacial till (ablation till, basal till)
 - Bedrock

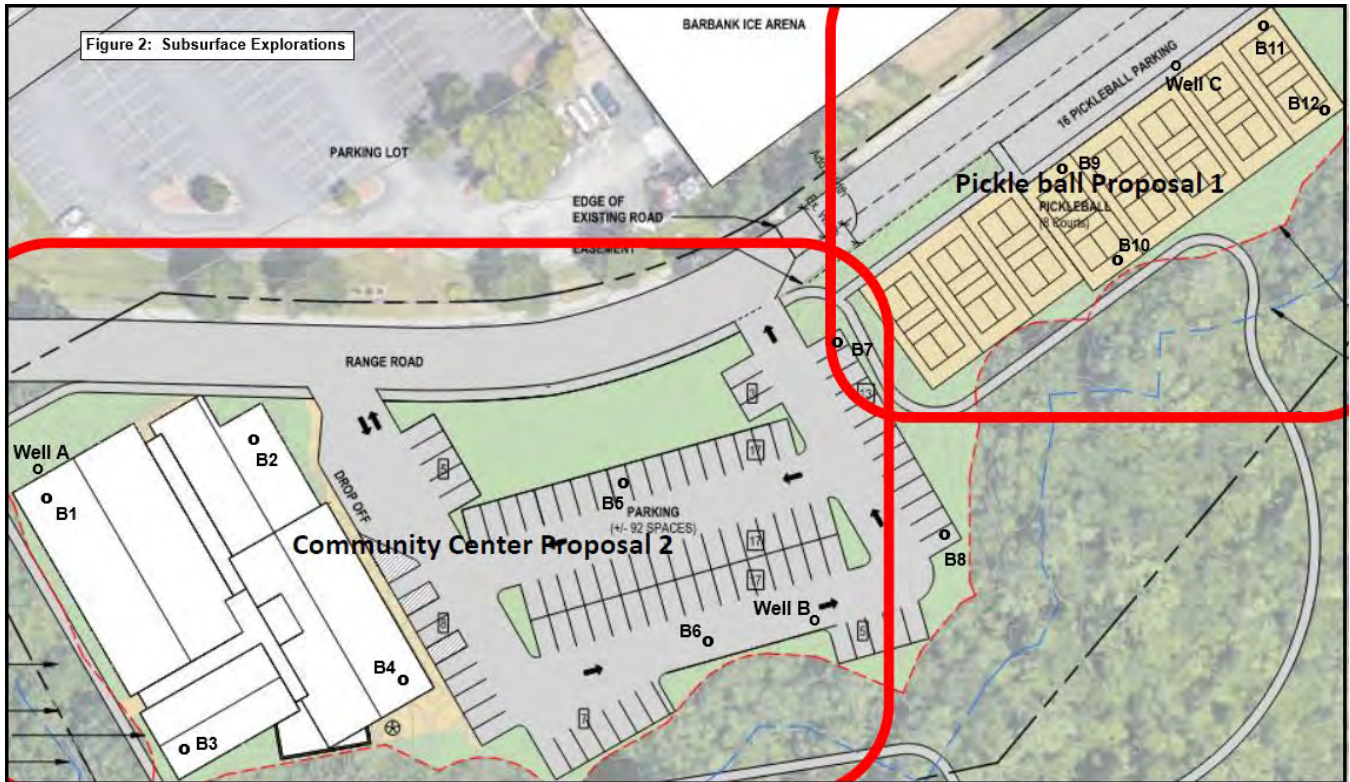
- **Area Bedrock Geology:** [US Department of the Interior; US Geological Survey, *Massachusetts State Geologic Map*; 1998; updated 2018; see *Figure 1E*]

- Primary rock: volcanic
 - Hardness: a medium hard rock; igneous
 - Structure: fine grained
 - Mineralogy: felsic with rhyolite
- Primary rock: gabbro
 - Hardness: a dark hard rock; igneous
 - Structure: medium to coarse grained equigranular
 - Mineralogy: feldspar with ferromagnesian minerals; no quartz
- Primary rock: diorite
 - Hardness: a hard rock; intrusive igneous
 - Structure: medium to coarse grained granular
 - Mineralogy: feldspar; no quartz
- Depth to bedrock data was not available from MA GIS (2018 database).



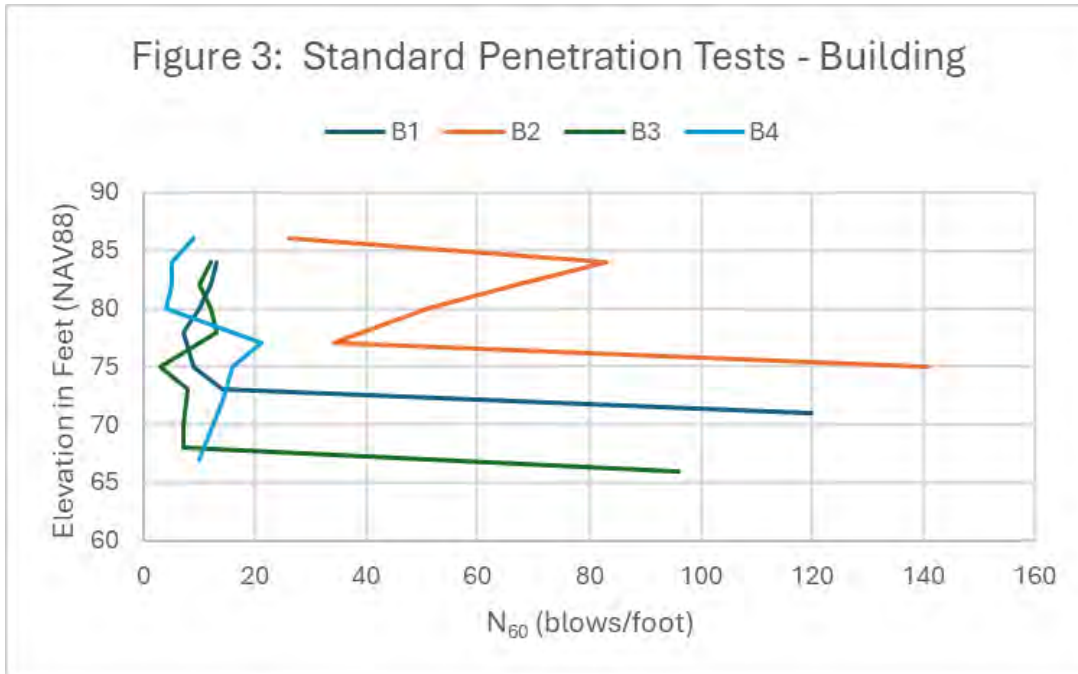
Previous Test Borings and Monitoring Wells

- **On-Site Borings:** no previous on-site boring records were found
- **Previous Area Borings:** no previous boring records were found
- **Existing Groundwater Monitoring Wells:**
 - Three remnant groundwater monitoring wells were found on this site (designated Well A, B, and C; *Figure 2*).
 - No wells were noted on adjacent properties.



Test Borings Undertaken for this Study

- Dig Safe: was performed by us
- Test Borings:
 - Drilling was performed by Cosmo Drilling of Ocean Bluffs, MA:
 - Twelve (12) structural test borings (designated B1 through B12) were drilled on-site during November 2024 (Figure 2). Drilling dates for the individual borings are provided on the boring logs in Appendix A.
 - Refer to Figure 2: Subsurface Explorations for approximate as-drilled test boring locations.
 - A tripod mounted (portable) drill-rig equipped with a drop hammer drilled and sampled soils in the borings below grade.
 - 3-in. dia. BW cased drive and wash borings were advanced
 - Community center borings B1 to B4 were terminated either to top of possible bedrock or 22 ft. below existing site grade (Table I, Figure 5A, Figure 5B).
 - Paved area and pickleball court borings (B5 to B12; Figure 2) to shallow depths, typically to either possible top of bedrock or dense glacial soil.
 - Soil samples were generally taken in 2-foot increments continuously from ground surface to up to 12 ft. depth and at 5-foot intervals thereafter (Appendix A).
- Digital Boring Logs:
 - Recovered test boring soil samples were digitally logged by the geotechnical engineer in accordance with ASTM D-5434-97: Standard Guide for Logging of Subsurface Explorations of Soil and Rock.
 - Boring logs prepared by the engineer are presented in soil boring log sheets in Appendix A. Log details soil type, boundary elevation or depth, density, consistency, thickness, coloration, moisture and composition.



III. Geotechnical Testing:

Field Testing Performed:

- Standard Penetration Tests (SPT) (N_{60} in blows/foot)
- Field Gradation Tests

Standard Penetration Testing (SPT):

- SPT Presentation and Definition:
 - A standard penetration test is defined as the number of blows of a 140 lb. hammer falling 30 inches to drive a standard soil split spoon sampler 12 vertical inches. The number of blows is designated as "N"
 - Standard penetration tests (SPT) N are summarized for the four building borings with depth on the boring logs in *Appendix A* and for the borings in *Figure 5A*, *Figure 5B*.
 - Field SPT N (blows/foot) is taken from blow count graphs provided on the boring logs.
 - Standard penetration test N is plotted for the four building borings in *Figure 3*.
- SPT Type:
 - The borings drilled (see *Appendix A*) used a drop hammer sampler drive system.
 - Borings were advanced using drive and wash methodology. This drilling technique is known to yield more accurate N values than either auger or percussion drilling.
- SPT N Data Analysis of this Site: see also *Appendix A*
 - Note that in the plot of N with depth in *Figure 3*:
 - Boring N values are variable within the near surface existing fill soil.
 - Boring N values are also variable with depth within the sandy glacial fluvial soils and then generally increase with additional depth.
 - No casing or split spoon refusal was found in any of the four borings, which could have indicated the top of possible bedrock.
 - See also the N pattern variation with respect to soil type in *Figure 5A*, *Figure 5B* as well as in the blow count graphs on individual boring logs in *Appendix A*.

- SPT N Engineering Uses: SPT data can be useful in determination of values of soil bearing capacity, Young's Modulus for footing settlement evaluation, as well as input to footing base soil friction angle, seismic site class and slab subgrade modulus determination.

Field Gradation Tests:

- Test Use:
 - Limited field gradation tests were performed to better determine the relative percents of coarse gravel, fine gravel, coarse sand, and medium sand and fines (silt and fine sand) in recovered site granular fill and sandy glacial fluvial subsoil samples.
- Limitations:
 - Field tests are limited to recovered dry or field air dried soil samples.
 - 4-sieve method does not allow for separation of silt from fine sand.

Laboratory Soil Tests:

- Test Boring Sampling:
 - No laboratory soil particle gradation testing was undertaken for this review.
 - Test boring samples are typically too small in recovered volume for accurate lab testing.
- Quality of Sampled Soils for Re-use: refer to the final section of this report.

IV. Soil Strata:

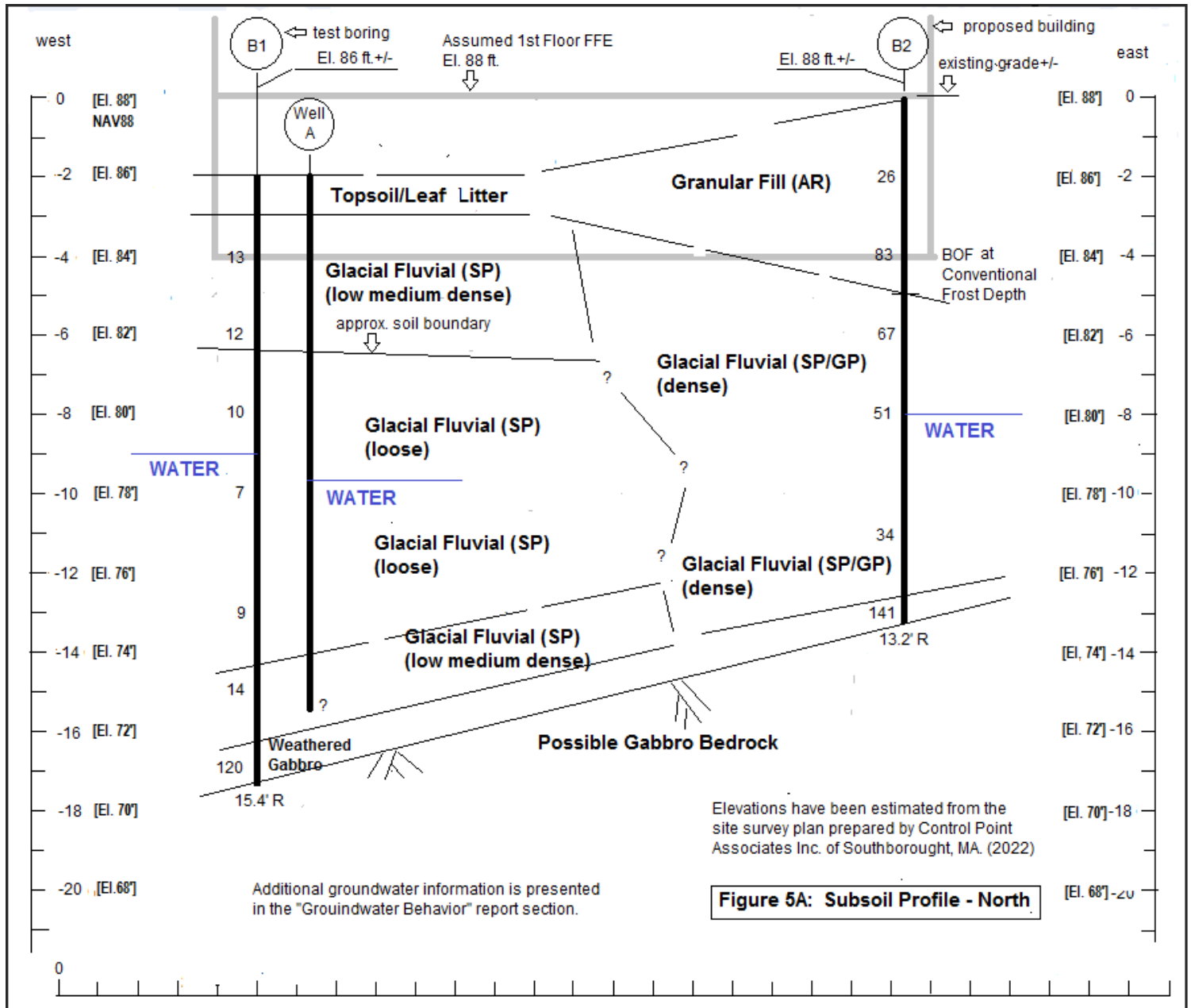
Data Summaries:

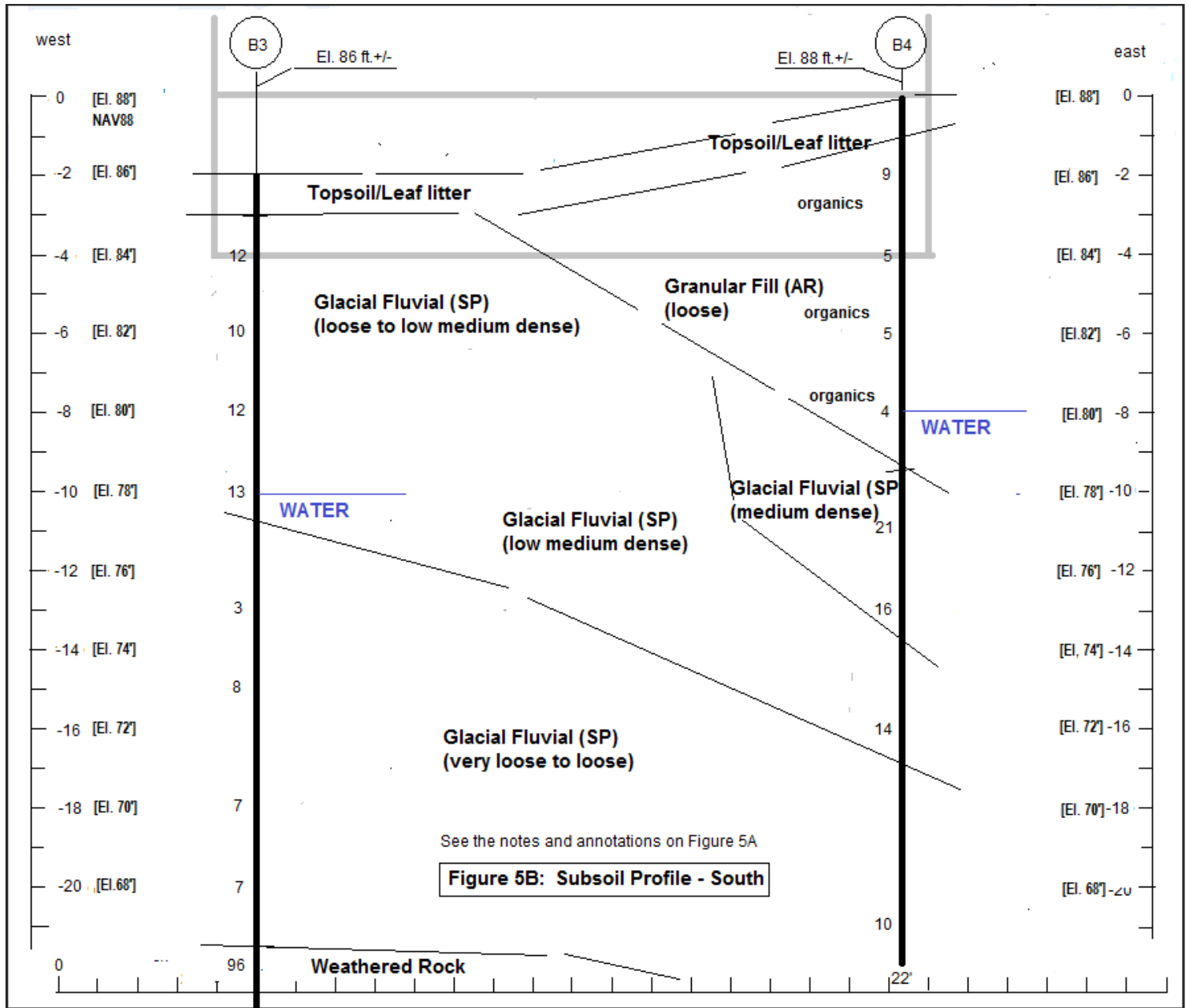
- Subsoil Profile Data Summary: general summaries of soil substrata found in the subsurface explorations are provided in:
 - *Table I: Exploration Summary.*
 - The subsoil profile drawings (*Figure 5A, Figure 5B*); and
 - The test boring logs (*Appendix A*).
 - Report section: Site Subsoil Descriptions
- Exploration Summary Table: refer to *Table I*

Table I: Exploration Summary – Community Center Building

Location	Surface El. (ft.) (NAV88)	Depth Drilled (ft.)	AR Existing Fill (ft.)	All SP & SP-GP Glacial Fluvial (medium dense to dense) (ft.)	All SP Glacial Fluvial (low medium dense) (ft.)	All SP Glacial Fluvial (very loose to loose) (ft.)	Depth to Possible Gabbro Bedrock (ft.)
B1	86+/-	15.4R	1	---	5	9.4	15.4
B2	88+/-	13.2R	5	8.2	---	---	13.2
B3	86+/-	21R	1	---	8	11	20
B4	88+/-	22	9.5	4	3	>5.5	>22

- **Subsurface Profile Drawings:**
 - Refer to the subsoil profiles sketched in *Figure 5A*, *Figure 5B* to gain an initial overview of site subsurface soil conditions at the locations drilled (*Figure 2*).
 - Subsoil profiles' orientations are parallel to Range Road (*Figure 2*) and are at the perimeter of the proposed new site building.
- **Subsoil Profile Field Log Descriptions:** Detailed field subsoil descriptions are given in the logs of the borings presented in *Appendix A*.





Soil Classification System Used for this Site Investigation:

- **Soil Classification System:** Project soils have been classified in accordance with the Unified Soil Classification System (USCS; MIT System). This is reflected in the test boring logs in Appendix A.
- **Soil Descriptions:** Soils are described in terms of color, grain size, moisture content, density (coarse grained soils), consistency (fine grained soils), plasticity and cementation, as appropriate.

Grain	Size Boundaries (dia.)	Common Size Example
Boulder	>12 in.	>Basketball
Cobble	3-in. to 12-in.	Grapefruit size

Coarse Gravel	¾-in. to 3-in.	Lemon size
Fine Gravel	#4 Sieve (4.75mm) to ¾-in.	Pea to grape size
Coarse Sand	#10 Sieve (2 mm) to #4 Sieve	Peppercorn size
Medium Sand	# 40 Sieve (.425 mm) to #10 Sieve	Sugar to table salt size
Fine Sand	#200 Sieve (.075 mm) to #40 Sieve	Powdered sugar size
Silt/Clay	<#200 Sieve (.075 mm)	Flour particle or finer

- **Soil Moisture Content:**
 - Dry: no moisture noted
 - Moist: some moisture observed
 - Very moist: very moist, but not saturated (possible vadose zone)
 - Wet: saturated above the liquid limit (likely groundwater zone)
- **Soil Density and Consistency:**
 - Density of coarse grained soils (non-plastic silts, sands, gravels): defined in terms of standard penetration test blowcount N values (refer to the summary table at the bottom of any boring log)
 - Consistency (plastic silts, clay, and organics): defined secondarily in terms of blowcount N values and primarily with respect to field unconfined compressive strength in TSF (refer to the summary table at the bottom of any boring log).
- **Soil Particle Percentage Field Designation:** Relative soil particle size percentages (trace, few, little, some, mostly [capitalized soil unit]): refer to summary table at bottom of any boring log. These are more accurately tallied by laboratory soil particle gradation tests.
- **Subsoil Classes on this Site:** USCS soil type designations utilized in this report:
 - AR = man placed fill, artificial soil stratum
 - SP = glacial fluvial sand; uniform
 - GP = glacial fluvial gravel
 - GT = glacial till; ablation till

Site Subsoil Descriptions: community center building

- **Existing Fill (AR):**
 - Fill types: two (2) general types of fill were found on-site: *Figure 5A, Figure 5B*
 - Granular fill: cohesionless soil with a lesser silt content ($\leq 15\%$)
 - Common fill/urban fill: cohesionless soil with included unsuitable material (organics).
 - Coloration:
 - Granular fill: black, dark-brown, brown, tan
 - Common fill/urban fill: dark-brown, brown, light gray
 - Existing Fill thickness (t) at the borings drilled: 1 ft. $\leq t \leq$ 9.5 ft.
 - Density:
 - Granular fill: medium dense to dense
 - Common fill/urban fill: very loose to loose
 - Fill source:
 - Granular fill: likely imported neighborhood glacial fluvial sand (SP)
 - Common fill/urban fill: mix of organics (topsoil, peat, organic silt) and granular fill (likely imported neighborhood glacial fluvial sand (SP)).
 - Competence:
 - Granular fill:
 - Could be re-used as earthwork phase engineered fill from >1 ft. depth below a floor slab pending the results of earthwork phase laboratory soil gradation tests and removal of any included unsuitable organic material.
 - Some of the granular fill has inadequate (low) gravel content (*Appendix A*).

- Common fill/urban fill:
 - No common fill or urban fill observed should be allowed to remain in-place below conventional structural units (footings, grade slabs).
 - Re-use of common fill would be limited as backfill in planted areas
 - Re-use of urban fill could have environmental engineering limitations with associated off-site disposal restrictions.
- Organics:
 - Although mapped adjacent, no woodland wetland organic soils (peat, organic silt) were found in the on-site borings drilled
 - Organic soil was found mixed with the existing fill in boring B4 (*Figure 5B*).

Photo 1: SP Glacial Fluvial in B3 at 1 ft; sand



Photo 2: SP Glacial Fluvial in B3 at 5 ft; sand

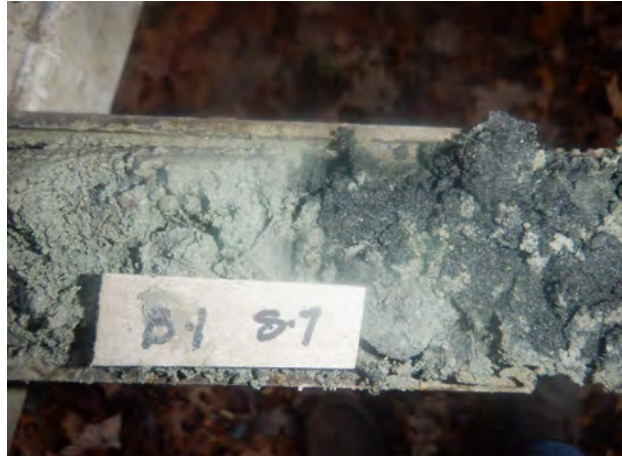


- Glacial Fluvial Soil (Glacial Outwash; Alluvial): glacial fluvial soil was mapped for this site (*Figure 1D*), and glacial outwash was found in the borings (*Photo 1, Photo 2, Photo 3*).
 - Definition and source:
 - Glacial fluvial (outwash) soils were deposited during glacial melt cycles within meltwater. Soil particles (silt, sand, gravel) were water sorted. Formation of glacial outwash lowland occurs within topographic lowlands adjacent to moraines and drumlins (*Figure 1D, Figure 1D-1*).
 - Alluvial soils are deposited during repeated river flood events (Bear Meadow Brook).

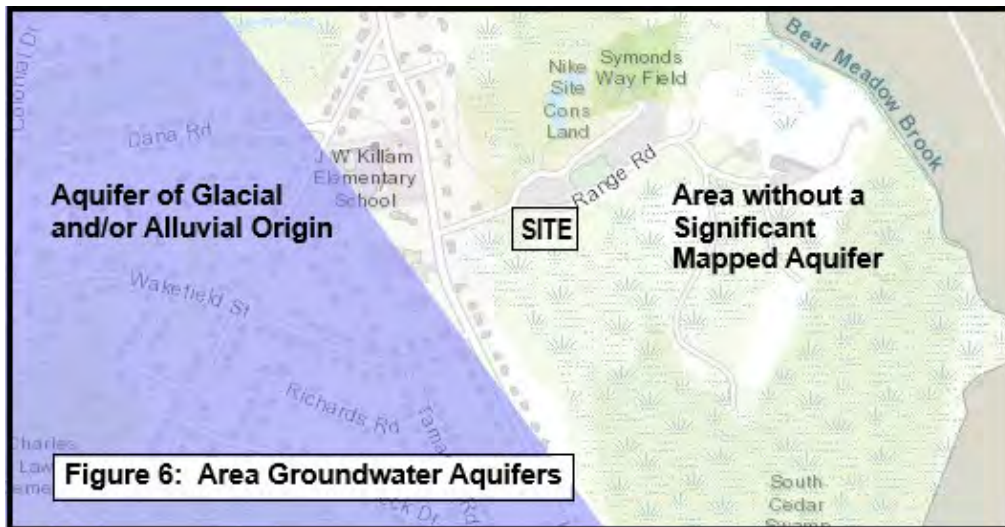
Photo 3: SP in B3 at 10 ft.; fine sand, wet



Photo 4: Weathered gabbro rock (rt.) in B1 at 14 ft.



- Description: soil types found:
 - SP: medium to fine sand (*Photo 1, Photo 2*) or fine sand (*Photo 3*) with a low non-plastic silt content; and absent to low gravel content; has a poorly graded, fairly uniform sand particle size (*Appendix A*); soil particles are water sorted; loose to dense found in-situ density.
 - GP: gravel with sand and minor (non-plastic) silt content. Found primarily in boring B2.
- Thickness (t): refer to *Table I*
- Coloration: dark-brown, rust brown, brown, light brown, tan, light gray, gray
- Competency: highly variable; very loose to dense
- Re-use:
 - SP soil could, dependent upon found gravel content, possibly be re-used as engineered fill per earthwork phase soil particle gradation test results.
 - GP soil likely can be re-used as engineered fill.
- **Glacial Till:**
 - Types: two varieties of glacial till are typically found
 - Ablation till: a cohesionless, sandy granular till
 - Basal till: a cohesive and/or strongly cemented granular till
 - One or both, of the two glacial till types were expected to be found at depth. However, neither was found to the depths drilled.
- **Bedrock:**
 - Rock outcropping was not noted on-site or in the immediate site area.
 - Weathered gabbro bedrock was encountered in some of the borings (*Photo 4; Appendix A*).
 - Rock type expected is either gabbro, diorite or volcanic (see “Area Bedrock Geology” report section and *Figure 1E*).



V. Groundwater Behavior – Community Building

- **Free Water:**
 - Wet (saturated) soil zones were encountered in all borings drilled (*Figure 5A, Figure 5B, Appendix A, Table II*).
 - The borings continued to remain wet at depth within the sandy (SP) glacial fluvial soil zone (*Appendix A*).
 - No groundwater monitoring well was installed in a completed borehole as the likely excavation depths should not encounter groundwater and Well A exists here (*Table II*).

Table II: Groundwater Data – Community Building

Loc.	Elevation	Date	Observation	Groundwater Depth	Groundwater El.
B1	86'+/-	11/23/24	Wet SP sand	7.0 ft.	79 ft.+/-
B2	88'+/-	11/23/24	Wet SP sand	8.0 ft.	80 ft.+/-
B3	86'+/-	11/24/24	Wet SP sand	8.0 ft.	78 ft.+/-
B4	88'+/-	11/24/24	Wet SP sand	8.0 ft.	80 ft.+/-
Well A	86'+/-	11/27/24	Well Reading	7.7 ft.	78.3 ft.+/-

Other wells elsewhere on-site (see Figure 2 for approximate well locations):

Well B		11/27/24	Well Reading	4.6 ft.
Well C		11/27/24	Well Reading	8.2 ft.

• **Groundwater Level Variation:**

- This site does not contain a significant mapped groundwater aquifer (Figure 6)
- Clear soil mottling (color variation, typically splotches, due to past or current water presence), and/or rust staining was not seen in site soil borings.
 - Rust staining and mottling give an indication of a past higher water level possibly indicative of seasonal high groundwater level.
 - Wet soils were found in all borings (Figure 5A, Figure 5B, Table II, Appendix A) but no useful soil mottling or rust staining was seen above the wet soils.
 - Note also that mottling and staining, if found, is considered unreliable in fill soils.
- Localized temporary and long-term changes to groundwater level can be natural or man-made. These include:
 - Alternating dry and wet precipitation periods now seem to be the norm, such as:
 - The 2016 extreme drought condition, the relatively dry summer of 2017, and the recent 2020, early 2021 and 2022 and 2024 drought periods.
 - A notably wetter 2018, parts of 2019 and summer 2021 and 2023 with included near record high water levels in eastern Massachusetts.
 - Winter drier season water levels.
 - Heavy rainstorms or lengthy precipitation periods
 - Leaky underground structures (pipes, tunnels)
 - Underground flow retarders (buried structures, walls, rock outcrops)
 - Percent of land surface covered by pavement and buildings without ability to recharge.
 - Nearby construction dewatering.
 - Changes to the existing surface drainage pattern due to new site topography, trenches, infiltrators, bio-retention basins and subgrade structures.
- Groundwater impact based upon the data collected to date (Table II, Appendix A):
 - Based on the data collected Seasonal High Groundwater is estimated at El. 81.5 ft. (NAV88)
 - Groundwater (seasonal or found, Table II) would not impact expected conventional depth building excavations (\leq 4 ft. depth (El. 84 ft).
 - Underground utilities on some sites are designed to be installed deeper than foundations, however such data has not been provided us to-date for this project.

Hydraulic Conductivity (K in GPD/ft.²):

- **Scope:** Laboratory soil gradation testing was not undertaken for this study and associated calculations and estimations of soil hydraulic conductivity (K) were not undertaken for any site subsoil unit.

- K Determination:
 - Many input factors go into determination of K. K is a function of particle grain sizes, soil density, soil particle uniformity, gravel content, soil cementation and soil layering.
 - Granular fill and SP sandy glacial fluvial soil are expected to be of moderate soil permeability (*Figure 5A, Figure 5B*).
 - GP glacial fluvial soil is expected to be of higher soil permeability.
 - K determination is the domain of the site civil engineer.

Site Civil and Environmental Site Investigation and Remediation Structural Unit Impact:

- Intrusive Site Civil and Environmental Testing and Remediation:
 - Site civil and environmental exploration (test pits and test trenches) can damage anticipated building structural unit bearing soils by lowering native bearing capacity.
 - Site remediation work including underground tank removal and soil replacement can remove significant volumes of contaminated soil materials from within proposed new construction footprints and inadvertently cause structural unit bearing soil degradation at the excavation base.
 - Any new site soil remediation work should be reviewed by the design team for quality of soil material placed to replace removed soils and/or tanks, as well as documentation that replacement soils were placed in compacted lifts.
- Protection of Structural Unit Bearing Subgrade: to protect structural bearing areas, project specifications should require:
 - Test pit and test trench areas avoid proposed project footing and slab bearing zones.
 - Test pit and test trench depths be limited to structural bearing depths minus one foot.
 - Where contaminated soil removal is required, replacement soil should be structural fill placed in compacted lifts, verified by field soil density testing to a laboratory Proctor standard for the placed soil.

VI. Foundation Review and Recommendations: Community Building

Foundation System:

- Groundwater impact: no groundwater impact on normal frost depth foundation excavation is anticipated (*Figure 5A, Figure 5B*). This is also true for seasonal high groundwater estimated at El. 81.5 ft. (NAV88; page 15).
- Subsoil impact: weak soil bearing zones as well as a thin deep bearing layer were found throughout the site which limits the type of foundation that can be economically utilized here (*Figure 5A, Figure 5B*).
- Subsoil and groundwater impact to support of walls, columns and lowest level floor slab:
 - Foundation and slab type: primarily impacted by existing fill currently in place
 - **Conventional shallow foundations:** spread and continuous wall footings with a 1st floor slab on grade.
 - **Deep Bulk excavation and replacement** of existing fill and weak glacial fluvial soil would be required within the building limits.
 - Excavation to near top of bedrock would be required in most site areas which is well below groundwater and thus not practicable without massive site dewatering (well points).
 - See *Table I, Figure 5A, Figure 5B, Appendix A*.
 - This approach is not economically feasible for site development with conventional structural units (footings, slab).

- Alternative foundation support methods (piles, ground improvement):
 - **Helical piles:** not practicable on this site as there is inadequate thickness of competent bearing soil for pile plate bearing in many parts of the site. These piles are not expected to be end bearing.
 - **Drilled concrete micropiles:** piles drilled and grouted into bedrock; cost prohibitive
 - **Ground improvement with aggregate piers:** there is usually not enough base soil thickness to properly seat the piers; not readily practicable. The size of project is likely too small for area contractors to consider in any case.
 - **Driven timber piles:**
 - This approach is practicable but possibly not cost effective. Piles would be driven to tip bearing in dense glacial fluvial sand or weathered rock.
 - Due to small diameter pile tips, the pile capacity could be as low as 20 K/pile.
 - Pile breakage during driving could occur in the vicinity of boring B2.
 - **Drilled concrete shafts:** this method is likely practicable with shaft end bearing on weathered rock or dense glacial fluvial sand (*Figure 5A, Figure 5B*).
 - Net allowable bearing pressure on weathered rock is on the order of 16 KSF.
 - Shallower shaft bearing take up in the vicinity of boring B2 should be expected (*Figure 5A*) in dense sand with net allowable bearing on the order of 12 KSF.
 - **Ductile iron piles:** piles pushed to bear on weathered rock or dense glacial fluvial sand and gravel (*Figure 5A, Figure 5B*). Pile capacity should be provided by the installer's engineer and could be at least 30 K/pile dependent upon pile sizing.
- Existing uncontrolled on-site fill (*Figure 5A, Figure 5B, Table I, Appendix A*):
 - The quality of some portion of the existing granular fill soil as seen in the borings may meet classification for engineered fill (see later report section: "Engineered Fills and their Uses". If so, it could be placed and compacted in lifts.
 - Excavated granular fill soil would need to be reviewed during earthwork with laboratory soil particle gradation testing of collected samples.
 - However, any large diameter solid waste debris (wood, asphalt, brick) and cobbles and boulders would have to be culled from the granular fill soil (*Appendix A*). Included topsoil and organics would have to be removed as well.

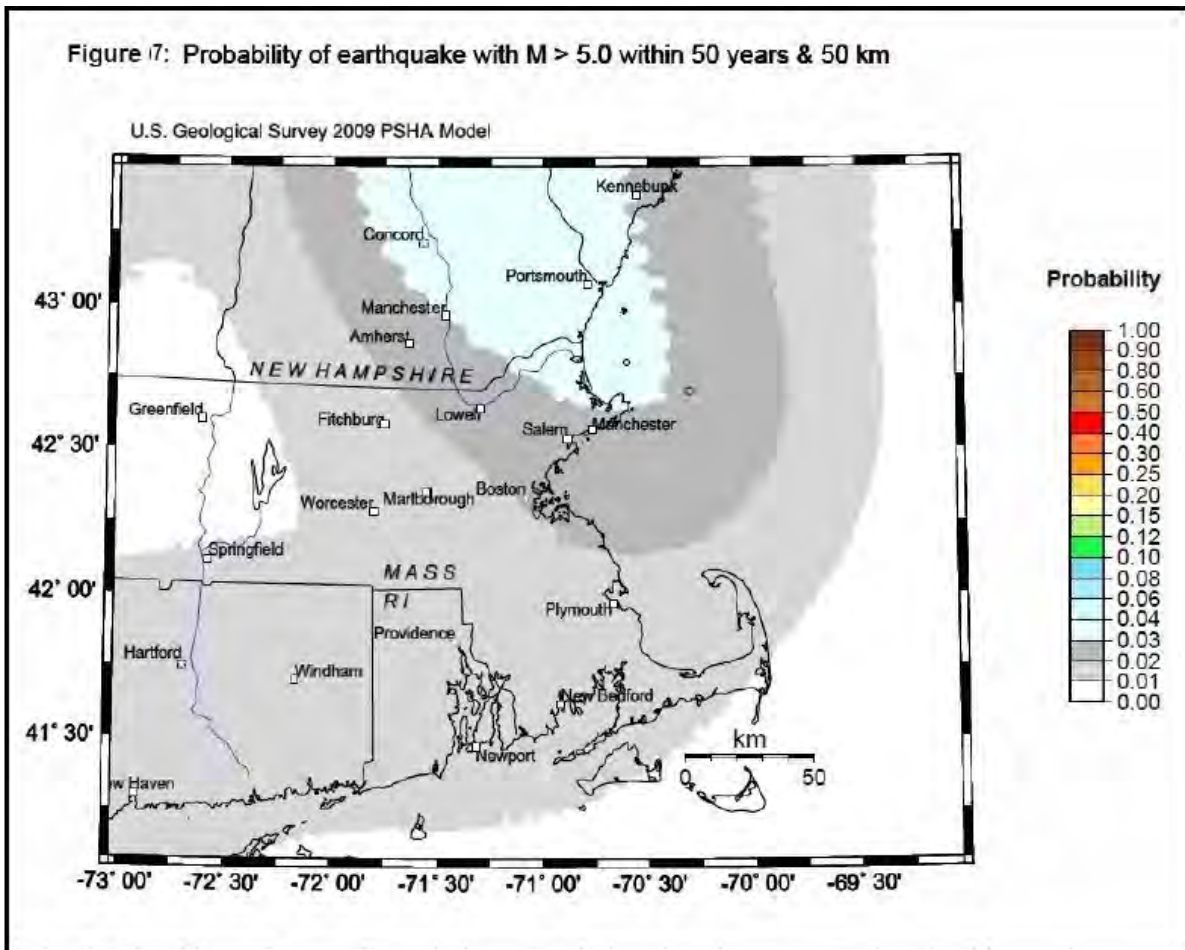
Seismic Recommendations:

- Seismic Site Hazard Review:
 - Probabilistic Site Hazard Analysis [*PSHA Interactive Deaggregation*; Geologic Hazards Science Center, US Geologic Survey; 2008 v.2]
 - Decimal site latitude and longitude utilized in this review: (42.5412° N, -71.0850° W)
 - Probability of magnitude 5 (M5.0) or greater earthquake occurrence within 50 miles of the subject site within a 50-year building design life is considered relatively low (< 2.5%+/-) according to *Figure 7*.
 - Area earthquake history:
 - Typical measured earthquakes within the past 40 years have magnitude ≤ 3.5+/-
 - Past significant earthquakes with area impact recreated from the geologic record:

Year	Magnitude	Location	Intensity in Boston
1638	6.5	Central New Hampshire	MMI: V-VII
1663	7.0	Charlevoix, Quebec	MMI: V-VI
1727	5.6	Newbury, MA	MMI: V-VI
1755	5.9	Scituate, MA	MMI: IX

MMI: Modified Mercalli Scale (subjective; observed damage and effects)

- **Seismic Site Class:** The collected site subsoil data has been applied to the Massachusetts adopted *International Building Code (2015)*. According to the *Building Code*
 - Analytic depth:
 - The upper 100 feet of soil and bedrock are subject to analysis.
 - Soil data on-site has generally been collected to likely top of bedrock (*Table I, Figure 5A, Figure 5B*).
 - Native soils tested indicated variable density glacial fluvial soil over likely bedrock (*Table I, Figure 5A, Figure 5B*).
 - Bedrock:
 - Bedrock expected is gabbro (see *Appendix A* and “Area Bedrock Geology” report section).
 - The depth to bedrock ranged from about 13 ft. to 25 ft. depth from existing ground surface.
 - Based upon the data collected this site is classified as seismic Site Class D.



- **Seismic Design Factors:** Preliminary estimated Earthquake Design Factors for Reading, Massachusetts (*Massachusetts Amendments to the International Building Code (2017; 9th Edition)*) and *IBC (2015)*:
 - $S_s = 0.234g$ (short interval)
 - $S_1 = 0.072g$ (1-second interval)
 - $F_a = 1.6$ (site coefficient, classification as Site Class D)
 - $F_v = 2.4$ (site coefficient, classification as Site Class D)

Liquefaction:

- Liquefaction Factors:
 - Earthquake magnitude
 - Earthquake amplitude (duration)
 - Subsoil types and condition
- Earthquake Magnitude:
 - Collected data indicates that the probability of occurrence of an earthquake of magnitude 5 or higher is low probable during a 50-year building design life.
 - However, with a time period measured in centuries instead of decades, earthquakes of magnitude 5 or greater can be expected to occur as the earthquakes listed above indicate.
- Earthquake Duration: This topic is beyond the scope of this review.
- Subsoil Data Input: Review of the site subsoil profile was necessary for soil liquefaction determination below structural units:
 - Relevant test boring information: no significant thickness (> 10 ft.; *Table I*) of post compaction, loose to very loose saturated native silty to clean sands and non-plastic silts (SM, SP, SW, ML) would be found below structural units.
 - Drill rig, site groundwater level and measured soil strength data with depth:
 - Drill rig hammer type: drop hammer
 - Groundwater level: El. 81.5 ft. (NAV88), seasonal high (page 15).
 - Plotted field N_{60} -values from the borings with depth (*Figure 3*).
- Site Liquefaction Determination:
 - Review of field auto hammer N_{60} from the borings with depth with respect to *Figure 1806.a* of the *Massachusetts Amendments (2017; 9th Edition)* for preliminary liquefaction exclusion review compared to a range of (seasonal high) groundwater levels.
 - Assumption that site subgrade preparation will be performed as described in the “Excavated Base and Working Base” report section.
 - Result: liquefaction settlement is not of concern for this site were a 5M or greater earthquake to occur here.

Structural Unit Frost Protection Depth:

- Definition:
 - Frost depth, freezing depth or frost line is the depth to which moisture in subsoil is expected to freeze.
 - Frost line varies in position (elevation) during seasonal freeze and thaw.
- Massachusetts State Building Code Mandated Frost Protection Depth Changes:
 - 7th Edition: “All foundations for buildings and structures shall extend to a minimum of 4 ft. below (exterior) finished grades...”
 - 8th Edition: Foundations and permanent building supports should be protected by “extending below the frost line of the locality...” **This suggests a 4 ft. frost depth is too deep for coastal and southern areas and too shallow for northern or topographically elevated locales.**
- Site Structural Unit Frost Protection Depth:
 - Frost line:
 - Average area frost line value: 0.9 m = 35.5 in. [J.E. Bowles; *Foundation Analysis and Design 5th Ed.*; 1997; Figure 7-1].

- Extreme frost line based upon state average: 53 in. [NAVFAC DM-7.1; *Soil Mechanics Design Manual 7.1*; Figure 7; 1982].
- Deepest frost observed by us in test borings in eastern Massachusetts: 28 in. (40-year period) coupled with the comment above about coastal area frost depth the recommended minimum site structural unit frost protection depth in soil bearing for this property as measured from exterior grade: = **36 in. (3 ft.)**
- Cold Weather Work Soil Protection:
 - During construction earthwork the contractor must be prepared to provide protection and/or thawing of foundation bearing soils against freezing.
 - Footings: insulation blankets and/or ground heating hoses should be utilized if footing subgrade is exposed to freezing during cold weather periods.
 - Lowest Level Slabs:
 - Typically slab subgrade areas are thawed once basic framing is up by providing heaters after enclosing the lowest level in plastic sheeting.
 - Then any remaining required grade raise fill, treatment and placement of the slab base pad can be properly performed.

Foundation Wall Design (Restrained Walls): no below grade foundation walls in design

Cantilever Earth Retaining Wall Design:

- Retaining Wall Construction:
 - It is not known if a cantilever wall will be required in site design.
 - Clean, free-draining granular backfill should be placed behind a new wall.
 - Weep holes should be provided in the wall to prevent hydrostatic pressure build up behind the wall.
 - Wall should be founded upon compacted structural fill placed upon an undisturbed glacial till subgrade or native conglomerate rock.
- Retaining Wall Design:
 - Backfill design factors: soil at 120 PCF; $\Phi=30^\circ$; $k_a = 0.33$; triangular soil load distribution
 - Equivalent fluid pressure behind the wall: 40 PCF; level backfill, no surcharge loads; resultant (P), located at $P = 1/3 H$ above base of wall.
 - Surcharge load (Q): an additional, uniform load on the wall = $k_a \times Q$ (resultant at 0.5 H)

Drainage and Waterproofing:

- General Comments/Good Practice:
 - Exterior grading at the building should be designed to carry surface water runoff away from the structure.
 - Planted areas or pavements should enhance the exterior grading performed to ensure surface water runoff beyond building limits.
 - Roof downspout water or other water should not be allowed to pool near the building.
- Review Summary of Groundwater and Structural Unit Elevation Data:
 - Building structural unit elevations are estimated as shown on *Figure 5A, Figure 5B*:
 - Groundwater elevation: all borings encountered groundwater
 - Found high groundwater elevation in the borings: about El. 80 ft. (NAV88) (*Table II*)
 - Seasonal high groundwater level: estimated at El. 81.5 ft. (NAV88; page 15).
 - Likely deepest bulk excavation point: El. 64 ft.+/- (NAV88; *Table I*)
 - Site flooding: not reviewed by us; review flood potential with project site civil engineer.

- Building Foundation Wall Drainage and Waterproofing:
 - Based upon the data collected, 1st floor frost wall foundation drains are unnecessary.
 - As there is no basement planned, basement level wall drains are irrelevant.
- Lowest Level Floor Slab Drainage and Waterproofing: normally two options exist for the lowest level;
 - Waterproofing Option 1: ground floor slab underdrains: unnecessary
 - Waterproofing Option 2: ground floor level membrane waterproofing such as Preprufe from WR Grace with hydrostatic slab: unnecessary
 - Damp proofing: only normal damp proofing need be provided:
 - Loose laid plastic sheeting; or
 - An under-slab membrane such as Florprufe by WR Grace.

Lowest Level Floor Slabs:

- Floor Slab Type:
 - Lowest level floor as a grade slab would only be expected if the **full** bulk excavation and replacement option is selected which is not practicable on this site.
 - The lowest level slab is a structural slab with any of the other alternative foundation approaches (pages 16-17).
- Groundwater Levels and Lowest Level Slab:
 - The lowest level floor slab itself is not expected to be impacted by groundwater (see Review on page 20; *Figure 5A, Figure 5B*).
 - Refer to the groundwater information provided in the “Groundwater Behavior” report section on pages 14-15.
- Subgrade Modulus: no 1st floor slab or elevator pit slab modulus of subgrade reaction is needed as no grade slabs can safely be installed on this site.
- Under Slab Pads and Slab Control Joints:
 - Lowest level slab base pads will be provided as either compacted ¾ inch crushed stone or compacted structural fill.
 - Slab control joints are usually unnecessary with a 1st floor structural slab.

Excavation and Bracing:

- Excavation Depth ≤ 4 ft.+/- in Soil:
 - Common practice is to maintain a 1H:1V temporary side slope for shallow excavation (≤ 4 ft.+/-) during construction. Benched steps can also be executed.
 - Note that the sidewall stability will be undermined by:
 - Minor sloughing when sidewall bleeding occurs either from release of trapped water in soil or drainage following storm events; and
 - Surficial exposed granular sidewall soil drying and subsequent caving or sloughing.
- Excavation > 4 ft. in Soil:
 - Excavation here is not expected to exceed 4 ft. depth (*Figure 5A, Figure 5B*) in general and slightly deeper at the elevator pit.
 - Any excavation > 4 ft. depth would take place within site granular soils which can be classified as **OSHA Type C** subsoils (*Appendix A*).
 - Excavate with a 1.5 H:1 V sidewall layback. A braced excavation is required where adequate lateral space does not exist for a temporary sloped excavation (**layback**).
 - Since layback space is adequate on this site, support of excavation is unlikely to be required.

Elevator:

- Elevator Pit Support:
 - The elevator pit base is assumed to bear at about 5 feet below lowest level slab.
 - Elevator system will likely be supported upon perimeter piles or a pile supported structural mat.
- Elevator Pit Uplift, Drainage and Waterproofing:
 - Groundwater will not impact either elevator pit installation or the pit base by uplift.
 - Pit waterproofing is typically provided as the pit is the lowest elevation excavation point in the structure. Here it is above groundwater.
 - Pit waterproofing should consist of installation of a positive side membrane system such as PrePrufe or equivalent.
 - Elevator pit construction should require properly tied continuous water stops in construction joints.

Construction Dewatering:

- Groundwater Impact:
 - Based upon the data collected to-date, groundwater seepage into recommended depth excavations for foundations and floor slab is unlikely (*Table II, Figure 5A, Figure 5B*).
 - Rain and melt seepage water into excavations should be expected.
 - Refer also to the “Groundwater Behavior” report section on pages 14-15, and the foundation preparation sections on pages 16-17.
- Dewatering Required:
 - Intruding water into normal level site excavation would be from rain and melt events.
 - Water at this level can be controlled by ditching to filtered sumps.
- Pumped Discharge:
 - Discharge of any pumped water should be performed in accord with all City, Commonwealth and Federal regulations. Filtering of pumped water prior to discharge should be expected.
 - Permitting required by the USEPA, MWRA, or the City should be reviewed. Assessment by the Project Civil Engineer should be sought.
 - The contractor would be responsible for obtaining all permits and any associated laboratory testing required for construction dewatering.
 - Based upon City requirements the contractor may be required to use frac tanks to temporarily store pumped water at the work site. This possibility should be reviewed in conjunction with the Project Civil Engineer.

Paved Area and Pickleball Court Borings:

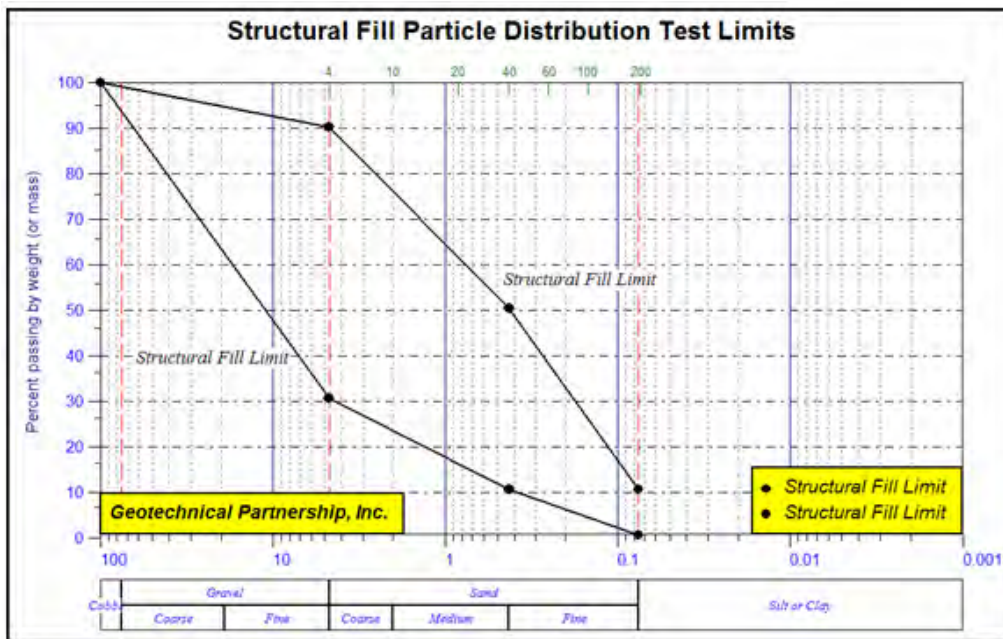
- Structural borings B5 through B12 (*Appendix A*) were drilled in the proposed paved parking and pickleball court areas (see *Figure 2*).
- The same mix of soils (fill, glacial fluvial) were found in these borings (*Appendix A*) at variable density as has been reported for the Community Building.
- Remnant groundwater monitoring wells designated B and C also exist in these areas (see *Figure 2*). Water level depths from ground surface were found to be 4.6 ft. and 8.2 ft., respectively.
- Ground surface elevations at the borings can be determined by others from the existing site survey plan.
- The logs of the borings should be shared with the site civil engineer as well as the landscape architect to help them with their design of pavement sections and consideration of the need of excavation and replacement and/or deep compaction base preparation in these areas.

Engineered Fills and their Uses:

- Crushed stone: ¾ in. clean, hard, durable crushed stone; uses:
 - As a construction working pad
 - As a surface protection below footings
 - As drainage media in wall and under slab drainage systems.

- Gravel: sandy gravel, bank run gravel; max. 3-in. gravel; limit No. 200 sieve content to about 6%; uses:
 - As base in a pavement section

- Structural fill: hard, durable sand and gravel.
 - Common gradation limits for structural fill are given in the plot shown below.
 - Gradation adjustments: gradations often specify
 - Minimum of 2% passing No. 200 to aid compaction
 - Maximum of 15% passing No. 200 with the assumption that work may not proceed during wet conditions using this material (Dense Grade can be substituted)
 - Structural Fill Uses (in lieu of crushed stone):
 - To form a protective base directly below footings or pile caps
 - As a slab base pad
 - As a replacement fill below structural units (over-excavated soft areas)
 - As sub base in a pavement section



- Dense Grade Structural Fill/2-in. Crushed Stone: Structural fill/crushed stone meeting the following minimum requirements

Sieve Size	Percent Finer by Weight
2 in.	100
1.5 in.	70 – 100
¾ in.	50 – 85
No. 4	30 – 55
No. 50	8 – 24
No. 200	3 – 10

- Dense grade structural fill uses:
 - As a readily workable replacement for conventional or recycled concrete type structural fill when work must proceed during cold and/or wet conditions.
 - As a base pad for lowest level floor slabs, footings or pile caps
- Granular Fill: minor gravel; primarily medium to fine sand and silt meeting the following

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
4 in.	100
No. 10	30 – 95
No. 40	10 – 70
No. 200	0 – 15*

 * May be as high as 20% if field compaction can be verified in **dry** conditions

- Granular Fill Uses:
 - As under slab fill below 12 in. depth as measured from the slab base.
 - As densified trench backfill

Re-use of Existing Site Subsoils as Engineered Fill:

- Existing Granular Fill:
 - Granular fill has been found from 1 ft. to 9.5 ft. depth within the community building area (*Figure 5A, Figure 5B, Appendix A*).
 - It tends to be a coarse to fine sand with zones of siltier sand and those of more predominant gravel (*Appendix A*).
 - It can contain scant gravel (*Appendix A*).
 - It can contain included organics and topsoil (*Appendix A*).
 - If the sandy granular fill has adequate gravel content and can be separated from the undesirable included material, it may be re-used as engineered fill (see previous section: “Engineered Fills and their Uses”) pending results of construction phase soil particle gradation test results.
 - Any found excavated granular fill soil should be considered non-engineered:
 - Thus, undertaking laboratory Proctor and associated field compaction tests is not useful as the silt-sand-gravel ratios will vary.
 - Re-use of these soils on-site would require experienced third-party field observation of compaction equipment behavior, supported by consideration of addition of water to dry soil or drying of saturated soils (harrowing, land spreading) as needed.
- Existing SP Sandy Glacial Fluvial Soil: this native soil material where excavated can be treated as described above for granular fill (*Figure 5A, Figure 5B, Appendix A*).

Thank you for inviting us to perform this site study. Please contact us with any questions.

Sincerely yours,
 Geotechnical Partnership, Inc.

Lisa R. Casselli, PE
 Principal

Attachments: *Appendix A: Logs of Test Borings B1 to B12*

APPENDIX A: Logs of Structural Test Borings B1 through B12

51 Symonds Way
Reading, Massachusetts

Geotechnical Partnership, Inc.
Fitchburg, MA
File No. 2436

Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 23 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-1 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum : El. 86 ft. (NAV88)	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph	Average qu-Field	Average qu-Field (TSF)				REMARKS
										0	1	2	3	
0	86	LEAF LITTER, DUFF & FIBROUS TOPSOIL	AR											Groundwater=7.0' Well Set: no
1	85	Brown, fine SAND, few silt, trace fine gravel (sub-angular), (loose to medium dense, dry to moist)	SP			1	11	9	4	4				SS-1: 1' - 3' R=9 N=13
2	84													
3	83	Brown, coarse to fine SAND, trace fine gravel (sub-rounded), and silt, (loose to medium dense, dry)	SP			2	6	5	6					SS-3: 5' - 7' R=13 N=10
4	82													
5	81	Brown, coarse to fine SAND, trace fine gravel (sub-rounded), and silt, (loose, very moist) 6.0 ft. -GLACIAL FLUVIAL-	SP			3	5	5	4	4	3	3		SS-5: 10' - 12' R=18 N=9
6	80													
7	79	Light brown, fine SAND (uniform), trace silt, (loose, wet)	SP			4	4	4	3	3				SS-7: 14' - 15.4' R=13 N=120
8	78													
9	77	Light gray, fine SAND (uniform), trace silt, (loose, wet)	SP			5	5	4	6					
10	76													
11	75	Light brown, fine SAND (uniform), trace silt, (medium dense, wet)	SP			6	7	7	7					
12	74													
13	73	14.0 ft. -GLACIAL FLUVIAL- Light gray, coarse to fine SAND, few silt, (dense, wet), over black weathered gabbro fragments 15.4 ft. -GLACIAL FLUVIAL-	SP			7	16	22	20	100				
14	72													
15	71	END OF BORING @ 15.4 FT DEPTH POSSIBLE BEDROCK												P=Penetrometer
16	70													
17	69	Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%												
18	69													

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 L: Sands; R: Gravels 11-30 Med-Dense 16-40 >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)
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Test Boring No. B-1 (1 of 1)
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Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 23 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-2 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum : El. 88 ft.+/- (NAV88)	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph	Average qu-Field	Average qu-Field (TSF)					REMARKS
										0	1	2	3	4	
0	88	MOSS & CRUSHED STONE OVER GRANULAR FILL	AR												Groundwater=8.0' Well Set: no
1	87	Dark brown, coarse to fine SAND, little coarse to fine gravel (angular to sub-angular), few silt, (medium dense, moist)	AR			1	20							SS-1: 1' - 3' R=16 N=26	
2	11						SS-2: 3' - 5' R=14 N=83								
3	85	Brown, coarse to fine GRAVEL (angular to sub-rounded), some coarse to fine sand, few silt, (dense, moist)	AR			2		15							SS-3: 5' - 7' R=20 N=67
4	52						SS-4: 7' - 9' R=16 N=51								
5	84	5.0 ft. -GRANULAR FILL-						49							
6	83	Light brown/tan, fine SAND (uniform), little fine gravel (sub-angular), few silt, (dense, moist)					34								
7	82	Brown, coarse to fine SAND, some coarse to fine gravel (angular to sub-angular), few silt, (dense, wet)				3	32							SS-5: 10' - 12' R=15 N=34	
8	25						SS-6: 12' - 13.2' R=11 N=141								
9	81	Brown, coarse to fine SAND, some coarse to fine gravel (angular to sub-angular), few silt, (dense, wet)				4		28							P=Penetrometer
10	39														
11	80	Brown, fine GRAVEL (angular to sub-rounded), few coarse to fine sand, and silt, (dense, wet)	SP/GP			5	23								
12	18														
13	79	Black & brown, coarse GRAVEL (angular), little coarse to fine sand, trace silt, (dense, wet)				6	21								
14	30														
15	78	13.2 ft. -GLACIAL FLUVIAL-					21								
16	8														
17	77	END OF BORING @ 13.2 FT DEPTH POSSIBLE GABBRO BEDROCK					12								
18	22														
19	76	Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%					18								
20	35														
21	75						41								
22	100														
23	74														

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 L: Sands; R: Gravels 11-30 Med-Dense 16-40 >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)	Test Boring No. B-2 (1 of 1)
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Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 24 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-3 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum : El. 86 ft. +/- (NAV88)	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph		Average qu-Field	Average qu-Field (TSF)					REMARKS	
								10	50		0	1	2	3	4		
0	86	LEAF LITTER, DUFF & TOPSOIL	AR													Groundwater=8 ft. Well Set: no	
1	85	Light brown, coarse to fine SAND, little coarse to fine gravel (sub-rounded), trace silt, (medium dense, moist)				1	3	5	7							SS-1: 1' - 3' R=14 N=12	
2	84																
3	83	Brown & rust-brown, coarse to fine SAND, few fine gravel (sub-rounded), trace silt, (loose, moist)				2	8	6	4							SS-2: 3' - 5' R=11 N=10	
4	82																
5	81	Light brown, coarse to fine SAND, little fine gravel (sub-rounded), trace silt, (medium dense, moist)	SP			3	6	6	6							SS-3: 5' - 7' R=9 N=12	
6	80																
7	79	Tan & rust-brown, coarse to fine SAND, few fine gravel (sub-rounded), (loose to medium dense, moist to wet)				4	7	7	6							SS-4: 7' - 9' R=16 N=13	
8	78																
9	77	9.0 ft. -GLACIAL FLUVIAL-															
10	76	Gray-brown, fine SAND (uniform), trace silt, (very loose, wet)				5	4	1	2							SS-5: 10' - 12' R=17 N=3	
11	75																
12	74	Gray, fine SAND (uniform), trace silt, (loose, wet)				6	4	4	4							SS-6: 12' - 14' R=19 N=8	
13	73																
14	72	Gray, fine SAND (uniform), trace silt, (loose, wet)	SP			7	3	4	3							SS-7: 15' - 17' R=19 N=7	
15	71																
16	70	Gray, fine SAND (uniform), trace silt, (loose, wet)				8	3	3	4							SS-7: 17 - 19' R=20 N=7	
17	69																
18	68	19.5 ft. -GLACIAL FLUVIAL-				9	8	30	66							SS-7: 19' - 21' R=14 N=96	
19	67																
20	66	Black & gray, coarse gravel (rock fragments), few silt, (very dense, wet)	GR														
21	65	21.0 ft. -WEATHERED/BROKEN /ROCK-															
22	64	END OF BORING @ 21 FT DEPTH POSSIBLE GABBRO BEDROCK															
23	64	Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%															

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 11-30 Med-Dense 16-40 L: Sands; R: Gravels >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)
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Test Boring No. B-3 (1 of 1)
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Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 24 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-4. (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum : El. 88 ft. +/- (NAV88)	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph	Average qu-Field	Average qu-Field (TSF)	REMARKS
0	88	LEAF LITTER & DUFF	AR								Groundwater=8 ft. Well Set: no
1	87	Dark brown, coarse to fine SAND, some coarse gravel (angular to sub-rounded), (loose, moist), infillings of dark-brown fibrous topsoil & leaves	AR			1	3	3			SS-1: 1' - 3' R=14 N=9
2	86										
3	85	Brown, coarse to fine SAND, few silt & organic silt, (very loose, moist)	AR			2	5	2			SS-2: 3' - 5' R=9 N=5
4	84										
5	83	Dark brown, SILT LOAM TOPSOIL/PEAT (remolded, filled), little coarse gravel (sub-angular), (very loose, very moist)	AR			3	4	3			SS-3: 5' - 7' R=11 N=5
6	82										
7	81	Light gray, coarse to fine SAND, few coarse gravel (angular to sub-rounded) and organic silt, (very loose, wet)	AR			4	4	2			SS-4: 7' - 9' R=9 N=4
8	80										
9	79	9.5 ft. -FILL WITH ORGANICS-									
10	78	Light brown/tan, coarse to fine SAND, little coarse gravel (angular), trace silt, (medium dense, wet)	SP			5	8	12			SS-5: 10' - 12' R=12 N=21
11	77										
12	76	Light brown, coarse to fine SAND, few coarse to fine gravel (angular), trace silt, (medium dense, wet)	SP			6	9	8			SS-6: 12' - 14' R=14 N=16
13	75										
14	74	Brown, coarse to fine SAND, trace fine gravel (sub-angular to sub-rounded) and silt, (medium dense, wet)	SP			7	8	8			SS-7: 15' - 17' R=16 N=14
15	73										
16	72	17.5 ft. -GLACIAL FLUVIAL-									
17	71										
18	70	Brown/tan, coarse to fine SAND, trace fine gravel (sub-rounded) and silt, (loose, wet)	SP			8	5	5			SS-8: 20' - 22' R=18 N=10
19	69										
20	68	22.0 ft. -GLACIAL FLUVIAL-									
21	67										
22	66	END OF BORING @ 22 FT DEPTH									P=Penetrometer
23	65										
24	64	Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%									

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 11-30 Med-Dense 16-40 L: Sands; R: Gravels >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)
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Test Boring No. B-4. (1 of 1)

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Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 27 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-5 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum :	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph	Average qu-Field	Average qu-Field (TSF)	REMARKS
0		LEAF LITTER OVER GRANULAR FILL	AR								Groundwater=not encountered Well Set: no
1		Brown & gray, coarse to fine SAND, little silt, few fine gravel (angular), (dense, moist)	AR				17				
2		2.0 ft. -COMMON FILL-				1	29				SS-1: 1' - 3' R=14 N=59
3		Brown, coarse to fine SAND, little silt, and coarse to fine gravel (angular to sub-angular), (dense, moist)	SP				30				
4							66				
5		5.0 ft. -GLACIAL FLUVIAL-					60				SS-2: 3' - 5' R=13 N=140
6		REFUSAL @ 5 FT DEPTH IN GLACIAL TILL OR ROCK					86				P=Penetrometer
7							54				
8							77				
		Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%									

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 11-30 Med-Dense 16-40 >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)	Test Boring No. B-5 (1 of 1)
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12-02-2024 C:\Users\User\Documents\M-Tech 4\samples\2436 B5-22 BOR

Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 25 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-6 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum :	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph		Average qu-Field	Average qu-Field (TSF)				REMARKS
								10	50		0	1	2	3	
0		LEAF LITTER & DUFF	AR												Groundwater=7' Well Set: no
1		TOPSOIL, LEAVES, VINES & ROOTS				1	1								SS-1: 1' - 3' R=7 N=2
2		Black & dark brown, fine SAND, trace fine gravel (sub-angular), and organic silt, (loose, moist), frequent infillings of remolded topsoil	AR			2	1								SS-2: 3' - 5' R=10 N=7
3		Dark brown, fine SAND, (loose, moist), frequent root clusters				3	2								SS-3: 5' - 7' R=14 N=9
4		6.5 ft. -FILL WITH ORGANICS-				3	3								
5		Dark brown to brown, medium to fine SAND, trace fine gravel (rounded), (medium dense, very moist)	SP			4	4								SS-4: 7' - 9' R=15 N=15
6		9.0 ft. -GLACIAL FLUVIAL-				4	5								P=Penetrometer
7		END OF BORING @ 9 FT DEPTH					6								
8		Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%					6								
9							7								
10							8								
11							8								

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 11-30 Med-Dense 16-40 L: Sands; R: Gravels >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)
--	---

Test Boring No. B-6
 (1 of 1)

12-02-2024 C:\Users\User\Documents\M-Tech 4\samples\2436 B6-22.bor

Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 25 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-7 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum :	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph	Average qu-Field	Average qu-Field (TSF)	REMARKS		
												10	50
0		LEAF LITTER OVER TOPSOIL	AR								Groundwater=not encountered Well Set: no		
1		Brown, coarse to fine SAND, some coarse to fine gravel (angular to sub-rounded), few silt, (medium dense, moist)	SP			1	6				SS-1: 1' - 3' R=12 N=21		
2	9										12	10	SS-2: 3' - 5' R=16 N=31
3	12										18	13	
4		Brown/tan, fine SAND, few silt, trace fine gravel (sub-rounded to rounded), (dense, moist)				2	12						
4.5		4.5 ft. -GLACIAL FLUVIAL-					13						
5		Brown, coarse GRAVEL (angular), little coarse to fine sand, few silt, (dense, moist)	GP			3	77				SS-3: 5' - 5.4' R=4 N=100		
5.4		5.4 ft. -GLACIAL FLUVIAL-					100				P=Penetrometer		
6		REFUSAL @ 5.4 FT DEPTH											
7		Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%											
8													

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 11-30 Med-Dense 16-40 L: Sands; R: Gravels >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)
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Test Boring No. B-7
(1 of 1)

12-02-2024 C:\Users\User\Documents\Tech 4\samples\2436 B7-22_bor

Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 25 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-8 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum :	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph	Average qu-Field	Average qu-Field (TSF)				REMARKS				
										0	1	2	3		4			
0		LEAF LITTLER OVER TOPSOIL	AR											Groundwater=not encountered Well Set: no				
1		Tan, fine SAND (uniform), few silt, trace fine gravel (rounded), (loose, moist)				1	4							SS-1: 1' - 3' R=13 N=7				
2	3														4	6	6	SS-2: 3' - 5' R=15 N=10
3	6														5	5	6	SS-3: 5' - 7' R=12 N=11
4		Light gray, fine SAND (uniform), trace silt, (loose, moist)	SP			2	5							P=Penetrometer				
5	5														6	7	4	
6		Light gray, coarse to fine SAND, little coarse to fine gravel (angular to sub-rounded), trace silt, (loose to medium dense, moist)				3	6											
7	7														4	4		
7		7.0 ft. -GLACIAL FLUVIAL-																
8		Bottom of Exploration at 7 feet Depth																
9		Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%																

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 L: Sands; R: Gravels 11-30 Med-Dense 16-40 >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)
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Test Boring No. B-8
 (1 of 1)

12-02-2024 C:\Users\User\Documents\M-Tech 4\samples\2436 B8-22.bor

Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 25 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-9 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum :	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph		Average qu-Field	Average qu-Field (TSF)					REMARKS	
								10	50		0	1	2	3	4		
0		LEAF LITTER OVER FIBROUS TOPSOIL	AR	[Hatched Box]												Groundwater=not encountered Well Set: no	
1		Brown, coarse to fine SAND, little coarse to fine gravel (angular), trace silt, (medium dense, moist)	SP	[Hatched Box]			4										
2		2.0 ft. -GLACIAL FLUVIAL-				1	8										SS-1: 1' - 3' R=16 N=24
3		Gray, coarse to fine SAND, some coarse to fine gravel (sub-angular), few silt, (dense, moist)	SP	[Hatched Box]			35										SS-2: 3' - 3.5' R=4 N=100
4		3.5 ft. -GLACIAL FLUVIAL-				2	100										P=Penetrometer
4		END OF BORING @ 3.5 FT DEPTH REFUSAL IN NESTED BOULDERS															
5		Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%															
6																	
7																	
8																	

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 L: Sands; R: Gravels 11-30 Med-Dense 16-40 >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)
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Test Boring No. B-9 (1 of 1)
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12-02-2024 C:\Users\User\Documents\M-Tech 4\samples\2436 B9-22_bor

Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 26 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-10 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum :	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph	Average qu-Field	Average qu-Field (TSF)				REMARKS
										0	1	2	3	
0		LEAF LITTER & DUFF	AR											Groundwater=not encountered Well Set: no
1														
2		Light brown, fine SAND, little fine gravel (rounded), trace silt and organic silt, (very loose, moist), frequent infillings of decomposed vegetation	AR			1	1							SS-1: 1' - 3' R=7 N=2
3		3.5 -FILL WITH ORGANICS-												SS-2: 3' - 4.9' R=15 N=88
4		Brown, coarse to fine SAND, some coarse gravel (angular) and rock fragments, few silt, (dense, moist)	SP			2	22							P=Penetrometer
5		4.9 ft. -GLACIAL FLUVIAL-					60							
6		REFUSAL @ 4.9 FT DEPTH POSSIBLE BEDROCK					100							
7		Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%												
8														

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 L: Sands; R: Gravels 11-30 Med-Dense 16-40 >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)
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Test Boring No. B-10 (1 of 1)

12-02-2024 C:\Users\User\Documents\M-Tech 4\samples\2436 B10-22.bor

Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 27 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-11 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum :	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph	Average qu-Field	Average qu-Field (TSF)				REMARKS
										10	50	0	1	
0		LEAF LITTER & TOPSOIL	AR											Groundwater=not encountered Well Set: no
1		Light brown, coarse to fine SAND, trace fine gravel (sub-angular to sub-rounded) and silt, (medium dense, moist) 2.5 ft. -GLACIAL FLUVIAL-	SP			1	6							SS-1: 1' - 3' R=14 N=14
2			SP			2	71							
3		Brown, coarse to fine SAND, some coarse to fine gravel (angular to sub-angular), few silt, (dense, moist) 4 ft. -GLACIAL FLUVIAL-					21							
4								42						
5		END OF BORING @ 4.9 FT DEPTH REFUSAL IN POSSIBLE GLACIAL TILL OR ROCK					100							
6		Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%												
7														
8														

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 L: Sands; R: Gravels 11-30 Med-Dense 16-40 >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)
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Test Boring No. B-11 (1 of 1)

12-02-2024 C:\Users\User\Documents\M-Tech 4\samples\2436 B11-22.bor

Geotechnical Partnership, Inc. Fitchburg, MA Geotechnical Services	Date Drilled : 26 November 2024 Boring Location : Refer to Report Figure 2 Drilling Contractor : Cosmo Drilling : Ocean Bluff, MA	Test Boring No. B-12 (1 of 1)
	Driller : E. Sviokla Rock Core : --- GPI Field Engineer : F. Sviokla Elevation and Datum :	
PROJECT: New Construction New Community Center - Range Rd. Reading, Massachusetts	Drilling Mud Utilized : Not necessary Constant Water Head : Drive & Wash	
CLIENT: Bargmann Hendrie & Archtype, Inc. File No. 2436		

Depth in Feet	Elev. in Feet	DESCRIPTIONS	USCS	GRAPHIC	Water Level	Sample No.	Blow Count	Blow Count Graph		Average qu-Field	Average qu-Field (TSF)					REMARKS
								10	50		0	1	2	3	4	
0		LEAF LITTER & TOPSOIL	AR													Groundwater=not encountered Well Set: no
1																
2		Rust-brown, coarse to fine SAND, little coarse to fine gravel (sub-angular to sub-rounded), few silt, (loose, moist)	SP			1	3									SS-1: 1' - 3' R=15 N=5
3		3.5 ft. -GLACIAL FLUVIAL-					7									
4		Brown, coarse to fine SAND, some coarse gravel (sub-angular to sub-rounded), few silt, (dense, moist)	SP			2	12									SS-2: 3' - 5' R=16 N=116 P=Penetrometer
5		5.0 ft. -GLACIAL FLUVIAL-					31									
6		END OF BORING @ 5.0 FT DEPTH REFUSAL IN GLACIAL TILL OR ROCK					85									
7		Particle Size: trace: <5%; few: 5-10%; little: 15-20%; some 30-45%; mostly: 50-100%					60									
8																

COHESIONLESS SOILS: 0-6 Very Loose 0-8 (DENSITY) 6-10 Loose 8-15 11-30 Med-Dense 16-40 >30 Dense 41-50 Very Dense >50	COHESIVE SOILS: 0-2 Very Soft (<0.25 TSF) (CONSISTENCY) 2-4 Soft (0.25-0.5 TSF) 4-8 Med. Stiff (0.5-1.0 TSF) 9-20 Stiff (1.0-4.0 TSF) >20 Hard (>4.0 TSF)
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Test Boring No. B-12 (1 of 1)








12-02-2024 C:\Users\User\Documents\M-Tech 4\samples\2436 B12-22.bor

Pre-Development Plan

EXISTING WATERSHED PLAN NOTES

1. EXISTING CONDITIONS INFORMATION IS REPRODUCED FROM THE BOUNDARY AND WETLAND LOCATION SURVEY PREPARED BY CONTROL POINT ASSOCIATES, INC., LOCATED AT 352 TURNPIKE ROAD, SOUTHBOROUGH, MA, AND DATED FEBRUARY 18TH, 2025.

EXISTING WATERSHED PLAN LEGEND

- PROPERTY LINE 
- WETLAND EDGE 
- 35' WETLAND BUFFER 
- 100' WETLAND BUFFER 
- FLOW ARROW 
- DRAINAGE ANALYSIS POINT 
- SUBCATCHMENT AREA 1 

MAP 41 LOT 56
N/F
LANDS OF TOWN OF READING
BOOK 11189 PAGE 431

SEE DEED OF EASEMENT
BK.11490,PG. 145 (1968) TOWN OF
READING TO READING RIFLE AND
REVOLVER CLUB, INC- R.O WAY OVER
EXISTING ROADWAY INCLUDING POLE
LINE FOR TEL, ELEC, ETC. FROM
HAVERHILL STREET
(PER REF #3)

N/F LANDS OF
TOWN OF READING ICE ARSENA
BK. 11189 PG. 431

N/F LANDS OF
TOWN OF READING ICE ARENA
BK. 11189 PG. 431

MAP 35
LOT 133
N/F LANDS OF
TOWN OF READING
BK. 73040 PG. 267

1

DP-1

PROPOSED
PROPERTY
LINE
(PER REF #5
& #7)

PROPOSED
PARCEL A
(PER REF #7)

SITE PLAN REVIEW SET ONLY - NOT FOR CONSTRUCTION

CONTACT DIGSAFE:
UNDERGROUND UTILITIES SHOWN ON THE PLAN ARE COMPILED FROM PLANS AND FIELD SURVEY. UTILITY LOCATIONS
SHOULD BE CONSIDERED APPROXIMATE ONLY. DIGSAFE AND/OR THE OTHER RESPECTIVE UTILITY COMPANIES SHALL BE
CONTACTED 72 BUSINESS HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS. PHONE DIGSAFE 1-888-344-7233.

ARCHITECT
bh+a
Bargmann Hendrie + Archetype, Inc.
9 Channel Center Street, Suite 300
Boston, MA 02210
617 350 0450

PROJECT NAME
**Reading Center for
Active Living (ReCAL)
+
Outdoor Community
Pickleball Courts**
Symonds Way
Reading, MA 01867
CLIENT
Town of Reading
16 Lowell Street
Reading, MA 01867

PROJECT TEAM
Civil and Landscape Engineer
Activitas
70 Milton Street
Dedham, MA 02026
(781) 326-2600
Structural Engineer
Foley Buhl Roberts & Associates, Inc.
2227 Washington Street
Newton, MA 02462
(617) 527-9600
MEPPF Engineer
Allied Consulting Engineering
270 Littleton Road, Suite 11
Westford, MA 01886
(978) 443-7888
AV / IT / Security
Building Technology Consulting
992 Bedford St.
Bridgewater, MA 02324
(617) 799-4309
Food Service
Colburn Guyette
100 Ledgewood Pl #104
Rockland, MA 02370
(781) 826-5522
Wetland Scientist
Epsilon Associates, Inc.
3 Mill and Main Place, Suite 250
Maynard, MA 01754
(978) 897-7100

REVISIONS

NO.	DATE	DESCRIPTION

DRAWING TITLE

**EXISTING
CONDITIONS
WATERSHED
PLAN**

DRAWING INFORMATION



Megan E. Buczynski
7/17/2025

07/07/2025
DATE OF ISSUE
SITE PLAN REVIEW
DESCRIPTION
1"=30'-0"
SCALE
3513
PROJECT #
FILE NAME

DRAWING NUMBER










EXWS

Post-Development Plan

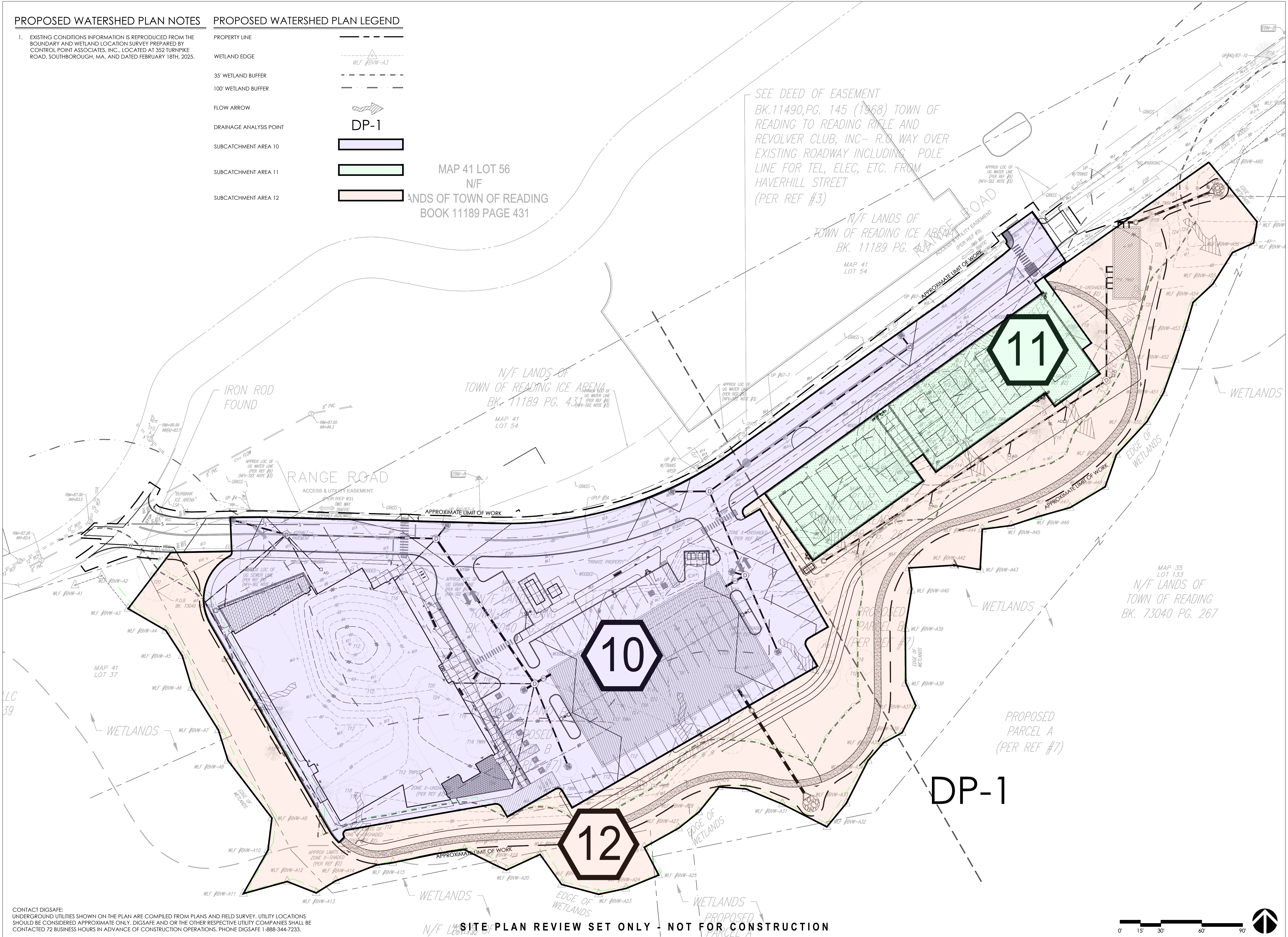
PROPOSED WATERSHED PLAN NOTES

1. EXISTING CONDITIONS INFORMATION IS REPRODUCED FROM THE BOUNDARY AND WETLAND LOCATION SURVEY PREPARED BY CONTROL POINT ASSOCIATES, INC., LOCATED AT 352 TURNPIKE ROAD, SOUTHBOROUGH, MA, AND DATED FEBRUARY 18TH, 2025.

PROPOSED WATERSHED PLAN LEGEND

- PROPERTY LINE 
- WETLAND EDGE 
- 35' WETLAND BUFFER 
- 100' WETLAND BUFFER 
- FLOW ARROW 
- DRAINAGE ANALYSIS POINT 
- SUBCATCHMENT AREA 10 
- SUBCATCHMENT AREA 11 
- SUBCATCHMENT AREA 12 

MAP 41 LOT 56
N/F
LANDS OF TOWN OF READING
BOOK 11189 PAGE 431



ARCHITECT
bh+a
Bargmann Hendrie + Archetype, Inc.
9 Channel Center Street, Suite 300
Boston, MA 02210
617 350 0450

PROJECT NAME
Reading Center for Active Living (ReCAL) + Outdoor Community Pickleball Courts

CLIENT
Town of Reading
16 Lowell Street
Reading, MA 01867

PROJECT TEAM

Civil and Landscape Engineer
Activitas
70 Milton Street
Dedham, MA 02026
(781) 326-2600

Structural Engineer
Foley Buhl Roberts & Associates, Inc.
2227 Washington Street
Newton, MA 02462
(617) 527-9600

MEPFP Engineer
Allied Consulting Engineering
270 Littleton Road, Suite 11
Westford, MA 01886
(978) 443-7888

AV / IT / Security
Building Technology Consulting
992 Bedford St.
Bridgewater, MA 02324
(617) 799-4309

Food Service
Colburn Guyette
100 Ledgewood Pl #104
Rockland, MA 02370
(781) 826-5522


Wetland Scientist
Epsilon Associates, Inc.
3 Mill and Main Place, Suite 250
Maynard, MA 01754
(978) 897-7100

REVISIONS

NO.	DATE	DESCRIPTION

DRAWING TITLE
PROPOSED CONDITIONS WATERSHED PLAN

DRAWING INFORMATION


MEGAN E. BUCZYNSKI
CIVIL
No. 47392
7/17/2025

07/07/2025
DATE OF ISSUE
SITE PLAN REVIEW
DESCRIPTION
1"=30'-0"
SCALE
3513
PROJECT #
FILE NAME

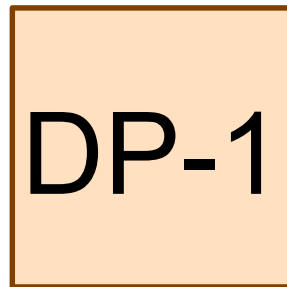
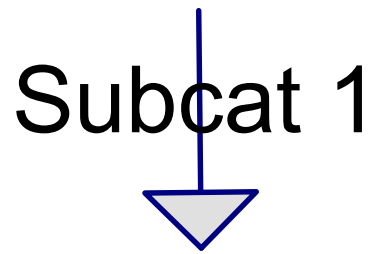
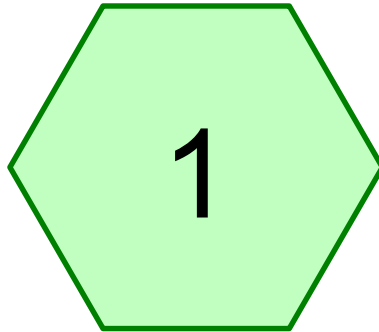
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PRWS

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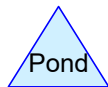
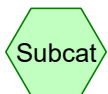
CONTACT DIGSAFE:
UNDERGROUND UTILITIES SHOWN ON THE PLAN ARE COMPILED FROM PLANS AND FIELD SURVEY. UTILITY LOCATIONS SHOULD BE CONSIDERED APPROXIMATE ONLY. DIGSAFE AND/OR THE OTHER RESPECTIVE UTILITY COMPANIES SHALL BE CONTACTED 72 BUSINESS HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS. PHONE DIGSAFE 1-888-344-7233.

SITE PLAN REVIEW SET ONLY - NOT FOR CONSTRUCTION

HydroCAD Report – Peak Rate



Wetland



24057-Ex_Cond

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.09	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.65	2
3	100-Year	Type III 24-hr		Default	24.00	1	8.36	2

24057-Ex_Cond

Type III 24-hr 2-Year Rainfall=3.09"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subcat 1

Runoff Area=178,246 sf 6.72% Impervious Runoff Depth=0.33"
Flow Length=126' Tc=13.6 min CN=59 Runoff=0.65 cfs 4,964 cf

Reach DP-1: Wetland

Inflow=0.65 cfs 4,964 cf
Outflow=0.65 cfs 4,964 cf

Total Runoff Area = 178,246 sf Runoff Volume = 4,964 cf Average Runoff Depth = 0.33"
93.28% Pervious = 166,271 sf 6.72% Impervious = 11,975 sf

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Type III 24-hr 2-Year Rainfall=3.09"

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Summary for Subcatchment 1: Subcat 1

Runoff = 0.65 cfs @ 12.37 hrs, Volume= 4,964 cf, Depth= 0.33"
Routed to Reach DP-1 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.09"

Area (sf)	CN	Description
11,833	69	50-75% Grass cover, Fair, HSG B
11,975	98	Paved parking, HSG B
154,438	55	Woods, Good, HSG B
178,246	59	Weighted Average
166,271		93.28% Pervious Area
11,975		6.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	50	0.0200	0.07		Sheet Flow, A
					Woods: Light underbrush n= 0.400 P2= 3.09"
1.0	76	0.0650	1.27		Shallow Concentrated Flow, B
					Woodland Kv= 5.0 fps
13.6	126	Total			

Summary for Reach DP-1: Wetland

Inflow Area = 178,246 sf, 6.72% Impervious, Inflow Depth = 0.33" for 2-Year event
Inflow = 0.65 cfs @ 12.37 hrs, Volume= 4,964 cf
Outflow = 0.65 cfs @ 12.37 hrs, Volume= 4,964 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

24057-Ex_Cond

Type III 24-hr 10-Year Rainfall=4.65"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subcat 1

Runoff Area=178,246 sf 6.72% Impervious Runoff Depth=1.04"
Flow Length=126' Tc=13.6 min CN=59 Runoff=3.29 cfs 15,464 cf

Reach DP-1: Wetland

Inflow=3.29 cfs 15,464 cf
Outflow=3.29 cfs 15,464 cf

Total Runoff Area = 178,246 sf Runoff Volume = 15,464 cf Average Runoff Depth = 1.04"
93.28% Pervious = 166,271 sf 6.72% Impervious = 11,975 sf

Summary for Subcatchment 1: Subcat 1

Runoff = 3.29 cfs @ 12.22 hrs, Volume= 15,464 cf, Depth= 1.04"
 Routed to Reach DP-1 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.65"

Area (sf)	CN	Description
11,833	69	50-75% Grass cover, Fair, HSG B
11,975	98	Paved parking, HSG B
154,438	55	Woods, Good, HSG B
178,246	59	Weighted Average
166,271		93.28% Pervious Area
11,975		6.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	50	0.0200	0.07		Sheet Flow, A
					Woods: Light underbrush n= 0.400 P2= 3.09"
1.0	76	0.0650	1.27		Shallow Concentrated Flow, B
					Woodland Kv= 5.0 fps
13.6	126	Total			

Summary for Reach DP-1: Wetland

Inflow Area = 178,246 sf, 6.72% Impervious, Inflow Depth = 1.04" for 10-Year event
 Inflow = 3.29 cfs @ 12.22 hrs, Volume= 15,464 cf
 Outflow = 3.29 cfs @ 12.22 hrs, Volume= 15,464 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

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Type III 24-hr 100-Year Rainfall=8.36"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subcat 1

Runoff Area=178,246 sf 6.72% Impervious Runoff Depth=3.49"
Flow Length=126' Tc=13.6 min CN=59 Runoff=12.90 cfs 51,845 cf

Reach DP-1: Wetland

Inflow=12.90 cfs 51,845 cf
Outflow=12.90 cfs 51,845 cf

Total Runoff Area = 178,246 sf Runoff Volume = 51,845 cf Average Runoff Depth = 3.49"
93.28% Pervious = 166,271 sf 6.72% Impervious = 11,975 sf

Summary for Subcatchment 1: Subcat 1

Runoff = 12.90 cfs @ 12.19 hrs, Volume= 51,845 cf, Depth= 3.49"
 Routed to Reach DP-1 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=8.36"

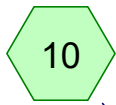
Area (sf)	CN	Description
11,833	69	50-75% Grass cover, Fair, HSG B
11,975	98	Paved parking, HSG B
154,438	55	Woods, Good, HSG B
178,246	59	Weighted Average
166,271		93.28% Pervious Area
11,975		6.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	50	0.0200	0.07		Sheet Flow, A
					Woods: Light underbrush n= 0.400 P2= 3.09"
1.0	76	0.0650	1.27		Shallow Concentrated Flow, B
					Woodland Kv= 5.0 fps
13.6	126	Total			

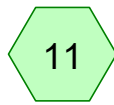
Summary for Reach DP-1: Wetland

Inflow Area = 178,246 sf, 6.72% Impervious, Inflow Depth = 3.49" for 100-Year event
 Inflow = 12.90 cfs @ 12.19 hrs, Volume= 51,845 cf
 Outflow = 12.90 cfs @ 12.19 hrs, Volume= 51,845 cf, Atten= 0%, Lag= 0.0 min

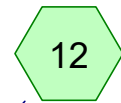
Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs



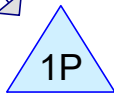
ReCal



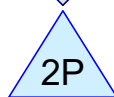
Pickleball Courts



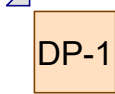
Subcat 12



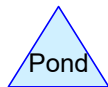
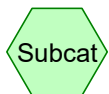
ReCal Infiltration Pond



Pickleball Infiltration Basin



Wetland



Routing Diagram for 24057-Pr_Cond
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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.09	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.65	2
3	100-Year	Type III 24-hr		Default	24.00	1	8.36	2

24057-Pr_Cond

Type III 24-hr 2-Year Rainfall=3.09"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: ReCal Runoff Area=92,574 sf 85.31% Impervious Runoff Depth=2.34"
Tc=6.0 min CN=93 Runoff=5.66 cfs 18,054 cf

Subcatchment 11: Pickleball Courts Runoff Area=16,253 sf 99.09% Impervious Runoff Depth=2.86"
Tc=6.0 min CN=98 Runoff=1.12 cfs 3,871 cf

Subcatchment 12: Subcat 12 Runoff Area=69,419 sf 0.09% Impervious Runoff Depth=0.40"
Flow Length=55' Tc=12.6 min CN=61 Runoff=0.35 cfs 2,313 cf

Reach DP-1: Wetland Inflow=0.54 cfs 4,687 cf
Outflow=0.54 cfs 4,687 cf

Pond 1P: ReCal Infiltration Pond Peak Elev=84.70' Storage=8,647 cf Inflow=5.66 cfs 18,054 cf
Discarded=0.28 cfs 17,891 cf Primary=0.03 cfs 163 cf Outflow=0.31 cfs 18,054 cf

Pond 2P: Pickleball Infiltration Basin Peak Elev=86.57' Storage=1,411 cf Inflow=1.12 cfs 3,871 cf
Discarded=0.03 cfs 1,660 cf Primary=0.20 cfs 2,211 cf Outflow=0.22 cfs 3,871 cf

Total Runoff Area = 178,246 sf Runoff Volume = 24,238 cf Average Runoff Depth = 1.63"
46.62% Pervious = 83,105 sf 53.38% Impervious = 95,141 sf

Summary for Subcatchment 10: ReCal

Runoff = 5.66 cfs @ 12.09 hrs, Volume= 18,054 cf, Depth= 2.34"
 Routed to Pond 1P : ReCal Infiltration Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Year Rainfall=3.09"

Area (sf)	CN	Description
13,598	61	>75% Grass cover, Good, HSG B
57,337	98	Paved parking, HSG B
21,638	98	Roofs, HSG B
92,574	93	Weighted Average
13,598		14.69% Pervious Area
78,976		85.31% Impervious Area

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

Summary for Subcatchment 11: Pickleball Courts

Runoff = 1.12 cfs @ 12.08 hrs, Volume= 3,871 cf, Depth= 2.86"
 Routed to Pond 2P : Pickleball Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Year Rainfall=3.09"

Area (sf)	CN	Description
147	61	>75% Grass cover, Good, HSG B
16,105	98	Paved parking, HSG B
16,253	98	Weighted Average
147		0.91% Pervious Area
16,105		99.09% Impervious Area

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

Summary for Subcatchment 12: Subcat 12

Runoff = 0.35 cfs @ 12.25 hrs, Volume= 2,313 cf, Depth= 0.40"
 Routed to Reach DP-1 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 2-Year Rainfall=3.09"

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Type III 24-hr 2-Year Rainfall=3.09"

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Area (sf)	CN	Description
43,243	61	>75% Grass cover, Good, HSG B
4,401	96	Gravel surface, HSG B
60	98	Paved parking, HSG B
21,715	55	Woods, Good, HSG B
69,419	61	Weighted Average
69,359		99.91% Pervious Area
60		0.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	50	0.0200	0.07		Sheet Flow, A Woods: Light underbrush n= 0.400 P2= 3.09"
0.0	5	0.0150	1.97		Shallow Concentrated Flow, B Unpaved Kv= 16.1 fps
12.6	55	Total			

Summary for Reach DP-1: Wetland

Inflow Area = 178,246 sf, 53.38% Impervious, Inflow Depth = 0.32" for 2-Year event
 Inflow = 0.54 cfs @ 12.28 hrs, Volume= 4,687 cf
 Outflow = 0.54 cfs @ 12.28 hrs, Volume= 4,687 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: ReCal Infiltration Pond

Inflow Area = 92,574 sf, 85.31% Impervious, Inflow Depth = 2.34" for 2-Year event
 Inflow = 5.66 cfs @ 12.09 hrs, Volume= 18,054 cf
 Outflow = 0.31 cfs @ 14.09 hrs, Volume= 18,054 cf, Atten= 95%, Lag= 120.2 min
 Discarded = 0.28 cfs @ 10.85 hrs, Volume= 17,891 cf
 Primary = 0.03 cfs @ 14.09 hrs, Volume= 163 cf
 Routed to Reach DP-1 : Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 4
 Peak Elev= 84.70' @ 14.09 hrs Surf.Area= 11,948 sf Storage= 8,647 cf

Plug-Flow detention time= 275.5 min calculated for 18,054 cf (100% of inflow)
 Center-of-Mass det. time= 275.5 min (1,069.4 - 793.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	83.50'	7,802 cf	82.25'W x 145.27'L x 3.50'H Field A 41,819 cf Overall - 15,813 cf Embedded = 26,006 cf x 30.0% Voids
#2A	84.00'	15,813 cf	Cultec R-300HD x 340 Inside #1 Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 340 Chambers in 17 Rows Cap Storage= 2.7 cf x 2 x 17 rows = 90.3 cf
		23,614 cf	Total Available Storage

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Type III 24-hr 2-Year Rainfall=3.09"

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Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	83.50'	1.020 in/hr Exfiltration over Surface area
#2	Primary	84.66'	10.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	86.00'	21.0" W x 10.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.28 cfs @ 10.85 hrs HW=83.54' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.02 cfs @ 14.09 hrs HW=84.70' (Free Discharge)

↑**2=Orifice/Grate** (Orifice Controls 0.02 cfs @ 0.66 fps)

↑**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 2P: Pickleball Infiltration Basin

Inflow Area = 16,253 sf, 99.09% Impervious, Inflow Depth = 2.86" for 2-Year event
 Inflow = 1.12 cfs @ 12.08 hrs, Volume= 3,871 cf
 Outflow = 0.22 cfs @ 12.51 hrs, Volume= 3,871 cf, Atten= 80%, Lag= 25.4 min
 Discarded = 0.03 cfs @ 8.22 hrs, Volume= 1,660 cf
 Primary = 0.20 cfs @ 12.51 hrs, Volume= 2,211 cf
 Routed to Reach DP-1 : Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Peak Elev= 86.57' @ 12.51 hrs Surf.Area= 1,090 sf Storage= 1,411 cf

Plug-Flow detention time= 77.9 min calculated for 3,869 cf (100% of inflow)
 Center-of-Mass det. time= 77.9 min (835.0 - 757.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.50'	750 cf	20.50'W x 53.18'L x 3.50'H Field A 3,816 cf Overall - 1,316 cf Embedded = 2,500 cf x 30.0% Voids
#2A	85.00'	1,316 cf	Cultec R-300HD x 28 Inside #1 Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 28 Chambers in 4 Rows Cap Storage= 2.7 cf x 2 x 4 rows = 21.2 cf
		2,066 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	84.50'	1.020 in/hr Exfiltration over Surface area
#2	Primary	85.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	86.66'	12.0" W x 4.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	87.75'	3.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

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Type III 24-hr 2-Year Rainfall=3.09"

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Discarded OutFlow Max=0.03 cfs @ 8.22 hrs HW=84.54' (Free Discharge)

└─1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.20 cfs @ 12.51 hrs HW=86.57' (Free Discharge)

└─2=Orifice/Grate (Orifice Controls 0.20 cfs @ 5.84 fps)

└─3=Orifice/Grate (Controls 0.00 cfs)

└─4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Type III 24-hr 10-Year Rainfall=4.65"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: ReCal Runoff Area=92,574 sf 85.31% Impervious Runoff Depth=3.85"
Tc=6.0 min CN=93 Runoff=9.07 cfs 29,737 cf

Subcatchment 11: Pickleball Courts Runoff Area=16,253 sf 99.09% Impervious Runoff Depth=4.41"
Tc=6.0 min CN=98 Runoff=1.70 cfs 5,978 cf

Subcatchment 12: Subcat 12 Runoff Area=69,419 sf 0.09% Impervious Runoff Depth=1.16"
Flow Length=55' Tc=12.6 min CN=61 Runoff=1.54 cfs 6,733 cf

Reach DP-1: Wetland Inflow=2.76 cfs 18,330 cf
Outflow=2.76 cfs 18,330 cf

Pond 1P: ReCal Infiltration Pond Peak Elev=85.29' Storage=13,910 cf Inflow=9.07 cfs 29,737 cf
Discarded=0.28 cfs 22,142 cf Primary=0.49 cfs 7,595 cf Outflow=0.78 cfs 29,736 cf

Pond 2P: Pickleball Infiltration Basin Peak Elev=87.05' Storage=1,707 cf Inflow=1.70 cfs 5,978 cf
Discarded=0.03 cfs 1,976 cf Primary=0.96 cfs 4,002 cf Outflow=0.98 cfs 5,978 cf

Total Runoff Area = 178,246 sf Runoff Volume = 42,448 cf Average Runoff Depth = 2.86"
46.62% Pervious = 83,105 sf 53.38% Impervious = 95,141 sf

Summary for Subcatchment 10: ReCal

Runoff = 9.07 cfs @ 12.08 hrs, Volume= 29,737 cf, Depth= 3.85"
 Routed to Pond 1P : ReCal Infiltration Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.65"

Area (sf)	CN	Description
13,598	61	>75% Grass cover, Good, HSG B
57,337	98	Paved parking, HSG B
21,638	98	Roofs, HSG B
92,574	93	Weighted Average
13,598		14.69% Pervious Area
78,976		85.31% Impervious Area

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

Summary for Subcatchment 11: Pickleball Courts

Runoff = 1.70 cfs @ 12.08 hrs, Volume= 5,978 cf, Depth= 4.41"
 Routed to Pond 2P : Pickleball Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.65"

Area (sf)	CN	Description
147	61	>75% Grass cover, Good, HSG B
16,105	98	Paved parking, HSG B
16,253	98	Weighted Average
147		0.91% Pervious Area
16,105		99.09% Impervious Area

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

Summary for Subcatchment 12: Subcat 12

Runoff = 1.54 cfs @ 12.19 hrs, Volume= 6,733 cf, Depth= 1.16"
 Routed to Reach DP-1 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 10-Year Rainfall=4.65"

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Type III 24-hr 10-Year Rainfall=4.65"

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Area (sf)	CN	Description
43,243	61	>75% Grass cover, Good, HSG B
4,401	96	Gravel surface, HSG B
60	98	Paved parking, HSG B
21,715	55	Woods, Good, HSG B
69,419	61	Weighted Average
69,359		99.91% Pervious Area
60		0.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	50	0.0200	0.07		Sheet Flow, A Woods: Light underbrush n= 0.400 P2= 3.09"
0.0	5	0.0150	1.97		Shallow Concentrated Flow, B Unpaved Kv= 16.1 fps
12.6	55	Total			

Summary for Reach DP-1: Wetland

Inflow Area = 178,246 sf, 53.38% Impervious, Inflow Depth = 1.23" for 10-Year event
 Inflow = 2.76 cfs @ 12.20 hrs, Volume= 18,330 cf
 Outflow = 2.76 cfs @ 12.20 hrs, Volume= 18,330 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: ReCal Infiltration Pond

Inflow Area = 92,574 sf, 85.31% Impervious, Inflow Depth = 3.85" for 10-Year event
 Inflow = 9.07 cfs @ 12.08 hrs, Volume= 29,737 cf
 Outflow = 0.78 cfs @ 13.01 hrs, Volume= 29,736 cf, Atten= 91%, Lag= 55.5 min
 Discarded = 0.28 cfs @ 9.55 hrs, Volume= 22,142 cf
 Primary = 0.49 cfs @ 13.01 hrs, Volume= 7,595 cf
 Routed to Reach DP-1 : Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 4
 Peak Elev= 85.29' @ 13.01 hrs Surf.Area= 11,948 sf Storage= 13,910 cf

Plug-Flow detention time= 266.9 min calculated for 29,726 cf (100% of inflow)
 Center-of-Mass det. time= 266.9 min (1,047.4 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	83.50'	7,802 cf	82.25'W x 145.27'L x 3.50'H Field A 41,819 cf Overall - 15,813 cf Embedded = 26,006 cf x 30.0% Voids
#2A	84.00'	15,813 cf	Cultec R-300HD x 340 Inside #1 Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 340 Chambers in 17 Rows Cap Storage= 2.7 cf x 2 x 17 rows = 90.3 cf
		23,614 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	83.50'	1.020 in/hr Exfiltration over Surface area
#2	Primary	84.66'	10.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	86.00'	21.0" W x 10.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.28 cfs @ 9.55 hrs HW=83.54' (Free Discharge)

↳ **1=Exfiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.49 cfs @ 13.01 hrs HW=85.29' (Free Discharge)

↳ **2=Orifice/Grate** (Orifice Controls 0.49 cfs @ 3.55 fps)

↳ **3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 2P: Pickleball Infiltration Basin

Inflow Area = 16,253 sf, 99.09% Impervious, Inflow Depth = 4.41" for 10-Year event
 Inflow = 1.70 cfs @ 12.08 hrs, Volume= 5,978 cf
 Outflow = 0.98 cfs @ 12.19 hrs, Volume= 5,978 cf, Atten= 42%, Lag= 6.5 min
 Discarded = 0.03 cfs @ 6.50 hrs, Volume= 1,976 cf
 Primary = 0.96 cfs @ 12.19 hrs, Volume= 4,002 cf
 Routed to Reach DP-1 : Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Peak Elev= 87.05' @ 12.19 hrs Surf.Area= 1,090 sf Storage= 1,707 cf

Plug-Flow detention time= 72.7 min calculated for 5,976 cf (100% of inflow)
 Center-of-Mass det. time= 72.7 min (821.9 - 749.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.50'	750 cf	20.50'W x 53.18'L x 3.50'H Field A 3,816 cf Overall - 1,316 cf Embedded = 2,500 cf x 30.0% Voids
#2A	85.00'	1,316 cf	Cultec R-300HD x 28 Inside #1 Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 28 Chambers in 4 Rows Cap Storage= 2.7 cf x 2 x 4 rows = 21.2 cf
		2,066 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	84.50'	1.020 in/hr Exfiltration over Surface area
#2	Primary	85.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	86.66'	12.0" W x 4.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	87.75'	3.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

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Type III 24-hr 10-Year Rainfall=4.65"

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Discarded OutFlow Max=0.03 cfs @ 6.50 hrs HW=84.54' (Free Discharge)

└─1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.96 cfs @ 12.19 hrs HW=87.05' (Free Discharge)

└─2=Orifice/Grate (Orifice Controls 0.23 cfs @ 6.71 fps)

└─3=Orifice/Grate (Orifice Controls 0.73 cfs @ 2.19 fps)

└─4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Type III 24-hr 100-Year Rainfall=8.36"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10: ReCal Runoff Area=92,574 sf 85.31% Impervious Runoff Depth=7.52"
Tc=6.0 min CN=93 Runoff=17.04 cfs 58,013 cf

Subcatchment 11: Pickleball Courts Runoff Area=16,253 sf 99.09% Impervious Runoff Depth=8.12"
Tc=6.0 min CN=98 Runoff=3.06 cfs 10,998 cf

Subcatchment 12: Subcat 12 Runoff Area=69,419 sf 0.09% Impervious Runoff Depth=3.72"
Flow Length=55' Tc=12.6 min CN=61 Runoff=5.54 cfs 21,528 cf

Reach DP-1: Wetland Inflow=12.56 cfs 60,944 cf
Outflow=12.56 cfs 60,944 cf

Pond 1P: ReCal Infiltration Pond Peak Elev=86.98' Storage=23,552 cf Inflow=17.04 cfs 58,013 cf
Discarded=0.28 cfs 25,224 cf Primary=6.15 cfs 30,706 cf Outflow=6.43 cfs 55,930 cf

Pond 2P: Pickleball Infiltration Basin Peak Elev=87.96' Storage=2,054 cf Inflow=3.06 cfs 10,998 cf
Discarded=0.03 cfs 2,288 cf Primary=2.95 cfs 8,710 cf Outflow=2.98 cfs 10,998 cf

Total Runoff Area = 178,246 sf Runoff Volume = 90,539 cf Average Runoff Depth = 6.10"
46.62% Pervious = 83,105 sf 53.38% Impervious = 95,141 sf

Summary for Subcatchment 10: ReCal

Runoff = 17.04 cfs @ 12.08 hrs, Volume= 58,013 cf, Depth= 7.52"
 Routed to Pond 1P : ReCal Infiltration Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
13,598	61	>75% Grass cover, Good, HSG B
57,337	98	Paved parking, HSG B
21,638	98	Roofs, HSG B
92,574	93	Weighted Average
13,598		14.69% Pervious Area
78,976		85.31% Impervious Area

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

Summary for Subcatchment 11: Pickleball Courts

Runoff = 3.06 cfs @ 12.08 hrs, Volume= 10,998 cf, Depth= 8.12"
 Routed to Pond 2P : Pickleball Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=8.36"

Area (sf)	CN	Description
147	61	>75% Grass cover, Good, HSG B
16,105	98	Paved parking, HSG B
16,253	98	Weighted Average
147		0.91% Pervious Area
16,105		99.09% Impervious Area

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

Summary for Subcatchment 12: Subcat 12

Runoff = 5.54 cfs @ 12.18 hrs, Volume= 21,528 cf, Depth= 3.72"
 Routed to Reach DP-1 : Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr 100-Year Rainfall=8.36"

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Type III 24-hr 100-Year Rainfall=8.36"

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Area (sf)	CN	Description
43,243	61	>75% Grass cover, Good, HSG B
4,401	96	Gravel surface, HSG B
60	98	Paved parking, HSG B
21,715	55	Woods, Good, HSG B
69,419	61	Weighted Average
69,359		99.91% Pervious Area
60		0.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	50	0.0200	0.07		Sheet Flow, A Woods: Light underbrush n= 0.400 P2= 3.09"
0.0	5	0.0150	1.97		Shallow Concentrated Flow, B Unpaved Kv= 16.1 fps
12.6	55	Total			

Summary for Reach DP-1: Wetland

Inflow Area = 178,246 sf, 53.38% Impervious, Inflow Depth = 4.10" for 100-Year event
 Inflow = 12.56 cfs @ 12.23 hrs, Volume= 60,944 cf
 Outflow = 12.56 cfs @ 12.23 hrs, Volume= 60,944 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: ReCal Infiltration Pond

Inflow Area = 92,574 sf, 85.31% Impervious, Inflow Depth = 7.52" for 100-Year event
 Inflow = 17.04 cfs @ 12.08 hrs, Volume= 58,013 cf
 Outflow = 6.43 cfs @ 12.32 hrs, Volume= 55,930 cf, Atten= 62%, Lag= 14.1 min
 Discarded = 0.28 cfs @ 7.45 hrs, Volume= 25,224 cf
 Primary = 6.15 cfs @ 12.32 hrs, Volume= 30,706 cf
 Routed to Reach DP-1 : Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 4
 Peak Elev= 86.98' @ 12.32 hrs Surf.Area= 11,948 sf Storage= 23,552 cf

Plug-Flow detention time= 214.6 min calculated for 55,930 cf (96% of inflow)
 Center-of-Mass det. time= 193.0 min (957.3 - 764.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	83.50'	7,802 cf	82.25'W x 145.27'L x 3.50'H Field A 41,819 cf Overall - 15,813 cf Embedded = 26,006 cf x 30.0% Voids
#2A	84.00'	15,813 cf	Cultec R-300HD x 340 Inside #1 Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 340 Chambers in 17 Rows Cap Storage= 2.7 cf x 2 x 17 rows = 90.3 cf
		23,614 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	83.50'	1.020 in/hr Exfiltration over Surface area
#2	Primary	84.66'	10.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	86.00'	21.0" W x 10.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.28 cfs @ 7.45 hrs HW=83.54' (Free Discharge)

↳ **1=Exfiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=6.15 cfs @ 12.32 hrs HW=86.98' (Free Discharge)

↳ **2=Orifice/Grate** (Orifice Controls 1.00 cfs @ 7.20 fps)

↳ **3=Orifice/Grate** (Orifice Controls 5.15 cfs @ 3.53 fps)

Summary for Pond 2P: Pickleball Infiltration Basin

Inflow Area = 16,253 sf, 99.09% Impervious, Inflow Depth = 8.12" for 100-Year event
 Inflow = 3.06 cfs @ 12.08 hrs, Volume= 10,998 cf
 Outflow = 2.98 cfs @ 12.10 hrs, Volume= 10,998 cf, Atten= 3%, Lag= 1.2 min
 Discarded = 0.03 cfs @ 2.97 hrs, Volume= 2,288 cf
 Primary = 2.95 cfs @ 12.10 hrs, Volume= 8,710 cf
 Routed to Reach DP-1 : Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Peak Elev= 87.96' @ 12.10 hrs Surf.Area= 1,090 sf Storage= 2,054 cf

Plug-Flow detention time= 62.2 min calculated for 10,994 cf (100% of inflow)
 Center-of-Mass det. time= 62.2 min (802.9 - 740.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.50'	750 cf	20.50'W x 53.18'L x 3.50'H Field A 3,816 cf Overall - 1,316 cf Embedded = 2,500 cf x 30.0% Voids
#2A	85.00'	1,316 cf	Cultec R-300HD x 28 Inside #1 Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 28 Chambers in 4 Rows Cap Storage= 2.7 cf x 2 x 4 rows = 21.2 cf
		2,066 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	84.50'	1.020 in/hr Exfiltration over Surface area
#2	Primary	85.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	86.66'	12.0" W x 4.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	87.75'	3.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

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Type III 24-hr 100-Year Rainfall=8.36"

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Discarded OutFlow Max=0.03 cfs @ 2.97 hrs HW=84.54' (Free Discharge)

└─1=Exfiltration (Exfiltration Controls 0.03 cfs)

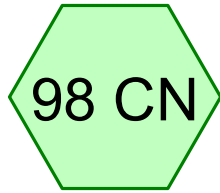
Primary OutFlow Max=2.94 cfs @ 12.10 hrs HW=87.96' (Free Discharge)

└─2=Orifice/Grate (Orifice Controls 0.28 cfs @ 8.14 fps)

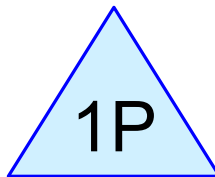
└─3=Orifice/Grate (Orifice Controls 1.71 cfs @ 5.13 fps)

└─4=Sharp-Crested Rectangular Weir (Weir Controls 0.95 cfs @ 1.51 fps)

HydroCAD Report – Recharge



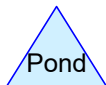
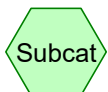
New Impervious (Pond
1P)



ReCal Infiltration Pond



Wetland



24057-Pr_Cond_Recharge_1P

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Recharge	Type III 24-hr		Default	24.00	1	0.54	2

24057-Pr_Cond_Recharge_1P

Type III 24-hr Recharge Rainfall=0.54"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 98 CN: New Impervious Runoff Area=67,000 sf 100.00% Impervious Runoff Depth=0.35"
Tc=6.0 min CN=98 Runoff=0.63 cfs 1,978 cf

Reach DP-1: Wetland Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 1P: ReCal Infiltration Pond Peak Elev=83.58' Storage=289 cf Inflow=0.63 cfs 1,978 cf
Discarded=0.28 cfs 1,978 cf Primary=0.00 cfs 0 cf Outflow=0.28 cfs 1,978 cf

Total Runoff Area = 67,000 sf Runoff Volume = 1,978 cf Average Runoff Depth = 0.35"
0.00% Pervious = 0 sf 100.00% Impervious = 67,000 sf

Summary for Subcatchment 98 CN: New Impervious (Pond 1P)

Runoff = 0.63 cfs @ 12.09 hrs, Volume= 1,978 cf, Depth= 0.35"
 Routed to Pond 1P : ReCal Infiltration Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr Recharge Rainfall=0.54"

Area (sf)	CN	Description
67,000	98	Paved parking, HSG B
67,000		100.00% Impervious Area

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

Summary for Reach DP-1: Wetland

Inflow Area = 67,000 sf, 100.00% Impervious, Inflow Depth = 0.00" for Recharge event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: ReCal Infiltration Pond

Inflow Area = 67,000 sf, 100.00% Impervious, Inflow Depth = 0.35" for Recharge event
 Inflow = 0.63 cfs @ 12.09 hrs, Volume= 1,978 cf
 Outflow = 0.28 cfs @ 12.04 hrs, Volume= 1,978 cf, Atten= 56%, Lag= 0.0 min
 Discarded = 0.28 cfs @ 12.04 hrs, Volume= 1,978 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Reach DP-1 : Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 4
 Peak Elev= 83.58' @ 12.28 hrs Surf.Area= 11,948 sf Storage= 289 cf

Plug-Flow detention time= 9.5 min calculated for 1,978 cf (100% of inflow)
 Center-of-Mass det. time= 9.5 min (819.7 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	83.50'	7,802 cf	82.25'W x 145.27'L x 3.50'H Field A 41,819 cf Overall - 15,813 cf Embedded = 26,006 cf x 30.0% Voids
#2A	84.00'	15,813 cf	Cultec R-300HD x 340 Inside #1 Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 340 Chambers in 17 Rows Cap Storage= 2.7 cf x 2 x 17 rows = 90.3 cf
		23,614 cf	Total Available Storage

Storage Group A created with Chamber Wizard

24057-Pr_Cond_Recharge_1P

Type III 24-hr Recharge Rainfall=0.54"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	83.50'	1.020 in/hr Exfiltration over Surface area
#2	Primary	84.66'	10.0" W x 2.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	86.00'	21.0" W x 10.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

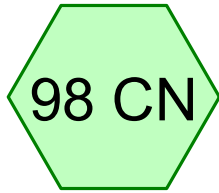
Discarded OutFlow Max=0.28 cfs @ 12.04 hrs HW=83.54' (Free Discharge)

↳ **1=Exfiltration** (Exfiltration Controls 0.28 cfs)

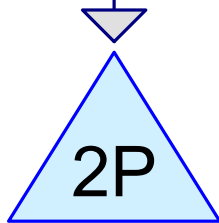
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.50' (Free Discharge)

↳ **2=Orifice/Grate** (Controls 0.00 cfs)

↳ **3=Orifice/Grate** (Controls 0.00 cfs)



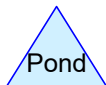
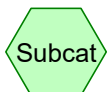
New Impervious (Pond
2P)



Pickleball Infiltration
Basin



Wetland



24057-Pr_Cond_Recharge_2P

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	Recharge	Type III 24-hr		Default	24.00	1	0.54	2

24057-Pr_Cond_Recharge_2P

Type III 24-hr Recharge Rainfall=0.54"

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 98 CN: New Impervious Runoff Area=16,105 sf 100.00% Impervious Runoff Depth=0.35"
Tc=6.0 min CN=98 Runoff=0.15 cfs 476 cf

Reach DP-1: Wetland Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond 2P: Pickleball Infiltration Basin Peak Elev=84.93' Storage=141 cf Inflow=0.15 cfs 476 cf
Discarded=0.03 cfs 476 cf Primary=0.00 cfs 0 cf Outflow=0.03 cfs 476 cf

Total Runoff Area = 16,105 sf Runoff Volume = 476 cf Average Runoff Depth = 0.35"
0.00% Pervious = 0 sf 100.00% Impervious = 16,105 sf

Summary for Subcatchment 98 CN: New Impervious (Pond 2P)

Runoff = 0.15 cfs @ 12.09 hrs, Volume= 476 cf, Depth= 0.35"
 Routed to Pond 2P : Pickleball Infiltration Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Type III 24-hr Recharge Rainfall=0.54"

Area (sf)	CN	Description
16,105	98	Paved parking, HSG B
16,105		100.00% Impervious Area

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

Summary for Reach DP-1: Wetland

Inflow Area = 16,105 sf, 100.00% Impervious, Inflow Depth = 0.00" for Recharge event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond 2P: Pickleball Infiltration Basin

Inflow Area = 16,105 sf, 100.00% Impervious, Inflow Depth = 0.35" for Recharge event
 Inflow = 0.15 cfs @ 12.09 hrs, Volume= 476 cf
 Outflow = 0.03 cfs @ 11.79 hrs, Volume= 476 cf, Atten= 83%, Lag= 0.0 min
 Discarded = 0.03 cfs @ 11.79 hrs, Volume= 476 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Reach DP-1 : Wetland

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Peak Elev= 84.93' @ 12.56 hrs Surf.Area= 1,090 sf Storage= 141 cf

Plug-Flow detention time= 37.6 min calculated for 475 cf (100% of inflow)
 Center-of-Mass det. time= 37.6 min (847.8 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.50'	750 cf	20.50'W x 53.18'L x 3.50'H Field A 3,816 cf Overall - 1,316 cf Embedded = 2,500 cf x 30.0% Voids
#2A	85.00'	1,316 cf	Cultec R-300HD x 28 Inside #1 Effective Size= 45.6"W x 30.0"H => 6.53 sf x 7.08'L = 46.2 cf Overall Size= 51.0"W x 30.0"H x 7.54'L with 0.46' Overlap 28 Chambers in 4 Rows Cap Storage= 2.7 cf x 2 x 4 rows = 21.2 cf
		2,066 cf	Total Available Storage

Storage Group A created with Chamber Wizard

24057-Pr_Cond_Recharge_2P

Type III 24-hr Recharge Rainfall=0.54"

Prepared by Activitas, Inc

Printed 7/2/2025

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Device	Routing	Invert	Outlet Devices
#1	Discarded	84.50'	1.020 in/hr Exfiltration over Surface area
#2	Primary	85.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	86.66'	12.0" W x 4.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Primary	87.75'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.03 cfs @ 11.79 hrs HW=84.54' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.50' (Free Discharge)

↑**2=Orifice/Grate** (Controls 0.00 cfs)

↑**3=Orifice/Grate** (Controls 0.00 cfs)

↑**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Mounding Analysis

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.

Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. **The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed** otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

Input Values

0.7065
0.370
26.18
62.010
41.125
3.000
14.000

R
Sy
K
x
y
t
hi(0)

Recharge (infiltration) rate (feet/day)
Specific yield, Sy (dimensionless, between 0 and 1)
Horizontal hydraulic conductivity, Kh (feet/day)*
1/2 length of basin (x direction, in feet)
1/2 width of basin (y direction, in feet)
duration of infiltration period (days)
initial thickness of saturated zone (feet)

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00
hours	days
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

16.680
2.680

h(max)
Δh(max)

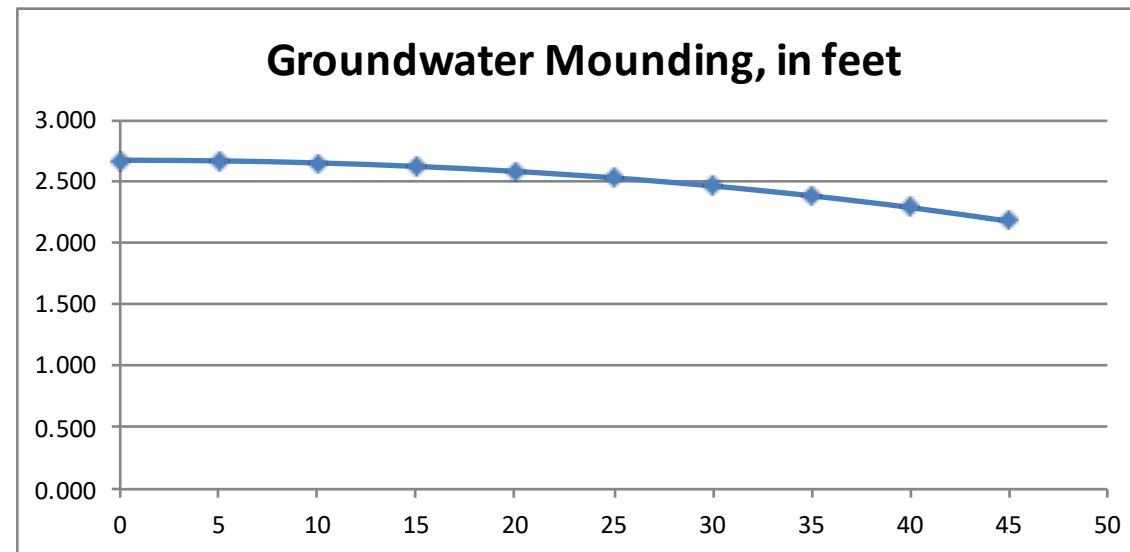
maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
maximum groundwater mounding (beneath center of basin at end of infiltration period)

Distance from
Ground-water center of basin in
Mounding, in x direction, in
feet feet

2.680	0
2.674	5
2.657	10
2.629	15
2.589	20
2.536	25
2.470	30
2.390	35
2.294	40
2.182	45



Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

This spreadsheet will calculate the height of a groundwater mound beneath a stormwater infiltration basin. More information can be found in the U.S. Geological Survey Scientific Investigations Report 2010-5102 "Simulation of groundwater mounding beneath hypothetical stormwater infiltration basins".

The user must specify infiltration rate (R), specific yield (Sy), horizontal hydraulic conductivity (Kh), basin dimensions (x, y), duration of infiltration period (t), and the initial thickness of the saturated zone (hi(0), height of the water table if the bottom of the aquifer is the datum). For a square basin the half width equals the half length (x = y). For a rectangular basin, if the user wants the water-table changes perpendicular to the long side, specify x as the short dimension and y as the long dimension. Conversely, if the user wants the values perpendicular to the short side, specify y as the short dimension, x as the long dimension. All distances are from the center of the basin. Users can change the distances from the center of the basin at which water-table aquifer thickness are calculated.

Cells highlighted in yellow are values that can be changed by the user. Cells highlighted in red are output values based on user-specified inputs. **The user MUST click the blue "Re-Calculate Now" button each time ANY of the user-specified inputs are changed** otherwise necessary iterations to converge on the correct solution will not be done and values shown will be incorrect. Use consistent units for all input values (for example, feet and days)

use consistent units (e.g. feet & days **or** inches & hours)

Input Values

0.7065
0.300
100.00
26.590
10.250
3.000
7.000

R
Sy
K
x
y
t
hi(0)

Recharge (infiltration) rate (feet/day)
Specific yield, Sy (dimensionless, between 0 and 1)
Horizontal hydraulic conductivity, Kh (feet/day)*
1/2 length of basin (x direction, in feet)
1/2 width of basin (y direction, in feet)
duration of infiltration period (days)
initial thickness of saturated zone (feet)

Conversion Table

inch/hour	feet/day
0.67	1.33
2.00	4.00
hours	days
36	1.50

In the report accompanying this spreadsheet (USGS SIR 2010-5102), vertical soil permeability (ft/d) is assumed to be one-tenth horizontal hydraulic conductivity (ft/d).

8.938
1.938

h(max)
Δh(max)

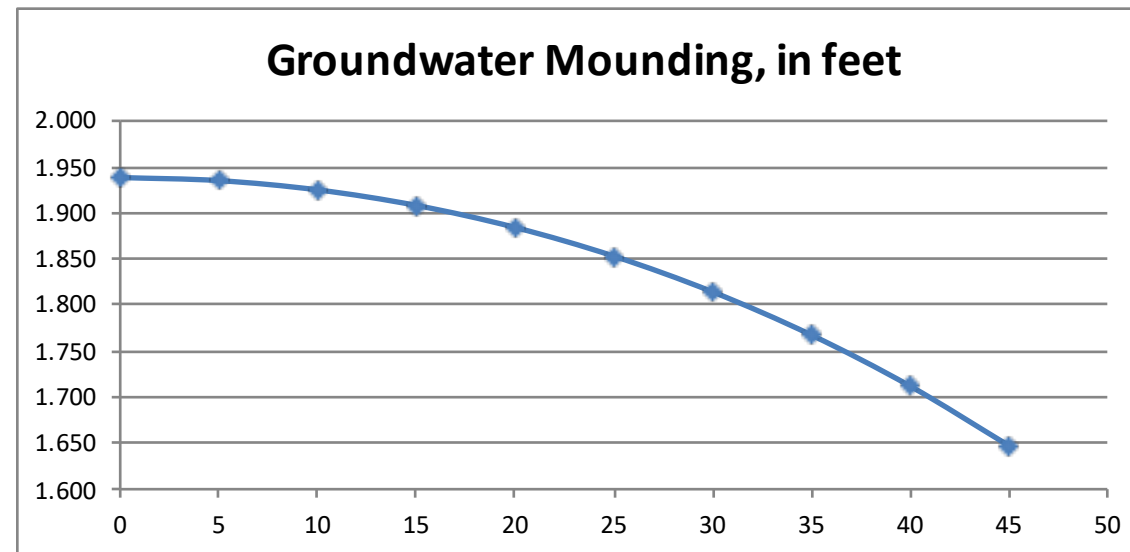
maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
maximum groundwater mounding (beneath center of basin at end of infiltration period)

Distance from
Ground-water center of basin in
Mounding, in x direction, in
feet feet

1.938	0
1.935	5
1.925	10
1.908	15
1.884	20
1.853	25
1.814	30
1.767	35
1.712	40
1.647	45



Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

TSS Removal Calculations

TOTAL SUSPENDED SOLIDS (TSS) REMOVAL WORKSHEET

Project: Reading Center for Active Living and Communit Pickleball Facility

Date: July 7, 2025

Revised:

Project No: 24057

Prepared By: BJM

Location: Reading, MA

Checked By: MEB

Legend:

Discharge Location: DP-1

BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)	F TSS Removal Rate
Street Sweeping - 10%	0.10	1.00	0.10	0.90	10%
Deep Sump and Hooded Catch Basin	0.25	0.90	0.23	0.68	33%
Water Quality Unit	0.75	0.68	0.51	0.17	83%
Infiltration Basin	0.80	0.17	0.14	0.03	97%

Total TSS Removal = 97%

TOTAL SUSPENDED SOLIDS (TSS) REMOVAL WORKSHEET

Project: Reading Center for Active Living and Communit Pickleball Facility

Date: July 7, 2025

Revised:

Project No: 24057

Prepared By: BJM

Location: Reading, MA

Checked By: MEB

Legend:

Discharge Location: DP-1

BMP	B TSS Removal Rate	C Starting TSS Load	D Amount Removed (BxC)	E Remaining Load (C-D)	F TSS Removal Rate
Street Sweeping - 10%	0.10	1.00	0.10	0.90	10%
Deep Sump and Hooded Catch Basin	0.25	0.90	0.23	0.68	33%
Infiltration Basin	0.80	0.68	0.54	0.14	87%
	0.00	0.14	0.00	0.14	87%

Total TSS Removal = 87%

Phosphorus Removal Calculations

Phosphorous Removal Calculations

	Surface Type	Soil HSG	Area (sf)	P Load Export Rate (lb/acre/yr)	P Load (lb/yr)
EXISTING CONDITION	EX-1				
	Impervious	B*	11,975	1.78	0.49
	Grass	B*	11,833	0.03	0.01
	Bare Soil/Gravel	B*	0	1.52	0.00
	Wooded	B*	154,438	0.13	0.46
				TOTAL:	0.96

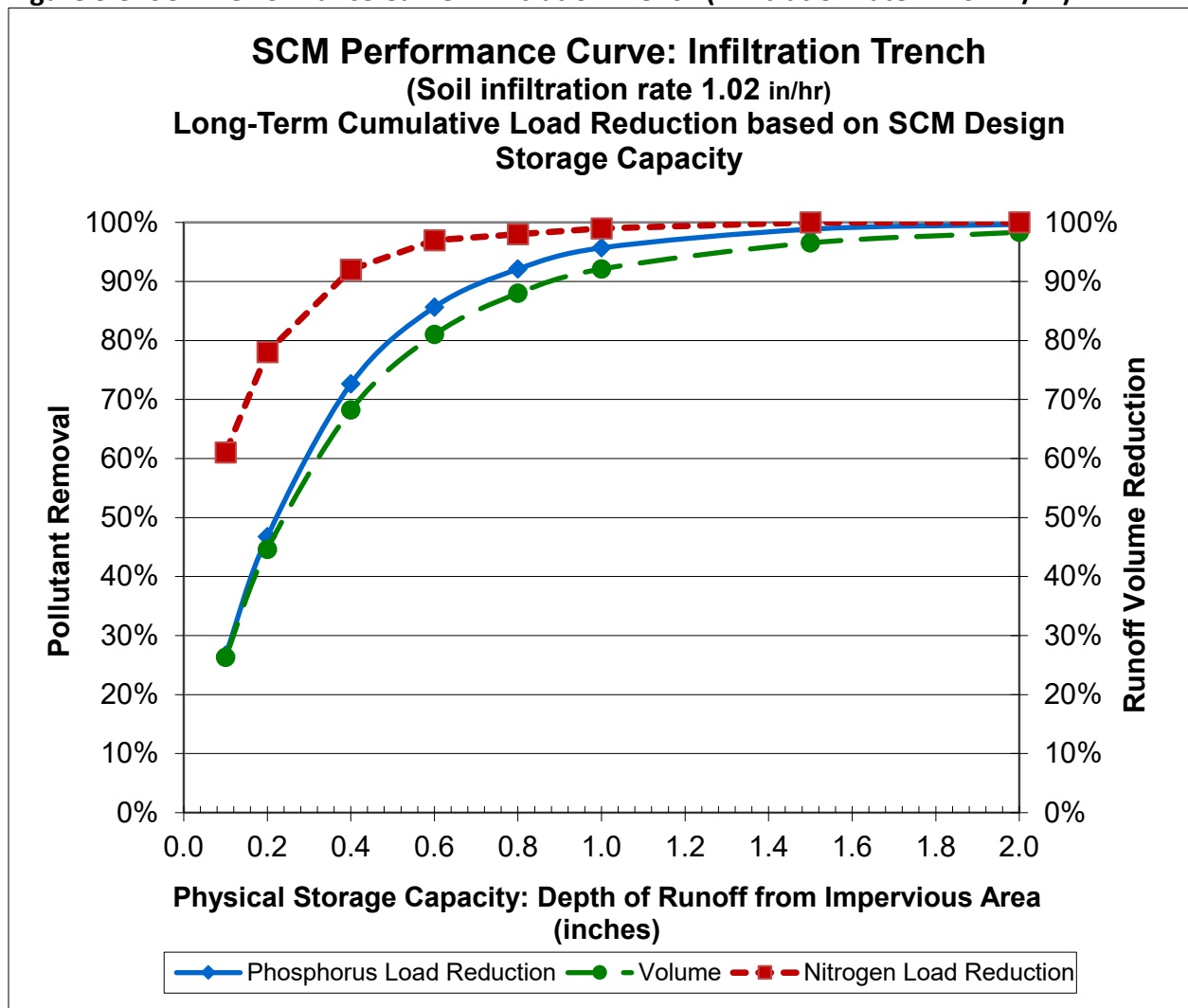
	Surface Type	Soil HSG	Area (sf)	P Load Export Rate (lb/acre/yr)	P Load (lb/yr)
PROPOSED CONDITIONS	PR-10				
	Impervious	B*	78,975	1.78	3.23
	Grass	B*	13,598	0.03	0.01
	Bare Soil/Gra	B*	0	1.52	0.00
	Wooded	B*	0	0.13	0.00
				TOTAL:	3.24
	PR-11				
	Impervious	B*	16,105	1.78	0.66
	Grass	B*	147	0.03	0.00
	Bare Soil/Gra	B*	0	1.52	0.00
	Wooded	B*	0	0.13	0.00
				TOTAL:	0.66
	PR-12				
	Impervious	B*	60	1.78	0.00
	Grass	B*	43,243	0.03	0.03
Bare Soil/Gra	B*	4,401	1.52	0.15	
Wooded	B*	21,715	0.13	0.06	
			TOTAL:	0.25	
			TOTAL PR:	0.34	

FINAL RESULTS	
<p>The TLP from PR-10 is expected to be exfiltrated in the water detention area 1P in a rainfall event with an average of 2.0" of runoff from impervious areas, and PR-11 is expected to be exfiltrated in the water detention area 2P in a rainfall event with average of 0.6" of rainfall. Thus, pond 1P is not expected to discharge water to DP-1 and Pond 2P has a cumulative phosphorus load reduction of 86%. Please see the TLP reduction calculation.</p>	
TLP Reduction =	64.2%

Table 3- 10: Infiltration Trench (IR = 1.02 in/hr) SCM Performance Table

Infiltration Trench (IR = 1.02 in/hr) SCM Performance Table: Long-Term Phosphorus & Nitrogen Load Reduction								
SCM Capacity: Depth of Runoff from Impervious Area (inches)	0.1	0.2	0.4	0.6	0.8	1.0	1.5	2.0
Runoff Volume Reduction	26.3%	44.6%	68.2%	81.0%	88.0%	92.1%	96.5%	98.3%
Cumulative Phosphorus Load Reduction	27%	47%	73%	86%	92%	96%	99%	100%
Cumulative Nitrogen Load Reduction	61%	78%	92%	97%	98%	99%	100%	100%

Figure 3-5: SCM Performance Curve: Infiltration Trench (infiltration rate = 1.02 in/hr)



Operations & Maintenance Plan (O&M) – DRAFT

(Refer to separate attachment)

Stormwater Pollution Prevention Plan (SWPPP) – DRAFT

(Refer to separate attachment)