NOTICE OF PUBLIC HEARING
SUDBURY CONSERVATION COMMISSION
Monday, April 29, 2024 at 7:00 PM
Virtual Meeting

The Sudbury Conservation Commission will hold a public hearing to review the Notice of Intent filing to renovate the existing site into a childcare facility. Work within jurisdiction includes renovating the parking lot, replacing the septic system, and installing a sidewalk within the 100-foot Buffer Zone and 200-foot Riverfront Area, pursuant to the Wetlands Protection Act and Sudbury Wetlands Administration Bylaw, at 225 Boston Post Road, Sudbury, MA. Matt Taylor, Applicant. The hearing will be held on Monday, April 29, 2024 at 7:00 pm, via remote participation.

Please see the Conservation Commission web page for further information.

https://sudbury.ma.us/conservationcommission/meeting/conservation-commission-meeting-monday-april-29-2024/

SUDBURY CONSERVATION COMMISSION
4/10/24

STONEFIELD

April 1, 2024

Lori Capone, Conservation Coordinator
Town of Sudbury Conservation Commission
275 Old Lancaster Road
Sudbury, MA 01776

RE: Notice of Intent Application
Proposed Primrose School Child Day Care Facility
Parcel K10-0009 & K10-0040
225 Boston Post Road
Town of Sudbury, Middlesex County, Massachusetts

Ms. Capone,

Stonefield Engineering and Design is pleased to submit a Notice of Intent Application for your review for the above referenced project. Please find the following items enclosed:

ITEM DESCRIPTION	DATED	COPIES	PREPARED BY
Project Narrative	04-01-2024	2	Stonefield Engineering & Design
Notice of Intent Application	04-01-2024	1	Stonefield Engineering & Design
NOI Fee Transmittal Form	04-01-2024	1	Stonefield Engineering & Design
Certified Abutters List	03-08-2024	2	Stonefield Engineering & Design
Project Location Maps	08-28-2023	2	Stonefield Engineering & Design
Land Development Plans	04-01-2024	2	Stonefield Engineering & Design
Stormwater Management Report	04-01-2024	2	Stonefield Engineering & Design
Stormwater Operations & Maintenance Plan	04-01-2024	2	Stonefield Engineering & Design
Earthwork Exhibit	04-01-2024	2	Stonefield Engineering & Design
Site Photos	--	2	Stonefield Engineering & Design
Town ConCom Wetland Bylaw Fee ($500.00)	04-08-2024	1	Stonefield Engineering & Design
Town Portion of NOI Fee ($637.50)	04-08-2024	1	Stonefield Engineering & Design
Copy of MassDEP Portion of NOI Fee ($612.50)	04-08-2024	1	Stonefield Engineering & Design
MassDEP Submission Receipt	04-09-2024	1	MassDEP

Should you have any questions regarding the submission items above please do not hesitate to contact our office.

Best regards,

Joshua H. Kline, PE
Stonefield Engineering and Design, LLC
Via FedEx Z:\Boston\BOS\2023\BOS-230051 ADA Architects - 225 Boston Post Road, Sudbury, MA\Correspondence\Outgoing\Municipal\2024-03-18_ConCom Submission Cover Letter.docx

STONEFIELD

NOTICE OF INTENT APPLICATION
PRIMROSE SCHOOL FRANCHISING COMPANY

PROPOSED CHILDCARE FACILITY
PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

PREPARED FOR:
PRIMROSE SCHOOL FRANCHISING COMPANY
21 CONKLIN AVENUE
WARREN, NEW JERSEY 07059

PREPARED BY:
STONEFIELD ENGINEERING & DESIGN, LLC
120 WASHINGTON STREET, SUITE 201
SALEM, MASSACHUSETTS

JOSH KLINE, PE
MA PE LICENSE #53936

STONEFIELDENG.COM
617.203.2073 T. 201.340.4472 F.

STONEFIELD

April 1, 2024

Town of Sudbury Conservation Commission
275 Old Lancaster Road
Sudbury, MA 01776

RE: Notice of Intent Application
Primrose School Childcare Center
Parcel ID: K10-0009 & K10-0040
225 Boston Post Road
Town of Sudbury, Middlesex County, Massachusetts

Commission Members:

Stonefield Engineering and Design, on behalf of the Applicant, Primrose School Franchising Company, has prepared this Notice of Intent Application for the redevelopment of Parcel K10-0009 and K10-0040, commonly known as 225 Boston Post Road, Sudbury, MA (Project Site). The project site is 214,118 SF (4.92 acres), the extent of land disturbance is 35,733 SF (0.72 acres), and 4,493 SF (0.10 acres) of impervious surface will be removed from the project site as a result of the development. The overall analysis area was modeled as 40,912 SF (0.94 acres).

The development is proposed to accommodate the renovation of the existing religious temple structure into a Childcare Facility. Additional improvements include children's playground areas with associated play equipment, parking area and pavement remediation, septic and other utility improvements, and stormwater infrastructure. Due to the reduction of impervious surface onsite, the development is subject to the Massachusetts DEP Stormwater Management Standards for a Redevelopment Project. The proposed development will consist of the removal of a portion of the parking area to accommodate children play areas and associated equipment, repair and restriping of parking areas to remain, septic system improvements, landscaping, and improvements to the existing stormwater management system.

A large portion of the rear of the property is undeveloped wooded, wetland area, and is a designated conservation area. This portion of the property shall remain undisturbed with the proposed improvements. A 100-foot wetland buffer encroaches into the southern limits of the proposed development area, originating from wetlands within the conservation land. Disturbance within this buffer area shall be limited to the removal of parking areas to be replaced with vegetation, the removal of an existing nonconforming shed, and the construction of a pervious paver emergency egress sidewalk. The proposed pathway will be constructed with permeable pavers rather than a concrete or asphalt material and is essential to provide safe egress from each of the classrooms at the rear of the building in the event of an emergency. There will be an overall reduction of approximately 450 SF of impervious area within the 100-foot wetland buffer, ultimately improving the condition of the regulated area.

Additional regulated areas within the development include a 200-foot Riverfront Area, which encroaches into the site from an Unnamed Tributary to Wash Brook. Approximately 5,755 SF (0.13 AC) of pavement restriping, curb replacement and grading shall occur within the 20-foot riverfront area, and disturbance is limited the areas of the site that are developed under existing conditions, and the proposed improvements are confined

to the limits of the existing developed land. Improvements in the riverfront area are limited to the removal and replacement of the onsite septic system and the restoration of existing parking areas. There shall be no disturbance within the 100-foot riverfront area. There will be a minor reduction of impervious coverage within the riverfront area of approximately 115 SF. There are no anticipated adverse impacts to the regulated areas and the development will be an overall improvement to the area.

Please find enclosed with this Application the following supporting Documentation:

- WPA Form 3 Notice of Intent Application
- NOI Fee Transmittal Form
- Certified List of Abutters
- Land Development Plans, Prepared by Stonefield Engineering & Design
- Stormwater Management Report, Prepared by Stonefield Engineering & Design
- Stormwater Operations & Maintenance Plan, Prepared by Stonefield Engineering & Design
- Earthwork Exhibit, Prepared by Stonefield Engineering & Design

The Applicant appreciates the opportunity to submit this Application to the Commission and look forward to presenting the project at the Public Meeting. Should you have any questions or require any additional information, please do not hesitate to contact our office.

Best regards,

Joshua H. Kline, PE
Stonefield Engineering & Design, LLC
Via FedEx

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

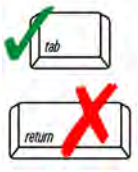
Provided by MassDEP:

MassDEP File Number

Document Transaction Number

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):

a. Street Address	b. City/Town	c. Zip Code
225 Boston Post Road	Sudbury	01776

Latitude and Longitude:

d. Latitude	e. Longitude
42.36117	71.40418

f. Assessors Map/Plat Number	g. Parcel /Lot Number
K10	9 & 40

2. Applicant:

a. First Name	b. Last Name
Matt	Taylor

c. Organization: Primrose School Franchising Company

d. Street Address: 21 Conklin Lane

e. City/Town	f. State	g. Zip Code
Warren	NJ	07059

h. Phone Number	i. Fax Number	j. Email Address
(617) 901-9015		MTaylor@PrimroseSchools.com

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

a. First Name	b. Last Name

c. Organization: Congregation B'Nai Torah Inc

d. Street Address: PO Box 273

e. City/Town	f. State	g. Zip Code
Sudbury	MA	01776

h. Phone Number	i. Fax Number	j. Email address

4. Representative (if any):

a. First Name	b. Last Name
Joshua	Kline

c. Company: Stonefield Engineering & Design

d. Street Address: 120 Washington Street, Suite 201

e. City/Town	f. State	g. Zip Code
Salem	MA	01970

h. Phone Number	i. Fax Number	j. Email address
(617) 203-2076	(201) 340-4472	jkline@stonefieldeng.com

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

a. Total Fee Paid	b. State Fee Paid	c. City/Town Fee Paid
$1,250	$612.50	$637.50

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

Provided by MassDEP:

MassDEP File Number

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A. General Information (continued)

6. General Project Description:

Proposed renovation of existing Temple structure into a proposed Childcare Facility. Additional site improvements include children's playground areas with associated equipment, parking area and pavement remediation, septic and other utility upgrades and stormwater infrastructure.

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:

a. County

b. Certificate # (if registered land)

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.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

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Provided by MassDEP:

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

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

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Bank	1. linear feet	2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet	
	2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☒ Riverfront Area	Unnamed Tributary to Wash Brook (Inland) 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: 102,170 SF (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.
5,760 SF	0 SF	5,760 SF

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.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

City/Town

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

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

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

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ 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. ☐ 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

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 3 – Notice of Intent
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

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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

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

   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

   08/01/2021
   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*

      1. ☐ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

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

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

   (a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ☐ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see https://www.mass.gov/ma-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.

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

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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:

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

North Shore - Plymouth to New Hampshire border:

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).

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

City/Town

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

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

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.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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Provided by MassDEP:

MassDEP File Number

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City/Town

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.

Land Development Plans	
a. Plan Title	
Stonefield Engineering & Design	Joshua Kline, PE #53936
b. Prepared By	c. Signed and Stamped by
04/01/2024	1" = 2-'
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:

7731	04/08/2024
2. Municipal Check Number	3. Check date
7727	04/08/2024
4. State Check Number	5. Check date
Stonefield Engineering & Design	
6. Payor name on check: First Name	7. Payor name on check: Last Name

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

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

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

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	2. Date: 04/01/2024
3. Signature of Property Owner (if different)	4. Date
5. Signature of Representative (if any)	6. Date: 04/01/2024

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.

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:

a. Street Address	b. City/Town
225 Boston Post Road	Sudbury
c. Check number	**d. Fee amount**
7727 (State) / 7731 (Town)	$612.50 (State) / $637.50 (Town)

2. Applicant Mailing Address:

a. First Name	b. Last Name
Joshua	Kline

c. Organization: Stonefield Engineering and Design

d. Mailing Address: 120 Washington Street, Suite 201

e. City/Town	f. State	g. Zip Code
Salem	MA	01970

h. Phone Number	i. Fax Number	j. Email Address
201-340-4468	201-340-4472	jkline@stonefieldeng.com

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

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

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.

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
Parking Lot (within RFA)	1	$500.00	$750.00
Removal of Parking Area to be Replaced with Vegetation (100' Wetland Buffer; NOT within RFA)	1	$500.00	$500.00

Step 5/Total Project Fee: $1,250

Step 6/Fee Payments:

Total Project Fee:	$1,250 (a. Total Fee from Step 5)
State share of filing Fee:	$612.50 (b. 1/2 Total Fee **less $**12.50)
City/Town share of filling Fee:	$637.50 (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.

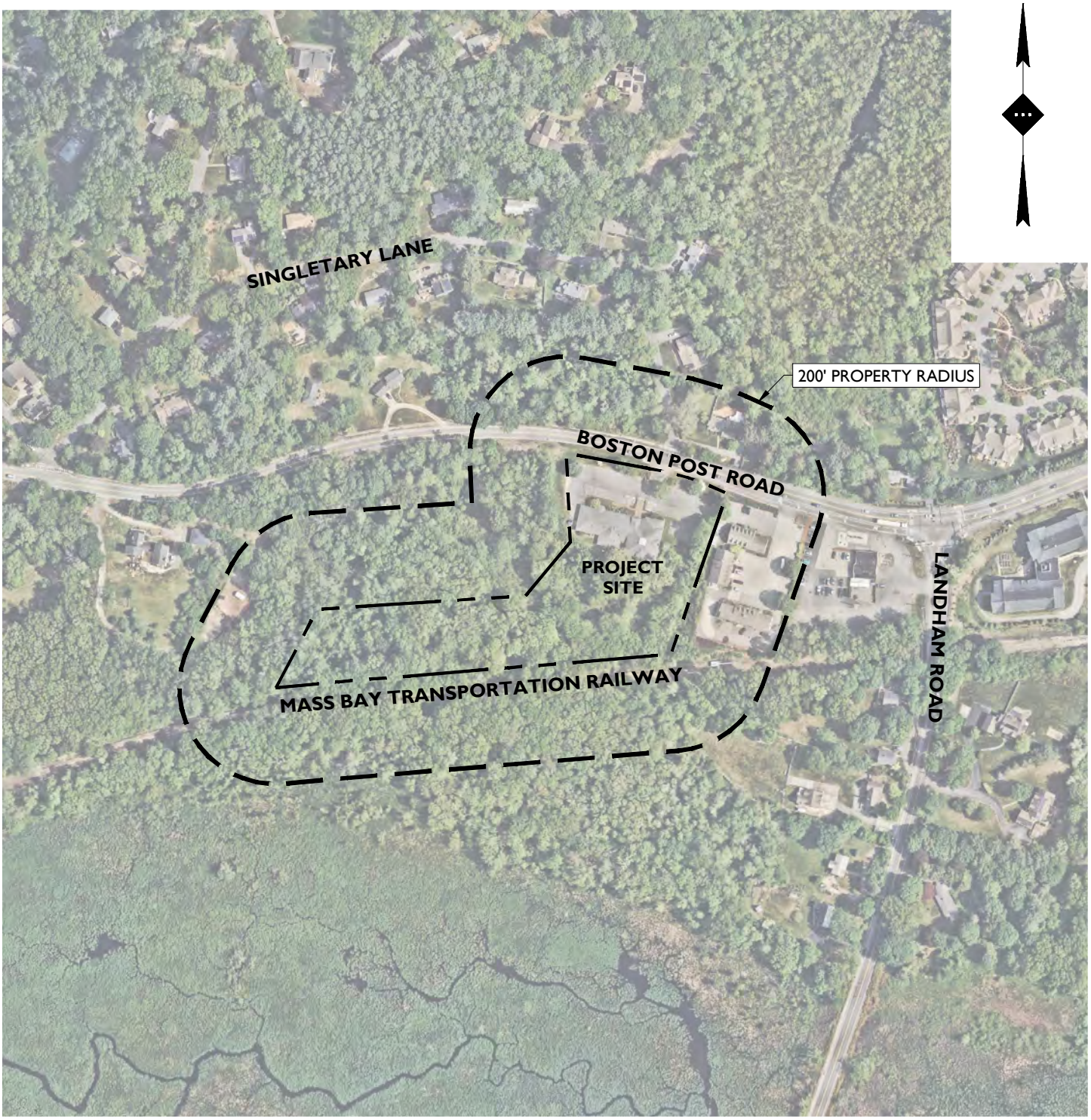
Department of Environmental Protection
Box 4062
Boston, MA 02211

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.)

Subject Abutters 100'	K10-0040	CONGREGATION B'NAI TORAH INC					
	K10-0009	CONGREGATION B'NAI TORAH INC					
abutters_id_field	abutters_owner1	abutters_owner2	abutters_address	abutters_town	abutters_state	abutters_zip	abutters_location
K09-0063	GEISINGER ELIZABETH		86 WALNUT ST	NATICK	MA	01760	BOSTON POST RD
K09-0067	MASS BAY TRANSPORTATION AUTH		10 PARK PLACE	BOSTON	MA	02110	BOSTON POST RD
K10-0004	SAFAR GASTON		132 NEWBURY ST	BOSTON	MA	02116	LANDHAM RD
K10-0005	HAN XU		271 LANDHAM ROAD	SUDBURY	MA	01776	271 LANDHAM RD
K10-0010	BROOKSIDE CUSTOM HOMES INC		416 BOSTON POST RD	SUDBURY	MA	01776	239 BOSTON POST RD
K10-0020	BENDORIS K EILEEN TRS	BOSTON POST REALTY TRUST	214 BOSTON POST RD	SUDBURY	MA	01776	214 BOSTON POST RD
K10-0021	MCKEOWN ADAM & MOLLY		222 BOSTON POST RD	SUDBURY	MA	01776	222 BOSTON POST RD
K10-0024	OLSEN FAMILY	PARTNERSHIP IV LTD	P.O. BOX 2050	LECANTO	FL	34460	GREEN HILL RD
K10-0038	GEISINGER ELIZABETH		86 WALNUT ST	NATICK	MA	01760	BOSTON POST RD
K10-0041	TOWN OF SUDBURY	CONSERVATION	278 OLD SUDBURY ROAD	SUDBURY	MA	01776	LANDHAM RD
K10-0007-0-1A	EMMA LOU LLC		1 GLEN PINES WAY	MILLIS	MA	02054	215-A BOSTON POST RD UNIT 1
K10-0007-0-1B	HOWARD FARM LLC		6 HOWARD FARM RD	SHARON	MA	02067	215-B BOSTON POST RD UNIT 1
K10-0007-0-1C	ORR CHARLES W & CAROLINA TRS	SPEER REALTY TRUST	365 BOSTON POST RD 138	SUDBURY	MA	01776	215-C BOSTON POST RD UNIT 1
K10-0007-0-2B	MICHELS KARL H & HILDEGARD M	TRUSTEES MICHELS FAMILY TRUST	215 BOSTON POST RD	SUDBURY	MA	01776	215-B BOSTON POST RD UNIT 2
K10-0007-0-2C	ORR CHARLES W & CAROLINA TRS	SPEER REALTY TRUST	365 BOSTON POST RD 138	SUDBURY	MA	01776	215-C BOSTON POST RD UNIT 2
K10-0109	LUCENTE DIANE E		17 SINGLETARY LN	SUDBURY	MA	01776	17 SINGLETARY LN
K10-0110	GEORGE PETER	C/O CHARLES GEORGE	169 PORTSMOUTH ST UNIT 114	CONCORD	NH	03301	BOSTON POST RD
K10-0111	GEORGE PETER	C/O CHARLES GEORGE	169 PORTSMOUTH ST UNIT 114	CONCORD	NH	03301	BOSTON POST RD
K09-5000	MASS BAY TRANSPORTATION		10 PARK PLAZA	BOSTON	MA	02116	RAILWAY

Cynthia Gray
assessor
3/18/2024



AERIAL MAP

300' 0' 300' 600'

GRAPHIC SCALE IN FEET

1"= 300'

SOURCE: AERIAL MAP RETRIEVED FROM NEARMAP AUGUST 25, 2023

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	QC
CHECKED BY:	JK
DATE:	08/28/2023
SCALE:	1" = 300'
PROJECT ID:	BOS-230051

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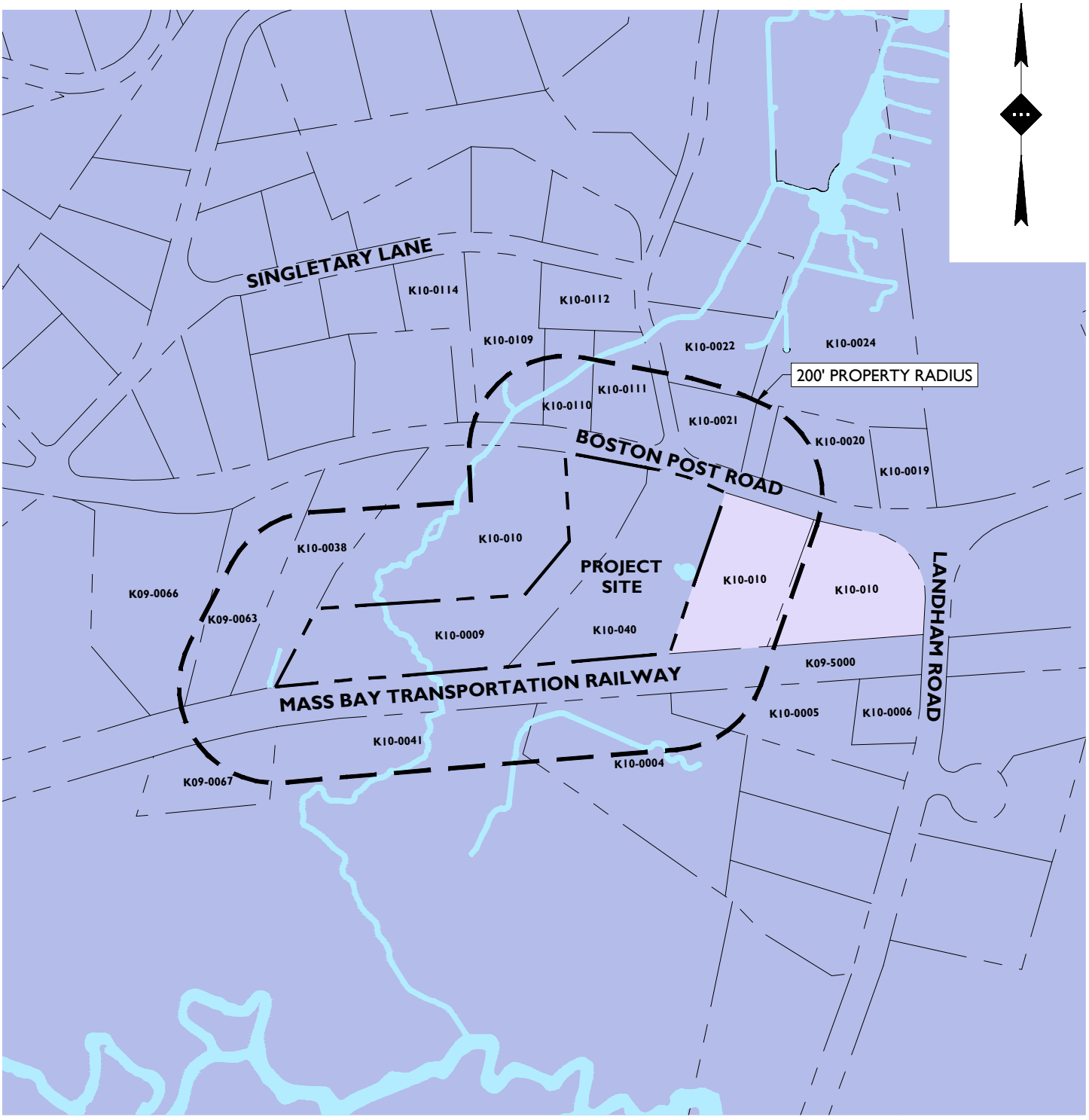

ZONING LEGEND

RES A - RESIDENTIAL A

BD - BUSINESS

WATERBODY

TAX & ZONING MAP

300' 0' 300' 600'

GRAPHIC SCALE IN FEET

1"= 300'

SOURCE: TOWN OF SUDBURY GIS MAPPING, RETRIEVED AUGUST 28, 2023

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	QC
CHECKED BY:	JK
DATE:	08/28/2023
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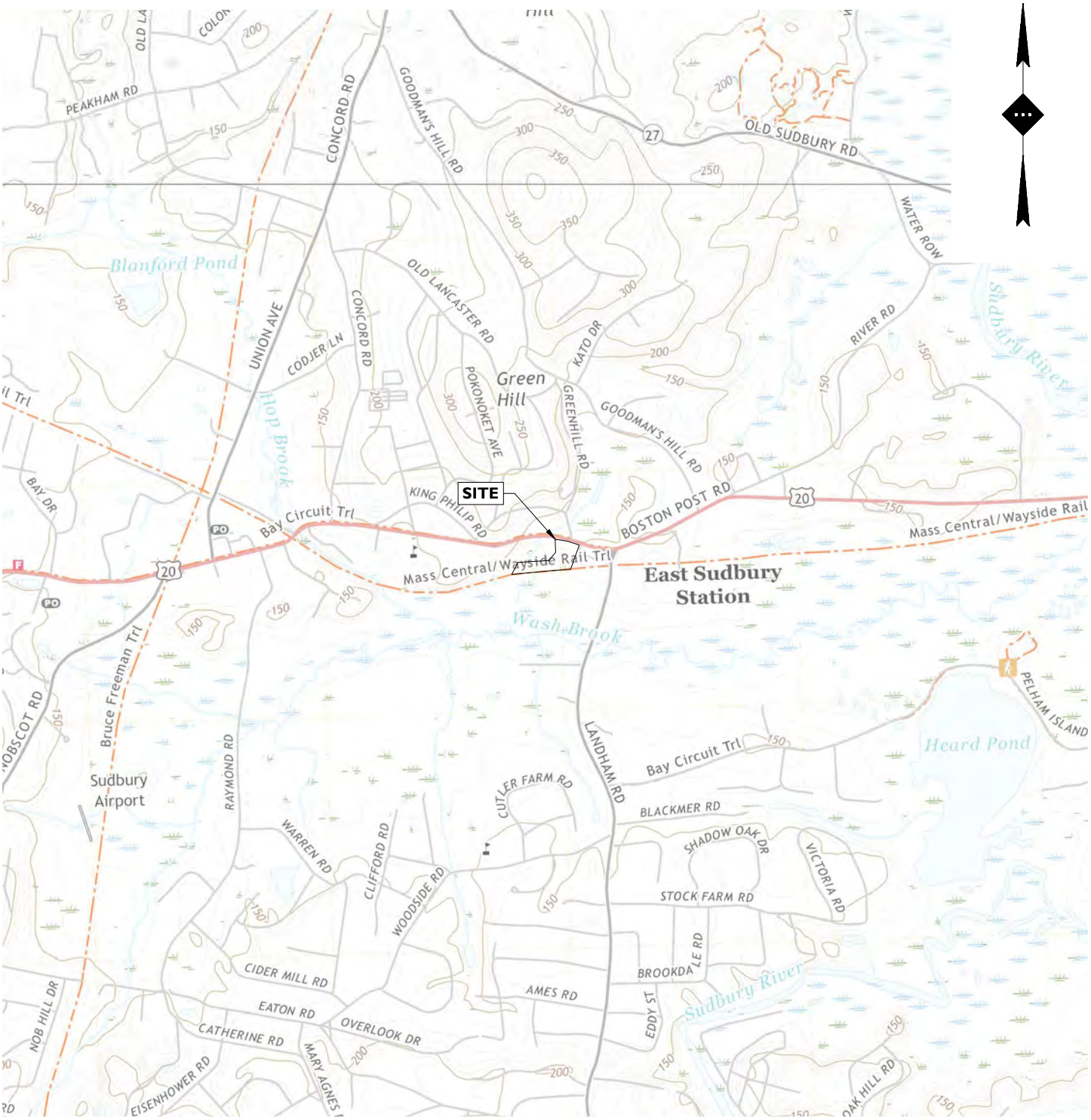

USGS QUADRANGLE MAP

2000' 0' 2000' 4000'

GRAPHIC SCALE IN FEET

1"= 2000'

SOURCE: USGS QUADRANGLE MAPS 7.5 SERIES MAYNARD & FRAMINGHAM, MASSACHUSETTS 2021

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	QC
CHECKED BY:	JK
DATE:	08/28/2023
SCALE:	1" = 2,000'
PROJECT ID:	BOS-230051

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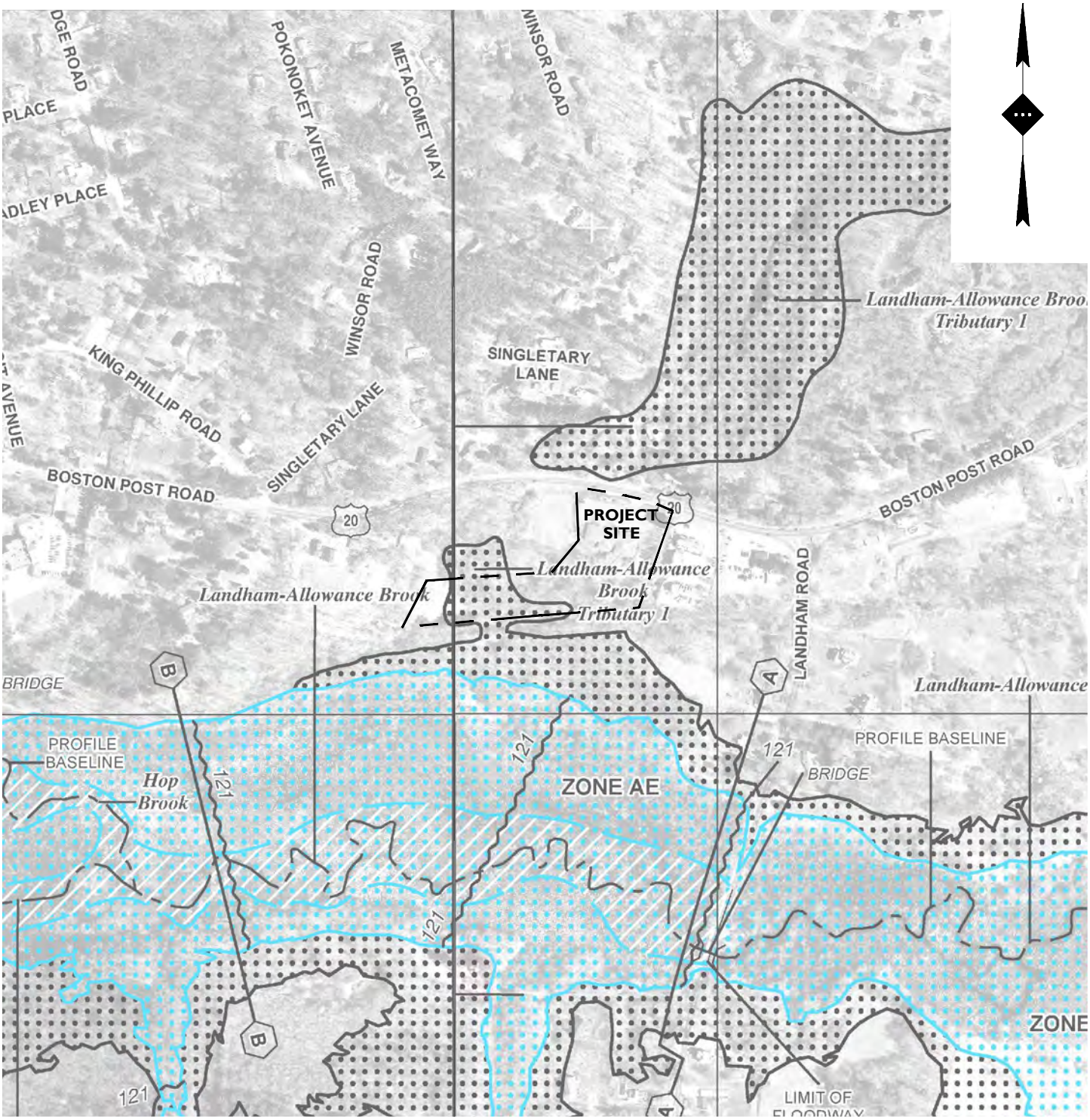

EFFECTIVE FEMA FLOOD INSURANCE RATE MAP

500' 0' 500' 1000'

GRAPHIC SCALE IN FEET

1"= 500'

SOURCE: FLOOD INSURANCE RATE MAP, MIDDLESEX COUNTY, MA, REVISED JULY 7, 2014

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	QC
CHECKED BY:	JK
DATE:	08/28/2023
SCALE:	1" = 500'
PROJECT ID:	BOS-230051

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LEGEND

ESTIMATED HABITATS OF RARE WILDLIFE

NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM MAP

500' 0' 500' 1000'

GRAPHIC SCALE IN FEET

1"= 500'

SOURCE: PRIORITY AND ESTIMATED HABITAT MAPS, NATURAL HERITAGE ATLAS, AUGUST 1, 2021, INTERACTIVE MAP VIEWER

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	AB
CHECKED BY:	JK
DATE:	03/14/2024
SCALE:	1" = 500'
PROJECT ID:	BOS-230051

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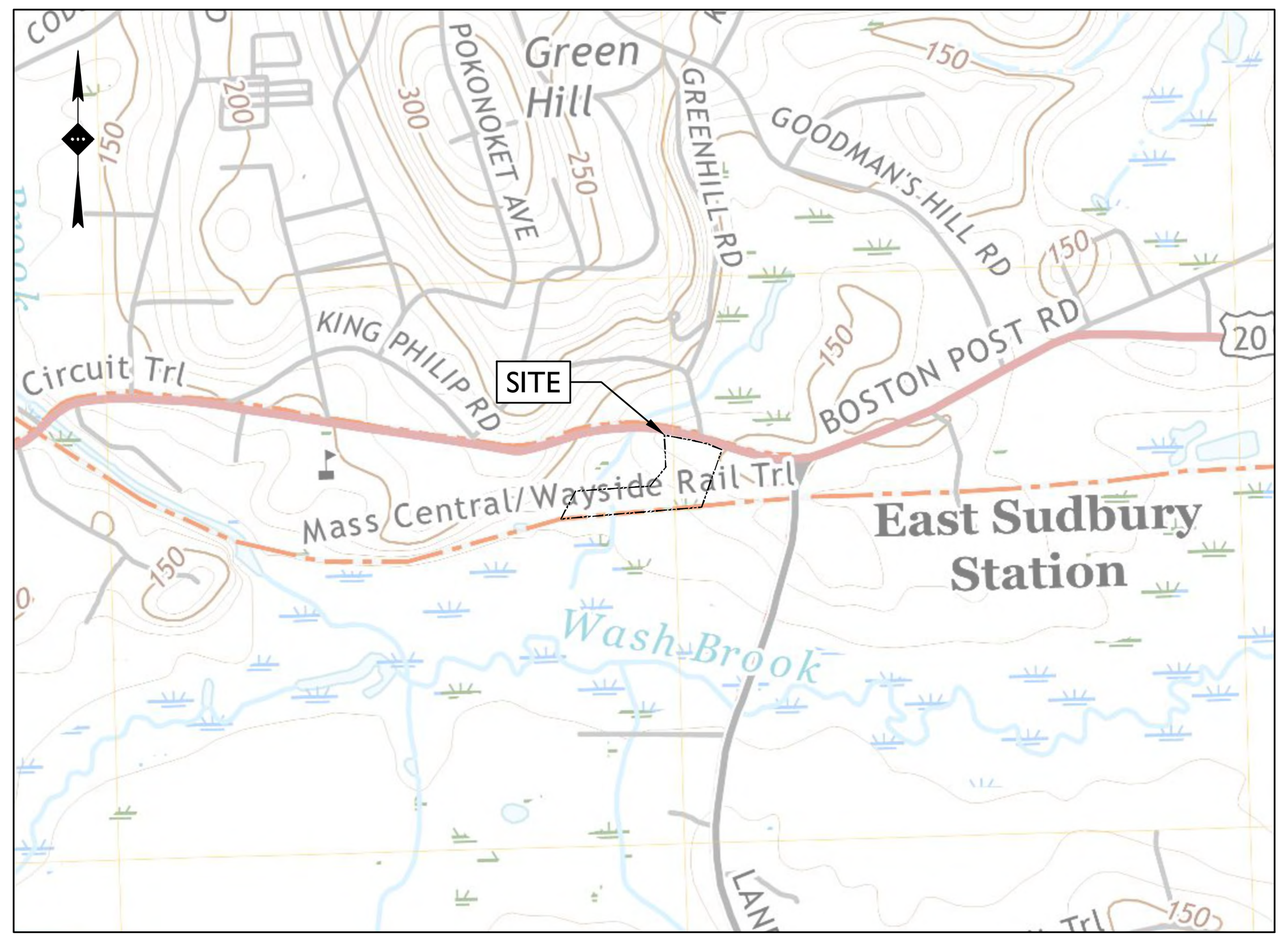
LAND DEVELOPMENT PLANS

FOR

PRIMROSE SCHOOL FRANCHISING COMPANY

PROPOSED CHILD DAY CARE FACILITY

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY, MIDDLESEX COUNTY, MASSACHUSETTS



SOURCE: USGS QUADRANGLE MAP 7.5 SERIES MAYNARD & FRAMINGHAM, MA, DATED 2021

LOCATION / KEY MAP

SCALE: 1" = 1,000'±

APPLICANT

PRIMROSE SCHOOL FRANCHISING COMPANY
21 CONKLIN LANE
WARREN, NJ 07059
MTAYLOR@PRIMROSESCHOOLS.COM

OWNER

CONGREGATION B`NAI TORAH INC
PO BOX 273
SUDBURY , MA 01776

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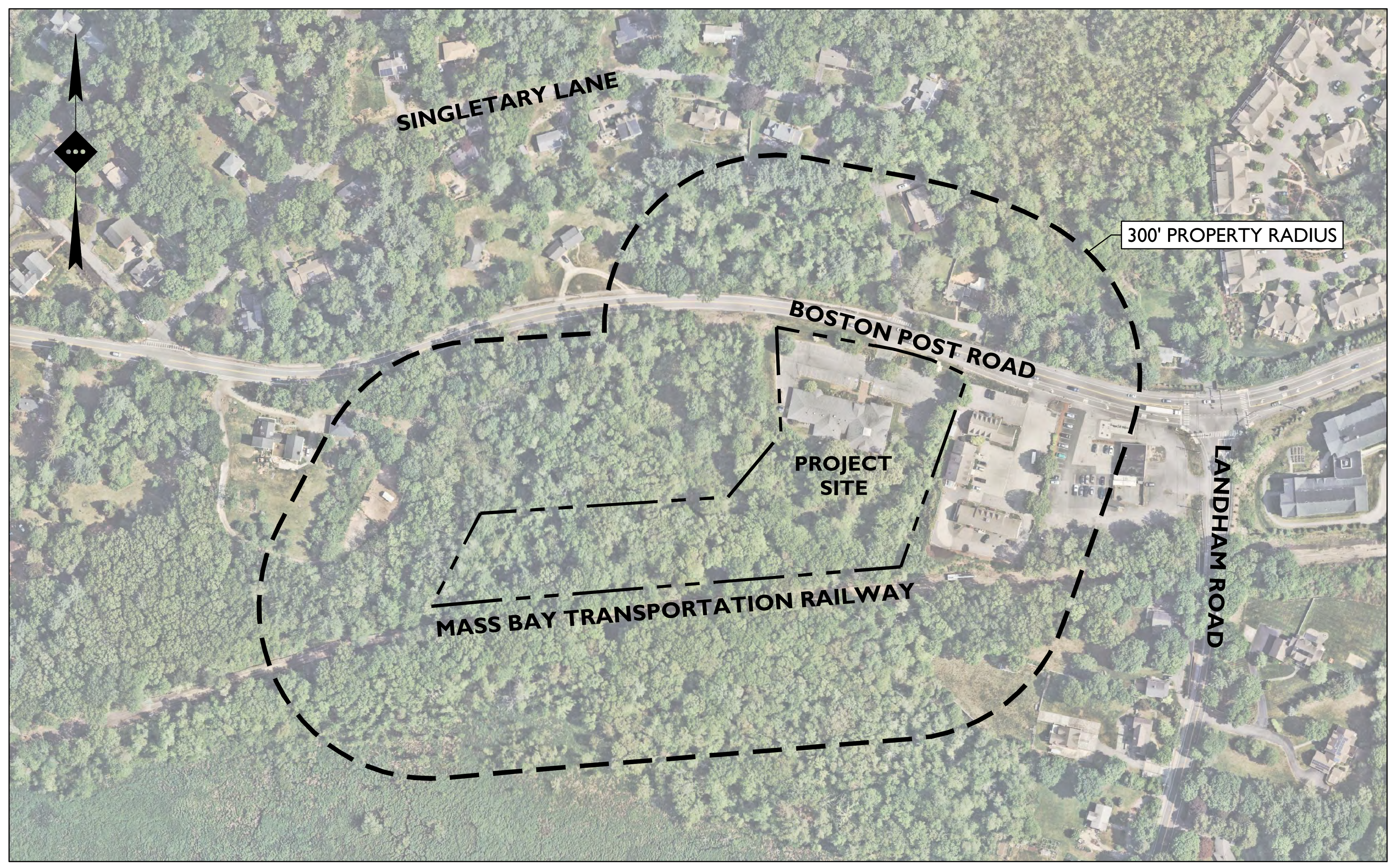
ZONING LEGEND

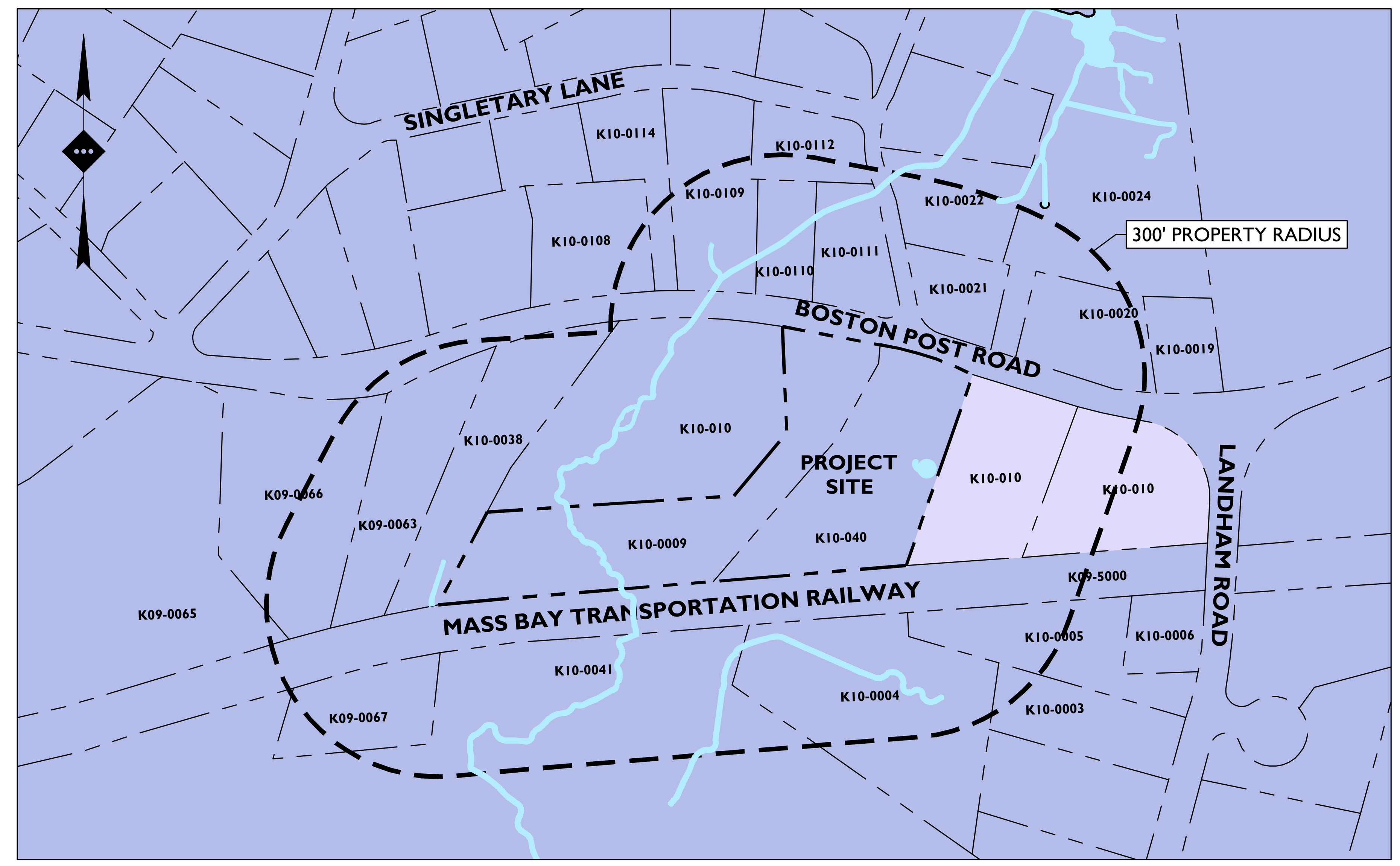
▨	RES A - SINGLE RESIDENCE A
▨	WATER BODY
▨	BD - BUSINESS



SOURCE: NEARMAP RETRIEVED AUGUST 25, 2023

AERIAL MAP

SCALE: 1" = 200'±



SOURCE: TOWN OF SUDBURY GIS MAPPING, RETRIEVED AUGUST 28, 2023

TAX AND ZONING MAP

SCALE: 1" = 200'±

TOWN OF SUDBURY 300' PROPERTY OWNERS LIST

PARCEL ID	OWNER	OWNER'S ADDRESS
K09-0063	GEISINGER ELIZABETH	86 WALNUT ST, NATICK, MA, 01760
K09-0066	GEISINGER ELIZABETH	86 WALNUT ST, NATICK, MA, 01760
K09-0067	MASS BAY TRANSPORTATION AUTH	10 PARK PLACE, BOSTON, MA, 02110
K10-0004	SAFAR GASTON	132 NEWBURY ST, BOSTON, MA, 02116
K10-0005	HAN XU	271 LANDHAM ROAD, SUDURY, MA, 01776
K10-0008	JACOB & ASSOCIATES INC	1232 WASHINGTON ST, WEST NEWTON, MA, 02465
K10-0010	BROOKSIDE CUSTOM HOMES INC	416 BOSTON POST RD, SUDBURY, MA, 01776
K10-0020	BENDORIS K EILEEN TRS	214 BOSTON POST RD, SUDBURY, MA, 01776
K10-0021	MCKEOWN ADAM & MOLLY	222 BOSTON POST RD, SUDBURY, MA, 01776
K10-0022	DELPIZZO PAUL & MARY TRUSTEES	8 GREENHILL RD, SUDBURY, MA, 01776
K10-0024	OLSEN FAMILY	P.O. BOX 2050, LECANTO, FL, 34460
K10-0038	GEISINGER ELIZABETH	86 WALNUT ST, NATICK, MA, 01760
K10-0041	TOWN OF SUDBURY	278 OLD SUDBURY ROAD, SUDBURY, MA, 01776
K10-0007-0-1A	EMMA LOU LLC	1 GLEN PINES WAY, MILLIS, MA, 02054
K10-0007-0-1B	HOWARD FARM LLC	6 HOWARD FARM RD, SHARON, MA, 02067
K10-0007-0-1C	ORR CHARLES W & CAROLINA TRS	365 BOSTON POST RD 138, SUDBURY, MA, 01776
K10-0007-0-2B	MICHELS KARL H & HILDEGARD M	215 BOSTON POST RD, SUDBURY, MA, 01776
K10-0007-0-2C	ORR CHARLES W & CAROLINA TRS	365 BOSTON POST RD 138, SUDBURY, MA, 01776
K10-0109	LUCENTE DIANE E	17 SINGLETARY LN, SUDBURY, MA, 01776
K10-0110	GEORGE PETER	169 PORTSMOUTH ST UNIT 114, CONCORD, NH, 03301
K10-0111	GEORGE PETER	169 PORTSMOUTH ST UNIT 114, CONCORD, NH, 03301
K10-0114	LARSON DAVID E & HEATHER J TRS	25 SINGLETARY LN, SUDBURY, MA, 01776
K09-5000	MASS BAY TRANSPORTATION	10 PARK PLAZA, BOSTON, MA, 02116
K09-0065	BAZILE CASTERA	275 BOSTON POST RD, SUDBURY, MA 01776
K10-0003	SAFAR GASTON	132 NEWBURY ST, BOSTON, MA 02116
K10-0108	KIRBY RUSSELL P & CAROL A	244 BOSTON POST RD, SUDBURY, MA 01776
K10-0112	RUE NICHOLAS & CYNTHIA V	5 SINGLETARY LN, SUDBURY, MA 01776

PLAN REFERENCE MATERIALS:

1. THIS PLAN SET REFERENCES THE FOLLOWING DOCUMENTS INCLUDING, BUT NOT LIMITED TO:
   - SURVEY PREPARED BY HANCOCK ASSOCIATES DATED AUGUST 01. 2023
   - ARCHITECTURAL PLANS PREPARED BY ADA ARCHITECTS, DATED DECEMBER 8, 2023
   - AERIAL MAP OBTAINED FROM NEARMAP RETRIEVED, AUGUST 25, 2023
   - TAX AND ZONING MAP FROM THE TOWN OF SUDBURY MASSACHUSETTS GIS, RETRIEVED AUGUST 28, 2023
   - LOCATION MAP OBTAINED FROM USGS QUADRANGLE MAP 7.5 SERIES MAYNARD & FRAMINGHAM, MA, DATED 2021
   - SEPTIC DESIGN PLAN PREPARED BY GRADY CONSULTING, LLC., DATED SEPTEMBER 26, 2023
   - SOIL SUITABILITY ASSESSMENT LOGS, PREPARED BY GRADY CONSULTING, LLC., DATED AUGUST 1, 2023
2. ALL REFERENCE MATERIAL LISTED ABOVE SHALL BE CONSIDERED A PART OF THIS PLAN SET AND ALL INFORMATION CONTAINED WITHIN THESE MATERIALS SHALL BE UTILIZED IN CONJUNCTION WITH THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN A COPY OF EACH REFERENCE AND REVIEW IT THOROUGHLY PRIOR TO THE START OF CONSTRUCTION.

PLANS PREPARED BY:

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PLANNING BOARD SIGNATURE BLOCK

CHAIR	DATE
VICE CHAIR	DATE
MEMBER	DATE
MEMBER	DATE
MEMBER	DATE

TOWN OF SUDBURY SIGNATURE BLOCK

BUILDING INSPECTOR	DATE
DIRECTOR OF PUBLIC WORKS	DATE
TOWN ENGINEER	DATE
TOWN PLANNER	DATE

SHEET INDEX

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

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LAND DEVELOPMENT PLANS
ADA ARCHITECTS
PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER
PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

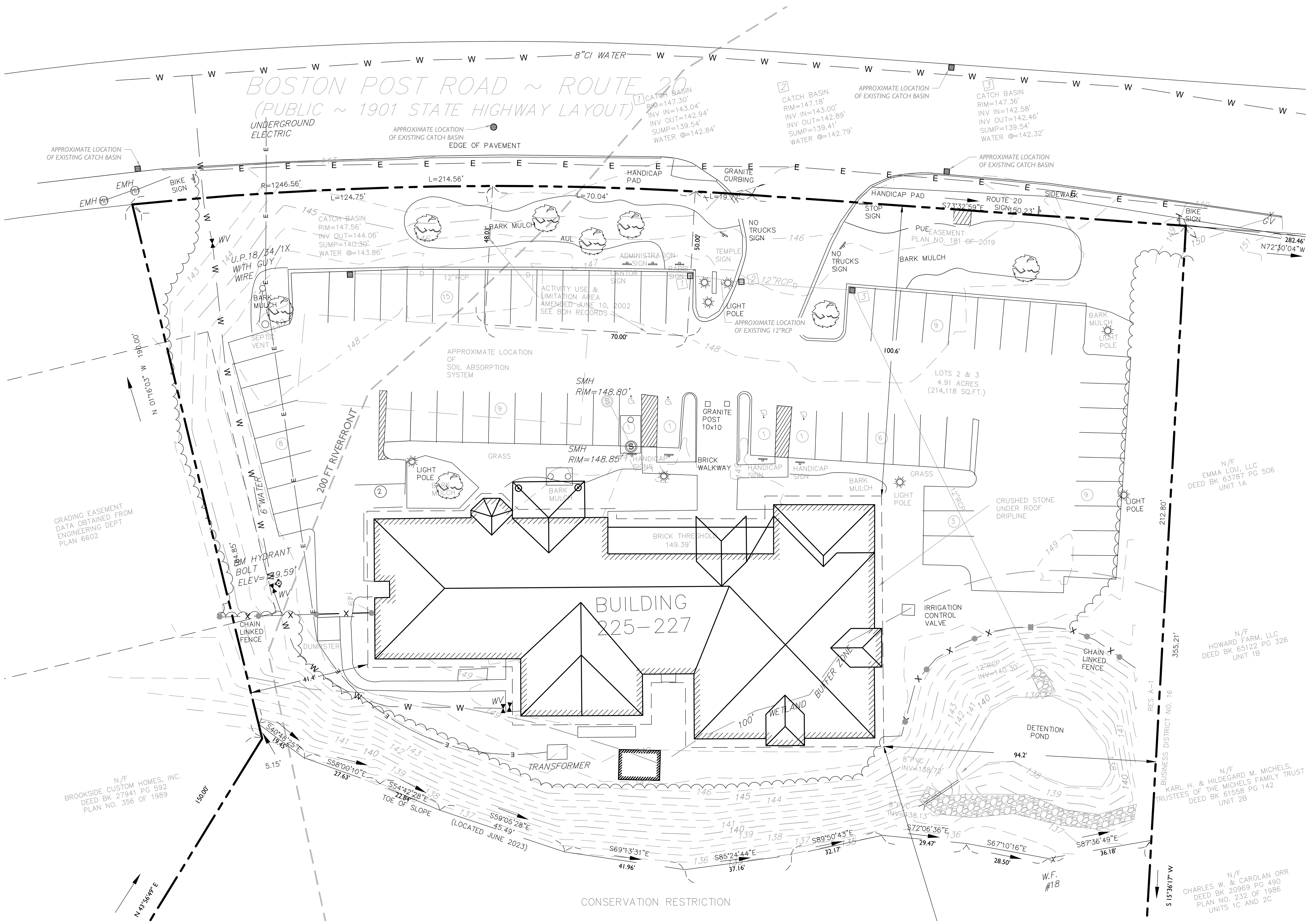
STONEFIELD engineering & design

SCALE: AS SHOWN | PROJECT ID: BOS-230051

TITLE: COVER SHEET

DRAWING: C-1

Z:\BOSTON\BOS\2023\BOS-230051 ADA ARCHITECTS - 225 BOSTON POST ROAD, SUDBURY, MA\CADD\PLOT\RDP-01-COVR.DWG



SYMBOL	DESCRIPTION
	PROPERTY LINE
x x	CHAIN LINKED FENCE
141	EXISTING 1' CONTOURS
140	EXISTING 5' CONTOURS
	EDGE OF WETLANDS
	100' WETLAND BUFFER ZONE
	FLOOD PLAIN ZONE
	EASEMENT
WV W 6"CI	WATER MANHOLE, WATER MAIN WITH SIZE, TEE, GATE VALVE & FIRE HYDRANT
D	DRAINAGE LINE
▤	CATCH BASIN
	SIGN
☼	LIGHT POLE
	HYDRANT
⌀	UTILITY POLE
MH	ELECTRIC MANHOLE
UGE	UNDERGROUND ELECTRIC
♿	HANDICAP PARKING SPACE
■	FOUND STONE BOUND MASSACHUSETTS HIGHWAY BOUND

SURVEY NOTES:

1. THE SURVEY LISTED WITHIN THE PLAN REFERENCES ON THE COVER SHEET SHALL BE CONSIDERED A PART OF THIS PLAN SET AND ALL INFORMATION CONTAINED WITHIN THE SURVEY AND ASSOCIATED DOCUMENTS SHALL BE UTILIZED IN CONJUNCTION WITH THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN A COPY OF THE SURVEY AND REVIEW IT THOROUGHLY PRIOR TO THE START OF CONSTRUCTION.

20' 0' 20' 40'
GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

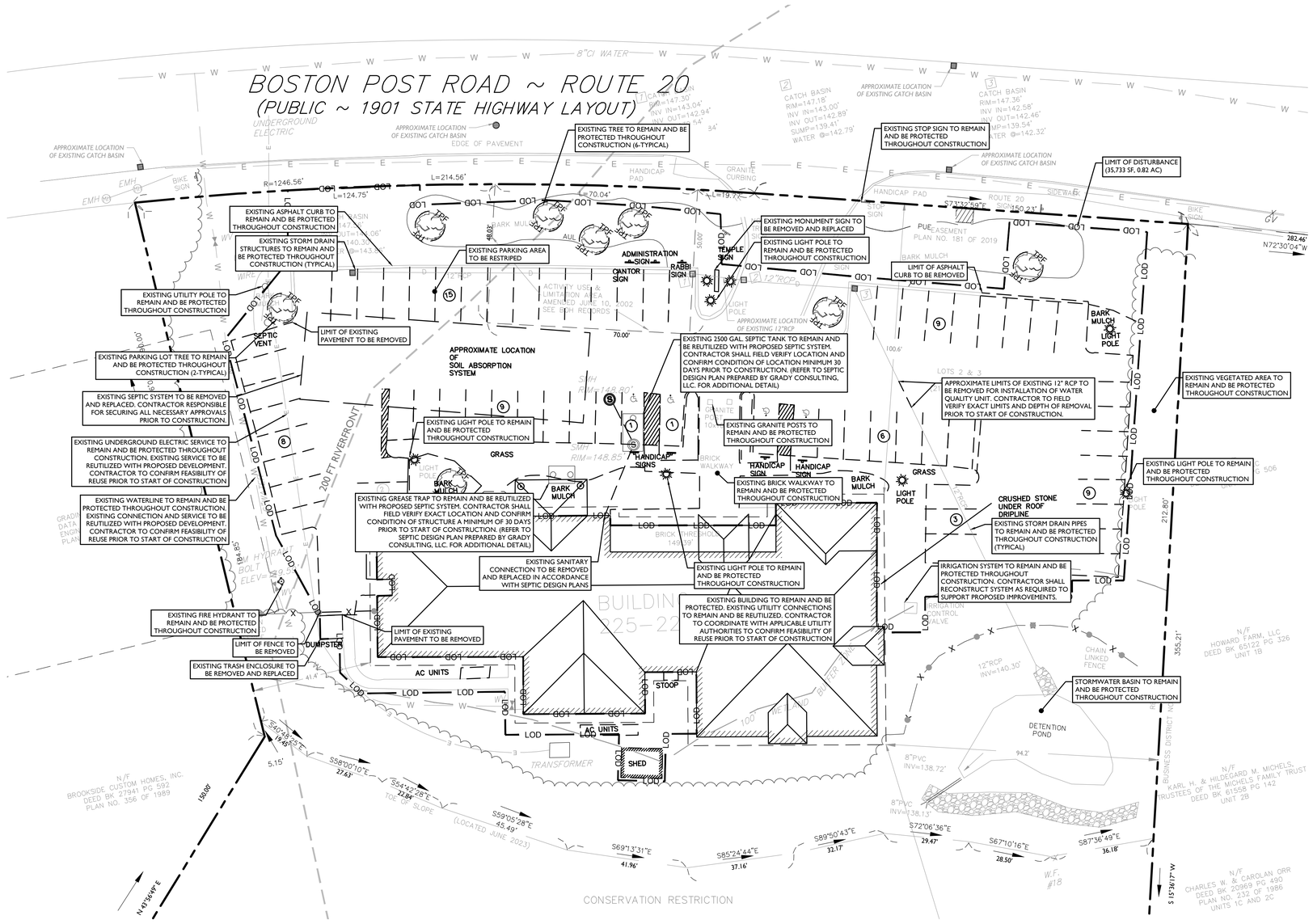
SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE:

EXISTING CONDITIONS PLAN

DRAWING:

C-2



SYMBOL	DESCRIPTION
– — – — –	FEATURE TO BE REMOVED / DEMOLISHED
LOD	LIMIT OF DISTURBANCE

811 Know what's **below** **Call** before you dig.

ALL SITE FEATURES WITHIN THE LIMIT OF DISTURBANCE INDICATED ON THIS PLAN ARE TO BE REMOVED / DEMOLISHED UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF SIGNIFICANT DISCREPANCIES ARE DISCERNED BETWEEN THIS PLAN AND FIELD CONDITIONS

DEMOLITION NOTES

1. THE WORK REFLECTED ON THE DEMOLITION PLAN IS TO PROVIDE GENERAL INFORMATION TOWARDS THE EXISTING ITEMS TO BE DEMOLISHED AND/OR REMOVED. THE CONTRACTOR IS RESPONSIBLE TO REVIEW THE ENTIRE PLAN SET AND ASSOCIATED REPORTS/REFERENCE DOCUMENTS INCLUDING ALL DEMOLITION ACTIVITIES AND INCIDENTAL TASKS NECESSARY TO COMPLETE THE SITE IMPROVEMENTS.
2. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF DEMOLITION ACTIVITIES.
3. EXPLOSIVES SHALL NOT BE USED UNLESS WRITTEN CONSENT FROM BOTH THE OWNER AND ANY APPLICABLE GOVERNING AGENCY IS OBTAINED. BEFORE THE START OF ANY EXPLOSIVE PROGRAM, THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL LOCAL, STATE, AND FEDERAL PERMITS. ADDITIONALLY, THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL SEISMIC TESTING AS REQUIRED AND ANY DAMAGES AS THE RESULT OF SAID DEMOLITION PRACTICES.
4. ALL DEMOLITION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL CODES. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL UTILITIES ARE DISCONNECTED IN ACCORDANCE WITH THE UTILITY AUTHORITY'S REQUIREMENTS PRIOR TO STARTING THE DEMOLITION OF ANY STRUCTURE. ALL EXCAVATIONS ASSOCIATED WITH DEMOLISHED STRUCTURES OR REMOVED TANKS SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO SUPPORT SITE AND BUILDING IMPROVEMENTS. A GEOTECHNICAL ENGINEER SHOULD BE PRESENT DURING BACKFILLING ACTIVITIES TO OBSERVE AND CERTIFY THAT BACKFILL MATERIAL WAS COMPACTED TO A SUITABLE CONDITION.
5. DEMOLISHED DEBRIS SHALL NOT BE BURIED ON SITE. ALL WASTE/DEBRIS GENERATED FROM DEMOLITION ACTIVITIES SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN ALL RECORDS OF THE DISPOSAL TO DEMONSTRATE COMPLIANCE WITH THE ABOVE REGULATIONS.

GRAPHIC SCALE IN FEET
20' 0' 20' 40'
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

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120 Washington Street, Suite 201, Salem, MA 01970
Phone 617.203.2076

LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE: DEMOLITION PLAN

DRAWING: C-3

Z:\BOS\PROJECTS\2023\BOS-230051 - ADA ARCHITECTS - 225 BOSTON POST ROAD, SUDBURY, MA\CAD\PLOT\TOP-DEMO.DWG

LAND USE AND ZONING

K10-0009 & K10-0040			
SINGLE RESIDENTIAL (RES A-1)			
PROPOSED USE			
CHILD CARE FACILITY (*)	PERMITTED USE		
ZONING REQUIREMENT	**REQUIRED**	**EXISTING**	**PROPOSED**
MINIMUM LOT AREA	40,000 SF	214,118 SF	NO CHANGE
MINIMUM LOT FRONTAGE	180 FT	364.8 FT	NO CHANGE
MAXIMUM BUILDING COVERAGE	40% (85,647 SF) (**)	5.03% (10,770 SF) (**)	NO CHANGE
MAXIMUM BUILDING HEIGHT	2.5 STORIES (35 FT)	1 STORY	NO CHANGE
MINIMUM FRONT YARD SETBACK	40 FT	103.8 FT	NO CHANGE
MINIMUM SIDE YARD SETBACK	20 FT	44.4 FT	NO CHANGE
MINIMUM REAR YARD SETBACK	30 FT	195.4 FT	NO CHANGE
MAXIMUM IMPERVIOUS COVERAGE	N/S	16.5% (35,400 SF)	14.6% (31,161 SF) (***)

(*) EXEMPT AND INSTITUTIONAL USES
(**) INCLUDING PRINCIPAL AND ACCESSORY BUILDINGS
(***) EXCLUDES 6,232 SF OF TURF SURFACE

OFF-STREET PARKING REQUIREMENTS

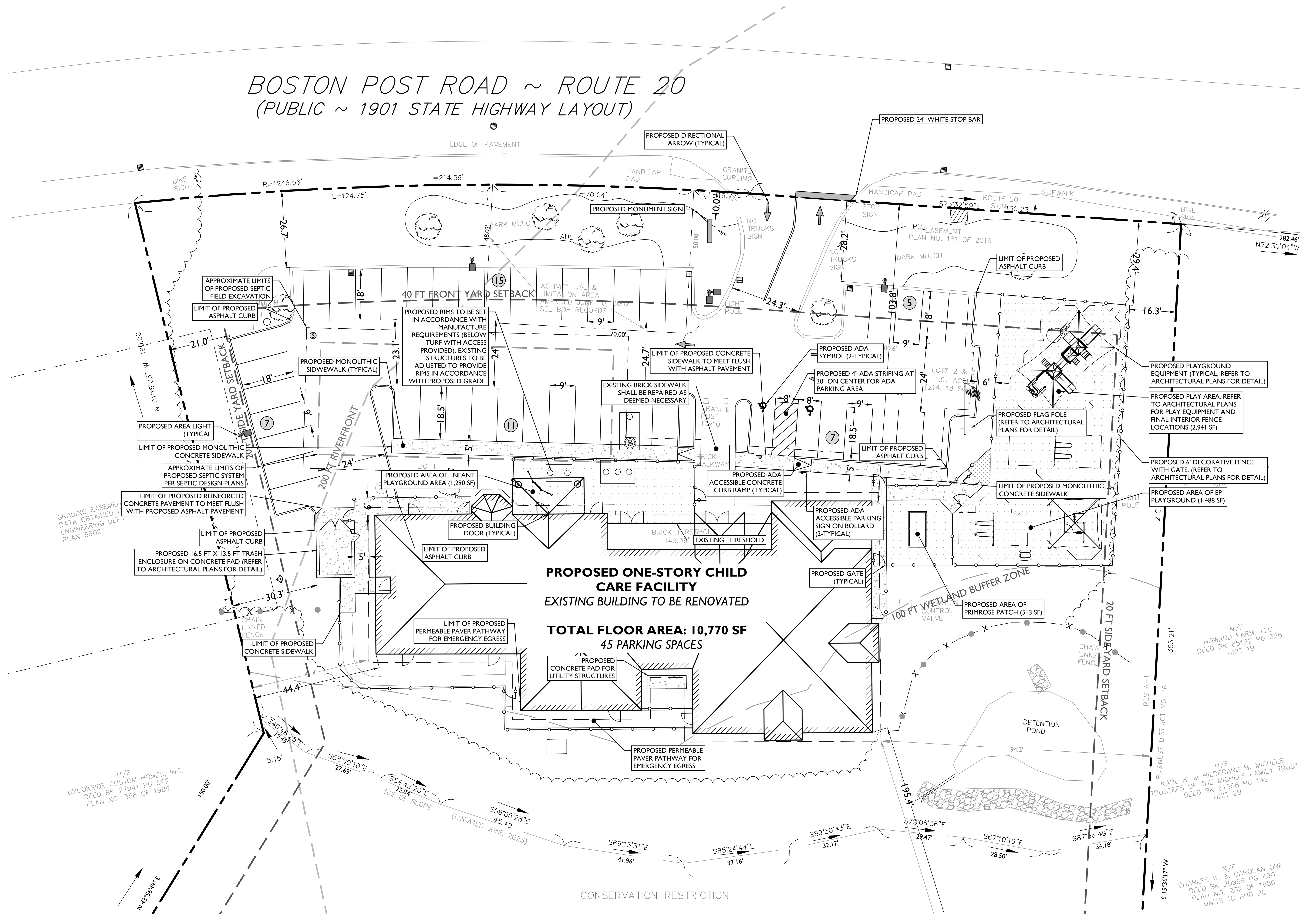
CODE SECTION	REQUIRED	PROPOSED
§ 3120	**REQUIRED PARKING:** 1 SPACE FOR EACH STAFF POSITION (22 STAFF) * (1 SPACE) = 22 SPACES 1 FOR SPACE EACH 5 PERSONS OF RATED CAPACITY OF THE LARGEST AUDITORIUM N/A - NO AUDITORIUM PROPOSED 1 SPACE FOR EACH STUDENT VEHICLE AT MAX CAPACITY (8 STUDENT DROP OFF VEHICLES) * (1 SPACE) = 9 SPACES **TOTAL: 22 + 9 = 31 SPACES**	45 SPACES
§ 3130	**DIMENSIONAL REGULATIONS 90 DEGREE PARKING:** WIDTH = 9 FT LENGTH = 18.5 FT WIDTH OF DRIVE AISLE = 24 FT	9 FT 18 FT (W) 23.1 FT (W)
§ 3142	**PARKING SETBACK:** SETBACK = 10 FT (DRIVE/WALKWAYS EXCLUDED)	21 FT

(W) WAIVER

SIGNAGE REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 3280	**RESIDENTIAL SIGNS:** MAXIMUM SIGNS: 1 SIGN MOUNTING OPTIONS: ATTACHED OR FREESTANDING MAXIMUM SIGN AREA: 10 SF MAXIMUM SIGN HEIGHT: 10 FT MAXIMUM SIGN CLEARANCE: 40% OF HEIGHT MINIMUM SIGN SETBACK: 10 FT	6 SIGNS (W) COMPLIES 54 SF (W) 8 FT N/A 10 FT

N/A NOT APPLICABLE



SYMBOL	DESCRIPTION
	PROPERTY LINE
	SETBACK LINE
	SAWCUT LINE
	PROPOSED CURB
	PROPOSED FLUSH OPENING
	PROPOSED SIGNS / BOLLARDS
	PROPOSED BUILDING
	PROPOSED CONCRETE
	PROPOSED AREA LIGHT
	PROPOSED DECORATIVE FENCE
	PROPOSED BUILDING DOORS

SITE IMPROVEMENTS NOTES

1. EXISTING LIGHT POLES AND EXTERIOR LIGHTS TO BE REUTILIZED. CONTRACTOR SHALL INSPECT AND REPAIR AND REPLACE LIGHT FIXTURE, LIGHT POLES, AND LIGHT BASES AS DEEMED NECESSARY.
2. PARKING LOT SHALL BE MILLED AND OVERLAID TO ENSURE POSITIVE DRAINAGE TO ALL STRUCTURES. FINAL LIMITS OF FULL DEPTH REPAIR SHALL BE COORDINATED WITH APPLICANT PRIOR TO CONSTRUCTION.

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ENSURE THAT ALL REQUIRED APPROVALS HAVE BEEN OBTAINED PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
3. ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC. AND IT'S SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
4. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
6. THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
7. THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTORS EXPENSE.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC. WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
9. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
10. THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
11. THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR TO BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
12. SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC. BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.

20' 0' 20' 40'
GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
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NOT APPROVED FOR CONSTRUCTION

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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE: SITE PLAN

DRAWING: C-4

DRAINAGE AND UTILITY NOTES

1. THE CONTRACTOR IS REQUIRED TO CALL THE APPROPRIATE AUTHORITY FOR NOTICE OF CONSTRUCTION/EXCAVATION AND UTILITY MARK OUT PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH STATE LAW. CONTRACTOR IS REQUIRED TO CONFIRM THE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES IN THE FIELD. SHOULD A DISCREPANCY EXIST BETWEEN THE FIELD LOCATION OF A UTILITY AND THE LOCATION SHOWN ON THE PLAN SET OR SURVEY, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IMMEDIATELY IN WRITING.
2. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN IN OPERATION ALL UTILITIES NOT DESIGNATED TO BE REMOVED.
3. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO ANY EXISTING UTILITY IDENTIFIED TO REMAIN WITHIN THE LIMITS OF THE PROPOSED WORK DURING CONSTRUCTION.
4. A MINIMUM HORIZONTAL SEPARATION OF 10 FEET IS REQUIRED BETWEEN ANY SANITARY SEWER SERVICE AND ANY WATER LINES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. ALL WATER LINES SHALL BE VERTICALLY SEPARATED ABOVE SANITARY SEWER LINES BY A MINIMUM DISTANCE OF 18 INCHES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
6. THE CONTRACTOR TO PERFORM A TEST PIT PRIOR TO CONSTRUCTION (RECOMMEND 30 DAYS PRIOR) AT LOCATIONS OF EXISTING UTILITY CROSSINGS FOR WATER AND SANITARY SEWER CONNECTION IMPROVEMENTS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IN WRITING.
7. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING GAS, ELECTRIC AND TELECOMMUNICATION CONNECTIONS WITH THE APPROPRIATE GOVERNING AUTHORITY.
8. CONTRACTOR SHALL START CONSTRUCTION OF ANY GRAVITY SEWER AT THE LOWEST INVERT AND WORK UP-GRADIENT.
9. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD SET OF PLANS REFLECTING THE LOCATION OF EXISTING UTILITIES THAT HAVE BEEN CAPPED, ABANDONED, OR RELOCATED BASED ON THE DEMOLITION/REMOVAL ACTIVITIES REQUIRED IN THIS PLAN SET. THIS DOCUMENT SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.
10. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD OF THE AS-BUILT LOCATIONS OF ALL PROPOSED UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR SHALL NOTE ANY DISCREPANCIES BETWEEN THE AS-BUILT LOCATIONS AND THE LOCATIONS DEPICTED WITHIN THE PLAN SET. THIS RECORD SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.

EXCAVATION, SOIL PREPARATION, AND DEWATERING NOTES

1. THE CONTRACTOR IS REQUIRED TO REVIEW THE REFERENCED GEOTECHNICAL DOCUMENTS PRIOR TO CONSTRUCTION, THESE DOCUMENTS SHALL BE CONSIDERED A PART OF THE PLAN SET.
2. THE CONTRACTOR IS REQUIRED TO PREPARE SUBGRADE SOILS BENEATH ALL PROPOSED IMPROVEMENTS AND BACKFILL ALL EXCAVATIONS IN ACCORDANCE WITH RECOMMENDATIONS BY THE GEOTECHNICAL ENGINEER OF RECORD.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SHORING FOR ALL EXCAVATIONS AS REQUIRED. CONTRACTOR SHALL HAVE THE SHORING DESIGN PREPARED BY A QUALIFIED PROFESSIONAL. SHORING DESIGNS SHALL BE SUBMITTED TO STONEFIELD ENGINEERING & DESIGN, LLC. AND THE OWNER PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL OPEN EXCAVATIONS ARE PERFORMED AND PROTECTED IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS.
5. THE CONTRACTOR IS RESPONSIBLE FOR ANY DEWATERING DESIGN AND OPERATIONS, AS REQUIRED, TO CONSTRUCT THE PROPOSED IMPROVEMENTS. THE CONTRACTOR SHALL OBTAIN ANY REQUIRED PERMITS FOR DEWATERING OPERATIONS AND GROUNDWATER DISPOSAL.

EXCAVATION & UTILITY VERIFICATION NOTE:

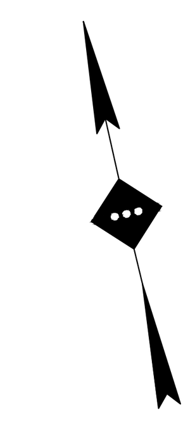
PRIOR TO THE START OF CONSTRUCTION (RECOMMENDED 30 DAYS PRIOR) THE CONTRACTOR SHALL PERFORM EXPLORATORY TEST PITS AT LOCATIONS OF UTILITY / DRAINAGE CROSSINGS OR CONNECTIONS WITH EXISTING UTILITY OR STORMWATER INFRASTRUCTURE. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ANY NECESSARY ROAD OPENING PERMITS TO PERFORM SAID EXPLORATORY WORK. SHOULD A CONFLICT BE DISCOVERED WITH THE INFORMATION CONTAINED WITHIN THESE PLANS THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC IN WRITING.

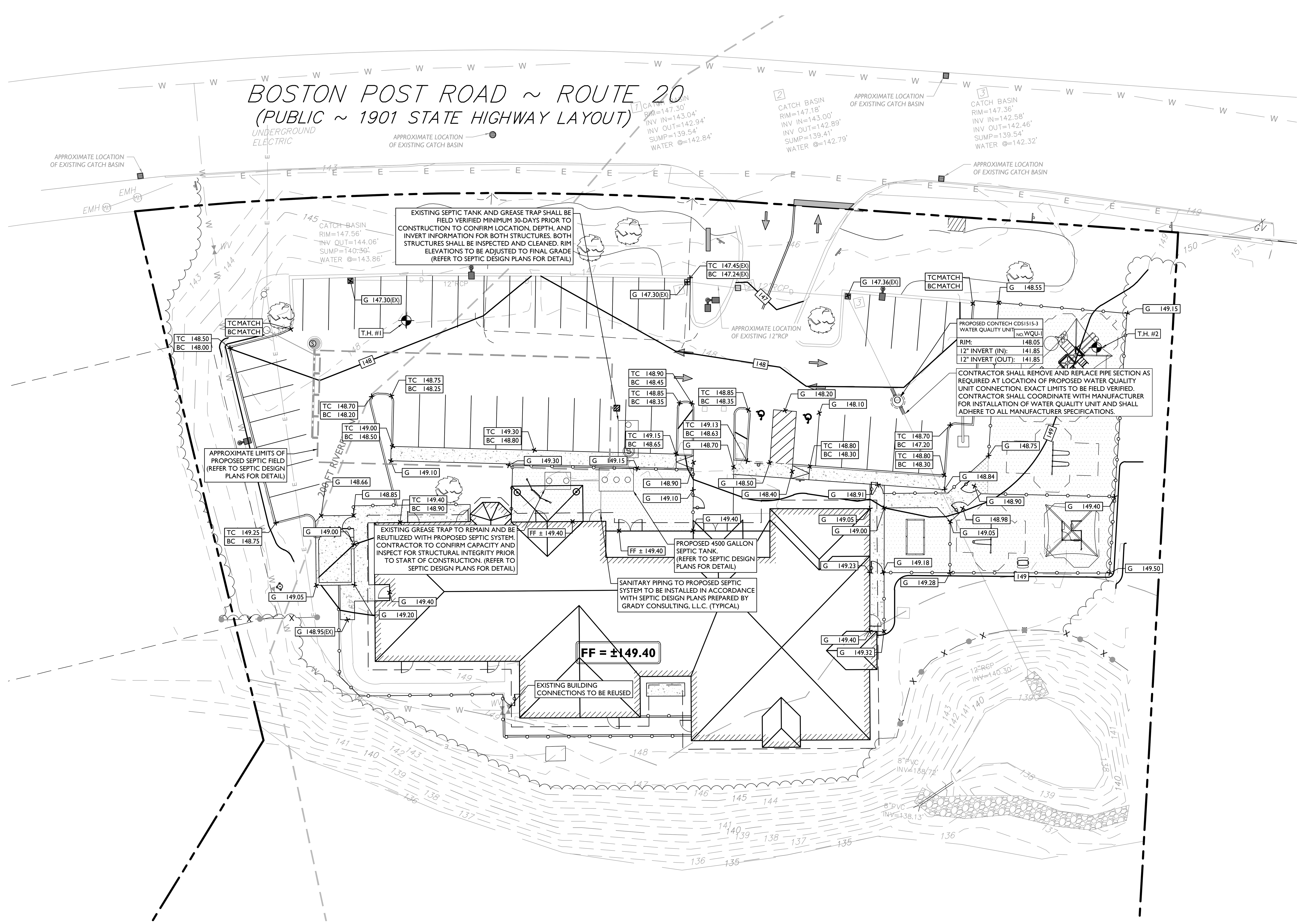
SANITARY / STORMWATER CONSTRUCTION NOTE:

THE CONTRACTOR SHALL START CONSTRUCTION OF ALL GRAVITY SANITARY AND STORMWATER INFRASTRUCTURE AT THE DOWNSTREAM CONNECTION POINT (E.G. LOWEST INVERT) AND WORK UP-GRADIENT.

SEPTIC INSTALLATION NOTE:

PROPOSED SEPTIC SYSTEM AND ASSOCIATED COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED SEPTIC DESIGN PLAN PREPARED BY GRADY CONSULTING, LLC. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION AND DEPTH OF EXISTING SANITARY INFRASTRUCTURE THAT IS TO REMAIN AND BE REUTILIZED, AND CONFIRM FEASIBILITY OF REUSE. CONTRACTOR TO INSPECT FOR STRUCTURAL INTEGRITY AND CONFIRM CAPACITY OF THE SYSTEMS REMAINING. SHOULD THE SYSTEMS BE DEEMED INFEASIBLE FOR REUSE, CONTRACTOR SHALL NOTIFY THE SEPTIC DESIGN ENGINEER IN WRITING AS SOON AS POSSIBLE.





SYMBOL	DESCRIPTION
— — —	PROPERTY LINE
100	PROPOSED GRADING CONTOUR
RIDGELINE	PROPOSED GRADING RIDGELINE
←	PROPOSED DIRECTION OF DRAINAGE FLOW
G 100.00	PROPOSED GRADE SPOT SHOT
TC 100.50 / BC 100.00	PROPOSED TOP OF CURB / BOTTOM OF CURB SPOT SHOT
FF 100.00	PROPOSED FINISHED FLOOR SPOT SHOT
DC 100.12 / BC 100.00	PROPOSED DEPRESSED CURB / BOTTOM OF CURB SPOT SHOT
	PROPOSED STORMWATER STRUCTURES
	PROPOSED STORMWATER PIPING
SAN	PROPOSED SANITARY LATERAL
S	PROPOSED SANITARY STRUCTURES

GRADING NOTES

1. ALL SOIL AND MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. ANY GROUNDWATER DE-WATERING PRACTICES SHALL BE PERFORMED UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS FOR THE DISCHARGE OF DE-WATERED GROUNDWATER. ALL SOIL IMPORTED TO THE SITE SHALL BE CERTIFIED CLEAN FILL. CONTRACTOR SHALL MAINTAIN RECORDS OF ALL FILL MATERIALS BROUGHT TO THE SITE.
2. THE CONTRACTOR IS REQUIRED TO PROVIDE TEMPORARY AND/OR PERMANENT SHORING WHERE REQUIRED DURING EXCAVATION ACTIVITIES, INCLUDING BUT NOT LIMITED TO UTILITY TRENCHES, TO ENSURE THE STRUCTURAL INTEGRITY OF NEARBY STRUCTURES AND STABILITY OF THE SURROUNDING SOILS.
3. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 4 INCHES TO 7 INCHES ABOVE EXISTING GRADES UNLESS OTHERWISE NOTED. THE CONTRACTOR WILL SUPPLY ALL STAKEOUT CURB GRADE SHEETS TO STONEFIELD ENGINEERING & DESIGN, LLC. FOR REVIEW AND APPROVAL PRIOR TO POURING CURBS.
4. THE CONTRACTOR IS RESPONSIBLE TO SET ALL PROPOSED UTILITY COVERS AND RESET ALL EXISTING UTILITY COVERS WITHIN THE PROJECT LIMITS TO PROPOSED GRADE IN ACCORDANCE WITH ANY APPLICABLE MUNICIPAL, COUNTY, STATE AND/OR UTILITY AUTHORITY REGULATIONS.
5. MINIMUM SLOPE REQUIREMENTS TO PREVENT PONDING SHALL BE AS FOLLOWS:
   - CURB GUTTER: 0.50%
   - CONCRETE SURFACES: 1.00%
   - ASPHALT SURFACES: 1.00%
6. A MINIMUM SLOPE OF 1.00% SHALL BE PROVIDED AWAY FROM ALL BUILDINGS. THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE FROM THE BUILDING IS ACHIEVED AND SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF THIS CONDITION CANNOT BE MET.
7. FOR PROJECTS WHERE BASEMENTS ARE PROPOSED, THE DEVELOPER IS RESPONSIBLE TO DETERMINE THE DEPTH TO GROUNDWATER AT THE LOCATION OF THE PROPOSED STRUCTURE. IF GROUNDWATER IS ENCOUNTERED WITHIN THE BASEMENT AREA, SPECIAL CONSTRUCTION METHODS SHALL BE UTILIZED AND REVIEWED/APPROVED BY THE CONSTRUCTION CODE OFFICIAL. IF SUMP PUMPS ARE UTILIZED, ALL DISCHARGES SHALL BE CONNECTED DIRECTLY TO THE PUBLIC STORM SEWER SYSTEM WITH APPROVAL FROM THE GOVERNING STORM SEWER SYSTEM AUTHORITY.

ADA NOTES

1. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION WITHIN THE ADA PARKING SPACES AND ACCESS AISLES.
2. THE CONTRACTOR SHALL PROVIDE COMPLIANT SIGNAGE AT ALL ADA PARKING AREAS IN ACCORDANCE WITH STATE GUIDELINES.
3. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 5.00% RUNNING SLOPE AND A MAXIMUM OF 2.00% CROSS SLOPE ALONG WALKWAYS WITHIN THE ACCESSIBLE PATH OF TRAVEL (SEE THE SITE PLAN FOR THE LOCATION OF THE ACCESSIBLE PATH). THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE ACCESSIBLE PATH OF TRAVEL IS 36 INCHES WIDE OR GREATER UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
4. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION AT ALL LANDINGS. LANDINGS INCLUDE, BUT ARE NOT LIMITED TO, THE TOP AND BOTTOM OF AN ACCESSIBLE RAMP, AT ACCESSIBLE BUILDING ENTRANCES, AT AN AREA IN FRONT OF A WALK-UP ATM, AND AT TURNING SPACES ALONG THE ACCESSIBLE PATH OF TRAVEL. THE LANDING AREA SHALL HAVE A MINIMUM CLEAR AREA OF 60 INCHES BY 60 INCHES UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
5. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 8.33% RUNNING SLOPE AND A MAXIMUM 2.00% CROSS SLOPE ON ANY CURB RAMPS ALONG THE ACCESSIBLE PATH OF TRAVEL. WHERE PROVIDED, CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 10.00% IF A LANDING AREA IS PROVIDED AT THE TOP OF THE RAMP. FOR ALTERATIONS, A CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 8.33% IF A LANDING AREA IS NOT PROVIDED AT THE TOP OF THE RAMP. CURBS RAMPS SHALL NOT RISE MORE THAN 6 INCHES IN ELEVATION WITHOUT A HANDRAIL. THE CLEAR WIDTH OF A CURB RAMP SHALL BE NO LESS THAN 36 INCHES WIDE.
6. ACCESSIBLE RAMPS WITH A RISE GREATER THAN 6 INCHES SHALL CONTAIN COMPLIANT HANDRAILS ON BOTH SIDES OF THE RAMP AND SHALL NOT RISE MORE THAN 30” IN ELEVATION WITHOUT A LANDING AREA IN BETWEEN RAMP RUNS. LANDING AREAS SHALL ALSO BE PROVIDED AT THE TOP AND BOTTOM OF THE RAMP.
7. A SLIP RESISTANT SURFACE SHALL BE CONSTRUCTED ALONG THE ACCESSIBLE PATH AND WITHIN ADA PARKING AREAS.
8. THE CONTRACTOR SHALL ENSURE A MAXIMUM OF ¼ INCHES VERTICAL CHANGE IN LEVEL ALONG THE ACCESSIBLE PATH. WHERE A CHANGE IN LEVEL BETWEEN ¼ INCHES AND ½ INCHES EXISTS, CONTRACTOR SHALL ENSURE THAT THE TOP ¼ INCH CHANGE IN LEVEL IS BEVELED WITH A SLOPE NOT STEEPER THAN 1 UNIT VERTICAL AND 2 UNITS HORIZONTAL (2:1 SLOPE).
9. THE CONTRACTOR SHALL ENSURE THAT ANY OPENINGS (GAPS OR HORIZONTAL SEPARATION) ALONG THE ACCESSIBLE PATH SHALL NOT ALLOW PASSAGE OF A SPHERE GREATER THAN ½ INCH.

20' 0' 20' 40'
GRAPHIC SCALE IN FEET
1" = 20'

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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

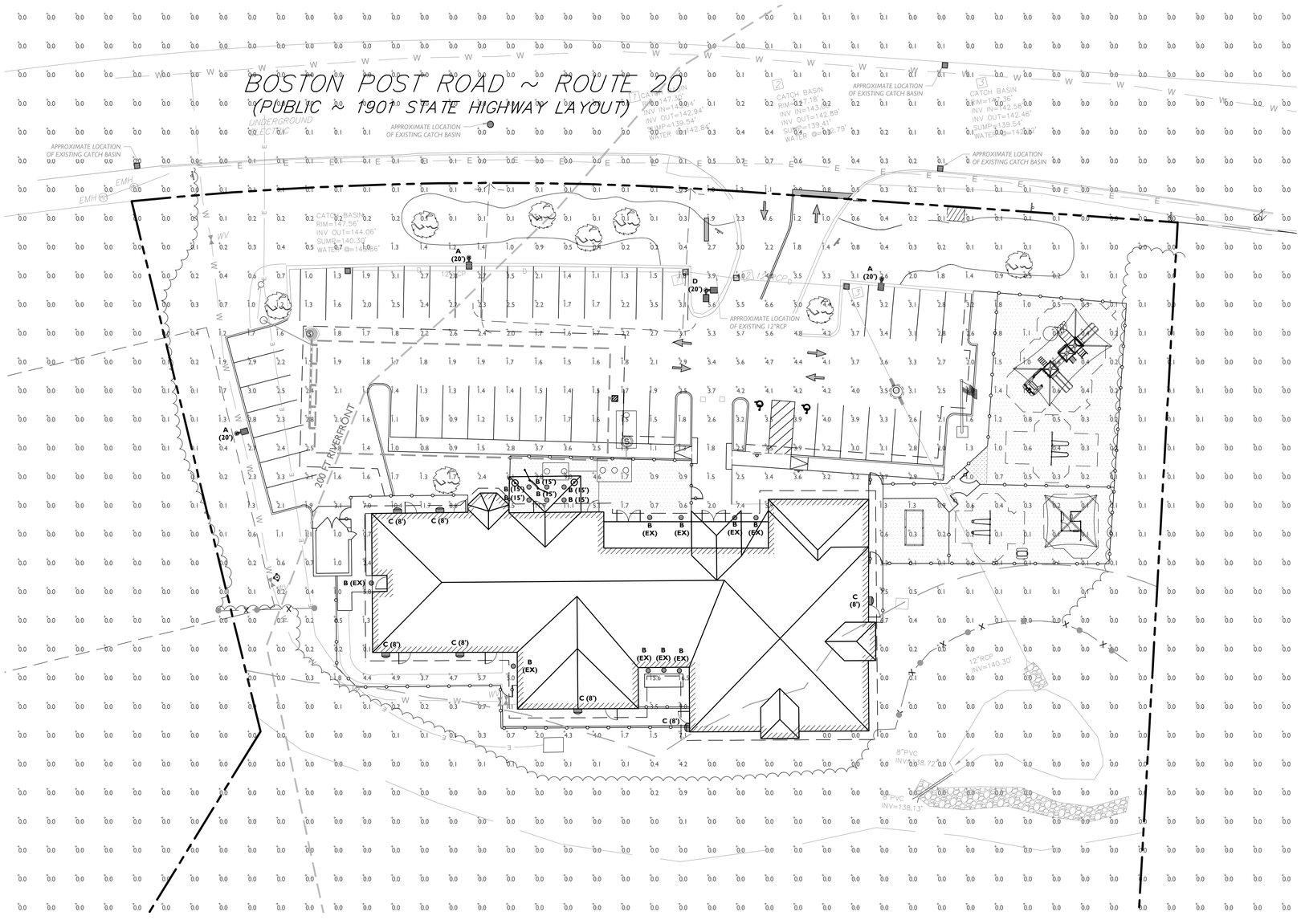
SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE: GRADING, DRAINAGE & UTILITY PLAN

DRAWING: C-5

PROPOSED LUMINAIRE SCHEDULE

SYMBOL	LABEL	QUANTITY	SECURITY LIGHTING	DISTRIBUTION	LLF	MANUFACTURER	IES FILE
	A	3	LUMARK PREVAIL LED AREA LIGHT - 30K - C25 - 120-277V	TYPE 4	0.9	LUMARK	PRV-C25-D-UNV-T4-BZ-7030-HSS.ies
	B	15	SRT1 EDGE-LIT CEILING LIGHT - 30K - 15W - 2000LM - 120-277V	N/A	0.9	BEACON	SRT1-15-3K7-SC-UNV.ies
	C	7	LSI LIGHTING MIRADA MEDIUM WALL SCONCE (XWM) - 30 LED	TYPE 2	0.9	LSI LIGHTING	XWM-2-LED-03L-30.ies
	D	1	LUMARK PREVAIL LED AREA LIGHT - 30K - C25 - 120-277V	TYPE 4	0.9	LUMARK	PRV-C25-D-UNV-T4-BZ-7030-HSS.ies



SYMBOL	DESCRIPTION
	PROPOSED CALCULATION AREA
	PROPOSED ISOMETRIC LINE
A (XX')	PROPOSED LIGHTING FIXTURE (MOUNTING HEIGHT)
+XX	PROPOSED LIGHTING INTENSITY (FOOTCANDLES)
	PROPOSED AREA LIGHT
	PROPOSED BUILDING MOUNTED LIGHT

GENERAL LIGHTING NOTES

1. THE LIGHTING LEVELS DEPICTED WITHIN THE PLAN SET ARE CALCULATED UTILIZING DATA OBTAINED FROM THE LISTED MANUFACTURER. ACTUAL ILLUMINATION LEVELS AND PERFORMANCE OF ANY PROPOSED LIGHTING FIXTURE MAY VARY DUE TO UNCONTROLLABLE VARIABLES SUCH ARE WEATHER, VOLTAGE SUPPLY, LAMP TOLERANCE, EQUIPMENT SERVICE LIFE AND OTHER VARIABLE FIELD CONDITIONS.
2. WHERE APPLICABLE, THE EXISTING LIGHT LEVELS DEPICTED WITHIN THE PLAN SET SHALL BE CONSIDERED APPROXIMATE. THE EXISTING LIGHT LEVELS ARE BASED ON FIELD OBSERVATIONS AND THE MANUFACTURER'S DATA OF THE ASSUMED OR MOST SIMILAR LIGHTING FIXTURE MODEL.
3. UNLESS NOTED ELSEWHERE WITHIN THIS PLAN SET, THE LIGHT LOSS FACTORS USED IN THE LIGHTING ANALYSIS ARE AS FOLLOWS:
   - LIGHT EMITTING DIODES (LED): 0.90
   - HIGH PRESSURE SODIUM: 0.72
   - METAL HALIDE: 0.72
4. THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IN WRITING, PRIOR TO THE START OF CONSTRUCTION, OF ANY PROPOSED LIGHTING LOCATIONS THAT CONFLICT WITH EXISTING/ PROPOSED DRAINAGE, UTILITY, OR OTHER IMPROVEMENTS.
5. THE CONTRACTOR IS RESPONSIBLE TO PREPARE A WIRING PLAN AND PROVIDE ELECTRIC SERVICE TO ALL PROPOSED LIGHTING FIXTURES. THE CONTRACTOR IS REQUIRED TO PREPARE AN AS-BUILT PLAN OF WIRING AND PROVIDE COPIES TO THE OWNER AND STONEFIELD ENGINEERING & DESIGN, LLC.

20' 0' 20' 40'
GRAPHIC SCALE IN FEET
1" = 20'

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PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

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MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE: LIGHTING PLAN

DRAWING: C-6

STABILIZATION SPECIFICATIONS:

1.A. TEMPORARY SEEDING AND MULCHING:
GROUND LIMESTONE - APPLIED UNIFORMLY ACCORDING TO SOIL TEST RECOMMENDATIONS.
FERTILIZER - APPLY 11LBS./1,000 SF OF 10-20-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN (UNLESS A SOIL TEST INDICATES OTHERWISE) WORKED INTO THE SOIL A MINIMUM OF 4".
SEED - PERENNIAL RYEGRASS 100 LBS./ACRE (2.3 LBS./1,000 SF) OR OTHER APPROVED SEEDS; PLANT BETWEEN MARCH 1 AND MAY 15 OR BETWEEN AUGUST 15 AND OCTOBER 1.
MULCH - UNROTTED STRAW OR HAY AT A RATE OF 70 TO 90 LBS./1,000 SF APPLIED TO ACHIEVE 95% SOIL SURFACE COVERAGE. MULCH SHALL BE ANCHORED BY APPROVED METHODS (I.E. PEG AND TWINE, MULCH NETTING, OR LIQUID MULCH BINDER).

1.B. PERMANENT SEEDING AND MULCHING:
TOPSOIL - UNIFORM APPLICATION TO A DEPTH OF 5" (UNSETTLED).
GROUND LIMESTONE - APPLIED UNIFORMLY ACCORDING TO SOIL TEST RECOMMENDATIONS.
FERTILIZER - APPLY 11 LBS./1,000 SF OF 10-10-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN (UNLESS A SOIL TEST INDICATES OTHERWISE) WORKED INTO THE SOIL A MINIMUM OF 4".
SEED - TURF TYPE TALL FESCUE (BLEND OF 3 CULTIVARS) 350 LBS./ACRE (8 LBS./1,000 SF) OR OTHER APPROVED SEEDS; PLANT BETWEEN MARCH 1 AND OCTOBER 1 (SUMMER SEEDINGS REQUIRE IRRIGATION)
MULCH - UNROTTED STRAW OR HAY AT A RATE OF 70 TO 90 LBS./1,000 SF APPLIED TO ACHIEVE 95% SOIL SURFACE COVERAGE. MULCH SHALL BE ANCHORED BY APPROVED METHODS (I.E. PEG AND TWINE, MULCH NETTING, OR LIQUID MULCH BINDER).

SEQUENCE OF CONSTRUCTION

1. INSTALL CONSTRUCTION ENTRANCE, SILT FENCING, TREE PROTECTION, INLET FILTERS AND OTHER APPLICABLE EROSION CONTROL MEASURES (2 DAYS).
2. DEMOLISH EXISTING PAVEMENT AND GRAVEL (7 DAYS).
3. ROUGH GRADING AND TEMPORARY SEEDING (21 DAYS).
4. BUILDING RENOVATION AND SITE IMPROVEMENTS (120 DAYS).
5. LANDSCAPING IMPROVEMENTS AND FINAL SEEDING (7 DAYS).
6. REMOVE SOIL EROSION MEASURES (1 DAY).

TOTAL ESTIMATED TIME = 8 MONTHS

NOTE: TIME DURATIONS ARE APPROXIMATE AND ARE INTENDED TO ACT AS A GENERAL GUILE TO THE CONSTRUCTION TIMELINE. ALL DURATIONS ARE SUBJECT TO CHANGE BY CONTRACTOR. CONTRACTOR SHALL SUBMIT CONSTRUCTION SCHEDULE TO TOWNSHIP AND ENGINEER. CONTRACTOR SHALL PHASE CONSTRUCTION ACCORDINGLY IF REQUIRED.

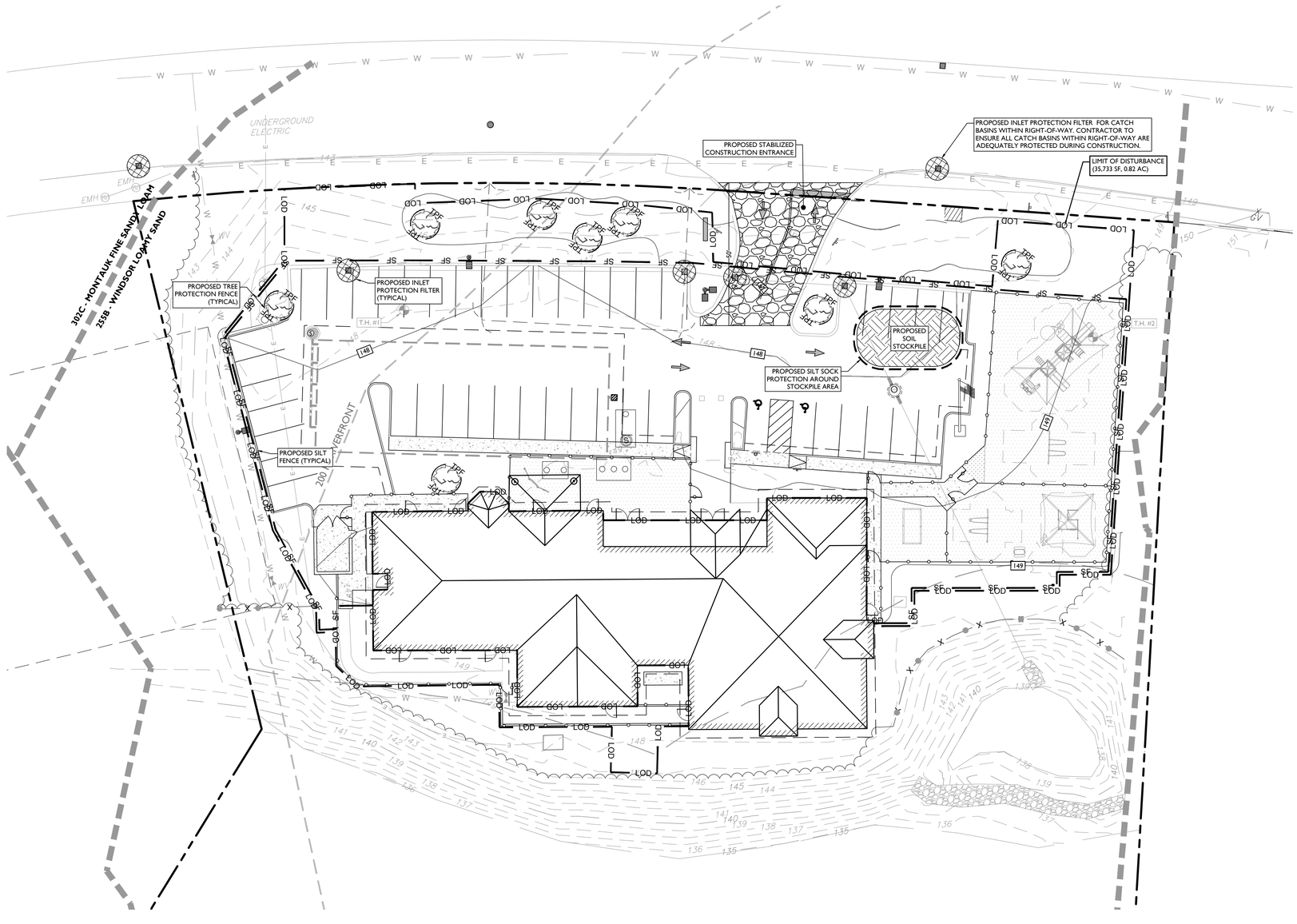
ALL EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED PRIOR TO THE BEGINNING OF ANY DEMOLITION ACTIVITIES OR ANY OTHER ON-SITE WORK. CONTRACT TO ENSURE, AT MINIMUM, ALL CONTROLS ARE INSTALLED PER APPROVED PLANS. CONTROL MEASURES SHALL BE INSPECTED FREQUENTLY TO ENSURE CONTINUED FUNCTIONALITY THROUGHOUT THE FULL COURSE OF CONSTRUCTION.

DUST CONTROL NOTES

1. MULCHES - SEE STANDARD OF STABILIZATION WITH MULCHES ONLY, PG. 5-1
2. VEGETATIVE COVER - SEE STANDARD FOR: TEMPORARY VEGETATIVE COVER, PG. 7-1, PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION PG. 4-1 AND PERMANENT STABILIZATION WITH SOD, PG. 6-1
3. SPRAY-ON ADHESIVES - ON MINERAL SOILS (NOT EFFECTIVE ON MUCK SOILS). KEEP TRAFFIC OFF THESE AREAS.
4. TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART AND SPRING-TOOTHED HARROWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.
5. SPRINKLING - SITE IS SPRINKLED UNTIL THE SURFACE IS WET.
6. BARRIERS - SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.
7. CALCIUM CHLORIDE - SHALL BE IN THE FORM OF LOOSE, DRY GRANULES OR FLAKES FINE ENOUGH TO FEED THROUGH COMMONLY USED SPREADERS AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. IF USED ON STEEPER SLOPES, THEN USE OTHER PRACTICES TO PREVENT WASHING INTO STREAMS OR ACCUMULATION AROUND PLANTS.
8. STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

SOIL CHARACTERISTICS CHART

TYPE OF SOIL	52A- FREETOWN MUCK	255B-WINDSOR LOAMY SAND	302C-MONTAUK FINE SANDY LOAM
PERCENT OF SITE COVERAGE	35.70%	59.50%	4.70%
HYDROLOGIC SOIL GROUP	B/D	A	C
DEPTH TO RESTRICTIVE LAYER	>80 INCHES	>80 INCHES	20 - 43 INCHES
SOIL PERMEABILITY	0.14 - 14.17 INCHES/HOUR	1.42 - 99.90 INCHES/HOUR	0.00 - 1.42 INCHES/HOUR
DEPTH TO WATER TABLE	0 - 6 INCHES	>80 INCHES	18 - 37 INCHES



SYMBOL	DESCRIPTION
	PROPERTY BOUNDARY
	ADJACENT PROPERTY BOUNDARY
LOD	PROPOSED LIMIT OF DISTURBANCE
SF	PROPOSED SILT FENCE
	PROPOSED SILT SOCK
TPF	PROPOSED TREE PROTECTION FENCE
	PROPOSED STOCKPILE & EQUIPMENT STORAGE
	PROPOSED STABILIZED CONSTRUCTION ENTRANCE
	PROPOSED INLET PROTECTION FILTER

Know what's **below**
Call before you dig.

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
2. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL AIR QUALITY STANDARDS.
3. THE CONTRACTOR IS RESPONSIBLE TO INSPECT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES WEEKLY AND AFTER A PRECIPITATION EVENT GREATER THAN 1 INCH. THE CONTRACTOR SHALL MAINTAIN AN INSPECTION LOG ON SITE AND DOCUMENT CORRECTIVE ACTION TAKEN THROUGHOUT THE COURSE OF CONSTRUCTION AS REQUIRED.

20' 0' 20' 40'
GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design
Rutherford, NJ · New York, NY · Salem, MA
Princeton, NJ · Tampa, FL · Detroit, MI
www.stonefieldeng.com
120 Washington Street, Suite 201, Salem, MA 01970
Phone 617.203.2076

LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE:
SOIL EROSION AND SEDIMENT CONTROL PLAN

DRAWING:
C-7

Z:\BOS\TOWN\BOS\2023\BOS-230051 ADA ARCHITECTS - 225 BOSTON POST ROAD, SUDBURY, MA\CAD\PLOT\PLOT SET\SEC.DWG

LANDSCAPING AND BUFFER REQUIREMENTS

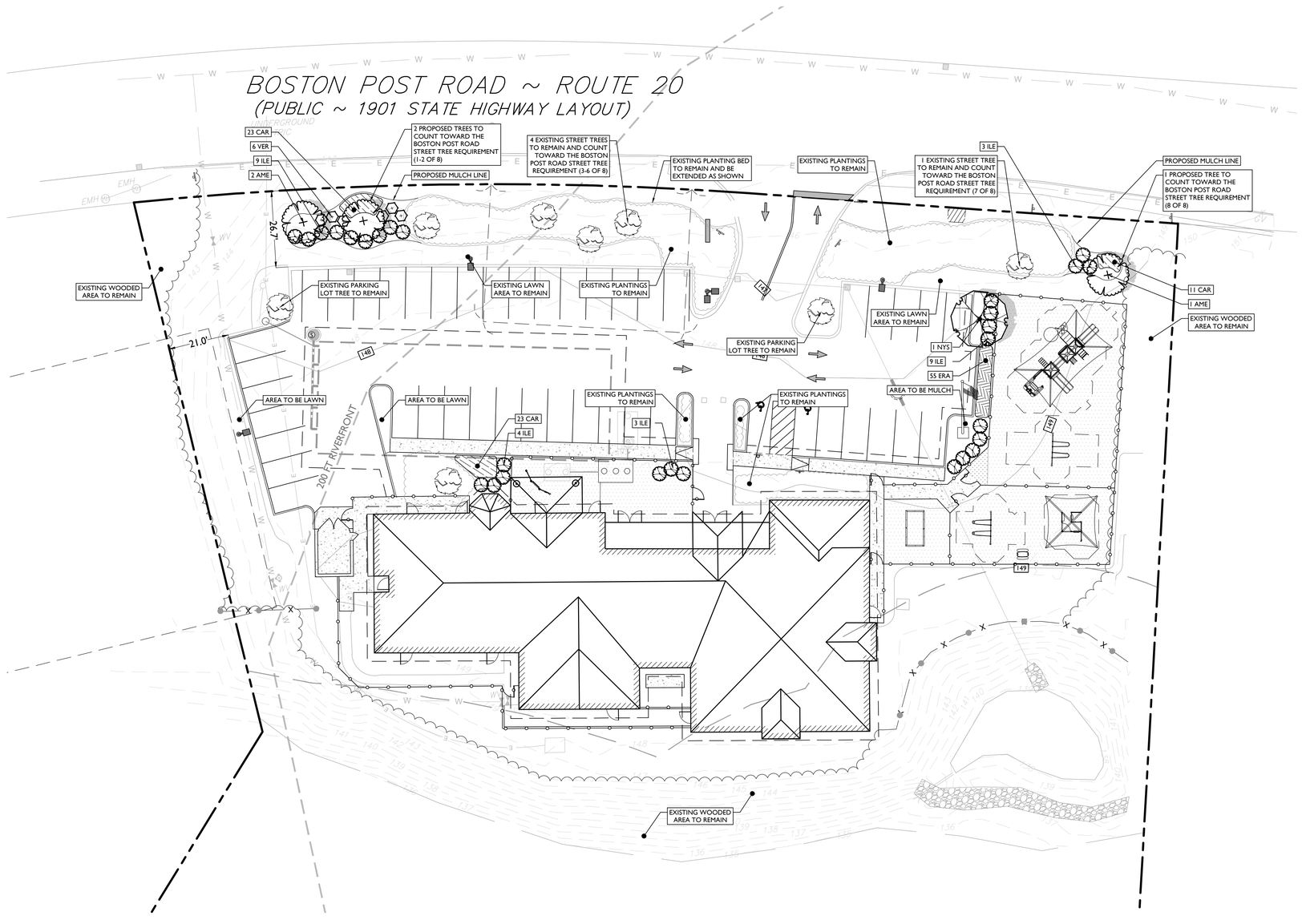
CODE SECTION	REQUIRED	PROPOSED
§ 3532.	LANDSCAPE REQUIREMENTS MINIMUM 30% OF LOT SHALL BE OPEN SPACE LOT AREA: 214,118 SF (214,118 SF) * (0.30) = 64,235 SF	 174,516 SF (81%)
§ 3541.	PARKING LOT LANDSCAPING 150 SF LANDSCAPING FOR EVERY 1,000 OF PARKING PARKING LOT AREA: 15,847 SF (15,847 SF) * (150 SF / 1,000 SF) = 2,377 SF PLANTED AREAS SHALL CONTAIN TREES AND OTHER PLANTINGS	 3,459 SF COMPLIES
§ 3542.	PARKING AND REFUSE AREAS SHALL BE SCREENED FROM VIEW OF R.O.W. AND ADJACENT PROPERTIES WITH PLANTED AREAS, BERMS, OR FENCES	COMPLIES
§ 3543.	BUFFER STRIP REQUIRED BETWEEN PARKING LOT AND SIDE/REAR LOT LINES MINIMUM BUFFER WIDTH: 25 FT	PROVIDED 21.0 FT (EN)
§ 3550.	STREET FRONTAGE LANDSCAPING LANDSCAPE BUFFER WIDTH: 20 FT BUFFER SHALL BE PLANTED WITH GRASS, SHRUBS, AND TREES 1 TREES FOR EVERY 40 LF OF FRONTAGE BOSTON POST ROAD: 322 FT (322 FT) * (1 TREE / 40 FT FRONTAGE) = 8 TREES	 26.7 FT COMPLIES 5 EXISTING TREES 3 TREES PROPOSED

(EN) EXISTING NONCONFORMITY

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	REMARKS
DECIDUOUS TREES							
	NYS	1	NYSSA SYLVATICA	TUPELO	2" - 2.5" CAL	B&B	NATIVE, SALT TOLERANT
ORNAMENTAL TREES							
	AME	3	AMELANCHIER CANADENSIS	CANADIAN SERVICEBERRY	2" - 2.5" CAL	B&B	SINGLE STEM; NATIVE, DROUGHT TOLERANT, SALT TOLERANT
SHRUBS							
	VER	6	ILEX VERTICILLATA 'RED SPRITE'	RED SPRITE WINTERBERRY	30" - 36"	POT	NATIVE, SALT TOLERANT
EVERGREEN SHRUBS							
	ILE	28	ILEX GLABRA	INKBERRY HOLLY	30" - 36"	B&B	NATIVE, DROUGHT TOLERANT, SALT TOLERANT
PERENNIALS AND GRASSES							
	CAR	57	CAREX PENSYLVANICA	PENNSYLVANIA SEDGE	24" O.C.	1 GAL. POT	NATIVE, DROUGHT TOLERANT
	ERA	55	ERAGROSTIS SPECTABILIS	PURPLE LOVEGRASS	18" O.C.	1 GAL. POT	NATIVE, DROUGHT TOLERANT, SALT TOLERANT

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN ON THE LANDSCAPE PLAN AND WITHIN THE PLANT LIST, THE PLAN SHALL DICTATE.



GRAPHIC SCALE IN FEET
1" = 20'

811 Know what's **below** **Call** before you dig.

IRRIGATION NOTE:

IRRIGATION CONTRACTOR TO PROVIDE A DESIGN FOR AN IRRIGATION SYSTEM SEPARATING PLANTING BEDS FROM LAWN AREA, PRIOR TO CONSTRUCTION, DESIGN IS TO BE SUBMITTED TO THE PROJECT LANDSCAPE DESIGNER FOR REVIEW AND APPROVAL. WHERE POSSIBLE, DRIP IRRIGATION AND OTHER WATER CONSERVATION TECHNIQUES SUCH AS RAIN SENSORS SHALL BE IMPLEMENTED. CONTRACTOR TO VERIFY MAXIMUM ON SITE DYNAMIC WATER PRESSURE AVAILABLE MEASURED IN PSI. PRESSURE REDUCING DEVICES OR BOOSTER PUMPS SHALL BE PROVIDED TO MEET SYSTEM PRESSURE REQUIREMENTS. DESIGN TO SHOW ALL VALVES, PIPING, HEADS, BACKFLOW PREVENTION, METERS, CONTROLLERS, AND SLEEVES WITHIN HARDSCAPE AREAS.

LANDSCAPING NOTES

1. THE CONTRACTOR SHALL RESTORE ALL DISTURBED GRASS AND LANDSCAPED AREAS TO MATCH EXISTING CONDITIONS UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
2. THE CONTRACTOR SHALL RESTORE ALL DISTURBED LAWN AREAS WITH A MINIMUM 4 INCH LAYER OF TOPSOIL AND SEED.
3. THE CONTRACTOR SHALL RESTORE MULCH AREAS WITH A MINIMUM 3 INCH LAYER OF MULCH .
4. THE MAXIMUM SLOPE ALLOWABLE IN LANDSCAPE RESTORATION AREAS SHALL BE 3 FEET HORIZONTAL TO 1 FOOT VERTICAL (3:1 SLOPE) UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
5. THE CONTRACTOR IS REQUIRED TO LOCATE ALL SPRINKLER HEADS IN AREA OF LANDSCAPING DISTURBANCE PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL RELOCATE SPRINKLER HEADS AND LINES IN ACCORDANCE WITH OWNER'S DIRECTION WITHIN AREAS OF DISTURBANCE.
6. THE CONTRACTOR SHALL ENSURE THAT ALL DISTURBED LANDSCAPED AREAS ARE GRADED TO MEET FLUSH AT THE ELEVATION OF WALKWAYS AND TOP OF CURB ELEVATIONS EXCEPT UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET. NO ABRUPT CHANGES IN GRADE ARE PERMITTED IN DISTURBED LANDSCAPING AREAS.

ISSUE	DATE	BY	DESCRIPTION
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STONEFIELD engineering & design
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Princeton, NJ · Tampa, FL · Detroit, MI
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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
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JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

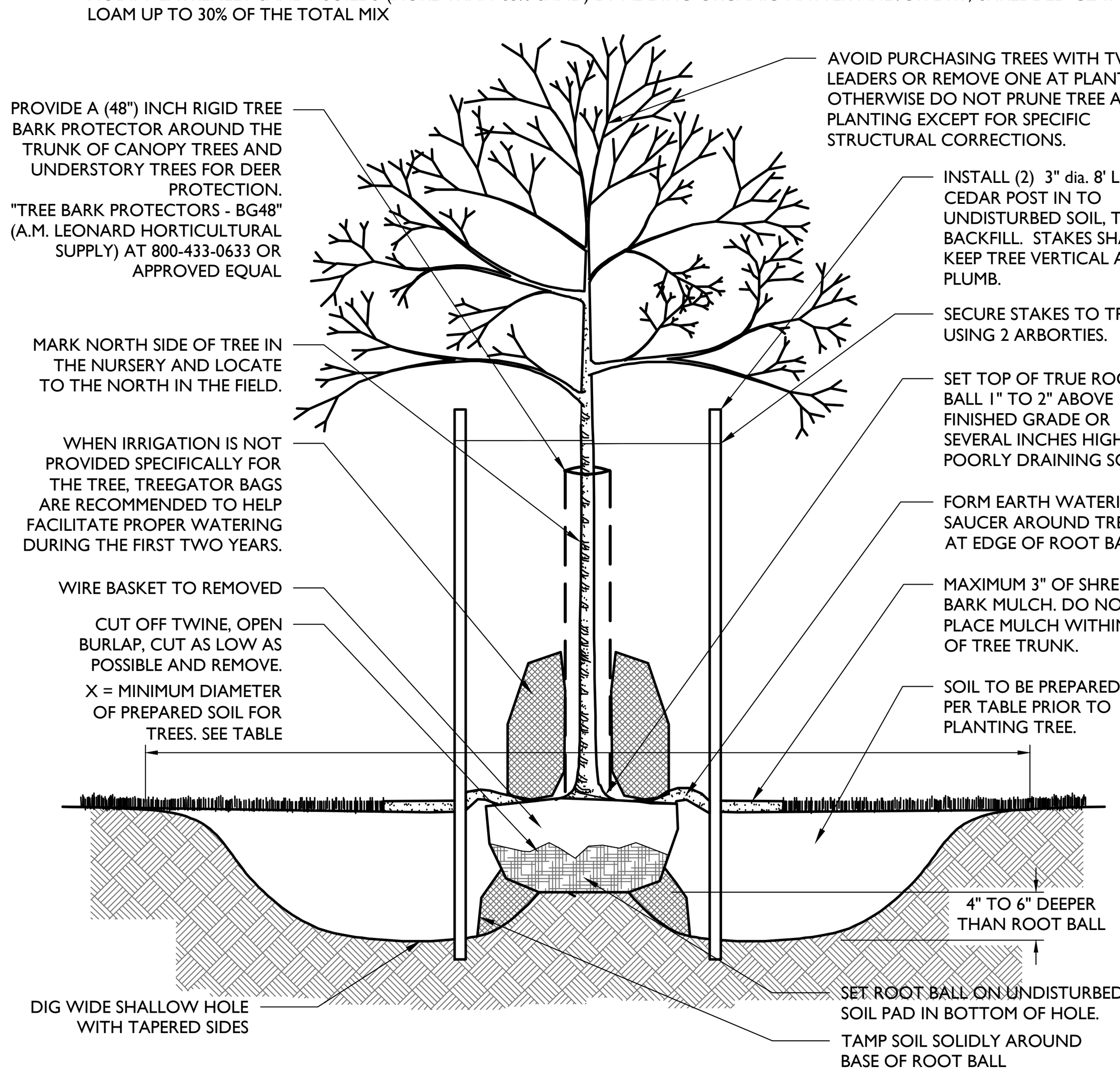
TITLE: **LANDSCAPING PLAN**

DRAWING: **C-8**

Z:\BOSTON\BOS2023\BOS-230051 ADA ARCHITECTS - 225 BOSTON POST ROAD, SUDBURY, MA\CAD\PLOT\SP-08-LANDSHG

NOTES:

1. FOR CONTAINER-GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER
2. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
3. SOIL AMENDMENTS:
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - MODIFY EXTREMELY SANDY SOILDS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX



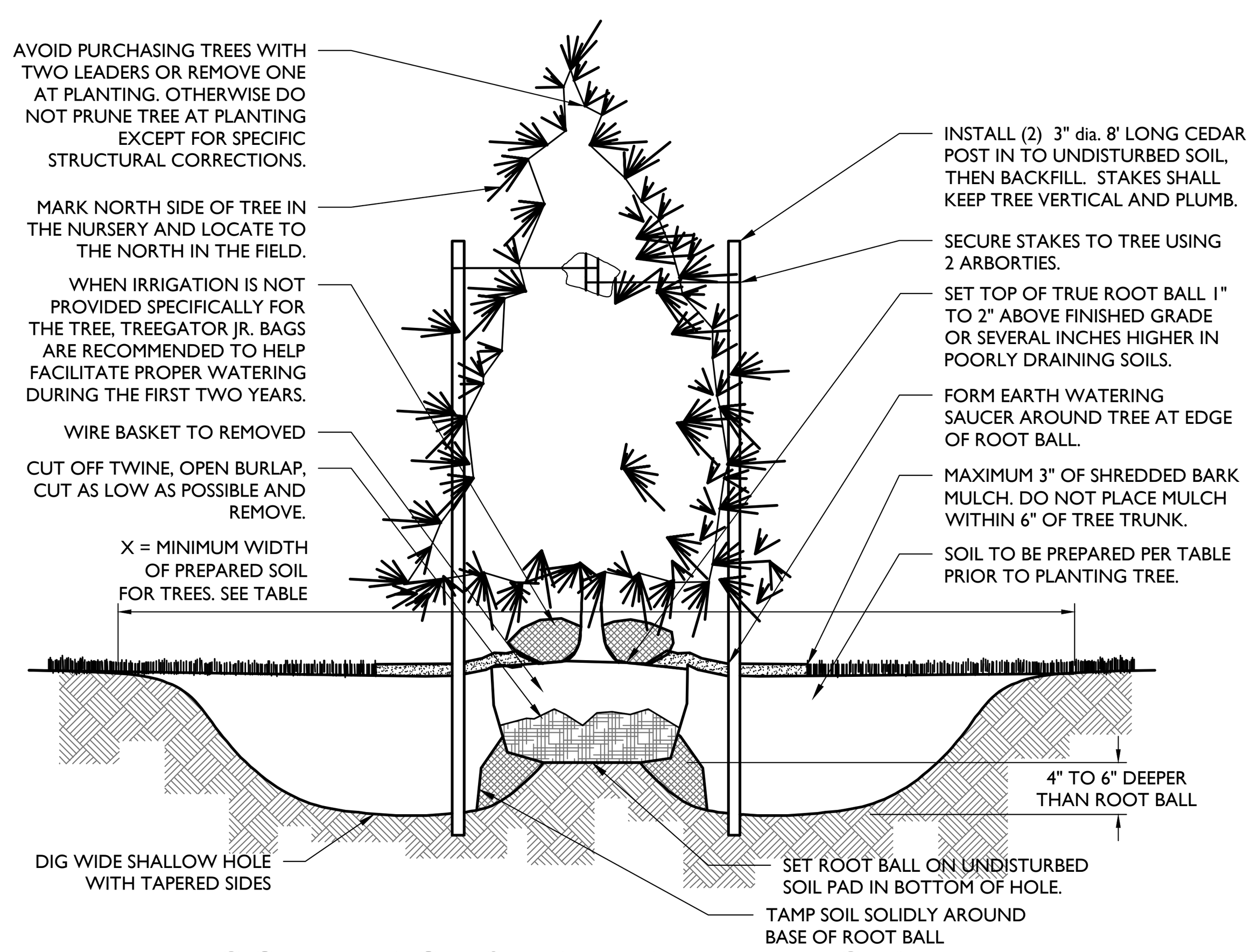
DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

1

NOTES:

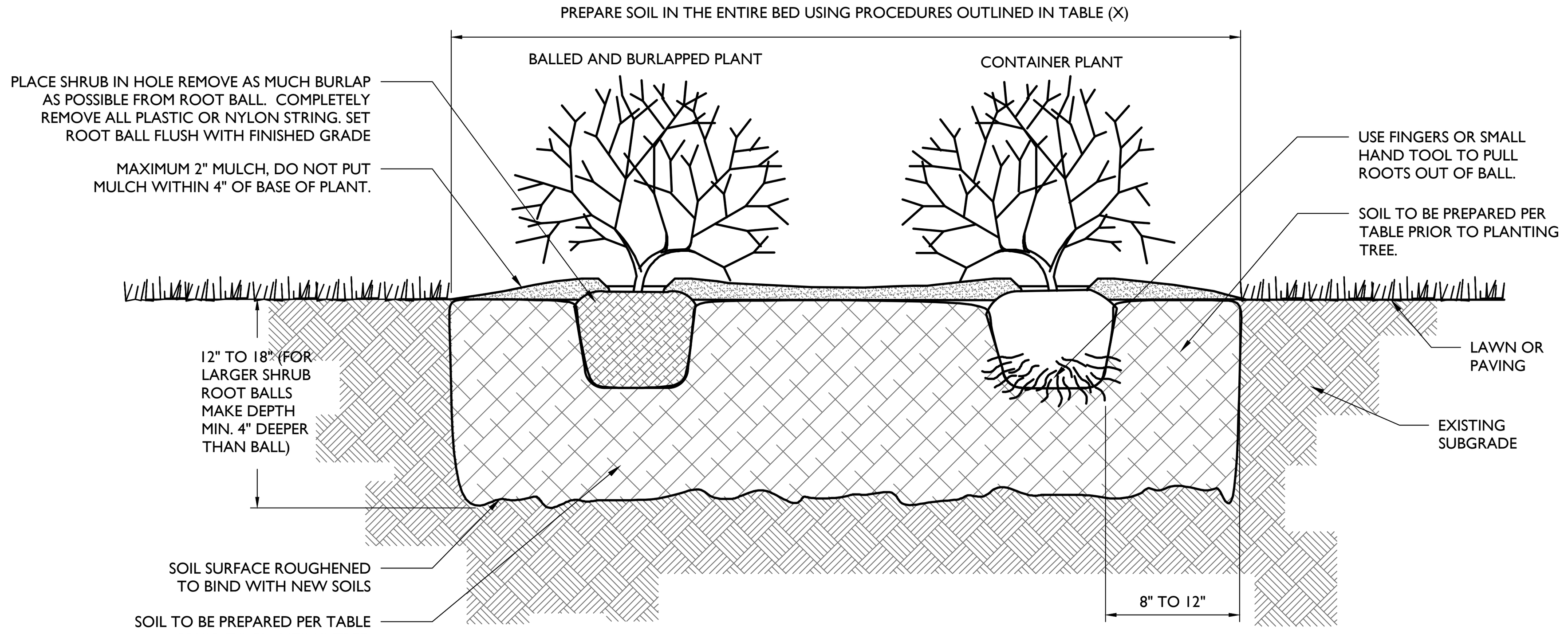
1. FOR CONTAINER-GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
2. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
3. SOIL AMENDMENTS:
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX



CONIFEROUS TREE PLANTING DETAIL

NOT TO SCALE

2



NOTES:

1. FOR THE CONTAINER-GROWN SHRUBS, USE FINGERS OR SMALL HAND TOOL TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
2. THOROUGHLY SOAK THE SHRUB ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - . MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL

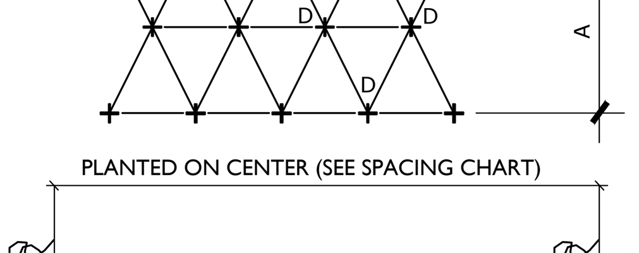
DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

3

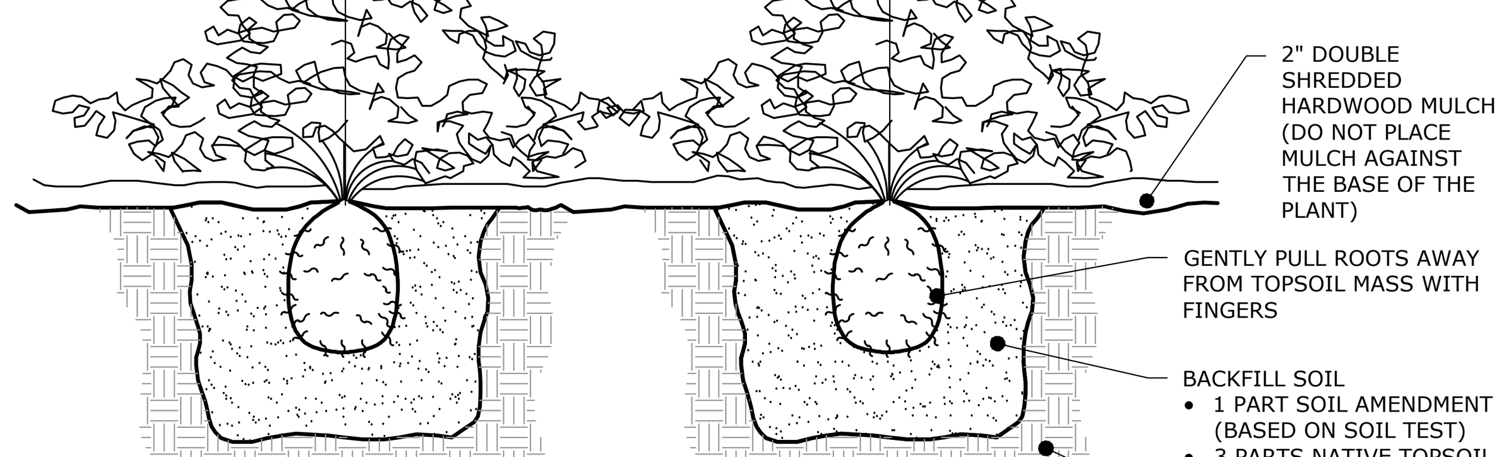
NOTES:

1. THOROUGHLY SOAK THE GROUND COVER ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
2. SOIL AMENDMENTS:
   - MODIFY HEAVY CLAY OR SILT SOILDS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - MODIFY EXTREMELY SANDY SOILDS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX
3. ALL GROUND COVER AREAS SHALL BE TREATED WITH A PRE-EMERGENT PER MANUFACTURER'S SPECIFICATIONS



SPACING CHART
NOT TO SCALE

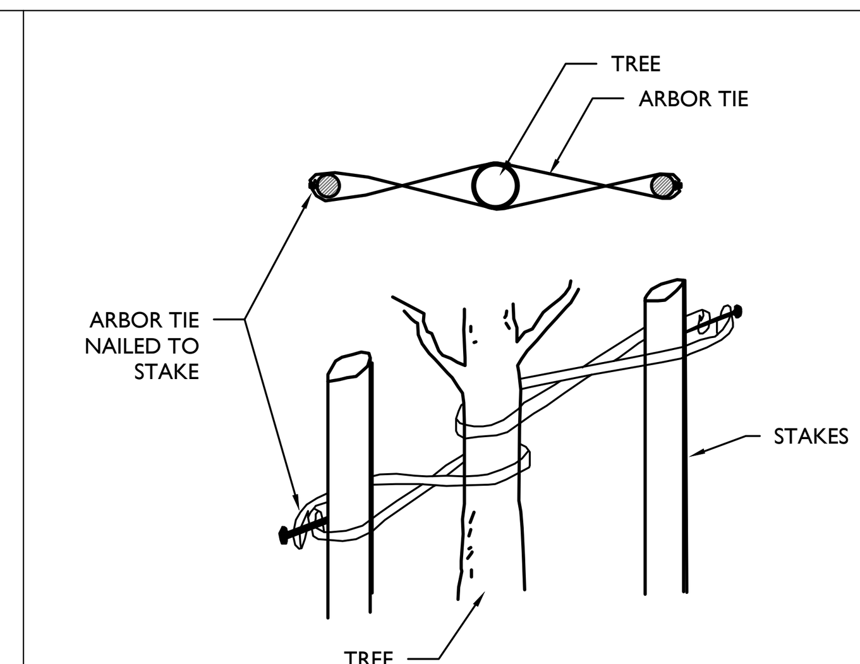
SPACING "D"	ROW "A"
6" O.C.	5.20"
8" O.C.	6.93"
10" O.C.	8.66"
12" O.C.	10.40"
15" O.C	13.00"
18" O.C.	15.60"
24" O.C.	20.80"
30" O.C.	26.00"
36" O.C.	30.00"



GROUND COVER/PERENNIAL/ANNUAL PLANTING DETAIL

NOT TO SCALE

4



INSTALLATION GUIDELINES:
1. LOOP TIE AROUND TREE AND NAIL TO CEDAR STAKE.
2. REMOVE ALL STAKING AND TIES AT END OF FIRST GROWING SEASON.
3. FOLD ENDS OF ARBORTIE BACK. SECURE TO STAKES WITH 1" GALVANIZED ROOFING NAIL OR USE A KNOT.
4. CONSULT LANDSCAPE ARCHITECT FOR STAKING OF TREES LARGER THAN 6".
5. SOURCES INCLUDE:
   GEMPLERS 1-800-332-6744 or GEMPLERS.COM
   CSP OUTDOORS 1-800-592-6940 or CSPOUTDOORS.COM

ARBORTIE DETAIL

NOT TO SCALE

5

GENERAL LANDSCAPING NOTES:

1. THE LANDSCAPE CONTRACTOR SHALL FURNISH ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH THESE SPECIFICATIONS, APPROVED OR FINAL DRAWINGS, AND INSTRUCTIONS PROVIDED BY THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIALS, OR OWNER/OWNER'S REPRESENTATIVE. ALL WORK COMPLETED AND MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH THE INTENTION OF THE SPECIFICATIONS, DRAWINGS, AND INSTRUCTIONS AND EXECUTED WITH THE STANDARD LEVEL OF CARE FOR THE LANDSCAPE INDUSTRY.
2. WORK MUST BE CARRIED OUT ONLY DURING WEATHER CONDITIONS FAVORABLE TO LANDSCAPE CONSTRUCTION AND TO THE HEALTH AND WELFARE OF PLANTS. THE SUITABILITY OF SUCH WEATHER CONDITIONS SHALL BE DETERMINED BY THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL.
3. IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR, BEFORE ORDERING OR PURCHASING MATERIALS, TO PROVIDE SAMPLES OF THOSE MATERIALS TO THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL FOR APPROVAL, IF SO REQUESTED.
4. IF SAMPLES ARE REQUESTED, THE LANDSCAPE CONTRACTOR IS TO SUBMIT CERTIFICATION TAGS FROM TREES, SHRUBS AND SEED VERIFYING TYPE AND PURITY.
5. UNLESS OTHERWISE AUTHORIZED BY THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL, THE LANDSCAPE CONTRACTOR SHALL PROVIDE NOTICE AT LEAST FORTY-EIGHT HOURS (48 HRS.) IN ADVANCE OF THE ANTICIPATED DELIVERY DATE OF ANY PLANT MATERIALS TO THE PROJECT SITE. A LEGIBLE COPY OF THE INVOICE, SHOWING VARIETIES AND SIZES OF MATERIALS INCLUDED FOR EACH SHIPMENT SHALL BE FURNISHED TO THE PROJECT LANDSCAPE DESIGNER, OR GOVERNING MUNICIPAL OFFICIAL.
6. THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL RESERVES THE RIGHT TO INSPECT AND REJECT PLANTS AT ANY TIME AND AT ANY PLACE.

PROTECTION OF EXISTING VEGETATION NOTES:

1. BEFORE COMMENCING WORK, ALL EXISTING VEGETATION WHICH COULD BE IMPACTED AS A RESULT OF THE PROPOSED CONSTRUCTION ACTIVITIES MUST BE PROTECTED FROM DAMAGE BY THE INSTALLATION OF TREE PROTECTION FENCING. FENCING SHALL BE LOCATED AT THE DRIP-LINE OR LIMIT OF DISTURBANCE AS DEPICTED WITHIN THE APPROVED OR FINAL PLAN SET, ESTABLISHING THE TREE PROTECTION ZONE. FENCE INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE PROTECTION FENCE DETAIL." NO WORK MAY BEGIN UNTIL THIS REQUIREMENT IS FULFILLED. THE FENCING SHALL BE INSPECTED REGULARLY BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
2. IN ORDER TO AVOID DAMAGE TO ROOTS, BARK OR LOWER BRANCHES, NO VEHICLE, EQUIPMENT, DEBRIS, OR OTHER MATERIALS SHALL BE DRIVEN, PARKED OR PLACED WITHIN THE TREE PROTECTION ZONE. ALL ON-SITE CONTRACTORS SHALL USE ANY AND ALL PRECAUTIONARY MEASURES WHEN PERFORMING WORK AROUND TREES, WALKS, PAVEMENTS, UTILITIES, AND ANY OTHER FEATURES EITHER EXISTING OR PREVIOUSLY INSTALLED UNDER THIS CONTRACT.
3. IN RARE INSTANCES WHERE EXCAVATING, FILL, OR GRADING IS REQUIRED WITHIN THE DRIP-LINE OF TREES TO REMAIN, THE WORK SHALL BE PERFORMED AS FOLLOWS:
   - TRENCHING: WHEN TRENCHING OCCURS AROUND TREES TO REMAIN, THE TREE ROOTS SHALL NOT BE CUT, BUT THE TRENCH SHALL BE TUNNELED UNDER OR AROUND THE ROOTS BY CAREFUL HAND DIGGING AND WITHOUT INJURY TO THE ROOTS. NO ROOTS, LIMBS, OR WOODS ARE TO HAVE ANY PAINT OR MATERIAL APPLIED TO ANY SURFACE.
   - RAISING GRADES: WHEN THE GRADE AT AN EXISTING TREE IS BELOW THE NEW FINISHED GRADE, AND FILL NOT EXCEEDING 6 INCHES (6") IS REQUIRED, CLEAN, WASHED GRAVEL FROM ONE TO TWO INCHES (1" - 2") IN SIZE SHALL BE PLACED DIRECTLY AROUND THE TREE TRUNK. THE GRAVEL SHALL EXTEND OUT FROM THE TRUNK ON ALL SIDES A MINIMUM OF 18 INCHES (18") AND FINISH APPROXIMATELY TWO INCHES (2") ABOVE THE FINISH GRADE AT TREE. INSTALL GRAVEL BEFORE ANY EARTH FILL IS PLACED. NEW EARTH FILL SHALL NOT BE LEFT IN CONTACT WITH THE TRUNK OF ANY TREE REQUIRING FILL. WHERE FILL EXCEEDING 6 INCHES (6") IS REQUIRED, A DRY LAID TREE WELL SHALL BE CONSTRUCTED. IF APPLICABLE, TREE WELL INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE WELL DETAIL."
   - LOWERING GRADES: EXISTING TREES LOCATED IN AREAS WHERE THE NEW FINISHED GRADE IS TO BE LOWERED, SHALL HAVE RE-GRADING WORK DONE BY HAND TO THE INDICATED ELEVATION, NO GREATER THAN SIX INCHES (6"). ROOTS SHALL BE CUT CLEANLY THREE INCHES (3") BELOW FINISHED GRADE UNDER THE DIRECTION OF A LICENSED ARBORIST. WHERE CUT EXCEEDING 6 INCHES (6") IS REQUIRED, A DRY LAID RETAINING WALL SHALL BE CONSTRUCTED. IF APPLICABLE, THE RETAINING WALL INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE RETAINING WALL DETAIL."

SOIL PREPARATION AND MULCH NOTES:

1. LANDSCAPE CONTRACTOR SHALL OBTAIN A SOIL TEST OF THE IN-SITU TOPSOIL BY A CERTIFIED SOIL LABORATORY PRIOR TO PLANTING. LANDSCAPE CONTRACTOR SHALL ALLOW FOR A TWO WEEK TURNAROUND TIME FROM SUBMITTAL OF SAMPLE TO NOTIFICATION OF RESULTS.
2. BASED ON SOIL TEST RESULTS, ADJUST THE RATES OF LIME AND FERTILIZER THAT SHALL BE MIXED INTO THE TOP SIX INCHES (6") OF TOPSOIL. THE LIME AND FERTILIZER RATES PROVIDED WITHIN THE "SEED SPECIFICATION" OR "SOD SPECIFICATION" IS APPROXIMATE AND FOR BIDDING PURPOSES ONLY. IF ADDITIONAL AMENDMENTS ARE NECESSARY, ADJUST THE TOPSOIL AS FOLLOWS:
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM.
   - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.
3. TOPSOIL SHALL BE FERTILE, FRIABLE, NATURAL TOPSOIL OF LOAMING CHARACTER, WITHOUT ADMIXTURE OF SUBSOIL MATERIAL OBTAINED FROM A WELL-DRAINED ARABLE SITE, FREE FROM ALL CLAY, LUMPS, COARSE SANDS, STONES, PLANTS, ROOTS, STICKS, AND OTHER FOREIGN MATERIAL GREATER THAN ONE INCH (1").
4. TOPSOIL SHALL HAVE A PH RANGE OF 5.0-7.0 AND SHALL NOT CONTAIN LESS THAN 6% ORGANIC MATTER BY WEIGHT.
5. OBTAIN TOPSOIL ONLY FROM LOCAL SOURCES OR FROM AREAS HAVING SIMILAR SOIL CHARACTERISTICS TO THAT FOUND AT THE PROJECT SITE.
6. CONTRACTOR SHALL PROVIDE A SIX INCH (6") DEEP LAYER OF TOPSOIL IN ALL PLANTING AREAS. TOPSOIL SHALL BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN SOIL CONDITIONS.
7. UNLESS OTHERWISE NOTED IN THE CONTRACT, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBED AREA OF THE SITE.
8. LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE SUB-GRADE ELEVATION MEETS THE FINISHED GRADE ELEVATION (LESS THE REQUIRED TOPSOIL), IN ACCORDANCE WITH THE APPROVED OR FINAL GRADING PLAN.
9. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THE APPROVED OR FINAL CONSTRUCTION SET UNLESS OTHERWISE DIRECTED BY THE PROJECT LANDSCAPE DESIGNER OR MUNICIPAL OFFICIAL.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER SURFACE AND SUBSURFACE PLANT BED DRAINAGE PRIOR TO THE INSTALLATION OF PLANTINGS. IF POOR DRAINAGE CONDITIONS EXIST, CORRECTIVE ACTION SHALL BE TAKEN PRIOR TO INSTALLATION. ALL PLANTING AND LAWN AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW A FREE FLOW OF SURFACE WATER.
11. DOUBLE SHREDDED HARDWOOD MULCH OR APPROVED EQUAL SHALL BE USED AS A THREE INCH (3") TOP DRESSING IN ALL SHRUB PLANTING BEDS AND AROUND ALL TREES PLANTED BY LANDSCAPE CONTRACTOR. GROUND COVER, PERENNIAL, AND ANNUAL PLANTING BEDS SHALL BE MULCHED WITH A TWO INCH (2") TOP DRESSING. SINGLE TREES OR SHRUBS SHALL BE MULCHED TO AVOID CONTACT WITH TRUNK OR PLANT STEM. MULCH SHALL BE OF SUFFICIENT CHARACTER AS NOT TO BE EASILY DISPLACED BY WIND OR WATER RUNOFF.
12. WHENEVER POSSIBLE, THE SOIL PREPARATION AREA SHALL BE CONNECTED FROM PLANTING TO PLANTING.
13. SOIL SHALL BE LOOSENED WITH A BACKHOE OR OTHER LARGE COARSE-TILING EQUIPMENT UNLESS THE SOIL IS FROZEN OR EXCESSIVELY WET. TILING THAT PRODUCES LARGE, COARSE CHUNKS OF SOIL IS PREFERABLE TO TILING THAT RESULTS IN FINE GRAINS UNIFORM IN TEXTURE. AFTER THE AREA IS LOOSENED IT SHALL NOT BE DRIVEN OVER BY ANY VEHICLE.
14. APPLY PRE-EMERGENT WEED CONTROL TO ALL PLANT BEDS PRIOR TO MULCHING. ENSURE COMPATIBILITY BETWEEN PRODUCT AND PLANT MATERIAL.
15. ALL PLANTING SOIL SHALL BE AMENDED WITH THE FOLLOWING:

MYCRO® TREE SAVER - A DRY GRANULAR MYCORRHIZAL FUNGI INOCULANT THAT IS MIXED IN THE BACKFILL WHEN PLANTING TREES AND SHRUBS. IT CONTAINS SPORES OF BOTH ECTOMYCORRHIZAL AND VA MYCORRHIZAL FUNGI (VAM), BENEFICIAL RHIZOSPHERE BACTERIA, TERRA-SORB SUPERABSORBENT HYDROGEL TO REDUCE WATER LEACHING, AND SELECTED ORGANIC MICROBIAL NUTRIENTS.
- DIRECTIONS FOR USE: USE 3-OZ PER EACH FOOT DIAMETER OF THE ROOT BALL, OR 3-OZ PER INCH CALIPER. MIX INTO THE BACKFILL WHEN TRANSPLANTING TREES AND SHRUBS. MIX PRODUCT IN A RING-SHAPED VOLUME OF SOIL AROUND THE UPPER PORTION OF THE ROOT BALL, EXTENDING FROM THE SOIL SURFACE TO A DEPTH OF ABOUT 8 INCHES, AND EXTENDING OUT FROM THE ROOT BALL ABOUT 8 INCHES INTO THE BACKFILL. APPLY WATER TO SOIL SATURATION.
- MYCOR® TREE SAVER® IS EFFECTIVE FOR ALL TREE AND SHRUB SPECIES EXCEPT RHODODENDRONS, AZALEAS, AND MOUNTAIN LAUREL, WHICH REQUIRE ERICOID MYCORRHIZAE.
- SOIL PH: THE FUNGI IN THIS PRODUCT WERE CHOSEN BASED ON THEIR ABILITY TO SURVIVE AND COLONIZE PLANT ROOTS IN A PH RANGE OF 3 TO 9.
- FUNGICIDES: THE USE OF CERTAIN FUNGICIDES CAN HAVE A DETRIMENTAL EFFECT ON THE INOCULATION PROGRAM. SOIL APPLICATION OF ANY FUNGICIDE IS NOT RECOMMENDED FOR TWO WEEKS AFTER APPLICATION.
- OTHER PESTICIDES: HERBICIDES AND INSECTICIDES DO NOT NORMALLY INTERFERE WITH MYCORRHIZAL FUNGAL DEVELOPMENT, BUT MAY INHIBIT THE GROWTH OF SOME TREE AND SHRUB SPECIES IF NOT USED PROPERLY.

HEALTHY START MACRO TABS 12-8-8
- FERTILIZER TABLETS ARE PLACED IN THE UPPER 4 INCHES OF BACKFILL SOIL WHEN PLANTING TREES AND SHRUBS.
- TABLETS ARE FORMULATED FOR LONG-TERM RELEASE BY SLOW BIODEGRADATION, AND LAST UP TO 2 YEARS AFTER PLANTING. TABLETS CONTAIN 12-8-8 NPK FERTILIZER, AS WELL AS A MINIMUM OF SEVEN PERCENT (7%) HUMIC ACID BY WEIGHT, MICROBIAL NUTRIENTS DERIVED FROM SEA KELP, PROTEIN BYPRODUCTS, AND YUCCA SCHIDIGERA, AND A COMPLEMENT OF BENEFICIAL RHIZOSPHERE BACTERIA. THE STANDARD 21 GRAM TABLET IS SPECIFIED HERE. DIRECTIONS FOR USE: FOR PLANTING BALLED & BURLAPPED (B&B) TREES AND SHRUBS, MEASURE THE THICKNESS OF THE TRUNK, AND USE ABOUT 1 TABLET (21-G) PER HALF-INCH. PLACE THE TABLETS DIRECTLY NEXT TO THE ROOT BALL, EVENLY DISTRIBUTED AROUND ITS PERIMETER, AT A DEPTH OF ABOUT 4 INCHES.

IRRIGATION DURING ESTABLISHMENT

SIZE AT PLANTING	IRRIGATION FOR VITALITY	IRRIGATION FOR SURVIVAL
< 2" CALIPER	DAILY FOR TWO WEEKS, EVERY OTHER DAY FOR TWO MONTHS, WEEKLY UNTIL ESTABLISHED	TWO TO THREE TIMES WEEKLY FOR TWO TO THREE MONTHS
2"-4 CALIPER	DAILY FOR ONE MONTH, EVERY OTHER DAY FOR THREE MONTHS, WEEKLY UNTIL ESTABLISHED	TWO TO THREE TIMES WEEKLY FOR THREE TO FOUR MONTHS
4 >" CALIPER	DAILY FOR SIX WEEKS, EVERY OTHER DAY FOR FIVE MONTHS, WEEKLY UNTIL ESTABLISHED	TWICE WEEKLY FOR FOUR TO FIVE MONTHS

TABLE NOTES:
1. AT EACH IRRIGATION, APPLY TWO TO THREE GALLONS PER INCH TRUNK CALIPER TO THE ROOT BALL SURFACE. APPLY IT IN A MANNER SO ALL WATER SOAKS THE ENTIRE ROOT BALL. DO NOT WATER IF ROOT BALL IS WET/SATURATED ON THE IRRIGATION DAY.

2. WHEN IRRIGATING FOR VITALITY, DELETE DAILY IRRIGATION WHEN PLANTING IN WINTER OR WHEN PLANTING IN COOL CLIMATES. ESTABLISHMENT TAKES THREE TO FOUR MONTHS PER INCH TRUNK CALIPER. NEVER APPLY IRRIGATION IF THE SOIL IS SATURATED.

3. WHEN IRRIGATION FOR SURVIVAL, TREES TAKE MUCH LONGER TO ESTABLISH THAN REGULARLY IRRIGATED TREES. IRRIGATION MAY BE REQUIRED IN THE NORMAL HOT, DRY PORTIONS OF THE FOLLOWING YEAR.

PLANT QUALITY AND HANDLING NOTES:

1. ALL PLANT MATERIAL SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004) OR LATEST REVISION AS PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
2. IN ALL CASES, BOTANICAL NAMES LISTED WITHIN THE APPROVED OR FINAL PLANT LIST SHALL TAKE PRECEDENCE OVER COMMON NAMES.
3. ALL PLANTS SHALL BE OF SELECTED SPECIMEN QUALITY, EXCEPTIONALLY HEAVY, TIGHTLY KNIT, SO TRAINED OR FAVORED IN THEIR DEVELOPMENT AND APPEARANCE AS TO BE SUPERIOR IN FORM, NUMBER OF BRANCHES, COMPACTNESS AND SYMMETRY. ALL PLANTS SHALL HAVE A NORMAL HABIT OR SOUND, HEALTHY, VIGOROUS PLANTS WITH WELL DEVELOPED ROOT SYSTEM. PLANTS SHALL BE FREE OF DISEASE, INSECT PESTS, EGGS OR LARVAE.
4. PLANTS SHALL NOT BE PRUNED BEFORE DELIVERY. TREES WITH ABRASION OF THE BARK, SUNSCALDS, DISFIGURING KNOTS OR FRESH CUTS OF LIMBS OVER ONE AND ONE-FOURTH INCHES (1-1/4") WHICH HAVE NOT COMPLETELY CALLOUSED SHALL BE REJECTED.
5. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH AND BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE.
6. THE ROOT SYSTEM OF EACH PLANT SHALL BE WELL PROVIDED WITH FIBROUS ROOTS. ALL PARTS SHALL BE SOUND, HEALTHY, VIGOROUS, WELL-BRANCHED AND DENSELY FOLIATED WHEN IN LEAF.
7. ALL PLANTS DESIGNATED BALL AND BURLAP (B&B) MUST BE MOVED WITH THE ROOT SYSTEM AS SOLID UNITS WITH BALLS OF EARTH FIRMLY WRAPPED WITH BURLAP. THE DIAMETER AND DEPTH OF THE BALLS OF EARTH MUST BE SUFFICIENT TO ENCOMPASS THE FIBROUS ROOT FEEDING SYSTEMS NECESSARY FOR THE HEALTHY DEVELOPMENT OF THE PLANT. NO PLANT SHALL BE ACCEPTED WHEN THE BALL OF EARTH SURROUNDING ITS ROOTS HAS BEEN BADLY CRACKED OR BROKEN PREPARATORY TO OR DURING THE PROCESS OF PLANTING. THE BALLS SHALL REMAIN INTACT DURING ALL OPERATIONS. ALL PLANTS THAT CANNOT BE PLANTED AT ONCE MUST BE HEELED-IN BY SETTING IN THE GROUND AND COVERING THE BALLS WITH SOIL OR MULCH AND THEN WATERING. HEMP BURLAP AND TWINE IS PREFERABLE TO TREATED. IF TREATED BURLAP IS USED, ALL TWINE IS TO BE CUT FROM AROUND THE TRUNK AND ALL BURLAP IS TO BE REMOVED.
8. PLANTS TRANSPORTED TO THE PROJECT IN OPEN VEHICLES SHALL BE COVERED WITH TARPS OR OTHER SUITABLE COVERS SECURELY FASTENED TO THE BODY OF THE VEHICLE TO PREVENT INJURY TO THE PLANTS. CLOSED VEHICLES SHALL BE ADEQUATELY VENTILATED TO PREVENT OVERHEATING OF THE PLANTS. EVIDENCE OF INADEQUATE PROTECTION FOLLOWING DIGGING, CARELESSNESS WHILE IN TRANSIT, OR IMPROPER HANDLING OR STORAGE SHALL BE CAUSE FOR REJECTION OF PLANT MATERIAL. ALL PLANTS SHALL BE KEPT MOIST, FRESH, AND PROTECTED. SUCH PROTECTION SHALL ENCOMPASS THE ENTIRE PERIOD DURING WHICH THE PLANTS ARE IN TRANSIT, BEING HANDLED, OR ARE IN TEMPORARY STORAGE.
9. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE CORRESPONDING LANDSCAPE PLAN AND PLANTING DETAILS.
10. LANDSCAPE CONTRACTOR SHALL MAKE BEST EFFORT TO INSTALL PLANTINGS ON THE SAME DAY AS DELIVERY. IF PLANTS ARE NOT PLANTED IMMEDIATELY ON SITE, PROPER CARE SHALL BE TAKEN TO PLACE THE PLANTINGS IN PARTIAL SHADE WHEN POSSIBLE. THE ROOT BALL SHALL BE KEPT MOIST AT ALL TIME AND COVERED WITH MOISTENED MULCH OR AGED WOODCHIPS. PROPER IRRIGATION SHALL BE SUPPLIED SO AS TO NOT ALLOW THE ROOT BALL TO DRY OUT. PLANTINGS SHALL BE UNTIED AND PROPER SPACING SHALL BE ALLOTTED FOR AIR CIRCULATION AND TO PREVENT DISEASE, WILTING, AND LEAF LOSS. PLANTS THAT REMAIN UNPLANTED FOR A PERIOD OF TIME GREATER THAN THREE (3) DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH AND WATERED AS REQUIRED TO PRESERVE ROOT MOISTURE.
11. NO PLANT MATERIAL SHALL BE PLANTED IN MUDDY OR FROZEN SOIL.
12. PLANTS WITH INJURED ROOTS OR BRANCHES SHALL BE PRUNED PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY DISEASED OR INJURED PLANTS SHALL BE REMOVED.
13. IF ROCK OR OTHER UNDERGROUND OBSTRUCTION IS ENCOUNTERED, THE LANDSCAPE DESIGNER RESERVES THE RIGHT TO RELOCATE OR ENLARGE PLANTING PITS OR DELETE PLANT MATERIAL FROM THE CONTRACT.
14. IF PLANTS ARE PROPOSED WITHIN SIGHT TRIANGLES, TREES SHALL BE LIMBED AND MAINTAINED TO A HEIGHT OF EIGHT FEET (8') ABOVE GRADE, AND SHRUBS, GROUND COVER, PERENNIALS, AND ANNUALS SHALL BE MAINTAINED TO A HEIGHT NOT TO EXCEED TWO FEET (2') ABOVE GRADE UNLESS OTHERWISE NOTED OR SPECIFIED BY THE GOVERNING MUNICIPALITY OR AGENCY.
15. INSTALLATION SHALL OCCUR DURING THE FOLLOWING SEASONS:
    PLANTS (MARCH 15 - DECEMBER 15)
    LAWNS (MARCH 15 - JUNE 15 OR SEPTEMBER 1 - DECEMBER 1)
16. THE FOLLOWING TREES ARE SUSCEPTIBLE TO TRANSPLANT SHOCK AND SHALL NOT BE PLANTED DURING THE FALL SEASON (STARTING SEPTEMBER 15):

ABIES CONCOLOR	CORNUS VARIETIES	OSTRYA VIRGINIANA
ACER BUERGERIANUM	CRATAEGUS VARIETIES	PINUS NIGRA
ACER FREEMANII	CUPRESSOCYPARIS LEYLANDII	PLATANUS VARIETIES
ACER RUBRUM	FAGUS VARIETIES	POPULUS VARIETIES
ACER SACCHARINUM	HALESIA VARIETIES	PRUNUS VARIETIES
BETULA VARIETIES	ILEX X FOSTERII	PYRUS VARIETIES
CARPINUS VARIETIES	ILEX NELLIE STEVENS	QUERCUS VARIETIES (NOT Q. PALUSTRIS)
CEDRUS DEODARA	ILEX OPACA	SALIX WEEPING VARIETIES
CELTIS VARIETIES	JUNIPERUS VIRGINIANA	SORBUS VARIETIES
CERCIDIPHYLLUM VARIETIES	KOELREUTERIA PANICULATA	TAXODIUM VARIETIES
CERCIS CANADENSIS	LIQUIDAMBAR VARIETIES	TAXUX B REPANDENS
CORNUS VARIETIES	LIRIODENDRON VARIETIES	TILIA TOMENTOSA VARIETIES
CRATAEGUS VARIETIES	MALUS IN LEAF	ULMUS PARVIFOLIA VARIETIES
	NYSSA SYLVATICA	ZELKOVA VARIETIES

17. IF A PROPOSED PLANT IS UNATTAINABLE OR ON THE FALL DIGGING HAZARD LIST, AN EQUIVALENT SPECIES OF THE SAME SIZE MAY BE REQUESTED FOR SUBSTITUTION OF THE ORIGINAL PLANT. ALL SUBSTITUTIONS SHALL BE APPROVED BY THE PROJECT LANDSCAPE DESIGNER OR MUNICIPAL OFFICIAL PRIOR TO ORDERING AND INSTALLATION.
18. DURING THE COURSE OF CONSTRUCTION/PLANT INSTALLATION, EXCESS AND WASTE MATERIALS SHALL BE CONTINUOUSLY AND PROMPTLY REMOVED AT THE END OF EACH WORK DAY. ALL DEBRIS, MATERIALS, AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF AND ALL PAVED AREAS SHALL BE CLEANED.
19. THE LANDSCAPE CONTRACTOR SHALL DISPOSE OF ALL RUBBISH AND EXCESS SOIL AT HIS EXPENSE TO AN OFF-SITE LOCATION AS APPROVED BY THE LOCAL MUNICIPALITY.
20. A 90-DAY MAINTENANCE PERIOD SHALL BEGIN IMMEDIATELY AFTER ALL PLANTS HAVE BEEN SATISFACTORILY INSTALLED.
21. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, REPLACING MULCH THAT HAS BEEN DISPLACED BY EROSION OR OTHER MEANS, REPAIRING AND RESHAPING WATER RINGS OR SAUCERS, MAINTAINING STAKES AND GUYS IF ORIGINALLY REQUIRED, WATERING WHEN NEEDED OR DIRECTED, WEEDING, PRUNING, SPRAYING, FERTILIZING, MOWING THE LAWN, AND PERFORMING ANY OTHER WORK REQUIRED TO KEEP THE PLANTS IN A HEALTHY CONDITION.
22. MOW ALL GRASS AREAS AT REGULAR INTERVALS TO KEEP THE GRASS HEIGHT FROM EXCEEDING THREE INCHES (3"). MOWING SHALL BE PERFORMED ONLY WHEN GRASS IS DRY. MOWER BLADE SHALL BE SET TO REMOVE NO MORE THAN ONE THIRD (1/3) OF THE GRASS LENGTH. WHEN THE AMOUNT OF GRASS IS HEAVY, IT SHALL BE REMOVED TO PREVENT DESTRUCTION OF THE UNDERLYING TURF. MOW GRASS AREAS IN SUCH A MANNER AS TO PREVENT CLIPPINGS FROM BLOWING ON PAVED AREAS, AND SIDEWALKS. CLEANUP AFTER MOWING SHALL INCLUDE SWEEPING OR BLOWING OF PAVED AREAS AND SIDEWALKS TO CLEAR THEM FROM MOWING DEBRIS.
23. GRASSED AREAS DAMAGED DURING THE PROCESS OF THE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHO SHALL RESTORE THE DISTURBED AREAS TO A CONDITION SATISFACTORY TO THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIAL, OR OWNER/OWNER'S REPRESENTATIVE. THIS MAY INCLUDE FILLING TO GRADE, FERTILIZING, SEEDING, AND MULCHING.
24. SHOULD THE OWNER REQUIRE MAINTENANCE BEYOND THE STANDARD 90-DAY MAINTENANCE PERIOD, A SEPARATE CONTRACT SHALL BE ESTABLISHED.
25. LANDSCAPE CONTRACTOR SHALL WATER NEW PLANTINGS FROM TIME OF INSTALL AND THROUGHOUT REQUIRED 90-DAY MAINTENANCE PERIOD UNTIL PLANTS ARE ESTABLISHED. IF ON-SITE WATER IS NOT AVAILABLE AT THE PROJECT LOCATION, THE LANDSCAPE CONTRACTOR SHALL FURNISH IT BY MEANS OR A WATERING TRUCK OR OTHER ACCEPTABLE MANNER.
26. THE QUANTITY OF WATER APPLIED AT ONE TIME SHALL BE SUFFICIENT TO PENETRATE THE SOIL TO A MINIMUM OF EIGHT INCHES (8") IN SHRUB BEDS AND SIX INCHES (6") IN TURF AREAS AT A RATE WHICH WILL PREVENT SATURATION OF THE SOIL.
27. IF AN AUTOMATIC IRRIGATION SYSTEM HAS BEEN INSTALLED, IT CAN BE USED FOR WATERING PLANT MATERIAL. HOWEVER, FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE LANDSCAPE CONTRACTOR'S RESPONSIBILITY OF PLANT HEALTH AND ESTABLISHMENT.

PLANT MATERIAL GUARANTEE NOTES:

1. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR (1 YR.) FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIAL, OR OWNER/OWNER'S REPRESENTATIVE.
2. THE LANDSCAPE CONTRACTOR SHALL REMOVE AND REPLACE DYING, DEAD, OR DEFECTIVE PLANT MATERIAL AT HIS EXPENSE. THE LANDSCAPE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS COMPANY'S OPERATIONS.
3. ALL REPLACEMENT PLANTS SHALL BE OF THE SAME SPECIES AND SIZE AS SPECIFIED ON THE APPROVED OR FINAL PLANT LIST. REPLACEMENTS RESULTING FROM REMOVAL, LOSS, OR DAMAGE DUE TO OCCUPANCY OF THE PROJECT IN ANY PART, VANDALISM, PHYSICAL DAMAGE BY ANIMALS, VEHICLES, ETC., AND LOSSES DUE TO CURTAILMENT OF WATER BY LOCAL AUTHORITIES SHALL BE APPROVED AND PAID FOR BY THE OWNER.
4. THE CONTRACTOR SHALL INSTRUCT THE OWNER AS TO THE PROPER CARE AND MAINTENANCE OF ALL PLANTINGS.

LAWN (SEED OR SOD) NOTES:

1. SEED MIXTURE SHALL BE FRESH, CLEAN, NEW CROP SEED. SOD SHALL BE STRONGLY ROOTED, UNIFORM IN THICKNESS, AND FREE OF WEEDS, DISEASE, AND PESTS.
2. SEED OR SOD SHALL BE PURCHASED FROM A RECOGNIZED DISTRIBUTOR AND SHALL BE COMPOSED OF THE MIX OR BLEND WITHIN THE PROVIDED "SEED SPECIFICATION" OR "SOD SPECIFICATION."
3. REFERENCE LANDSCAPE PLAN FOR AREAS TO BE SEEDED OR LAID WITH SOD.
4. SEEDING SHALL NOT BE PERFORMED IN WINDY WEATHER. IF THE SEASON OF THE PROJECT COMPLETION PROHIBITS PERMANENT STABILIZATION, TEMPORARY STABILIZATION SHALL BE PROVIDED IN ACCORDANCE WITH THE "TEMPORARY SEEDING SPECIFICATION."
5. PROTECT NEW LAWN AREAS AGAINST TRESPASSING WHILE THE SEED IS GERMINATING. FURNISH AND INSTALL FENCES, SIGNS, BARRIERS OR ANY OTHER NECESSARY TEMPORARY PROTECTIVE DEVICES. DAMAGE RESULTING FROM TRESPASS, EROSION, WASHOUT, SETTLEMENT OR OTHER CAUSES SHALL BE REPAIRED BY THE LANDSCAPE CONTRACTOR AT HIS EXPENSE. REMOVE ALL FENCES, SIGNS, BARRIERS OR OTHER TEMPORARY PROTECTIVE DEVICES ONCE LAWN HAS BEEN ESTABLISHED.

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

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www.stonefieldeng.com
120 Washington Street, Suite 201, Salem, MA 01970
Phone 617.203.2076

LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: AS SHOWN | PROJECT ID: BOS-230051

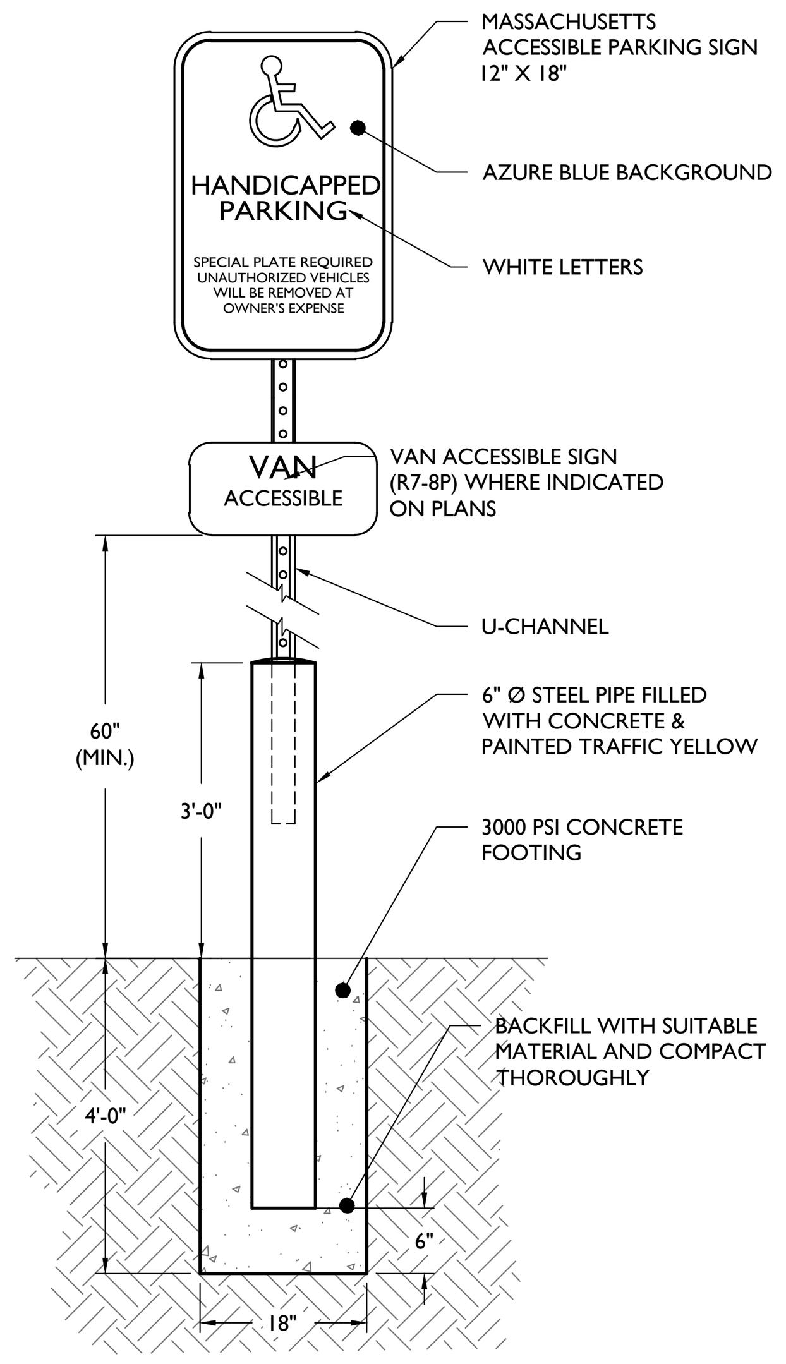
TITLE:

LANDSCAPING DETAILS

DRAWING:

C-9

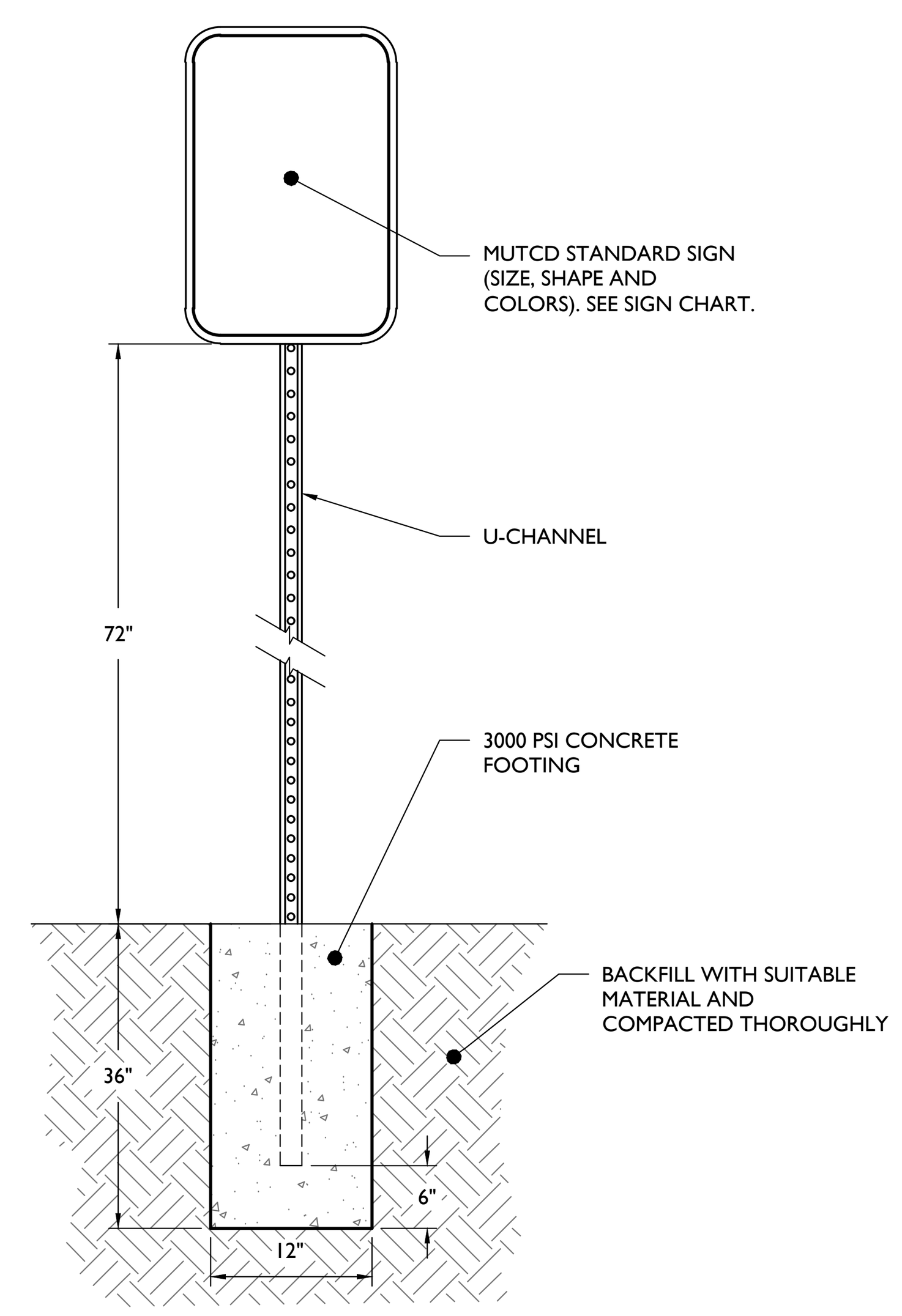
Z:\BOSTON\BOS\2023\BOS-230051 ADA ARCHITECTS - 225 BOSTON POST ROAD, SUDBURY, MA\CADD\PLOT\RDP-08-LAND.DWG



ACCESSIBLE PARKING SIGN WITH BOLLARD DETAIL

NOT TO SCALE

1



SIGN POST DETAIL

NOT TO SCALE

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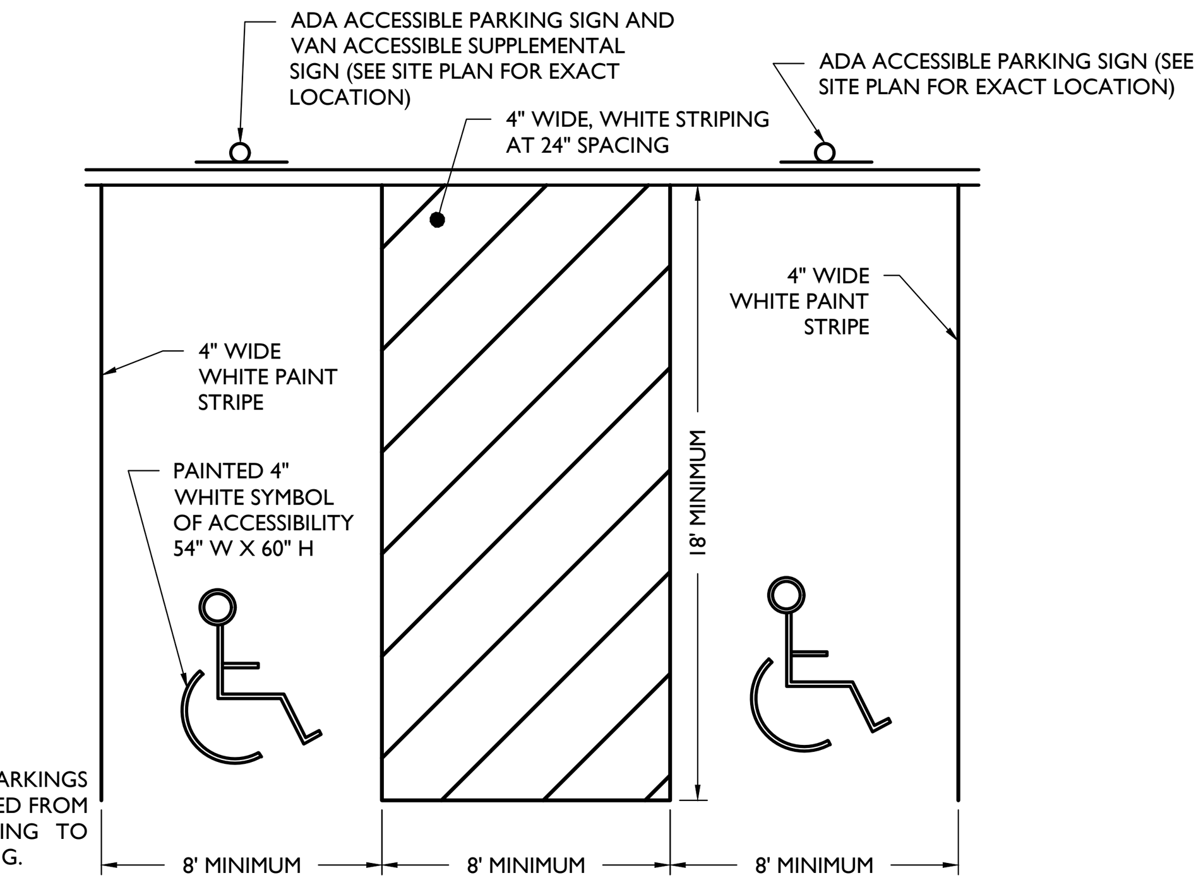
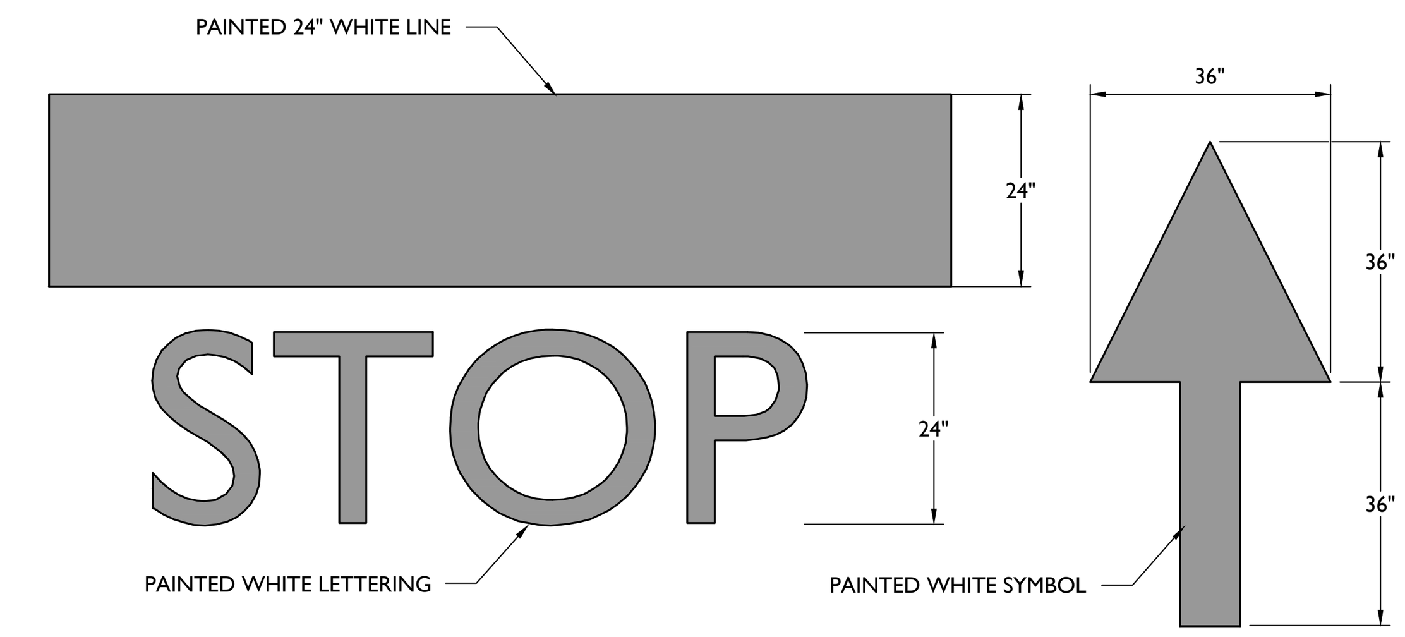


NOTE:
1. PARKING STALL MARKINGS ARE TO BE MEASURED FROM CENTER OF MARKING TO CENTER OF MARKING.

ACCESSIBLE PARKING STALL MARKINGS

NOT TO SCALE

3



STOP BAR & ARROW DETAILS

NOT TO SCALE

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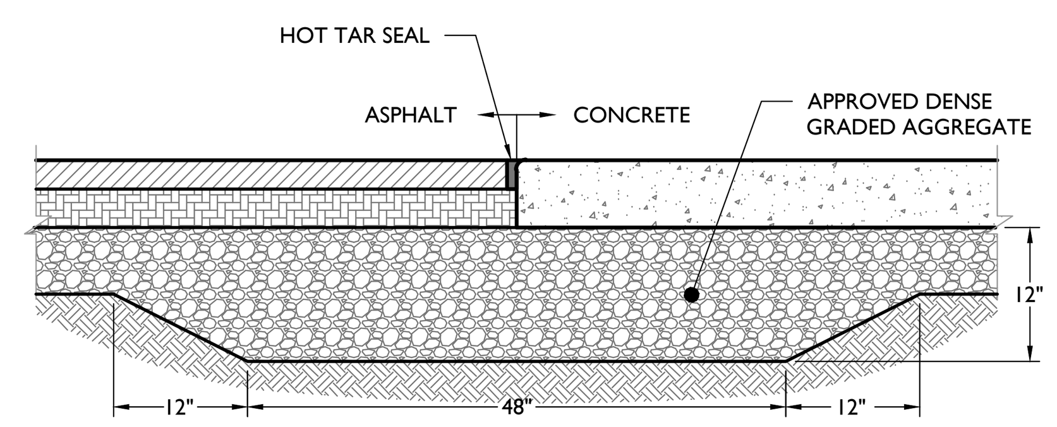

CONCRETE TO ASPHALT TRANSITION DETAIL

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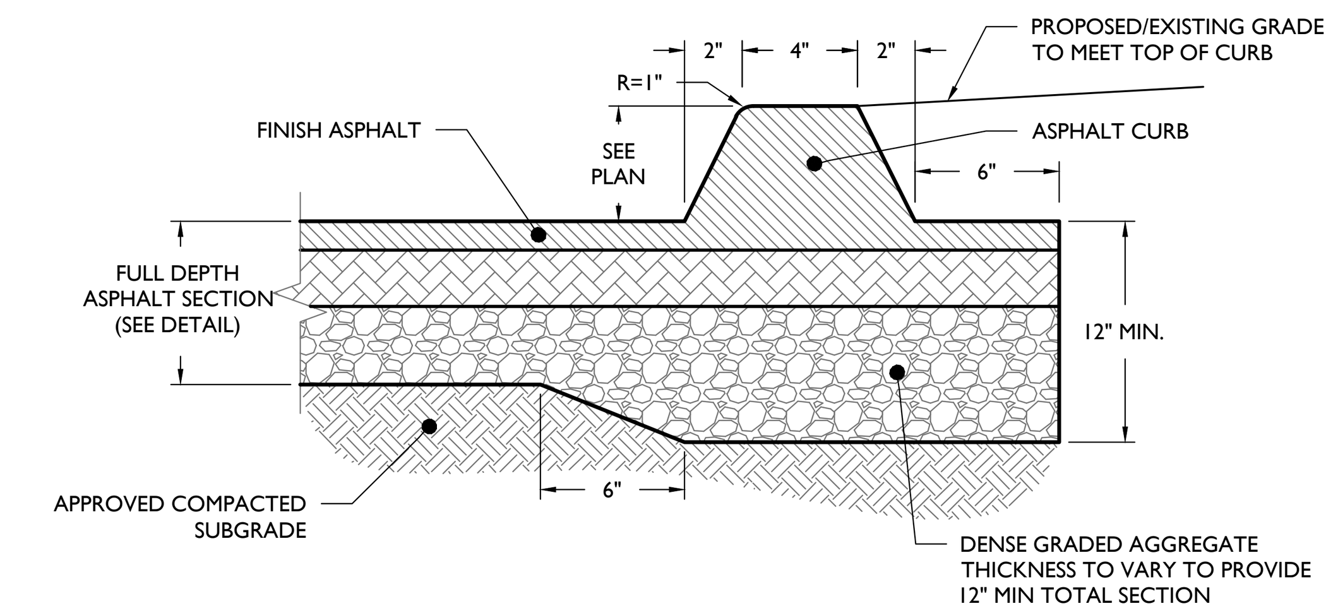

ASPHALT CURB DETAIL

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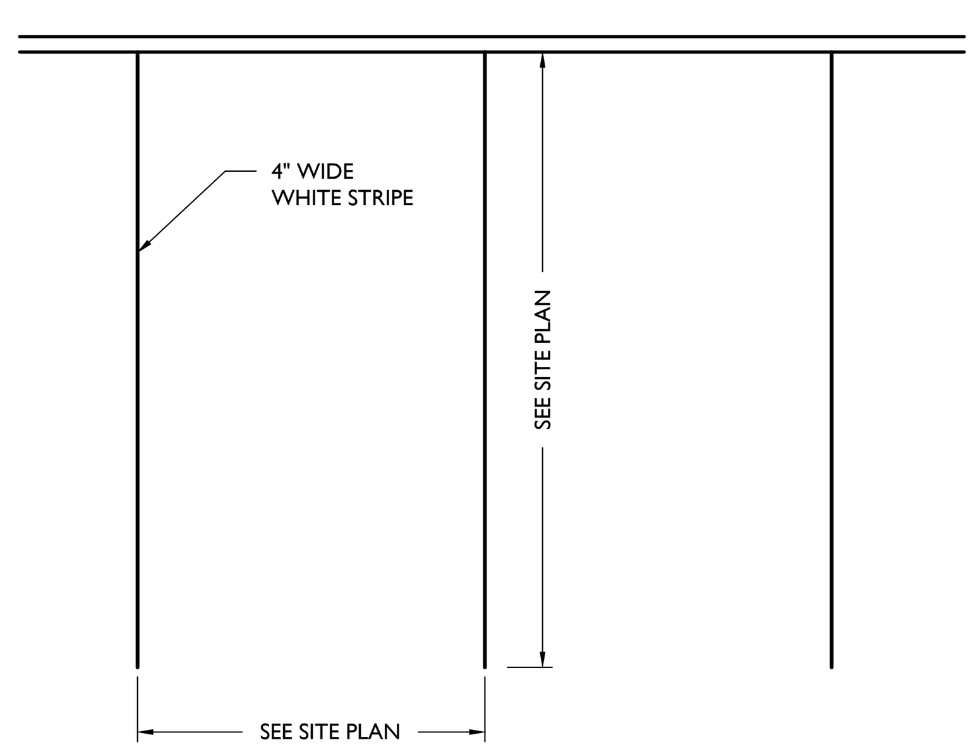

PARKING STALL MARKINGS

NOT TO SCALE

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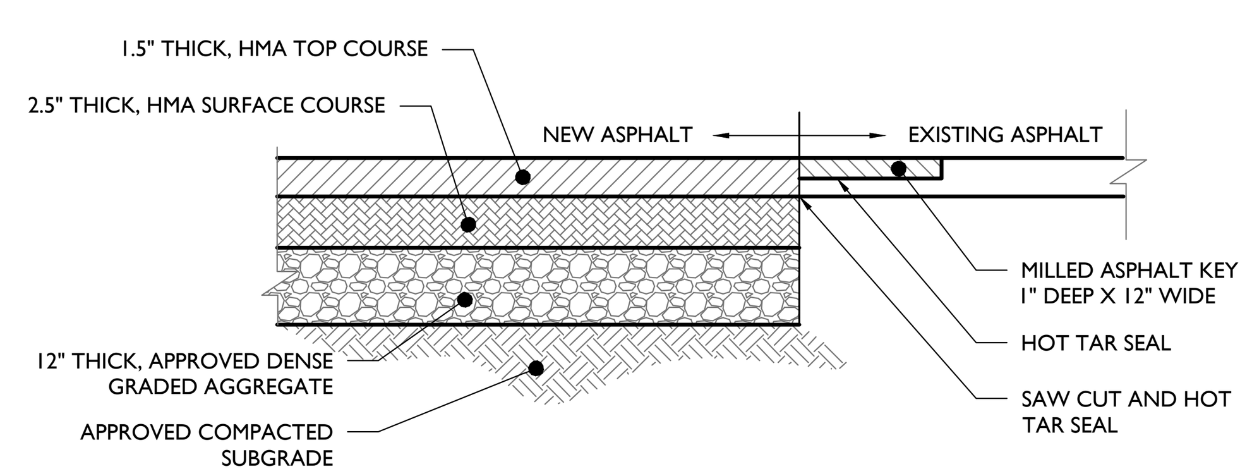
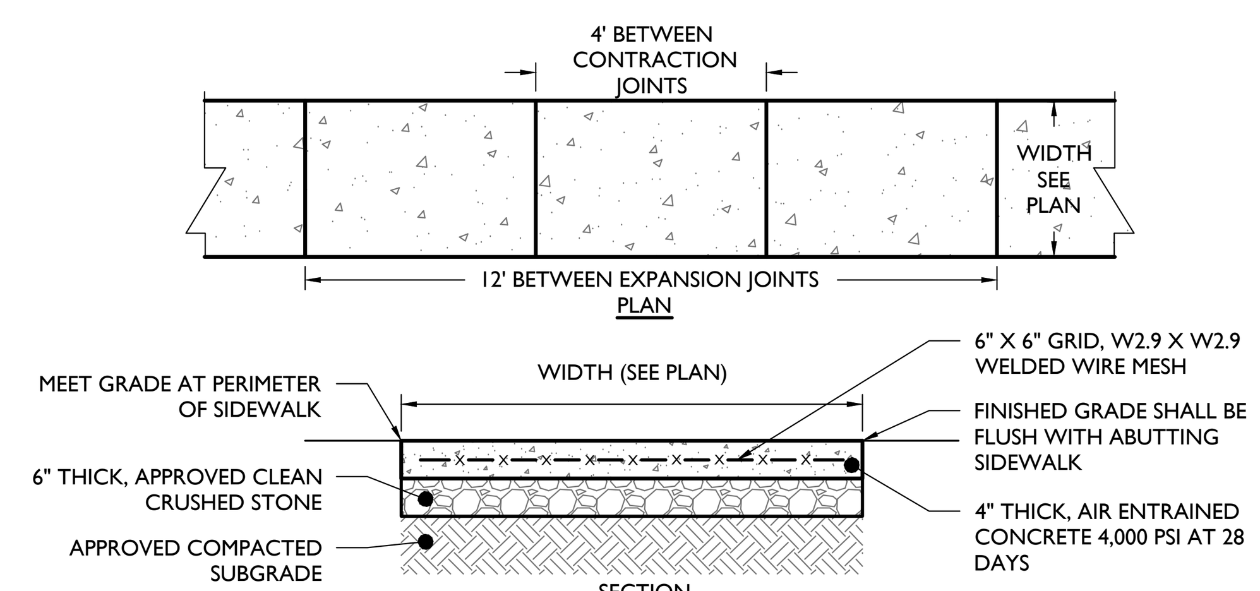


FULL DEPTH ASPHALT PAVEMENT DETAIL

NOT TO SCALE

NOTE:
1. HMA MIX AND DENSE GRADED AGGREGATE SHALL CONFORM TO STATE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.
2. CONTRACTOR TO REFER TO GEOTECHNICAL REPORT FOR PAVEMENT CROSS SECTION.

8

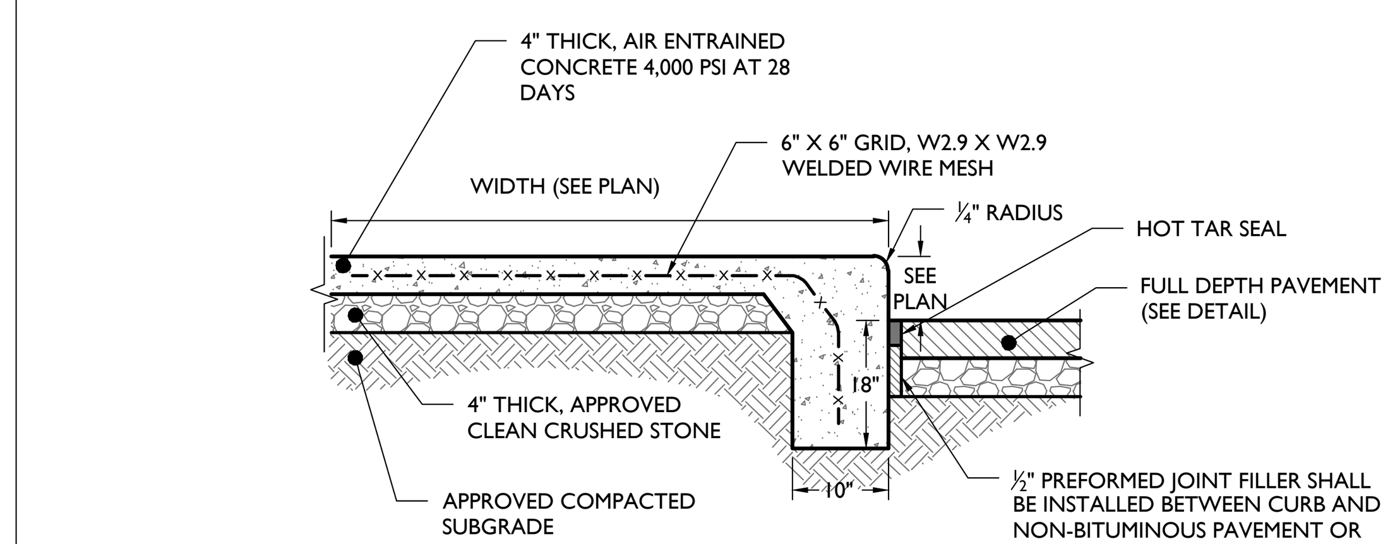


REINFORCED CONCRETE WALKWAY DETAIL

NOT TO SCALE

NOTES:
1. MAXIMUM CROSS SLOPE SHALL BE ¼" PER FOOT.
2. ½" EXPANSION JOINTS SHALL BE PROVIDED AT 12' INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED ¼" FROM THE SURFACE.
3. 1" DEEP BY ⅛" WIDE, TOOLED CONTRACTION JOINTS SHALL BE PROVIDED AT 4' INTERVALS.
4. EXPANSION JOIN SHALL BE PROVIDED WHERE ADJACENT TO A BUILDING.

9

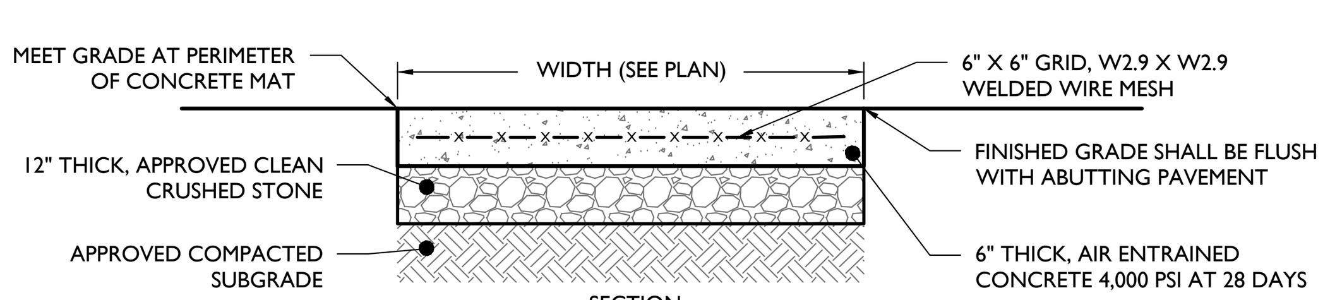


MONOLITHIC CONCRETE CURB DETAIL

NOT TO SCALE

NOTES:
1. MAXIMUM CROSS SLOPE SHALL BE ¼" PER FOOT.
2. ½" EXPANSION JOINTS SHALL BE PROVIDED AT 12' INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED ¼" FROM THE SURFACE.
3. 1" DEEP BY ⅛" WIDE, TOOLED CONTRACTION JOINTS SHALL BE PROVIDED AT 4' INTERVALS.

10

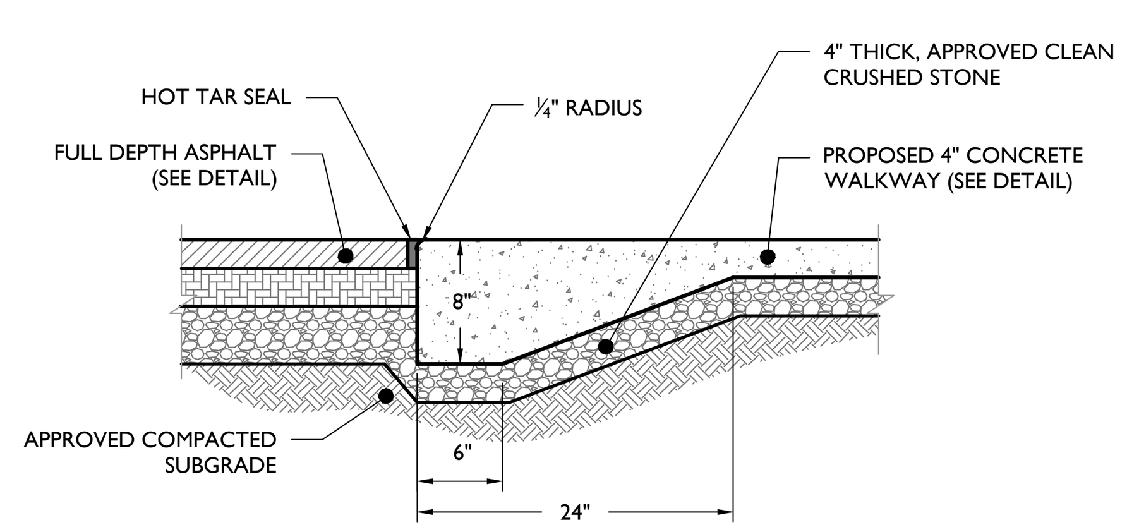


REINFORCED 6" CONCRETE MAT

NOT TO SCALE

NOTES:
1. ½" EXPANSION JOINTS WITH WATER SEAL SHALL BE PROVIDED AT 12' INTERVALS WITH PRE-MOLDED, BITUMINOUS JOINT FILLER, RECESSED ¼" FROM THE SURFACE. LONGITUDINAL REBAR TO BE CUT AT EXPANSION JOINTS.
2. 1" DEEP BY ⅛" WIDE, TOOLED CONTRACTION JOINTS SHALL BE PROVIDED AT MID-POINT BETWEEN EXPANSION JOINTS OR 6' INTERVALS MAX.
3. CONCRETE SHALL RECEIVE BROOM FINISH.
4. ALL EXPOSED CORNERS TO HAVE 12" CHAMFER.

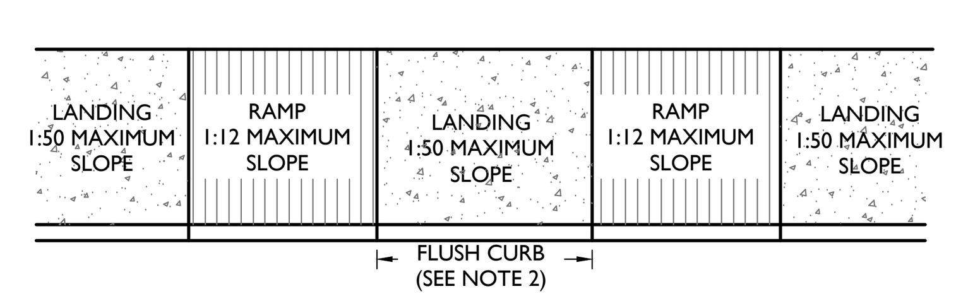
11



CONCRETE WALKWAY TO ASPHALT TRANSITION DETAIL

NOT TO SCALE

12

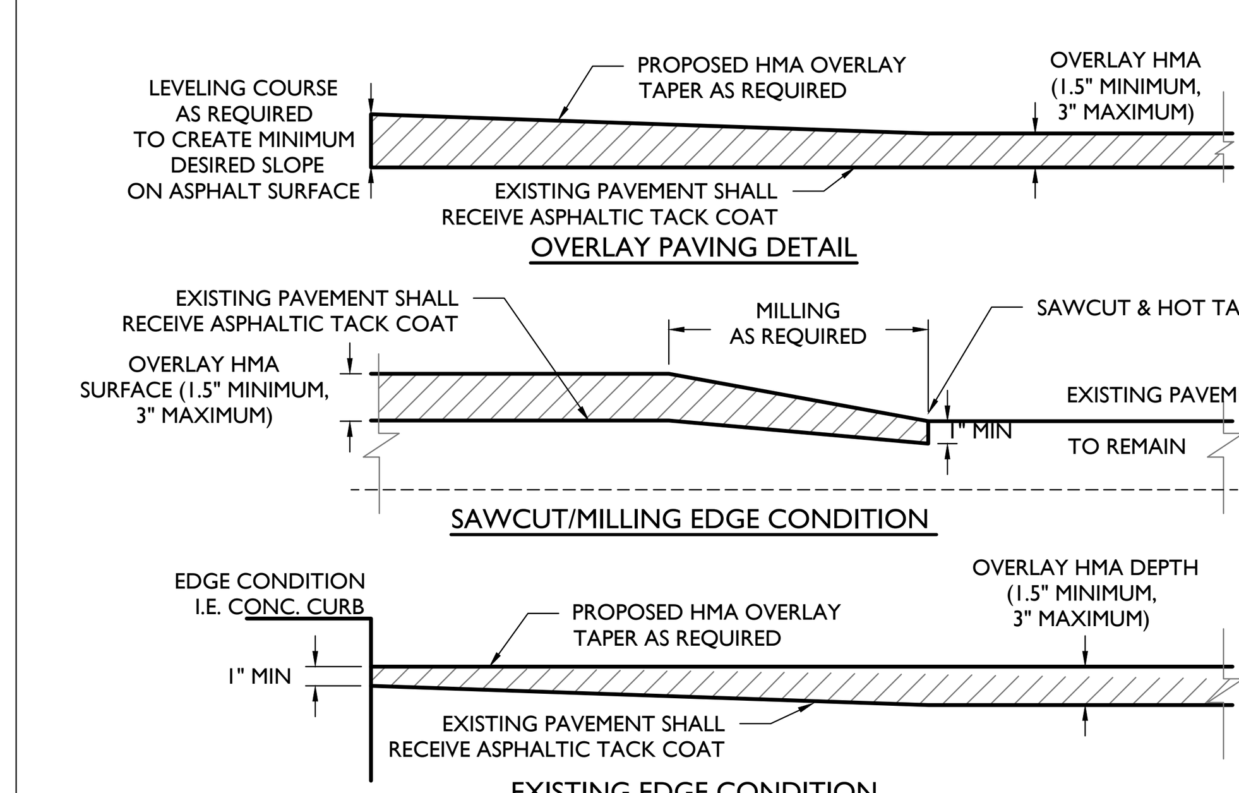


TRANSITION RAMP DETAIL

NOT TO SCALE

NOTES:
1. CROSS SLOPE ON RAMP SHALL NOT EXCEED 2%
2. A FLUSH CURB SHALL HAVE A MINIMUM WIDTH OF 36". SEE PLAN FOR EXACT WIDTH.
3. RAMP SHALL HAVE A MAXIMUM RISE OF 6" WITHOUT A HANDRAIL

13



PAVEMENT MILLING & OVERLAY DETAIL

NOT TO SCALE

14

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

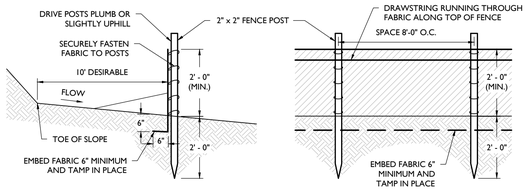
JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: AS SHOWN | PROJECT ID: BOS-230051

TITLE: CONSTRUCTION DETAILS

DRAWING: C-10

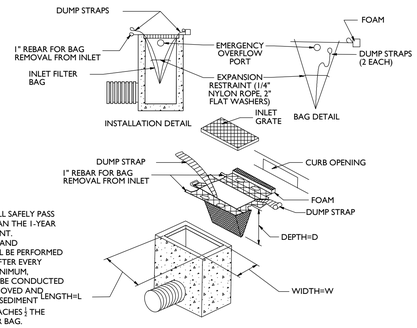


NOTES:
1. SECURELY FASTEN GEOTEXTILE TO FENCE POST BY USE OF WIRE TIES, HOG RINGS, STAPLES OR POCKETS. FOUR TO SIX FASTENERS PER POST.
2. GEOTEXTILE FABRIC TO BE EMBEDDED 6" (MIN.) AND TAMP IN PLACE.
3. SECURELY FASTEN ENDS OF INDIVIDUAL ROLLS OF GEOTEXTILE TO A POST BY WRAPPING EACH END OF THE GEOTEXTILE AROUND THE POST TWICE AND ATTACHING AS SPECIFIED IN NOTE 1 ABOVE. SPLICING OF INDIVIDUAL ROLLS SHALL NOT OCCUR AT LOW POINTS.
4. SET SILT FENCE WITHIN PROJECT LIMITS. 10'-0" IS DESIRABLE.
5. SILT FENCE SHALL BE CLEANED AND SEDIMENTS REMOVED AND PROPERLY DISPOSED OF ONCE SEDIMENT ACCUMULATION REACHES ½ TO ¾ THE HEIGHT OF THE FENCE. FENCE SHALL BE REPAIRED AND/OR REPLACED AS NEEDED.

SILT FENCE DETAIL

NOT TO SCALE

1

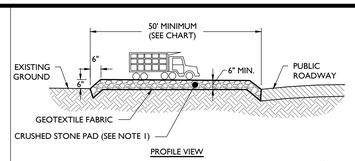


NOTES:
1. THE FILTER BAG SHALL SAFELY PASS FLOWS GREATER THAN THE 1-YEAR 24-HOUR STORM EVENT.
2. SEDIMENT REMOVAL AND MAINTENANCE SHALL BE PERFORMED FREQUENTLY AND AFTER EVERY STORM EVENT. AT MINIMUM, MAINTENCNE SHALL BE CONDUCTED AND SEDIMENTS REMOVED AND DISPOSED OF WHEN SEDIMENT ACCUMULATION REACHES ½ THE DEPTH OF THE FILTER BAG.

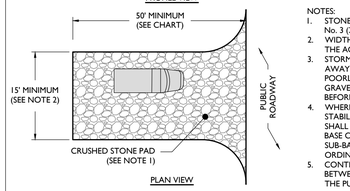
INLET FILTER BAG DETAIL

NOT TO SCALE

2



SLOPE OF PUBLIC ROADWAY	LENGTH OF STONE REQ'D	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0% TO 2%	50 FEET	100 FEET
2% TO 5%	100 FEET	200 FEET
> 5%	SEE NOTE 4	

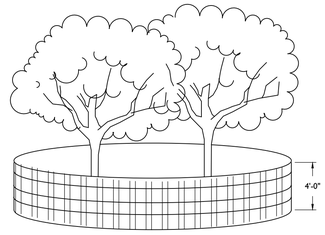


NOTES:
1. STONE SHALL BE ASTM C-33, SIZE No. 2 (2.5" TO 1.5") OR No. 3 (2" TO 1") CLEAN CRUSHED ANGULAR STONE.
2. WIDTH SHALL BE 15' MINIMUM OR THE FULL WIDTH OF THE ACCESS POINT, WHICHEVER IS GREATER.
3. STORMWATER FROM UP-SLOPE AREAS SHALL BE DIVERTED AWAY FROM THE STABILIZED PAD, WHERE POSSIBLE. AT POORLY DRAINED LOCATIONS, SUBSURFACE DRAINAGE GRAVEL FILTER OR GEOTEXTILE SHALL BE INSTALLED BEFORE THE STABILIZED CONSTRUCTION ENTRANCE.
4. WHERE THE SLOPE OF THE ROADWAY EXCEEDS 5%, A STABILIZED BASE OF HOT MIX ASPHALT BASE COURSE SHALL BE INSTALLED. THE TYPE AND THICKNESS OF THE BASE COURSE AND USE OF DENSE GRADED AGGREGATE SUB-BASE SHALL BE AS PRESCRIBED BY LOCAL MUNICIPAL ORDINANCE OR GOVERNING AUTHORITY. CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN THE STABILIZED CONSTRUCTION ACCESS AND THE PUBLIC ROADWAY.

STABILIZED CONSTRUCTION ACCESS DETAIL

NOT TO SCALE

3

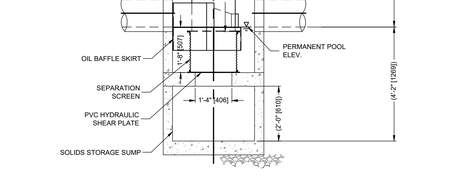


NOTES:
1. SNOW FENCING IS TO BE 4'-0" HIGH AND SELF SUPPORTED.
2. DO NOT STOCKPILE MATERIALS OR STORE EQUIPMENT WITHIN THE TREE PROTECTION FENCING.
3. SNOW FENCE TO BE INSTALLED AT DRIP LINE OF EXISTING TREE OR TREE CLUSTER TO BE PROTECTED OR NO CLOSER THAN 6' FROM TREE TRUNK IF NECESSARY.
4. IF THE PROJECT AREA ENCOMPASSES A PORTION OF THE DRIP LINE OF THE TREE, NO MORE THAN ONE THIRD OF THE OF THE TOTAL AREA OF WITHIN THE DRIP LINE SHOULD BE DISTURBED BY CONSTRUCTION OR REGRADING AND A 3" THICK LAYER OF MULCH SHALL BE INSTALLED OVER THE AREA OF THE DRIP LINE WHICH IS NOT PROTECTED BY FENCING TO PROVIDE A CUSHION.

TREE PROTECTION DETAIL

NOT TO SCALE

4

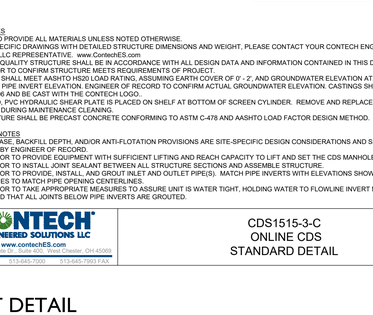


NOTES:
1. STOCKPILES SHALL BE SITUATED SO AS NOT TO OBSTRUCT NATURAL DRAINAGE OR CAUSE OFF-SITE ENVIRONMENTAL DAMAGE.
2. STOCKPILES SHALL BE STABILIZED IN ACCORDANCE WITH THE STANDARDS FOR PERMANENT OR TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION, AS APPROPRIATE (SEE SOIL EROSION NOTES).
3. IN THE EVENT A SOIL STOCKPILE REMAINS INACTIVE FOR A MINIMUM OF 14 DAYS, THE STOCKPILE SHALL BE SEEDED AND STABILIZED IN ACCORDANCE WITH APPLICABLE STANDARDS.

SOIL STOCKPILE DETAIL

NOT TO SCALE

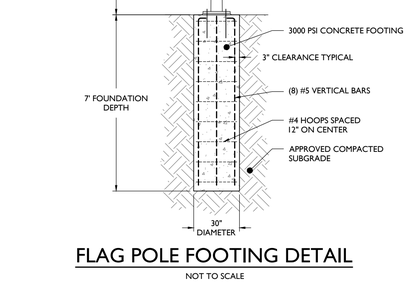
5



COMPOST FILTER SOCK DETAIL

NOT TO SCALE

6



NOTE:

MINIMUM PIPE COVER SHALL BE AS FOLLOW:
- ELECTRIC SERVICE - PER APPLICABLE UTILITY AUTHORITY
- GAS SERVICE - PER APPLICABLE UTILITY AUTHORITY
- SEWER SERVICE - 36" MINIMUM
- WATER SERVICE - 48" MINIMUM

UTILITY TRENCH DETAIL

NOT TO SCALE

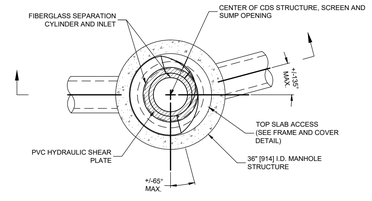
7

NOTES:
1. ALL PIPE SYSTEM INSTALLATIONS SHALL MEET ALL APPLICABLE STANDARDS AND SPECIFICATIONS.
2. ALL HDPE PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS" (LATEST EDITION).
3. ALL RCP PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C76-15, "STANDARD SPECIFICATION FOR REINFORCED CONCRETE CULVERT, STORM DRAIN, AND SEWER PIPE" (LATEST EDITION).
4. FOR NON HDPE OR RCP PIPE INSTALLATIONS, CONTRACTOR SHALL INSTALL PIPE IN ACCORDANCE WITH ALL APPLICABLE STANDARDS AND SPECIFICATIONS.
5. WHERE THE TRENCH BOTTOM IS UNSTABLE, CONTRACTOR SHALL PROVIDE SUITABLE BACKFILL MATERIAL AS REQUIRED BY ENGINEER OR PER GEOTECH RECOMMENDATIONS.
6. MINIMUM COVER IN TRAFFIC AREAS IS 12" UP TO 48" DIAMETER PIPE AND 24" FOR 54" - 60" DIAMETER PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT.
7. CONTRACTOR SHALL INSTALL SUITABLE MATERIAL FOR INITIAL AND FINAL BACKFILL. BACKFILL COMPACTION SHOULD MEET ALL APPLICABLE STANDARDS AND SPECIFICATIONS.

STORM TRENCH DETAIL

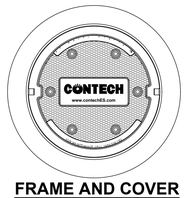
NOT TO SCALE

8



PLAN VIEW B-B
N.T.S.

ELEVATION A-A
N.T.S.



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

CDS 1515-3-C DESIGN NOTES
CDS 1515-3-C RATED TREATMENT CAPACITY IS 1.0 CFS, OR PER LOCAL REGULATIONS.
THE STANDARD CDS 1515-3-C CONFIGURATION IS SHOWN.

SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS OR L/s)			*
PEAK FLOW RATE (CFS OR L/s)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
SCREEN APERTURE (2400 OR 4700)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*
NOTES/SPECIAL REQUIREMENTS:			
* PER ENGINEER OF RECORD			

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr. Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS1515-3-C
ONLINE CDS
STANDARD DETAIL

WATER QUALITY UNIT DETAIL

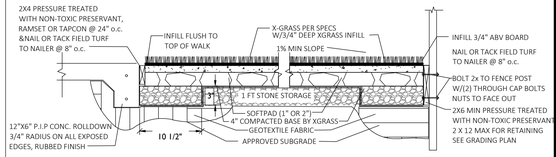
NOT TO SCALE

9

FLAG POLE FOOTING DETAIL

NOT TO SCALE

10



NOTES:
1. FALL SURFACING SHALL COMPLY WITH ASTM F1951 FOR WHEELCHAIR ACCESSIBILITY & ASTM F1292 FOR FALL ATTENUATION.
2. PREPARE SUBGRADE 5.75" BELOW FINISH GRADE WITH 1" SOFTPAD & 6.75" WITH 2" SOFTPAD - CONSULT XGRASS FOR AREAS OF PAD.
3. STONE DETENTION TO BE ADDED UNDER 4" COMPACTED SUBBASE PER INFILTRATION BASIN B-3C DETAIL.

ARTIFICIAL TURF DETAIL

NOT TO SCALE

11

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
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Phone 617.203.2076

LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0008 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

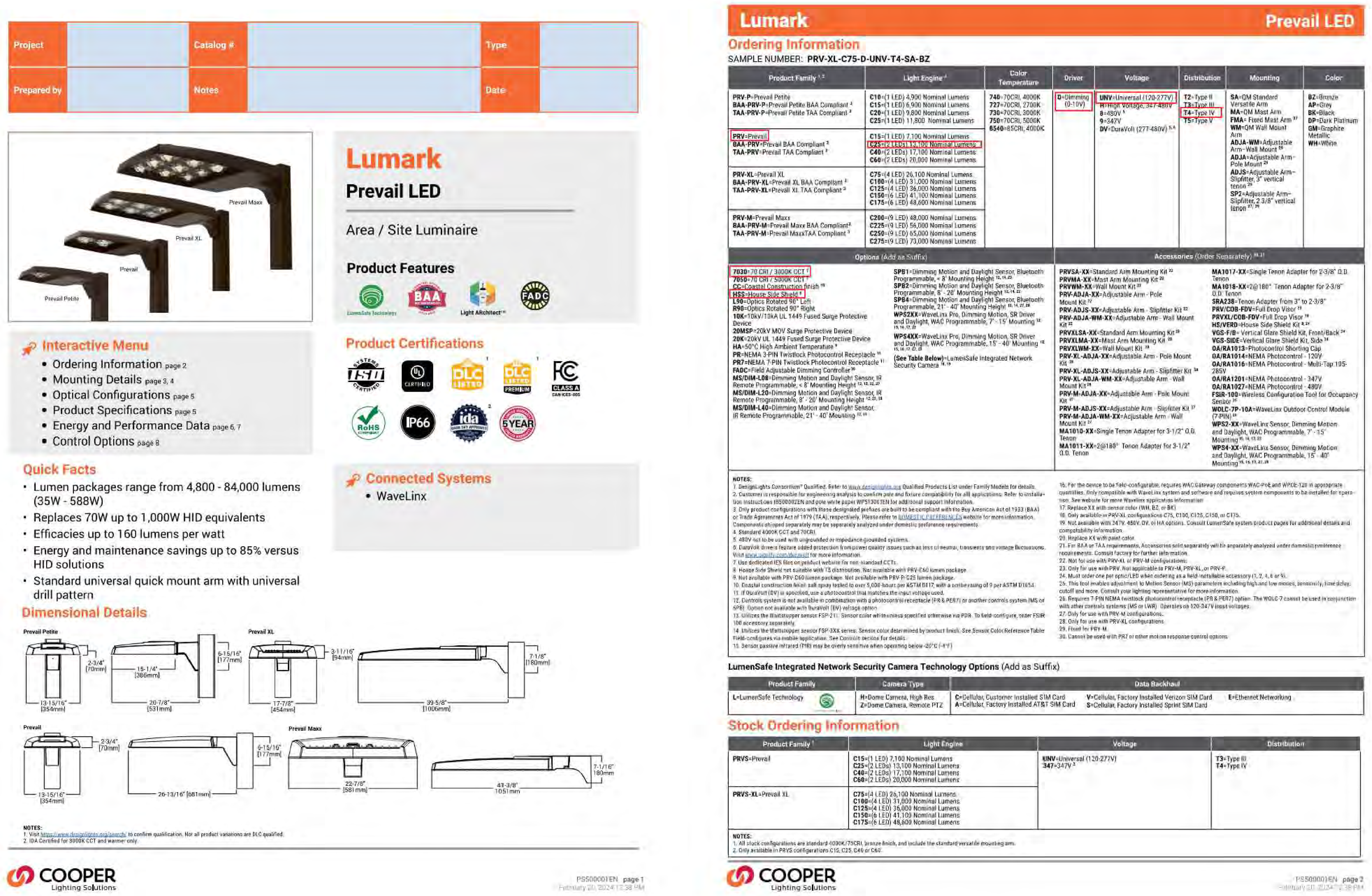
JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: AS SHOWN | PROJECT ID: BOS-230051

TITLE: CONSTRUCTION DETAILS

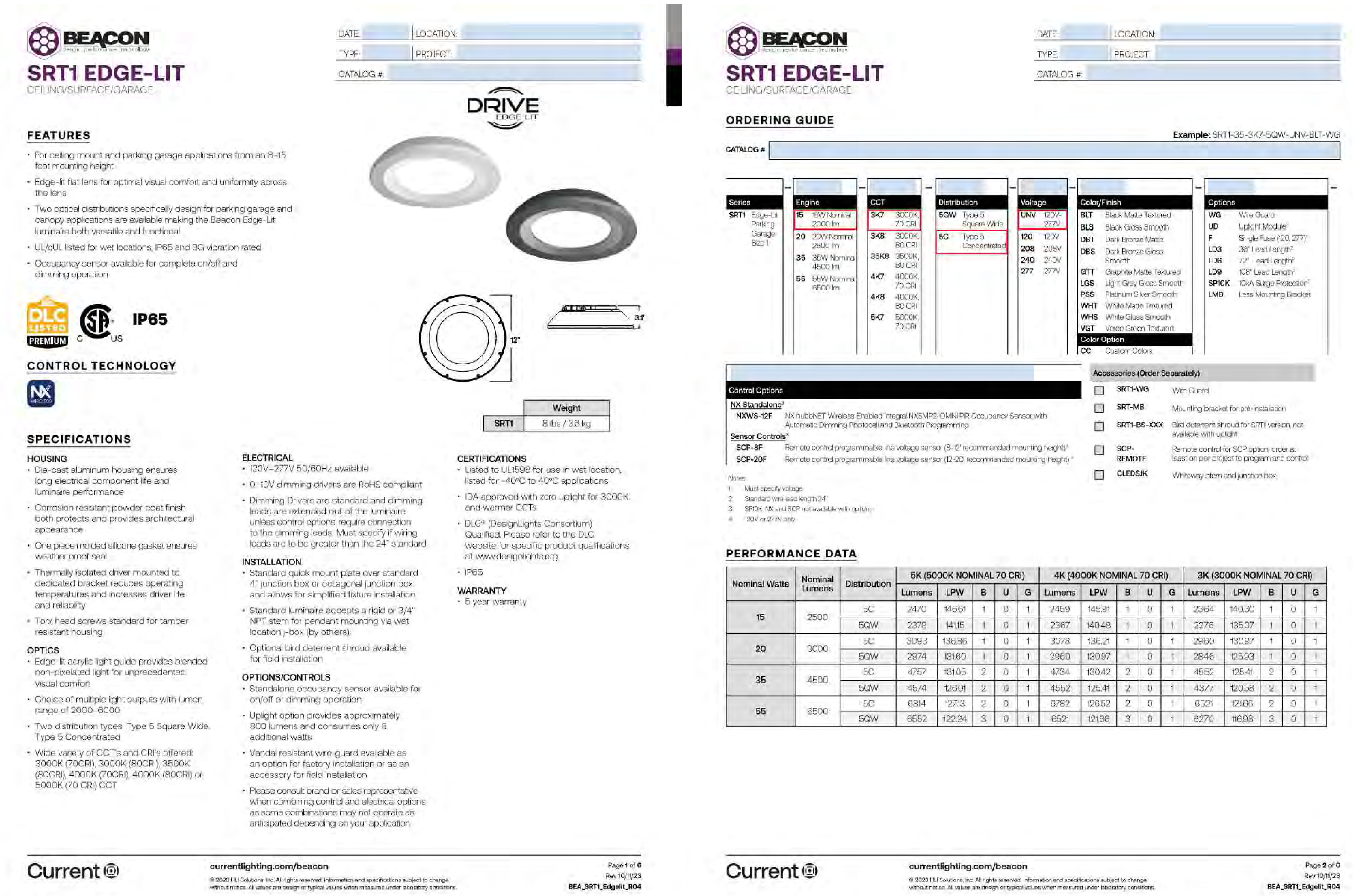
DRAWING: C-11



LIGHT FIXTURE 'A' DETAIL

NOT TO SCALE

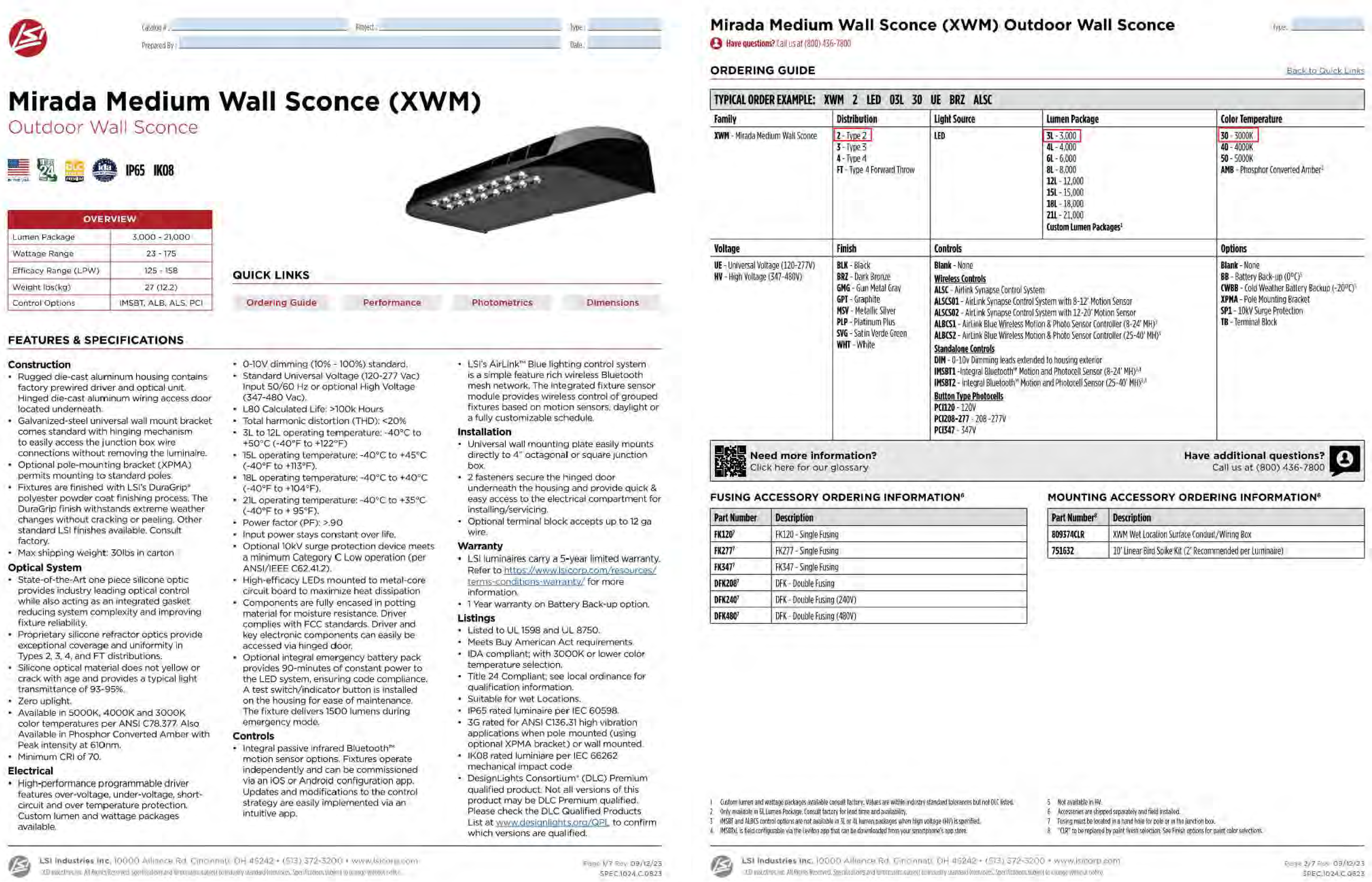
1



LIGHT FIXTURE 'B' DETAIL

NOT TO SCALE

2



LIGHT FIXTURE 'C' DETAIL

NOT TO SCALE

3

16

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

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www.stonefieldeng.com

120 Washington Street, Suite 201, Salem, MA 01970
Phone 617.203.2076

LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL
CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD
engineering & design

SCALE: AS SHOWN | PROJECT ID: BOS-230051

TITLE:

LIGHTING DETAILS

DRAWING:

C-12

STONEFIELD

STORMWATER MANAGEMENT REPORT
PRIMROSE SCHOOL FRANCHISING COMPANY

PROPOSED CHILDCARE FACILITY
PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

PREPARED FOR:
PRIMROSE SCHOOL FRANCHISING COMPANY
21 CONKLIN AVENUE
WARREN, NEW JERSEY 07059

PREPARED BY:
STONEFIELD ENGINEERING & DESIGN, LLC
120 WASHINGTON STREET, SUITE 201
SALEM, MASSACHUSETTS

REPORT DATE:
DECEMBER 8, 2023
REVISED: APRIL 1, 2024

JOSHUA H. KLINE, PE
MA PE LICENSE #53936

REPORT CONTENTS

APPENDICES

1.0 PROJECT DESCRIPTION

Primrose School Franchising Company is proposing to redevelop Parcel K10-0009 & K10-0040, commonly known as 225 Boston Post Road, Sudbury, MA, (herein referred to as the "project site") to accommodate the renovation of the existing structure into a Childcare Facility. Additional improvements include children's playground areas with associated play equipment, parking area and pavement remediation, septic and other utility improvements, and stormwater infrastructure.

The property is located within the Single Residential (RES A-1) zoning district in the Town of Sudbury. The proposed redevelopment site is bounded by Boston Post Road (US Route 20) to the north, commercial development to the east, and undeveloped wooded and wetland area to the west and south. The site will be accessed via one (1) full movement driveway off of Boston Post Road (US Route 20). The access will remain from existing conditions and will not be modified with the redevelopment. Refer to **APPENDIX A** for project maps of the subject site.

The project site is 214,118 SF (4.92 acres), the extent of land disturbance is 35,733 SF (0.82 acres), and 4,462 SF (0.10 acres) of impervious surface will be removed from the project site. The overall drainage area was modeled as 40,912 SF (0.94 acres).

This Report has been prepared to analyze the potential stormwater runoff impacts of the proposed project site and outline proposed measures to conform to the stormwater management regulations set forth by the Town of Sudbury and the Massachusetts Department of Environmental Protection.

2.0 SITE CONDITIONS

EXISTING SITE DEVELOPMENT

The project site fronts Boston Post Road (US Route 20) Under existing conditions, the project site is developed with an approximately 10,243 ± SF religious temple with associated accessory structure, parking facilities, utilities and stormwater improvements. The site is accessed via one (1) full movement driveway off of Boston Post Road. There is an existing stormwater pond on the project site that captures all runoff within the existing developed area. The existing structure and stormwater management infrastructure shall remain and be reutilzied with the proposed improvements. A portion of the existing parking area will be removed with the proposed redevelopment to accommodate the installation of children's play areas. The remainder of the parking area and associated curbing will be restriped and repaired but will remain. An Aerial Map depicting the existing site conditions can be found in **APPENDIX A**.

PROPOSED SITE DEVELOPMENT

The proposed redevelopment will consist of the renovation of the existing structure to accommodate a new Childcare Center. Additional improvements include the removal of a portion of the parking area to accommodate children play areas and associated equipment, repair and restriping of parking areas to remain, septic system improvements, landscaping, and improvements to the existing stormwater management system. The site will be accessed via the existing full movement driveway off of Boston Post Road, which will not be modified with the proposed development. The existing stormwater management facility and associated infrastructure shall remain undisturbed with the proposed development, and there will be a reduction of impervious area in the development area. Refer to **APPENDIX A** for a half-size Overall Site Plan depicting the proposed project improvements.

PROJECT SITE SOILS

Soil mapping was obtained from the National Resource Conservation Service (NRCS) for the project site and immediate area. The table below provides a summary of soils for the project site:

TABLE 1: NRCS SOIL MAPPING RESULTS

Soil Unit Code	Soil Description	Approximate Project Coverage	Drainage Class	Hydrologic Soil Group
52A	Freetown Muck 0% to 1% Slopes	35.8%	Very Poorly Drained	D
255B	Windsor Loamy Sand 3% to 8% Slopes	59.5%	Excessively Drained	A
302C	Montauk Fine Sandy Loam 8% to 15% Slopes	4.7%	Well Drained	C

Additional information regarding the NRCS soil mapping can be found in **APPENDIX B**.

A Soil Suitability Assessment was prepared by Grady Consulting, LLC., dated August 8, 2023, for the purpose of determining the soil profile and feasibility of infiltration. The soil testing determined the soil was not ideal for infiltration for the purposes of stormwater management, and as such, no infiltration has been considered in the proposed design. The Soil Suitability Assessment can be found in **APPENDIX B** of this Report.

3.0 STORMWATER ANALYSIS

HYDROLOGIC METHODOLOGY

The analysis program "HydroCAD" Version 10.0 by HydroCAD Software Solutions was utilized to calculate and plot the runoff hydrographs. The program incorporates the time of concentration, C values, rainfall data, and project drainage areas to calculate the runoff characteristics. The existing and proposed drainage areas have been analyzed utilizing Intensity-Duration-Frequency data obtained from NRCC for the project area; specifics of the rainfall distribution can be found in **APPENDIX C.** Additional key variables utilized in the analysis include:

TABLE 2: HYDROCAD DESIGN VARIABLES

Variable	Input	Variable	Input
Runoff Calculation Method	SCS TR-20	NRCS Rainfall Frequency Data Set	Middlesex
Pervious/Impervious CN Calculations	Separate	Storm Intervals (Year Events)	2, 10, 25, 100
Stage-Storage Relationship	Dynamic	Storm Duration	24 Hours
Minimum time of concentration	6 minutes	Storm Curve	NRCC D

Additional information regarding the hydrologic calculations can be found in **APPENDIX C**.

EXISTING DRAINAGE AREAS

Under current conditions, the project site is comprised of one (1) drainage area discharging to one (1) Point of Interest (POI-1). The ultimate POI analyzed for the redevelopment is the existing detention pond located to the rear of the site. The existing pond captures runoff from the entirety of the developed area within the limits of disturbance via a series of catch basins and subsurface conveyance pipes. See below for a short summary of the drainage area:

TABLE 3: SUMMARY OF EXISTING DRAINAGE AREA

Drainage Area	Description	Area Extents	Impervious Area	Time of Concentration
EX-1 (POI-1)	Existing Development Area Drainage to Detention Pond	40,912 SF	28,147 SF	6.0 Minutes*

***The minimum time of concentration was utilized due to the quantity of impervious coverage and proximity to POI.**

Existing drainage areas were delineated based on field surveying data. Hydrologic calculations and parameters for each drainage area can be found in **APPENDIX C**; specific drainage area delineations and land cover can be found in **APPENDIX E.**

PROPOSED DRAINAGE AREAS

Under proposed conditions, the general drainage patterns and ultimate point of interest will be maintained. There is one (1) drainage area discharging to one (1) point of interest in proposed conditions, consisting of the entirety of the existing developed area that is being improved, including the parking area and children's play areas. The redevelopment will result in an overall decrease of impervious surfaces compared to existing conditions, and therefore, conditions at the point of interest will be naturally improved, meeting several of the Standards set forth by the Massachusetts Department of Environmental Protection Stormwater Management Standards as outlined in the next Report section. See below for a short summary of the drainage area:

TABLE 4: SUMMARY OF PROPOSED DRAINAGE AREA

Drainage Area	Description	Area Extents	Impervious Area	Time of Concentration
P-1 (POI-1)	Proposed Development Area Drainage to Detention Pond	40,912 SF	23,685 SF	6.0 Minutes*

***The minimum time of concentration was utilized due to the quantity of impervious coverage and proximity to POI.**

All proposed drainage areas were delineated based on the proposed grading design overlain on field survey data. Hydrologic calculations and parameters for each drainage area can be found in **APPENDIX C**; specific drainage area delineations and land cover can be found in **APPENDIX E.**

STORMWATER MANAGEMENT DESIGN PARAMETERS

The redevelopment proposes to construct improvements upon a previously developed site, resulting in a reduction of impervious area. The amount of impervious coverage will decrease by 4,462 SF (0.10 AC) under post-development conditions; as such it is considered a redevelopment as defined in the Town of Sudbury Ordinances and the Massachusetts Stormwater Handbook Volume 1. A redevelopment is subject to Standards 1, 2, and 3 to the maximum extent practicable as well as the best management practices of Standards 4, 5, and 6. See below for a summary of each design parameter and compliance requirements:

TABLE 5: STORMWATER DESIGN STANDARDS SUMMARY

Design Parameter	Design Target for Compliance
Standard 1: *Stormwater Discharge*	Demonstrate that no new stormwater conveyances will discharge untreated stormwater directly to or cause erosion in wetlands or waters.
Standard 2: *Stormwater Quantity*	Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 2-, 10-, and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events.
Standard 3: *Groundwater Recharge*	Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measure shall approximate average annual pre-construction groundwater recharge volume for the site.
Standard 4: *Stormwater Quality*	Stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from existing and proposed impervious coverage onsite. Water Quality design should be based on 1" of rainfall across impervious surfaces.
Standard 5: *High Pollutant Loads*	Demonstrate that the discharge of stormwater runoff from land uses with higher potential pollutant loads will be eliminated or reduced through complete protection from potential runoff or use of a specific structural BMP.
Standard 6: *Critical Areas*	The project does not lie within Zone II Areas, Interim Wellhead Protection Areas, Outstanding Resource Waters, Special Resources, Zone I, or Zone A and therefore is **exempt** from meeting Standard 6 as it is not applicable to the development.

STANDARD 1 – STORMWATER DISCHARGE

No new stormwater conveyance discharges of untreated water are proposed directly to wetlands or waters of the Commonwealth. The ultimate discharge point of the system is the existing stormwater pond on the site, where it is understood the system detains, treats and releases runoff from the existing development. Proposed improvements to the existing system include the incorporation of a Water Quality Unit, a Contech CDS 1515-3 Separator, which is certified for a minimum of 80% TSS removal, treating runoff from the site prior to outfall into the existing pond, where it is further treated. The outfall of the existing system shall remain the same from existing to proposed conditions, and no disturbance to the existing pond or its associated outfall is proposed. The proposed improvements to the existing stormwater conveyance system for the project site shall not alter the existing discharge, or result in the creation of a new outfall, and does not discharge to a water body or wetland, therefore complies with Standard 1.

STANDARD 2 – STORMWATER QUANTITY

The proposed improvements to the subject site shall result in a reduction of impervious area of 4,462 SF (0.10 AC), and therefore, peak stormwater runoff rates and volumes shall naturally be reduced to mandatory regulatory levels. The tables below summarize the various drainage areas in relation to flow rates and runoff volume during regulatory storm events:

TABLE 6: SUMMARY OF EXISTING DRAINAGE AREA FLOW RATES

Drainage Area	2-Year Flow Rate	10-Year Flow Rate	25-Year Flow Rate	100-Year Flow Rate
EX-1 (POI-1)	1.86 CFS	2.81 CFS	3.53 CFS	5.40 CFS

TABLE 7: SUMMARY OF PROPOSED DRAINAGE AREA FLOW RATES

Drainage Area	2-Year Flow Rate	10-Year Flow Rate	25-Year Flow Rate	100-Year Flow Rate
P-1 (POI-1)	1.57 CFS	2.36 CFS	2.98 CFS	4.73 CFS

TABLE 8: SUMMARY OF EXISTING DRAINAGE AREA VOLUMES

Drainage Area	2-Year Volume	10-Year Volume	25-Year Volume	100-Year Volume
EX-1 (POI-1)	6,961 CF	10,876 CF	13,989 CF	21,117 CF

TABLE 9: SUMMARY OF PROPOSED DRAINAGE AREA VOLUMES

Drainage Area	2-Year Volume	10-Year Volume	25-Year Volume	100-Year Volume
P-1 (POI-1)	5,858 CF	9,239 CF	12,012 CF	18,536 CF

Under post-development conditions the runoff flow rates and volumes are reduced to the pre-development undetained drainage conditions. The existing storm drain system is reutilized to convey all proposed runoff within the developed area to the existing detention pond at the rear of the Site, as it does in existing conditions. The proposed improvements shall result in a reduction of impervious area, naturally reducing the volume and flow rate of discharge into the exiting basin. The table below outlines the regulatory compliance parameters for runoff quantity on the project site:

TABLE 10: STORMWATER RUNOFF QUANTITY COMPLIANCE SUMMARY – FLOW RATE (POI-1)

Rainfall Event	Existing Flow Rate	Proposed Flow Rate	Proposed % Reduction
WQv Storm	1.04 CFS	0.88 CFS	15.38%
2-Year Storm	1.86 CFS	1.57 CFS	15.59%
10-Year Storm	2.81 CFS	2.36 CFS	16.01%
25-Year Storm	3.53 CFS	2.98 CFS	15.58%
100-Year Storm	5.40 CFS	4.73 CFS	12.41%

TABLE 11: STORMWATER RUNOFF QUANTITY COMPLIANCE SUMMARY – VOLUME (POI-1)

Rainfall Event	Existing Volume	Proposed Volume	Proposed Reduction
WQv Storm	3,767 CF	3,170 CF	586 CF
2-Year Storm	6,961 CF	5,858 CF	1,103 CF
10-Year Storm	10,876 CF	9,239 CF	1,637 CF
25-Year Storm	13,989 CF	12,012 CF	1,977 CF
100-Year Storm	21,117 CF	18,536 CF	2,581 CF

The proposed reduction in impervious surfaces naturally provides sufficient flow rate attenuation to ensure that no adverse impacts are anticipated downstream of the project site. Detailed hydrologic calculations for each drainage area can be found in **APPENDIX C**.

STANDARD 3 – GROUNDWATER RECHARGE

A Soil Suitability Assessment was conducted by Grady Consulting, LLC., on August 1, 2023. Per the performed testing, it was determined that the soils onsite are not conducive to infiltration. Per the Massachusetts Stormwater Handbook Volume 1, as the site is deemed to be comprised wholly of soils unsuitable for infiltration, groundwater recharge for the development is required only to the maximum extent practicable. Refer to **APPENDIX B** of this Report for the detailed Soil Suitability Assessment.

Due to the reduction of impervious surfaces on site, runoff is naturally reduced below pre-construction conditions, and an overall improvement to groundwater recharge is provided with the redevelopment as shown in the table below:

TABLE 12: TWO-YEAR EVENT RUNOFF VOLUMES

Point of Interest	Pre-Construction Runoff Volume	Post-Construction Runoff Volume	Difference in Volume
POI-1	6,961 CF	5,858 CF	1,103 CF

The proposed development, while unsuitable for infiltration and groundwater recharge, proposes an improvement of the existing groundwater through the reduction of impervious area, and therefore complies with Standard 3.

STANDARD 4 – STORMWATER QUALITY CONTROL

For all developments, a removal of 80% of the average annual post-construction load of Total Suspended Solids (TSS) is required. Per Town of Sudbury requirements, a water quality volume of 1.0 inches times the total impervious area (18,642 SF) for a total of 1,554 CF is required.

One (1) proprietary treatment device, A Contech CDS 1515-3 Water Quality Unit, is proposed with the development to provide the required 80% TSS removal. The Water Quality Unit is proposed to be installed on existing conveyance network, on the downstream end prior to outfall into the existing basin, in order to treat all runoff from the existing and proposed impervious areas. The existing conveyance system is equipped with multiple catch basins throughout the developed area which capture the runoff from the existing developed area and will be reutilized with the proposed redevelopment. The proposed CDS Water Quality Unit is designed as an online device with bypass equipment for storms exceeding the water quality rainfall. Site specific TSS removal calculations and general information on the device's operation/maintenance can be found in **APPENDIX D**.

The proposed treatment design will exceed the regulatory requirements for stormwater runoff quality and ensure that runoff discharged into the existing stormwater pond will not have any adverse effects on downstream waterways and environs.

STANDARD 5 – HIGH POLLUTANT LOADS

The proposed use for the development is Childcare Facility, which is not considered a Land Use with Higher Potential Pollutant Loads (LUHPPL) by the MassDEP and therefore is exempt from Standard 5 requirements.

STANDARD 6 – CRITICAL AREAS

The proposed redevelopment area does not lie in or discharge to a Zone II Interim Wellhead Protection Area, Outstanding Resources Waters, Special Resource Waters or other critical area as defined by the Massachusetts Stormwater Handbook Volume 1, and therefore is exempt from Standard 6 requirements.

STANDARD 7 – REDEVELOPMENT PROJECT

The proposed development is considered a redevelopment project as the site was previously developed and the impervious cover is decreased by 4,462 SF (0.10 AC) under proposed conditions. Standards 2 through 6 have been met to the maximum extent practicable and conditions from the existing development are considerably improved through the decrease in impervious area and installation of a water quality unit in-line with the existing drainage system. The proposed redevelopment project has been designed in accordance with the Massachusetts Stormwater Handbook Chapter 3 Checklist for Redevelopment Projects. The proposed site complies with Standards 8 through 10 as shown in the following sections.

STANDARD 8 – EROSION, SEDIMENTATION, AND POLLUTION PREVENTION PLAN

A Soil Erosion & Sediment Control Plan has been prepared in accordance with the latest edition of Volume 2 of the Massachusetts Stormwater Handbook and the Erosion and Sedimentation Control Guidelines. This plan can be found within the Land Development Plans prepared by Stonefield Engineering & Design in conjunction with this Report. Proposed temporary measures during construction include but are not limited to silt fencing, stabilized construction entrance, inlet filters, silt sock, street sweeping, and temporary seeding for soil stabilization. No land disturbance will occur until certification and permits have been obtained. Details for all proposed control measures have also been provided.

STANDARD 9 – STORMWATER FACILITY OPERATIONS AND MAINTENANCE

A Stormwater Operations & Maintenance Manual has been prepared by Stonefield Engineering & Design in conjunction with and supplemental to this Report. Any necessary easements or covenants associated with the stormwater improvements will be recorded prior to the start of construction.

STANDARD 10 – ILLICIT DISCHARGES

There are no known or suspected illicit discharges to or from the existing stormwater management conveyance and detention system that is proposed to be reutilized. Per the Massachusetts Stormwater Handbook, illicit discharges include but are not limited to the following: sanitary wastewater from any source, direct septic connections to storm drain systems, septic tank overflow, car wash wastewater, laundry wastewater and disposal of household or automobile products. No illicit discharges are intended to occur at the proposed redevelopment location upon installation of the stormwater management upgrades to the existing system in accordance with Standard 10. All discharge to the system shall be comprised solely of stormwater.

6.0 EROSION, SEDIMENTATION, AND POLLUTION PREVENTION

TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

Under proposed conditions, erosion and sediment controls will be utilized to limit the potential effects due to construction of the proposed development. Refer to the Soil Erosion and Sediment Control Plans in **APPENDIX A** of this report. The following includes the temporary sediment controls proposed for this project:

Construction Entrance – To provide a stable entrance and exit from a construction site and keep mud and sediment off public roads, a temporary stone-stabilized pad located at points of vehicular ingress and egress on a construction site. If the action of the vehicle traveling over the gravel pad is not sufficient to remove the majority of the mud, then the tires must be washed before the vehicle enters a public road. If washing is used, provisions must be made to intercept the wash water and trap sediment before it is carried off-site.

Dust Control – To reduce surface and air movement of dust from exposed soil surfaces during land disturbing, demolition, and construction activities, preventative measures must be taken. Sprinkling or other approved methods must be used to reduce dust generated on the site. Dust control shall be provided by the general contractor to a degree acceptable to the owner/operator, and in compliance with the applicable local and state dust control requirements.

Inlet Protection – A sediment filter or an excavated impounding area around a storm drain, drop inlet, or curb inlet must be used to prevent sediment from entering storm drainage systems prior to permanent stabilization of the disturbed area. During construction, the inlet protection measures shall be replaced as needed to ensure proper function of the structure.

Preserving Natural Vegetation – Natural vegetation should be preserved whenever possible, but especially on steep slopes, near perennial and intermittent watercourses or swales, and on building sites in wooded areas. Clearly flag or mark areas around trees that are to be saved. It is preferable to keep ground disturbance away from the

trees at least as far out as the dripline. If possible, place a barrier/fencing around the trees. Inspect flagged areas regularly to make sure flagging has not been removed. If tree roots have been exposed or injured, re-cover and/or seal them.

Sediment Fence – A temporary sediment barrier consisting of a filter fabric stretched across and attached to supporting posts and entrenched must be established along the perimeter of areas to be disturbed before initiation of and during construction. The sediment fence is constructed of stakes and synthetic filter fabric with a rigid wire fence backing where necessary for support. Sediment fence can be purchased with pockets presewn to accept use of steel fence posts. Silt fences should be inspected immediately after each rainfall and at least daily during prolonged rainfall. Repair as necessary. If the fabric tears, decomposes, or in any way becomes ineffective, replace it immediately. Replace burlap used in sediment fences after no more than 60 days.

Temporary Seeding – Disturbed areas that will not be brought to final grade for a period of more than 30 working days or in a season not suitable for permanent seeding shall be temporarily seeded to minimize erosion and sediment loss. Other stabilization methods may be used and shall be in conformance with the *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas*, latest edition.

Temporary Soil Stockpile – Locate the topsoil stockpile so that it does not interfere with work on the site. Side slopes of the stockpile should not exceed 2:1. Surround all topsoil stockpiles with an interceptor dike with gravel outlet and silt fence. Either seed or cover stockpiles with clear plastic or other mulching materials within 7 days of the formation of the stockpile. Topsoil should not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or when conditions exist that may otherwise be detrimental to proper grading or proposed sodding or seeding. Do not place topsoil on slopes steeper than 2:1. Maintain protective cover on stockpiles until needed.

PERMANENT EROSION AND SEDIMENT CONTROL MEASURES

Permanent Seeding – Permanent seeding of grass and planting of trees and shrubs shall be established on any graded or cleared area where long-lived plant cover is needed to stabilize the soil in accordance with the accompanying plans. Areas which will not be brought to final grade for a year or more shall also be seeded permanently. Inspect seeded areas for failure and make necessary repairs and reseed immediately. Conduct a follow-up survey after one year and replace failed plants where necessary.

CONSTRUCTION PHASING PLAN AND SEQUENCE OF OPERATIONS

The Soil Erosion & Sediment Control Plans have been phased in order to effectively control erosion and sedimentation and minimize impacts due to seasonal changes. Please refer to **APPENDIX A** for half size Soil Erosion & Sediment Control Plans for detailed construction sequencing.

FINAL SITE STABILIZATION

Recommended practices for final surface stabilization include surface roughening, terrace, topsoiling, permanent seeding, sodding, trees and shrub planting, mulching, and riprap. The stabilization measures shall be in conformance with the *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas*, latest edition.

8.0 CONCLUSIONS

As demonstrated in this Report, the change in runoff flow rate and volume generated by the proposed redevelopment will be satisfactorily mitigated by the reduction of impervious area. Runoff water quality will be improved naturally by the reduction of impervious area and further by the implementation of one (1) Contech CDS Water Quality unit into the existing storm drain conveyance system. All existing storm drain infrastructure, including catch basins, conveyance pipes, and the existing detention basin shall remain and be reutilized with the redevelopment.

The proposed project complies with all applicable stormwater management regulations and standards. As such, the project is not anticipated to have any adverse drainage impacts on neighboring properties, downstream watercourses, or adjoining conveyance systems.

9.0 REFERENCES

1. Massachusetts Stormwater Handbook and Stormwater Standards, last amended January 2, 2008

   https://www.mass.gov/guides/massachusetts-stormwater-handbook-and-stormwater-standards

2. Massachusetts Complete Erosion and Sedimentation Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers, and Municipal Officials, last amended May 2003

   https://www.mass.gov/doc/complete-erosion-and-sedimentation-control-guidelines-a-guide-for-planners-designers-and/download

3. Town of Sudbury Zoning Bylaw Article IX, last amended May 2, 2022

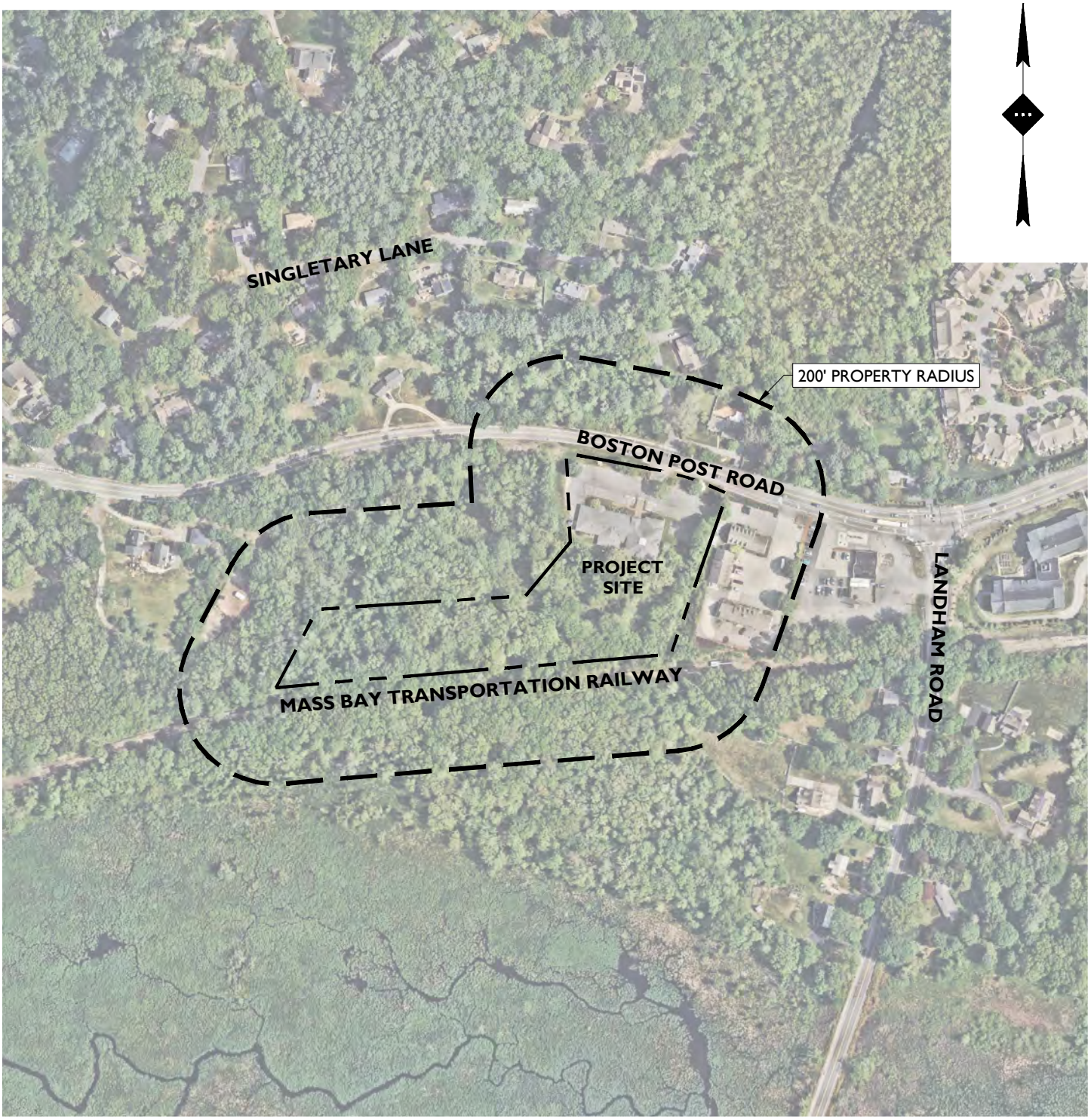
   https://cdn.sudbury.ma.us/wp-content/uploads/sites/270/2023/01/2022-Zoning-Bylaw-Article-IX.pdf?version=f47a8935840dd9d10be41ac94d5c3de3

4. Town of Sudbury Stormwater Management Bylaw Regulations, last amended January 23, 2013

   https://cdn.sudbury.ma.us/wp-content/uploads/sites/328/2014/08/SudburySWRegsRevised2013.pdf?version=abc2458ab7a235e57cc5f137ba179ce7

APPENDIX A
PROJECT FIGURES

INVENTORY



AERIAL MAP

300' 0' 300' 600'

GRAPHIC SCALE IN FEET

1"= 300'

SOURCE: AERIAL MAP RETRIEVED FROM NEARMAP AUGUST 25, 2023

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

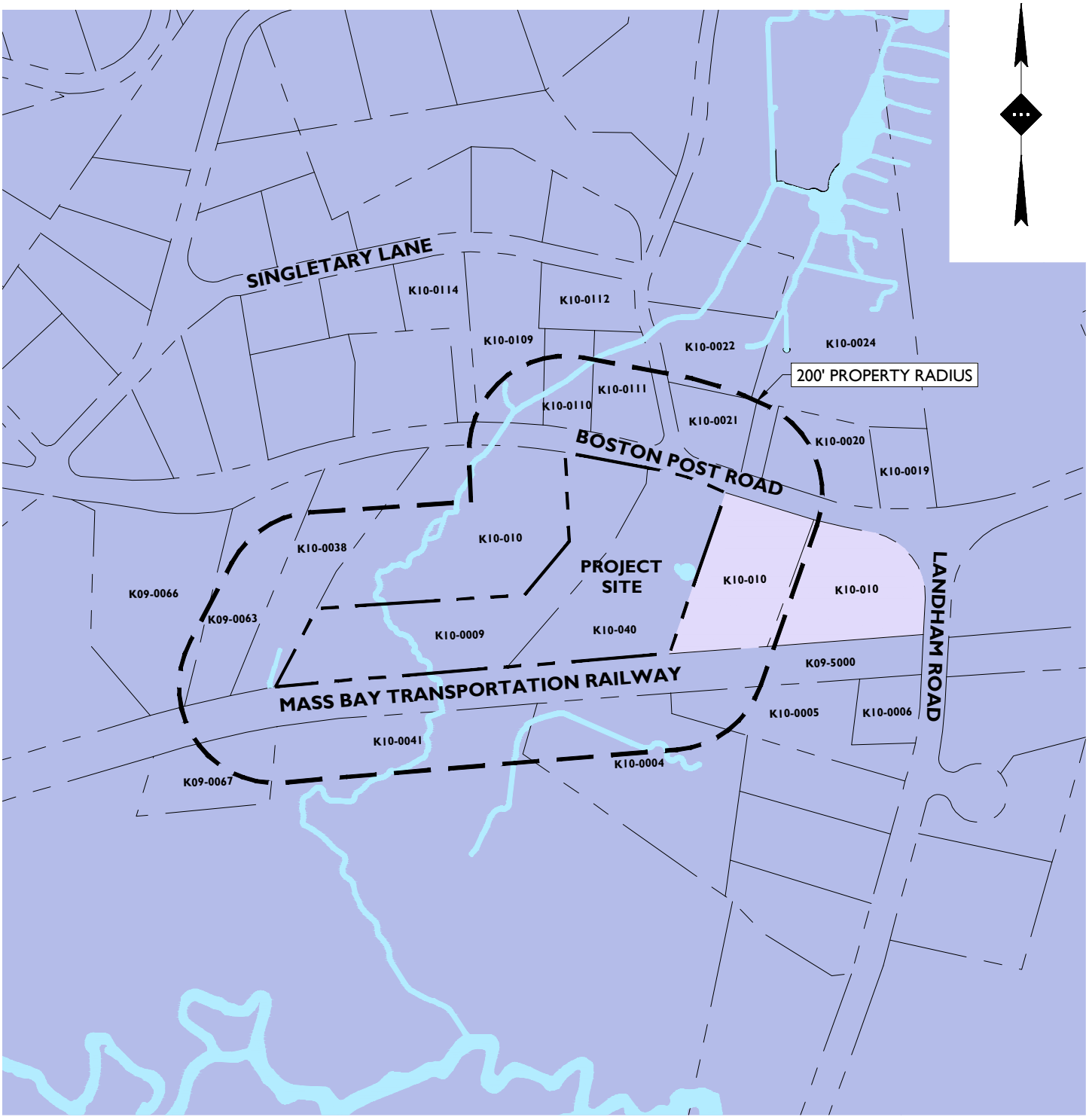
PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	QC
CHECKED BY:	JK
DATE:	08/28/2023
SCALE:	1" = 300'
PROJECT ID:	BOS-230051

STONEFIELD engineering & design

Rutherford, NJ · New York, NY · Salem, MA
Princeton, NJ · Tampa, FL · Detroit, MI
www.stonefieldeng.com

120 Washington Street, Suite 201, Salem, MA 01970
Phone 617.203.2076



ZONING LEGEND

RES A - RESIDENTIAL A

BD - BUSINESS

WATERBODY

TAX & ZONING MAP

300' 0' 300' 600'

GRAPHIC SCALE IN FEET

1"= 300'

SOURCE: TOWN OF SUDBURY GIS MAPPING, RETRIEVED AUGUST 28, 2023

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

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225 BOSTON POST ROAD
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MIDDLESEX COUNTY, MASSACHUSETTS

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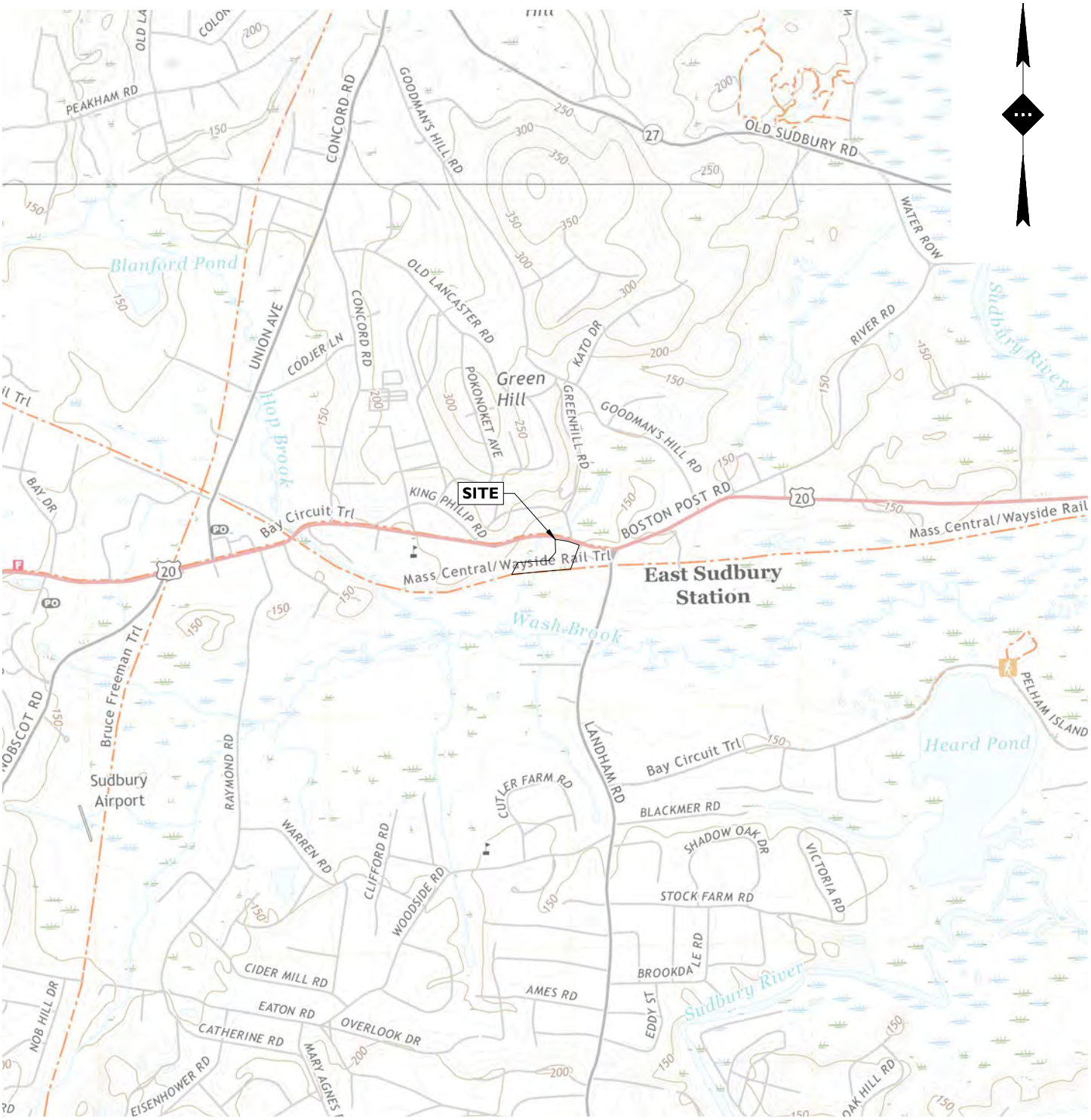

USGS QUADRANGLE MAP

2000' 0' 2000' 4000'

GRAPHIC SCALE IN FEET

1"= 2000'

SOURCE: USGS QUADRANGLE MAPS 7.5 SERIES MAYNARD & FRAMINGHAM, MASSACHUSETTS 2021

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	QC
CHECKED BY:	JK
DATE:	08/28/2023
SCALE:	1" = 2,000'
PROJECT ID:	BOS-230051

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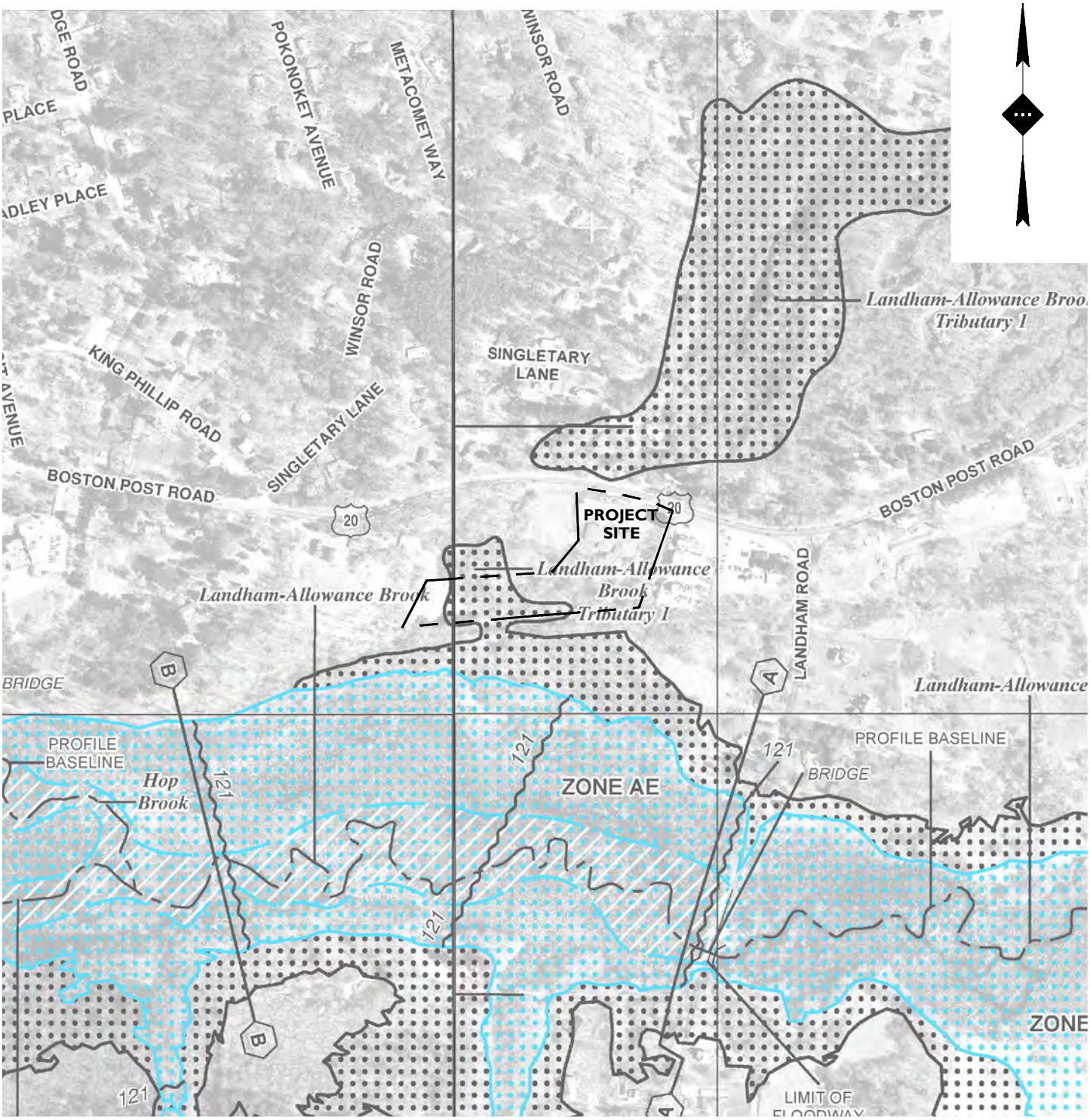

EFFECTIVE FEMA FLOOD INSURANCE RATE MAP

500' 0' 500' 1000'

GRAPHIC SCALE IN FEET

1"= 500'

SOURCE: FLOOD INSURANCE RATE MAP, MIDDLESEX COUNTY, MA, REVISED JULY 7, 2014

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

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225 BOSTON POST ROAD
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LEGEND

ESTIMATED HABITATS OF RARE WILDLIFE

NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM MAP

500' 0' 500' 1000'

GRAPHIC SCALE IN FEET

1"= 500'

SOURCE: PRIORITY AND ESTIMATED HABITAT MAPS, NATURAL HERITAGE ATLAS, AUGUST 1, 2021, INTERACTIVE MAP VIEWER

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	AB
CHECKED BY:	JK
DATE:	03/14/2024
SCALE:	1" = 500'
PROJECT ID:	BOS-230051

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LAND USE AND ZONING

K10-0009 & K10-0040			
SINGLE RESIDENTIAL (RES A-1)			
PROPOSED USE			
CHILD CARE FACILITY (*)	PERMITTED USE		
ZONING REQUIREMENT	**REQUIRED**	**EXISTING**	**PROPOSED**
MINIMUM LOT AREA	40,000 SF	214,118 SF	NO CHANGE
MINIMUM LOT FRONTAGE	180 FT	364.8 FT	NO CHANGE
MAXIMUM BUILDING COVERAGE	40% (85,647 SF) (**)	5.03% (10,770 SF) (**)	NO CHANGE
MAXIMUM BUILDING HEIGHT	2.5 STORIES (35 FT)	1 STORY	NO CHANGE
MINIMUM FRONT YARD SETBACK	40 FT	103.8 FT	NO CHANGE
MINIMUM SIDE YARD SETBACK	20 FT	44.4 FT	NO CHANGE
MINIMUM REAR YARD SETBACK	30 FT	195.4 FT	NO CHANGE
MAXIMUM IMPERVIOUS COVERAGE	N/S	16.5% (35,400 SF)	14.6% (31,161 SF) (***)

(*) EXEMPT AND INSTITUTIONAL USES
(**) INCLUDING PRINCIPAL AND ACCESSORY BUILDINGS
(***) EXCLUDES 6,232 SF OF TURF SURFACE

OFF-STREET PARKING REQUIREMENTS

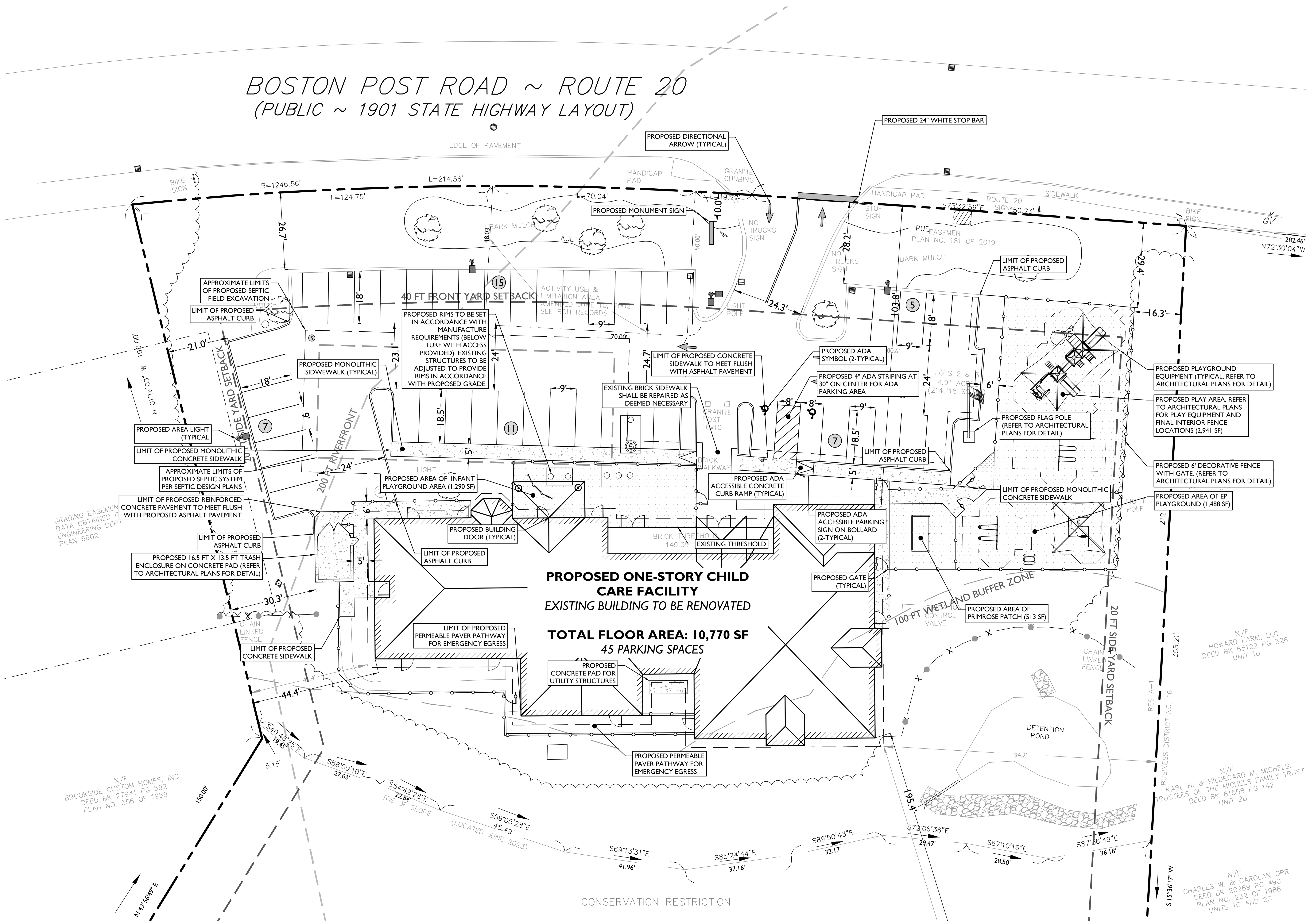
CODE SECTION	REQUIRED	PROPOSED
§ 3120	**REQUIRED PARKING:** 1 SPACE FOR EACH STAFF POSITION (22 STAFF) * (1 SPACE) = 22 SPACES 1 FOR SPACE EACH 5 PERSONS OF RATED CAPACITY OF THE LARGEST AUDITORIUM N/A - NO AUDITORIUM PROPOSED 1 SPACE FOR EACH STUDENT VEHICLE AT MAX CAPACITY (8 STUDENT DROP OFF VEHICLES) * (1 SPACE) = 9 SPACES **TOTAL: 22 + 9 = 31 SPACES**	45 SPACES
§ 3130	**DIMENSIONAL REGULATIONS 90 DEGREE PARKING:** WIDTH = 9 FT LENGTH = 18.5 FT WIDTH OF DRIVE AISLE = 24 FT	9 FT 18 FT (W) 23.1 FT (W)
§ 3142	**PARKING SETBACK:** SETBACK = 10 FT (DRIVE/WALKWAYS EXCLUDED)	21 FT

(W) WAIVER

SIGNAGE REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 3280	**RESIDENTIAL SIGNS:** MAXIMUM SIGNS: 1 SIGN MOUNTING OPTIONS: ATTACHED OR FREESTANDING MAXIMUM SIGN AREA: 10 SF MAXIMUM SIGN HEIGHT: 10 FT MAXIMUM SIGN CLEARANCE: 40% OF HEIGHT MINIMUM SIGN SETBACK: 10 FT	6 SIGNS (W) COMPLIES 54 SF (W) 8 FT N/A 10 FT

N/A NOT APPLICABLE



SYMBOL	DESCRIPTION
	PROPERTY LINE
	SETBACK LINE
	SAWCUT LINE
	PROPOSED CURB
	PROPOSED FLUSH OPENING
	PROPOSED SIGNS / BOLLARDS
	PROPOSED BUILDING
	PROPOSED CONCRETE
	PROPOSED AREA LIGHT
	PROPOSED DECORATIVE FENCE
	PROPOSED BUILDING DOORS

SITE IMPROVEMENTS NOTES

1. EXISTING LIGHT POLES AND EXTERIOR LIGHTS TO BE REUTILIZED. CONTRACTOR SHALL INSPECT AND REPAIR AND REPLACE LIGHT FIXTURE, LIGHT POLES, AND LIGHT BASES AS DEEMED NECESSARY.
2. PARKING LOT SHALL BE MILLED AND OVERLAID TO ENSURE POSITIVE DRAINAGE TO ALL STRUCTURES. FINAL LIMITS OF FULL DEPTH REPAIR SHALL BE COORDINATED WITH APPLICANT PRIOR TO CONSTRUCTION.

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ENSURE THAT ALL REQUIRED APPROVALS HAVE BEEN OBTAINED PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
3. ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC. AND IT'S SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
4. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
6. THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
7. THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTORS EXPENSE.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC. WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
9. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
10. THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
11. THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR TO BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
12. SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC. BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.

20' 0' 20' 40'
GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
235 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER
STONEFIELD
engineering & design

SCALE: 1" = 20' PROJECT ID: BOS-230051

TITLE:

SITE PLAN

DRAWING:

C-4

DRAINAGE AND UTILITY NOTES

1. THE CONTRACTOR IS REQUIRED TO CALL THE APPROPRIATE AUTHORITY FOR NOTICE OF CONSTRUCTION/EXCAVATION AND UTILITY MARK OUT PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH STATE LAW. CONTRACTOR IS REQUIRED TO CONFIRM THE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES IN THE FIELD. SHOULD A DISCREPANCY EXIST BETWEEN THE FIELD LOCATION OF A UTILITY AND THE LOCATION SHOWN ON THE PLAN SET OR SURVEY, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IMMEDIATELY IN WRITING.
2. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN IN OPERATION ALL UTILITIES NOT DESIGNATED TO BE REMOVED.
3. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO ANY EXISTING UTILITY IDENTIFIED TO REMAIN WITHIN THE LIMITS OF THE PROPOSED WORK DURING CONSTRUCTION.
4. A MINIMUM HORIZONTAL SEPARATION OF 10 FEET IS REQUIRED BETWEEN ANY SANITARY SEWER SERVICE AND ANY WATER LINES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. ALL WATER LINES SHALL BE VERTICALLY SEPARATED ABOVE SANITARY SEWER LINES BY A MINIMUM DISTANCE OF 18 INCHES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
6. THE CONTRACTOR TO PERFORM A TEST PIT PRIOR TO CONSTRUCTION (RECOMMEND 30 DAYS PRIOR) AT LOCATIONS OF EXISTING UTILITY CROSSINGS FOR WATER AND SANITARY SEWER CONNECTION IMPROVEMENTS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IN WRITING.
7. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING GAS, ELECTRIC AND TELECOMMUNICATION CONNECTIONS WITH THE APPROPRIATE GOVERNING AUTHORITY.
8. CONTRACTOR SHALL START CONSTRUCTION OF ANY GRAVITY SEWER AT THE LOWEST INVERT AND WORK UP-GRADIENT.
9. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD SET OF PLANS REFLECTING THE LOCATION OF EXISTING UTILITIES THAT HAVE BEEN CAPPED, ABANDONED, OR RELOCATED BASED ON THE DEMOLITION/REMOVAL ACTIVITIES REQUIRED IN THIS PLAN SET. THIS DOCUMENT SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.
10. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD OF THE AS-BUILT LOCATIONS OF ALL PROPOSED UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR SHALL NOTE ANY DISCREPANCIES BETWEEN THE AS-BUILT LOCATIONS AND THE LOCATIONS DEPICTED WITHIN THE PLAN SET. THIS RECORD SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.

EXCAVATION, SOIL PREPARATION, AND DEWATERING NOTES

1. THE CONTRACTOR IS REQUIRED TO REVIEW THE REFERENCED GEOTECHNICAL DOCUMENTS PRIOR TO CONSTRUCTION, THESE DOCUMENTS SHALL BE CONSIDERED A PART OF THE PLAN SET.
2. THE CONTRACTOR IS REQUIRED TO PREPARE SUBGRADE SOILS BENEATH ALL PROPOSED IMPROVEMENTS AND BACKFILL ALL EXCAVATIONS IN ACCORDANCE WITH RECOMMENDATIONS BY THE GEOTECHNICAL ENGINEER OF RECORD.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SHORING FOR ALL EXCAVATIONS AS REQUIRED. CONTRACTOR SHALL HAVE THE SHORING DESIGN PREPARED BY A QUALIFIED PROFESSIONAL. SHORING DESIGNS SHALL BE SUBMITTED TO STONEFIELD ENGINEERING & DESIGN, LLC. AND THE OWNER PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL OPEN EXCAVATIONS ARE PERFORMED AND PROTECTED IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS.
5. THE CONTRACTOR IS RESPONSIBLE FOR ANY DEWATERING DESIGN AND OPERATIONS, AS REQUIRED, TO CONSTRUCT THE PROPOSED IMPROVEMENTS. THE CONTRACTOR SHALL OBTAIN ANY REQUIRED PERMITS FOR DEWATERING OPERATIONS AND GROUNDWATER DISPOSAL.

EXCAVATION & UTILITY VERIFICATION NOTE:

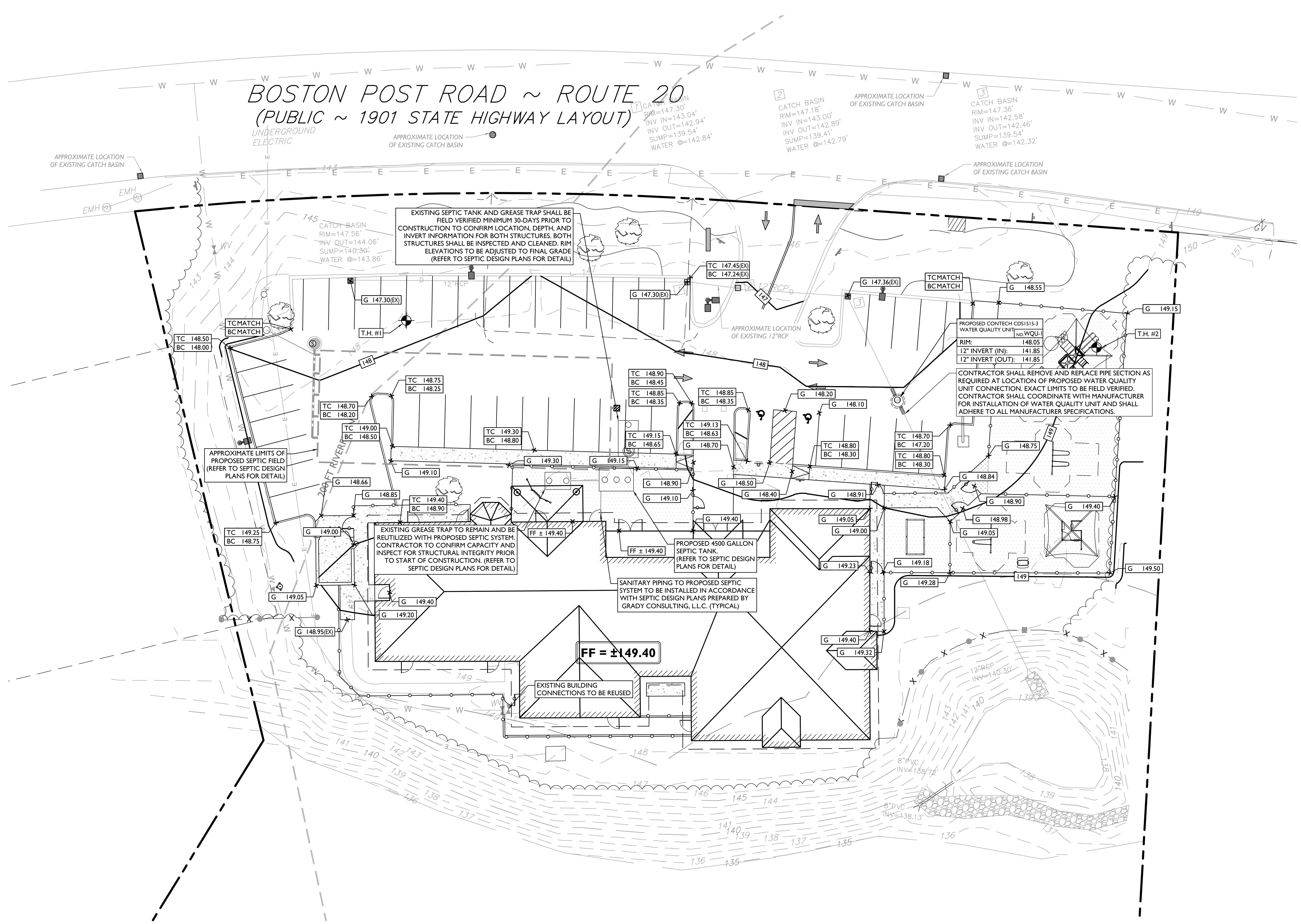
PRIOR TO THE START OF CONSTRUCTION (RECOMMENDED 30 DAYS PRIOR) THE CONTRACTOR SHALL PERFORM EXPLORATORY TEST PITS AT LOCATIONS OF UTILITY / DRAINAGE CROSSINGS OR CONNECTIONS WITH EXISTING UTILITY OR STORMWATER INFRASTRUCTURE. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ANY NECESSARY ROAD OPENING PERMITS TO PERFORM SAID EXPLORATORY WORK. SHOULD A CONFLICT BE DISCOVERED WITH THE INFORMATION CONTAINED WITHIN THESE PLANS THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC IN WRITING.

SANITARY / STORMWATER CONSTRUCTION NOTE:

THE CONTRACTOR SHALL START CONSTRUCTION OF ALL GRAVITY SANITARY AND STORMWATER INFRASTRUCTURE AT THE DOWNSTREAM CONNECTION POINT (E.G. LOWEST INVERT) AND WORK UP-GRADIENT.

SEPTIC INSTALLATION NOTE:

PROPOSED SEPTIC SYSTEM AND ASSOCIATED COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED SEPTIC DESIGN PLAN PREPARED BY GRADY CONSULTING, LLC. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION AND DEPTH OF EXISTING SANITARY INFRASTRUCTURE THAT IS TO REMAIN AND BE REUTILIZED, AND CONFIRM FEASIBILITY OF REUSE. CONTRACTOR TO INSPECT FOR STRUCTURAL INTEGRITY AND CONFIRM CAPACITY OF THE SYSTEMS REMAINING. SHOULD THE SYSTEMS BE DEEMED INFEASIBLE FOR REUSE, CONTRACTOR SHALL NOTIFY THE SEPTIC DESIGN ENGINEER IN WRITING AS SOON AS POSSIBLE.



SYMBOL	DESCRIPTION
	PROPERTY LINE
100	PROPOSED GRADING CONTOUR
RIDGELINE	PROPOSED GRADING RIDGELINE
	PROPOSED DIRECTION OF DRAINAGE FLOW
G 100.00	PROPOSED GRADE SPOT SHOT
TC 100.50 / BC 100.00	PROPOSED TOP OF CURB / BOTTOM OF CURB SPOT SHOT
FF 100.00	PROPOSED FINISHED FLOOR SPOT SHOT
DC 100.12 / BC 100.00	PROPOSED DEPRESSED CURB / BOTTOM OF CURB SPOT SHOT
	PROPOSED STORMWATER STRUCTURES
	PROPOSED STORMWATER PIPING
SAN	PROPOSED SANITARY LATERAL
S	PROPOSED SANITARY STRUCTURES

GRADING NOTES

1. ALL SOIL AND MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. ANY GROUNDWATER DE-WATERING PRACTICES SHALL BE PERFORMED UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS FOR THE DISCHARGE OF DE-WATERED GROUNDWATER. ALL SOIL IMPORTED TO THE SITE SHALL BE CERTIFIED CLEAN FILL. CONTRACTOR SHALL MAINTAIN RECORDS OF ALL FILL MATERIALS BROUGHT TO THE SITE.
2. THE CONTRACTOR IS REQUIRED TO PROVIDE TEMPORARY AND/OR PERMANENT SHORING WHERE REQUIRED DURING EXCAVATION ACTIVITIES, INCLUDING BUT NOT LIMITED TO UTILITY TRENCHES, TO ENSURE THE STRUCTURAL INTEGRITY OF NEARBY STRUCTURES AND STABILITY OF THE SURROUNDING SOILS.
3. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 4 INCHES TO 7 INCHES ABOVE EXISTING GRADES UNLESS OTHERWISE NOTED. THE CONTRACTOR WILL SUPPLY ALL STAKEOUT CURB GRADE SHEETS TO STONEFIELD ENGINEERING & DESIGN, LLC. FOR REVIEW AND APPROVAL PRIOR TO POURING CURBS.
4. THE CONTRACTOR IS RESPONSIBLE TO SET ALL PROPOSED UTILITY COVERS AND RESET ALL EXISTING UTILITY COVERS WITHIN THE PROJECT LIMITS TO PROPOSED GRADE IN ACCORDANCE WITH ANY APPLICABLE MUNICIPAL, COUNTY, STATE AND/OR UTILITY AUTHORITY REGULATIONS.
5. MINIMUM SLOPE REQUIREMENTS TO PREVENT PONDING SHALL BE AS FOLLOWS:
   - CURB GUTTER: 0.50%
   - CONCRETE SURFACES: 1.00%
   - ASPHALT SURFACES: 1.00%
6. A MINIMUM SLOPE OF 1.00% SHALL BE PROVIDED AWAY FROM ALL BUILDINGS. THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE FROM THE BUILDING IS ACHIEVED AND SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF THIS CONDITION CANNOT BE MET.
7. FOR PROJECTS WHERE BASEMENTS ARE PROPOSED, THE DEVELOPER IS RESPONSIBLE TO DETERMINE THE DEPTH TO GROUNDWATER AT THE LOCATION OF THE PROPOSED STRUCTURE. IF GROUNDWATER IS ENCOUNTERED WITHIN THE BASEMENT AREA, SPECIAL CONSTRUCTION METHODS SHALL BE UTILIZED AND REVIEWED/APPROVED BY THE CONSTRUCTION CODE OFFICIAL. IF SUMP PUMPS ARE UTILIZED, ALL DISCHARGES SHALL BE CONNECTED DIRECTLY TO THE PUBLIC STORM SEWER SYSTEM WITH APPROVAL FROM THE GOVERNING STORM SEWER SYSTEM AUTHORITY.

ADA NOTES

1. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION WITHIN THE ADA PARKING SPACES AND ACCESS AISLES.
2. THE CONTRACTOR SHALL PROVIDE COMPLIANT SIGNAGE AT ALL ADA PARKING AREAS IN ACCORDANCE WITH STATE GUIDELINES.
3. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 5.00% RUNNING SLOPE AND A MAXIMUM OF 2.00% CROSS SLOPE ALONG WALKWAYS WITHIN THE ACCESSIBLE PATH OF TRAVEL (SEE THE SITE PLAN FOR THE LOCATION OF THE ACCESSIBLE PATH). THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE ACCESSIBLE PATH OF TRAVEL IS 36 INCHES WIDE OR GREATER UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
4. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION AT ALL LANDINGS. LANDINGS INCLUDE, BUT ARE NOT LIMITED TO, THE TOP AND BOTTOM OF AN ACCESSIBLE RAMP, AT ACCESSIBLE BUILDING ENTRANCES, AT AN AREA IN FRONT OF A WALK-UP ATM, AND AT TURNING SPACES ALONG THE ACCESSIBLE PATH OF TRAVEL. THE LANDING AREA SHALL HAVE A MINIMUM CLEAR AREA OF 60 INCHES BY 60 INCHES UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
5. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 8.33% RUNNING SLOPE AND A MAXIMUM 2.00% CROSS SLOPE ON ANY CURB RAMPS ALONG THE ACCESSIBLE PATH OF TRAVEL. WHERE PROVIDED, CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 10.00% IF A LANDING AREA IS PROVIDED AT THE TOP OF THE RAMP. FOR ALTERATIONS, A CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 8.33% IF A LANDING AREA IS NOT PROVIDED AT THE TOP OF THE RAMP. CURBS RAMPS SHALL NOT RISE MORE THAN 6 INCHES IN ELEVATION WITHOUT A HANDRAIL. THE CLEAR WIDTH OF A CURB RAMP SHALL BE NO LESS THAN 36 INCHES WIDE.
6. ACCESSIBLE RAMPS WITH A RISE GREATER THAN 6 INCHES SHALL CONTAIN COMPLIANT HANDRAILS ON BOTH SIDES OF THE RAMP AND SHALL NOT RISE MORE THAN 30” IN ELEVATION WITHOUT A LANDING AREA IN BETWEEN RAMP RUNS. LANDING AREAS SHALL ALSO BE PROVIDED AT THE TOP AND BOTTOM OF THE RAMP.
7. A SLIP RESISTANT SURFACE SHALL BE CONSTRUCTED ALONG THE ACCESSIBLE PATH AND WITHIN ADA PARKING AREAS.
8. THE CONTRACTOR SHALL ENSURE A MAXIMUM OF ¼ INCHES VERTICAL CHANGE IN LEVEL ALONG THE ACCESSIBLE PATH. WHERE A CHANGE IN LEVEL BETWEEN ¼ INCHES AND ½ INCHES EXISTS, CONTRACTOR SHALL ENSURE THAT THE TOP ¼ INCH CHANGE IN LEVEL IS BEVELED WITH A SLOPE NOT STEEPER THAN 1 UNIT VERTICAL AND 2 UNITS HORIZONTAL (2:1 SLOPE).
9. THE CONTRACTOR SHALL ENSURE THAT ANY OPENINGS (GAPS OR HORIZONTAL SEPARATION) ALONG THE ACCESSIBLE PATH SHALL NOT ALLOW PASSAGE OF A SPHERE GREATER THAN ½ INCH.

20' 0' 20' 40'

GRAPHIC SCALE IN FEET
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Princeton, NJ · Tampa, FL · Detroit, MI
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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE:

GRADING, DRAINAGE & UTILITY PLAN

DRAWING:

C-5

STABILIZATION SPECIFICATIONS:

1.A. TEMPORARY SEEDING AND MULCHING:
GROUND LIMESTONE - APPLIED UNIFORMLY ACCORDING TO SOIL TEST RECOMMENDATIONS.
FERTILIZER - APPLY 11LBS./1,000 SF OF 10-20-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN (UNLESS A SOIL TEST INDICATES OTHERWISE) WORKED INTO THE SOIL A MINIMUM OF 4".
SEED - PERENNIAL RYEGRASS 100 LBS./ACRE (2.3 LBS./1,000 SF) OR OTHER APPROVED SEEDS; PLANT BETWEEN MARCH 1 AND MAY 15 OR BETWEEN AUGUST 15 AND OCTOBER 1.
MULCH - UNROTTED STRAW OR HAY AT A RATE OF 70 TO 90 LBS./1,000 SF APPLIED TO ACHIEVE 95% SOIL SURFACE COVERAGE. MULCH SHALL BE ANCHORED BY APPROVED METHODS (I.E. PEG AND TWINE, MULCH NETTING, OR LIQUID MULCH BINDER).

1.B. PERMANENT SEEDING AND MULCHING:
TOPSOIL - UNIFORM APPLICATION TO A DEPTH OF 5" (UNSETTLED).
GROUND LIMESTONE - APPLIED UNIFORMLY ACCORDING TO SOIL TEST RECOMMENDATIONS.
FERTILIZER - APPLY 11 LBS./1,000 SF OF 10-10-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN (UNLESS A SOIL TEST INDICATES OTHERWISE) WORKED INTO THE SOIL A MINIMUM OF 4".
SEED - TURF TYPE TALL FESCUE (BLEND OF 3 CULTIVARS) 350 LBS./ACRE (8 LBS./1,000 SF) OR OTHER APPROVED SEEDS; PLANT BETWEEN MARCH 1 AND OCTOBER 1 (SUMMER SEEDINGS REQUIRE IRRIGATION)
MULCH - UNROTTED STRAW OR HAY AT A RATE OF 70 TO 90 LBS./1,000 SF APPLIED TO ACHIEVE 95% SOIL SURFACE COVERAGE. MULCH SHALL BE ANCHORED BY APPROVED METHODS (I.E. PEG AND TWINE, MULCH NETTING, OR LIQUID MULCH BINDER).

SEQUENCE OF CONSTRUCTION

1. INSTALL CONSTRUCTION ENTRANCE, SILT FENCING, TREE PROTECTION, INLET FILTERS AND OTHER APPLICABLE EROSION CONTROL MEASURES (2 DAYS).
2. DEMOLISH EXISTING PAVEMENT AND GRAVEL (7 DAYS).
3. ROUGH GRADING AND TEMPORARY SEEDING (21 DAYS).
4. BUILDING RENOVATION AND SITE IMPROVEMENTS (120 DAYS).
5. LANDSCAPING IMPROVEMENTS AND FINAL SEEDING (7 DAYS).
6. REMOVE SOIL EROSION MEASURES (1 DAY).

TOTAL ESTIMATED TIME = 8 MONTHS

NOTE: TIME DURATIONS ARE APPROXIMATE AND ARE INTENDED TO ACT AS A GENERAL GUILE TO THE CONSTRUCTION TIMELINE. ALL DURATIONS ARE SUBJECT TO CHANGE BY CONTRACTOR. CONTRACTOR SHALL SUBMIT CONSTRUCTION SCHEDULE TO TOWNSHIP AND ENGINEER. CONTRACTOR SHALL PHASE CONSTRUCTION ACCORDINGLY IF REQUIRED.

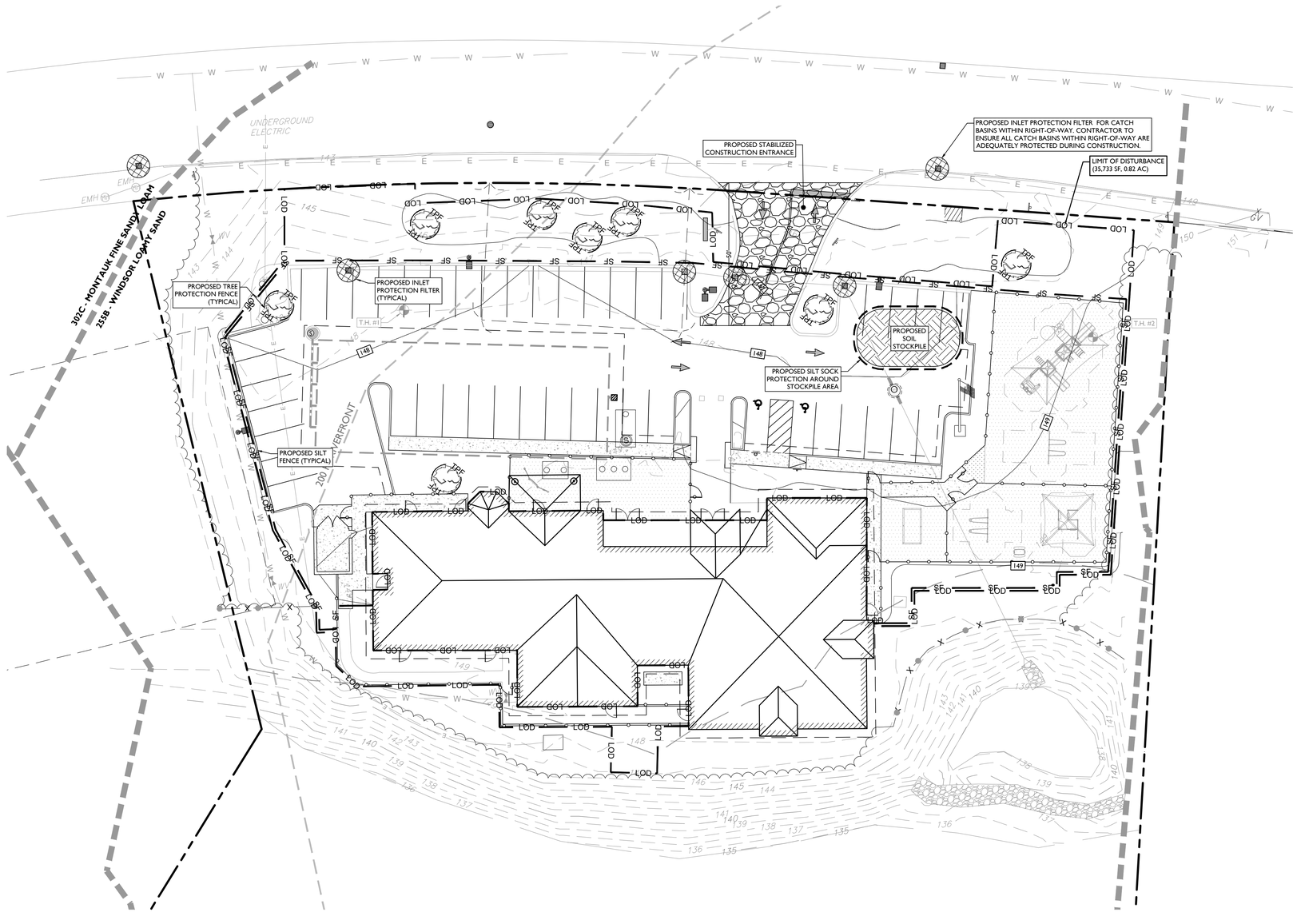
ALL EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED PRIOR TO THE BEGINNING OF ANY DEMOLITION ACTIVITIES OR ANY OTHER ON-SITE WORK. CONTRACT TO ENSURE, AT MINIMUM, ALL CONTROLS ARE INSTALLED PER APPROVED PLANS. CONTROL MEASURES SHALL BE INSPECTED FREQUENTLY TO ENSURE CONTINUED FUNCTIONALITY THROUGHOUT THE FULL COURSE OF CONSTRUCTION.

DUST CONTROL NOTES

1. MULCHES - SEE STANDARD OF STABILIZATION WITH MULCHES ONLY, PG. 5-1
2. VEGETATIVE COVER - SEE STANDARD FOR: TEMPORARY VEGETATIVE COVER, PG. 7-1, PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION PG. 4-1 AND PERMANENT STABILIZATION WITH SOD, PG. 6-1
3. SPRAY-ON ADHESIVES - ON MINERAL SOILS (NOT EFFECTIVE ON MUCK SOILS). KEEP TRAFFIC OFF THESE AREAS.
4. TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART AND SPRING-TOOTHED HARROWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.
5. SPRINKLING - SITE IS SPRINKLED UNTIL THE SURFACE IS WET.
6. BARRIERS - SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.
7. CALCIUM CHLORIDE - SHALL BE IN THE FORM OF LOOSE, DRY GRANULES OR FLAKES FINE ENOUGH TO FEED THROUGH COMMONLY USED SPREADERS AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. IF USED ON STEEPER SLOPES, THEN USE OTHER PRACTICES TO PREVENT WASHING INTO STREAMS OR ACCUMULATION AROUND PLANTS.
8. STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

SOIL CHARACTERISTICS CHART

TYPE OF SOIL	52A- FREETOWN MUCK	255B-WINDSOR LOAMY SAND	302C-MONTAUK FINE SANDY LOAM
PERCENT OF SITE COVERAGE	35.70%	59.50%	4.70%
HYDROLOGIC SOIL GROUP	B/D	A	C
DEPTH TO RESTRICTIVE LAYER	>80 INCHES	>80 INCHES	20 - 43 INCHES
SOIL PERMEABILITY	0.14 - 14.17 INCHES/HOUR	1.42 - 99.90 INCHES/HOUR	0.00 - 1.42 INCHES/HOUR
DEPTH TO WATER TABLE	0 - 6 INCHES	>80 INCHES	18 - 37 INCHES



SYMBOL	DESCRIPTION
	PROPERTY BOUNDARY
	ADJACENT PROPERTY BOUNDARY
LOD	PROPOSED LIMIT OF DISTURBANCE
SF	PROPOSED SILT FENCE
	PROPOSED SILT SOCK
TPF	PROPOSED TREE PROTECTION FENCE
	PROPOSED STOCKPILE & EQUIPMENT STORAGE
	PROPOSED STABILIZED CONSTRUCTION ENTRANCE
	PROPOSED INLET PROTECTION FILTER

Know what's **below**
Call before you dig.

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
2. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL AIR QUALITY STANDARDS.
3. THE CONTRACTOR IS RESPONSIBLE TO INSPECT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES WEEKLY AND AFTER A PRECIPITATION EVENT GREATER THAN 1 INCH. THE CONTRACTOR SHALL MAINTAIN AN INSPECTION LOG ON SITE AND DOCUMENT CORRECTIVE ACTION TAKEN THROUGHOUT THE COURSE OF CONSTRUCTION AS REQUIRED.

20' 0' 20' 40'
GRAPHIC SCALE IN FEET
1" = 20'

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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

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LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE:
SOIL EROSION AND SEDIMENT CONTROL PLAN

DRAWING:
C-7

Z:\BOS\TOWN\BOS\2023\BOS-230051 ADA ARCHITECTS - 225 BOSTON POST ROAD, SUDBURY, MA\CAD\PLOT\PLOT SET\SEC.DWG

LANDSCAPING AND BUFFER REQUIREMENTS

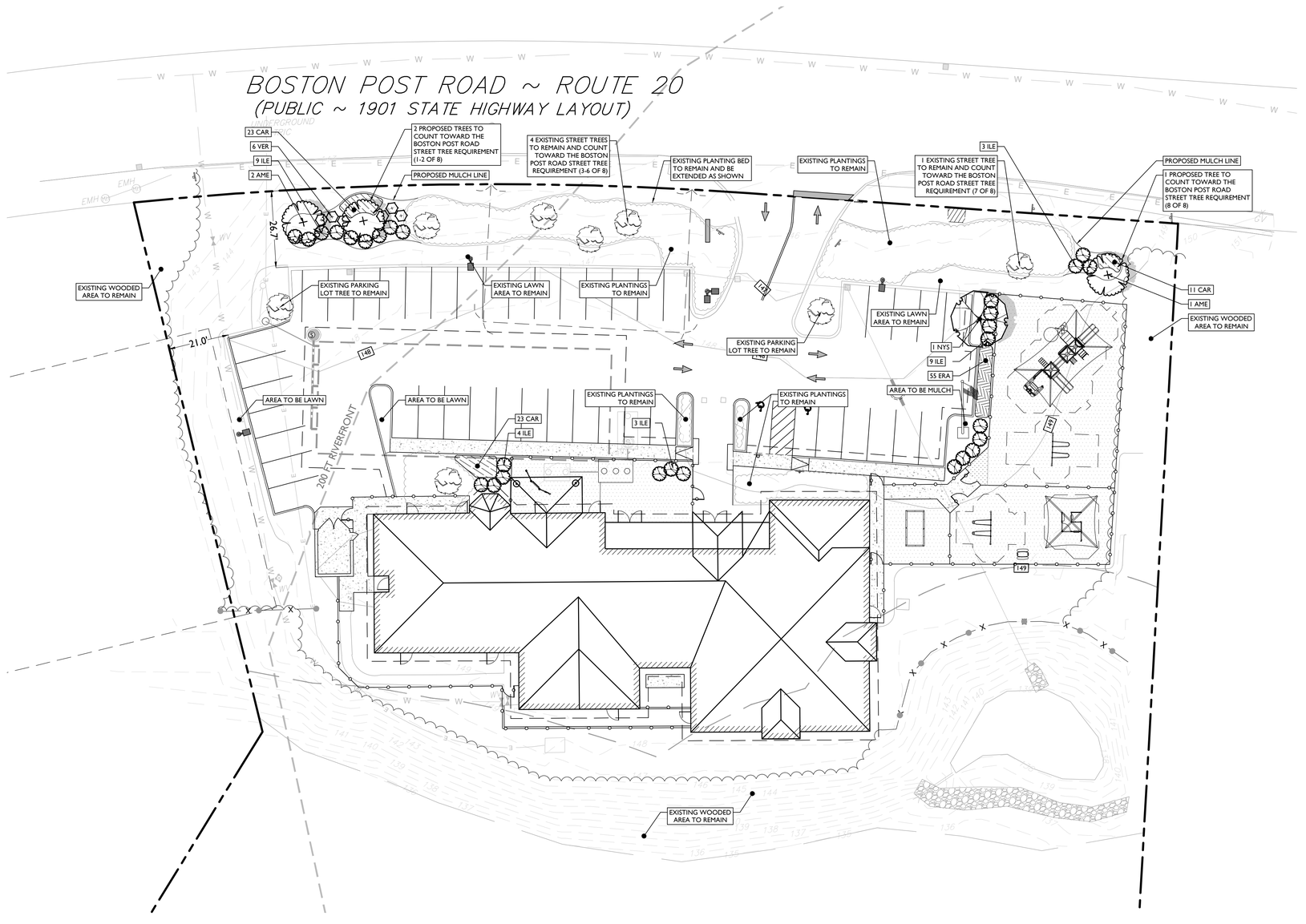
CODE SECTION	REQUIRED	PROPOSED
§ 3532.	LANDSCAPE REQUIREMENTS MINIMUM 30% OF LOT SHALL BE OPEN SPACE LOT AREA: 214,118 SF (214,118 SF) * (0.30) = 64,235 SF	 174,516 SF (81%)
§ 3541.	PARKING LOT LANDSCAPING 150 SF LANDSCAPING FOR EVERY 1,000 OF PARKING PARKING LOT AREA: 15,847 SF (15,847 SF) * (150 SF / 1,000 SF) = 2,377 SF PLANTED AREAS SHALL CONTAIN TREES AND OTHER PLANTINGS	 3,459 SF COMPLIES
§ 3542.	PARKING AND REFUSE AREAS SHALL BE SCREENED FROM VIEW OF R.O.W. AND ADJACENT PROPERTIES WITH PLANTED AREAS, BERMS, OR FENCES	COMPLIES
§ 3543.	BUFFER STRIP REQUIRED BETWEEN PARKING LOT AND SIDE/REAR LOT LINES MINIMUM BUFFER WIDTH: 25 FT	PROVIDED 21.0 FT (EN)
§ 3550.	STREET FRONTAGE LANDSCAPING LANDSCAPE BUFFER WIDTH: 20 FT BUFFER SHALL BE PLANTED WITH GRASS, SHRUBS, AND TREES 1 TREES FOR EVERY 40 LF OF FRONTAGE BOSTON POST ROAD: 322 FT (322 FT) * (1 TREE / 40 FT FRONTAGE) = 8 TREES	 26.7 FT COMPLIES 5 EXISTING TREES 3 TREES PROPOSED

(EN) EXISTING NONCONFORMITY

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	REMARKS
DECIDUOUS TREES							
	NYS	1	NYSSA SYLVATICA	TUPELO	2" - 2.5" CAL	B&B	NATIVE, SALT TOLERANT
ORNAMENTAL TREES							
	AME	3	AMELANCHIER CANADENSIS	CANADIAN SERVICEBERRY	2" - 2.5" CAL	B&B	SINGLE STEM; NATIVE, DROUGHT TOLERANT, SALT TOLERANT
SHRUBS							
	VER	6	ILEX VERTICILLATA 'RED SPRITE'	RED SPRITE WINTERBERRY	30" - 36"	POT	NATIVE, SALT TOLERANT
EVERGREEN SHRUBS							
	ILE	28	ILEX GLABRA	INKBERRY HOLLY	30" - 36"	B&B	NATIVE, DROUGHT TOLERANT, SALT TOLERANT
PERENNIALS AND GRASSES							
	CAR	57	CAREX PENSYLVANICA	PENNSYLVANIA SEDGE	24" O.C.	1 GAL. POT	NATIVE, DROUGHT TOLERANT
	ERA	55	ERAGROSTIS SPECTABILIS	PURPLE LOVEGRASS	18" O.C.	1 GAL. POT	NATIVE, DROUGHT TOLERANT, SALT TOLERANT

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN ON THE LANDSCAPE PLAN AND WITHIN THE PLANT LIST, THE PLAN SHALL DICTATE.



GRAPHIC SCALE IN FEET
1" = 20'

811 Know what's **below** **Call** before you dig.

IRRIGATION NOTE:

IRRIGATION CONTRACTOR TO PROVIDE A DESIGN FOR AN IRRIGATION SYSTEM SEPARATING PLANTING BEDS FROM LAWN AREA, PRIOR TO CONSTRUCTION, DESIGN IS TO BE SUBMITTED TO THE PROJECT LANDSCAPE DESIGNER FOR REVIEW AND APPROVAL. WHERE POSSIBLE, DRIP IRRIGATION AND OTHER WATER CONSERVATION TECHNIQUES SUCH AS RAIN SENSORS SHALL BE IMPLEMENTED. CONTRACTOR TO VERIFY MAXIMUM ON SITE DYNAMIC WATER PRESSURE AVAILABLE MEASURED IN PSI. PRESSURE REDUCING DEVICES OR BOOSTER PUMPS SHALL BE PROVIDED TO MEET SYSTEM PRESSURE REQUIREMENTS. DESIGN TO SHOW ALL VALVES, PIPING, HEADS, BACKFLOW PREVENTION, METERS, CONTROLLERS, AND SLEEVES WITHIN HARDSCAPE AREAS.

LANDSCAPING NOTES

1. THE CONTRACTOR SHALL RESTORE ALL DISTURBED GRASS AND LANDSCAPED AREAS TO MATCH EXISTING CONDITIONS UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
2. THE CONTRACTOR SHALL RESTORE ALL DISTURBED LAWN AREAS WITH A MINIMUM 4 INCH LAYER OF TOPSOIL AND SEED.
3. THE CONTRACTOR SHALL RESTORE MULCH AREAS WITH A MINIMUM 3 INCH LAYER OF MULCH .
4. THE MAXIMUM SLOPE ALLOWABLE IN LANDSCAPE RESTORATION AREAS SHALL BE 3 FEET HORIZONTAL TO 1 FOOT VERTICAL (3:1 SLOPE) UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
5. THE CONTRACTOR IS REQUIRED TO LOCATE ALL SPRINKLER HEADS IN AREA OF LANDSCAPING DISTURBANCE PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL RELOCATE SPRINKLER HEADS AND LINES IN ACCORDANCE WITH OWNER'S DIRECTION WITHIN AREAS OF DISTURBANCE.
6. THE CONTRACTOR SHALL ENSURE THAT ALL DISTURBED LANDSCAPED AREAS ARE GRADED TO MEET FLUSH AT THE ELEVATION OF WALKWAYS AND TOP OF CURB ELEVATIONS EXCEPT UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET. NO ABRUPT CHANGES IN GRADE ARE PERMITTED IN DISTURBED LANDSCAPING AREAS.

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design
Rutherford, NJ · New York, NY · Salem, MA
Princeton, NJ · Tampa, FL · Detroit, MI
www.stonefieldeng.com
120 Washington Street, Suite 201, Salem, MA 01970
Phone 617.203.2076

LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

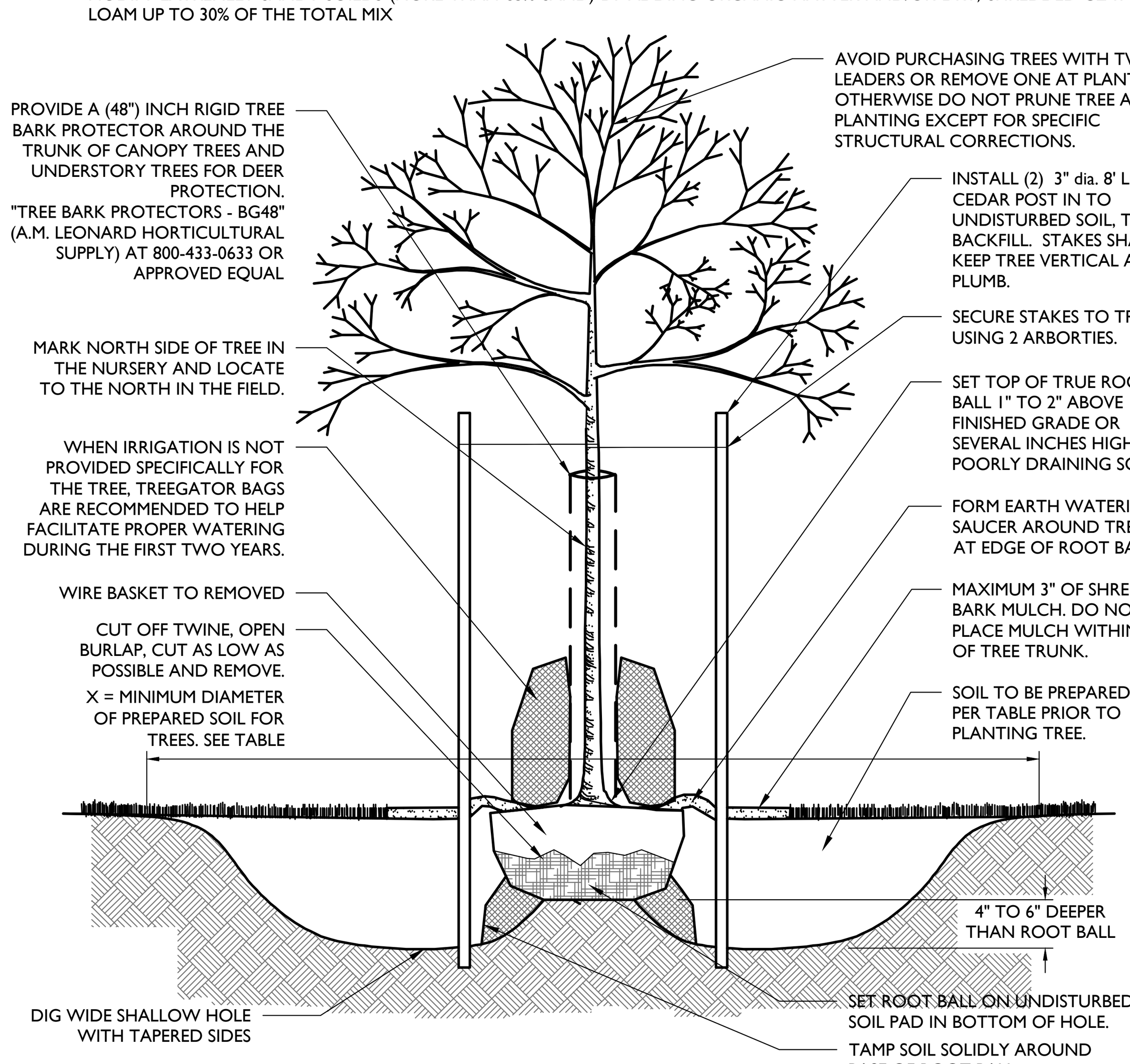
TITLE: **LANDSCAPING PLAN**

DRAWING: **C-8**

Z:\BOSTON\BOS2023\BOS-230051 ADA ARCHITECTS - 225 BOSTON POST ROAD, SUDBURY, MA\CAD\PLOT\SP-08-LANDSHG

NOTES:

1. FOR CONTAINER-GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER
2. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
3. SOIL AMENDMENTS:
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - MODIFY EXTREMELY SANDY SOILDS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX



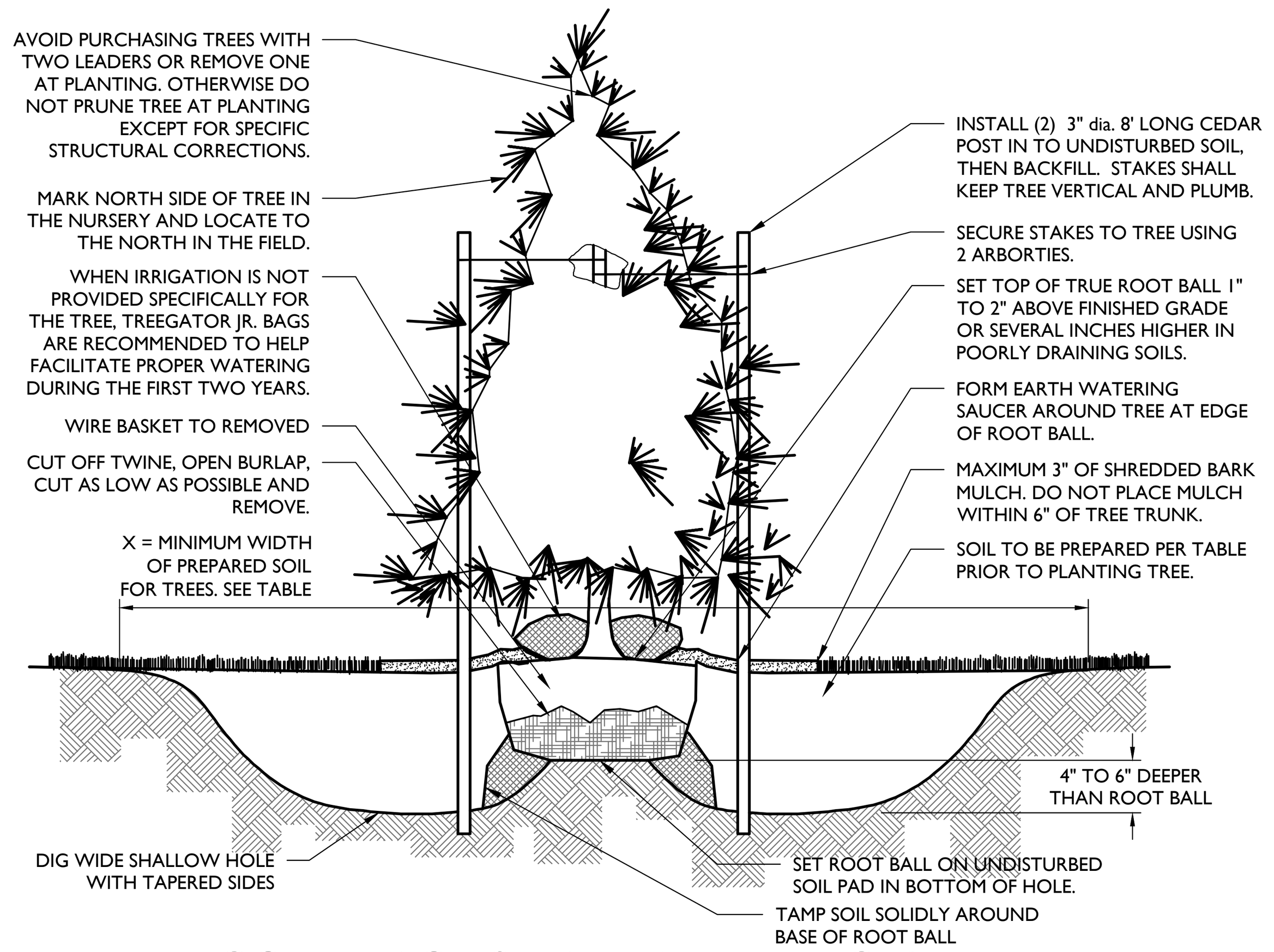
DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

1

NOTES:

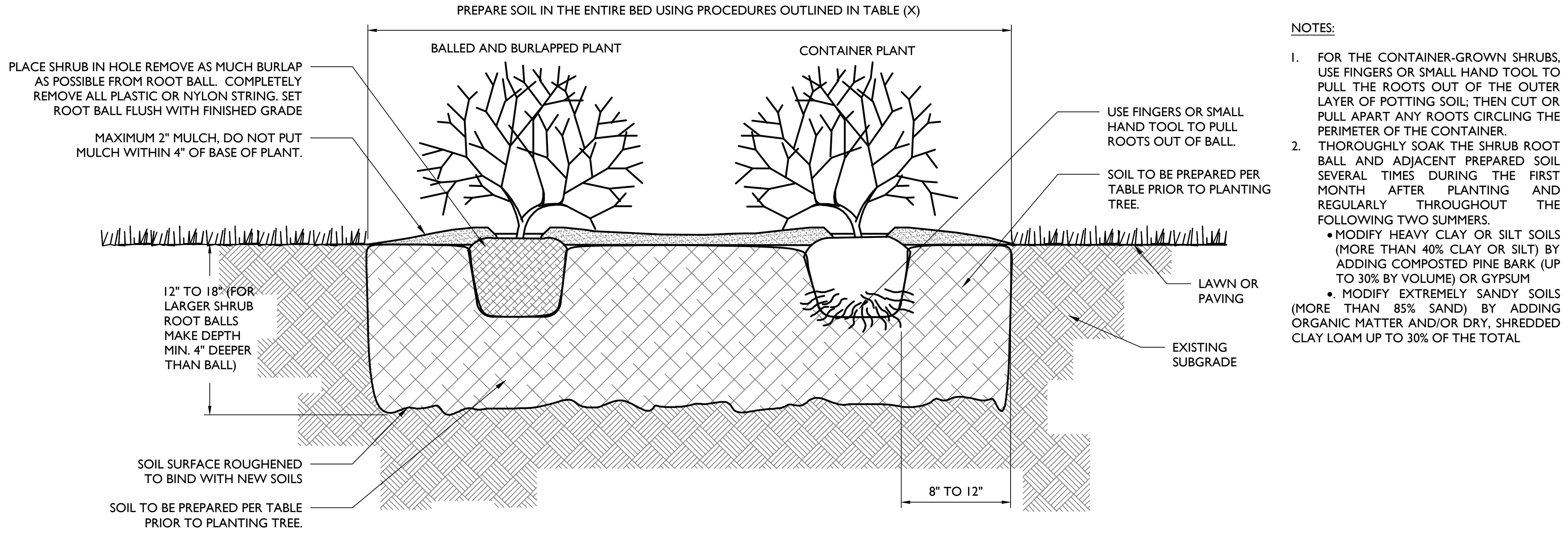
1. FOR CONTAINER-GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
2. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
3. SOIL AMENDMENTS:
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX



CONIFEROUS TREE PLANTING DETAIL

NOT TO SCALE

2



NOTES:

1. FOR THE CONTAINER-GROWN SHRUBS, USE FINGERS OR SMALL HAND TOOL TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
2. THOROUGHLY SOAK THE SHRUB ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - . MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL

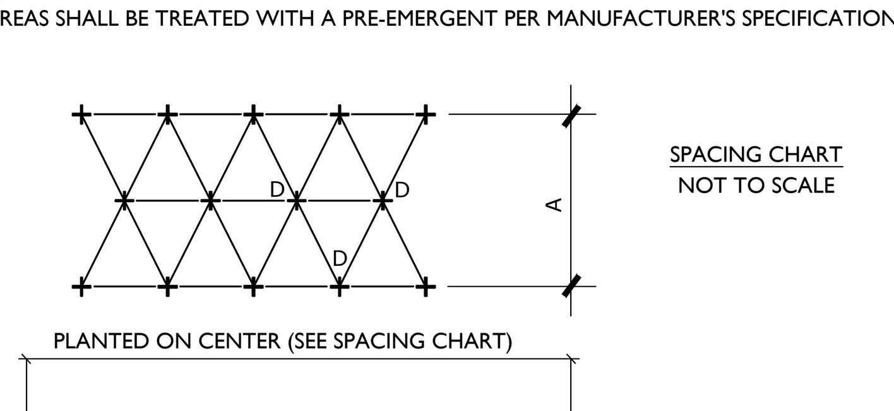
DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

3

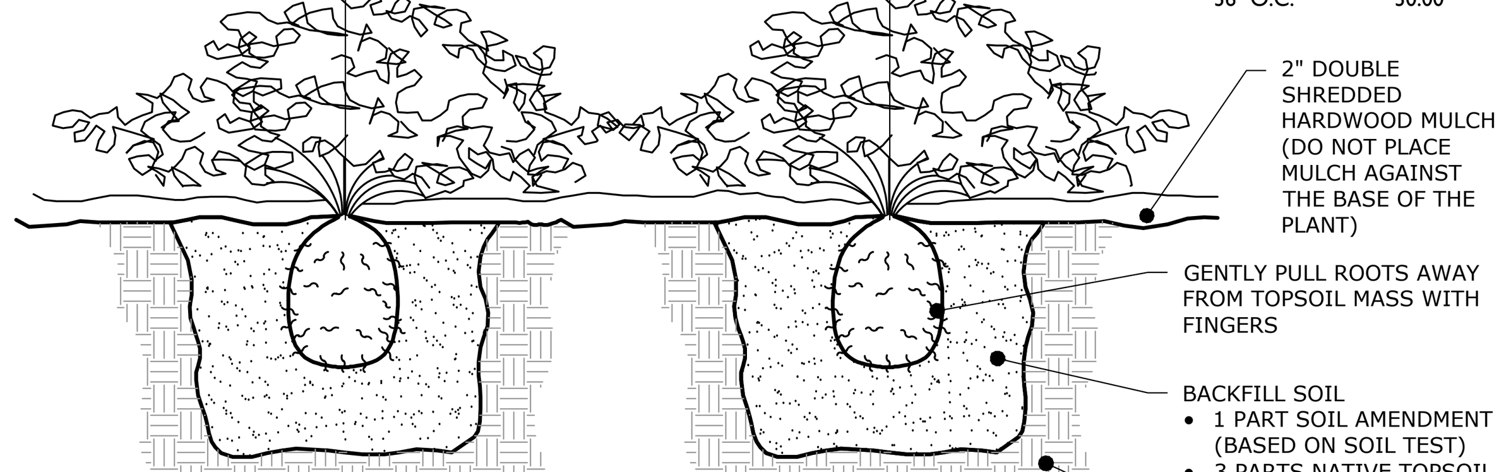
NOTES:

1. THOROUGHLY SOAK THE GROUND COVER ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
2. SOIL AMENDMENTS:
   - MODIFY HEAVY CLAY OR SILT SOILDS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - MODIFY EXTREMELY SANDY SOILDS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX
3. ALL GROUND COVER AREAS SHALL BE TREATED WITH A PRE-EMERGENT PER MANUFACTURER'S SPECIFICATIONS



SPACING CHART
NOT TO SCALE

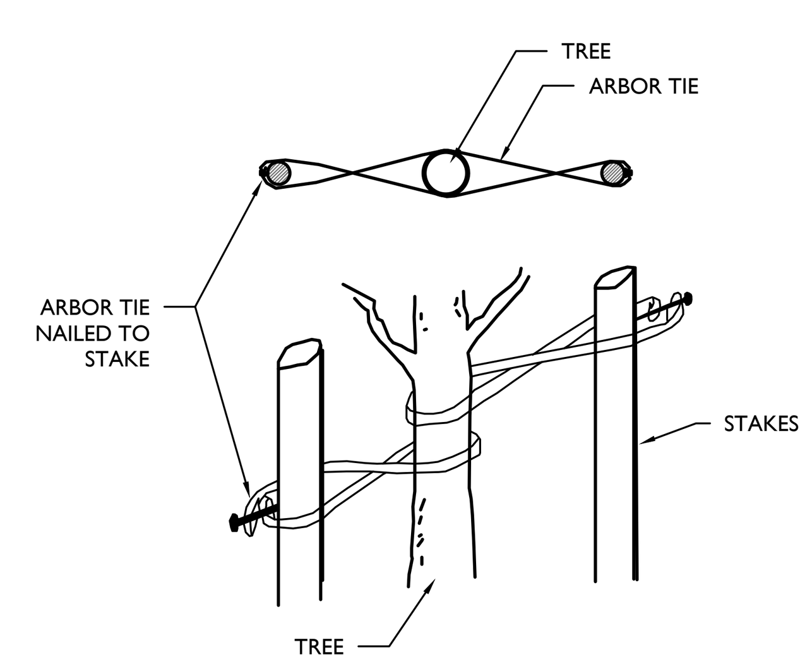
SPACING "D"	ROW "A"
6" O.C.	5.20"
8" O.C.	6.93"
10" O.C.	8.66"
12" O.C.	10.40"
15" O.C	13.00"
18" O.C.	15.60"
24" O.C.	20.80"
30" O.C.	26.00"
36" O.C.	30.00"



GROUND COVER/PERENNIAL/ANNUAL PLANTING DETAIL

NOT TO SCALE

4



INSTALLATION GUIDELINES:
1. LOOP TIE AROUND TREE AND NAIL TO CEDAR STAKE.
2. REMOVE ALL STAKING AND TIES AT END OF FIRST GROWING SEASON.
3. FOLD ENDS OF ARBORTIE BACK. SECURE TO STAKES WITH 1" GALVANIZED ROOFING NAIL OR USE A KNOT.
4. CONSULT LANDSCAPE ARCHITECT FOR STAKING OF TREES LARGER THAN 6".
5. SOURCES INCLUDE:
   GEMPLERS 1-800-332-6744 or GEMPLERS.COM
   CSP OUTDOORS 1-800-592-6940 or CSPOUTDOORS.COM

ARBORTIE DETAIL

NOT TO SCALE

5

GENERAL LANDSCAPING NOTES:

1. THE LANDSCAPE CONTRACTOR SHALL FURNISH ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH THESE SPECIFICATIONS, APPROVED OR FINAL DRAWINGS, AND INSTRUCTIONS PROVIDED BY THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIALS, OR OWNER/OWNER'S REPRESENTATIVE. ALL WORK COMPLETED AND MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH THE INTENTION OF THE SPECIFICATIONS, DRAWINGS, AND INSTRUCTIONS AND EXECUTED WITH THE STANDARD LEVEL OF CARE FOR THE LANDSCAPE INDUSTRY.
2. WORK MUST BE CARRIED OUT ONLY DURING WEATHER CONDITIONS FAVORABLE TO LANDSCAPE CONSTRUCTION AND TO THE HEALTH AND WELFARE OF PLANTS. THE SUITABILITY OF SUCH WEATHER CONDITIONS SHALL BE DETERMINED BY THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL.
3. IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR, BEFORE ORDERING OR PURCHASING MATERIALS, TO PROVIDE SAMPLES OF THOSE MATERIALS TO THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL FOR APPROVAL, IF SO REQUESTED.
4. IF SAMPLES ARE REQUESTED, THE LANDSCAPE CONTRACTOR IS TO SUBMIT CERTIFICATION TAGS FROM TREES, SHRUBS AND SEED VERIFYING TYPE AND PURITY.
5. UNLESS OTHERWISE AUTHORIZED BY THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL, THE LANDSCAPE CONTRACTOR SHALL PROVIDE NOTICE AT LEAST FORTY-EIGHT HOURS (48 HRS.) IN ADVANCE OF THE ANTICIPATED DELIVERY DATE OF ANY PLANT MATERIALS TO THE PROJECT SITE. A LEGIBLE COPY OF THE INVOICE, SHOWING VARIETIES AND SIZES OF MATERIALS INCLUDED FOR EACH SHIPMENT SHALL BE FURNISHED TO THE PROJECT LANDSCAPE DESIGNER, OR GOVERNING MUNICIPAL OFFICIAL.
6. THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL RESERVES THE RIGHT TO INSPECT AND REJECT PLANTS AT ANY TIME AND AT ANY PLACE.

PROTECTION OF EXISTING VEGETATION NOTES:

1. BEFORE COMMENCING WORK, ALL EXISTING VEGETATION WHICH COULD BE IMPACTED AS A RESULT OF THE PROPOSED CONSTRUCTION ACTIVITIES MUST BE PROTECTED FROM DAMAGE BY THE INSTALLATION OF TREE PROTECTION FENCING. FENCING SHALL BE LOCATED AT THE DRIP-LINE OR LIMIT OF DISTURBANCE AS DEPICTED WITHIN THE APPROVED OR FINAL PLAN SET, ESTABLISHING THE TREE PROTECTION ZONE. FENCE INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE PROTECTION FENCE DETAIL." NO WORK MAY BEGIN UNTIL THIS REQUIREMENT IS FULFILLED. THE FENCING SHALL BE INSPECTED REGULARLY BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
2. IN ORDER TO AVOID DAMAGE TO ROOTS, BARK OR LOWER BRANCHES, NO VEHICLE, EQUIPMENT, DEBRIS, OR OTHER MATERIALS SHALL BE DRIVEN, PARKED OR PLACED WITHIN THE TREE PROTECTION ZONE. ALL ON-SITE CONTRACTORS SHALL USE ANY AND ALL PRECAUTIONARY MEASURES WHEN PERFORMING WORK AROUND TREES, WALKS, PAVEMENTS, UTILITIES, AND ANY OTHER FEATURES EITHER EXISTING OR PREVIOUSLY INSTALLED UNDER THIS CONTRACT.
3. IN RARE INSTANCES WHERE EXCAVATING, FILL, OR GRADING IS REQUIRED WITHIN THE DRIP-LINE OF TREES TO REMAIN, THE WORK SHALL BE PERFORMED AS FOLLOWS:
   - TRENCHING: WHEN TRENCHING OCCURS AROUND TREES TO REMAIN, THE TREE ROOTS SHALL NOT BE CUT, BUT THE TRENCH SHALL BE TUNNELED UNDER OR AROUND THE ROOTS BY CAREFUL HAND DIGGING AND WITHOUT INJURY TO THE ROOTS. NO ROOTS, LIMBS, OR WOODS ARE TO HAVE ANY PAINT OR MATERIAL APPLIED TO ANY SURFACE.
   - RAISING GRADES: WHEN THE GRADE AT AN EXISTING TREE IS BELOW THE NEW FINISHED GRADE, AND FILL NOT EXCEEDING 6 INCHES (6") IS REQUIRED, CLEAN, WASHED GRAVEL FROM ONE TO TWO INCHES (1" - 2") IN SIZE SHALL BE PLACED DIRECTLY AROUND THE TREE TRUNK. THE GRAVEL SHALL EXTEND OUT FROM THE TRUNK ON ALL SIDES A MINIMUM OF 18 INCHES (18") AND FINISH APPROXIMATELY TWO INCHES (2") ABOVE THE FINISH GRADE AT TREE. INSTALL GRAVEL BEFORE ANY EARTH FILL IS PLACED. NEW EARTH FILL SHALL NOT BE LEFT IN CONTACT WITH THE TRUNK OF ANY TREE REQUIRING FILL. WHERE FILL EXCEEDING 6 INCHES (6") IS REQUIRED, A DRY LAID TREE WELL SHALL BE CONSTRUCTED. IF APPLICABLE, TREE WELL INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE WELL DETAIL."
   - LOWERING GRADES: EXISTING TREES LOCATED IN AREAS WHERE THE NEW FINISHED GRADE IS TO BE LOWERED, SHALL HAVE RE-GRADING WORK DONE BY HAND TO THE INDICATED ELEVATION, NO GREATER THAN SIX INCHES (6"). ROOTS SHALL BE CUT CLEANLY THREE INCHES (3") BELOW FINISHED GRADE UNDER THE DIRECTION OF A LICENSED ARBORIST. WHERE CUT EXCEEDING 6 INCHES (6") IS REQUIRED, A DRY LAID RETAINING WALL SHALL BE CONSTRUCTED. IF APPLICABLE, THE RETAINING WALL INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE RETAINING WALL DETAIL."

SOIL PREPARATION AND MULCH NOTES:

1. LANDSCAPE CONTRACTOR SHALL OBTAIN A SOIL TEST OF THE IN-SITU TOPSOIL BY A CERTIFIED SOIL LABORATORY PRIOR TO PLANTING. LANDSCAPE CONTRACTOR SHALL ALLOW FOR A TWO WEEK TURNAROUND TIME FROM SUBMITTAL OF SAMPLE TO NOTIFICATION OF RESULTS.
2. BASED ON SOIL TEST RESULTS, ADJUST THE RATES OF LIME AND FERTILIZER THAT SHALL BE MIXED INTO THE TOP SIX INCHES (6") OF TOPSOIL. THE LIME AND FERTILIZER RATES PROVIDED WITHIN THE "SEED SPECIFICATION" OR "SOD SPECIFICATION" IS APPROXIMATE AND FOR BIDDING PURPOSES ONLY. IF ADDITIONAL AMENDMENTS ARE NECESSARY, ADJUST THE TOPSOIL AS FOLLOWS:
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM.
   - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.
3. TOPSOIL SHALL BE FERTILE, FRIABLE, NATURAL TOPSOIL OF LOAMING CHARACTER, WITHOUT ADMIXTURE OF SUBSOIL MATERIAL OBTAINED FROM A WELL-DRAINED ARABLE SITE, FREE FROM ALL CLAY, LUMPS, COARSE SANDS, STONES, PLANTS, ROOTS, STICKS, AND OTHER FOREIGN MATERIAL GREATER THAN ONE INCH (1").
4. TOPSOIL SHALL HAVE A PH RANGE OF 5.0-7.0 AND SHALL NOT CONTAIN LESS THAN 6% ORGANIC MATTER BY WEIGHT.
5. OBTAIN TOPSOIL ONLY FROM LOCAL SOURCES OR FROM AREAS HAVING SIMILAR SOIL CHARACTERISTICS TO THAT FOUND AT THE PROJECT SITE.
6. CONTRACTOR SHALL PROVIDE A SIX INCH (6") DEEP LAYER OF TOPSOIL IN ALL PLANTING AREAS. TOPSOIL SHALL BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN SOIL CONDITIONS.
7. UNLESS OTHERWISE NOTED IN THE CONTRACT, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBED AREA OF THE SITE.
8. LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE SUB-GRADE ELEVATION MEETS THE FINISHED GRADE ELEVATION (LESS THE REQUIRED TOPSOIL), IN ACCORDANCE WITH THE APPROVED OR FINAL GRADING PLAN.
9. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THE APPROVED OR FINAL CONSTRUCTION SET UNLESS OTHERWISE DIRECTED BY THE PROJECT LANDSCAPE DESIGNER OR MUNICIPAL OFFICIAL.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER SURFACE AND SUBSURFACE PLANT BED DRAINAGE PRIOR TO THE INSTALLATION OF PLANTINGS. IF POOR DRAINAGE CONDITIONS EXIST, CORRECTIVE ACTION SHALL BE TAKEN PRIOR TO INSTALLATION. ALL PLANTING AND LAWN AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW A FREE FLOW OF SURFACE WATER.
11. DOUBLE SHREDDED HARDWOOD MULCH OR APPROVED EQUAL SHALL BE USED AS A THREE INCH (3") TOP DRESSING IN ALL SHRUB PLANTING BEDS AND AROUND ALL TREES PLANTED BY LANDSCAPE CONTRACTOR. GROUND COVER, PERENNIAL, AND ANNUAL PLANTING BEDS SHALL BE MULCHED WITH A TWO INCH (2") TOP DRESSING. SINGLE TREES OR SHRUBS SHALL BE MULCHED TO AVOID CONTACT WITH TRUNK OR PLANT STEM. MULCH SHALL BE OF SUFFICIENT CHARACTER AS NOT TO BE EASILY DISPLACED BY WIND OR WATER RUNOFF.
12. WHENEVER POSSIBLE, THE SOIL PREPARATION AREA SHALL BE CONNECTED FROM PLANTING TO PLANTING.
13. SOIL SHALL BE LOOSENED WITH A BACKHOE OR OTHER LARGE COARSE-TILING EQUIPMENT UNLESS THE SOIL IS FROZEN OR EXCESSIVELY WET. TILING THAT PRODUCES LARGE, COARSE CHUNKS OF SOIL IS PREFERABLE TO TILING THAT RESULTS IN FINE GRAINS UNIFORM IN TEXTURE. AFTER THE AREA IS LOOSENED IT SHALL NOT BE DRIVEN OVER BY ANY VEHICLE.
14. APPLY PRE-EMERGENT WEED CONTROL TO ALL PLANT BEDS PRIOR TO MULCHING. ENSURE COMPATIBILITY BETWEEN PRODUCT AND PLANT MATERIAL.
15. ALL PLANTING SOIL SHALL BE AMENDED WITH THE FOLLOWING:

MYCRO® TREE SAVER - A DRY GRANULAR MYCORRHIZAL FUNGI INOCULANT THAT IS MIXED IN THE BACKFILL WHEN PLANTING TREES AND SHRUBS. IT CONTAINS SPORES OF BOTH ECTOMYCORRHIZAL AND VA MYCORRHIZAL FUNGI (VAM), BENEFICIAL RHIZOSPHERE BACTERIA, TERRA-SORB SUPERABSORBENT HYDROGEL TO REDUCE WATER LEACHING, AND SELECTED ORGANIC MICROBIAL NUTRIENTS.
- DIRECTIONS FOR USE: USE 3-OZ PER EACH FOOT DIAMETER OF THE ROOT BALL, OR 3-OZ PER INCH CALIPER. MIX INTO THE BACKFILL WHEN TRANSPLANTING TREES AND SHRUBS. MIX PRODUCT IN A RING-SHAPED VOLUME OF SOIL AROUND THE UPPER PORTION OF THE ROOT BALL, EXTENDING FROM THE SOIL SURFACE TO A DEPTH OF ABOUT 8 INCHES, AND EXTENDING OUT FROM THE ROOT BALL ABOUT 8 INCHES INTO THE BACKFILL. APPLY WATER TO SOIL SATURATION.
- MYCOR® TREE SAVER® IS EFFECTIVE FOR ALL TREE AND SHRUB SPECIES EXCEPT RHODODENDRONS, AZALEAS, AND MOUNTAIN LAUREL, WHICH REQUIRE ERICOID MYCORRHIZAE.
- SOIL PH: THE FUNGI IN THIS PRODUCT WERE CHOSEN BASED ON THEIR ABILITY TO SURVIVE AND COLONIZE PLANT ROOTS IN A PH RANGE OF 3 TO 9.
- FUNGICIDES: THE USE OF CERTAIN FUNGICIDES CAN HAVE A DETRIMENTAL EFFECT ON THE INOCULATION PROGRAM. SOIL APPLICATION OF ANY FUNGICIDE IS NOT RECOMMENDED FOR TWO WEEKS AFTER APPLICATION.
- OTHER PESTICIDES: HERBICIDES AND INSECTICIDES DO NOT NORMALLY INTERFERE WITH MYCORRHIZAL FUNGAL DEVELOPMENT, BUT MAY INHIBIT THE GROWTH OF SOME TREE AND SHRUB SPECIES IF NOT USED PROPERLY.

HEALTHY START MACRO TABS 12-8-8
- FERTILIZER TABLETS ARE PLACED IN THE UPPER 4 INCHES OF BACKFILL SOIL WHEN PLANTING TREES AND SHRUBS.
- TABLETS ARE FORMULATED FOR LONG-TERM RELEASE BY SLOW BIODEGRADATION, AND LAST UP TO 2 YEARS AFTER PLANTING. TABLETS CONTAIN 12-8-8 NPK FERTILIZER, AS WELL AS A MINIMUM OF SEVEN PERCENT (7%) HUMIC ACID BY WEIGHT, MICROBIAL NUTRIENTS DERIVED FROM SEA KELP, PROTEIN BYPRODUCTS, AND YUCCA SCHIDIGERA, AND A COMPLEMENT OF BENEFICIAL RHIZOSPHERE BACTERIA. THE STANDARD 21 GRAM TABLET IS SPECIFIED HERE. DIRECTIONS FOR USE: FOR PLANTING BALLED & BURLAPPED (B&B) TREES AND SHRUBS, MEASURE THE THICKNESS OF THE TRUNK, AND USE ABOUT 1 TABLET (21-G) PER HALF-INCH. PLACE THE TABLETS DIRECTLY NEXT TO THE ROOT BALL, EVENLY DISTRIBUTED AROUND ITS PERIMETER, AT A DEPTH OF ABOUT 4 INCHES.

IRRIGATION DURING ESTABLISHMENT

SIZE AT PLANTING	IRRIGATION FOR VITALITY	IRRIGATION FOR SURVIVAL
< 2" CALIPER	DAILY FOR TWO WEEKS, EVERY OTHER DAY FOR TWO MONTHS, WEEKLY UNTIL ESTABLISHED	TWO TO THREE TIMES WEEKLY FOR TWO TO THREE MONTHS
2"-4 CALIPER	DAILY FOR ONE MONTH, EVERY OTHER DAY FOR THREE MONTHS, WEEKLY UNTIL ESTABLISHED	TWO TO THREE TIMES WEEKLY FOR THREE TO FOUR MONTHS
4 >" CALIPER	DAILY FOR SIX WEEKS, EVERY OTHER DAY FOR FIVE MONTHS, WEEKLY UNTIL ESTABLISHED	TWICE WEEKLY FOR FOUR TO FIVE MONTHS

TABLE NOTES:
1. AT EACH IRRIGATION, APPLY TWO TO THREE GALLONS PER INCH TRUNK CALIPER TO THE ROOT BALL SURFACE. APPLY IT IN A MANNER SO ALL WATER SOAKS THE ENTIRE ROOT BALL. DO NOT WATER IF ROOT BALL IS WET/SATURATED ON THE IRRIGATION DAY.

2. WHEN IRRIGATING FOR VITALITY, DELETE DAILY IRRIGATION WHEN PLANTING IN WINTER OR WHEN PLANTING IN COOL CLIMATES. ESTABLISHMENT TAKES THREE TO FOUR MONTHS PER INCH TRUNK CALIPER. NEVER APPLY IRRIGATION IF THE SOIL IS SATURATED.

3. WHEN IRRIGATION FOR SURVIVAL, TREES TAKE MUCH LONGER TO ESTABLISH THAN REGULARLY IRRIGATED TREES. IRRIGATION MAY BE REQUIRED IN THE NORMAL HOT, DRY PORTIONS OF THE FOLLOWING YEAR.

PLANT QUALITY AND HANDLING NOTES:

1. ALL PLANT MATERIAL SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004) OR LATEST REVISION AS PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
2. IN ALL CASES, BOTANICAL NAMES LISTED WITHIN THE APPROVED OR FINAL PLANT LIST SHALL TAKE PRECEDENCE OVER COMMON NAMES.
3. ALL PLANTS SHALL BE OF SELECTED SPECIMEN QUALITY, EXCEPTIONALLY HEAVY, TIGHTLY KNIT, SO TRAINED OR FAVORED IN THEIR DEVELOPMENT AND APPEARANCE AS TO BE SUPERIOR IN FORM, NUMBER OF BRANCHES, COMPACTNESS AND SYMMETRY. ALL PLANTS SHALL HAVE A NORMAL HABIT OR SOUND, HEALTHY, VIGOROUS PLANTS WITH WELL DEVELOPED ROOT SYSTEM. PLANTS SHALL BE FREE OF DISEASE, INSECT PESTS, EGGS OR LARVAE.
4. PLANTS SHALL NOT BE PRUNED BEFORE DELIVERY. TREES WITH ABRASION OF THE BARK, SUNSCALDS, DISFIGURING KNOTS OR FRESH CUTS OF LIMBS OVER ONE AND ONE-FOURTH INCHES (1-1/4") WHICH HAVE NOT COMPLETELY CALLOUSED SHALL BE REJECTED.
5. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH AND BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE.
6. THE ROOT SYSTEM OF EACH PLANT SHALL BE WELL PROVIDED WITH FIBROUS ROOTS. ALL PARTS SHALL BE SOUND, HEALTHY, VIGOROUS, WELL-BRANCHED AND DENSELY FOLIATED WHEN IN LEAF.
7. ALL PLANTS DESIGNATED BALL AND BURLAP (B&B) MUST BE MOVED WITH THE ROOT SYSTEM AS SOLID UNITS WITH BALLS OF EARTH FIRMLY WRAPPED WITH BURLAP. THE DIAMETER AND DEPTH OF THE BALLS OF EARTH MUST BE SUFFICIENT TO ENCOMPASS THE FIBROUS ROOT FEEDING SYSTEMS NECESSARY FOR THE HEALTHY DEVELOPMENT OF THE PLANT. NO PLANT SHALL BE ACCEPTED WHEN THE BALL OF EARTH SURROUNDING ITS ROOTS HAS BEEN BADLY CRACKED OR BROKEN PREPARATORY TO OR DURING THE PROCESS OF PLANTING. THE BALLS SHALL REMAIN INTACT DURING ALL OPERATIONS. ALL PLANTS THAT CANNOT BE PLANTED AT ONCE MUST BE HEELED-IN BY SETTING IN THE GROUND AND COVERING THE BALLS WITH SOIL OR MULCH AND THEN WATERING. HEMP BURLAP AND TWINE IS PREFERABLE TO TREATED. IF TREATED BURLAP IS USED, ALL TWINE IS TO BE CUT FROM AROUND THE TRUNK AND ALL BURLAP IS TO BE REMOVED.
8. PLANTS TRANSPORTED TO THE PROJECT IN OPEN VEHICLES SHALL BE COVERED WITH TARPS OR OTHER SUITABLE COVERS SECURELY FASTENED TO THE BODY OF THE VEHICLE TO PREVENT INJURY TO THE PLANTS. CLOSED VEHICLES SHALL BE ADEQUATELY VENTILATED TO PREVENT OVERHEATING OF THE PLANTS. EVIDENCE OF INADEQUATE PROTECTION FOLLOWING DIGGING, CARELESSNESS WHILE IN TRANSIT, OR IMPROPER HANDLING OR STORAGE SHALL BE CAUSE FOR REJECTION OF PLANT MATERIAL. ALL PLANTS SHALL BE KEPT MOIST, FRESH, AND PROTECTED. SUCH PROTECTION SHALL ENCOMPASS THE ENTIRE PERIOD DURING WHICH THE PLANTS ARE IN TRANSIT, BEING HANDLED, OR ARE IN TEMPORARY STORAGE.
9. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE CORRESPONDING LANDSCAPE PLAN AND PLANTING DETAILS.
10. LANDSCAPE CONTRACTOR SHALL MAKE BEST EFFORT TO INSTALL PLANTINGS ON THE SAME DAY AS DELIVERY. IF PLANTS ARE NOT PLANTED IMMEDIATELY ON SITE, PROPER CARE SHALL BE TAKEN TO PLACE THE PLANTINGS IN PARTIAL SHADE WHEN POSSIBLE. THE ROOT BALL SHALL BE KEPT MOIST AT ALL TIME AND COVERED WITH MOISTENED MULCH OR AGED WOODCHIPS. PROPER IRRIGATION SHALL BE SUPPLIED SO AS TO NOT ALLOW THE ROOT BALL TO DRY OUT. PLANTINGS SHALL BE UNTIED AND PROPER SPACING SHALL BE ALLOTTED FOR AIR CIRCULATION AND TO PREVENT DISEASE, WILTING, AND LEAF LOSS. PLANTS THAT REMAIN UNPLANTED FOR A PERIOD OF TIME GREATER THAN THREE (3) DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH AND WATERED AS REQUIRED TO PRESERVE ROOT MOISTURE.
11. NO PLANT MATERIAL SHALL BE PLANTED IN MUDDY OR FROZEN SOIL.
12. PLANTS WITH INJURED ROOTS OR BRANCHES SHALL BE PRUNED PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY DISEASED OR INJURED PLANTS SHALL BE REMOVED.
13. IF ROCK OR OTHER UNDERGROUND OBSTRUCTION IS ENCOUNTERED, THE LANDSCAPE DESIGNER RESERVES THE RIGHT TO RELOCATE OR ENLARGE PLANTING PITS OR DELETE PLANT MATERIAL FROM THE CONTRACT.
14. IF PLANTS ARE PROPOSED WITHIN SIGHT TRIANGLES, TREES SHALL BE LIMBED AND MAINTAINED TO A HEIGHT OF EIGHT FEET (8') ABOVE GRADE, AND SHRUBS, GROUND COVER, PERENNIALS, AND ANNUALS SHALL BE MAINTAINED TO A HEIGHT NOT TO EXCEED TWO FEET (2') ABOVE GRADE UNLESS OTHERWISE NOTED OR SPECIFIED BY THE GOVERNING MUNICIPALITY OR AGENCY.
15. INSTALLATION SHALL OCCUR DURING THE FOLLOWING SEASONS:
    PLANTS (MARCH 15 - DECEMBER 15)
    LAWNS (MARCH 15 - JUNE 15 OR SEPTEMBER 1 - DECEMBER 1)
16. THE FOLLOWING TREES ARE SUSCEPTIBLE TO TRANSPLANT SHOCK AND SHALL NOT BE PLANTED DURING THE FALL SEASON (STARTING SEPTEMBER 15):

ABIES CONCOLOR	CORNUS VARIETIES	OSTRYA VIRGINIANA
ACER BUERGERIANUM	CRATAEGUS VARIETIES	PINUS NIGRA
ACER FREEMANII	CUPRESSOCYPARIS LEYLANDII	PLATANUS VARIETIES
ACER RUBRUM	FAGUS VARIETIES	POPULUS VARIETIES
ACER SACCHARINUM	HALESIA VARIETIES	PRUNUS VARIETIES
BETULA VARIETIES	ILEX X FOSTERII	PYRUS VARIETIES
CARPINUS VARIETIES	ILEX NELLIE STEVENS	QUERCUS VARIETIES (NOT Q. PALUSTRIS)
CEDRUS DEODARA	ILEX OPACA	SALIX WEEPING VARIETIES
CELTIS VARIETIES	JUNIPERUS VIRGINIANA	SORBUS VARIETIES
CERCIDIPHYLLUM VARIETIES	KOELREUTERIA PANICULATA	TAXODIUM VARIETIES
CERCIS CANADENSIS	LIQUIDAMBAR VARIETIES	TAXUX B REPANDENS
CORNUS VARIETIES	LIRIODENDRON VARIETIES	TILIA TOMENTOSA VARIETIES
CRATAEGUS VARIETIES	MALUS IN LEAF	ULMUS PARVIFOLIA VARIETIES
	NYSSA SYLVATICA	ZELKOVA VARIETIES

17. IF A PROPOSED PLANT IS UNATTAINABLE OR ON THE FALL DIGGING HAZARD LIST, AN EQUIVALENT SPECIES OF THE SAME SIZE MAY BE REQUESTED FOR SUBSTITUTION OF THE ORIGINAL PLANT. ALL SUBSTITUTIONS SHALL BE APPROVED BY THE PROJECT LANDSCAPE DESIGNER OR MUNICIPAL OFFICIAL PRIOR TO ORDERING AND INSTALLATION.
18. DURING THE COURSE OF CONSTRUCTION/PLANT INSTALLATION, EXCESS AND WASTE MATERIALS SHALL BE CONTINUOUSLY AND PROMPTLY REMOVED AT THE END OF EACH WORK DAY. ALL DEBRIS, MATERIALS, AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF AND ALL PAVED AREAS SHALL BE CLEANED.
19. THE LANDSCAPE CONTRACTOR SHALL DISPOSE OF ALL RUBBISH AND EXCESS SOIL AT HIS EXPENSE TO AN OFF-SITE LOCATION AS APPROVED BY THE LOCAL MUNICIPALITY.
20. A 90-DAY MAINTENANCE PERIOD SHALL BEGIN IMMEDIATELY AFTER ALL PLANTS HAVE BEEN SATISFACTORILY INSTALLED.
21. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, REPLACING MULCH THAT HAS BEEN DISPLACED BY EROSION OR OTHER MEANS, REPAIRING AND RESHAPING WATER RINGS OR SAUCERS, MAINTAINING STAKES AND GUYS IF ORIGINALLY REQUIRED, WATERING WHEN NEEDED OR DIRECTED, WEEDING, PRUNING, SPRAYING, FERTILIZING, MOWING THE LAWN, AND PERFORMING ANY OTHER WORK REQUIRED TO KEEP THE PLANTS IN A HEALTHY CONDITION.
22. MOW ALL GRASS AREAS AT REGULAR INTERVALS TO KEEP THE GRASS HEIGHT FROM EXCEEDING THREE INCHES (3"). MOWING SHALL BE PERFORMED ONLY WHEN GRASS IS DRY. MOWER BLADE SHALL BE SET TO REMOVE NO MORE THAN ONE THIRD (1/3) OF THE GRASS LENGTH. WHEN THE AMOUNT OF GRASS IS HEAVY, IT SHALL BE REMOVED TO PREVENT DESTRUCTION OF THE UNDERLYING TURF. MOW GRASS AREAS IN SUCH A MANNER AS TO PREVENT CLIPPINGS FROM BLOWING ON PAVED AREAS, AND SIDEWALKS. CLEANUP AFTER MOWING SHALL INCLUDE SWEEPING OR BLOWING OF PAVED AREAS AND SIDEWALKS TO CLEAR THEM FROM MOWING DEBRIS.
23. GRASSED AREAS DAMAGED DURING THE PROCESS OF THE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHO SHALL RESTORE THE DISTURBED AREAS TO A CONDITION SATISFACTORY TO THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIAL, OR OWNER/OWNER'S REPRESENTATIVE. THIS MAY INCLUDE FILLING TO GRADE, FERTILIZING, SEEDING, AND MULCHING.
24. SHOULD THE OWNER REQUIRE MAINTENANCE BEYOND THE STANDARD 90-DAY MAINTENANCE PERIOD, A SEPARATE CONTRACT SHALL BE ESTABLISHED.
25. LANDSCAPE CONTRACTOR SHALL WATER NEW PLANTINGS FROM TIME OF INSTALL AND THROUGHOUT REQUIRED 90-DAY MAINTENANCE PERIOD UNTIL PLANTS ARE ESTABLISHED. IF ON-SITE WATER IS NOT AVAILABLE AT THE PROJECT LOCATION, THE LANDSCAPE CONTRACTOR SHALL FURNISH IT BY MEANS OR A WATERING TRUCK OR OTHER ACCEPTABLE MANNER.
26. THE QUANTITY OF WATER APPLIED AT ONE TIME SHALL BE SUFFICIENT TO PENETRATE THE SOIL TO A MINIMUM OF EIGHT INCHES (8") IN SHRUB BEDS AND SIX INCHES (6") IN TURF AREAS AT A RATE WHICH WILL PREVENT SATURATION OF THE SOIL.
27. IF AN AUTOMATIC IRRIGATION SYSTEM HAS BEEN INSTALLED, IT CAN BE USED FOR WATERING PLANT MATERIAL. HOWEVER, FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE LANDSCAPE CONTRACTOR'S RESPONSIBILITY OF PLANT HEALTH AND ESTABLISHMENT.

PLANT MATERIAL GUARANTEE NOTES:

1. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR (1 YR.) FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIAL, OR OWNER/OWNER'S REPRESENTATIVE.
2. THE LANDSCAPE CONTRACTOR SHALL REMOVE AND REPLACE DYING, DEAD, OR DEFECTIVE PLANT MATERIAL AT HIS EXPENSE. THE LANDSCAPE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS COMPANY'S OPERATIONS.
3. ALL REPLACEMENT PLANTS SHALL BE OF THE SAME SPECIES AND SIZE AS SPECIFIED ON THE APPROVED OR FINAL PLANT LIST. REPLACEMENTS RESULTING FROM REMOVAL, LOSS, OR DAMAGE DUE TO OCCUPANCY OF THE PROJECT IN ANY PART, VANDALISM, PHYSICAL DAMAGE BY ANIMALS, VEHICLES, ETC., AND LOSSES DUE TO CURTAILMENT OF WATER BY LOCAL AUTHORITIES SHALL BE APPROVED AND PAID FOR BY THE OWNER.
4. THE CONTRACTOR SHALL INSTRUCT THE OWNER AS TO THE PROPER CARE AND MAINTENANCE OF ALL PLANTINGS.

LAWN (SEED OR SOD) NOTES:

1. SEED MIXTURE SHALL BE FRESH, CLEAN, NEW CROP SEED. SOD SHALL BE STRONGLY ROOTED, UNIFORM IN THICKNESS, AND FREE OF WEEDS, DISEASE, AND PESTS.
2. SEED OR SOD SHALL BE PURCHASED FROM A RECOGNIZED DISTRIBUTOR AND SHALL BE COMPOSED OF THE MIX OR BLEND WITHIN THE PROVIDED "SEED SPECIFICATION" OR "SOD SPECIFICATION."
3. REFERENCE LANDSCAPE PLAN FOR AREAS TO BE SEEDED OR LAID WITH SOD.
4. SEEDING SHALL NOT BE PERFORMED IN WINDY WEATHER. IF THE SEASON OF THE PROJECT COMPLETION PROHIBITS PERMANENT STABILIZATION, TEMPORARY STABILIZATION SHALL BE PROVIDED IN ACCORDANCE WITH THE "TEMPORARY SEEDING SPECIFICATION."
5. PROTECT NEW LAWN AREAS AGAINST TRESPASSING WHILE THE SEED IS GERMINATING. FURNISH AND INSTALL FENCES, SIGNS, BARRIERS OR ANY OTHER NECESSARY TEMPORARY PROTECTIVE DEVICES. DAMAGE RESULTING FROM TRESPASS, EROSION, WASHOUT, SETTLEMENT OR OTHER CAUSES SHALL BE REPAIRED BY THE LANDSCAPE CONTRACTOR AT HIS EXPENSE. REMOVE ALL FENCES, SIGNS, BARRIERS OR OTHER TEMPORARY PROTECTIVE DEVICES ONCE LAWN HAS BEEN ESTABLISHED.

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design
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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: AS SHOWN | PROJECT ID: BOS-230051

TITLE:

LANDSCAPING DETAILS

DRAWING:

C-9

APPENDIX B
PROJECT SOILS

INVENTORY

B-1: NRCS SOILS REPORT

B-2: SOIL SUITABILITY ASSESSMENT (PREPARED BY: GRADY CONSULTING, LLC.)

APPENDIX B-I
NRCS SOIL REPORT

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,460 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
52A	Freetown muck, 0 to 1 percent slopes	2.1	35.7%
255B	Windsor loamy sand, 3 to 8 percent slopes	3.4	59.5%
302C	Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony	0.3	4.7%
656	Udorthents-Urban land complex	0.0	0.1%
Totals for Area of Interest		**5.8**	**100.0%**

Map Unit Descriptions

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

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

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

Middlesex County, Massachusetts

52A—Freetown muck, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2t2q9
Elevation: 0 to 1,110 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown

Setting

Landform: Depressions, depressions, swamps, kettles, marshes, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material

Typical profile

Oe - 0 to 2 inches: mucky peat
Oa - 2 to 79 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 19.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Whitman

Percent of map unit: 5 percent
Landform: Drainageways, depressions

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 5 percent
Landform: Bogs, swamps, marshes, depressions, depressions, kettles
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

255B—Windsor loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svkf
Elevation: 0 to 1,210 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Windsor and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: Outwash terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 10 percent
Landform: Eskers
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Deerfield, loamy sand

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

302C—Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w80s
Elevation: 0 to 1,080 feet
Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Montauk, extremely stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Montauk, Extremely Stony

Setting

Landform: Hills, recessionial moraines, ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Scituate, extremely stony

Percent of map unit: 8 percent
Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex

Hydric soil rating: No

Canton, extremely stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, extremely stony

Percent of map unit: 2 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

656—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 995k
Elevation: 0 to 3,000 feet
Mean annual precipitation: 32 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 110 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 45 percent
Urban land: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Parent material: Loamy alluvium and/or sandy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy marine deposits and/or loamy basal till and/or loamy lodgment till

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Description of Urban Land

Setting

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Excavated and filled land

Minor Components

Canton

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope, toeslope
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Paxton

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent
Landform: Terraces, plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Custom Soil Resource Report
Map—Hydrologic Soil Group

Map Scale: 1:1,460 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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

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

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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 23, Sep 12, 2023

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

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

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
52A	Freetown muck, 0 to 1 percent slopes	B/D	2.1	35.7%
255B	Windsor loamy sand, 3 to 8 percent slopes	A	3.4	59.5%
302C	Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony	C	0.3	4.7%
656	Udorthents-Urban land complex		0.0	0.1%
Totals for Area of Interest			**5.8**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX B-2
SOIL SUITABILITY ASSESSMENT (PREPARED BY: GRADY CONSULTING, LLC.)

Commonwealth of Massachusetts

Sudbury, Massachusetts

Soil Suitability Assessment for On-site Sewage Disposal

Performed by: Kevin Grady
GRADY CONSULTING, L.L.C.
71 Evergreen Street, Suite 1
Kingston, MA 02364
Phone: (781) 585-2300 Fax: (781) 585-2378

Date: 8/1/23

Witnessed by: Robert Lyon

Location Address or Lot #: 225 Boston Post Road

*Owner's Name: Congregation B'NAI Torah Inc.
*Address & *Telephone #: P.O. Box 273, Sudbury MA 01776

New Construction X Repair ___ Title V Inspection ___

Office Review

Published Soil Survey Available: No X Yes ___
Year Published: _____ Publication Scale: _____ Soil Map Unit: _____
Drainage Class: _____ Soil Limitations: _____

Surficial Geology Report Available: No X Yes ___
Year Published: _____ Publication Scale: _____
Geologic Material (Map Unit): _____
Landform: _____

Flood Insurance Rate Map:

Above 500 year flood boundary:	**No** ___	**Yes** X
Within 500 year flood boundary	**No** X	**Yes** ___
Within 100 year flood boundary	**No** X	**Yes** ___

Wetland Area:
National Wetland Inventory Map (map unit): N/A
Wetlands Conservancy Program Map (map unit): _____

Current Water Resource Conditions (USGS): **Month:** August
Range: **Above Normal** ___ **Normal** X **Below Normal** ___

Other References Reviewed:

Depth of Naturally Occurring Pervious Material

Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system? Yes

If not, what is the depth of naturally occurring pervious material?

Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated on the attached soil evaluation form, are accurate and in accordance with CMR 15.100 through 15.107.

Signature: _____ Date: 8/1/23

TITLE 5 ON-SITE REVIEW

Deep Hole # 1 **Date** 8/1/23 **Time** 8:30 **Weather** sunny 70°
Location(identify on Site Plan) _____
Land Use Commercial **Slope(%)** 0 **Surface Stones** none
Vegetation pavement **Landform** _____

Distances from: Open Water Body 300 ft. Possible Wet Area 250 ft. Drinking Water Well — ft.
Drainageway — ft. Propertyline 50 ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-72		Fill			
72-138	C_1	Fine Sand Silt	2.5Y 5/3	none	<2% gravel

Parent Material (geologic) Lacustrine Sediments **Depth to Bedrock** none
Depth to Groundwater: **Standing Water in Hole:** none **Weeping from Pit Face** none
Estimated Seasonal High Groundwater 11'-6" assumed

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches ____Depth to soil mottles:_____ inches
___ Depth to weeping from side of observation hole:____inches ____ Groundwater adjustment____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date**_____ **Time**_____

Observation Hole #			**Time at 9"**	
Depth of Perc			**Time at 6"**	
Start Presoak			**Time (9"-6")**	
End Presoak			**Rate Min/Inch**	

Site Suitability Assessment: **Site Passed**_____ **Site Failed**_____ **Additional Testing Needed:**
Performed By_____ **Certification #**_____
Witnessed By_____
Comments: use previous perc info and design @ 30min/in per field discussion w/ Agent
Unable to perc Test hole dangerous due to depth + parking lot pavement

TITLE 5 ON-SITE REVIEW

Deep Hole # 2 **Date** 8/1/23 **Time** 9:30 **Weather** sunny 70°
Location(identify on Site Plan) _____
Land Use Commercial **Slope(%)** 0-2 **Surface Stones** none
Vegetation Lawn **Landform** _____

Distances from: Open Water Body 600 ft. Possible Wet Area 200 ft. Drinking Water Well — ft.
Drainageway — ft. Propertyline 30 ft Other _____

DEEP OBSERVATION HOLE LOG

Depth From Surface (Inches)	Soil Horizon (USDA	Soil Texture (Munsell)	Soil Color	Soil Mottling	Other: Structures, Stones, Boulders, Consistency, %Gravel
0"-10"		Fill			
10"-104"	C1	Fine Sand w/silt	2.5Y 5/3	52"	Firm in Place <2% gravel

Parent Material (geologic) Lacustrine Sediments **Depth to Bedrock** none
Depth to Groundwater: **Standing Water in Hole:** none **Weeping from Pit Face** 62
Estimated Seasonal High Groundwater 4'-4"

DETERMINATION FOR SEASONAL HIGH WATER TABLE

Method Used:
___ Depth observed standing in observation hole: ____inches _X_ Depth to soil mottles: 52 inches
___ Depth to weeping from side of observation hole: ____inches ____ Groundwater adjustment ____ft
Index Well #_____ **Reading Date**_____ **Index well level**_____ **Adj.factor**_____ **Adj.Groundwater level**____

PERCOLATION TEST **Date**_____ **Time**_____

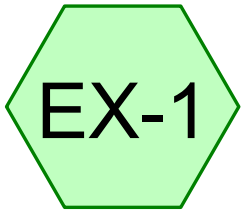
Observation Hole #	_____	_____	**Time at 9"** _____	_____
Depth of Perc	_____	_____	**Time at 6"** _____	_____
Start Presoak	_____	_____	**Time (9"-6")** _____	_____
End Presoak	_____	_____	**Rate Min/Inch** _____	_____

Site Suitability Assessment: **Site Passed**_____ **Site Failed**_____ **Additional Testing Needed:**
Performed By_____ **Certification #**_____
Witnessed By_____
Comments:

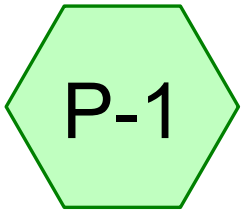
APPENDIX C
HYDROLOGIC & HYDRAULIC CALCULATIONS

INVENTORY

APPENDIX C-1
HydroCAD Node Schematic Diagram



Existing Discharge to Detention Pond



Proposed Discharge to Detention Pond

Subcat Reach Pond Link

Routing Diagram for 2024-04-01_HydroCAD
Prepared by Stonefield Engineering & Design

APPENDIX C-2
WQv Storm Event Hydrographs

Summary for Subcatchment EX-1: Existing Discharge to Detention Pond

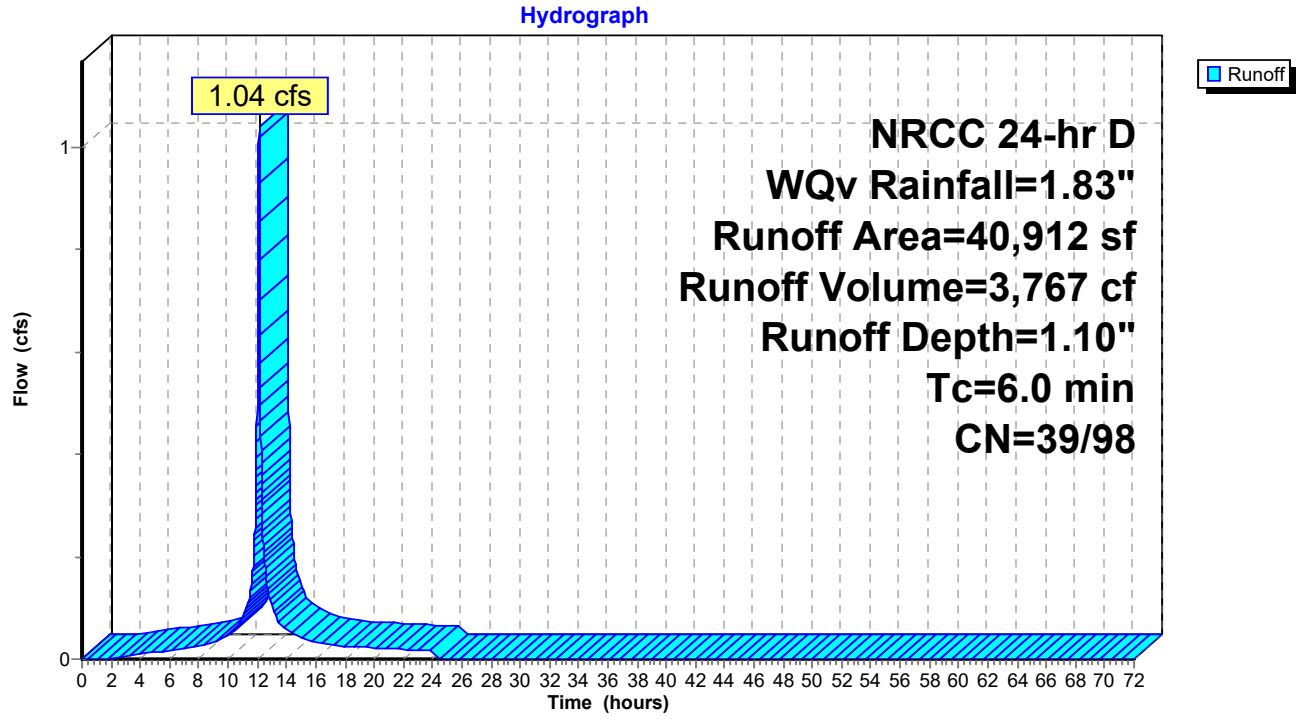
Runoff = 1.04 cfs @ 12.13 hrs, Volume= 3,767 cf, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQv Rainfall=1.83"

	Area (sf)	CN	Description
*	28,147	98	Impervious Area
	12,269	39	>75% Grass cover, Good, HSG A
	496	30	Woods, Good, HSG A
	40,912	79	Weighted Average
	12,765	39	31.20% Pervious Area
	28,147	98	68.80% Impervious Area

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

Subcatchment EX-1: Existing Discharge to Detention Pond



Hydrograph for Subcatchment EX-1: Existing Discharge to Detention Pond

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	**0.00**	0.00	0.00
1.00	0.03	0.00	0.00	0.00
2.00	0.06	0.00	0.00	0.00
3.00	0.09	0.00	0.01	0.01
4.00	0.12	0.00	0.02	0.01
5.00	0.15	0.00	0.04	0.01
6.00	0.19	0.00	0.06	0.02
7.00	0.23	0.00	0.09	0.02
8.00	0.28	0.00	0.13	0.03
9.00	0.34	0.00	0.17	0.03
10.00	0.41	0.00	0.24	0.05
11.00	0.52	0.00	0.34	0.08
12.00	0.88	0.00	0.67	**0.55**
13.00	1.31	0.00	1.09	**0.10**
14.00	1.42	0.00	1.20	0.06
15.00	1.49	0.00	1.27	0.04
16.00	1.55	0.00	1.33	0.03
17.00	1.60	0.00	1.38	0.03
18.00	1.64	0.00	1.42	0.02
19.00	1.68	0.00	1.46	0.02
20.00	1.71	0.00	1.49	0.02
21.00	1.74	0.00	1.52	0.02
22.00	1.77	0.00	1.55	0.02
23.00	1.80	0.00	1.58	0.02
24.00	**1.83**	0.00	**1.61**	0.02
25.00	1.83	0.00	1.61	0.00
26.00	1.83	0.00	1.61	0.00
27.00	1.83	0.00	1.61	0.00
28.00	1.83	0.00	1.61	0.00
29.00	1.83	0.00	1.61	0.00
30.00	1.83	0.00	1.61	0.00
31.00	1.83	0.00	1.61	0.00
32.00	1.83	0.00	1.61	0.00
33.00	1.83	0.00	1.61	0.00
34.00	1.83	0.00	1.61	0.00
35.00	1.83	0.00	1.61	0.00
36.00	1.83	0.00	1.61	0.00
37.00	1.83	0.00	1.61	0.00
38.00	1.83	0.00	1.61	0.00
39.00	1.83	0.00	1.61	0.00
40.00	1.83	0.00	1.61	0.00
41.00	1.83	0.00	1.61	0.00
42.00	1.83	0.00	1.61	0.00
43.00	1.83	0.00	1.61	0.00
44.00	1.83	0.00	1.61	0.00
45.00	1.83	0.00	1.61	0.00
46.00	1.83	0.00	1.61	0.00
47.00	1.83	0.00	1.61	0.00
48.00	1.83	0.00	1.61	0.00
49.00	1.83	0.00	1.61	0.00
50.00	1.83	0.00	1.61	0.00
51.00	1.83	0.00	1.61	0.00
52.00	1.83	0.00	1.61	0.00

Hydrograph for Subcatchment EX-1: Existing Discharge to Detention Pond (continued)

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
53.00	1.83	0.00	1.61	0.00
54.00	1.83	0.00	1.61	0.00
55.00	1.83	0.00	1.61	0.00
56.00	1.83	0.00	1.61	0.00
57.00	1.83	0.00	1.61	0.00
58.00	1.83	0.00	1.61	0.00
59.00	1.83	0.00	1.61	0.00
60.00	1.83	0.00	1.61	0.00
61.00	1.83	0.00	1.61	0.00
62.00	1.83	0.00	1.61	0.00
63.00	1.83	0.00	1.61	0.00
64.00	1.83	0.00	1.61	0.00
65.00	1.83	0.00	1.61	0.00
66.00	1.83	0.00	1.61	0.00
67.00	1.83	0.00	1.61	0.00
68.00	1.83	0.00	1.61	0.00
69.00	1.83	0.00	1.61	0.00
70.00	1.83	0.00	1.61	0.00
71.00	1.83	0.00	1.61	0.00
72.00	1.83	0.00	1.61	0.00

Summary for Subcatchment P-1: Proposed Discharge to Detention Pond

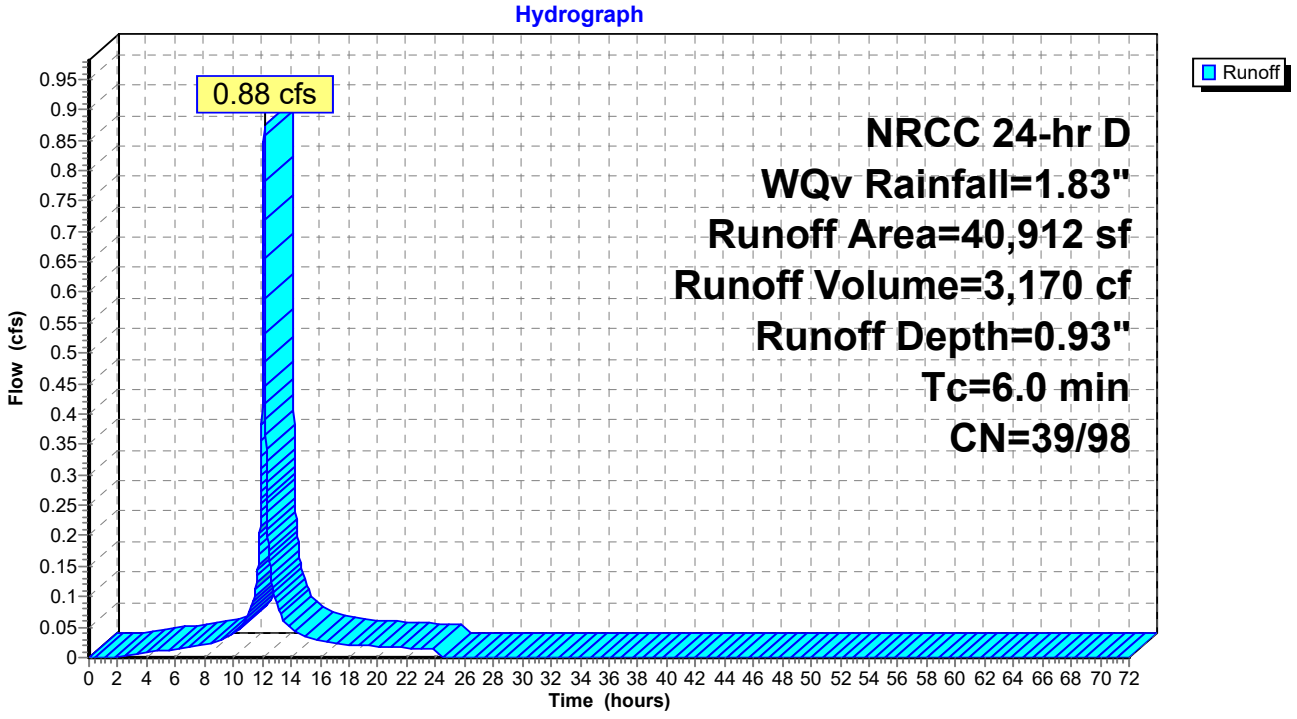
Runoff = 0.88 cfs @ 12.13 hrs, Volume= 3,170 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D WQv Rainfall=1.83"

	Area (sf)	CN	Description
*	23,685	98	Impervious Area
	10,603	39	>75% Grass cover, Good, HSG A
*	6,128	39	Turf Area
	496	30	Woods, Good, HSG A
	40,912	73	Weighted Average
	17,227	39	42.11% Pervious Area
	23,685	98	57.89% Impervious Area

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

Subcatchment P-1: Proposed Discharge to Detention Pond



Hydrograph for Subcatchment P-1: Proposed Discharge to Detention Pond

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	**0.00**	0.00	0.00
1.00	0.03	0.00	0.00	0.00
2.00	0.06	0.00	0.00	0.00
3.00	0.09	0.00	0.01	0.01
4.00	0.12	0.00	0.02	0.01
5.00	0.15	0.00	0.04	0.01
6.00	0.19	0.00	0.06	0.01
7.00	0.23	0.00	0.09	0.02
8.00	0.28	0.00	0.13	0.02
9.00	0.34	0.00	0.17	0.03
10.00	0.41	0.00	0.24	0.04
11.00	0.52	0.00	0.34	0.07
12.00	0.88	0.00	0.67	**0.46**
13.00	1.31	0.00	1.09	**0.09**
14.00	1.42	0.00	1.20	0.05
15.00	1.49	0.00	1.27	0.03
16.00	1.55	0.00	1.33	0.03
17.00	1.60	0.00	1.38	0.02
18.00	1.64	0.00	1.42	0.02
19.00	1.68	0.00	1.46	0.02
20.00	1.71	0.00	1.49	0.02
21.00	1.74	0.00	1.52	0.02
22.00	1.77	0.00	1.55	0.02
23.00	1.80	0.00	1.58	0.02
24.00	**1.83**	0.00	**1.61**	0.01
25.00	1.83	0.00	1.61	0.00
26.00	1.83	0.00	1.61	0.00
27.00	1.83	0.00	1.61	0.00
28.00	1.83	0.00	1.61	0.00
29.00	1.83	0.00	1.61	0.00
30.00	1.83	0.00	1.61	0.00
31.00	1.83	0.00	1.61	0.00
32.00	1.83	0.00	1.61	0.00
33.00	1.83	0.00	1.61	0.00
34.00	1.83	0.00	1.61	0.00
35.00	1.83	0.00	1.61	0.00
36.00	1.83	0.00	1.61	0.00
37.00	1.83	0.00	1.61	0.00
38.00	1.83	0.00	1.61	0.00
39.00	1.83	0.00	1.61	0.00
40.00	1.83	0.00	1.61	0.00
41.00	1.83	0.00	1.61	0.00
42.00	1.83	0.00	1.61	0.00
43.00	1.83	0.00	1.61	0.00
44.00	1.83	0.00	1.61	0.00
45.00	1.83	0.00	1.61	0.00
46.00	1.83	0.00	1.61	0.00
47.00	1.83	0.00	1.61	0.00
48.00	1.83	0.00	1.61	0.00
49.00	1.83	0.00	1.61	0.00
50.00	1.83	0.00	1.61	0.00
51.00	1.83	0.00	1.61	0.00
52.00	1.83	0.00	1.61	0.00

Hydrograph for Subcatchment P-1: Proposed Discharge to Detention Pond (continued)

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
53.00	1.83	0.00	1.61	0.00
54.00	1.83	0.00	1.61	0.00
55.00	1.83	0.00	1.61	0.00
56.00	1.83	0.00	1.61	0.00
57.00	1.83	0.00	1.61	0.00
58.00	1.83	0.00	1.61	0.00
59.00	1.83	0.00	1.61	0.00
60.00	1.83	0.00	1.61	0.00
61.00	1.83	0.00	1.61	0.00
62.00	1.83	0.00	1.61	0.00
63.00	1.83	0.00	1.61	0.00
64.00	1.83	0.00	1.61	0.00
65.00	1.83	0.00	1.61	0.00
66.00	1.83	0.00	1.61	0.00
67.00	1.83	0.00	1.61	0.00
68.00	1.83	0.00	1.61	0.00
69.00	1.83	0.00	1.61	0.00
70.00	1.83	0.00	1.61	0.00
71.00	1.83	0.00	1.61	0.00
72.00	1.83	0.00	1.61	0.00

APPENDIX C-3
2-YEAR STORM EVENT HYDROGRAPHS

Summary for Subcatchment EX-1: Existing Discharge to Detention Pond

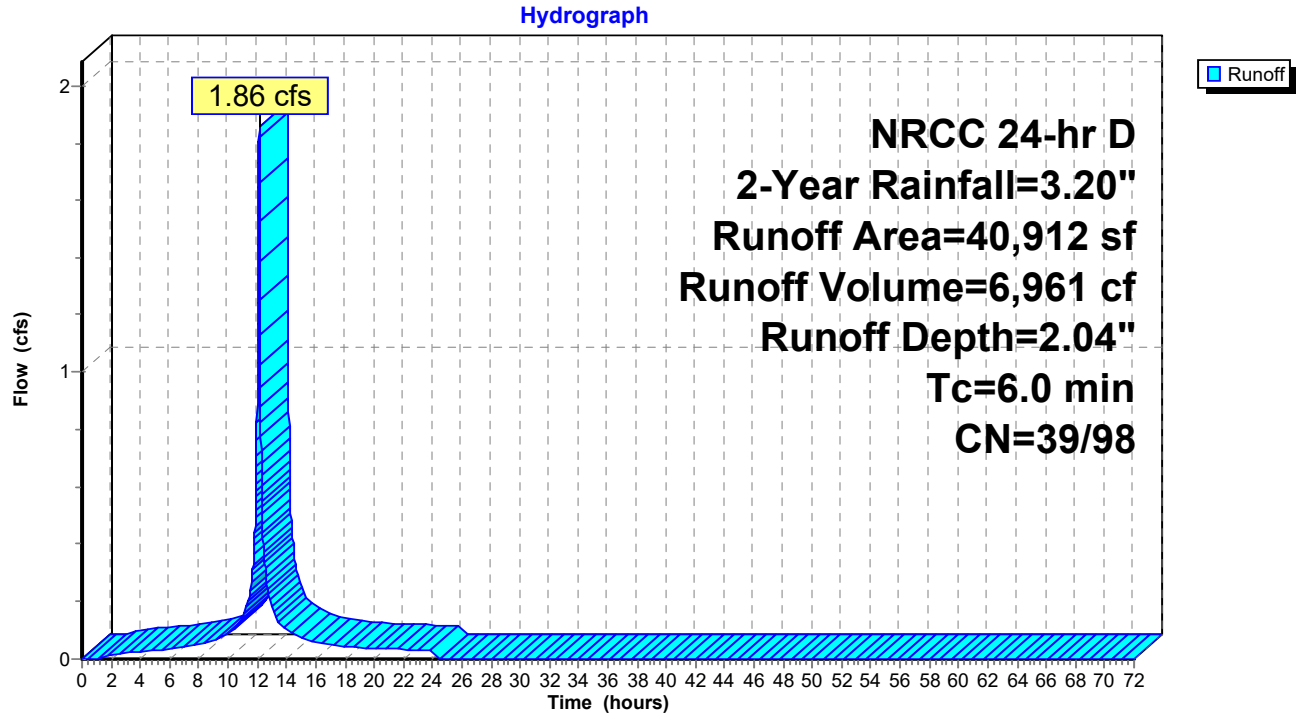
Runoff = 1.86 cfs @ 12.13 hrs, Volume= 6,961 cf, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
*	28,147	98	Impervious Area
	12,269	39	>75% Grass cover, Good, HSG A
	496	30	Woods, Good, HSG A
	40,912	79	Weighted Average
	12,765	39	31.20% Pervious Area
	28,147	98	68.80% Impervious Area

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

Subcatchment EX-1: Existing Discharge to Detention Pond



Hydrograph for Subcatchment EX-1: Existing Discharge to Detention Pond

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00	0.00
2.00	0.10	0.00	0.01	0.01
3.00	0.15	0.00	0.04	0.02
4.00	0.21	0.00	0.07	0.03
5.00	0.27	0.00	0.12	0.03
6.00	0.33	0.00	0.17	0.03
7.00	0.40	0.00	0.23	0.04
8.00	0.49	0.00	0.31	0.05
9.00	0.59	0.00	0.40	0.06
10.00	0.72	0.00	0.52	0.09
11.00	0.91	0.00	0.70	0.15
12.00	1.53	0.00	1.31	**0.99**
13.00	2.29	0.00	2.06	**0.18**
14.00	2.48	0.00	2.25	0.10
15.00	2.61	0.00	2.38	0.07
16.00	2.71	0.00	2.48	0.06
17.00	2.80	0.00	2.57	0.05
18.00	2.87	0.00	2.64	0.04
19.00	2.93	0.00	2.70	0.04
20.00	2.99	0.00	2.76	0.04
21.00	3.05	0.00	2.82	0.04
22.00	3.10	0.00	2.87	0.03
23.00	3.15	0.00	2.92	0.03
24.00	**3.20**	**0.00**	**2.97**	0.03
25.00	3.20	0.00	2.97	0.00
26.00	3.20	0.00	2.97	0.00
27.00	3.20	0.00	2.97	0.00
28.00	3.20	0.00	2.97	0.00
29.00	3.20	0.00	2.97	0.00
30.00	3.20	0.00	2.97	0.00
31.00	3.20	0.00	2.97	0.00
32.00	3.20	0.00	2.97	0.00
33.00	3.20	0.00	2.97	0.00
34.00	3.20	0.00	2.97	0.00
35.00	3.20	0.00	2.97	0.00
36.00	3.20	0.00	2.97	0.00
37.00	3.20	0.00	2.97	0.00
38.00	3.20	0.00	2.97	0.00
39.00	3.20	0.00	2.97	0.00
40.00	3.20	0.00	2.97	0.00
41.00	3.20	0.00	2.97	0.00
42.00	3.20	0.00	2.97	0.00
43.00	3.20	0.00	2.97	0.00
44.00	3.20	0.00	2.97	0.00
45.00	3.20	0.00	2.97	0.00
46.00	3.20	0.00	2.97	0.00
47.00	3.20	0.00	2.97	0.00
48.00	3.20	0.00	2.97	0.00
49.00	3.20	0.00	2.97	0.00
50.00	3.20	0.00	2.97	0.00
51.00	3.20	0.00	2.97	0.00
52.00	3.20	0.00	2.97	0.00

Hydrograph for Subcatchment EX-1: Existing Discharge to Detention Pond (continued)

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
53.00	3.20	0.00	2.97	0.00
54.00	3.20	0.00	2.97	0.00
55.00	3.20	0.00	2.97	0.00
56.00	3.20	0.00	2.97	0.00
57.00	3.20	0.00	2.97	0.00
58.00	3.20	0.00	2.97	0.00
59.00	3.20	0.00	2.97	0.00
60.00	3.20	0.00	2.97	0.00
61.00	3.20	0.00	2.97	0.00
62.00	3.20	0.00	2.97	0.00
63.00	3.20	0.00	2.97	0.00
64.00	3.20	0.00	2.97	0.00
65.00	3.20	0.00	2.97	0.00
66.00	3.20	0.00	2.97	0.00
67.00	3.20	0.00	2.97	0.00
68.00	3.20	0.00	2.97	0.00
69.00	3.20	0.00	2.97	0.00
70.00	3.20	0.00	2.97	0.00
71.00	3.20	0.00	2.97	0.00
72.00	3.20	0.00	2.97	0.00

Summary for Subcatchment P-1: Proposed Discharge to Detention Pond

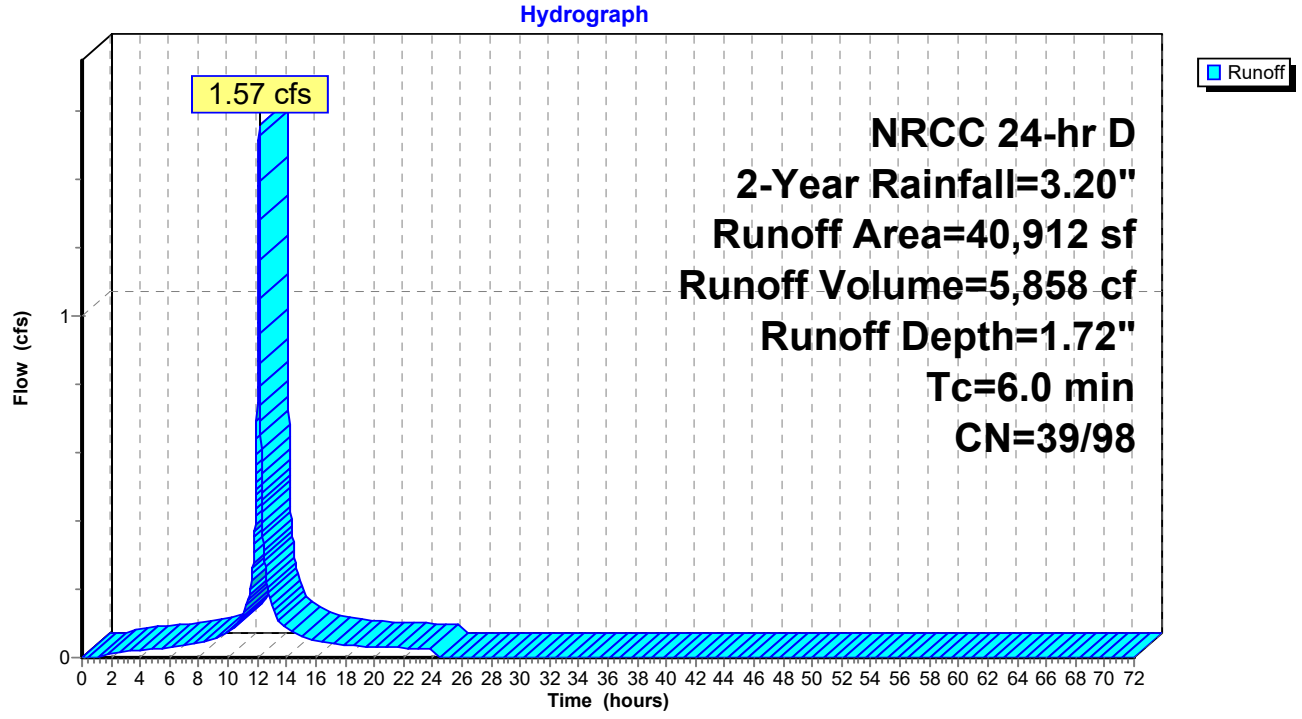
Runoff = 1.57 cfs @ 12.13 hrs, Volume= 5,858 cf, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 2-Year Rainfall=3.20"

	Area (sf)	CN	Description
*	23,685	98	Impervious Area
	10,603	39	>75% Grass cover, Good, HSG A
*	6,128	39	Turf Area
	496	30	Woods, Good, HSG A
	40,912	73	Weighted Average
	17,227	39	42.11% Pervious Area
	23,685	98	57.89% Impervious Area

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

Subcatchment P-1: Proposed Discharge to Detention Pond



Hydrograph for Subcatchment P-1: Proposed Discharge to Detention Pond

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00	0.00
2.00	0.10	0.00	0.01	0.01
3.00	0.15	0.00	0.04	0.02
4.00	0.21	0.00	0.07	0.02
5.00	0.27	0.00	0.12	0.03
6.00	0.33	0.00	0.17	0.03
7.00	0.40	0.00	0.23	0.04
8.00	0.49	0.00	0.31	0.05
9.00	0.59	0.00	0.40	0.05
10.00	0.72	0.00	0.52	0.08
11.00	0.91	0.00	0.70	0.13
12.00	1.53	0.00	1.31	**0.83**
13.00	2.29	0.00	2.06	**0.16**
14.00	2.48	0.00	2.25	0.09
15.00	2.61	0.00	2.38	0.06
16.00	2.71	0.00	2.48	0.05
17.00	2.80	0.00	2.57	0.04
18.00	2.87	0.00	2.64	0.04
19.00	2.93	0.00	2.70	0.03
20.00	2.99	0.00	2.76	0.03
21.00	3.05	0.00	2.82	0.03
22.00	3.10	0.00	2.87	0.03
23.00	3.15	0.00	2.92	0.03
24.00	**3.20**	**0.00**	**2.97**	0.03
25.00	3.20	0.00	2.97	0.00
26.00	3.20	0.00	2.97	0.00
27.00	3.20	0.00	2.97	0.00
28.00	3.20	0.00	2.97	0.00
29.00	3.20	0.00	2.97	0.00
30.00	3.20	0.00	2.97	0.00
31.00	3.20	0.00	2.97	0.00
32.00	3.20	0.00	2.97	0.00
33.00	3.20	0.00	2.97	0.00
34.00	3.20	0.00	2.97	0.00
35.00	3.20	0.00	2.97	0.00
36.00	3.20	0.00	2.97	0.00
37.00	3.20	0.00	2.97	0.00
38.00	3.20	0.00	2.97	0.00
39.00	3.20	0.00	2.97	0.00
40.00	3.20	0.00	2.97	0.00
41.00	3.20	0.00	2.97	0.00
42.00	3.20	0.00	2.97	0.00
43.00	3.20	0.00	2.97	0.00
44.00	3.20	0.00	2.97	0.00
45.00	3.20	0.00	2.97	0.00
46.00	3.20	0.00	2.97	0.00
47.00	3.20	0.00	2.97	0.00
48.00	3.20	0.00	2.97	0.00
49.00	3.20	0.00	2.97	0.00
50.00	3.20	0.00	2.97	0.00
51.00	3.20	0.00	2.97	0.00
52.00	3.20	0.00	2.97	0.00

Hydrograph for Subcatchment P-1: Proposed Discharge to Detention Pond (continued)

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
53.00	3.20	0.00	2.97	0.00
54.00	3.20	0.00	2.97	0.00
55.00	3.20	0.00	2.97	0.00
56.00	3.20	0.00	2.97	0.00
57.00	3.20	0.00	2.97	0.00
58.00	3.20	0.00	2.97	0.00
59.00	3.20	0.00	2.97	0.00
60.00	3.20	0.00	2.97	0.00
61.00	3.20	0.00	2.97	0.00
62.00	3.20	0.00	2.97	0.00
63.00	3.20	0.00	2.97	0.00
64.00	3.20	0.00	2.97	0.00
65.00	3.20	0.00	2.97	0.00
66.00	3.20	0.00	2.97	0.00
67.00	3.20	0.00	2.97	0.00
68.00	3.20	0.00	2.97	0.00
69.00	3.20	0.00	2.97	0.00
70.00	3.20	0.00	2.97	0.00
71.00	3.20	0.00	2.97	0.00
72.00	3.20	0.00	2.97	0.00

APPENDIX C-4
10-YEAR STORM EVENT HYDROGRAPHS

Summary for Subcatchment EX-1: Existing Discharge to Detention Pond

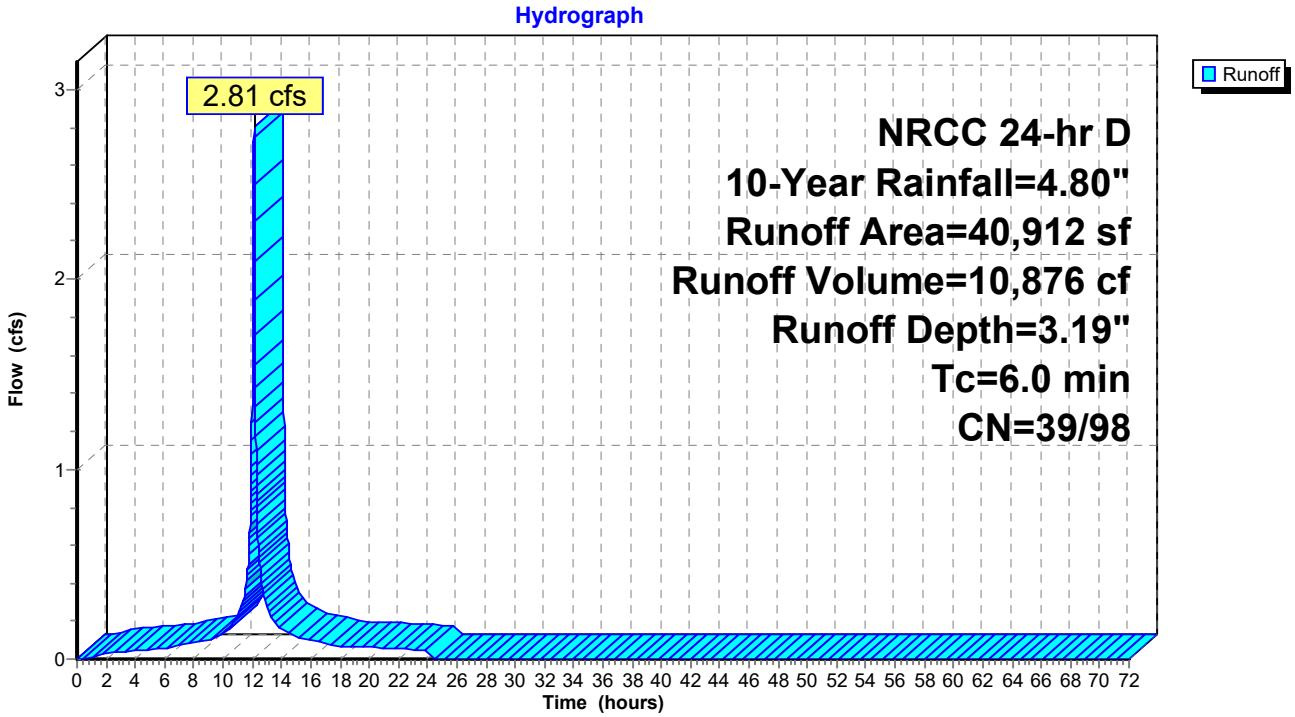
Runoff = 2.81 cfs @ 12.13 hrs, Volume= 10,876 cf, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.80"

	Area (sf)	CN	Description
*	28,147	98	Impervious Area
	12,269	39	>75% Grass cover, Good, HSG A
	496	30	Woods, Good, HSG A
	40,912	79	Weighted Average
	12,765	39	31.20% Pervious Area
	28,147	98	68.80% Impervious Area

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

Subcatchment EX-1: Existing Discharge to Detention Pond



Hydrograph for Subcatchment EX-1: Existing Discharge to Detention Pond

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
1.00	0.07	0.00	0.00	0.01
2.00	0.14	0.00	0.03	0.03
3.00	0.22	0.00	0.09	0.04
4.00	0.31	0.00	0.15	0.05
5.00	0.40	0.00	0.23	0.05
6.00	0.49	0.00	0.31	0.06
7.00	0.60	0.00	0.41	0.07
8.00	0.73	0.00	0.53	0.08
9.00	0.88	0.00	0.68	0.10
10.00	1.08	0.00	0.87	0.14
11.00	1.36	0.00	1.15	0.23
12.00	2.30	0.00	2.07	**1.50**
13.00	3.44	0.01	3.20	**0.28**
14.00	3.72	0.02	3.49	0.16
15.00	3.92	0.04	3.68	0.11
16.00	4.07	0.05	3.83	0.10
17.00	4.20	0.07	3.96	0.08
18.00	4.31	0.08	4.07	0.07
19.00	4.40	0.10	4.16	0.06
20.00	4.49	0.11	4.25	0.06
21.00	4.58	0.12	4.34	0.06
22.00	4.66	0.14	4.42	0.05
23.00	4.73	0.15	4.49	0.05
24.00	**4.80**	**0.16**	**4.56**	0.05
25.00	4.80	0.16	4.56	0.00
26.00	4.80	0.16	4.56	0.00
27.00	4.80	0.16	4.56	0.00
28.00	4.80	0.16	4.56	0.00
29.00	4.80	0.16	4.56	0.00
30.00	4.80	0.16	4.56	0.00
31.00	4.80	0.16	4.56	0.00
32.00	4.80	0.16	4.56	0.00
33.00	4.80	0.16	4.56	0.00
34.00	4.80	0.16	4.56	0.00
35.00	4.80	0.16	4.56	0.00
36.00	4.80	0.16	4.56	0.00
37.00	4.80	0.16	4.56	0.00
38.00	4.80	0.16	4.56	0.00
39.00	4.80	0.16	4.56	0.00
40.00	4.80	0.16	4.56	0.00
41.00	4.80	0.16	4.56	0.00
42.00	4.80	0.16	4.56	0.00
43.00	4.80	0.16	4.56	0.00
44.00	4.80	0.16	4.56	0.00
45.00	4.80	0.16	4.56	0.00
46.00	4.80	0.16	4.56	0.00
47.00	4.80	0.16	4.56	0.00
48.00	4.80	0.16	4.56	0.00
49.00	4.80	0.16	4.56	0.00
50.00	4.80	0.16	4.56	0.00
51.00	4.80	0.16	4.56	0.00
52.00	4.80	0.16	4.56	0.00

Hydrograph for Subcatchment EX-1: Existing Discharge to Detention Pond (continued)

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
53.00	4.80	0.16	4.56	0.00
54.00	4.80	0.16	4.56	0.00
55.00	4.80	0.16	4.56	0.00
56.00	4.80	0.16	4.56	0.00
57.00	4.80	0.16	4.56	0.00
58.00	4.80	0.16	4.56	0.00
59.00	4.80	0.16	4.56	0.00
60.00	4.80	0.16	4.56	0.00
61.00	4.80	0.16	4.56	0.00
62.00	4.80	0.16	4.56	0.00
63.00	4.80	0.16	4.56	0.00
64.00	4.80	0.16	4.56	0.00
65.00	4.80	0.16	4.56	0.00
66.00	4.80	0.16	4.56	0.00
67.00	4.80	0.16	4.56	0.00
68.00	4.80	0.16	4.56	0.00
69.00	4.80	0.16	4.56	0.00
70.00	4.80	0.16	4.56	0.00
71.00	4.80	0.16	4.56	0.00
72.00	4.80	0.16	4.56	0.00

Summary for Subcatchment P-1: Proposed Discharge to Detention Pond

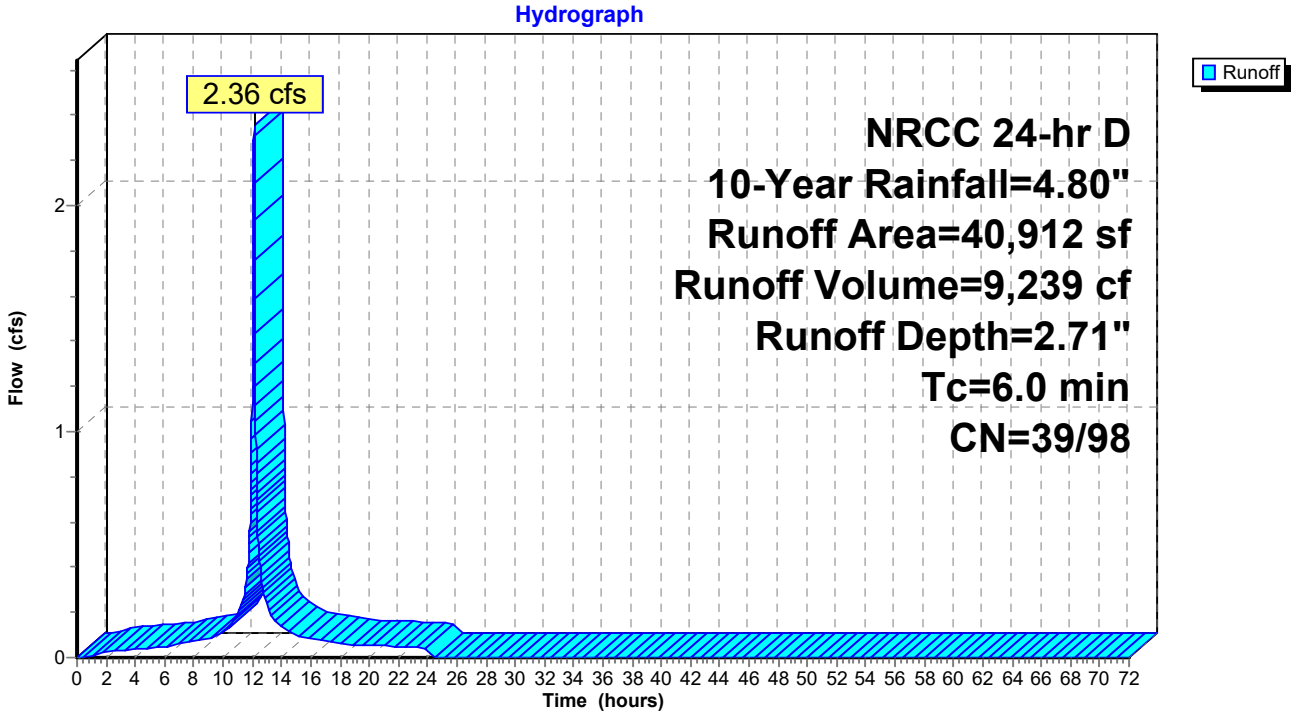
Runoff = 2.36 cfs @ 12.13 hrs, Volume= 9,239 cf, Depth= 2.71"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 10-Year Rainfall=4.80"

	Area (sf)	CN	Description
*	23,685	98	Impervious Area
	10,603	39	>75% Grass cover, Good, HSG A
*	6,128	39	Turf Area
	496	30	Woods, Good, HSG A
	40,912	73	Weighted Average
	17,227	39	42.11% Pervious Area
	23,685	98	57.89% Impervious Area

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

Subcatchment P-1: Proposed Discharge to Detention Pond



Hydrograph for Subcatchment P-1: Proposed Discharge to Detention Pond

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
1.00	0.07	0.00	0.00	0.01
2.00	0.14	0.00	0.03	0.02
3.00	0.22	0.00	0.09	0.03
4.00	0.31	0.00	0.15	0.04
5.00	0.40	0.00	0.23	0.04
6.00	0.49	0.00	0.31	0.05
7.00	0.60	0.00	0.41	0.06
8.00	0.73	0.00	0.53	0.07
9.00	0.88	0.00	0.68	0.08
10.00	1.08	0.00	0.87	0.12
11.00	1.36	0.00	1.15	0.20
12.00	2.30	0.00	2.07	**1.26**
13.00	3.44	0.01	3.20	**0.24**
14.00	3.72	0.02	3.49	0.13
15.00	3.92	0.04	3.68	0.10
16.00	4.07	0.05	3.83	0.08
17.00	4.20	0.07	3.96	0.07
18.00	4.31	0.08	4.07	0.06
19.00	4.40	0.10	4.16	0.06
20.00	4.49	0.11	4.25	0.05
21.00	4.58	0.12	4.34	0.05
22.00	4.66	0.14	4.42	0.05
23.00	4.73	0.15	4.49	0.04
24.00	**4.80**	**0.16**	**4.56**	0.04
25.00	4.80	0.16	4.56	0.00
26.00	4.80	0.16	4.56	0.00
27.00	4.80	0.16	4.56	0.00
28.00	4.80	0.16	4.56	0.00
29.00	4.80	0.16	4.56	0.00
30.00	4.80	0.16	4.56	0.00
31.00	4.80	0.16	4.56	0.00
32.00	4.80	0.16	4.56	0.00
33.00	4.80	0.16	4.56	0.00
34.00	4.80	0.16	4.56	0.00
35.00	4.80	0.16	4.56	0.00
36.00	4.80	0.16	4.56	0.00
37.00	4.80	0.16	4.56	0.00
38.00	4.80	0.16	4.56	0.00
39.00	4.80	0.16	4.56	0.00
40.00	4.80	0.16	4.56	0.00
41.00	4.80	0.16	4.56	0.00
42.00	4.80	0.16	4.56	0.00
43.00	4.80	0.16	4.56	0.00
44.00	4.80	0.16	4.56	0.00
45.00	4.80	0.16	4.56	0.00
46.00	4.80	0.16	4.56	0.00
47.00	4.80	0.16	4.56	0.00
48.00	4.80	0.16	4.56	0.00
49.00	4.80	0.16	4.56	0.00
50.00	4.80	0.16	4.56	0.00
51.00	4.80	0.16	4.56	0.00
52.00	4.80	0.16	4.56	0.00

Hydrograph for Subcatchment P-1: Proposed Discharge to Detention Pond (continued)

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
53.00	4.80	0.16	4.56	0.00
54.00	4.80	0.16	4.56	0.00
55.00	4.80	0.16	4.56	0.00
56.00	4.80	0.16	4.56	0.00
57.00	4.80	0.16	4.56	0.00
58.00	4.80	0.16	4.56	0.00
59.00	4.80	0.16	4.56	0.00
60.00	4.80	0.16	4.56	0.00
61.00	4.80	0.16	4.56	0.00
62.00	4.80	0.16	4.56	0.00
63.00	4.80	0.16	4.56	0.00
64.00	4.80	0.16	4.56	0.00
65.00	4.80	0.16	4.56	0.00
66.00	4.80	0.16	4.56	0.00
67.00	4.80	0.16	4.56	0.00
68.00	4.80	0.16	4.56	0.00
69.00	4.80	0.16	4.56	0.00
70.00	4.80	0.16	4.56	0.00
71.00	4.80	0.16	4.56	0.00
72.00	4.80	0.16	4.56	0.00

APPENDIX C-5
25-YEAR STORM EVENT HYDROGRAPHS

Summary for Subcatchment EX-1: Existing Discharge to Detention Pond

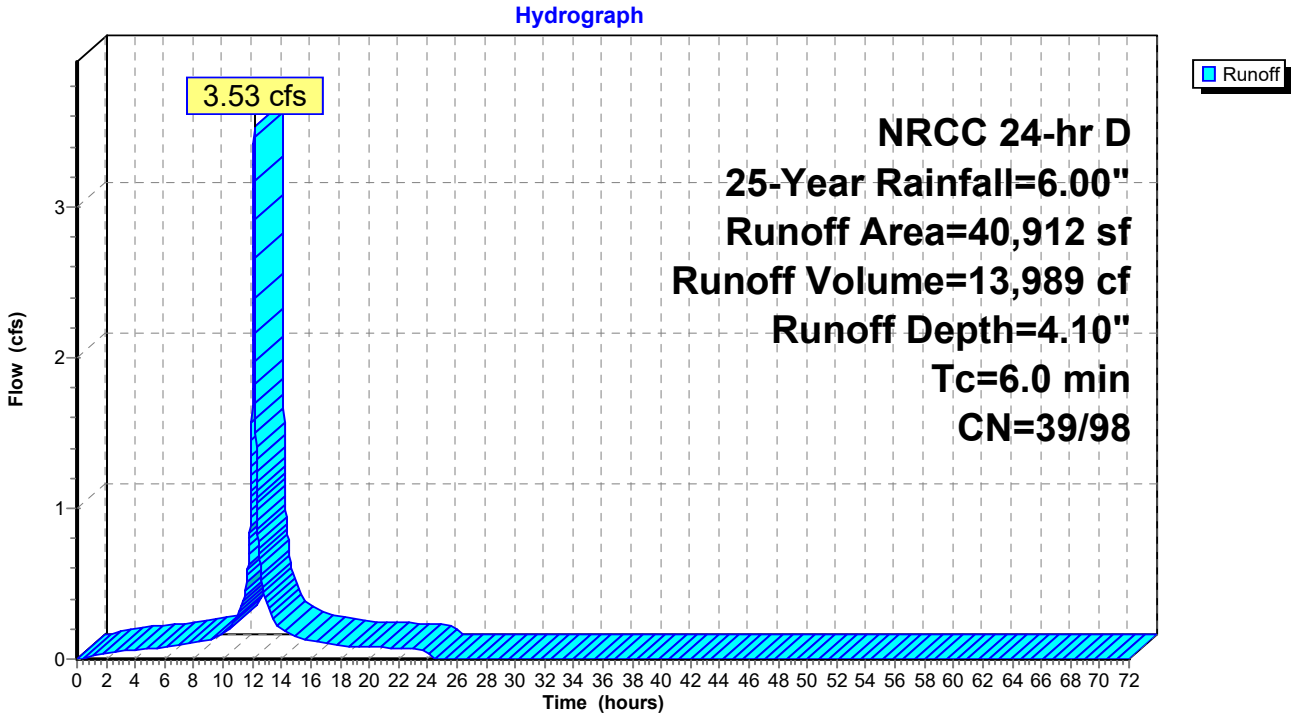
Runoff = 3.53 cfs @ 12.13 hrs, Volume= 13,989 cf, Depth= 4.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.00"

	Area (sf)	CN	Description
*	28,147	98	Impervious Area
	12,269	39	>75% Grass cover, Good, HSG A
	496	30	Woods, Good, HSG A
	40,912	79	Weighted Average
	12,765	39	31.20% Pervious Area
	28,147	98	68.80% Impervious Area

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

Subcatchment EX-1: Existing Discharge to Detention Pond



Hydrograph for Subcatchment EX-1: Existing Discharge to Detention Pond

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
1.00	0.09	0.00	0.01	0.02
2.00	0.18	0.00	0.06	0.04
3.00	0.28	0.00	0.13	0.05
4.00	0.39	0.00	0.22	0.06
5.00	0.50	0.00	0.32	0.07
6.00	0.62	0.00	0.43	0.07
7.00	0.75	0.00	0.55	0.09
8.00	0.91	0.00	0.71	0.11
9.00	1.10	0.00	0.89	0.12
10.00	1.35	0.00	1.13	0.18
11.00	1.70	0.00	1.48	0.29
12.00	2.87	0.00	2.64	**1.88**
13.00	4.30	0.08	4.06	**0.37**
14.00	4.65	0.14	4.42	0.21
15.00	4.90	0.18	4.66	0.15
16.00	5.09	0.22	4.85	0.13
17.00	5.25	0.25	5.01	0.11
18.00	5.38	0.28	5.14	0.09
19.00	5.50	0.31	5.26	0.08
20.00	5.61	0.34	5.38	0.08
21.00	5.72	0.37	5.48	0.08
22.00	5.82	0.40	5.58	0.07
23.00	5.91	0.42	5.67	0.07
24.00	**6.00**	**0.45**	**5.76**	0.06
25.00	6.00	0.45	5.76	0.00
26.00	6.00	0.45	5.76	0.00
27.00	6.00	0.45	5.76	0.00
28.00	6.00	0.45	5.76	0.00
29.00	6.00	0.45	5.76	0.00
30.00	6.00	0.45	5.76	0.00
31.00	6.00	0.45	5.76	0.00
32.00	6.00	0.45	5.76	0.00
33.00	6.00	0.45	5.76	0.00
34.00	6.00	0.45	5.76	0.00
35.00	6.00	0.45	5.76	0.00
36.00	6.00	0.45	5.76	0.00
37.00	6.00	0.45	5.76	0.00
38.00	6.00	0.45	5.76	0.00
39.00	6.00	0.45	5.76	0.00
40.00	6.00	0.45	5.76	0.00
41.00	6.00	0.45	5.76	0.00
42.00	6.00	0.45	5.76	0.00
43.00	6.00	0.45	5.76	0.00
44.00	6.00	0.45	5.76	0.00
45.00	6.00	0.45	5.76	0.00
46.00	6.00	0.45	5.76	0.00
47.00	6.00	0.45	5.76	0.00
48.00	6.00	0.45	5.76	0.00
49.00	6.00	0.45	5.76	0.00
50.00	6.00	0.45	5.76	0.00
51.00	6.00	0.45	5.76	0.00
52.00	6.00	0.45	5.76	0.00

Hydrograph for Subcatchment EX-1: Existing Discharge to Detention Pond (continued)

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
53.00	6.00	0.45	5.76	0.00
54.00	6.00	0.45	5.76	0.00
55.00	6.00	0.45	5.76	0.00
56.00	6.00	0.45	5.76	0.00
57.00	6.00	0.45	5.76	0.00
58.00	6.00	0.45	5.76	0.00
59.00	6.00	0.45	5.76	0.00
60.00	6.00	0.45	5.76	0.00
61.00	6.00	0.45	5.76	0.00
62.00	6.00	0.45	5.76	0.00
63.00	6.00	0.45	5.76	0.00
64.00	6.00	0.45	5.76	0.00
65.00	6.00	0.45	5.76	0.00
66.00	6.00	0.45	5.76	0.00
67.00	6.00	0.45	5.76	0.00
68.00	6.00	0.45	5.76	0.00
69.00	6.00	0.45	5.76	0.00
70.00	6.00	0.45	5.76	0.00
71.00	6.00	0.45	5.76	0.00
72.00	6.00	0.45	5.76	0.00

Summary for Subcatchment P-1: Proposed Discharge to Detention Pond

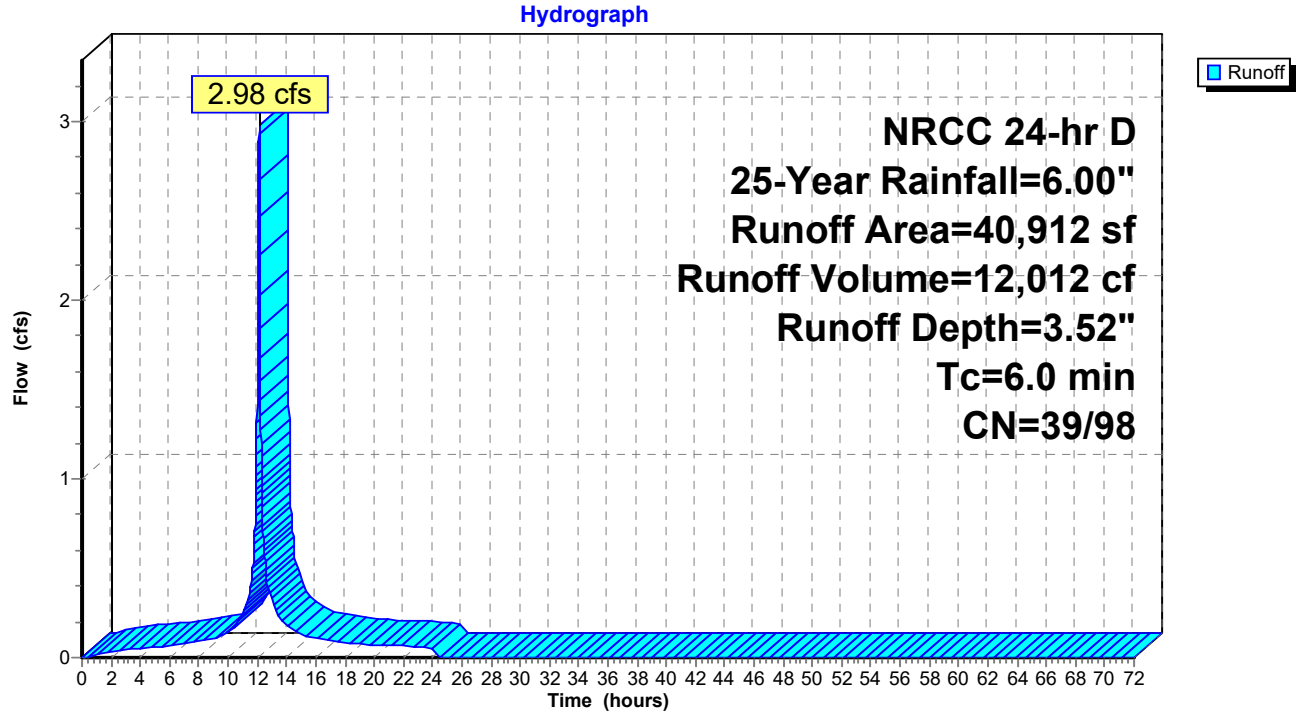
Runoff = 2.98 cfs @ 12.13 hrs, Volume= 12,012 cf, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 25-Year Rainfall=6.00"

	Area (sf)	CN	Description
*	23,685	98	Impervious Area
	10,603	39	>75% Grass cover, Good, HSG A
*	6,128	39	Turf Area
	496	30	Woods, Good, HSG A
	40,912	73	Weighted Average
	17,227	39	42.11% Pervious Area
	23,685	98	57.89% Impervious Area

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

Subcatchment P-1: Proposed Discharge to Detention Pond



Hydrograph for Subcatchment P-1: Proposed Discharge to Detention Pond

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
1.00	0.09	0.00	0.01	0.01
2.00	0.18	0.00	0.06	0.03
3.00	0.28	0.00	0.13	0.04
4.00	0.39	0.00	0.22	0.05
5.00	0.50	0.00	0.32	0.06
6.00	0.62	0.00	0.43	0.06
7.00	0.75	0.00	0.55	0.08
8.00	0.91	0.00	0.71	0.09
9.00	1.10	0.00	0.89	0.11
10.00	1.35	0.00	1.13	0.15
11.00	1.70	0.00	1.48	0.25
12.00	2.87	0.00	2.64	**1.58**
13.00	4.30	0.08	4.06	**0.32**
14.00	4.65	0.14	4.42	0.18
15.00	4.90	0.18	4.66	0.13
16.00	5.09	0.22	4.85	0.11
17.00	5.25	0.25	5.01	0.10
18.00	5.38	0.28	5.14	0.08
19.00	5.50	0.31	5.26	0.07
20.00	5.61	0.34	5.38	0.07
21.00	5.72	0.37	5.48	0.07
22.00	5.82	0.40	5.58	0.06
23.00	5.91	0.42	5.67	0.06
24.00	**6.00**	**0.45**	**5.76**	0.06
25.00	6.00	0.45	5.76	0.00
26.00	6.00	0.45	5.76	0.00
27.00	6.00	0.45	5.76	0.00
28.00	6.00	0.45	5.76	0.00
29.00	6.00	0.45	5.76	0.00
30.00	6.00	0.45	5.76	0.00
31.00	6.00	0.45	5.76	0.00
32.00	6.00	0.45	5.76	0.00
33.00	6.00	0.45	5.76	0.00
34.00	6.00	0.45	5.76	0.00
35.00	6.00	0.45	5.76	0.00
36.00	6.00	0.45	5.76	0.00
37.00	6.00	0.45	5.76	0.00
38.00	6.00	0.45	5.76	0.00
39.00	6.00	0.45	5.76	0.00
40.00	6.00	0.45	5.76	0.00
41.00	6.00	0.45	5.76	0.00
42.00	6.00	0.45	5.76	0.00
43.00	6.00	0.45	5.76	0.00
44.00	6.00	0.45	5.76	0.00
45.00	6.00	0.45	5.76	0.00
46.00	6.00	0.45	5.76	0.00
47.00	6.00	0.45	5.76	0.00
48.00	6.00	0.45	5.76	0.00
49.00	6.00	0.45	5.76	0.00
50.00	6.00	0.45	5.76	0.00
51.00	6.00	0.45	5.76	0.00
52.00	6.00	0.45	5.76	0.00

Hydrograph for Subcatchment P-1: Proposed Discharge to Detention Pond (continued)

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
53.00	6.00	0.45	5.76	0.00
54.00	6.00	0.45	5.76	0.00
55.00	6.00	0.45	5.76	0.00
56.00	6.00	0.45	5.76	0.00
57.00	6.00	0.45	5.76	0.00
58.00	6.00	0.45	5.76	0.00
59.00	6.00	0.45	5.76	0.00
60.00	6.00	0.45	5.76	0.00
61.00	6.00	0.45	5.76	0.00
62.00	6.00	0.45	5.76	0.00
63.00	6.00	0.45	5.76	0.00
64.00	6.00	0.45	5.76	0.00
65.00	6.00	0.45	5.76	0.00
66.00	6.00	0.45	5.76	0.00
67.00	6.00	0.45	5.76	0.00
68.00	6.00	0.45	5.76	0.00
69.00	6.00	0.45	5.76	0.00
70.00	6.00	0.45	5.76	0.00
71.00	6.00	0.45	5.76	0.00
72.00	6.00	0.45	5.76	0.00

APPENDIX C-6
100-YEAR STORM EVENT HYDROGRAPHS

Summary for Subcatchment EX-1: Existing Discharge to Detention Pond

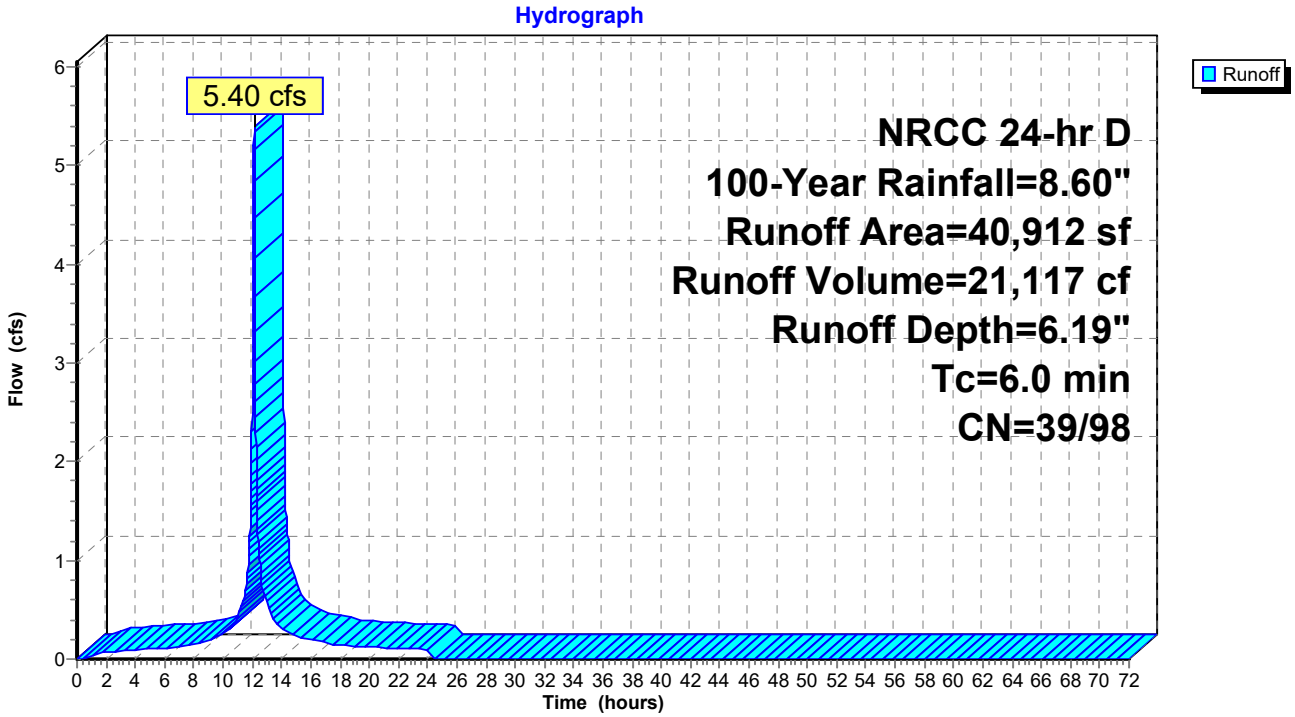
Runoff = 5.40 cfs @ 12.13 hrs, Volume= 21,117 cf, Depth= 6.19"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=8.60"

	Area (sf)	CN	Description
*	28,147	98	Impervious Area
	12,269	39	>75% Grass cover, Good, HSG A
	496	30	Woods, Good, HSG A
	40,912	79	Weighted Average
	12,765	39	31.20% Pervious Area
	28,147	98	68.80% Impervious Area

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

Subcatchment EX-1: Existing Discharge to Detention Pond



Hydrograph for Subcatchment EX-1: Existing Discharge to Detention Pond

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
1.00	0.13	0.00	0.02	0.04
2.00	0.26	0.00	0.11	0.07
3.00	0.40	0.00	0.23	0.08
4.00	0.55	0.00	0.37	0.09
5.00	0.72	0.00	0.52	0.10
6.00	0.89	0.00	0.68	0.11
7.00	1.08	0.00	0.87	0.13
8.00	1.31	0.00	1.09	0.16
9.00	1.58	0.00	1.36	0.18
10.00	1.93	0.00	1.70	0.26
11.00	2.44	0.00	2.21	0.43
12.00	4.12	0.06	3.88	**2.79**
13.00	6.16	0.49	5.92	**0.57**
14.00	6.67	0.65	6.43	0.31
15.00	7.02	0.78	6.78	0.23
16.00	7.29	0.87	7.05	0.19
17.00	7.52	0.96	7.28	0.17
18.00	7.71	1.04	7.47	0.14
19.00	7.88	1.11	7.64	0.13
20.00	8.05	1.18	7.81	0.12
21.00	8.20	1.24	7.96	0.12
22.00	8.34	1.30	8.10	0.11
23.00	8.47	1.36	8.23	0.10
24.00	**8.60**	**1.42**	**8.36**	0.10
25.00	8.60	1.42	8.36	0.00
26.00	8.60	1.42	8.36	0.00
27.00	8.60	1.42	8.36	0.00
28.00	8.60	1.42	8.36	0.00
29.00	8.60	1.42	8.36	0.00
30.00	8.60	1.42	8.36	0.00
31.00	8.60	1.42	8.36	0.00
32.00	8.60	1.42	8.36	0.00
33.00	8.60	1.42	8.36	0.00
34.00	8.60	1.42	8.36	0.00
35.00	8.60	1.42	8.36	0.00
36.00	8.60	1.42	8.36	0.00
37.00	8.60	1.42	8.36	0.00
38.00	8.60	1.42	8.36	0.00
39.00	8.60	1.42	8.36	0.00
40.00	8.60	1.42	8.36	0.00
41.00	8.60	1.42	8.36	0.00
42.00	8.60	1.42	8.36	0.00
43.00	8.60	1.42	8.36	0.00
44.00	8.60	1.42	8.36	0.00
45.00	8.60	1.42	8.36	0.00
46.00	8.60	1.42	8.36	0.00
47.00	8.60	1.42	8.36	0.00
48.00	8.60	1.42	8.36	0.00
49.00	8.60	1.42	8.36	0.00
50.00	8.60	1.42	8.36	0.00
51.00	8.60	1.42	8.36	0.00
52.00	8.60	1.42	8.36	0.00

Hydrograph for Subcatchment EX-1: Existing Discharge to Detention Pond (continued)

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
53.00	8.60	1.42	8.36	0.00
54.00	8.60	1.42	8.36	0.00
55.00	8.60	1.42	8.36	0.00
56.00	8.60	1.42	8.36	0.00
57.00	8.60	1.42	8.36	0.00
58.00	8.60	1.42	8.36	0.00
59.00	8.60	1.42	8.36	0.00
60.00	8.60	1.42	8.36	0.00
61.00	8.60	1.42	8.36	0.00
62.00	8.60	1.42	8.36	0.00
63.00	8.60	1.42	8.36	0.00
64.00	8.60	1.42	8.36	0.00
65.00	8.60	1.42	8.36	0.00
66.00	8.60	1.42	8.36	0.00
67.00	8.60	1.42	8.36	0.00
68.00	8.60	1.42	8.36	0.00
69.00	8.60	1.42	8.36	0.00
70.00	8.60	1.42	8.36	0.00
71.00	8.60	1.42	8.36	0.00
72.00	8.60	1.42	8.36	0.00

Summary for Subcatchment P-1: Proposed Discharge to Detention Pond

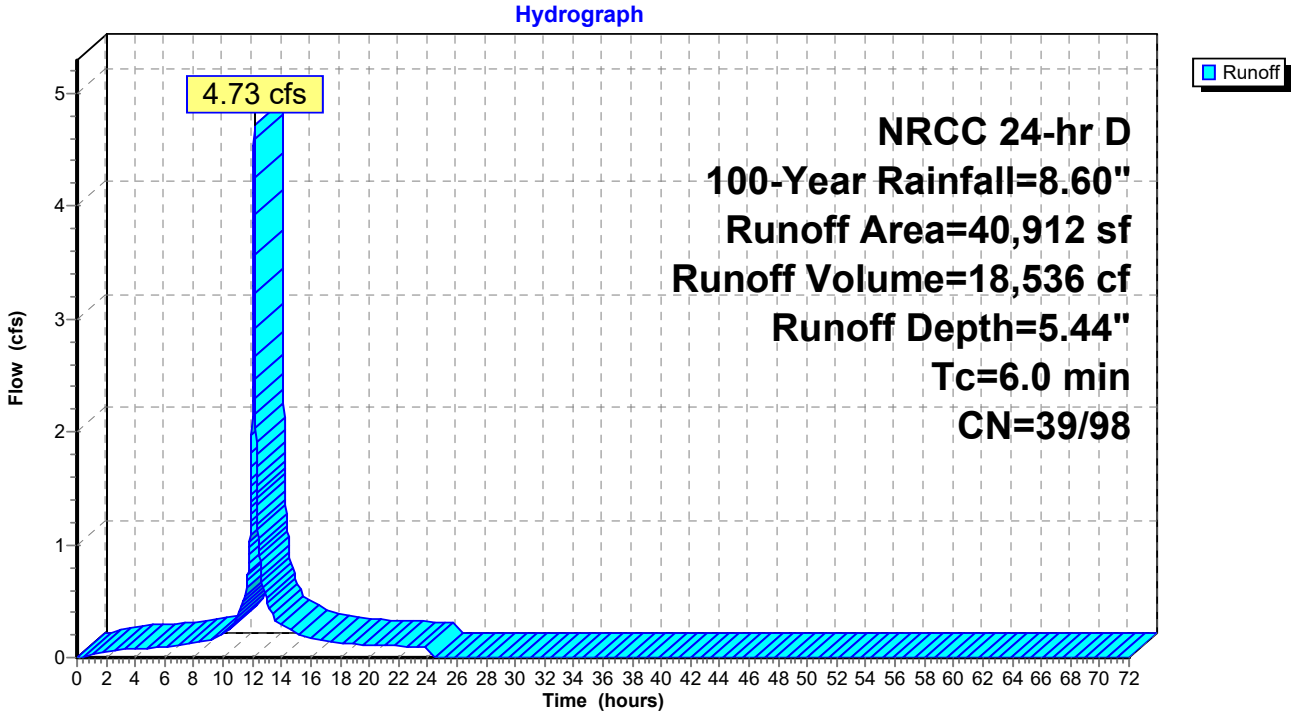
Runoff = 4.73 cfs @ 12.13 hrs, Volume= 18,536 cf, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NRCC 24-hr D 100-Year Rainfall=8.60"

	Area (sf)	CN	Description
*	23,685	98	Impervious Area
	10,603	39	>75% Grass cover, Good, HSG A
*	6,128	39	Turf Area
	496	30	Woods, Good, HSG A
	40,912	73	Weighted Average
	17,227	39	42.11% Pervious Area
	23,685	98	57.89% Impervious Area

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

Subcatchment P-1: Proposed Discharge to Detention Pond



Hydrograph for Subcatchment P-1: Proposed Discharge to Detention Pond

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
1.00	0.13	0.00	0.02	0.03
2.00	0.26	0.00	0.11	0.06
3.00	0.40	0.00	0.23	0.07
4.00	0.55	0.00	0.37	0.08
5.00	0.72	0.00	0.52	0.09
6.00	0.89	0.00	0.68	0.09
7.00	1.08	0.00	0.87	0.11
8.00	1.31	0.00	1.09	0.13
9.00	1.58	0.00	1.36	0.15
10.00	1.93	0.00	1.70	0.22
11.00	2.44	0.00	2.21	0.36
12.00	4.12	0.06	3.88	**2.39**
13.00	6.16	0.49	5.92	**0.51**
14.00	6.67	0.65	6.43	0.29
15.00	7.02	0.78	6.78	0.21
16.00	7.29	0.87	7.05	0.18
17.00	7.52	0.96	7.28	0.15
18.00	7.71	1.04	7.47	0.13
19.00	7.88	1.11	7.64	0.12
20.00	8.05	1.18	7.81	0.11
21.00	8.20	1.24	7.96	0.11
22.00	8.34	1.30	8.10	0.10
23.00	8.47	1.36	8.23	0.09
24.00	**8.60**	**1.42**	**8.36**	0.09
25.00	8.60	1.42	8.36	0.00
26.00	8.60	1.42	8.36	0.00
27.00	8.60	1.42	8.36	0.00
28.00	8.60	1.42	8.36	0.00
29.00	8.60	1.42	8.36	0.00
30.00	8.60	1.42	8.36	0.00
31.00	8.60	1.42	8.36	0.00
32.00	8.60	1.42	8.36	0.00
33.00	8.60	1.42	8.36	0.00
34.00	8.60	1.42	8.36	0.00
35.00	8.60	1.42	8.36	0.00
36.00	8.60	1.42	8.36	0.00
37.00	8.60	1.42	8.36	0.00
38.00	8.60	1.42	8.36	0.00
39.00	8.60	1.42	8.36	0.00
40.00	8.60	1.42	8.36	0.00
41.00	8.60	1.42	8.36	0.00
42.00	8.60	1.42	8.36	0.00
43.00	8.60	1.42	8.36	0.00
44.00	8.60	1.42	8.36	0.00
45.00	8.60	1.42	8.36	0.00
46.00	8.60	1.42	8.36	0.00
47.00	8.60	1.42	8.36	0.00
48.00	8.60	1.42	8.36	0.00
49.00	8.60	1.42	8.36	0.00
50.00	8.60	1.42	8.36	0.00
51.00	8.60	1.42	8.36	0.00
52.00	8.60	1.42	8.36	0.00

Hydrograph for Subcatchment P-1: Proposed Discharge to Detention Pond (continued)

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
53.00	8.60	1.42	8.36	0.00
54.00	8.60	1.42	8.36	0.00
55.00	8.60	1.42	8.36	0.00
56.00	8.60	1.42	8.36	0.00
57.00	8.60	1.42	8.36	0.00
58.00	8.60	1.42	8.36	0.00
59.00	8.60	1.42	8.36	0.00
60.00	8.60	1.42	8.36	0.00
61.00	8.60	1.42	8.36	0.00
62.00	8.60	1.42	8.36	0.00
63.00	8.60	1.42	8.36	0.00
64.00	8.60	1.42	8.36	0.00
65.00	8.60	1.42	8.36	0.00
66.00	8.60	1.42	8.36	0.00
67.00	8.60	1.42	8.36	0.00
68.00	8.60	1.42	8.36	0.00
69.00	8.60	1.42	8.36	0.00
70.00	8.60	1.42	8.36	0.00
71.00	8.60	1.42	8.36	0.00
72.00	8.60	1.42	8.36	0.00

APPENDIX D
CONTECH CDS WATER QUALITY UNIT DETAILS

INVENTORY

D-1: TSS REMOVAL CALCULATIONS

D-2: CONTECH CDS WATER QUALITY UNIT OPERATION & MAINTENANCE FIELD GUIDE

APPENDIX D-1
TSS REMOVAL CALCULATIONS

Project: Proposed Primrose School Child Care Center
Location: Sudbury, MA
Prepared For: Stonefield Engineering & Design

CONTECH ENGINEERED SOLUTIONS

Purpose: To calculate the water quality flow rate (WQF) over a given site area. In this situation the WQF is derived from the first 1" of runoff from the contributing impervious surface.

Reference: Massachusetts Dept. of Environmental Protection Wetlands Program / United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

Procedure: Determine unit peak discharge using Figure 1 or 2. Figure 2 is in tabular form so is preferred. Using the tc, read the unit peak discharge (qu) from Figure 1 or Table in Figure 2. qu is expressed in the following units: cfs/mi^2/watershed inches (csm/in).

Compute Q Rate using the following equation:

$$Q = (qu)\ (A)\ (WQV)$$

where:

Q = flow rate associated with first 1" of runoff
qu = the unit peak discharge, in csm/in.
A = impervious surface drainage area (in square miles)
WQV = water quality volume in watershed inches (1" in this case)

Structure Name	Impv. (acres)	A (miles^2)	t_c (min)	t_c (hr)	WQV (in)	qu (csm/in.)	Q (cfs)
WQU-1	0.43	0.0006719	6.0	0.100	1.00	774.00	0.52

CONTECH ENGINEERED SOLUTIONS

CDS TECHNOLOGIES

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER SUDBURY, MA

Area	0.43 ac	Unit Site Designation	WQU-1
Weighted C	0.9	Rainfall Station #	67
t_c	6 min		
CDS Model	1515-3	CDS Treatment Capacity	1.0 cfs

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.08	41.0%	41.0%	0.03	0.03	39.0
0.16	23.9%	64.9%	0.06	0.06	22.2
0.24	11.5%	76.5%	0.09	0.09	10.5
0.32	7.4%	83.9%	0.12	0.12	6.6
0.40	4.4%	88.3%	0.15	0.15	3.9
0.48	2.9%	91.2%	0.19	0.19	2.4
0.56	1.8%	93.0%	0.22	0.22	1.5
0.64	1.2%	94.2%	0.25	0.25	0.9
0.72	1.6%	95.8%	0.28	0.28	1.2
0.80	0.8%	96.6%	0.31	0.31	0.6
1.00	0.6%	97.1%	0.39	0.39	0.4
1.40	1.4%	98.6%	0.54	0.54	0.9
1.80	0.9%	99.5%	0.70	0.70	0.5
2.20	0.5%	100.0%	0.85	0.85	0.2
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
					90.8
				Removal Efficiency Adjustment[2] =	0.0%
				Predicted % Annual Rainfall Treated =	100.0%
				Predicted Net Annual Load Removal Efficiency =	**90.8%**

1 - Based on 7 years of data from NCDC station #3276, Groveland, Essex County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

APPENDIX D-2
CONTECH CDS WATER QUALITY UNIT
OPERATION & MAINTENANCE FIELD GUIDE

CONTECH®
ENGINEERED SOLUTIONS

CDS Guide
Operation, Design, Performance and Maintenance

CDS®

Using patented continuous deflective separation technology, the CDS system screens, separates and traps debris, sediment, and oil and grease from stormwater runoff. The indirect screening capability of the system allows for 100% removal of floatables and neutrally buoyant material without blinding. Flow and screening controls physically separate captured solids, and minimize the re-suspension and release of previously trapped pollutants. Inline units can treat up to 6 cfs, and internally bypass flows in excess of 50 cfs (1416 L/s). Available precast or cast-in-place, offline units can treat flows from 1 to 300 cfs (28.3 to 8495 L/s). The pollutant removal capacity of the CDS system has been proven in lab and field testing.

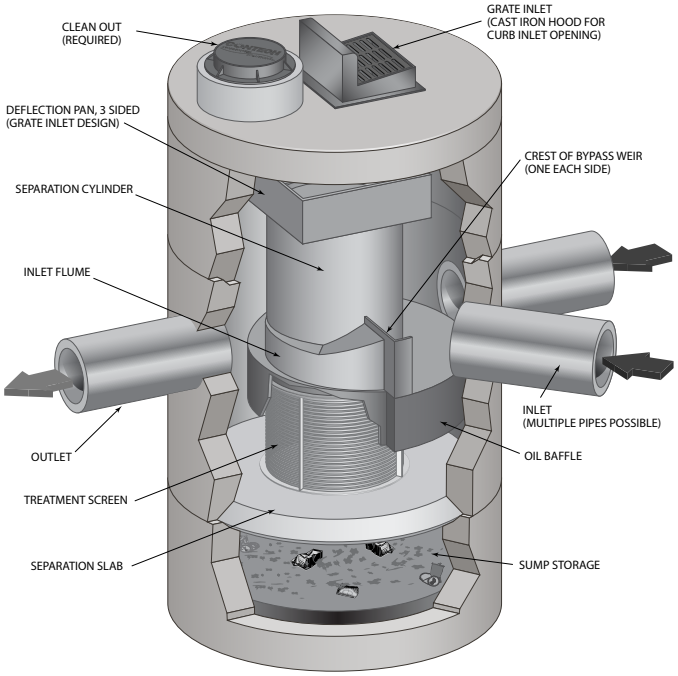
Operation Overview

Stormwater enters the diversion chamber where the diversion weir guides the flow into the unit's separation chamber and pollutants are removed from the flow. All flows up to the system's treatment design capacity enter the separation chamber and are treated.

Swirl concentration and screen deflection force floatables and solids to the center of the separation chamber where 100% of floatables and neutrally buoyant debris larger than the screen apertures are trapped.

Stormwater then moves through the separation screen, under the oil baffle and exits the system. The separation screen remains clog free due to continuous deflection.

During the flow events exceeding the treatment design capacity, the diversion weir bypasses excessive flows around the separation chamber, so captured pollutants are retained in the separation cylinder.



Design Basics

There are three primary methods of sizing a CDS system. The Water Quality Flow Rate Method determines which model size provides the desired removal efficiency at a given flow rate for a defined particle size. The Rational Rainfall Method™ or the and Probabilistic Method is used when a specific removal efficiency of the net annual sediment load is required.

Typically in the Unites States, CDS systems are designed to achieve an 80% annual solids load reduction based on lab generated performance curves for a gradation with an average particle size (d50) of 125 microns (μm). For some regulatory environments, CDS systems can also be designed to achieve an 80% annual solids load reduction based on an average particle size (d50) of 75 microns (μm) or 50 microns (μm).

Water Quality Flow Rate Method

In some cases, regulations require that a specific treatment rate, often referred to as the water quality design flow (WQQ), be treated. This WQQ represents the peak flow rate from either an event with a specific recurrence interval, e.g. the six-month storm, or a water quality depth, e.g. 1/2-inch (13 mm) of rainfall.

The CDS is designed to treat all flows up to the WQQ. At influent rates higher than the WQQ, the diversion weir will direct most flow exceeding the WQQ around the separation chamber. This allows removal efficiency to remain relatively constant in the separation chamber and eliminates the risk of washout during bypass flows regardless of influent flow rates.

Treatment flow rates are defined as the rate at which the CDS will remove a specific gradation of sediment at a specific removal efficiency. Therefore the treatment flow rate is variable, based on the gradation and removal efficiency specified by the design engineer.

Rational Rainfall Method™

Differences in local climate, topography and scale make every site hydraulically unique. It is important to take these factors into consideration when estimating the long-term performance of any stormwater treatment system. The Rational Rainfall Method combines site-specific information with laboratory generated performance data, and local historical precipitation records to estimate removal efficiencies as accurately as possible.

Short duration rain gauge records from across the United States and Canada were analyzed to determine the percent of the total annual rainfall that fell at a range of intensities. US stations' depths were totaled every 15 minutes, or hourly, and recorded in 0.01-inch increments. Depths were recorded hourly with 1-mm resolution at Canadian stations. One trend was consistent at all sites; the vast majority of precipitation fell at low intensities and high intensity storms contributed relatively little to the total annual depth.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Rainfall Method. Since most sites are relatively small and highly impervious, the Rational Rainfall Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS system are

determined. Performance efficiency curve determined from full scale laboratory tests on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Probabilistic Rational Method

The Probabilistic Rational Method is a sizing program Contech developed to estimate a net annual sediment load reduction for a particular CDS model based on site size, site runoff coefficient, regional rainfall intensity distribution, and anticipated pollutant characteristics.

The Probabilistic Method is an extension of the Rational Method used to estimate peak discharge rates generated by storm events of varying statistical return frequencies (e.g. 2-year storm event). Under the Rational Method, an adjustment factor is used to adjust the runoff coefficient estimated for the 10-year event, correlating a known hydrologic parameter with the target storm event. The rainfall intensities vary depending on the return frequency of the storm event under consideration. In general, these two frequency dependent parameters (rainfall intensity and runoff coefficient) increase as the return frequency increases while the drainage area remains constant.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Method. Since most sites are relatively small and highly impervious, the Rational Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS are determined. Performance efficiency curve on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Treatment Flow Rate

The inlet throat area is sized to ensure that the WQQ passes through the separation chamber at a water surface elevation equal to the crest of the diversion weir. The diversion weir bypasses excessive flows around the separation chamber, thus preventing re-suspension or re-entrainment of previously captured particles.

Hydraulic Capacity

The hydraulic capacity of a CDS system is determined by the length and height of the diversion weir and by the maximum allowable head in the system. Typical configurations allow hydraulic capacities of up to ten times the treatment flow rate. The crest of the diversion weir may be lowered and the inlet throat may be widened to increase the capacity of the system at a given water surface elevation. The unit is designed to meet project specific hydraulic requirements.

Performance

Full-Scale Laboratory Test Results

A full-scale CDS system (Model CDS2020-5B) was tested at the facility of University of Florida, Gainesville, FL. This CDS unit was evaluated under controlled laboratory conditions of influent flow rate and addition of sediment.

Two different gradations of silica sand material (UF Sediment & OK-110) were used in the CDS performance evaluation. The particle size distributions (PSDs) of the test materials were analyzed using standard method "Gradation ASTM D-422 "Standard Test Method for Particle-Size Analysis of Soils" by a certified laboratory.

UF Sediment is a mixture of three different products produced by the U.S. Silica Company: "Sil-Co-Sil 106", "#1 DRY" and "20/40 Oil Frac". Particle size distribution analysis shows that the UF Sediment has a very fine gradation (d50 = 20 to 30 μm) covering a wide size range (Coefficient of Uniformity, C averaged at 10.6). In comparison with the hypothetical TSS gradation specified in the NJDEP (New Jersey Department of Environmental Protection) and NJCAT (New Jersey Corporation for Advanced Technology) protocol for lab testing, the UF Sediment covers a similar range of particle size but with a finer d50 (d50 for NJDEP is approximately 50 μm) (NJDEP, 2003).

The OK-110 silica sand is a commercial product of U.S. Silica Sand. The particle size distribution analysis of this material, also included in Figure 1, shows that 99.9% of the OK-110 sand is finer than 250 microns, with a mean particle size (d50) of 106 microns. The PSDs for the test material are shown in Figure 1.

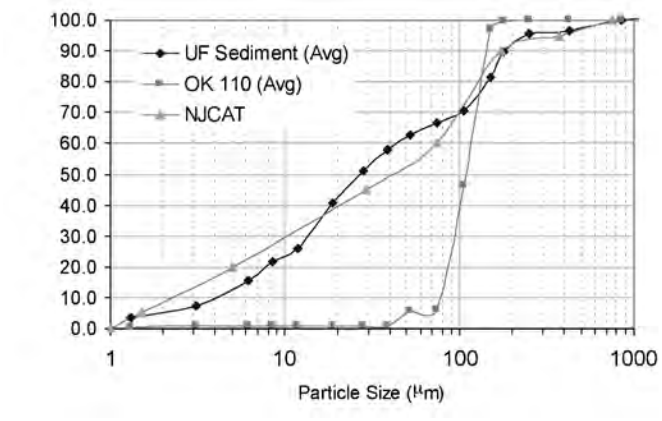


Figure 1. Particle size distributions

Tests were conducted to quantify the performance of a specific CDS unit (1.1 cfs (31.3-L/s) design capacity) at various flow rates, ranging from 1% up to 125% of the treatment design capacity of the unit, using the 2400 micron screen. All tests were conducted with controlled influent concentrations of approximately 200 mg/L. Effluent samples were taken at equal time intervals across the entire duration of each test run. These samples were then processed with a Dekaport Cone sample splitter to obtain representative sub-samples for Suspended Sediment Concentration (SSC) testing using ASTM D3977-97 "Standard Test Methods for Determining Sediment Concentration in Water Samples", and particle size distribution analysis.

Results and Modeling

Based on the data from the University of Florida, a performance model was developed for the CDS system. A regression analysis was used to develop a fitting curve representative of the scattered data points at various design flow rates. This model, which demonstrated good agreement with the laboratory data, can then be used to predict CDS system performance with respect

to SSC removal for any particle size gradation, assuming the particles are inorganic sandy-silt. Figure 2 shows CDS predictive performance for two typical particle size gradations (NJCAT gradation and OK-110 sand) as a function of operating rate.

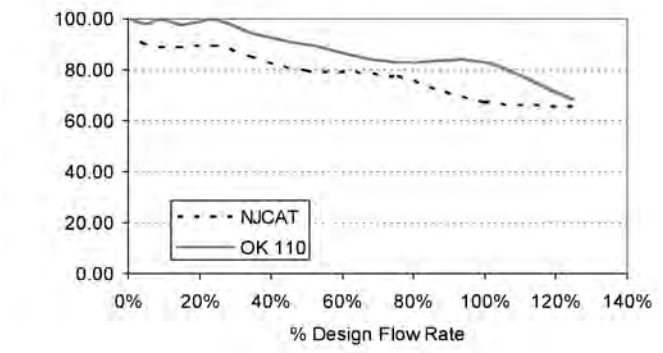


Figure 2. CDS stormwater treatment predictive performance for various particle gradations as a function of operating rate.

Many regulatory jurisdictions set a performance standard for hydrodynamic devices by stating that the devices shall be capable of achieving an 80% removal efficiency for particles having a mean particle size (d50) of 125 microns (e.g. Washington State Department of Ecology — WASDOE - 2008). The model can be used to calculate the expected performance of such a PSD (shown in Figure 3). The model indicates (Figure 4) that the CDS system with 2400 micron screen achieves approximately 80% removal at the design (100%) flow rate, for this particle size distribution (d50 = 125 μm).

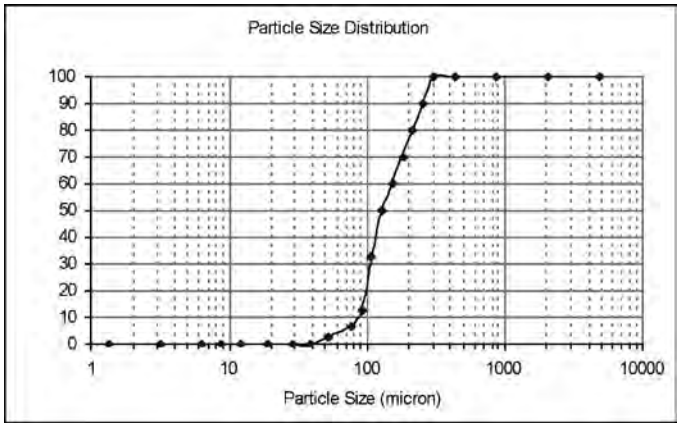


Figure 3. WASDOE PSD

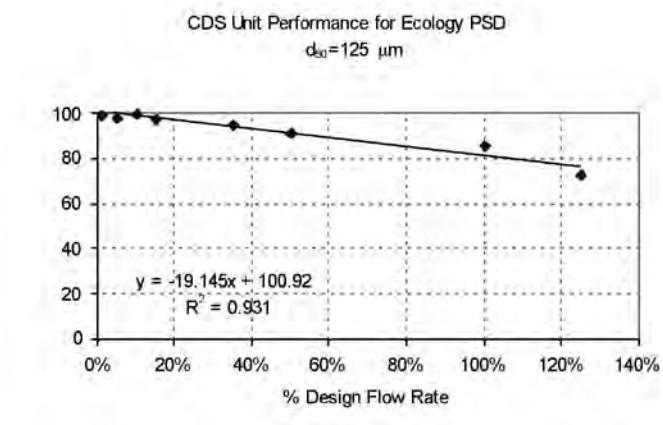


Figure 4. Modeled performance for WASDOE PSD.

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified

during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

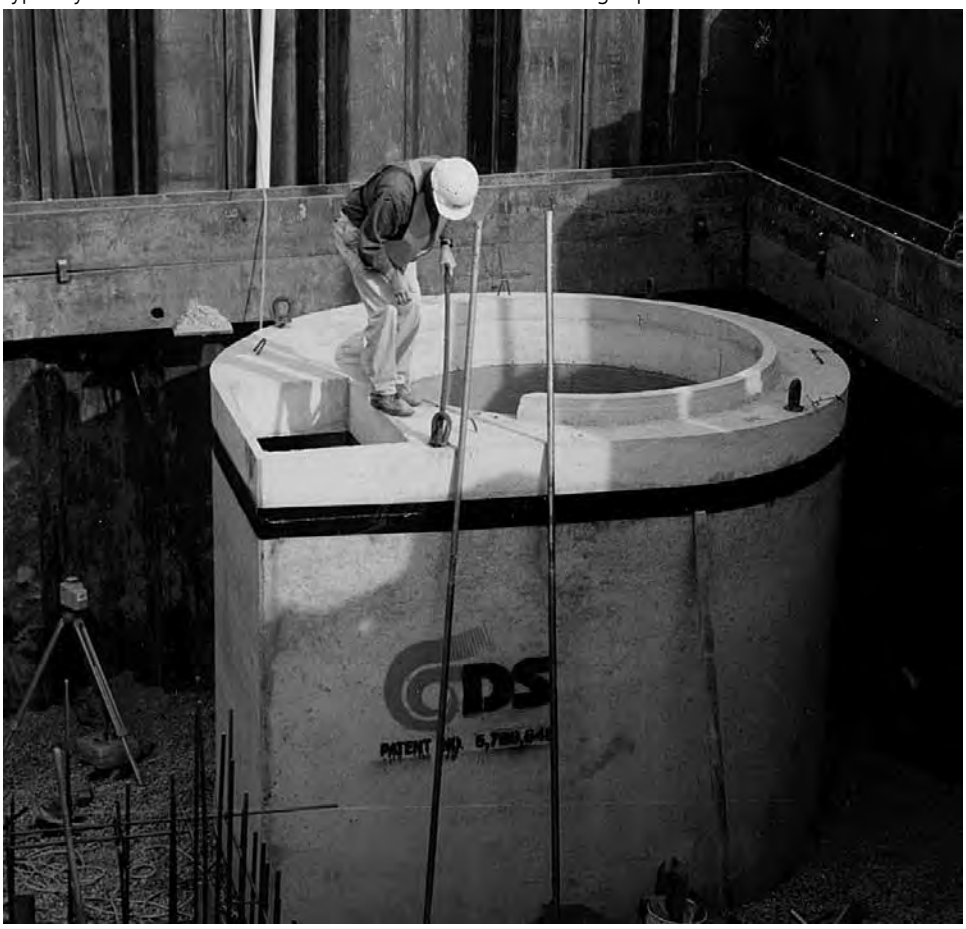
In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be cleaned to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CDS1515	3	0.9	3.0	0.9	0.5	0.4
CDS2015	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3025	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Note: To avoid underestimating the volume of sediment in the chamber, carefully lower the measuring device to the top of the sediment pile. Finer silty particles at the top of the pile may be more difficult to feel with a measuring stick. These finer particles typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile.



CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile**.

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

SUPPORT

- Drawings and specifications are available at www.ContechES.com.
- Site-specific design support is available from our engineers.

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Contech Engineered Solutions provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, earth stabilization and stormwater treatment products. For information on other Contech division offerings, visit www.ContechES.com or call 800.338.1122

The product(s) described may be protected by one or more of the following US patents: 5,322,629; 5,624,576; 5,707,527; 5,759,415; 5,788,848; 5,985,157; 6,027,639; 6,350,374; 6,406,218; 6,641,720; 6,511,595; 6,649,048; 6,991,114; 6,998,038; 7,186,058; 7,296,692; 7,297,266; related foreign patents or other patents pending.

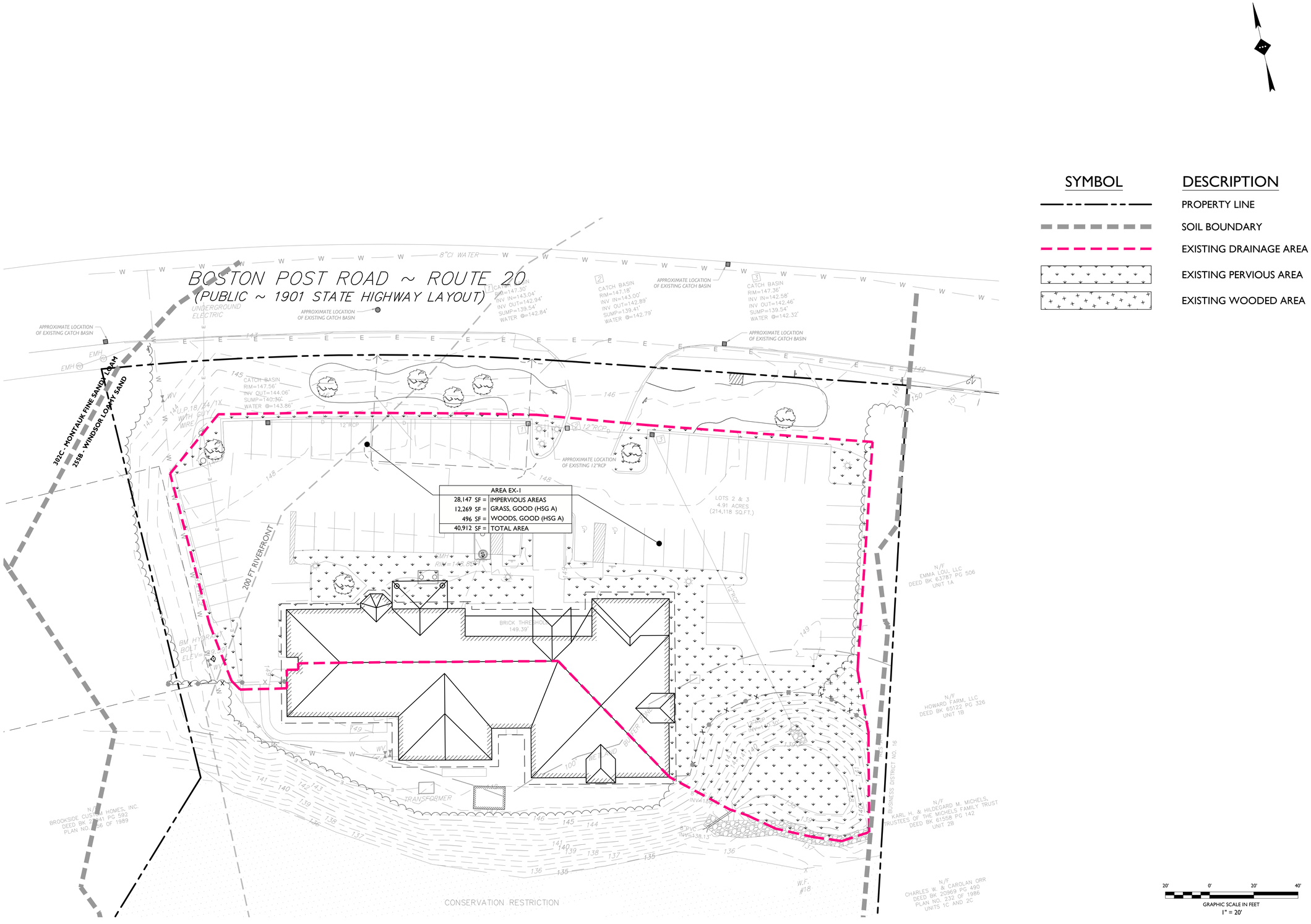
cds_manual 3/17 PDF

APPENDIX E
DRAINAGE AREA MAPS

INVENTORY

SHEET 1 OF 2: EXISTING DRAINAGE AREA MAP

SHEET 2 OF 2: PROPOSED DRAINAGE AREA MAP



SYMBOL	DESCRIPTION
	PROPERTY LINE
	SOIL BOUNDARY
	EXISTING DRAINAGE AREA
	EXISTING PERVIOUS AREA
	EXISTING WOODED AREA

20' 0' 20' 40'

GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

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120 Washington Street, Suite 201, Salem, MA 01970
Phone 617.203.2076

LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
251 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

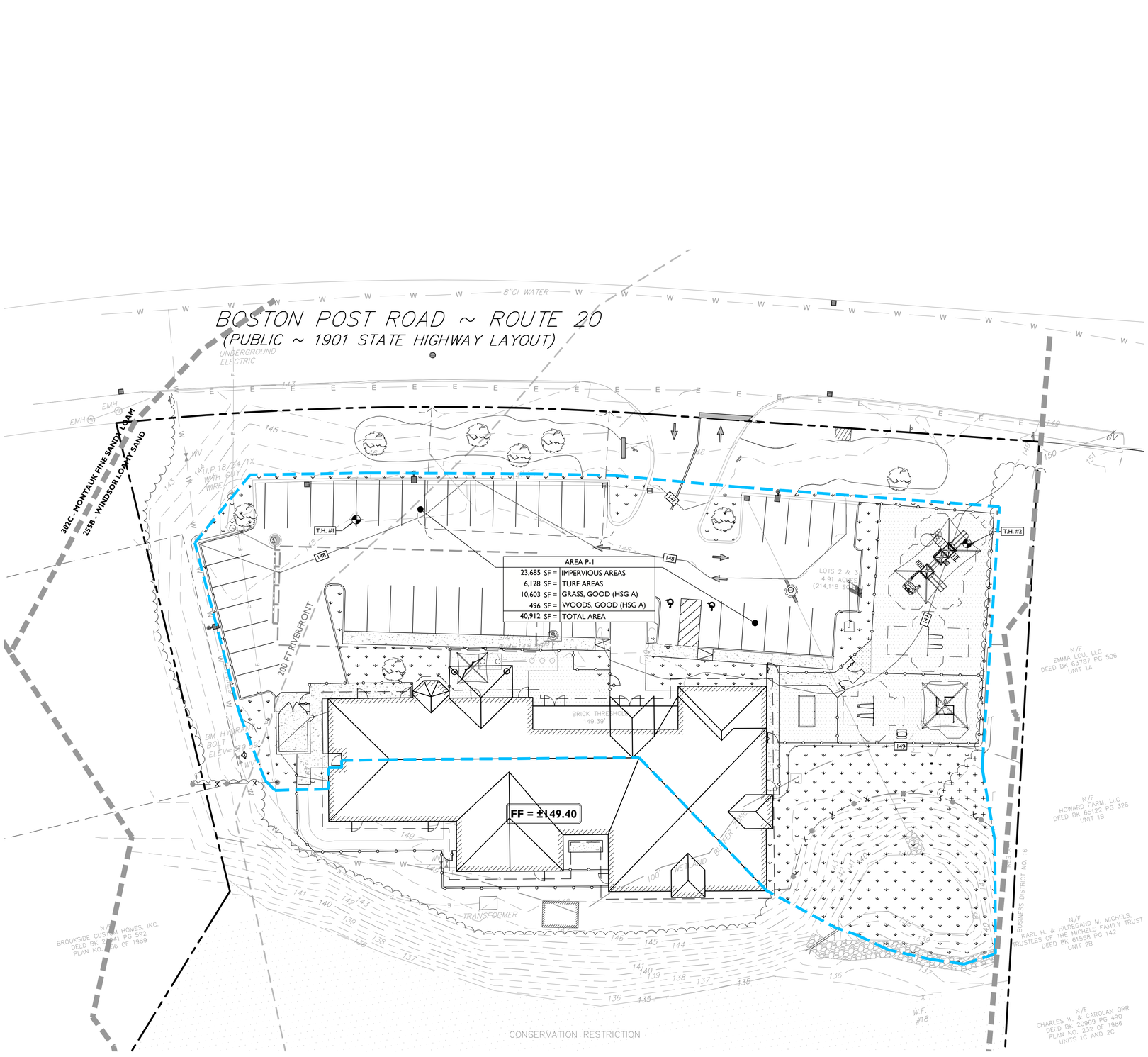
TITLE:

EXISTING DRAINAGE AREA MAP

DRAWING:

1 OF 2

Z:\BOS\DWG\BOS230051\BOS-230051 ADA ARCHITECTS - 251 BOSTON POST ROAD, SUDBURY, MA\CAD\EXHIBIT\DRAINAGE AREA MAP\BOS-230051-EXI_DRAINAGE AREA MAP.DWG



SYMBOL / DESCRIPTION

- PROPERTY LINE
- SOIL BOUNDARY
- PROPOSED DRAINAGE AREA
- PROPOSED PERVIOUS AREA
- PROPOSED WOODED AREA

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
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LAND DEVELOPMENT PLANS

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MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE:

PROPOSED DRAINAGE AREA MAP

DRAWING:

2 OF 2

Z:\BOS\DWG\2023\BOS-230051 ADA ARCHITECTS - 231 BOSTON POST ROAD, SUDBURY, MA\CAD\SHEET\DRAINAGE AREA MAP\2023-12-01_DRAINAGE AREA MAP.DWG

STONEFIELD

STORMWATER OPERATIONS & MAINTENANCE PLAN

PRIMROSE SCHOOL FRANCHISING COMPANY

PROPOSED CHILDCARE FACILITY
PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

PREPARED FOR:
PRIMROSE SCHOOL FRANCHISING COMPANY
21 CONKLIN LANE
WARREN, NEW JERSEY 07059

PREPARED BY:
STONEFIELD ENGINEERING & DESIGN, LLC
120 WASHINGTON STREET, SUITE 201
SALEM, MASSACHUSETTS

REPORT DATE:
DECEMBER 8, 2023
REVISED : APRIL 1, 2024

JOSHUA H. KLINE, PE
MA PE LICENSE #53936

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REPORT CONTENTS

APPENDICES

1.0 INTRODUCTION

This Stormwater Operations & Maintenance Plan has been prepared to identify the operational and maintenance responsibilities for the existing and proposed stormwater facilities for the redevelopment of the parcel located at 225 Boston Post Road, Town of Sudbury, Middlesex County, Massachusetts. This Plan has been prepared in conjunction with the Land Development Plans and the Stormwater Management Report, prepared by Stonefield Engineering & Design, and in accordance with the standards and regulations set forth by Town of Sudbury and the Massachusetts Department of Environmental Protection (MassDEP).

Operation and maintenance of the permanent stormwater control Best Management Practices (BMPs) shall be the responsibility of the operator of the project site at the time that the applicable maintenance is required. The existing stormwater treatment and conveyance systems on the development site shall remain and be reutilized under post-development conditions. Improvements associated with this redevelopment include the incorporation of additional water quality measures into the existing system. All guidelines, standards and requirements set forth in this Plan shall be implemented for all existing and proposed stormwater infrastructure. These guidelines are not exclusive to the proposed improvements, and existing infrastructure shall be maintained in accordance with this document.

A copy of this report shall be kept on-site at all times both during and after construction. Upon reviewing agency approval, the title and date of the maintenance plan as well as the contact information of the current agent responsible for maintaining the stormwater management measures for the project shall be recorded on the deed of the property on which the measures are located. Any future change in this information such as change in property ownership shall also be recorded on the deed.

1.1 RESPONSIBILITY

The purpose of the Stormwater Operations and Maintenance (O&M) plan is to ensure adequate inspection of the systems, removal of accumulated sediments, oils, and debris, and implementation of corrective action and record keeping activities. The enclosed O&M activities will be performed by a Contract Operator for the scope of maintenance. The Contract Operator will be a professional engineer or other technical professional with expertise and experience with stormwater management facilities operation and maintenance. The Owner, its successors, and/or assigns shall be responsible for the maintenance of the stormwater infrastructure associated with the proposed site improvements. Adequate maintenance is defined in this document as good working condition.

The current responsible agent shall evaluate the maintenance plan for effectiveness at least annually and revise the plan, as necessary. A detailed, written log of all preventative and corrective maintenance performed for each stormwater management measure must be kept, including a record of all inspections and copies of maintenance-

related work orders. Upon request from a public entity with jurisdiction over the project area the responsible agent shall make available the maintenance plan and associate logs and other records for review.

Responsible Agent:

Name:	Primrose School Franchising Company
Address:	21 Conklin Lane, Warren, New Jersey 07059
Contact:	Matt Taylor
Phone:	(617) 901-9015
Email:	mtaylor@primroseschools.com

1.2 DOCUMENTATION

Quarterly Operation and Maintenance Record Log and Schedule will be kept by the Owner summarizing inspections, maintenance, repairs and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. Sample Inspection, Preventive Maintenance and Corrective Maintenance Logs are enclosed. Additionally, invoices and other documentation of performance of maintenance activities (e.g., sediment disposal) shall be kept by the Owner or the legally authorized representative. The documentation will be kept on file at the on-site Property Management office.

The site supervisor shall be responsible for ensuring that the scheduled tasks as described in this plan are appropriately completed and recorded in the Maintenance Log. Accurate records of all inspections, routine maintenance and repairs shall be documented and these records shall be available for inspection by members of the Sudbury Conservation Commission, or their designated agent, upon request.

1.3 CHANGES TO OPERATIONS & MAINTENANCE PLAN

The Owner(s) and/or Responsible Agent shall notify the designated Governing Authority of any changes to the Operations & Maintenance Plan. Amendments to the Plan include but are not limited to changes in ownership, changes in assignment of financial responsibility, change in responsible parties, and modifications to the procedures outlined herein. Changes to the Plan shall be recorded on the Amendment Log in **APPENDIX E** of this Plan.

2.0 OPERATIONS & MAINTENANCE

The Owner, Property Manager and maintenance staff will conduct the Operation and Maintenance program set forth in this document. The Owner or Property Manager will ensure that inspections and record keeping are timely

and accurate and that cleaning and maintenance are performed in accordance with the recommended frequency for each stormwater component. Inspection & Maintenance Log Forms (provided herein) shall include the date and the amount of the last significant storm event in excess of 1" of rain in a 24-hour period, physical conditions of the structures, depth of sediment in structures, evidence of overtopping or debris blockage and maintenance required of each structure.

2.1 INSPECTION AND MAINTENANCE OF STORMWATER MANAGEMENT SYSTEMS

The following areas, facilities and measures will be inspected by the Owner or Property Manager and maintained as specified below. The following guidelines are applicable to both existing and proposed stormwater structures and facilities on the parcel. Identified deficiencies will be corrected. Accumulated sediments and debris will be properly handled and disposed of off-site, in accordance with local, state, and federal guidelines and regulations.

CATCH BASINS

The existing storm drain conveyance system is comprised of multiple catch basins with sumps that will be reutilized with the redevelopment.

- Existing catch basins shall be inspected prior to start of construction.
- Catch basins with hoods shall be cleaned and inspected according to manufacturer recommendations.
- All catch basins shall be inspected at least four times per year and cleaned a minimum of at least once per year or when the depth of deposits is greater than one half of the depth from the bottom of the sump to the invert of the lowest connecting pipe.
- Sediment and/or floatable pollutants shall be pumped from the basin and disposed of at an approved offsite facility in accordance with all applicable regulations.
- Any structural damage or other indication of malfunction will be reported to the site manager and repaired as necessary.
- During colder periods, the catch basin grates must be kept free of snow and ice.
- During warmer periods, the catch basin grates must be kept free of leaves, litter, sand, and debris.

STORM DRAIN PIPING

The existing site storm drain system is comprised of a network of piping and structures discharging to an above-ground stormwater basin. The existing system shall be reutilized, inspected, and maintained alongside all new infrastructure.

- Existing storm drain pipes to be inspected and deemed adequate for reuse prior to construction.
- All storm drain piping (existing and/or proposed) will be inspected quarterly and cleaned as necessary.

- Sediments and hydrocarbons will be properly handled and disposed of off-site, in accordance with local, state and federal guidelines and regulations.
- Pipe outlets should be cleaned away from the existing stormwater basin to prevent discharge of sediment into the basin.

FLARED END SECTIONS

One (1) flared end section exists on the project site as a part of the existing conveyance system. No new flared end sections are proposed with the redevelopment.

- Flared end sections shall be inspected quarterly or as necessary to ensure that they are working in their intended fashion.
- Remove and dispose of any trash or debris at outfall.
- Remove any obstructions to flow; remove accumulated sediments and debris at the outlet and within the conduit and repair any erosion damage.
- Maintain riprap pad below flared end section and replace washout as needed.

STORMWATER BASINS

The existing site is improved with one (1) above-ground stormwater pond that will remain and be reutilized with the redevelopment. Existing and proposed systems shall be maintained in accordance with the guidelines enclosed in this Plan.

- Stormwater basin shall be inspected annually and after major storm events. Maintenance and repairs will be completed as necessary.
- Basins will be mowed at least twice a year.
- Sediment will be removed as necessary, or every five (5) years. Removal procedures should not take place until the floor of the basin is thoroughly dry.
- Inspect planted areas on a semi-annual basis and remove any litter.
- Regular maintenance includes mowing, keeping the grass no shorter than 3 to 4 inches and no larger than 6-inches.
- Grass clippings, organic matter, and accumulated trash and debris are removed at least twice during the growing season.
- Eroded or barren spots should be reseeded immediately after inspection to prevent additional erosion and accumulation of sediment.

- Vegetated drainage systems shall be inspected at regular intervals and record specific information:
    - Notable changes in general extent of standing water.
        - Stability of embankments, channels, and outfall areas.
        - Accumulation of sediment

VEGETATED AREAS

Existing vegetated areas shall remain with the redevelopment alongside multiple proposed plantings. Existing and proposed plantings and vegetated areas shall be maintained in accordance with the guidelines enclosed in this Plan.

- Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. If erosion is evident, armor the area with an appropriate lining or riprap stone.
- Inspect planted areas on a semi-annual basis and remove any litter.
- Maintain planted areas adjacent to pavement to prevent soil washout.
- Immediately clean any soil deposited on pavement.
- Re-seed bare areas; install appropriate erosion control measures when native soil is exposed, or erosion channels are forming.
- Plant alternative mixture of grass species in the event of unsuccessful establishment.
- The grass vegetation should be cut to a height between three and four inches.
- Pesticide/Herbicide Usage – No pesticides are to be used unless a single spot treatment is required for a specific control application.
- No pesticides or herbicides are allowed within the 100' adjacent upland resource area property without prior approval of the Governing Authority.
- Fertilizer usage should be avoided. If deemed necessary, fertilizer may only be of the low nitrogen and phosphorous variety. Fertilizer may be used to begin the establishment of vegetation in bare or damaged areas but should not be applied on a regular basis unless necessary.
- Fertilizer applications shall be limited to the spring and early fall and applied per the manufacturers' specifications. Nitrogen content shall not exceed 25% with ratios for Nitrogen, Phosphorus, and Potassium at 3-1-2 or 3-1-1. It is also recommended that at least 30%-50% of total nitrogen be slow release.
- Annual application of compost amendments and aeration are recommended.

WATER QUALITY UNIT

The stormwater drainage system includes a structural water quality device, a Contech CDS unit, which efficiently removes sediment and hydrocarbons from stormwater runoff. An Operation & Maintenance Field Guide for the proprietary system has been enclosed herein.

- All water quality units are to be inspected at least twice per year and cleaned a minimum of at least once per year or when sediment reaches 75% of the sump depth, whichever occurs sooner.
- Remove oil and sediment through manhole access cover.
- Follow manufacturer instructions and contact manufacturer if system is malfunctioning. Manufacturer's inspection and maintenance instructions are included in **APPENDIX C.**

2.2 PARKING SURFACES AND SITE ACCESS DRIVES

Roadways with curbs and catch basins must be swept at a minimum of once per year. Roadways with curbs and catch basins that discharge to nitrogen or phosphorus impaired waters, or their tributaries are swept at a minimum of twice per year, once in the spring and once in the fall. Sweeping on rural uncurbed roads and parking lots with no catch basins must be conducted on an as-needed basis. All street sweepings collected must be disposed of. The responsible party may temporarily store street sweepings in labor yards, but street sweepings must be disposed of offsite in a reasonable timeframe. Street sweepings may not be disposed of on parking lots or lands.

The following minimum maintenance measures shall be implemented:

- Sweep or vacuum standard asphalt pavement areas with a rotary brush sweeper and properly dispose of removed material.
- Minimum recommended sweeping schedule:
    - October / November
    - April / May
    - More frequent sweeping of paved surfaces will result in less accumulation in catch basins, less cleaning of subsurface structures, and less disposal costs.
- Check loading docks and dumpster areas frequently for spillage and/or pavement staining and clean as necessary.
- No coal-tar, petroleum-based, or other parking lot "sealants" are permitted to be used on-site. Normal maintenance activities intended to extend the life expectancy of the pavement surfaces including the use of bitumen asphalt to seal developing cracks, asphalt repair are not subject to this special condition.

The following street and parking lot sweeping procedures shall be performed to reduce the discharge of pollutants:

Sweeping

- Street sweeping will be conducted in dry weather. Sweeping will not be conducted during or immediately after rainstorms.
- Dry cleaning methods will be used whenever possible with the exception of very fine water spray for dust control. Avoid wet cleaning or flushing of the pavement.
- When necessary, parking bans will be enacted to facilitate sweeping on busy streets.
- Sweeping will be conducted in a manner that avoids depositing debris into storm drains.
- Sweeping equipment (mechanical, regenerative air, vacuum filter, tandem sweeping) will be selected depending on the level of debris. Brush alignment, sweeper speed, rotation rate, and sweeping patterns will be set to optimate levels to manage debris.
- Sweeping equipment will be routinely inspected and maintained to reduce the potential for leaks.

Disposal

- The reuse of sweepings is recommended by MassDEP. If street sweepings are reused, e.g., as anti-skid material or to fill in parking lots), they will be properly filtered to remove solid waste, such as paper or trash, in accordance with their intended reuse. All reuse and/or disposal of street sweeping will be managed in accordance with current MassDEP policies and regulations.
- Street sweepings can be stored for up to one year in approved temporary storage areas. Storage areas will be protected to prevent erosion and runoff and should be located away from wetland resource areas and buffer zones, surface water, or groundwater.
- Sweepings are classified as solid waste and are disposed of at solid waste disposal sites.

2.3 WINTER MAINTENANCE AND SNOW & ICE MANAGEMENT

The landowner will contract with a professional snow removal/winter conditions management contractor to treat the paved parking and walking areas within the developed area for safe access during winter conditions. All snow and ice operators are required to be trained annually on the MassDOT practices. The contractor is responsible for minimizing de-icing applications while ensuring safe vehicle and pedestrian access to onsite facilities.

Snow storage and removal shall be conducted in accordance with the following minimum requirements:

- Snow will be stored in areas that do not block or hinder access to any structure or accessory facility.

- Should it become infeasible to store snow onsite without hindering pedestrian or vehicle circulation, snow shall be removed from the site and disposed of in accordance with the MassDOT Snow & Ice Control Program by a qualified operator.
- Snow storage areas will be managed to prevent blockage of storm drain catch basins, stormwater drainage channels, and on-street parking. Snow combined with sand and debris may block a storm drainage system, diminishing the drainage capacity of the system and causing localized flooding.
- Sand and debris deposited on vegetated or paved areas shall be cleared from the site and properly disposed of at the end of the snow season, no later than May 15.
- Snow shall not be dumped into any waterbody, pond, or wetland resource area.
- All sand shall be removed from the top of bank and on the banks of all wetlands immediately following spring snow melt each year.

In addition to snow removal, potentially icy and unsafe paved surfaces are addressed as follows:

- The de-icing program consists of two treatment zones: The largest area, parking and vehicle circulation areas, and the smaller area, the sidewalks/front doors of the facility.
- The parking and vehicle circulation areas within the center will be treated with approved treatment product mixed with sand. Per deicing event up to 200 gallons per acre may be applied.
- The front door entrances and sidewalks of the stores will have a non-sodium pelletized de-icing material that may contain calcium chloride or magnesium chloride as the active ice melting ingredient. The pellets are broadcast at a rate up to 1 lb. per 75-100 square feet.
- Only calcium or magnesium-based de-icing chemicals shall be used on surfaces where runoff/drainage will discharge into any wetland resources, or the 100' adjacent upland resource area.

The following winter maintenance procedures shall be performed to reduce the discharge of pollutants:

- Minimize the use and optimize the application of sodium chloride and other salt (while maintaining public safety) and consider opportunities for use of alternative methods.
- Optimize sand and/or chemical application rates through the use, where practicable, of automated application equipment (e.g., zero velocity spreaders), anti-icing and pre-wetting techniques. Implementation of pavement management systems, and alternate chemicals. Maintain records of the application of sand, anti-icing and/or de-icing chemicals to document the reduction of chemicals to meet established goals.
- Prevent exposure of de-icing product (salt, sand, or alternative products) storage piles to precipitation by enclosing or covering the storage piles. Implement good housekeeping, diversions, containment, or

other measures to minimize exposure resulting from adding to or removing materials from the pile. Store piles in such a manner as not to impact surface water resources, groundwater resources, recharge areas, and wells.

- The MS4 permit prohibits snow disposal into waters of the United States. Snow disposal activities, including selection of appropriate snow disposal sites, will adhere to the Massachusetts Department of Environmental Protection Snow Disposal Guidance, Guideline No. BWR G2015-01 (Effective Date: December 21, 2015).
- MassDEP Snow Disposal Guidance for ice melting operations and skating rinks shall be followed.

3.0 INSPECTION & LOGS OF PREVENTATIVE AND CORRECTIVE MEASURES

The person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

A maintenance plan shall include a schedule of regular inspections and tasks, and detailed logs of all preventative and corrective maintenance performed on the stormwater management measure, including all maintenance-related work orders. The person with maintenance responsibility must retain and, upon request, make available the maintenance plan and associated logs and other records for review by a public entity with administrative, health, environmental, or safety authority over the site.

All inspection and maintenance activities shall be recorded to document frequency of inspection and maintenance, and implementation of corrective action. All regularly scheduled inspections, inspections following one (1) inch of precipitation, maintenance activities, and repairs shall be recorded. General Inspection Checklists and Maintenance Logs can be found in **APPENDIX D** of this Plan. The enclosed general log forms shall be considered a minimum standard for recording purposes; the Operator and Inspection/Maintenance Personnel are encouraged to supplement the Log with additional notes and photos.

4.0 ANNUAL EVALUATION OF THE EFFECTIVENESS OF THE PLAN

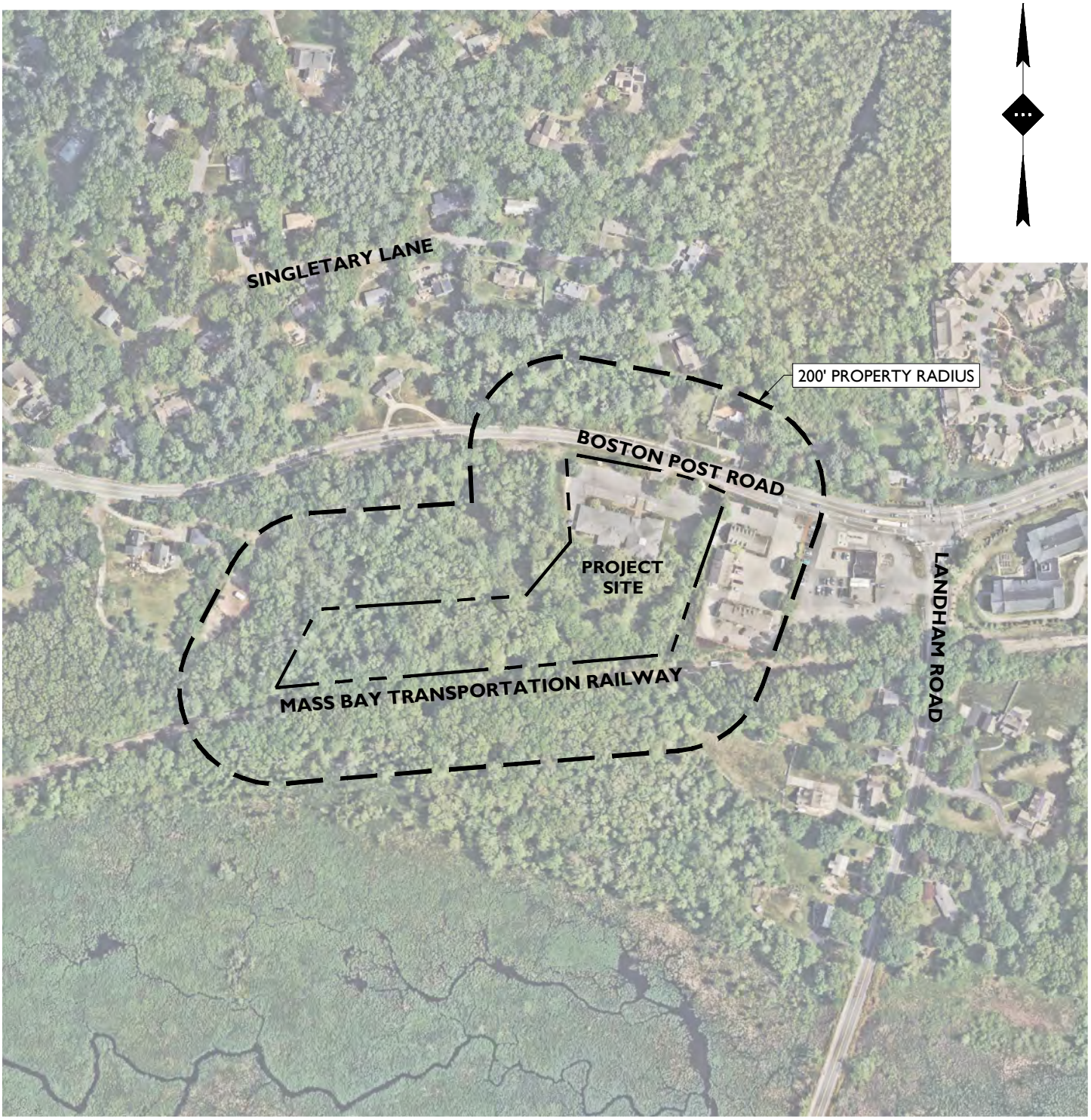
The person responsible for maintenance shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed. The responsible party should evaluate the effectiveness of the maintenance plan by comparing the maintenance plan with the actual performance of the maintenance. The items to evaluate may include, but not limited to:

- Whether the inspections have been performed as scheduled;
- Whether the preventive maintenance has been performed as scheduled;
- Whether the frequency of preventative maintenance needs to increase or decrease;
- Whether the planned resources were enough to perform the maintenance;
- Whether the repairs were completed on time;
- Whether the actual cost was consistent with the estimated cost;
- Whether the inspection, maintenance, and repair records have been kept.

If actual performance of those items has been deviated from the maintenance plan, the responsible party should find the causes and implement solutions in a revised maintenance plan. Should modifications to the Plan be deemed necessary to ensure longevity of the site systems, the changes should be noted within the enclosed Amendment Log in **APPENDIX E**.

APPENDIX A
PROJECT FIGURES

INVENTORY



AERIAL MAP

300' 0' 300' 600'

GRAPHIC SCALE IN FEET

1"= 300'

SOURCE: AERIAL MAP RETRIEVED FROM NEARMAP AUGUST 25, 2023

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	QC
CHECKED BY:	JK
DATE:	08/28/2023
SCALE:	1" = 300'
PROJECT ID:	BOS-230051

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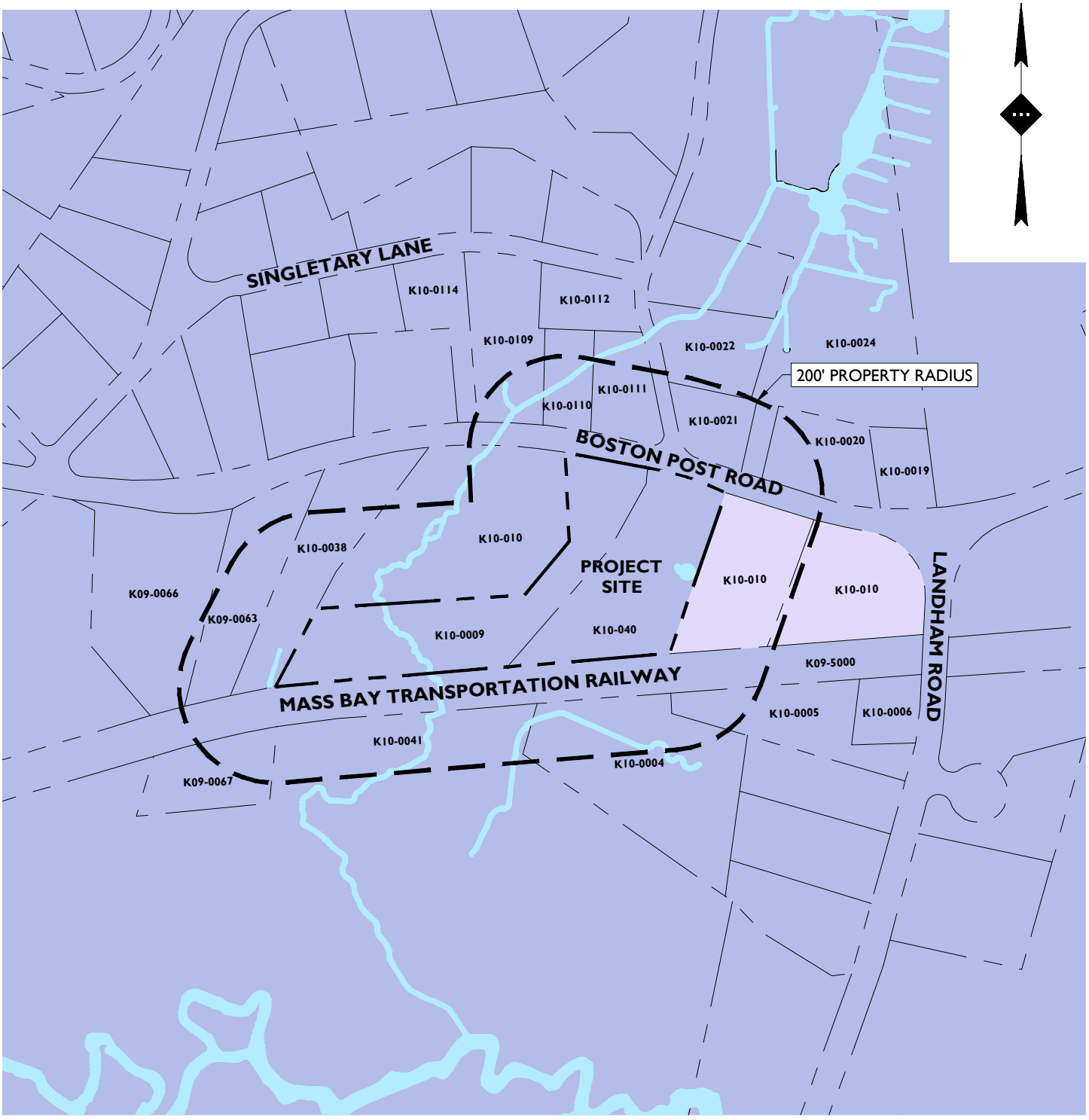

ZONING LEGEND

RES A - RESIDENTIAL A

BD - BUSINESS

WATERBODY

TAX & ZONING MAP

300' 0' 300' 600'

GRAPHIC SCALE IN FEET

1"= 300'

SOURCE: TOWN OF SUDBURY GIS MAPPING, RETRIEVED AUGUST 28, 2023

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

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225 BOSTON POST ROAD
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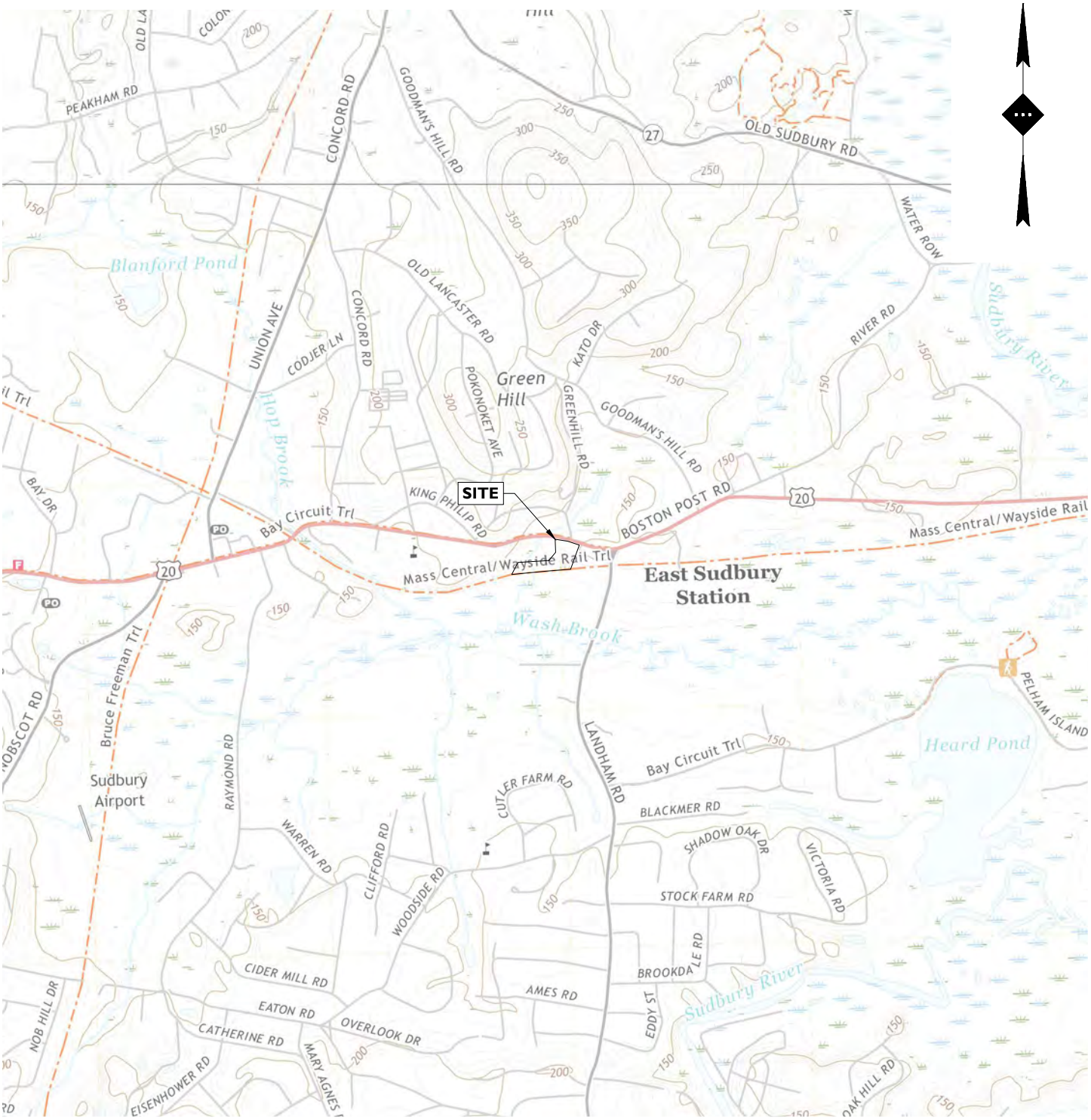

USGS QUADRANGLE MAP

2000' 0' 2000' 4000'

GRAPHIC SCALE IN FEET

1"= 2000'

SOURCE: USGS QUADRANGLE MAPS 7.5 SERIES MAYNARD & FRAMINGHAM, MASSACHUSETTS 2021

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225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

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DATE:	08/28/2023
SCALE:	1" = 2,000'
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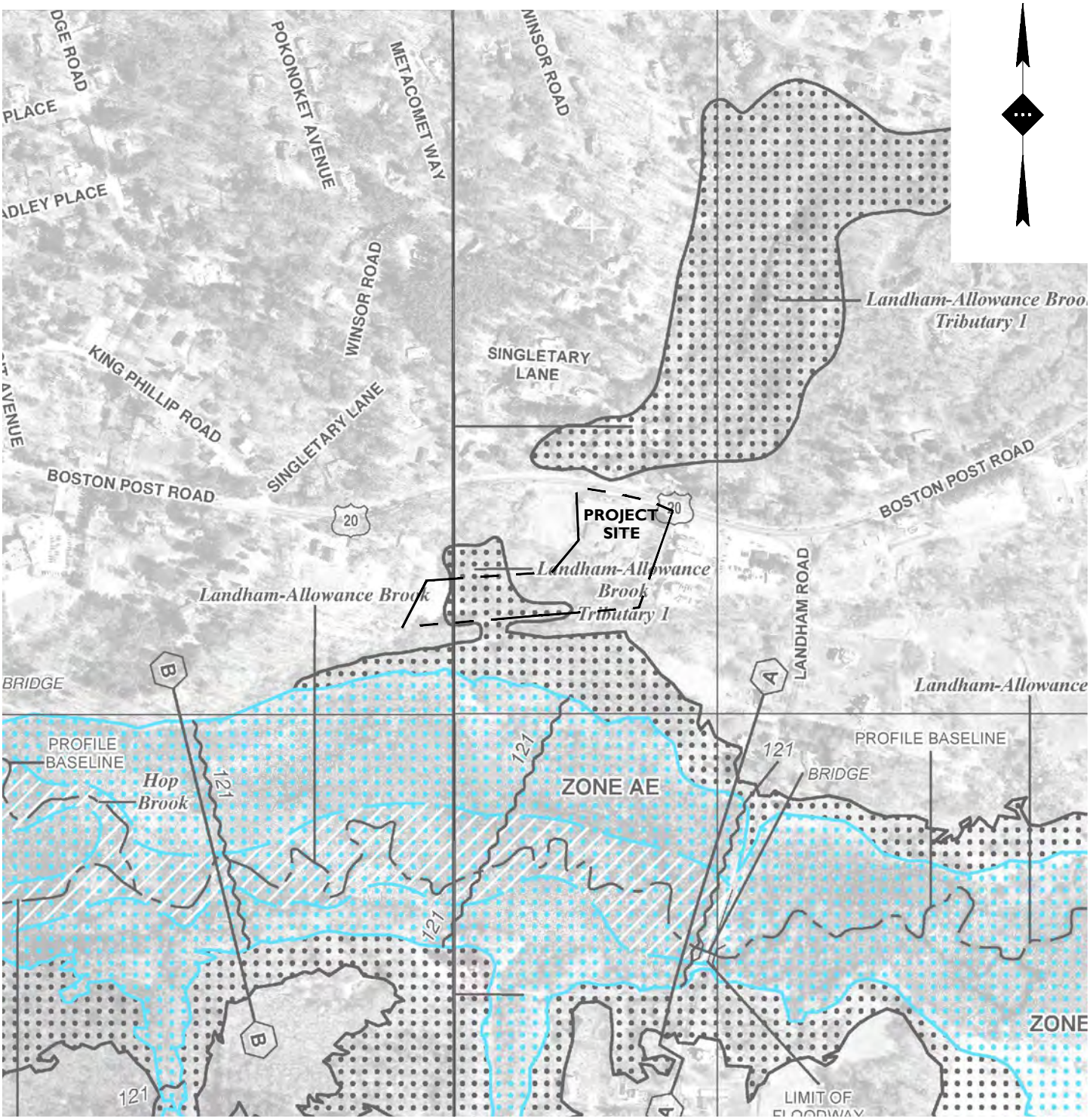

EFFECTIVE FEMA FLOOD INSURANCE RATE MAP

500' 0' 500' 1000'

GRAPHIC SCALE IN FEET

1"= 500'

SOURCE: FLOOD INSURANCE RATE MAP, MIDDLESEX COUNTY, MA, REVISED JULY 7, 2014

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	QC
CHECKED BY:	JK
DATE:	08/28/2023
SCALE:	1" = 500'
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LEGEND

ESTIMATED HABITATS OF RARE WILDLIFE

NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM MAP

500' 0' 500' 1000'

GRAPHIC SCALE IN FEET

1"= 500'

SOURCE: PRIORITY AND ESTIMATED HABITAT MAPS, NATURAL HERITAGE ATLAS, AUGUST 1, 2021, INTERACTIVE MAP VIEWER

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

DRAWN BY:	AB
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DATE:	03/14/2024
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PROJECT ID:	BOS-230051

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LAND USE AND ZONING

K10-0009 & K10-0040

SINGLE RESIDENTIAL (RES A-1)

PROPOSED USE

CHILD CARE FACILITY (*) — PERMITTED USE

ZONING REQUIREMENT	REQUIRED	EXISTING	PROPOSED
MINIMUM LOT AREA	40,000 SF	214,118 SF	NO CHANGE
MINIMUM LOT FRONTAGE	180 FT	364.8 FT	NO CHANGE
MAXIMUM BUILDING COVERAGE	40% (85,647 SF) (**)	5.03% (10,770 SF) (**)	NO CHANGE
MAXIMUM BUILDING HEIGHT	2.5 STORIES (35 FT)	1 STORY	NO CHANGE
MINIMUM FRONT YARD SETBACK	40 FT	103.8 FT	NO CHANGE
MINIMUM SIDE YARD SETBACK	20 FT	44.4 FT	NO CHANGE
MINIMUM REAR YARD SETBACK	30 FT	195.4 FT	NO CHANGE
MAXIMUM IMPERVIOUS COVERAGE	N/S	16.5% (35,400 SF)	14.6% (31,161 SF) (***)

(*) EXEMPT AND INSTITUTIONAL USES
(**) INCLUDING PRINCIPAL AND ACCESSORY BUILDINGS
(***) EXCLUDES 6,232 SF OF TURF SURFACE

OFF-STREET PARKING REQUIREMENTS

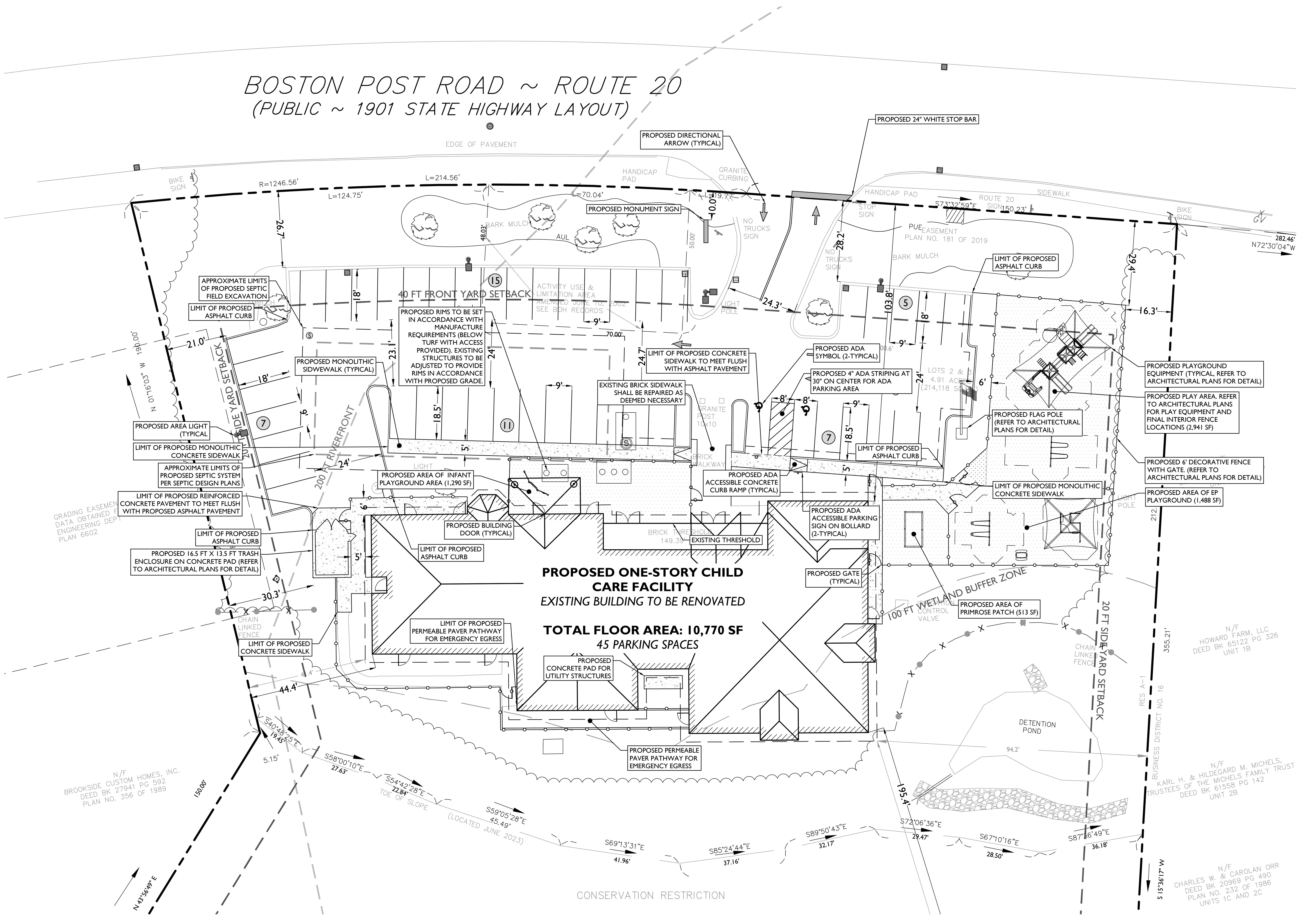
CODE SECTION	REQUIRED	PROPOSED
§ 3120	**REQUIRED PARKING:** 1 SPACE FOR EACH STAFF POSITION (22 STAFF) * (1 SPACE) = 22 SPACES 1 FOR SPACE EACH 5 PERSONS OF RATED CAPACITY OF THE LARGEST AUDITORIUM N/A - NO AUDITORIUM PROPOSED 1 SPACE FOR EACH STUDENT VEHICLE AT MAX CAPACITY (8 STUDENT DROP OFF VEHICLES) * (1 SPACE) = 9 SPACES **TOTAL: 22 + 9 = 31 SPACES**	45 SPACES
§ 3130	**DIMENSIONAL REGULATIONS 90 DEGREE PARKING:** WIDTH = 9 FT LENGTH = 18.5 FT WIDTH OF DRIVE AISLE = 24 FT	9 FT 18 FT (W) 23.1 FT (W)
§ 3142	**PARKING SETBACK:** SETBACK = 10 FT (DRIVE/WALKWAYS EXCLUDED)	21 FT

(W) WAIVER

SIGNAGE REQUIREMENTS

CODE SECTION	REQUIRED	PROPOSED
§ 3280	**RESIDENTIAL SIGNS:** MAXIMUM SIGNS: 1 SIGN MOUNTING OPTIONS: ATTACHED OR FREESTANDING MAXIMUM SIGN AREA: 10 SF MAXIMUM SIGN HEIGHT: 10 FT MAXIMUM SIGN CLEARANCE: 40% OF HEIGHT MINIMUM SIGN SETBACK: 10 FT	6 SIGNS (W) COMPLIES 54 SF (W) 8 FT N/A 10 FT

N/A NOT APPLICABLE



SYMBOL	DESCRIPTION
	PROPERTY LINE
	SETBACK LINE
	SAWCUT LINE
	PROPOSED CURB
	PROPOSED FLUSH OPENING
	PROPOSED SIGNS / BOLLARDS
	PROPOSED BUILDING
	PROPOSED CONCRETE
	PROPOSED AREA LIGHT
	PROPOSED DECORATIVE FENCE
	PROPOSED BUILDING DOORS

SITE IMPROVEMENTS NOTES

1. EXISTING LIGHT POLES AND EXTERIOR LIGHTS TO BE REUTILIZED. CONTRACTOR SHALL INSPECT AND REPAIR AND REPLACE LIGHT FIXTURE, LIGHT POLES, AND LIGHT BASES AS DEEMED NECESSARY.
2. PARKING LOT SHALL BE MILLED AND OVERLAID TO ENSURE POSITIVE DRAINAGE TO ALL STRUCTURES. FINAL LIMITS OF FULL DEPTH REPAIR SHALL BE COORDINATED WITH APPLICANT PRIOR TO CONSTRUCTION.

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY AND FAMILIARIZE THEMSELVES WITH THE EXISTING SITE CONDITIONS AND THE PROPOSED SCOPE OF WORK (INCLUDING DIMENSIONS, LAYOUT, ETC.) PRIOR TO INITIATING THE IMPROVEMENTS IDENTIFIED WITHIN THESE DOCUMENTS. SHOULD ANY DISCREPANCY BE FOUND BETWEEN THE EXISTING SITE CONDITIONS AND THE PROPOSED WORK THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. PRIOR TO THE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND ENSURE THAT ALL REQUIRED APPROVALS HAVE BEEN OBTAINED PRIOR TO THE START OF CONSTRUCTION. COPIES OF ALL REQUIRED PERMITS AND APPROVALS SHALL BE KEPT ON SITE AT ALL TIMES DURING CONSTRUCTION.
3. ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED BY LAW, INDEMNIFY AND HOLD HARMLESS STONEFIELD ENGINEERING & DESIGN, LLC. AND IT'S SUB-CONSULTANTS FROM AND AGAINST ANY DAMAGES AND LIABILITIES INCLUDING ATTORNEY'S FEES ARISING OUT OF CLAIMS BY EMPLOYEES OF THE CONTRACTOR IN ADDITION TO CLAIMS CONNECTED TO THE PROJECT AS A RESULT OF NOT CARRYING THE PROPER INSURANCE FOR WORKERS COMPENSATION, LIABILITY INSURANCE, AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE.
4. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PROPOSED IMPROVEMENTS IDENTIFIED WITHIN THIS PLAN SET UNLESS APPROVAL IS PROVIDED IN WRITING BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE THE MEANS AND METHODS OF CONSTRUCTION.
6. THE CONTRACTOR SHALL NOT PERFORM ANY WORK OR CAUSE DISTURBANCE ON A PRIVATE PROPERTY NOT CONTROLLED BY THE PERSON OR ENTITY WHO HAS AUTHORIZED THE WORK WITHOUT PRIOR WRITTEN CONSENT FROM THE OWNER OF THE PRIVATE PROPERTY.
7. THE CONTRACTOR IS RESPONSIBLE TO RESTORE ANY DAMAGED OR UNDERMINED STRUCTURE OR SITE FEATURE THAT IS IDENTIFIED TO REMAIN ON THE PLAN SET. ALL REPAIRS SHALL USE NEW MATERIALS TO RESTORE THE FEATURE TO ITS EXISTING CONDITION AT THE CONTRACTORS EXPENSE.
8. CONTRACTOR IS RESPONSIBLE TO PROVIDE THE APPROPRIATE SHOP DRAWINGS, PRODUCT DATA, AND OTHER REQUIRED SUBMITTALS FOR REVIEW. STONEFIELD ENGINEERING & DESIGN, LLC. WILL REVIEW THE SUBMITTALS IN ACCORDANCE WITH THE DESIGN INTENT AS REFLECTED WITHIN THE PLAN SET.
9. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL IN ACCORDANCE WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
10. THE CONTRACTOR IS REQUIRED TO PERFORM ALL WORK IN THE PUBLIC RIGHT-OF-WAY IN ACCORDANCE WITH THE APPROPRIATE GOVERNING AUTHORITY AND SHALL BE RESPONSIBLE FOR THE PROCUREMENT OF STREET OPENING PERMITS.
11. THE CONTRACTOR IS REQUIRED TO RETAIN AN OSHA CERTIFIED SAFETY INSPECTOR TO BE PRESENT ON SITE AT ALL TIMES DURING CONSTRUCTION & DEMOLITION ACTIVITIES.
12. SHOULD AN EMPLOYEE OF STONEFIELD ENGINEERING & DESIGN, LLC. BE PRESENT ON SITE AT ANY TIME DURING CONSTRUCTION, IT DOES NOT RELIEVE THE CONTRACTOR OF ANY OF THE RESPONSIBILITIES AND REQUIREMENTS LISTED IN THE NOTES WITHIN THIS PLAN SET.

20' 0' 20' 40'
GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

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Phone 617.203.2076

LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE: SITE PLAN

DRAWING: C-4

DRAINAGE AND UTILITY NOTES

1. THE CONTRACTOR IS REQUIRED TO CALL THE APPROPRIATE AUTHORITY FOR NOTICE OF CONSTRUCTION/EXCAVATION AND UTILITY MARK OUT PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH STATE LAW. CONTRACTOR IS REQUIRED TO CONFIRM THE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES IN THE FIELD. SHOULD A DISCREPANCY EXIST BETWEEN THE FIELD LOCATION OF A UTILITY AND THE LOCATION SHOWN ON THE PLAN SET OR SURVEY, THE CONTRACTOR SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IMMEDIATELY IN WRITING.
2. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN IN OPERATION ALL UTILITIES NOT DESIGNATED TO BE REMOVED.
3. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO ANY EXISTING UTILITY IDENTIFIED TO REMAIN WITHIN THE LIMITS OF THE PROPOSED WORK DURING CONSTRUCTION.
4. A MINIMUM HORIZONTAL SEPARATION OF 10 FEET IS REQUIRED BETWEEN ANY SANITARY SEWER SERVICE AND ANY WATER LINES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
5. ALL WATER LINES SHALL BE VERTICALLY SEPARATED ABOVE SANITARY SEWER LINES BY A MINIMUM DISTANCE OF 18 INCHES. IF THIS SEPARATION CANNOT BE PROVIDED, A CONCRETE ENCASEMENT SHALL BE UTILIZED FOR THE SANITARY SEWER SERVICE AS APPROVED BY STONEFIELD ENGINEERING & DESIGN, LLC.
6. THE CONTRACTOR TO PERFORM A TEST PIT PRIOR TO CONSTRUCTION (RECOMMEND 30 DAYS PRIOR) AT LOCATIONS OF EXISTING UTILITY CROSSINGS FOR WATER AND SANITARY SEWER CONNECTION IMPROVEMENTS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IN WRITING.
7. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING GAS, ELECTRIC AND TELECOMMUNICATION CONNECTIONS WITH THE APPROPRIATE GOVERNING AUTHORITY.
8. CONTRACTOR SHALL START CONSTRUCTION OF ANY GRAVITY SEWER AT THE LOWEST INVERT AND WORK UP-GRADIENT.
9. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD SET OF PLANS REFLECTING THE LOCATION OF EXISTING UTILITIES THAT HAVE BEEN CAPPED, ABANDONED, OR RELOCATED BASED ON THE DEMOLITION/REMOVAL ACTIVITIES REQUIRED IN THIS PLAN SET. THIS DOCUMENT SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.
10. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN A RECORD OF THE AS-BUILT LOCATIONS OF ALL PROPOSED UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR SHALL NOTE ANY DISCREPANCIES BETWEEN THE AS-BUILT LOCATIONS AND THE LOCATIONS DEPICTED WITHIN THE PLAN SET. THIS RECORD SHALL BE PROVIDED TO THE OWNER FOLLOWING COMPLETION OF WORK.

EXCAVATION, SOIL PREPARATION, AND DEWATERING NOTES

1. THE CONTRACTOR IS REQUIRED TO REVIEW THE REFERENCED GEOTECHNICAL DOCUMENTS PRIOR TO CONSTRUCTION, THESE DOCUMENTS SHALL BE CONSIDERED A PART OF THE PLAN SET.
2. THE CONTRACTOR IS REQUIRED TO PREPARE SUBGRADE SOILS BENEATH ALL PROPOSED IMPROVEMENTS AND BACKFILL ALL EXCAVATIONS IN ACCORDANCE WITH RECOMMENDATIONS BY THE GEOTECHNICAL ENGINEER OF RECORD.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SHORING FOR ALL EXCAVATIONS AS REQUIRED. CONTRACTOR SHALL HAVE THE SHORING DESIGN PREPARED BY A QUALIFIED PROFESSIONAL. SHORING DESIGNS SHALL BE SUBMITTED TO STONEFIELD ENGINEERING & DESIGN, LLC. AND THE OWNER PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL OPEN EXCAVATIONS ARE PERFORMED AND PROTECTED IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS.
5. THE CONTRACTOR IS RESPONSIBLE FOR ANY DEWATERING DESIGN AND OPERATIONS, AS REQUIRED, TO CONSTRUCT THE PROPOSED IMPROVEMENTS. THE CONTRACTOR SHALL OBTAIN ANY REQUIRED PERMITS FOR DEWATERING OPERATIONS AND GROUNDWATER DISPOSAL.

EXCAVATION & UTILITY VERIFICATION NOTE:

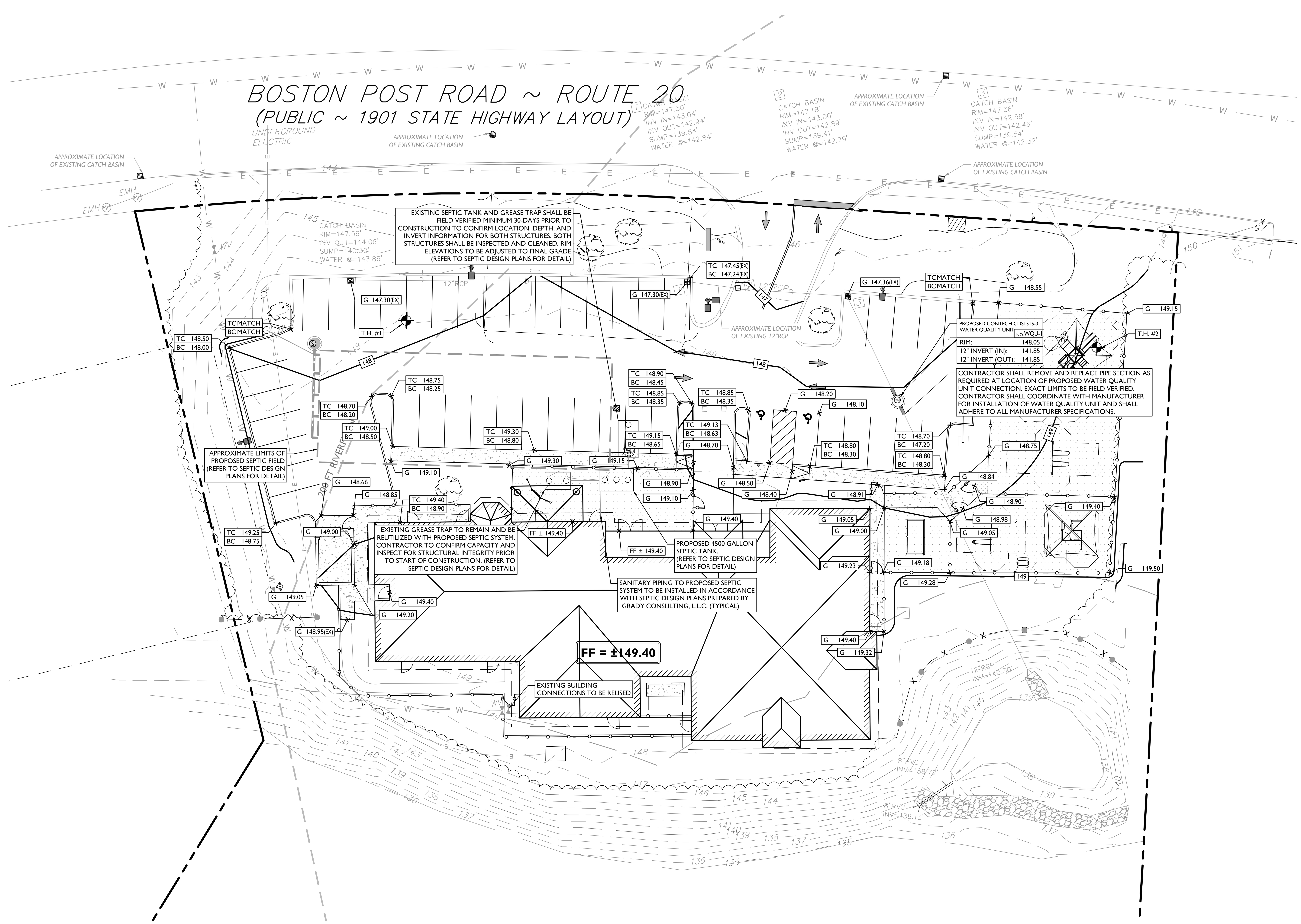
PRIOR TO THE START OF CONSTRUCTION (RECOMMENDED 30 DAYS PRIOR) THE CONTRACTOR SHALL PERFORM EXPLORATORY TEST PITS AT LOCATIONS OF UTILITY / DRAINAGE CROSSINGS OR CONNECTIONS WITH EXISTING UTILITY OR STORMWATER INFRASTRUCTURE. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ANY NECESSARY ROAD OPENING PERMITS TO PERFORM SAID EXPLORATORY WORK. SHOULD A CONFLICT BE DISCOVERED WITH THE INFORMATION CONTAINED WITHIN THESE PLANS THE CONTRACTOR SHALL IMMEDIATELY NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC IN WRITING.

SANITARY / STORMWATER CONSTRUCTION NOTE:

THE CONTRACTOR SHALL START CONSTRUCTION OF ALL GRAVITY SANITARY AND STORMWATER INFRASTRUCTURE AT THE DOWNSTREAM CONNECTION POINT (E.G. LOWEST INVERT) AND WORK UP-GRADIENT.

SEPTIC INSTALLATION NOTE:

PROPOSED SEPTIC SYSTEM AND ASSOCIATED COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED SEPTIC DESIGN PLAN PREPARED BY GRADY CONSULTING, LLC. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION AND DEPTH OF EXISTING SANITARY INFRASTRUCTURE THAT IS TO REMAIN AND BE REUTILIZED, AND CONFIRM FEASIBILITY OF REUSE. CONTRACTOR TO INSPECT FOR STRUCTURAL INTEGRITY AND CONFIRM CAPACITY OF THE SYSTEMS REMAINING. SHOULD THE SYSTEMS BE DEEMED INFEASIBLE FOR REUSE, CONTRACTOR SHALL NOTIFY THE SEPTIC DESIGN ENGINEER IN WRITING AS SOON AS POSSIBLE.



SYMBOL	DESCRIPTION
	PROPERTY LINE
100	PROPOSED GRADING CONTOUR
RIDGELINE	PROPOSED GRADING RIDGELINE
	PROPOSED DIRECTION OF DRAINAGE FLOW
G 100.00	PROPOSED GRADE SPOT SHOT
TC 100.50 / BC 100.00	PROPOSED TOP OF CURB / BOTTOM OF CURB SPOT SHOT
FF 100.00	PROPOSED FINISHED FLOOR SPOT SHOT
DC 100.12 / BC 100.00	PROPOSED DEPRESSED CURB / BOTTOM OF CURB SPOT SHOT
	PROPOSED STORMWATER STRUCTURES
	PROPOSED STORMWATER PIPING
SAN	PROPOSED SANITARY LATERAL
S	PROPOSED SANITARY STRUCTURES

GRADING NOTES

1. ALL SOIL AND MATERIAL REMOVED FROM THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. ANY GROUNDWATER DE-WATERING PRACTICES SHALL BE PERFORMED UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS FOR THE DISCHARGE OF DE-WATERED GROUNDWATER. ALL SOIL IMPORTED TO THE SITE SHALL BE CERTIFIED CLEAN FILL. CONTRACTOR SHALL MAINTAIN RECORDS OF ALL FILL MATERIALS BROUGHT TO THE SITE.
2. THE CONTRACTOR IS REQUIRED TO PROVIDE TEMPORARY AND/OR PERMANENT SHORING WHERE REQUIRED DURING EXCAVATION ACTIVITIES, INCLUDING BUT NOT LIMITED TO UTILITY TRENCHES, TO ENSURE THE STRUCTURAL INTEGRITY OF NEARBY STRUCTURES AND STABILITY OF THE SURROUNDING SOILS.
3. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 4 INCHES TO 7 INCHES ABOVE EXISTING GRADES UNLESS OTHERWISE NOTED. THE CONTRACTOR WILL SUPPLY ALL STAKEOUT CURB GRADE SHEETS TO STONEFIELD ENGINEERING & DESIGN, LLC. FOR REVIEW AND APPROVAL PRIOR TO POURING CURBS.
4. THE CONTRACTOR IS RESPONSIBLE TO SET ALL PROPOSED UTILITY COVERS AND RESET ALL EXISTING UTILITY COVERS WITHIN THE PROJECT LIMITS TO PROPOSED GRADE IN ACCORDANCE WITH ANY APPLICABLE MUNICIPAL, COUNTY, STATE AND/OR UTILITY AUTHORITY REGULATIONS.
5. MINIMUM SLOPE REQUIREMENTS TO PREVENT PONDING SHALL BE AS FOLLOWS:
   - CURB GUTTER: 0.50%
   - CONCRETE SURFACES: 1.00%
   - ASPHALT SURFACES: 1.00%
6. A MINIMUM SLOPE OF 1.00% SHALL BE PROVIDED AWAY FROM ALL BUILDINGS. THE CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE FROM THE BUILDING IS ACHIEVED AND SHALL NOTIFY STONEFIELD ENGINEERING & DESIGN, LLC. IF THIS CONDITION CANNOT BE MET.
7. FOR PROJECTS WHERE BASEMENTS ARE PROPOSED, THE DEVELOPER IS RESPONSIBLE TO DETERMINE THE DEPTH TO GROUNDWATER AT THE LOCATION OF THE PROPOSED STRUCTURE. IF GROUNDWATER IS ENCOUNTERED WITHIN THE BASEMENT AREA, SPECIAL CONSTRUCTION METHODS SHALL BE UTILIZED AND REVIEWED/APPROVED BY THE CONSTRUCTION CODE OFFICIAL. IF SUMP PUMPS ARE UTILIZED, ALL DISCHARGES SHALL BE CONNECTED DIRECTLY TO THE PUBLIC STORM SEWER SYSTEM WITH APPROVAL FROM THE GOVERNING STORM SEWER SYSTEM AUTHORITY.

ADA NOTES

1. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION WITHIN THE ADA PARKING SPACES AND ACCESS AISLES.
2. THE CONTRACTOR SHALL PROVIDE COMPLIANT SIGNAGE AT ALL ADA PARKING AREAS IN ACCORDANCE WITH STATE GUIDELINES.
3. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 5.00% RUNNING SLOPE AND A MAXIMUM OF 2.00% CROSS SLOPE ALONG WALKWAYS WITHIN THE ACCESSIBLE PATH OF TRAVEL (SEE THE SITE PLAN FOR THE LOCATION OF THE ACCESSIBLE PATH). THE CONTRACTOR IS RESPONSIBLE TO ENSURE THE ACCESSIBLE PATH OF TRAVEL IS 36 INCHES WIDE OR GREATER UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
4. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 2.00% SLOPE IN ANY DIRECTION AT ALL LANDINGS. LANDINGS INCLUDE, BUT ARE NOT LIMITED TO, THE TOP AND BOTTOM OF AN ACCESSIBLE RAMP, AT ACCESSIBLE BUILDING ENTRANCES, AT AN AREA IN FRONT OF A WALK-UP ATM, AND AT TURNING SPACES ALONG THE ACCESSIBLE PATH OF TRAVEL. THE LANDING AREA SHALL HAVE A MINIMUM CLEAR AREA OF 60 INCHES BY 60 INCHES UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
5. THE CONTRACTOR SHALL MAINTAIN A MAXIMUM 8.33% RUNNING SLOPE AND A MAXIMUM 2.00% CROSS SLOPE ON ANY CURB RAMPS ALONG THE ACCESSIBLE PATH OF TRAVEL. WHERE PROVIDED, CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 10.00% IF A LANDING AREA IS PROVIDED AT THE TOP OF THE RAMP. FOR ALTERATIONS, A CURB RAMP FLARES SHALL NOT HAVE A SLOPE GREATER THAN 8.33% IF A LANDING AREA IS NOT PROVIDED AT THE TOP OF THE RAMP. CURBS RAMPS SHALL NOT RISE MORE THAN 6 INCHES IN ELEVATION WITHOUT A HANDRAIL. THE CLEAR WIDTH OF A CURB RAMP SHALL BE NO LESS THAN 36 INCHES WIDE.
6. ACCESSIBLE RAMPS WITH A RISE GREATER THAN 6 INCHES SHALL CONTAIN COMPLIANT HANDRAILS ON BOTH SIDES OF THE RAMP AND SHALL NOT RISE MORE THAN 30" IN ELEVATION WITHOUT A LANDING AREA IN BETWEEN RAMP RUNS. LANDING AREAS SHALL ALSO BE PROVIDED AT THE TOP AND BOTTOM OF THE RAMP.
7. A SLIP RESISTANT SURFACE SHALL BE CONSTRUCTED ALONG THE ACCESSIBLE PATH AND WITHIN ADA PARKING AREAS.
8. THE CONTRACTOR SHALL ENSURE A MAXIMUM OF ¼ INCHES VERTICAL CHANGE IN LEVEL ALONG THE ACCESSIBLE PATH. WHERE A CHANGE IN LEVEL BETWEEN ¼ INCHES AND ½ INCHES EXISTS, CONTRACTOR SHALL ENSURE THAT THE TOP ¼ INCH CHANGE IN LEVEL IS BEVELED WITH A SLOPE NOT STEEPER THAN 1 UNIT VERTICAL AND 2 UNITS HORIZONTAL (2:1 SLOPE).
9. THE CONTRACTOR SHALL ENSURE THAT ANY OPENINGS (GAPS OR HORIZONTAL SEPARATION) ALONG THE ACCESSIBLE PATH SHALL NOT ALLOW PASSAGE OF A SPHERE GREATER THAN ½ INCH.

GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
235 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE: GRADING, DRAINAGE & UTILITY PLAN

DRAWING: C-5

STABILIZATION SPECIFICATIONS:

1.A. TEMPORARY SEEDING AND MULCHING:
GROUND LIMESTONE - APPLIED UNIFORMLY ACCORDING TO SOIL TEST RECOMMENDATIONS.
FERTILIZER - APPLY 11LBS./1,000 SF OF 10-20-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN (UNLESS A SOIL TEST INDICATES OTHERWISE) WORKED INTO THE SOIL A MINIMUM OF 4".
SEED - PERENNIAL RYEGRASS 100 LBS./ACRE (2.3 LBS./1,000 SF) OR OTHER APPROVED SEEDS; PLANT BETWEEN MARCH 1 AND MAY 15 OR BETWEEN AUGUST 15 AND OCTOBER 1.
MULCH - UNROTTED STRAW OR HAY AT A RATE OF 70 TO 90 LBS./1,000 SF APPLIED TO ACHIEVE 95% SOIL SURFACE COVERAGE. MULCH SHALL BE ANCHORED BY APPROVED METHODS (I.E. PEG AND TWINE, MULCH NETTING, OR LIQUID MULCH BINDER).

1.B. PERMANENT SEEDING AND MULCHING:
TOPSOIL - UNIFORM APPLICATION TO A DEPTH OF 5" (UNSETTLED).
GROUND LIMESTONE - APPLIED UNIFORMLY ACCORDING TO SOIL TEST RECOMMENDATIONS.
FERTILIZER - APPLY 11 LBS./1,000 SF OF 10-10-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN (UNLESS A SOIL TEST INDICATES OTHERWISE) WORKED INTO THE SOIL A MINIMUM OF 4".
SEED - TURF TYPE TALL FESCUE (BLEND OF 3 CULTIVARS) 350 LBS./ACRE (8 LBS./1,000 SF) OR OTHER APPROVED SEEDS; PLANT BETWEEN MARCH 1 AND OCTOBER 1 (SUMMER SEEDINGS REQUIRE IRRIGATION)
MULCH - UNROTTED STRAW OR HAY AT A RATE OF 70 TO 90 LBS./1,000 SF APPLIED TO ACHIEVE 95% SOIL SURFACE COVERAGE. MULCH SHALL BE ANCHORED BY APPROVED METHODS (I.E. PEG AND TWINE, MULCH NETTING, OR LIQUID MULCH BINDER).

SEQUENCE OF CONSTRUCTION

1. INSTALL CONSTRUCTION ENTRANCE, SILT FENCING, TREE PROTECTION, INLET FILTERS AND OTHER APPLICABLE EROSION CONTROL MEASURES (2 DAYS).
2. DEMOLISH EXISTING PAVEMENT AND GRAVEL (7 DAYS).
3. ROUGH GRADING AND TEMPORARY SEEDING (21 DAYS).
4. BUILDING RENOVATION AND SITE IMPROVEMENTS (120 DAYS).
5. LANDSCAPING IMPROVEMENTS AND FINAL SEEDING (7 DAYS).
6. REMOVE SOIL EROSION MEASURES (1 DAY).

TOTAL ESTIMATED TIME = 8 MONTHS

NOTE: TIME DURATIONS ARE APPROXIMATE AND ARE INTENDED TO ACT AS A GENERAL GUILE TO THE CONSTRUCTION TIMELINE. ALL DURATIONS ARE SUBJECT TO CHANGE BY CONTRACTOR. CONTRACTOR SHALL SUBMIT CONSTRUCTION SCHEDULE TO TOWNSHIP AND ENGINEER. CONTRACTOR SHALL PHASE CONSTRUCTION ACCORDINGLY IF REQUIRED.

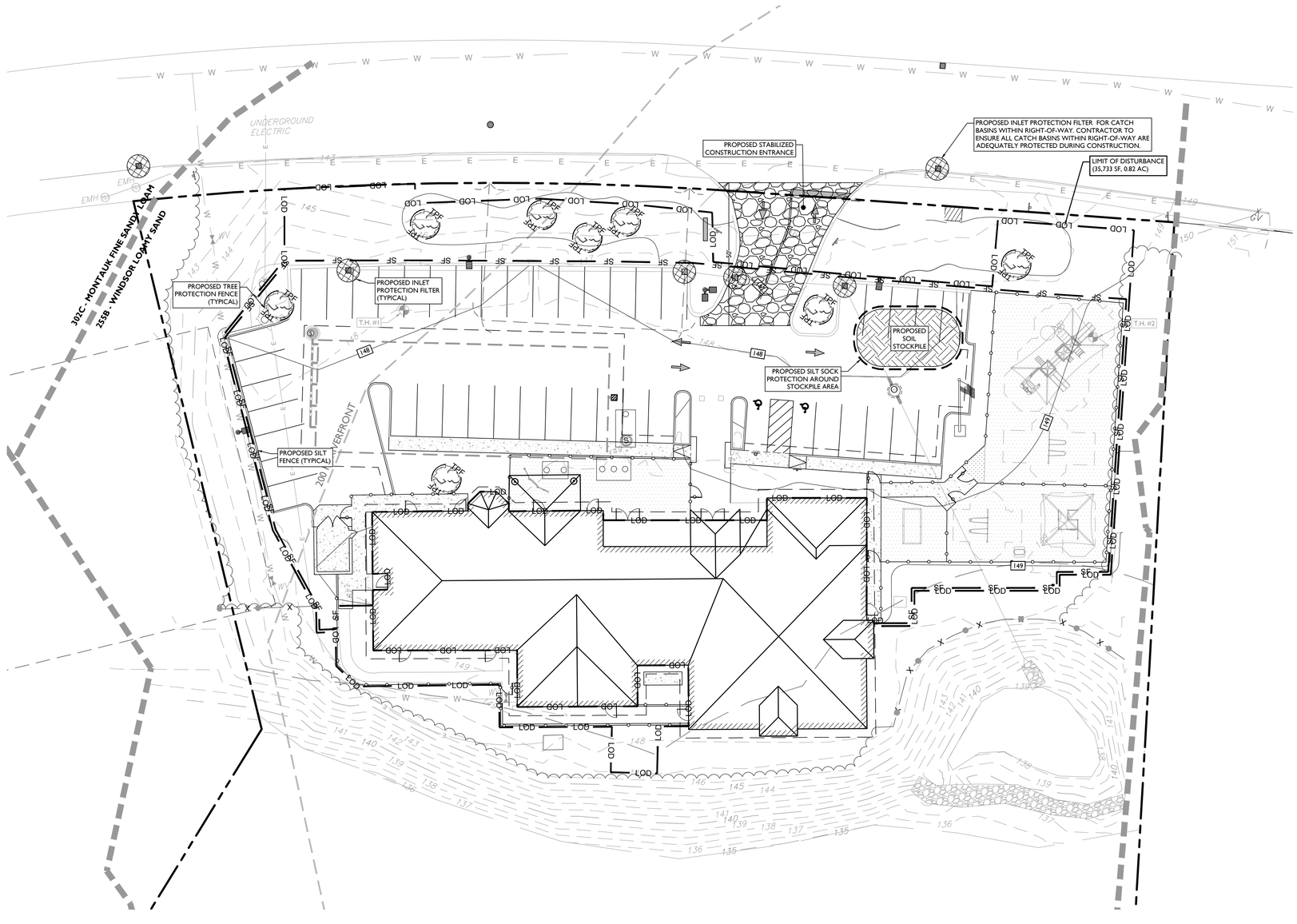
ALL EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED PRIOR TO THE BEGINNING OF ANY DEMOLITION ACTIVITIES OR ANY OTHER ON-SITE WORK. CONTRACT TO ENSURE, AT MINIMUM, ALL CONTROLS ARE INSTALLED PER APPROVED PLANS. CONTROL MEASURES SHALL BE INSPECTED FREQUENTLY TO ENSURE CONTINUED FUNCTIONALITY THROUGHOUT THE FULL COURSE OF CONSTRUCTION.

DUST CONTROL NOTES

1. MULCHES - SEE STANDARD OF STABILIZATION WITH MULCHES ONLY, PG. 5-1
2. VEGETATIVE COVER - SEE STANDARD FOR: TEMPORARY VEGETATIVE COVER, PG. 7-1, PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION PG. 4-1 AND PERMANENT STABILIZATION WITH SOD, PG. 6-1
3. SPRAY-ON ADHESIVES - ON MINERAL SOILS (NOT EFFECTIVE ON MUCK SOILS). KEEP TRAFFIC OFF THESE AREAS.
4. TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART AND SPRING-TOOTHED HARROWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.
5. SPRINKLING - SITE IS SPRINKLED UNTIL THE SURFACE IS WET.
6. BARRIERS - SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.
7. CALCIUM CHLORIDE - SHALL BE IN THE FORM OF LOOSE, DRY GRANULES OR FLAKES FINE ENOUGH TO FEED THROUGH COMMONLY USED SPREADERS AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. IF USED ON STEEPER SLOPES, THEN USE OTHER PRACTICES TO PREVENT WASHING INTO STREAMS OR ACCUMULATION AROUND PLANTS.
8. STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

SOIL CHARACTERISTICS CHART

TYPE OF SOIL	52A- FREETOWN MUCK	255B-WINDSOR LOAMY SAND	302C-MONTAUK FINE SANDY LOAM
PERCENT OF SITE COVERAGE	35.70%	59.50%	4.70%
HYDROLOGIC SOIL GROUP	B/D	A	C
DEPTH TO RESTRICTIVE LAYER	>80 INCHES	>80 INCHES	20 - 43 INCHES
SOIL PERMEABILITY	0.14 - 14.17 INCHES/HOUR	1.42 - 99.90 INCHES/HOUR	0.00 - 1.42 INCHES/HOUR
DEPTH TO WATER TABLE	0 - 6 INCHES	>80 INCHES	18 - 37 INCHES



SYMBOL	DESCRIPTION
	PROPERTY BOUNDARY
	ADJACENT PROPERTY BOUNDARY
LOD	PROPOSED LIMIT OF DISTURBANCE
SF	PROPOSED SILT FENCE
	PROPOSED SILT SOCK
TPF	PROPOSED TREE PROTECTION FENCE
	PROPOSED STOCKPILE & EQUIPMENT STORAGE
	PROPOSED STABILIZED CONSTRUCTION ENTRANCE
	PROPOSED INLET PROTECTION FILTER

Know what's **below**
Call before you dig.

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
2. THE CONTRACTOR IS RESPONSIBLE FOR DUST CONTROL IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL AIR QUALITY STANDARDS.
3. THE CONTRACTOR IS RESPONSIBLE TO INSPECT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES WEEKLY AND AFTER A PRECIPITATION EVENT GREATER THAN 1 INCH. THE CONTRACTOR SHALL MAINTAIN AN INSPECTION LOG ON SITE AND DOCUMENT CORRECTIVE ACTION TAKEN THROUGHOUT THE COURSE OF CONSTRUCTION AS REQUIRED.

20' 0' 20' 40'
GRAPHIC SCALE IN FEET
1" = 20'

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LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE:
SOIL EROSION AND SEDIMENT CONTROL PLAN

DRAWING:
C-7

Z:\BOS\TOWN\BOS\2023\BOS-230051 ADA ARCHITECTS - 225 BOSTON POST ROAD, SUDBURY, MA\CAD\PLOT\PLOT SET\SEC.DWG

LANDSCAPING AND BUFFER REQUIREMENTS

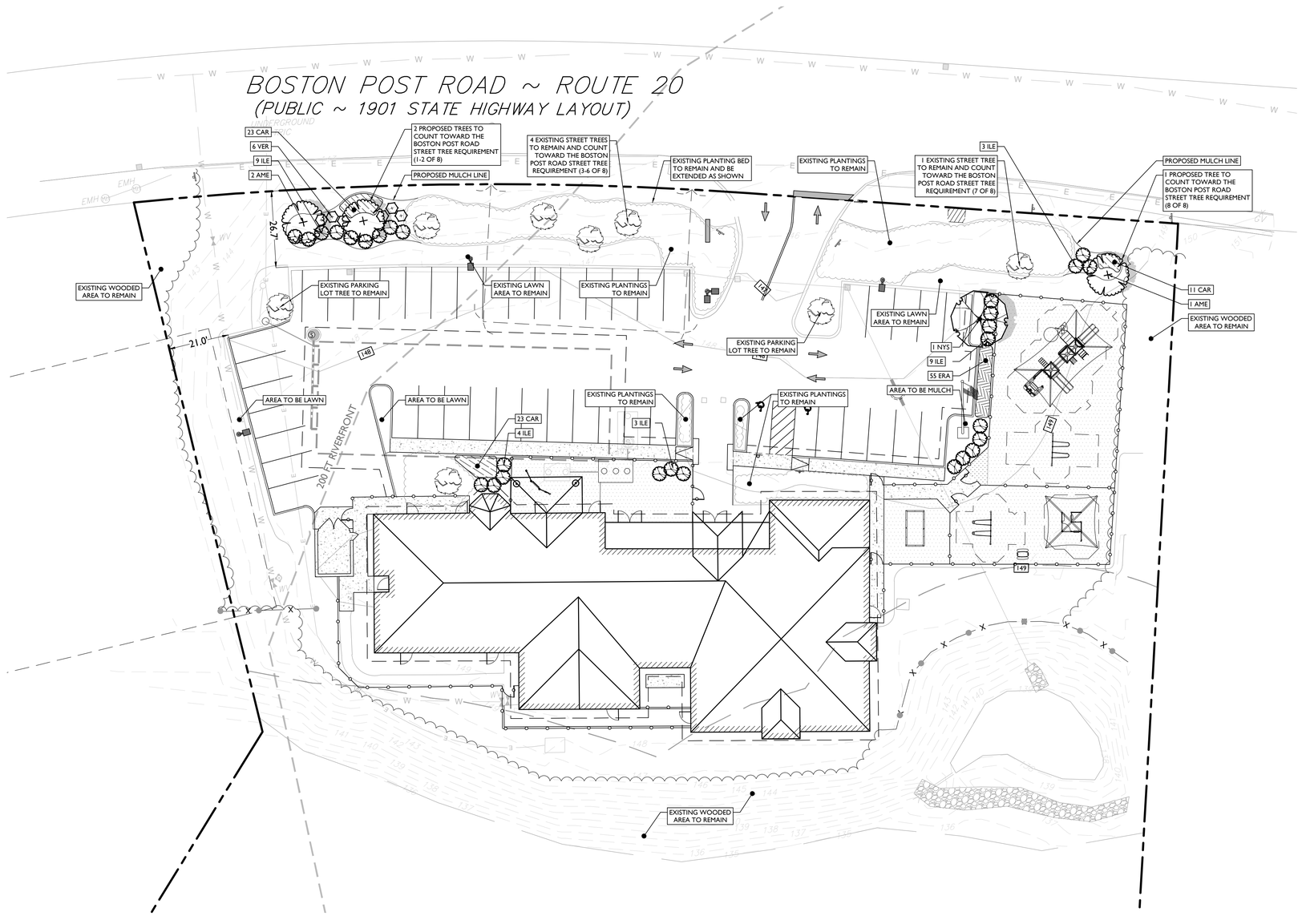
CODE SECTION	REQUIRED	PROPOSED
§ 3532.	LANDSCAPE REQUIREMENTS MINIMUM 30% OF LOT SHALL BE OPEN SPACE LOT AREA: 214,118 SF (214,118 SF) * (0.30) = 64,235 SF	 174,516 SF (81%)
§ 3541.	PARKING LOT LANDSCAPING 150 SF LANDSCAPING FOR EVERY 1,000 OF PARKING PARKING LOT AREA: 15,847 SF (15,847 SF) * (150 SF / 1,000 SF) = 2,377 SF PLANTED AREAS SHALL CONTAIN TREES AND OTHER PLANTINGS	 3,459 SF COMPLIES
§ 3542.	PARKING AND REFUSE AREAS SHALL BE SCREENED FROM VIEW OF R.O.W. AND ADJACENT PROPERTIES WITH PLANTED AREAS, BERMS, OR FENCES	COMPLIES
§ 3543.	BUFFER STRIP REQUIRED BETWEEN PARKING LOT AND SIDE/REAR LOT LINES MINIMUM BUFFER WIDTH: 25 FT	PROVIDED 21.0 FT (EN)
§ 3550.	STREET FRONTAGE LANDSCAPING LANDSCAPE BUFFER WIDTH: 20 FT BUFFER SHALL BE PLANTED WITH GRASS, SHRUBS, AND TREES 1 TREES FOR EVERY 40 LF OF FRONTAGE BOSTON POST ROAD: 322 FT (322 FT) * (1 TREE / 40 FT FRONTAGE) = 8 TREES	 26.7 FT COMPLIES 5 EXISTING TREES 3 TREES PROPOSED

(EN) EXISTING NONCONFORMITY

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	REMARKS
DECIDUOUS TREES							
	NYS	1	NYSSA SYLVATICA	TUPELO	2" - 2.5" CAL	B&B	NATIVE, SALT TOLERANT
ORNAMENTAL TREES							
	AME	3	AMELANCHIER CANADENSIS	CANADIAN SERVICEBERRY	2" - 2.5" CAL	B&B	SINGLE STEM; NATIVE, DROUGHT TOLERANT, SALT TOLERANT
SHRUBS							
	VER	6	ILEX VERTICILLATA 'RED SPRITE'	RED SPRITE WINTERBERRY	30" - 36"	POT	NATIVE, SALT TOLERANT
EVERGREEN SHRUBS							
	ILE	28	ILEX GLABRA	INKBERRY HOLLY	30" - 36"	B&B	NATIVE, DROUGHT TOLERANT, SALT TOLERANT
PERENNIALS AND GRASSES							
	CAR	57	CAREX PENSYLVANICA	PENNSYLVANIA SEDGE	24" O.C.	1 GAL. POT	NATIVE, DROUGHT TOLERANT
	ERA	55	ERAGROSTIS SPECTABILIS	PURPLE LOVEGRASS	18" O.C.	1 GAL. POT	NATIVE, DROUGHT TOLERANT, SALT TOLERANT

NOTE: IF ANY DISCREPANCIES OCCUR BETWEEN AMOUNTS SHOWN ON THE LANDSCAPE PLAN AND WITHIN THE PLANT LIST, THE PLAN SHALL DICTATE.



GRAPHIC SCALE IN FEET
1" = 20'

811 Know what's **below** **Call** before you dig.

IRRIGATION NOTE:

IRRIGATION CONTRACTOR TO PROVIDE A DESIGN FOR AN IRRIGATION SYSTEM SEPARATING PLANTING BEDS FROM LAWN AREA, PRIOR TO CONSTRUCTION, DESIGN IS TO BE SUBMITTED TO THE PROJECT LANDSCAPE DESIGNER FOR REVIEW AND APPROVAL. WHERE POSSIBLE, DRIP IRRIGATION AND OTHER WATER CONSERVATION TECHNIQUES SUCH AS RAIN SENSORS SHALL BE IMPLEMENTED. CONTRACTOR TO VERIFY MAXIMUM ON SITE DYNAMIC WATER PRESSURE AVAILABLE MEASURED IN PSI. PRESSURE REDUCING DEVICES OR BOOSTER PUMPS SHALL BE PROVIDED TO MEET SYSTEM PRESSURE REQUIREMENTS. DESIGN TO SHOW ALL VALVES, PIPING, HEADS, BACKFLOW PREVENTION, METERS, CONTROLLERS, AND SLEEVES WITHIN HARDSCAPE AREAS.

LANDSCAPING NOTES

1. THE CONTRACTOR SHALL RESTORE ALL DISTURBED GRASS AND LANDSCAPED AREAS TO MATCH EXISTING CONDITIONS UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
2. THE CONTRACTOR SHALL RESTORE ALL DISTURBED LAWN AREAS WITH A MINIMUM 4 INCH LAYER OF TOPSOIL AND SEED.
3. THE CONTRACTOR SHALL RESTORE MULCH AREAS WITH A MINIMUM 3 INCH LAYER OF MULCH .
4. THE MAXIMUM SLOPE ALLOWABLE IN LANDSCAPE RESTORATION AREAS SHALL BE 3 FEET HORIZONTAL TO 1 FOOT VERTICAL (3:1 SLOPE) UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET.
5. THE CONTRACTOR IS REQUIRED TO LOCATE ALL SPRINKLER HEADS IN AREA OF LANDSCAPING DISTURBANCE PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL RELOCATE SPRINKLER HEADS AND LINES IN ACCORDANCE WITH OWNER'S DIRECTION WITHIN AREAS OF DISTURBANCE.
6. THE CONTRACTOR SHALL ENSURE THAT ALL DISTURBED LANDSCAPED AREAS ARE GRADED TO MEET FLUSH AT THE ELEVATION OF WALKWAYS AND TOP OF CURB ELEVATIONS EXCEPT UNLESS INDICATED OTHERWISE WITHIN THE PLAN SET. NO ABRUPT CHANGES IN GRADE ARE PERMITTED IN DISTURBED LANDSCAPING AREAS.

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LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

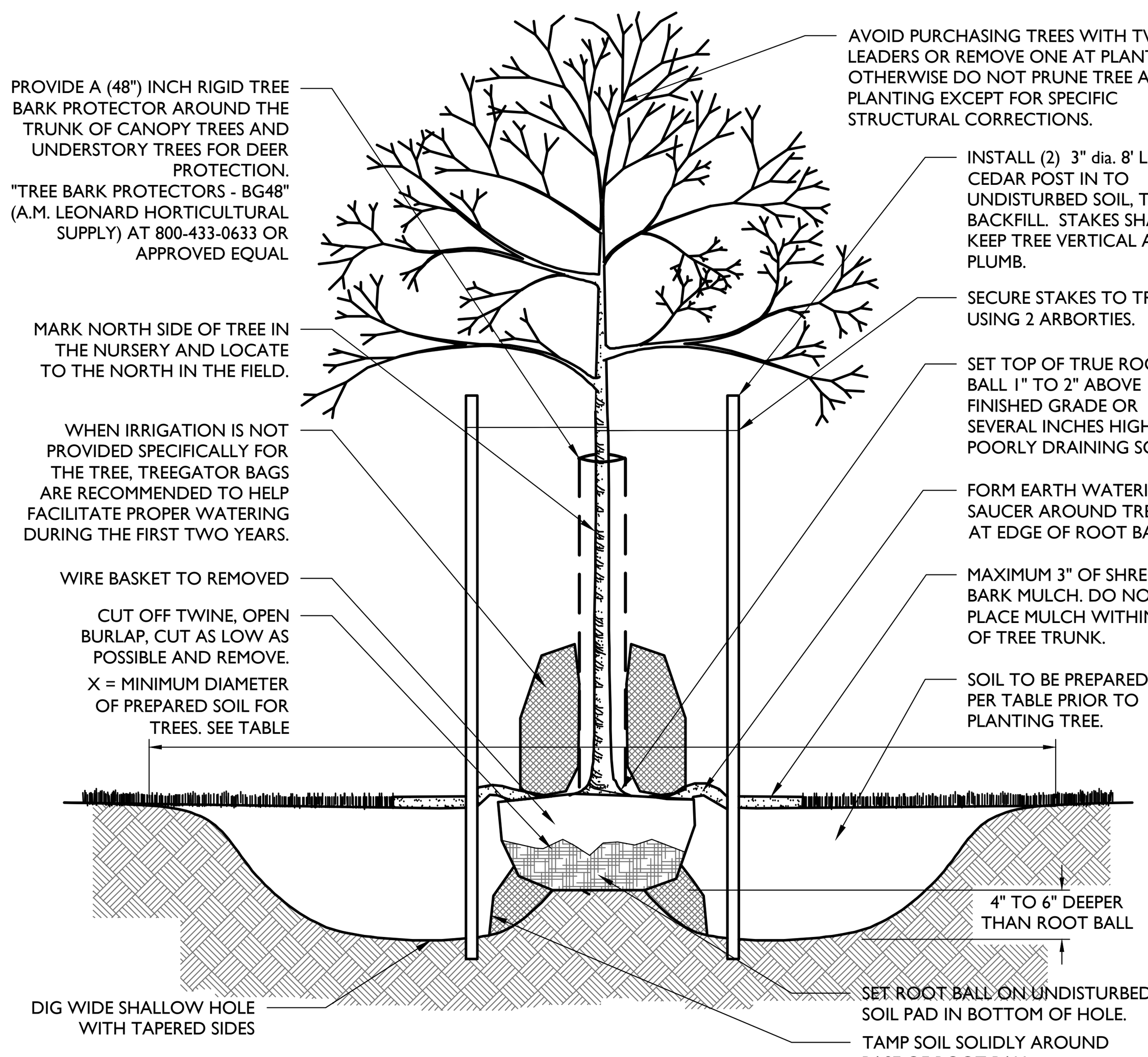
TITLE: **LANDSCAPING PLAN**

DRAWING: **C-8**

Z:\BOSTON\BOS2023\BOS-230051 ADA ARCHITECTS - 225 BOSTON POST ROAD, SUDBURY, MA\CAD\PLOT\SP-08-LANDSHG

NOTES:

1. FOR CONTAINER-GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER
2. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
3. SOIL AMENDMENTS:
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - MODIFY EXTREMELY SANDY SOILDS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX



DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

1

NOTES:

1. FOR CONTAINER-GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
2. THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
3. SOIL AMENDMENTS:
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
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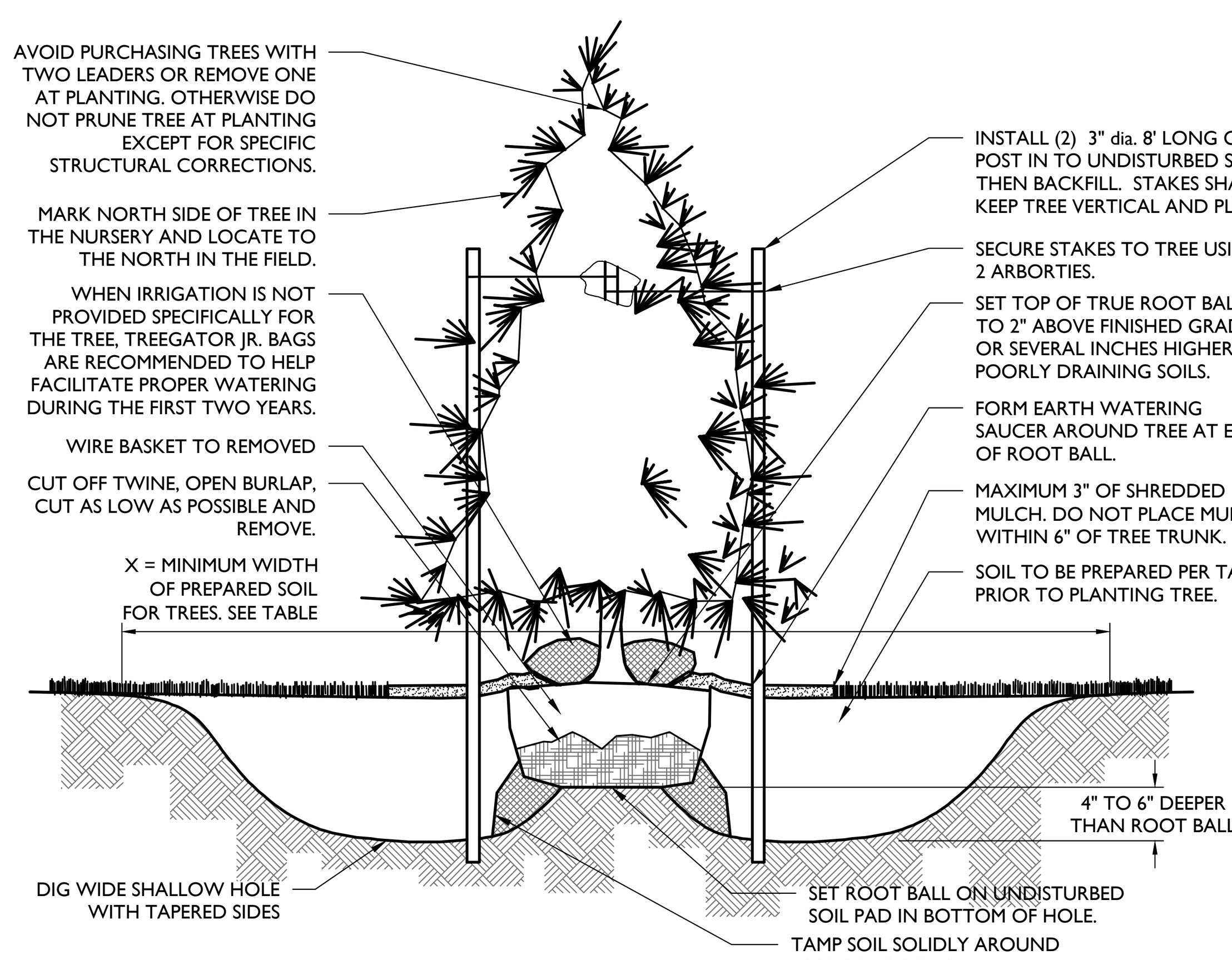
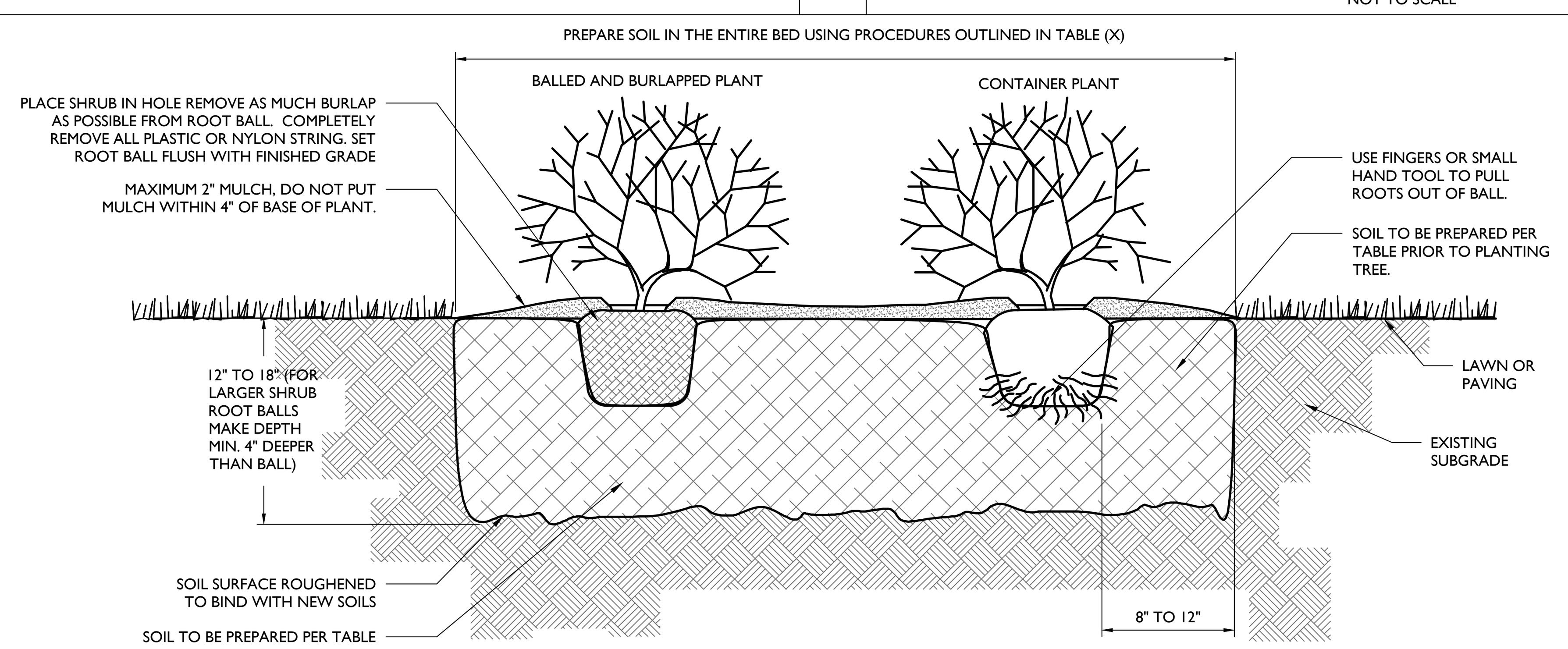


CONIFEROUS TREE PLANTING DETAIL

NOT TO SCALE

2



NOTES:

1. FOR THE CONTAINER-GROWN SHRUBS, USE FINGERS OR SMALL HAND TOOL TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
2. THOROUGHLY SOAK THE SHRUB ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - . MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL

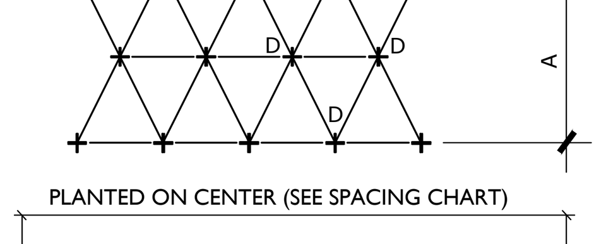
DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE

3

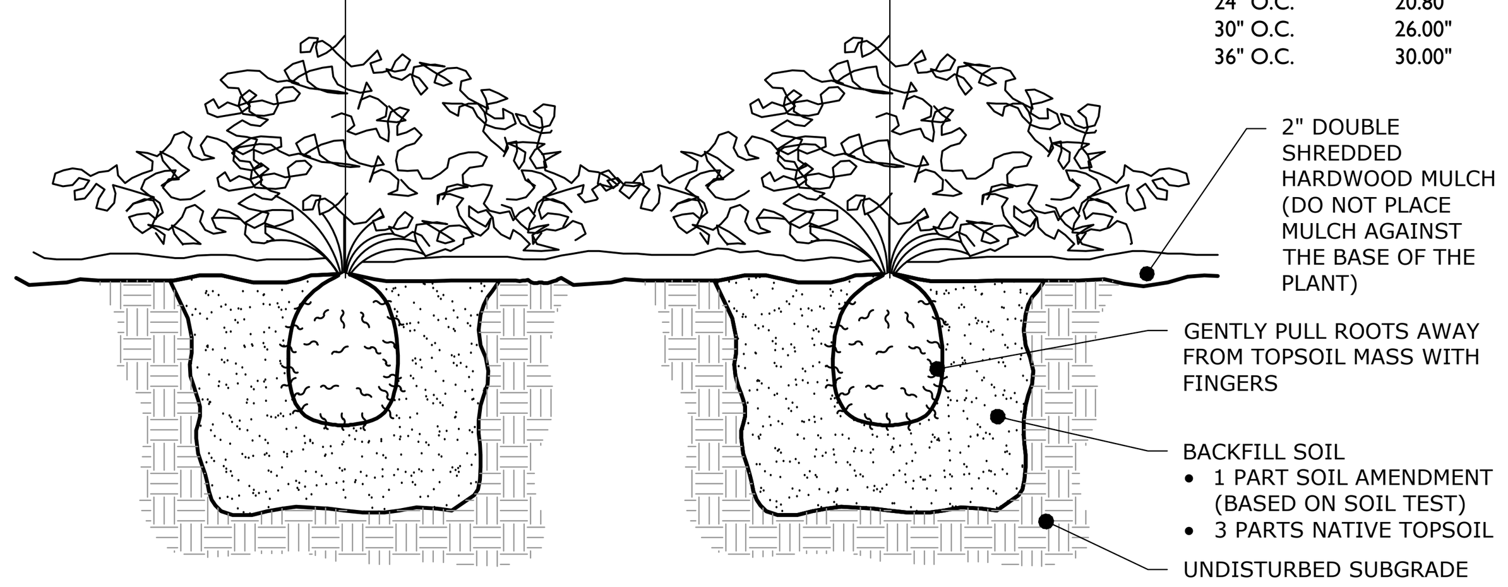
NOTES:

1. THOROUGHLY SOAK THE GROUND COVER ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
2. SOIL AMENDMENTS:
   - MODIFY HEAVY CLAY OR SILT SOILDS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM
   - MODIFY EXTREMELY SANDY SOILDS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX
3. ALL GROUND COVER AREAS SHALL BE TREATED WITH A PRE-EMERGENT PER MANUFACTURER'S SPECIFICATIONS



SPACING CHART
NOT TO SCALE

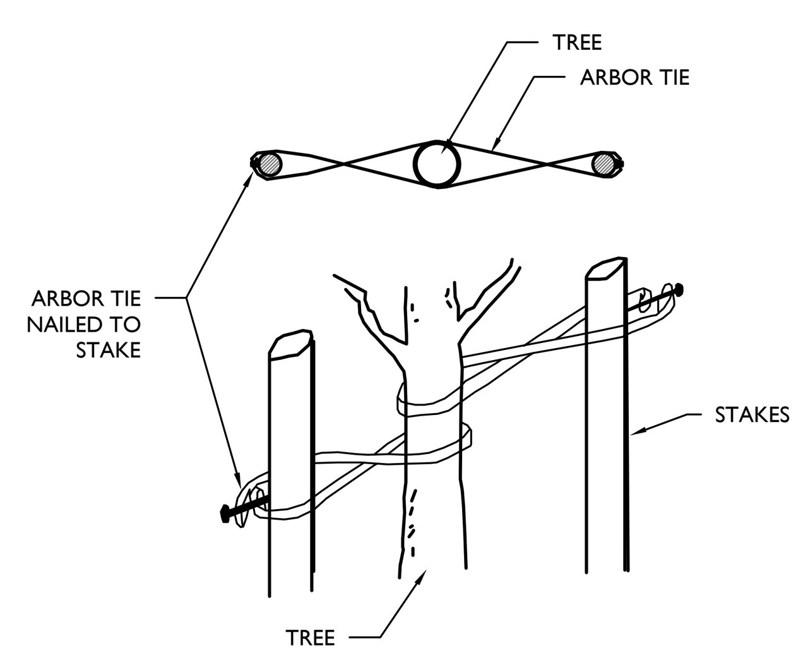
SPACING "D"	ROW "A"
6" O.C.	5.20"
8" O.C.	6.93"
10" O.C.	8.66"
12" O.C.	10.40"
15" O.C	13.00"
18" O.C.	15.60"
24" O.C.	20.80"
30" O.C.	26.00"
36" O.C.	30.00"



GROUND COVER/PERENNIAL/ANNUAL PLANTING DETAIL

NOT TO SCALE

4



INSTALLATION GUIDELINES:
1. LOOP TIE AROUND TREE AND NAIL TO CEDAR STAKE.
2. REMOVE ALL STAKING AND TIES AT END OF FIRST GROWING SEASON.
3. FOLD ENDS OF ARBORTIE BACK. SECURE TO STAKES WITH 1" GALVANIZED ROOFING NAIL OR USE A KNOT.
4. CONSULT LANDSCAPE ARCHITECT FOR STAKING OF TREES LARGER THAN 6".
5. SOURCES INCLUDE:
   GEMPLERS 1-800-332-6744 or GEMPLERS.COM
   CSP OUTDOORS 1-800-592-6940 or CSPOUTDOORS.COM

ARBORTIE DETAIL

NOT TO SCALE

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GENERAL LANDSCAPING NOTES:

1. THE LANDSCAPE CONTRACTOR SHALL FURNISH ALL MATERIALS AND PERFORM ALL WORK IN ACCORDANCE WITH THESE SPECIFICATIONS, APPROVED OR FINAL DRAWINGS, AND INSTRUCTIONS PROVIDED BY THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIALS, OR OWNER/OWNER'S REPRESENTATIVE. ALL WORK COMPLETED AND MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH THE INTENTION OF THE SPECIFICATIONS, DRAWINGS, AND INSTRUCTIONS AND EXECUTED WITH THE STANDARD LEVEL OF CARE FOR THE LANDSCAPE INDUSTRY.
2. WORK MUST BE CARRIED OUT ONLY DURING WEATHER CONDITIONS FAVORABLE TO LANDSCAPE CONSTRUCTION AND TO THE HEALTH AND WELFARE OF PLANTS. THE SUITABILITY OF SUCH WEATHER CONDITIONS SHALL BE DETERMINED BY THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL.
3. IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR, BEFORE ORDERING OR PURCHASING MATERIALS, TO PROVIDE SAMPLES OF THOSE MATERIALS TO THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL FOR APPROVAL, IF SO REQUESTED.
4. IF SAMPLES ARE REQUESTED, THE LANDSCAPE CONTRACTOR IS TO SUBMIT CERTIFICATION TAGS FROM TREES, SHRUBS AND SEED VERIFYING TYPE AND PURITY.
5. UNLESS OTHERWISE AUTHORIZED BY THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL, THE LANDSCAPE CONTRACTOR SHALL PROVIDE NOTICE AT LEAST FORTY-EIGHT HOURS (48 HRS.) IN ADVANCE OF THE ANTICIPATED DELIVERY DATE OF ANY PLANT MATERIALS TO THE PROJECT SITE. A LEGIBLE COPY OF THE INVOICE, SHOWING VARIETIES AND SIZES OF MATERIALS INCLUDED FOR EACH SHIPMENT SHALL BE FURNISHED TO THE PROJECT LANDSCAPE DESIGNER, OR GOVERNING MUNICIPAL OFFICIAL.
6. THE PROJECT LANDSCAPE DESIGNER OR GOVERNING MUNICIPAL OFFICIAL RESERVES THE RIGHT TO INSPECT AND REJECT PLANTS AT ANY TIME AND AT ANY PLACE.

PROTECTION OF EXISTING VEGETATION NOTES:

1. BEFORE COMMENCING WORK, ALL EXISTING VEGETATION WHICH COULD BE IMPACTED AS A RESULT OF THE PROPOSED CONSTRUCTION ACTIVITIES MUST BE PROTECTED FROM DAMAGE BY THE INSTALLATION OF TREE PROTECTION FENCING. FENCING SHALL BE LOCATED AT THE DRIP-LINE OR LIMIT OF DISTURBANCE AS DEPICTED WITHIN THE APPROVED OR FINAL PLAN SET, ESTABLISHING THE TREE PROTECTION ZONE. FENCE INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE PROTECTION FENCE DETAIL." NO WORK MAY BEGIN UNTIL THIS REQUIREMENT IS FULFILLED. THE FENCING SHALL BE INSPECTED REGULARLY BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
2. IN ORDER TO AVOID DAMAGE TO ROOTS, BARK OR LOWER BRANCHES, NO VEHICLE, EQUIPMENT, DEBRIS, OR OTHER MATERIALS SHALL BE DRIVEN, PARKED OR PLACED WITHIN THE TREE PROTECTION ZONE. ALL ON-SITE CONTRACTORS SHALL USE ANY AND ALL PRECAUTIONARY MEASURES WHEN PERFORMING WORK AROUND TREES, WALKS, PAVEMENTS, UTILITIES, AND ANY OTHER FEATURES EITHER EXISTING OR PREVIOUSLY INSTALLED UNDER THIS CONTRACT.
3. IN RARE INSTANCES WHERE EXCAVATING, FILL, OR GRADING IS REQUIRED WITHIN THE DRIP-LINE OF TREES TO REMAIN, THE WORK SHALL BE PERFORMED AS FOLLOWS:
   - TRENCHING: WHEN TRENCHING OCCURS AROUND TREES TO REMAIN, THE TREE ROOTS SHALL NOT BE CUT, BUT THE TRENCH SHALL BE TUNNELED UNDER OR AROUND THE ROOTS BY CAREFUL HAND DIGGING AND WITHOUT INJURY TO THE ROOTS. NO ROOTS, LIMBS, OR WOODS ARE TO HAVE ANY PAINT OR MATERIAL APPLIED TO ANY SURFACE.
   - RAISING GRADES: WHEN THE GRADE AT AN EXISTING TREE IS BELOW THE NEW FINISHED GRADE, AND FILL NOT EXCEEDING 6 INCHES (6") IS REQUIRED, CLEAN, WASHED GRAVEL FROM ONE TO TWO INCHES (1" - 2") IN SIZE SHALL BE PLACED DIRECTLY AROUND THE TREE TRUNK. THE GRAVEL SHALL EXTEND OUT FROM THE TRUNK ON ALL SIDES A MINIMUM OF 18 INCHES (18") AND FINISH APPROXIMATELY TWO INCHES (2") ABOVE THE FINISH GRADE AT TREE. INSTALL GRAVEL BEFORE ANY EARTH FILL IS PLACED. NEW EARTH FILL SHALL NOT BE LEFT IN CONTACT WITH THE TRUNK OF ANY TREE REQUIRING FILL. WHERE FILL EXCEEDING 6 INCHES (6") IS REQUIRED, A DRY LAID TREE WELL SHALL BE CONSTRUCTED. IF APPLICABLE, TREE WELL INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE WELL DETAIL."
   - LOWERING GRADES: EXISTING TREES LOCATED IN AREAS WHERE THE NEW FINISHED GRADE IS TO BE LOWERED, SHALL HAVE RE-GRADING WORK DONE BY HAND TO THE INDICATED ELEVATION, NO GREATER THAN SIX INCHES (6"). ROOTS SHALL BE CUT CLEANLY THREE INCHES (3") BELOW FINISHED GRADE UNDER THE DIRECTION OF A LICENSED ARBORIST. WHERE CUT EXCEEDING 6 INCHES (6") IS REQUIRED, A DRY LAID RETAINING WALL SHALL BE CONSTRUCTED. IF APPLICABLE, THE RETAINING WALL INSTALLATION SHALL BE IN ACCORDANCE WITH THE PROVIDED "TREE RETAINING WALL DETAIL."

SOIL PREPARATION AND MULCH NOTES:

1. LANDSCAPE CONTRACTOR SHALL OBTAIN A SOIL TEST OF THE IN-SITU TOPSOIL BY A CERTIFIED SOIL LABORATORY PRIOR TO PLANTING. LANDSCAPE CONTRACTOR SHALL ALLOW FOR A TWO WEEK TURNAROUND TIME FROM SUBMITTAL OF SAMPLE TO NOTIFICATION OF RESULTS.
2. BASED ON SOIL TEST RESULTS, ADJUST THE RATES OF LIME AND FERTILIZER THAT SHALL BE MIXED INTO THE TOP SIX INCHES (6") OF TOPSOIL. THE LIME AND FERTILIZER RATES PROVIDED WITHIN THE "SEED SPECIFICATION" OR "SOD SPECIFICATION" IS APPROXIMATE AND FOR BIDDING PURPOSES ONLY. IF ADDITIONAL AMENDMENTS ARE NECESSARY, ADJUST THE TOPSOIL AS FOLLOWS:
   - MODIFY HEAVY CLAY OR SILT SOILS (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) OR GYPSUM.
   - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.
3. TOPSOIL SHALL BE FERTILE, FRIABLE, NATURAL TOPSOIL OF LOAMING CHARACTER, WITHOUT ADMIXTURE OF SUBSOIL MATERIAL OBTAINED FROM A WELL-DRAINED ARABLE SITE, FREE FROM ALL CLAY, LUMPS, COARSE SANDS, STONES, PLANTS, ROOTS, STICKS, AND OTHER FOREIGN MATERIAL GREATER THAN ONE INCH (1").
4. TOPSOIL SHALL HAVE A PH RANGE OF 5.0-7.0 AND SHALL NOT CONTAIN LESS THAN 6% ORGANIC MATTER BY WEIGHT.
5. OBTAIN TOPSOIL ONLY FROM LOCAL SOURCES OR FROM AREAS HAVING SIMILAR SOIL CHARACTERISTICS TO THAT FOUND AT THE PROJECT SITE.
6. CONTRACTOR SHALL PROVIDE A SIX INCH (6") DEEP LAYER OF TOPSOIL IN ALL PLANTING AREAS. TOPSOIL SHALL BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN SOIL CONDITIONS.
7. UNLESS OTHERWISE NOTED IN THE CONTRACT, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBED AREA OF THE SITE.
8. LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE SUB-GRADE ELEVATION MEETS THE FINISHED GRADE ELEVATION (LESS THE REQUIRED TOPSOIL), IN ACCORDANCE WITH THE APPROVED OR FINAL GRADING PLAN.
9. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THE APPROVED OR FINAL CONSTRUCTION SET UNLESS OTHERWISE DIRECTED BY THE PROJECT LANDSCAPE DESIGNER OR MUNICIPAL OFFICIAL.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER SURFACE AND SUBSURFACE PLANT BED DRAINAGE PRIOR TO THE INSTALLATION OF PLANTINGS. IF POOR DRAINAGE CONDITIONS EXIST, CORRECTIVE ACTION SHALL BE TAKEN PRIOR TO INSTALLATION. ALL PLANTING AND LAWN AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW A FREE FLOW OF SURFACE WATER.
11. DOUBLE SHREDDED HARDWOOD MULCH OR APPROVED EQUAL SHALL BE USED AS A THREE INCH (3") TOP DRESSING IN ALL SHRUB PLANTING BEDS AND AROUND ALL TREES PLANTED BY LANDSCAPE CONTRACTOR. GROUND COVER, PERENNIAL, AND ANNUAL PLANTING BEDS SHALL BE MULCHED WITH A TWO INCH (2") TOP DRESSING. SINGLE TREES OR SHRUBS SHALL BE MULCHED TO AVOID CONTACT WITH TRUNK OR PLANT STEM. MULCH SHALL BE OF SUFFICIENT CHARACTER AS NOT TO BE EASILY DISPLACED BY WIND OR WATER RUNOFF.
12. WHENEVER POSSIBLE, THE SOIL PREPARATION AREA SHALL BE CONNECTED FROM PLANTING TO PLANTING.
13. SOIL SHALL BE LOOSENED WITH A BACKHOE OR OTHER LARGE COARSE-TILING EQUIPMENT UNLESS THE SOIL IS FROZEN OR EXCESSIVELY WET. TILING THAT PRODUCES LARGE, COARSE CHUNKS OF SOIL IS PREFERABLE TO TILING THAT RESULTS IN FINE GRAINS UNIFORM IN TEXTURE. AFTER THE AREA IS LOOSENED IT SHALL NOT BE DRIVEN OVER BY ANY VEHICLE.
14. APPLY PRE-EMERGENT WEED CONTROL TO ALL PLANT BEDS PRIOR TO MULCHING. ENSURE COMPATIBILITY BETWEEN PRODUCT AND PLANT MATERIAL.
15. ALL PLANTING SOIL SHALL BE AMENDED WITH THE FOLLOWING:

    MYCRO® TREE SAVER - A DRY GRANULAR MYCORRHIZAL FUNGI INOCULANT THAT IS MIXED IN THE BACKFILL WHEN PLANTING TREES AND SHRUBS. IT CONTAINS SPORES OF BOTH ECTOMYCORRHIZAL AND VA MYCORRHIZAL FUNGI (VAM), BENEFICIAL RHIZOSPHERE BACTERIA, TERRA-SORB SUPERABSORBENT HYDROGEL TO REDUCE WATER LEACHING, AND SELECTED ORGANIC MICROBIAL NUTRIENTS.
    - DIRECTIONS FOR USE: USE 3-OZ PER EACH FOOT DIAMETER OF THE ROOT BALL, OR 3-OZ PER INCH CALIPER. MIX INTO THE BACKFILL WHEN TRANSPLANTING TREES AND SHRUBS. MIX PRODUCT IN A RING-SHAPED VOLUME OF SOIL AROUND THE UPPER PORTION OF THE ROOT BALL, EXTENDING FROM THE SOIL SURFACE TO A DEPTH OF ABOUT 8 INCHES, AND EXTENDING OUT FROM THE ROOT BALL ABOUT 8 INCHES INTO THE BACKFILL. APPLY WATER TO SOIL SATURATION.
    - MYCOR® TREE SAVER® IS EFFECTIVE FOR ALL TREE AND SHRUB SPECIES EXCEPT RHODODENDRONS, AZALEAS, AND MOUNTAIN LAUREL, WHICH REQUIRE ERICOID MYCORRHIZAE.
    - SOIL PH: THE FUNGI IN THIS PRODUCT WERE CHOSEN BASED ON THEIR ABILITY TO SURVIVE AND COLONIZE PLANT ROOTS IN A PH RANGE OF 3 TO 9.
    - FUNGICIDES: THE USE OF CERTAIN FUNGICIDES CAN HAVE A DETRIMENTAL EFFECT ON THE INOCULATION PROGRAM. SOIL APPLICATION OF ANY FUNGICIDE IS NOT RECOMMENDED FOR TWO WEEKS AFTER APPLICATION.
    - OTHER PESTICIDES: HERBICIDES AND INSECTICIDES DO NOT NORMALLY INTERFERE WITH MYCORRHIZAL FUNGAL DEVELOPMENT, BUT MAY INHIBIT THE GROWTH OF SOME TREE AND SHRUB SPECIES IF NOT USED PROPERLY.

    HEALTHY START MACRO TABS 12-8-8
    - FERTILIZER TABLETS ARE PLACED IN THE UPPER 4 INCHES OF BACKFILL SOIL WHEN PLANTING TREES AND SHRUBS.
    - TABLETS ARE FORMULATED FOR LONG-TERM RELEASE BY SLOW BIODEGRADATION, AND LAST UP TO 2 YEARS AFTER PLANTING. TABLETS CONTAIN 12-8-8 NPK FERTILIZER, AS WELL AS A MINIMUM OF SEVEN PERCENT (7%) HUMIC ACID BY WEIGHT, MICROBIAL NUTRIENTS DERIVED FROM SEA KELP, PROTEIN BYPRODUCTS, AND YUCCA SCHIDIGERA, AND A COMPLEMENT OF BENEFICIAL RHIZOSPHERE BACTERIA. THE STANDARD 21 GRAM TABLET IS SPECIFIED HERE. DIRECTIONS FOR USE: FOR PLANTING BALLED & BURLAPPED (B&B) TREES AND SHRUBS, MEASURE THE THICKNESS OF THE TRUNK, AND USE ABOUT 1 TABLET (21-G) PER HALF-INCH. PLACE THE TABLETS DIRECTLY NEXT TO THE ROOT BALL, EVENLY DISTRIBUTED AROUND ITS PERIMETER, AT A DEPTH OF ABOUT 4 INCHES.

IRRIGATION DURING ESTABLISHMENT

SIZE AT PLANTING	IRRIGATION FOR VITALITY	IRRIGATION FOR SURVIVAL
< 2" CALIPER	DAILY FOR TWO WEEKS, EVERY OTHER DAY FOR TWO MONTHS, WEEKLY UNTIL ESTABLISHED	TWO TO THREE TIMES WEEKLY FOR TWO TO THREE MONTHS
2"-4 CALIPER	DAILY FOR ONE MONTH, EVERY OTHER DAY FOR THREE MONTHS, WEEKLY UNTIL ESTABLISHED	TWO TO THREE TIMES WEEKLY FOR THREE TO FOUR MONTHS
4 >" CALIPER	DAILY FOR SIX WEEKS, EVERY OTHER DAY FOR FIVE MONTHS, WEEKLY UNTIL ESTABLISHED	TWICE WEEKLY FOR FOUR TO FIVE MONTHS

TABLE NOTES:
1. AT EACH IRRIGATION, APPLY TWO TO THREE GALLONS PER INCH TRUNK CALIPER TO THE ROOT BALL SURFACE. APPLY IT IN A MANNER SO ALL WATER SOAKS THE ENTIRE ROOT BALL. DO NOT WATER IF ROOT BALL IS WET/SATURATED ON THE IRRIGATION DAY.

2. WHEN IRRIGATING FOR VITALITY, DELETE DAILY IRRIGATION WHEN PLANTING IN WINTER OR WHEN PLANTING IN COOL CLIMATES. ESTABLISHMENT TAKES THREE TO FOUR MONTHS PER INCH TRUNK CALIPER. NEVER APPLY IRRIGATION IF THE SOIL IS SATURATED.

3. WHEN IRRIGATION FOR SURVIVAL, TREES TAKE MUCH LONGER TO ESTABLISH THAN REGULARLY IRRIGATED TREES. IRRIGATION MAY BE REQUIRED IN THE NORMAL HOT, DRY PORTIONS OF THE FOLLOWING YEAR.

PLANT QUALITY AND HANDLING NOTES:

1. ALL PLANT MATERIAL SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004) OR LATEST REVISION AS PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
2. IN ALL CASES, BOTANICAL NAMES LISTED WITHIN THE APPROVED OR FINAL PLANT LIST SHALL TAKE PRECEDENCE OVER COMMON NAMES.
3. ALL PLANTS SHALL BE OF SELECTED SPECIMEN QUALITY, EXCEPTIONALLY HEAVY, TIGHTLY KNIT, SO TRAINED OR FAVORED IN THEIR DEVELOPMENT AND APPEARANCE AS TO BE SUPERIOR IN FORM, NUMBER OF BRANCHES, COMPACTNESS AND SYMMETRY. ALL PLANTS SHALL HAVE A NORMAL HABIT OR SOUND, HEALTHY, VIGOROUS PLANTS WITH WELL DEVELOPED ROOT SYSTEM. PLANTS SHALL BE FREE OF DISEASE, INSECT PESTS, EGGS OR LARVAE.
4. PLANTS SHALL NOT BE PRUNED BEFORE DELIVERY. TREES WITH ABRASION OF THE BARK, SUNSCALDS, DISFIGURING KNOTS OR FRESH CUTS OF LIMBS OVER ONE AND ONE-FOURTH INCHES (1-1/4") WHICH HAVE NOT COMPLETELY CALLOUSED SHALL BE REJECTED.
5. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH AND BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE.
6. THE ROOT SYSTEM OF EACH PLANT SHALL BE WELL PROVIDED WITH FIBROUS ROOTS. ALL PARTS SHALL BE SOUND, HEALTHY, VIGOROUS, WELL-BRANCHED AND DENSELY FOLIATED WHEN IN LEAF.
7. ALL PLANTS DESIGNATED BALL AND BURLAP (B&B) MUST BE MOVED WITH THE ROOT SYSTEM AS SOLID UNITS WITH BALLS OF EARTH FIRMLY WRAPPED WITH BURLAP. THE DIAMETER AND DEPTH OF THE BALLS OF EARTH MUST BE SUFFICIENT TO ENCOMPASS THE FIBROUS ROOT FEEDING SYSTEMS NECESSARY FOR THE HEALTHY DEVELOPMENT OF THE PLANT. NO PLANT SHALL BE ACCEPTED WHEN THE BALL OF EARTH SURROUNDING ITS ROOTS HAS BEEN BADLY CRACKED OR BROKEN PREPARATORY TO OR DURING THE PROCESS OF PLANTING. THE BALLS SHALL REMAIN INTACT DURING ALL OPERATIONS. ALL PLANTS THAT CANNOT BE PLANTED AT ONCE MUST BE HEELED-IN BY SETTING IN THE GROUND AND COVERING THE BALLS WITH SOIL OR MULCH AND THEN WATERING. HEMP BURLAP AND TWINE IS PREFERABLE TO TREATED. IF TREATED BURLAP IS USED, ALL TWINE IS TO BE CUT FROM AROUND THE TRUNK AND ALL BURLAP IS TO BE REMOVED.
8. PLANTS TRANSPORTED TO THE PROJECT IN OPEN VEHICLES SHALL BE COVERED WITH TARPS OR OTHER SUITABLE COVERS SECURELY FASTENED TO THE BODY OF THE VEHICLE TO PREVENT INJURY TO THE PLANTS. CLOSED VEHICLES SHALL BE ADEQUATELY VENTILATED TO PREVENT OVERHEATING OF THE PLANTS. EVIDENCE OF INADEQUATE PROTECTION FOLLOWING DIGGING, CARELESSNESS WHILE IN TRANSIT, OR IMPROPER HANDLING OR STORAGE SHALL BE CAUSE FOR REJECTION OF PLANT MATERIAL. ALL PLANTS SHALL BE KEPT MOIST, FRESH, AND PROTECTED. SUCH PROTECTION SHALL ENCOMPASS THE ENTIRE PERIOD DURING WHICH THE PLANTS ARE IN TRANSIT, BEING HANDLED, OR ARE IN TEMPORARY STORAGE.
9. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE CORRESPONDING LANDSCAPE PLAN AND PLANTING DETAILS.
10. LANDSCAPE CONTRACTOR SHALL MAKE BEST EFFORT TO INSTALL PLANTINGS ON THE SAME DAY AS DELIVERY. IF PLANTS ARE NOT PLANTED IMMEDIATELY ON SITE, PROPER CARE SHALL BE TAKEN TO PLACE THE PLANTINGS IN PARTIAL SHADE WHEN POSSIBLE. THE ROOT BALL SHALL BE KEPT MOIST AT ALL TIME AND COVERED WITH MOISTENED MULCH OR AGED WOODCHIPS. PROPER IRRIGATION SHALL BE SUPPLIED SO AS TO NOT ALLOW THE ROOT BALL TO DRY OUT. PLANTINGS SHALL BE UNTIED AND PROPER SPACING SHALL BE ALLOTTED FOR AIR CIRCULATION AND TO PREVENT DISEASE, WILTING, AND LEAF LOSS. PLANTS THAT REMAIN UNPLANTED FOR A PERIOD OF TIME GREATER THAN THREE (3) DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH AND WATERED AS REQUIRED TO PRESERVE ROOT MOISTURE.
11. NO PLANT MATERIAL SHALL BE PLANTED IN MUDDY OR FROZEN SOIL.
12. PLANTS WITH INJURED ROOTS OR BRANCHES SHALL BE PRUNED PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY DISEASED OR INJURED PLANTS SHALL BE REMOVED.
13. IF ROCK OR OTHER UNDERGROUND OBSTRUCTION IS ENCOUNTERED, THE LANDSCAPE DESIGNER RESERVES THE RIGHT TO RELOCATE OR ENLARGE PLANTING PITS OR DELETE PLANT MATERIAL FROM THE CONTRACT.
14. IF PLANTS ARE PROPOSED WITHIN SIGHT TRIANGLES, TREES SHALL BE LIMBED AND MAINTAINED TO A HEIGHT OF EIGHT FEET (8') ABOVE GRADE, AND SHRUBS, GROUND COVER, PERENNIALS, AND ANNUALS SHALL BE MAINTAINED TO A HEIGHT NOT TO EXCEED TWO FEET (2') ABOVE GRADE UNLESS OTHERWISE NOTED OR SPECIFIED BY THE GOVERNING MUNICIPALITY OR AGENCY.
15. INSTALLATION SHALL OCCUR DURING THE FOLLOWING SEASONS:
    PLANTS (MARCH 15 - DECEMBER 15)
    LAWNS (MARCH 15 - JUNE 15 OR SEPTEMBER 1 - DECEMBER 1)
16. THE FOLLOWING TREES ARE SUSCEPTIBLE TO TRANSPLANT SHOCK AND SHALL NOT BE PLANTED DURING THE FALL SEASON (STARTING SEPTEMBER 15):

ABIES CONCOLOR	CORNUS VARIETIES	OSTRYA VIRGINIANA
ACER BUERGERIANUM	CRATAEGUS VARIETIES	PINUS NIGRA
ACER FREEMANII	CUPRESSOCYPARIS LEYLANDII	PLATANUS VARIETIES
ACER RUBRUM	FAGUS VARIETIES	POPULUS VARIETIES
ACER SACCHARINUM	HALESIA VARIETIES	PRUNUS VARIETIES
BETULA VARIETIES	ILEX X FOSTERII	PYRUS VARIETIES
CARPINUS VARIETIES	ILEX NELLIE STEVENS	QUERCUS VARIETIES (NOT Q. PALUSTRIS)
CEDRUS DEODARA	ILEX OPACA	SALIX WEEPING VARIETIES
CELTIS VARIETIES	JUNIPERUS VIRGINIANA	SORBUS VARIETIES
CERCIDIPHYLLUM VARIETIES	KOELREUTERIA PANICULATA	TAXODIUM VARIETIES
CERCIS CANADENSIS	LIQUIDAMBAR VARIETIES	TAXUX B REPANDENS
CORNUS VARIETIES	LIRIODENDRON VARIETIES	TILIA TOMENTOSA VARIETIES
CRATAEGUS VARIETIES	MALUS IN LEAF	ULMUS PARVIFOLIA VARIETIES
	NYSSA SYLVATICA	ZELKOVA VARIETIES

17. IF A PROPOSED PLANT IS UNATTAINABLE OR ON THE FALL DIGGING HAZARD LIST, AN EQUIVALENT SPECIES OF THE SAME SIZE MAY BE REQUESTED FOR SUBSTITUTION OF THE ORIGINAL PLANT. ALL SUBSTITUTIONS SHALL BE APPROVED BY THE PROJECT LANDSCAPE DESIGNER OR MUNICIPAL OFFICIAL PRIOR TO ORDERING AND INSTALLATION.
18. DURING THE COURSE OF CONSTRUCTION/PLANT INSTALLATION, EXCESS AND WASTE MATERIALS SHALL BE CONTINUOUSLY AND PROMPTLY REMOVED AT THE END OF EACH WORK DAY. ALL DEBRIS, MATERIALS, AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF AND ALL PAVED AREAS SHALL BE CLEANED.
19. THE LANDSCAPE CONTRACTOR SHALL DISPOSE OF ALL RUBBISH AND EXCESS SOIL AT HIS EXPENSE TO AN OFF-SITE LOCATION AS APPROVED BY THE LOCAL MUNICIPALITY.
20. A 90-DAY MAINTENANCE PERIOD SHALL BEGIN IMMEDIATELY AFTER ALL PLANTS HAVE BEEN SATISFACTORILY INSTALLED.
21. MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, REPLACING MULCH THAT HAS BEEN DISPLACED BY EROSION OR OTHER MEANS, REPAIRING AND RESHAPING WATER RINGS OR SAUCERS, MAINTAINING STAKES AND GUYS IF ORIGINALLY REQUIRED, WATERING WHEN NEEDED OR DIRECTED, WEEDING, PRUNING, SPRAYING, FERTILIZING, MOWING THE LAWN, AND PERFORMING ANY OTHER WORK REQUIRED TO KEEP THE PLANTS IN A HEALTHY CONDITION.
22. MOW ALL GRASS AREAS AT REGULAR INTERVALS TO KEEP THE GRASS HEIGHT FROM EXCEEDING THREE INCHES (3"). MOWING SHALL BE PERFORMED ONLY WHEN GRASS IS DRY. MOWER BLADE SHALL BE SET TO REMOVE NO MORE THAN ONE THIRD (1/3) OF THE GRASS LENGTH. WHEN THE AMOUNT OF GRASS IS HEAVY, IT SHALL BE REMOVED TO PREVENT DESTRUCTION OF THE UNDERLYING TURF. MOW GRASS AREAS IN SUCH A MANNER AS TO PREVENT CLIPPINGS FROM BLOWING ON PAVED AREAS, AND SIDEWALKS. CLEANUP AFTER MOWING SHALL INCLUDE SWEEPING OR BLOWING OF PAVED AREAS AND SIDEWALKS TO CLEAR THEM FROM MOWING DEBRIS.
23. GRASSED AREAS DAMAGED DURING THE PROCESS OF THE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHO SHALL RESTORE THE DISTURBED AREAS TO A CONDITION SATISFACTORY TO THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIAL, OR OWNER/OWNER'S REPRESENTATIVE. THIS MAY INCLUDE FILLING TO GRADE, FERTILIZING, SEEDING, AND MULCHING.
24. SHOULD THE OWNER REQUIRE MAINTENANCE BEYOND THE STANDARD 90-DAY MAINTENANCE PERIOD, A SEPARATE CONTRACT SHALL BE ESTABLISHED.
25. LANDSCAPE CONTRACTOR SHALL WATER NEW PLANTINGS FROM TIME OF INSTALL AND THROUGHOUT REQUIRED 90-DAY MAINTENANCE PERIOD UNTIL PLANTS ARE ESTABLISHED. IF ON-SITE WATER IS NOT AVAILABLE AT THE PROJECT LOCATION, THE LANDSCAPE CONTRACTOR SHALL FURNISH IT BY MEANS OR A WATERING TRUCK OR OTHER ACCEPTABLE MANNER.
26. THE QUANTITY OF WATER APPLIED AT ONE TIME SHALL BE SUFFICIENT TO PENETRATE THE SOIL TO A MINIMUM OF EIGHT INCHES (8") IN SHRUB BEDS AND SIX INCHES (6") IN TURF AREAS AT A RATE WHICH WILL PREVENT SATURATION OF THE SOIL.
27. IF AN AUTOMATIC IRRIGATION SYSTEM HAS BEEN INSTALLED, IT CAN BE USED FOR WATERING PLANT MATERIAL. HOWEVER, FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE LANDSCAPE CONTRACTOR'S RESPONSIBILITY OF PLANT HEALTH AND ESTABLISHMENT.

PLANT MATERIAL GUARANTEE NOTES:

1. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR (1 YR.) FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE PROJECT LANDSCAPE DESIGNER, MUNICIPAL OFFICIAL, OR OWNER/OWNER'S REPRESENTATIVE.
2. THE LANDSCAPE CONTRACTOR SHALL REMOVE AND REPLACE DYING, DEAD, OR DEFECTIVE PLANT MATERIAL AT HIS EXPENSE. THE LANDSCAPE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS COMPANY'S OPERATIONS.
3. ALL REPLACEMENT PLANTS SHALL BE OF THE SAME SPECIES AND SIZE AS SPECIFIED ON THE APPROVED OR FINAL PLANT LIST. REPLACEMENTS RESULTING FROM REMOVAL, LOSS, OR DAMAGE DUE TO OCCUPANCY OF THE PROJECT IN ANY PART, VANDALISM, PHYSICAL DAMAGE BY ANIMALS, VEHICLES, ETC., AND LOSSES DUE TO CURTAILMENT OF WATER BY LOCAL AUTHORITIES SHALL BE APPROVED AND PAID FOR BY THE OWNER.
4. THE CONTRACTOR SHALL INSTRUCT THE OWNER AS TO THE PROPER CARE AND MAINTENANCE OF ALL PLANTINGS.

LAWN (SEED OR SOD) NOTES:

1. SEED MIXTURE SHALL BE FRESH, CLEAN, NEW CROP SEED. SOD SHALL BE STRONGLY ROOTED, UNIFORM IN THICKNESS, AND FREE OF WEEDS, DISEASE, AND PESTS.
2. SEED OR SOD SHALL BE PURCHASED FROM A RECOGNIZED DISTRIBUTOR AND SHALL BE COMPOSED OF THE MIX OR BLEND WITHIN THE PROVIDED "SEED SPECIFICATION" OR "SOD SPECIFICATION."
3. REFERENCE LANDSCAPE PLAN FOR AREAS TO BE SEEDED OR LAID WITH SOD.
4. SEEDING SHALL NOT BE PERFORMED IN WINDY WEATHER. IF THE SEASON OF THE PROJECT COMPLETION PROHIBITS PERMANENT STABILIZATION, TEMPORARY STABILIZATION SHALL BE PROVIDED IN ACCORDANCE WITH THE "TEMPORARY SEEDING SPECIFICATION."
5. PROTECT NEW LAWN AREAS AGAINST TRESPASSING WHILE THE SEED IS GERMINATING. FURNISH AND INSTALL FENCES, SIGNS, BARRIERS OR ANY OTHER NECESSARY TEMPORARY PROTECTIVE DEVICES. DAMAGE RESULTING FROM TRESPASS, EROSION, WASHOUT, SETTLEMENT OR OTHER CAUSES SHALL BE REPAIRED BY THE LANDSCAPE CONTRACTOR AT HIS EXPENSE. REMOVE ALL FENCES, SIGNS, BARRIERS OR OTHER TEMPORARY PROTECTIVE DEVICES ONCE LAWN HAS BEEN ESTABLISHED.

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design
Rutherford, NJ · New York, NY · Salem, MA
Princeton, NJ · Tampa, FL · Detroit, MI
www.stonefieldeng.com
120 Washington Street, Suite 201, Salem, MA 01970
Phone 617.203.2076

LAND DEVELOPMENT PLANS

ADA ARCHITECTS

PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER

PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: AS SHOWN | PROJECT ID: BOS-230051

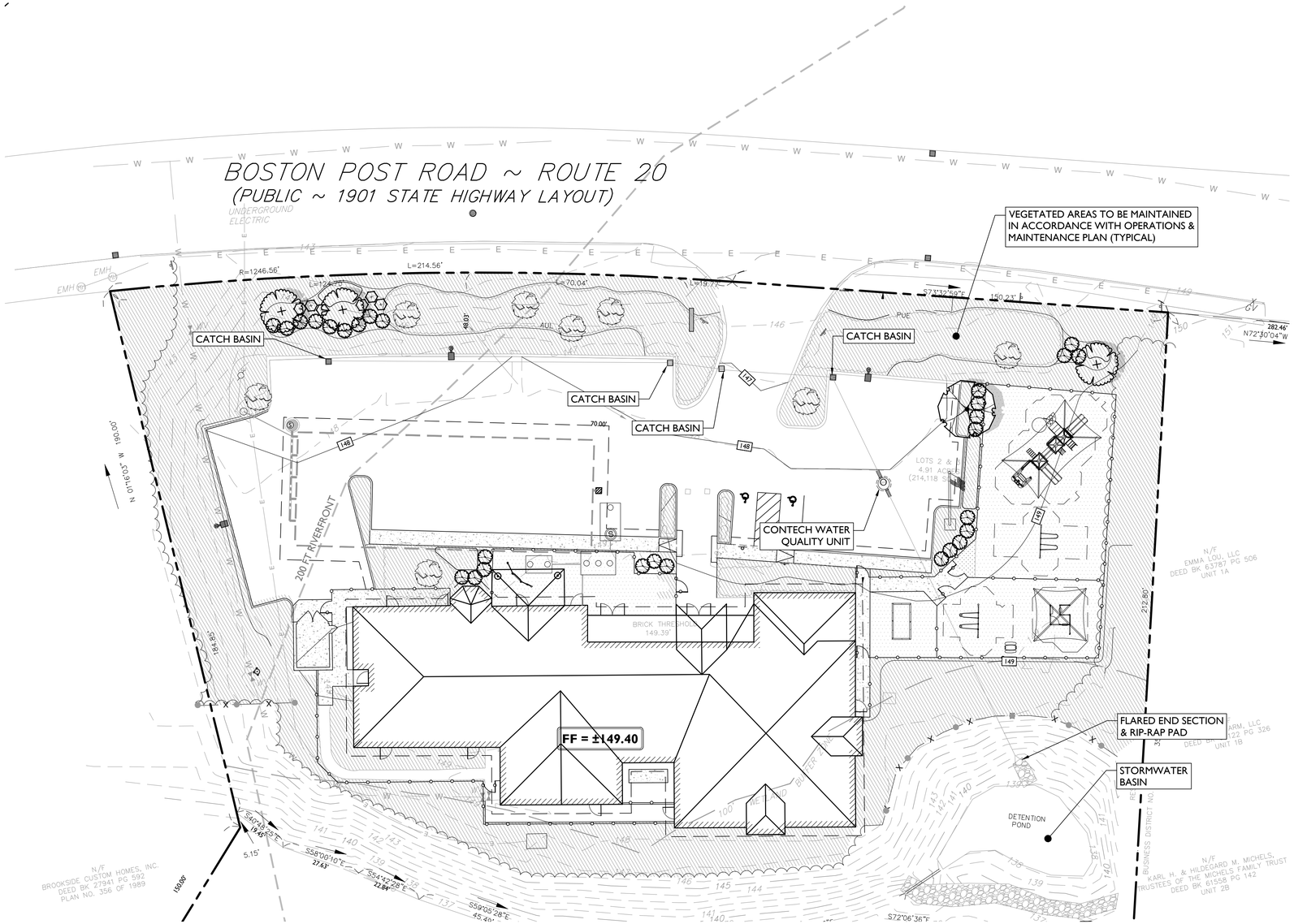
TITLE:

LANDSCAPING DETAILS

DRAWING:

C-9

APPENDIX B
STORMWATER BMP LOCATION EXHIBIT



ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
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LAND DEVELOPMENT PLANS

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JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' | PROJECT ID: BOS-230051

TITLE:

STORMWATER BMP LOCATION EXHIBIT

DRAWING:

1 OF 1

Z:\BOSTON\PROJECTS\2023\BOS\230051 - ADA ARCHITECTS - 225 BOSTON POST ROAD, SUDBURY, MA\CAD\DESIGN\SITE\SWPP LOCATION EXHIBIT\230051-SWPP LOCATION EXHIBIT.DWG

APPENDIX C
CONTECH CDS WATER QUALITY UNIT OPERATION & MAINTENANCE FIELD GUIDE

CONTECH®
ENGINEERED SOLUTIONS

CDS Guide
Operation, Design, Performance and Maintenance

CDS®

Using patented continuous deflective separation technology, the CDS system screens, separates and traps debris, sediment, and oil and grease from stormwater runoff. The indirect screening capability of the system allows for 100% removal of floatables and neutrally buoyant material without blinding. Flow and screening controls physically separate captured solids, and minimize the re-suspension and release of previously trapped pollutants. Inline units can treat up to 6 cfs, and internally bypass flows in excess of 50 cfs (1416 L/s). Available precast or cast-in-place, offline units can treat flows from 1 to 300 cfs (28.3 to 8495 L/s). The pollutant removal capacity of the CDS system has been proven in lab and field testing.

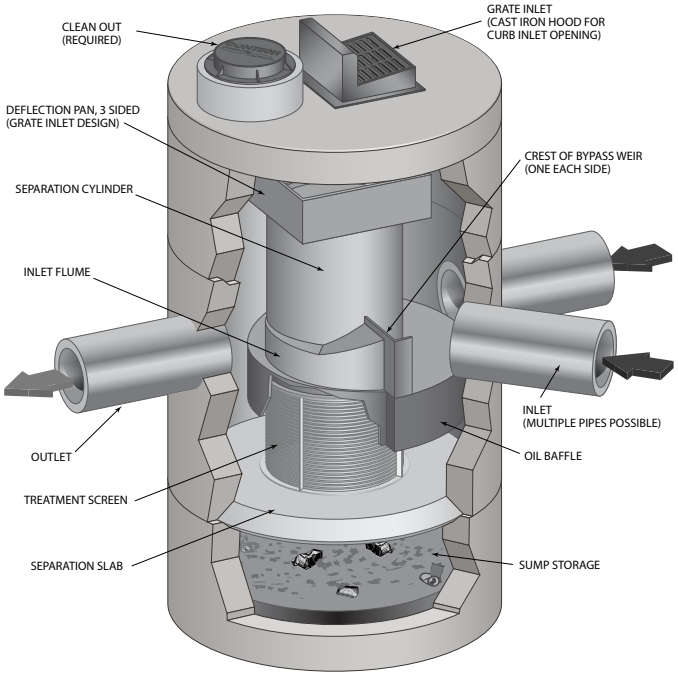
Operation Overview

Stormwater enters the diversion chamber where the diversion weir guides the flow into the unit's separation chamber and pollutants are removed from the flow. All flows up to the system's treatment design capacity enter the separation chamber and are treated.

Swirl concentration and screen deflection force floatables and solids to the center of the separation chamber where 100% of floatables and neutrally buoyant debris larger than the screen apertures are trapped.

Stormwater then moves through the separation screen, under the oil baffle and exits the system. The separation screen remains clog free due to continuous deflection.

During the flow events exceeding the treatment design capacity, the diversion weir bypasses excessive flows around the separation chamber, so captured pollutants are retained in the separation cylinder.



Design Basics

There are three primary methods of sizing a CDS system. The Water Quality Flow Rate Method determines which model size provides the desired removal efficiency at a given flow rate for a defined particle size. The Rational Rainfall Method™ or the and Probabilistic Method is used when a specific removal efficiency of the net annual sediment load is required.

Typically in the Unites States, CDS systems are designed to achieve an 80% annual solids load reduction based on lab generated performance curves for a gradation with an average particle size (d50) of 125 microns (μm). For some regulatory environments, CDS systems can also be designed to achieve an 80% annual solids load reduction based on an average particle size (d50) of 75 microns (μm) or 50 microns (μm).

Water Quality Flow Rate Method

In some cases, regulations require that a specific treatment rate, often referred to as the water quality design flow (WQQ), be treated. This WQQ represents the peak flow rate from either an event with a specific recurrence interval, e.g. the six-month storm, or a water quality depth, e.g. 1/2-inch (13 mm) of rainfall.

The CDS is designed to treat all flows up to the WQQ. At influent rates higher than the WQQ, the diversion weir will direct most flow exceeding the WQQ around the separation chamber. This allows removal efficiency to remain relatively constant in the separation chamber and eliminates the risk of washout during bypass flows regardless of influent flow rates.

Treatment flow rates are defined as the rate at which the CDS will remove a specific gradation of sediment at a specific removal efficiency. Therefore the treatment flow rate is variable, based on the gradation and removal efficiency specified by the design engineer.

Rational Rainfall Method™

Differences in local climate, topography and scale make every site hydraulically unique. It is important to take these factors into consideration when estimating the long-term performance of any stormwater treatment system. The Rational Rainfall Method combines site-specific information with laboratory generated performance data, and local historical precipitation records to estimate removal efficiencies as accurately as possible.

Short duration rain gauge records from across the United States and Canada were analyzed to determine the percent of the total annual rainfall that fell at a range of intensities. US stations' depths were totaled every 15 minutes, or hourly, and recorded in 0.01-inch increments. Depths were recorded hourly with 1-mm resolution at Canadian stations. One trend was consistent at all sites; the vast majority of precipitation fell at low intensities and high intensity storms contributed relatively little to the total annual depth.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Rainfall Method. Since most sites are relatively small and highly impervious, the Rational Rainfall Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS system are

determined. Performance efficiency curve determined from full scale laboratory tests on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Probabilistic Rational Method

The Probabilistic Rational Method is a sizing program Contech developed to estimate a net annual sediment load reduction for a particular CDS model based on site size, site runoff coefficient, regional rainfall intensity distribution, and anticipated pollutant characteristics.

The Probabilistic Method is an extension of the Rational Method used to estimate peak discharge rates generated by storm events of varying statistical return frequencies (e.g. 2-year storm event). Under the Rational Method, an adjustment factor is used to adjust the runoff coefficient estimated for the 10-year event, correlating a known hydrologic parameter with the target storm event. The rainfall intensities vary depending on the return frequency of the storm event under consideration. In general, these two frequency dependent parameters (rainfall intensity and runoff coefficient) increase as the return frequency increases while the drainage area remains constant.

These intensities, along with the total drainage area and runoff coefficient for each specific site, are translated into flow rates using the Rational Method. Since most sites are relatively small and highly impervious, the Rational Method is appropriate. Based on the runoff flow rates calculated for each intensity, operating rates within a proposed CDS are determined. Performance efficiency curve on defined sediment PSDs is applied to calculate solids removal efficiency. The relative removal efficiency at each operating rate is added to produce a net annual pollutant removal efficiency estimate.

Treatment Flow Rate

The inlet throat area is sized to ensure that the WQQ passes through the separation chamber at a water surface elevation equal to the crest of the diversion weir. The diversion weir bypasses excessive flows around the separation chamber, thus preventing re-suspension or re-entrainment of previously captured particles.

Hydraulic Capacity

The hydraulic capacity of a CDS system is determined by the length and height of the diversion weir and by the maximum allowable head in the system. Typical configurations allow hydraulic capacities of up to ten times the treatment flow rate. The crest of the diversion weir may be lowered and the inlet throat may be widened to increase the capacity of the system at a given water surface elevation. The unit is designed to meet project specific hydraulic requirements.

Performance

Full-Scale Laboratory Test Results

A full-scale CDS system (Model CDS2020-5B) was tested at the facility of University of Florida, Gainesville, FL. This CDS unit was evaluated under controlled laboratory conditions of influent flow rate and addition of sediment.

Two different gradations of silica sand material (UF Sediment & OK-110) were used in the CDS performance evaluation. The particle size distributions (PSDs) of the test materials were analyzed using standard method "Gradation ASTM D-422 "Standard Test Method for Particle-Size Analysis of Soils" by a certified laboratory.

UF Sediment is a mixture of three different products produced by the U.S. Silica Company: "Sil-Co-Sil 106", "#1 DRY" and "20/40 Oil Frac". Particle size distribution analysis shows that the UF Sediment has a very fine gradation (d50 = 20 to 30 μm) covering a wide size range (Coefficient of Uniformity, C averaged at 10.6). In comparison with the hypothetical TSS gradation specified in the NJDEP (New Jersey Department of Environmental Protection) and NJCAT (New Jersey Corporation for Advanced Technology) protocol for lab testing, the UF Sediment covers a similar range of particle size but with a finer d50 (d50 for NJDEP is approximately 50 μm) (NJDEP, 2003).

The OK-110 silica sand is a commercial product of U.S. Silica Sand. The particle size distribution analysis of this material, also included in Figure 1, shows that 99.9% of the OK-110 sand is finer than 250 microns, with a mean particle size (d50) of 106 microns. The PSDs for the test material are shown in Figure 1.

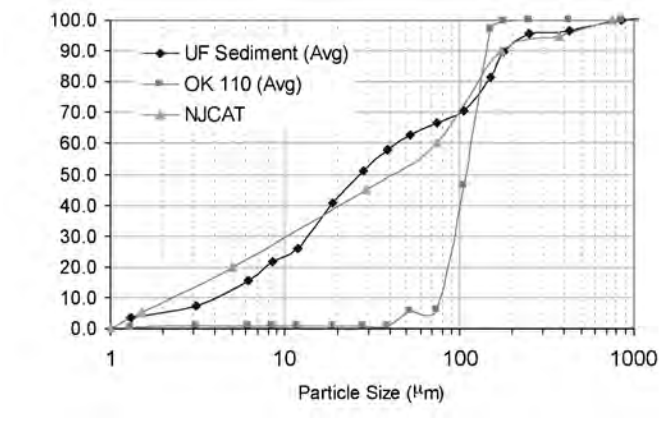


Figure 1. Particle size distributions

Tests were conducted to quantify the performance of a specific CDS unit (1.1 cfs (31.3-L/s) design capacity) at various flow rates, ranging from 1% up to 125% of the treatment design capacity of the unit, using the 2400 micron screen. All tests were conducted with controlled influent concentrations of approximately 200 mg/L. Effluent samples were taken at equal time intervals across the entire duration of each test run. These samples were then processed with a Dekaport Cone sample splitter to obtain representative sub-samples for Suspended Sediment Concentration (SSC) testing using ASTM D3977-97 "Standard Test Methods for Determining Sediment Concentration in Water Samples", and particle size distribution analysis.

Results and Modeling

Based on the data from the University of Florida, a performance model was developed for the CDS system. A regression analysis was used to develop a fitting curve representative of the scattered data points at various design flow rates. This model, which demonstrated good agreement with the laboratory data, can then be used to predict CDS system performance with respect

to SSC removal for any particle size gradation, assuming the particles are inorganic sandy-silt. Figure 2 shows CDS predictive performance for two typical particle size gradations (NJCAT gradation and OK-110 sand) as a function of operating rate.

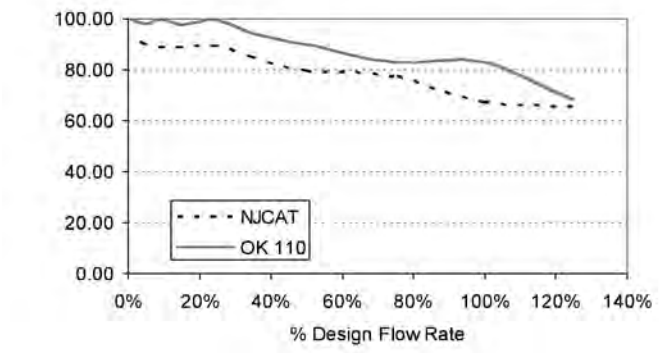


Figure 2. CDS stormwater treatment predictive performance for various particle gradations as a function of operating rate.

Many regulatory jurisdictions set a performance standard for hydrodynamic devices by stating that the devices shall be capable of achieving an 80% removal efficiency for particles having a mean particle size (d50) of 125 microns (e.g. Washington State Department of Ecology — WASDOE - 2008). The model can be used to calculate the expected performance of such a PSD (shown in Figure 3). The model indicates (Figure 4) that the CDS system with 2400 micron screen achieves approximately 80% removal at the design (100%) flow rate, for this particle size distribution (d50 = 125 μm).

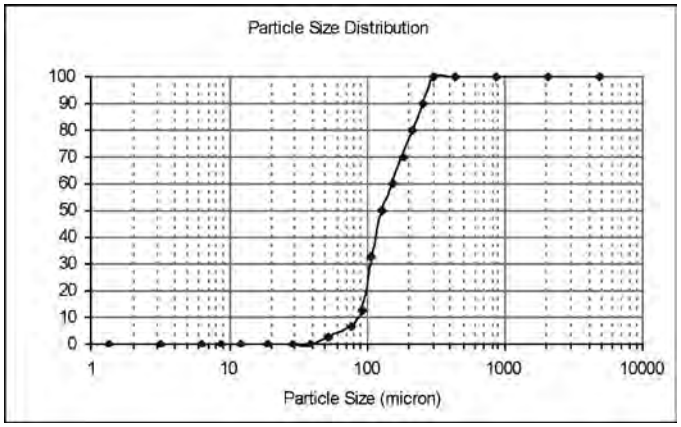


Figure 3. WASDOE PSD

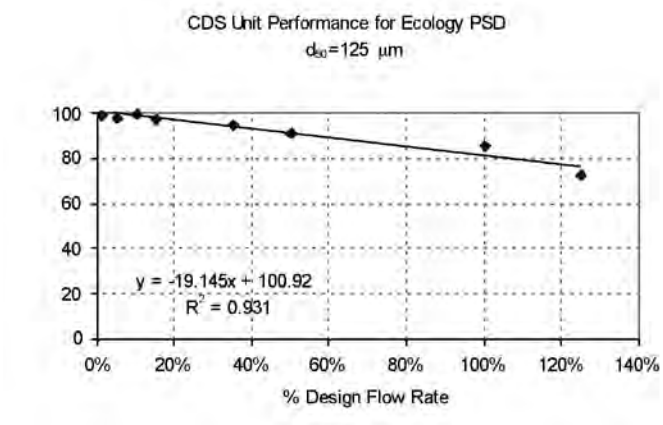


Figure 4. Modeled performance for WASDOE PSD.

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified

during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

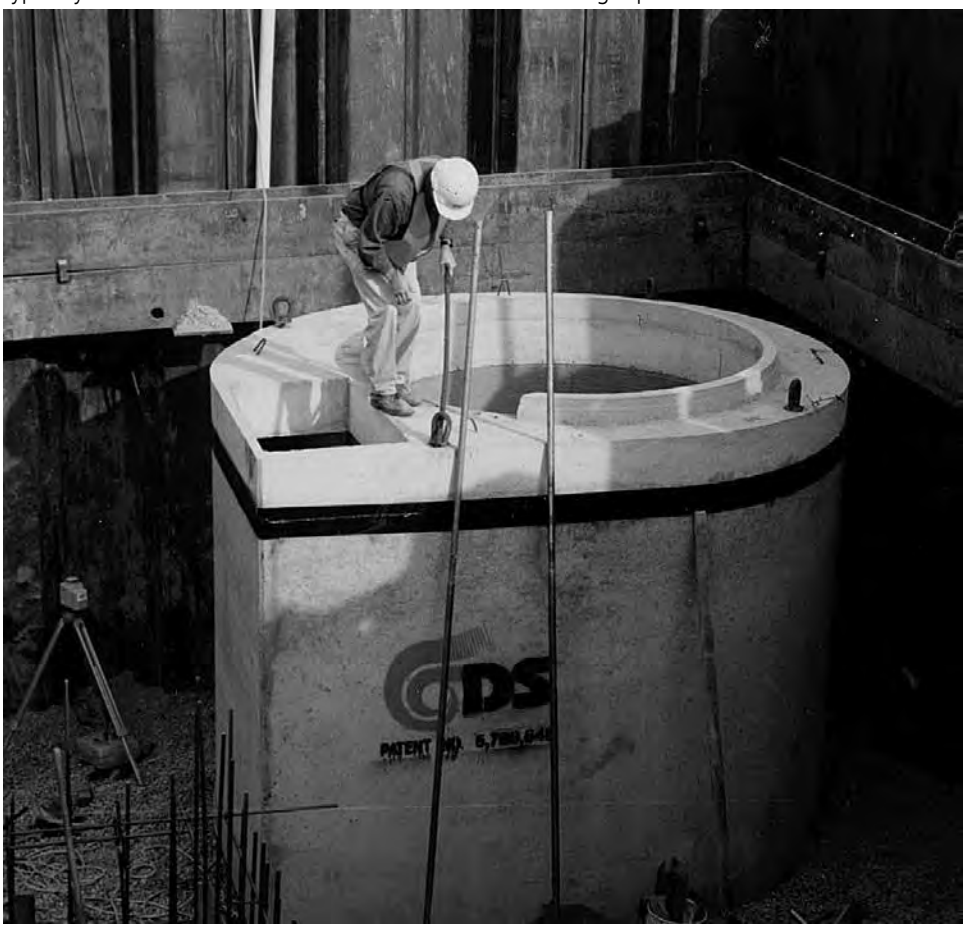
In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be cleaned to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.

CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	y^3	m^3
CDS1515	3	0.9	3.0	0.9	0.5	0.4
CDS2015	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3025	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities

Note: To avoid underestimating the volume of sediment in the chamber, carefully lower the measuring device to the top of the sediment pile. Finer silty particles at the top of the pile may be more difficult to feel with a measuring stick. These finer particles typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile.



CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. **Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile**.

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

SUPPORT

- Drawings and specifications are available at www.ContechES.com.
- Site-specific design support is available from our engineers.

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800-338-1122
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The product(s) described may be protected by one or more of the following US patents: 5,322,629; 5,624,576; 5,707,527; 5,759,415; 5,788,848; 5,985,157; 6,027,639; 6,350,374; 6,406,218; 6,641,720; 6,511,595; 6,649,048; 6,991,114; 6,998,038; 7,186,058; 7,296,692; 7,297,266; related foreign patents or other patents pending.

cds_manual 3/17 PDF

APPENDIX D
INSPECTION CHECKLISTS

Primrose Schools Franchising Company

225 Boston Post Road, Sudbury, MA

Date / Time: _____

Days Since Previous Rainfall and Rainfall Amount: _____

Inspector: _____

Operation and Maintenance Log

All oil, sediment and debris to be disposed of in accordance with local, state, and federal guidelines and regulations.

Maintenance Item	Inspection Date	Action Taken	Initials
1. Catch Basins (Inspected four times per year) (Cleaned biannually)			
Inspect & clean existing catch basins to remain prior to construction.			
Oil and sediments to be removed.			
Cleaned biennially or sooner if sediment build up exceeds 6"			
Structural damage or malfunction to be reported to site manager and repaired			
Cleaned immediately after fuel or oil spill.			
During colder periods, the catch basin grates must be kept free of snow and ice.			
During warmer periods, the catch basin grates must be kept free of leaves, litter, sand, and debris.			
Additional inspection, maintenance, and corrective measures taken as needed (please specify):			

Maintenance Item	Inspection Date	Action Taken	Initials
2. Water Quality Unit - Contech (Inspected four times per year in the first year and twice per year thereafter)			
Clean when sediment reaches 6 inches or when an appreciable level of hydrocarbons and trash covers over the water surface.			
Inspect that system components are in working order and that there are no blockages or obstructions in the inlet or separation screen			
Quantify accumulation of hydrocarbons, trash, and sediment.			
Clean SDS System at least once per year or when sediment has reached 75% of capacity or when appreciable level of hydrocarbons and trash has accumulated during dry weather conditions using vacuum truck			
Additional inspection, maintenance, and corrective measures taken as needed (please specify):			
3. Flared End Sections (Inspected quarterly & as needed) (cleaned annually)			
Remove & dispose of any trash or debris at outfall			
Remove any obstructions to flow; remove accumulated sediments & debris at outlet and within conduit.			
Maintain riprap pad and replace washout as needed.			
Additional inspection, maintenance, and corrective measures taken as needed (please specify):			

Maintenance Item	Inspection Date	Action Taken	Initials
4. Stormwater Basin (Inspected annually & as needed) (cleaned annually)			
Mow basin at least twice per year. Grass should be no shorter than 3 inches, and no taller than 6 inches			
Remove sediment as needed, but at minimum every five (5) years. Removal procedures shall not take place until floor of basin is thoroughly dry.			
Grass clippings, organic matter, and accumulated trash and debris are removed at least twice during the growing season.			
Eroded or barren spots should be reseeded immediately after inspection to prevent additional erosion and accumulation of sediment.			
Vegetated drainage systems shall be inspected at regular intervals and record specific information including but not limited to: Notable changes in general extent of standing water; Stability of embankments, channels, and outfall areas; Accumulation of sediment			
Additional inspection, maintenance, and corrective measures taken as needed (please specify):			

Maintenance Item	Inspection Date	Action Taken	Initials
5. Vegetated Areas (Inspected & maintained annually & as needed)			
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. If erosion is evident, armor the area with an appropriate lining or riprap stone.			
Inspect planted areas on a semi-annual basis and remove any litter.			
Maintain planted areas adjacent to pavement to prevent soil washout. Immediately clean any soil deposited on pavement.			
The grass vegetation should be cut to a height between three and four inches.			
Pesticide/Herbicide Usage – No pesticides are to be used unless a single spot treatment is required for a specific control application. No pesticides or herbicides are allowed within the 100' adjacent upland resource area or 200' riverfront area without prior approval of the Governing Authority.			
Additional inspection, maintenance, and corrective measures taken as needed (please specify):			

Notes:

APPENDIX E
ANNUAL EVALUATION FORMS

INVENTORY

E-1: ANNUAL EVALUATION LOG

E-2: AMENDMENT LOG

ANNUAL EVALUATION RECORD

The person responsible for maintenance shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.

The responsible party should evaluate the effectiveness of the maintenance plan by comparing the maintenance plan with the actual performance of the maintenance. The items to evaluate may include, but not limited to,

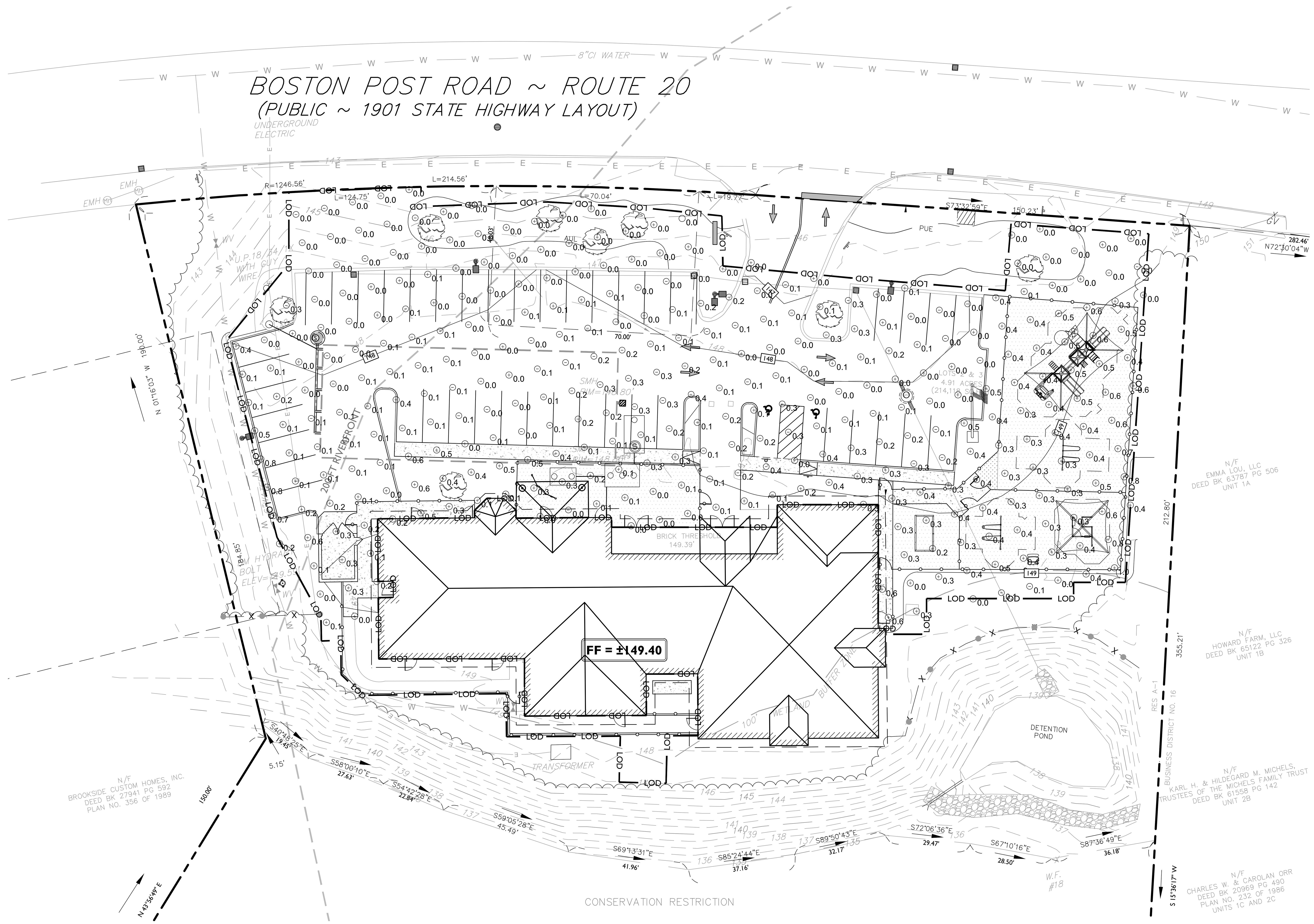
- Whether the inspections have been performed as scheduled;
- Whether the preventive maintenance has been performed as scheduled;
- Whether the frequency of preventative maintenance needs to increase or decrease;
- Whether the planned resources were enough to perform the maintenance;
- Whether the repairs were completed on time;
- Whether the actual cost was consistent with the estimated cost;
- Whether the inspection, maintenance, and repair records have been kept.

If actual performance of those items has been deviated from the maintenance plan, the responsible party should find the causes and implement solutions in a revised maintenance plan.

Evaluator(s)	***Date of Evaluation***	***Decision***
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)

Operations & Maintenance Plan Amendment Log

Amendment No.	Description of the Amendment	Date of Amendment	Amendment Prepared by (Name(s) and Title)



SYMBOL	DESCRIPTION
⊖0.1	SOIL CUT LABEL
⊕0.1	SOIL FILL LABEL

NOTE:
CONTRACTOR SHALL PERFORM THEIR OWN ANALYSIS FOR BIDDING AND CONSTRUCTION PURPOSES. THE FOLLOWING SOIL MOVEMENT EXHIBIT IS FOR PERMITTING PURPOSES ONLY.

SURFACE TO SURFACE CALCULATION

CUT	FILL
50 CY	167 CY
NET: 117 CY FILL	

DEMOLITION TAKEOFFS SUMMARY

MATERIAL	PROPOSED
EXISTING PAVEMENT	310 CY (REMOVE & BACKFILL)
EXISTING SANITARY SYSTEM	656 CY (REMOVE & BACKFILL)
TOTAL	966 CY

CONSTRUCTION MATERIALS SUMMARY

MATERIAL	PROPOSED
ASPHALT / PAVEMENT	370 CY (NEW MATERIAL)
CONCRETE SIDEWALK & MATS	48 CY (NEW MATERIAL)
TURF PLAYGROUND AREAS	149 CY (NEW MATERIAL)
SUBSURFACE STORM SEWER	16 CY (LINES & BEDDING)
SANITARY SYSTEM	813 CY (SYSTEM & BEDDING)
TOTAL	1,396 CY

PROJECT SUMMARY

SURFACE TO SURFACE CALC	117 CY FILL
DEMOLITION TAKEOFFS	966 CY
CONSTRUCTION MATERIALS	(1,396 CY)
NET OVERALL	313 CY EXPORT

GRAPHIC SCALE IN FEET
1" = 20'

ISSUE	DATE	BY	DESCRIPTION
2	04/01/2024	AB	FOR CONSERVATION COMMISSION SUBMISSION
1	12/08/2023	AB	FOR PLANNING BOARD SUBMISSION

NOT APPROVED FOR CONSTRUCTION

STONEFIELD engineering & design
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Princeton, NJ · Tampa, FL · Detroit, MI
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120 Washington Street, Suite 201, Salem, MA 01970
Phone 617.203.2076

LAND DEVELOPMENT PLANS
ADA ARCHITECTS
PROPOSED PRIMROSE SCHOOL CHILD CARE CENTER
PARCEL ID: K10-0009 & K10-0040
225 BOSTON POST ROAD
THE TOWN OF SUDBURY
MIDDLESEX COUNTY, MASSACHUSETTS

JOSHUA H. KLINE, P.E.
MASSACHUSETTS LICENSE No. 53936
LICENSED PROFESSIONAL ENGINEER

STONEFIELD engineering & design

SCALE: 1" = 20' PROJECT ID: BOS-230051

TITLE: SOIL MOVEMENT EXHIBIT

DRAWING: 1 of 1

STONEFIELD

STONEFIELD

STONEFIELD

STONEFIELD

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STONEFIELD

STONEFIELD

Receipt

Forms → Attach Files → Signature → Payment → Receipt

Summary/Receipt

print receipt Exit

Your submission is complete. Thank you for using DEP's online reporting system. You can select "My eDEP" to see a list of your transactions.

DEP Transaction ID: 1693519
Date and Time Submitted: 4/9/2024 12:44:51 PM
Other Email :

Form Name: WPA Form 3 - NOI

Project Location
City/Town Name: SUDBURY
location: 225 BOSTON POST ROAD
General Description: PROPOSED RENOVATION OF EXISTING TEMPLE STRUCTURE INTO A PROPOSED CHILDCARE FACILITY. ADDITIONAL SITE IMPROVEMENTS INCLUDE CHILDREN'S PLAYGROUND AREAS WITH ASSOCIATED EQUIPMENT, PARKING AREA AND PAVEMENT REMEDIATION, SEPTIC AND OTHER UTILITY UPGRADES AND STORMWATER INFRASTRUCTURE.

Applicant Information
Name: MATT TAYLOR
Company: PRIMROSE SCHOOL FRANCHISING COMPANY
Address: 21 CONKLIN LANE, WARREN, NJ, 07059

Payment Information
Your fee for the state share is $: 612.50
If you have paid by credit card or ACH, thank you for your payment. If you are paying by check or money order, please send your check (payable to the Commonwealth of Massachusetts) to MassDEP, Box 4062, Boston, MA 02211

Additional Forms Submitted
WPA Form 3 - NOI (Fee Transmittal)(ONLINE ONLY)

Ancillary Document Uploaded/Mailed
01 - Project Narrative
04 - Certified Abutters List
05 - Project Location Maps
06 - Land Development Plans
07 - Stormwater Management Report
08 - Operations & Maintenance Plan
09 - Earthwork Exhibit

12 - Town Portion of NOI Fee ($637.50)
13 - Copy of MassDEP Portion of NOI Fee ($612.50)