



OLD NORTH BRIDGE

**TOWN OF CONCORD**

TOWN HOUSE - P.O. BOX 535  
 CONCORD, MASSACHUSETTS 01742

**Select Board Agenda**

Monday, May 20, 2024 at 6:00 PM

Town House, Select Board Room, 22 Monument Square

Join Zoom Meeting

<https://us02web.zoom.us/j/82044926272?pwd=eEljYW13c0hFL3ZSR2dob0RLV2hCUT09>

Meeting ID: 820 4492 6272

Passcode: 013360

Dial In Toll-Free: 888-475-4499

#	Time*	Agenda Item
I.	6:00 PM	Public Comment: Public Comment is limited to up to 15 minutes, with no more than 3 minutes allocated to any one speaker. Public Comment is limited to items that are not on the agenda.
II.	6:15 PM	<p>Consent Agenda</p> <ul style="list-style-type: none"> <li>a. Town Accountant Warrants: May 15, 2024</li> <li>b. Meeting Minutes: April 10, 2024 (Concord Housing Roundtable); April 29, 2024</li> <li>c. One Day Liquor Licenses:               <ul style="list-style-type: none"> <li>i. AMENDMENT OF ISSUED LICENSE – Runway for Recovery for Wines Only for the Love Local Concord Event on <u>Thursday, May 23, 2024</u> from 6:30 PM to 9:00 PM on Walden Street (between Main Street and Hubbard Street)</li> <li>ii. Wines &amp; Malt Beverages Only for Jennifer Verrill of Verrill Farm for the Concord Rotary Dinner on Monday, June 27, 2024 from 5:00 PM – 8:00 PM at Verrill Farm, 11 Wheeler Road</li> <li>iii. All Alcoholic Beverages for Sara Killelea of Concord Country Club for the Women’s Closing Harvest Dinner on Thursday, October 3, 2024 from 12:00 PM to 11:00 PM at Concord Country Club, 246 ORNAC</li> <li>iv. All Alcoholic Beverages for Sara Killelea of Concord Country Club for the Wine Dinner on Thursday, October 24, 2024 from 3:00 PM to 11:00 PM at Concord Country Club, 246 ORNAC</li> <li>v. All Alcoholic Beverages for Sara Killelea of Concord Country Club for the Closing Cocktail Party on Friday, November 1, 2024 from 3:00 PM to 11:00 PM at Concord Country Club, 246 ORNAC</li> </ul> </li> <li>d. Sunday Entertainment License for Carole Wayland of 51 Walden Performing Arts Center for the Performance of an Opera on Sunday, June 9, 2024 from</li> </ul>

		<p>2:00 PM – 5:00 PM</p> <p>e. Gift Acceptance from the Middlesex Savings Bank to the Fire Department in the amount of \$1,000.00</p> <p>f. Proclamation for Jerry Wedge, Executive Director of the Umbrella Arts Center</p> <p>g. Committee Nominations:</p> <p>i. Greg Higgins of 51 Cottage Lane to the Economic Vitality Committee to complete an unexpired term to expire on May 31, 2025</p>
III.	6:15 PM	<p>Select Board Appointments</p> <p>i. Joe Palumbo of 90 Blackhorse Place to the Concord 2025 Executive Committee for a term to expire December 31, 2026</p> <p>ii. Pat Nelson of 52 Cottage Lane to the Planning Board for a term to expire May 31, 2029</p> <p>iii. Linda Escobedo of 1783 Wedgewood Common to the Concord Municipal Affordable Housing Trust for a term to expire May 31, 2027</p> <p>iv. Mary Hartman to the Concord Municipal Affordable Housing Trust as the Select Board Member for a term to expire May 31, 2027</p> <p>v. Terri Ackerman to the Concord 2025 Executive Committee as the Select Board Member for a term to expire December 31, 2025</p> <p>vi. <u>Reappoint</u> Andrea Foncerrada of 41 Commonwealth Avenue to the DEI Commission for a term to expire May 31, 2027</p> <p>vii. <u>Reappoint</u> Jimi Two Feathers of 303 Commonwealth Avenue to the DEI Commission for a term to expire May 31, 2027</p> <p>viii. <u>Reappoint</u> Eric Macy of 1228 Lowell Road to the Trustees of Town Donations for a first full term to expire May 31, 2027</p> <p>ix. <u>Reappoint</u> Rick Miller of 300 Main Street to the Trustees of Town Donations for a partial <u>third term</u> to expire May 31, 2026 (shortened to continue staggered terms on the Trustees) and to be exempted from APP 10, Section VII b. 1</p>
IV.	6:20 PM	Town Manager's Report
V.	6:25 PM	Chair's Report
VI.	6:30 PM	Select Board Liaison Reports
VII.	6:50 PM	<p>Discuss Language of the Ballot and Vote to set the date of the Special Town Election in relation to the adoption of the Special Act Establishing a Permanent Senior Means Tested Property Tax Exemption in the Town of Concord</p> <p>Presenter: Kaari Tari, Town Clerk</p>
VIII.	7:00 PM	<p>Review Request for Approval of North Bridge Trail Rehabilitation at Minuteman National Historic Park</p> <p>Presenter: Simone Monteleone, Superintendent of Minuteman National Historic Park</p>
IX.	7:10 PM	<p>Review Final Report of the Solar Implementation Task Force and Vote to Disband the Solar Implementation Task Force due to the conclusion of their work</p> <p>Presenter: Dean Banfield, Chair of the Solar Implementation Task Force</p>

X.	7:30 PM	<p>Review and Approve Amended MCI Concord Advisory Board Charge and Nominate Candidates to the MCI Concord Advisory Board for a term to expire December 31, 2025, with the option of reappointment at the discretion of the Select Board:</p> <ul style="list-style-type: none"> <li>i. Linda Miller of 300 Main Street</li> <li>ii. Patrick McCurdy of 1100 Monument Street</li> <li>iii. Peter Lowitt of 5 Westvale Drive</li> <li>iv. Scott Bates of 52 Indian Spring Road</li> <li>v. Lee Smith of 1836 Main Street</li> <li>vi. John Boynton of 72 Chestnut Street</li> <li>vii. Erin Cusker of 61 Commerford Road</li> <li>viii. Emily Rush of 122 Upland Road</li> <li>ix. Elizabeth Akehurst-Moore of 86 Holden Wood Road</li> <li>x. Dan Gainsboro of 12 Mill Run Lane</li> </ul> <p>Presenter: Mark Howell, Select Board Clerk</p>
XI.	7:35 PM	<p>Discuss potential Select Board Sign-On to the Conservation Law Foundation’s Comment Letter regarding Hanscom North Airfield Proposed Expansion</p> <p>Presenter: Mary Hartman, Select Board Chair</p>
XII.	7:40 PM	<p>Review and Approve Select Board Correspondence Policy</p> <p>Presenter: Mary Hartman, Select Board Chair</p>
XIII.		<p>Correspondence</p> <p>Weekly correspondence received by the Select Board can now be viewed online on the Select Board’s webpage here:  <a href="https://concordma.gov/3636/Select-Board-Correspondence">https://concordma.gov/3636/Select-Board-Correspondence</a></p>
XIV.		Adjournment

*\*Times are approximate and subject to change*

<b>Upcoming Meetings:</b>		
Monday, June 3, 2024	Monday, June 17, 2024	Monday, July 8, 2024



The Town of Concord endeavors to make public meetings accessible to all members of the community. To request a meeting accommodation or modification, please contact our ADA Coordinator Jessica Porter at [jporter@concordma.gov](mailto:jporter@concordma.gov) or at 978-318-3028. Please make any requests for accommodation or modifications at least two (2) business days prior to the scheduled meeting.

**Town of Concord  
Select Board  
Minutes  
April 10, 2024**

Pursuant to notice duly filed with the Town Clerk, the Concord Select Board convened in a meeting both in-person at 22 Monument Square on the 2<sup>nd</sup> floor in the Public Hearing Room and via Zoom at 7:00 PM on April 10, 2024 as part of the **Concord Housing Roundtable**.

Present were: Mary Hartman, Clerk; Terri Ackerman, Linda Escobedo, Mark Howell

**Call to Order**

Regional Housing Services Office Director Liz Rust opened the Concord Housing Roundtable.

**Planning Board – MBTA Communities Zoning**

Planning Board Chair Linda Miller presented an overview of Annual Town Meeting Article 34 – MBTA Communities Zoning and Overlay District. Ms. Miller highlighted the public outreach regarding the Warrant Article through public meetings and other communication channels and then presented technical zoning details. The zoning has received substantial public input and support and the next step for the zoning is Town Meeting approval.

**Concord Municipal Affordable Housing Trust – Housing Production Plan (HPP) Priority Production Projects; Status of 40B Projects; HPP Amendment; Pending Legislation; 2024 Annual Town Meeting Warrant Articles**

Concord Municipal Affordable Housing Trust Chair Keith Bergman presented an overview of Annual Town Meeting Warrant Articles that pertain to housing. Mr. Bergman continued with HPP priority production projects and their funding statuses, continuing with a general housing project pipeline and SHI update. Mr. Bergman noted that in relation to the HPP, he is looking into requesting an amendment to it in Fall 2024. Lastly, Mr. Bergman reviewed pending state legislation related to housing.

**Concord Housing Development Corporation – Assabet River Homes; Assabet River Homes Roadway Naming; Junction Village**

Concord Housing Development Corporation Chair Lee Smith presented an update on the Assabet River Homes at 406 OMR, with both units occupied and on their way to the SHI. Mr. Smith noted that for the new development, the permit has been issued and that the roadway will need to be named, in which the CHDC will consider naming nominations after Annual Town Meeting and until June 1, 2024. Mr. Smith added that naming nominations should have a connection to affordable housing. Mr. Smith then turned his presentation to an update on Junction Village, noting that the RFP is still on pause after the MCI Concord closure announcement. Lastly, Mr. Smith noted that the Small Grant Program is newly funded and the CHDC can accept new applications.

**Concord Housing Authority – Concord Housing Authority LLC Property Acquisition**

**Town of Concord  
Select Board  
Minutes  
April 10, 2024**

Concord Housing Authority Chair Stephanie Chrobak presented background information on the CHA, noting that it is a stage agency, focused on property management and emerging property acquisition. Ms. Chrobak continued and noted that funding comes from the state and augmented from the Bond Bill for maintenance and rehabilitation of property. Ms. Chrobak then highlighted that the CHA has completed the purchase for Forest Ridge, which was a quick purchase but slow moving through the paperwork associated with the sale. The CHA is partnering with the temporary shelter located at the former Best Western to work to house families staying at the shelter.

**Select Board – MCI Concord Advisory Board**

Select Board Clerk Mary Hartman presented on the Select Board’s work in response to the MCI Concord closure announcement. Ms. Hartman noted that the Select Board is working on two parallel tracks: one at the state level and one at the local level. At the state level, the board is working with Reps Cataldo and Gentile to make amendments to the Governor’s Budget Bill that will require the Division of Capital Asset Management and Maintenance (DCAMM) to consult with local and state agencies when deciding the disposition of the parcel. Another amendment will seek funds for the town for consulting. At the local level, the Select Board is working with Town staff on a charge for a MCI Concord Advisory Board. The main functions of the local MCI Concord Advisory Board will be to educate and advise the Select Board and seek community input. She said she hoped the board would be appointed in May 2024.

**Community Preservation Committee**

There were no updates from the Community preservation Committee.

**Concord Housing Foundation**

Concord Housing Foundation Member Holly Darzen presented background information on the CHF and noted that its primary role is in providing early funding for developments and noted that the CHF Newsletter will be published shortly.

**Adjournment**

Upon a motion duly made and seconded, it was UNANIMOUSLY **voted:** to adjourn the meeting at 8:22 PM.

**Meeting Materials:**

[Concord Housing Roundtable Meeting Agenda for April 10, 2024](#)

[Concord Housing Roundtable Meeting Recording for April 10, 2024](#)

**Town of Concord  
Select Board  
Minutes  
April 29, 2024**

Pursuant to notice duly filed with the Town Clerk, the Concord Select Board convened in a meeting in-person only at 500 Walden Street in the Concord-Carlisle High School Learning Commons, Room 241 at 6:00 PM on April 29, 2024.

Present were: Henry Dane, Chair; Mary Hartman, Clerk; Terri Ackerman, Linda Escobedo, Mark Howell

**Call to Order**

Select Board Chair Henry Dane called the meeting to order at 6:00 PM.

Ms. Hartman confirmed that all members were present.

**Committee Nominations**

Upon a motion duly made and seconded, it was UNANIMOUSLY **voted**: to nominate the following candidates to the Agriculture Committee: Grace Scimone of 10 Dana Road (current Associate Member) as a Full Member for a term to expire May 31, 2027; Brian Cramer of 792 Monument Street as a Full Member for a term to expire May 31, 2027; Mark Congdon of 11 Heath Road, Shrewsbury as an Associate Member for a term to expire May 31, 2027 and to be exempt from the Concord residency requirements outlined in APP 10.

**Discuss Recommendations on Annual and Special Town Meeting**

Chair Dane opened the discussion on recommendations for Annual and Special Town Meeting. Mr. Dane commented that the Town Moderator has noted that she anticipates a motion on the floor of Annual Town Meeting to take the Warrant Articles out of order, and asked if the Select Board would support or oppose the motion.

The Select Board concurred that it would oppose the motion to take the Warrant Articles out of order, as the Warrant is ordered in a public meeting significantly in advance of Town Meeting in which the public is able to weigh in on the order of the Warrant at this time.

Mr. Dane continued and commented that the Town Moderator has noted that she anticipates a motion on the floor of Annual Town Meeting for the vote of Article 22 – Authorize New Middle School Naming – Name the New Concord Middle School Ellen Garrison Middle School to be taken via paper ballot and if so, asked the Select Board to weigh in on the procedure of the meeting if a motion to vote via paper ballot passed. The options for the Select Board were: 1) Select Board could move to take up one additional Warrant Article, notwithstanding the preliminary motion to take up no new business after 10:00 PM, while the meeting awaits the ballot count, 2) Select Board could move to adjourn the meeting to resume on Tuesday, April 30, 2024 at 7:00 PM and report the vote when the meeting resumes, 3) Town Meeting could take up no new business and wait for the vote results.

The Select Board concurred that it would move to adjourn the meeting to resume on Tuesday, April 30, 2024 at 7:00 PM and report the vote when the meeting resumes. The Select Board also

**Town of Concord  
Select Board  
Minutes  
April 29, 2024**

concurred to move to take up no new business after 10:15 PM at Annual Town Meeting (motion made *at* Town Meeting), rather than the traditional 10:00 PM time.

Mr. Dane continued and commented that there is an anticipated amendment to Article 20 – Concord-Carlisle Regional School District Budget to remain at the Finance Committee Guideline and asked if the Select Board would support or oppose the amendment.

Mr. Howell noted that ultimately, he does not support either option – neither the Regional School Committee’s inability to reduce their budget to meet the Guideline nor the Finance Committee’s ability to provide some flexibility on the Guideline.

Chair Dane and Ms. Ackerman noted that they would support the amendment.

Ms. Hartman noted that she feels that leadership must be held accountable and leaned more toward supporting the amendment.

Upon a motion duly made and seconded, it was **voted:** to recommend affirmative action on the anticipated Finance Committee amendment to Article 20. The motion passed 4-1-0, with Ms. Escobedo voting nay.

Chair Dane continued and noted that the Select Board also still must make a recommendation on Article 38 – Citizen Petition: Citizen Support for a Cell Tower Located at the Landfill at 755 Walden Street.

Upon a motion duly made and seconded, it was **UNANIMOUSLY voted:** to recommend affirmative action on Article 38 – Citizen Petition: Citizen Support for a Cell Tower Located at the Landfill at 755 Walden Street.

Chair Dane continued and noted that the Select Board also still must make a recommendation on Special Town Meeting Warrant Article 1 – In-Town Utility Scale Battery.

Upon a motion duly made and seconded, it was **UNANIMOUSLY voted:** to recommend affirmative action on Article 1 – In-Town Utility Scale Battery.

**Relocate to Gymnasium at Concord-Carlisle High School for Annual Town Meeting**

**Meeting Materials:**

[Select Board Meeting Agenda for April 29, 2024](#) (Pre-Town Meeting Select Board Meeting)

This meeting was not hybrid nor recorded to be posted on Minuteman Media Network’s YouTube channel.



**TOWN OF CONCORD**  
**Office of the Town Manager**  
Town House  
P.O. Box 535  
Concord, Massachusetts 01742

To: Concord Select Board

From: Shannon McAndrew, Executive Assistant to the Select Board

Date: May 20, 2024

Re: One Day Liquor License for Olivia Boger of Runway for Recovery – Amendment to Issued License

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Included in your packet is a One Day Liquor License application for Wines Only for Oliva Boger of Runway for Recovery, a nonprofit organization seeking to hold a fundraiser event on Thursday, May 23, 2024 from 6:30 PM to 9:00 PM on Walden Street between Main Street and Hubbard Street. As such, the applicant is seeking to close the public way during the event and will be provided support from both Concord Public Works and the Concord Police Department.

This application was originally reviewed and approved by the Select Board on March 18, 2024, but due to poor weather conditions, the application seeks an amendment to the issued license for the event to be held on Thursday, May 23, 2024. Relevant Town staff have also reviewed the request for an amendment, and there were no staffing issues in changing the event date.

This application is complete with payment and TIPS Certification. This application was also reviewed by the Use of Town Property internal review team, including the Police Department, Fire Department, Public Works, Department of Planning and Land Management, and Risk and Compliance and are comfortable proceeding pending the Select Board's approval of the amendment to the license.

**From:** [noreply@civicplus.com](mailto:noreply@civicplus.com)  
**To:** [licensing board](#); [Town Manager's Office](#); [jromanul@concordma.gov](mailto:jromanul@concordma.gov)  
**Subject:** Online Form Submittal: One Day Special Liquor Licenses  
**Date:** Monday, February 12, 2024 5:23:41 PM

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## One Day Special Liquor Licenses

Company or Organization	Runway for Recovery
Applicant Name	Olivia Boger
Email Address	<a href="mailto:olivia@runwayforrecovery.org">olivia@runwayforrecovery.org</a>
Applicant Address	29 Water Street
City	Newburyport
State	Massachusetts
Zip Code	01950
Phone Number	6177102172
Name of Event	Olivia Boger
Activity Is	Non-Profit
Event Type	Event in Town-Owned Facility
Event Date & Start Time	<b>5/23/2024</b> 6:30 PM
End Time	9:00 PM
Premises to be Licensed	Walden Street (between Hubbard and Main Street)
City	Concord
State	MA
Zip Code	01742
License is for the Sale of:	Wines Only
Bartenders TIPS trained?	Yes

Under 21 Attendees? Yes

---

1st one-day license for Organization? No

---

If NO, number of years licensed? 17

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More than 100 in attendance? Yes

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*By exercising the privileges of this license in serving persons with alcoholic beverages, the licensee is potentially exposed to significant liability for injuries and damages to the persons served or to others who are injured or damaged by the persons served. Your acceptance and exercise of this license will be deemed to be acknowledgement that you are aware of this potential liability. You are encouraged to discuss the risks associated with exercising your privileges of the license and the precautions appropriate to avoid injuries, damage and liability to others with your legal advisor. The Town of Concord, and the Select Board, acting as the Local Licensing Authority, shall not be liable to the licensee or others if injury or damage shall result from the exercise of the license.*

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I acknowledge and accept the above statement of liability Olivia Boger

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APPLICATION FEE \$75.00

*Please forward to: Town Manager's Office PO Box 535 Concord, MA 01742  
Applications cannot be processed until payment is received.*

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Acknowledgements I attest the information contained in this form is true and accurate., I acknowledge that I must pay an application fee of \$75 and will mail my payment., I acknowledge that no action will be taken, or scheduled, regarding my application until payment is received.

---

IMPORTANT NOTICE **Board & Committee Meeting Calendar**

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(Section Break)

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TIPS TRAINING

*The Select Board require that for any event which they issue a special permit, the alcohol provided must be served by a TIPS trained (or equivalent) bartender. TIPS training cards, or their equivalent, must accompany this application. Additionally, each certification must show a photo and name of the bartender(s) and must be current. If a photo is not on the TIPS training cards, a copy of a valid driver's license with a photo should be included. Proof of TIPS credentials must be provided before any application may be voted on by the Select Board.*

---

I acknowledge and Copies of cards have been included with this application

agree to the Town of  
Concord's TIPS  
Training Policy as  
outlined above.

---

(Section Break)

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**UNDER 21 POLICY**

*The Town of Concord Select Board assumes that there may be guests or attended under 21 years of age at any event. therefore, this policy must be adhered to for all events. Applicants agree to check the ages of all guests at the door. If a persons under the age of 21 are present, his or her hand shall be stamped to indicate the he/she is underage for the bartender.*

---

I certify that Concord's  
Under 21 Policy, as  
outlined above, will be  
followed.

A legal adult, over 21 years of age, shall check the ages of all guests to ensure compliance., All bartenders shall be made aware of the Under 21 Policy terms before the event's commencement.

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Email not displaying correctly? [View it in your browser.](#)



**TOWN OF CONCORD**  
**Office of the Town Manager**  
Town House  
P.O. Box 535  
Concord, Massachusetts 01742

To: Concord Select Board

From: Shannon McAndrew, Executive Assistant to the Select Board

Date: May 20, 2024

Re: One Day Liquor License for Jen Verrill of Verrill Farm

---

Included in your meeting packet is a One Day Liquor License application for Jen Verrill of Verrill Farm. This application is for Wines and Malt Beverages Only for the Concord Rotary Dinner to be held on Thursday, June 27, 2024 from 5:00 PM to 8:00 PM at Verrill Farm, 11 Wheeler Road.

Jen Verrill keeps an active file of TIPS Certifications for bartenders from SimplyServe (currently 8 bartenders) with the Town Manager's Office, which I have confirmed is up to date. This applications are complete with payment.

**Shannon McAndrew**

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**From:** noreply@civicplus.com  
**Sent:** Thursday, May 9, 2024 9:33 AM  
**To:** licensing board; Town Manager's Office; jromanul@concordma.gov  
**Subject:** Online Form Submittal: One Day Special Liquor Licenses

## One Day Special Liquor Licenses

Company or Organization	Verrill Farm
Applicant Name	Jennifer Verrill
Email Address	jen@verrillfarm.com
Applicant Address	11 Wheeler Rd
City	Concord
State	Massachusetts
Zip Code	01742
Phone Number	9788355638
Name of Event	Concord Rotarty Dinner
Activity Is	Non-Profit
Event Type	Private Event in Rented Facility
Event Date & Start Time	6/27/2024 5:00 PM
End Time	8:00 PM
Premises to be Licensed	Verrill Farm LLC
City	Concord
State	Massachusetts
Zip Code	01742
License is for the Sale of:	Wines & Malt Beverages Only

Bartenders TIPS  
trained? Yes

---

Under 21 Attendees? No

---

1st one-day license for  
Organization? No

---

If NO, number of years  
licensed? 3

---

More than 100 in  
attendance? No

---

*By exercising the privileges of this license in serving persons with alcoholic beverages, the licensee is potentially exposed to significant liability for injuries and damages to the persons served or to others who are injured or damaged by the persons served. Your acceptance and exercise of this license will be deemed to be acknowledgement that you are aware of this potential liability. You are encouraged to discuss the risks associated with exercising your privileges of the license and the precautions appropriate to avoid injuries, damage and liability to others with your legal advisor. The Town of Concord, and the Select Board, acting as the Local Licensing Authority, shall not be liable to the licensee or others if injury or damage shall result from the exercise of the license.*

---

I acknowledge and  
accept the above  
statement of liability Jennifer Verrill

---

APPLICATION FEE \$75.00  
*Please forward to: Town Manager's Office PO Box 535 Concord, MA 01742  
Applications cannot be processed until payment is received.*

---

Acknowledgements I attest the information contained in this form is true and accurate., I acknowledge that I must pay an application fee of \$75 and will mail my payment., I acknowledge that no action will be taken, or scheduled, regarding my application until payment is received.

---

IMPORTANT NOTICE **Board & Committee Meeting Calendar**

---

(Section Break)

---

#### TIPS TRAINING

*The Select Board require that for any event which they issue a special permit, the alcohol provided must be served by a TIPS trained (or equivalent) bartender. TIPS training cards, or their equivalent, must accompany this application. Additionally, each certification must show a photo and name of the bartender(s) and must be current. If a photo is not on the TIPS training cards, a copy of a valid driver's license*

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*with a photo should be included. Proof of TIPS credentials must be provided before any application may be voted on by the Select Board.*

---

I acknowledge and agree to the Town of Concord's TIPS Training Policy as outlined above.

Copies of cards have been included with this application

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(Section Break)

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#### UNDER 21 POLICY

*The Town of Concord Select Board assumes that there may be guests or attended under 21 years of age at any event. therefore, this policy must be adhered to for all events. Applicants agree to check the ages of all guests at the door. If a persons under the age of 21 are present, his or her hand shall be stamped to indicate the he/she is underage for the bartender.*

---

I certify that Concord's Under 21 Policy, as outlined above, will be followed.

A legal adult, over 21 years of age, shall check the ages of all guests to ensure compliance., All bartenders shall be made aware of the Under 21 Policy terms before the event's commencement.

---

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**TOWN OF CONCORD**  
**Office of the Town Manager**  
Town House  
P.O. Box 535  
Concord, Massachusetts 01742

To: Concord Select Board

From: Shannon McAndrew, Executive Assistant to the Select Board

Date: May 13, 2024

Re: One Day Liquor Licenses for Sara Killelea of Concord Country Club

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Included in your meeting packet are five One Day Liquor License applications for Sara Killelea of Concord Country Club. These applications are all for All Alcoholic Beverages to be held at the Concord Country Club, 246 ORNAC for the following events:

- Women's Closing Harvest Dinner on Thursday, October 3, 2024 from 12:00 PM to 11:00 PM
- Wine Dinner on Thursday, October 24, 2024 from 3:00 PM to 11:00 PM
- Closing Cocktail Party on Friday, November 1, 2024 from 3:00 PM to 11:00 PM

Sara Killelea (General Manager) keeps an active file of TIPS Certifications for Concord Country Club bartenders with the Town Manager's Office, which I have confirmed is up to date. These applications are complete with payment.



Telephone	<u>978-371-1089</u>	Email	<u>skillelea@concordcc.org</u>
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**SECTION 3 - APPLICANT INFORMATION**

Applicant Name	<u>Sara Killelea</u>		
Street Number	<u>246</u>	Street Name	<u>Old Road to Nine Acre Corner</u>
City	<u>Concord</u>	State	<u>MA</u> Zip Code <u>01742</u>
Telephone number	<u>978-371-1089</u>	Email	<u>skillelea@concordcc.org</u>

**SECTION 4 - MAILING ADDRESS**

Street Number	<u>246</u>	Street Name	<u>Old Road to Nine Acre Corner</u>
City	<u>Concord</u>	State	<u>MA</u> Zip Code <u>01742</u>
Telephone	<u>978-371-1089</u>		

**SECTION 5 - HOURS OF OPERATION**

To Sell: (Check One)  Wines & Malts  
 All Alcoholic

**Note: Please indicate A.M. or P.M.**

Day of Event	<u>10/03/24</u>	Hours of Operation	From <u>12pm</u>	To <u>11pm</u>
Activity	<u>Women's Closing Harvest Dinner</u>			
Approximate Number of Attendance	<u>100</u>			

**SECTION 6- DECLARATION**

I do hereby certify under the pains & penalties of perjury that the information provided above is true and correct.

Date 03/05/24

(Chapter 138, Section 14. General Laws of the Commonwealth of Massachusetts)

**Indicates Mandatory Field.**

Note: Please check the above checkbox to submit the form



Telephone

978-371-1089

Email

skillelea@concordcc.org**SECTION 3 - APPLICANT INFORMATION**

Applicant Name

Sara Killelea

Street Number

246

Street Name

Old Road to Nine Acre Corner

City

Concord

State

MA

Zip Code

01742

Telephone number

978-371-1089

Email

skillelea@concordcc.org**SECTION 4 - MAILING ADDRESS**

Street Number

246

Street Name

Old Road to Nine Acre Corner

City

Concord

State

MA

Zip Code

01742

Telephone

978-371-1089**SECTION 5 - HOURS OF OPERATION**

To Sell: (Check One)

Wines &amp; Malts

All Alcoholic

**Note: Please indicate A.M. or P.M.**Day of  
Event10/24/24**Hours of  
Operation****From**3pm**To**11pm

Activity

Wine DinnerApproximate Number of  
Attendance70

**SECTION 6- DECLARATION**

I do hereby certify under the pains & penalties of perjury that the information provided above is true and correct.

Date 03/05/24

(Chapter 138, Section 14. General Laws of the Commonwealth of Massachusetts)

**Indicates Mandatory Field.**

Note: Please check the above checkbox to submit the form



Telephone	<u>978-371-1089</u>	Email	<u>skillelea@concordcc.org</u>
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**SECTION 3 - APPLICANT INFORMATION**

Applicant Name	<u>Sara Killelea</u>		
Street Number	<u>246</u>	Street Name	<u>Old Road to Nine Acre Corner</u>
City	<u>Concord</u>	State	<u>MA</u> Zip Code <u>01742</u>
Telephone number	<u>978-371-1089</u>	Email	<u>skillelea@concordcc.org</u>

**SECTION 4 - MAILING ADDRESS**

Street Number	<u>246</u>	Street Name	<u>Old Road to Nine Acre Corner</u>
City	<u>Concord</u>	State	<u>MA</u> Zip Code <u>01742</u>
Telephone	<u>978-371-1089</u>		

**SECTION 5 - HOURS OF OPERATION**

To Sell: (Check One)       Wines & Malts  
 All Alcoholic

**Note: Please indicate A.M. or P.M.**

Day of Event	<u>11/01/24</u>	Hours of Operation	From <u>3pm</u>	To <u>11pm</u>
Activity	<u>Closing Cocktail Party</u>			
Approximate Number of Attendance	<u>150</u>			

**SECTION 6- DECLARATION**

I do hereby certify under the pains & penalties of perjury that the information provided above is true and correct.

Date 03/05/24

(Chapter 138, Section 14. General Laws of the Commonwealth of Massachusetts)

**Indicates Mandatory Field.**

Note: Please check the above checkbox to submit the form



**TOWN OF CONCORD**  
**Office of the Town Manager**  
Town House  
P.O. Box 535  
Concord, Massachusetts 01742

To: Concord Select Board

From: Shannon McAndrew, Executive Assistant to the Select Board

Date: May 20, 2024

Re: Sunday Entertainment License for Carole Wayland of 51 Walden Performing  
Arts Center

---

Included in your meeting packet is an application for a Sunday Entertainment  
Licenses for Carole Wayland of 51 Walden Performing Arts Center for a  
performance of an opera on Sunday, June 9, 2024 from 2:00 PM to 5:00 PM.

This application is complete with payment.





Town of Concord  
Finance Department  
22 Monument Square  
P.O. Box 535  
Concord, Massachusetts 01742

To: Kerry A. Lefleur, Town Manager  
From: Anthony M. Ansaldi, Jr, Chief Financial Officer  
Subject: Donation to the Concord Fire Department on behalf of Middlesex Savings Bank  
Date: May 15, 2024

I am writing to request the inclusion of an item, with your acceptance on the upcoming Select Board's agenda. A gift donation to the Concord Fire Department from Middlesex Savings Bank for the purchase of safety equipment.

Middlesex Savings Bank  
36 Summer Street  
Natick, MA 01760

\$1,000.00

To be Deposited:  
Concord Fire Department  
FDGIFT 45100066-4850

Accepted: \_\_\_\_\_  
Clerk

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



Michael Kuza  
Senior Vice President

February 22, 2024

Concord Fire Department  
Attn: Todd Niemi  
209 Walden Street  
Concord, MA 01742

Dear Lt. Niemi:

Attached, please find Middlesex Savings Bank's contribution of \$1,000.00, proceeds of which will be used to support the Concord Fire Department's purchase of safety equipment. We at the Bank feel it is important to support the community that we serve. Our contribution to your organization is just one method by which we do this.

On behalf of the entire staff at the Bank, I thank you for thinking of Middlesex Savings Bank and wish you continued success in your fund-raising efforts.

Sincerely,

Michael Kuza  
Senior Vice President

IRS regulations, effective January 1, 1994, require the substantiation of charitable contributions. In keeping with these regulations, please sign the enclosed IRS form and return in the postage paid envelope provided.



# Middlesex Savings Bank

ADMINISTRATION CENTER  
NATICK, MA 01760

0162820

53-7122  
2113

	DATE	CHECK NUMBER	PAY EXACTLY
C06220	2/23/2024	162820	**1,000.00**

PAY

One Thousand and 00/100

TO  
THE  
ORDER  
OF

CONCORD TOWN OF/FIRE  
CONCORD FIRE DEPT  
209 WALDEN ST  
CONCORD, MA 01742

VOID AFTER 180 DAYS

*Michelle L. Simmy*

⑈0162820⑈ ⑆211371227⑆ 830 6000 02⑈

COMMONWEALTH OF MASSACHUSETTS  
TOWN OF CONCORD  
SELECT BOARD

**PROCLAMATION**

**HONORING JERRY WEDGE AND HIS COMMITMENT TO  
BUILDING A VIBRANT AND INCLUSIVE COMMUNITY  
THROUGH THE ARTS**

**WHEREAS** Jerry Wedge has stewarded the transformation and expansion of The Umbrella Arts Center as a highly regarded cultural destination and center of excellence in his 12-year tenure as Executive Director; and

**WHEREAS** Jerry served three terms on the Concord Public School Committee and Concord-Carlisle Regional School Committee; and

**WHEREAS** Jerry has contributed to fostering and strengthening Arts & Education in Concord through service to the Concord Center Cultural District Task Force; Concord 250 Arts, Literature, and Music Committee; Economic Vitality & Tourism Community and Cultural Advisory Group; among other town groups and committees;

**NOW THEREFORE** We, as the select Board of the Town of Concord, Massachusetts, on behalf of Concord's employees, committees, community partners and citizens, do hereby recognize Jerry Wedge for his service to the community over nearly two decades in Concord and for enriching lives in our town through expanding access to Arts.



*Proclaimed this 21<sup>st</sup> day of May 2024*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CONCORD SELECT BOARD**



Town Clerk's Office  
22 Monument Square  
Concord, MA 01742

# Memo

**To:** Select Board  
Kerry Lafleur, Town Manager

**Cc:** Anthony Ansaldi, Finance Director  
Board of Registrars

**From:** Kaari Mai Tari

**Date:** May 20, 2024

**Re:** Special Town Election timeline to adopt a Permanent Senior Means Tested Property Tax Exemption **with updated ballot question language highlighted below**

---

On April 29, 2024, during the first session of Concord's Annual Town Meeting, voters unanimously approved, under the consent calendar, adoption of Chapter 193 of the Acts of 2022 establishing a permanent Senior Means Tested Property Tax Exemption in the Town of Concord as approved by the Legislature on August 24, 2022: <https://malegislature.gov/Laws/SessionLaws/Acts/2022/Chapter193>

According to Section 5 of this Special Act, the voters of Concord must also approve adoption of this measure at the polls.

I request that the Select Board vote to hold a Special Town Election for this purpose on Tuesday, June 25<sup>th</sup> in order for the Special Act to be in effect during the first quarter of the FY2025 tax cycle. The effective date of the Special Act is 30 days after an affirmative vote at the polls. (proposed motion 1)

I further request that the Select Board designate the National Guard Armory building located at 91 Everett Street as the polling location for Precincts 4 and 5 for this election only. The polling location normally used is unavailable due to summer camp programming. (proposed motion 2)

## Proposed motion 1:

That a Special Town Election be held on June 25, 2024 for the purpose of approving the adoption of a permanent Senior Means Tested Property Tax Exemption in the Town of Concord by including the following language on the ballot:

**Shall the Town of Concord accept the provisions of Chapter 193 of the Acts of 2022, "An Act Establishing A Permanent Senior Means-Tested Property Tax Exemption in the Town of Concord," which Act was accepted at the 2024 Annual Town Meeting, fair and concise summary which appears below?**

**A Tax Fairness Committee was appointed by the Select Board to examine the "fair allocation of property tax burdens" as well as the "loss of economic diversity resulting from reliance on the property tax in Concord."**

The Tax Fairness Committee's proposal, which was approved and codified as Chapter 374 of the Acts of 2016, created a pilot program to assist seniors with limited incomes to stay in their homes. The pilot program was successful, and thus Town Meeting subsequently asked the Legislature to permit the Town to make the tax relief it offered permanent. In 2022, the Legislature approved legislation that did so, subject to (1) a Town Meeting vote accepting the legislation establishing the program; and (2) a subsequent approval by the Town's voter at the ballot.

Accordingly, if the ballot question before you receives an affirmative vote at this election, the Senior Means-Tested Property Tax Exemption (the "Exemption") would become permanent. The Exemption is intended to provide property tax relief for low- and moderate-income seniors. It would be available to Concord homeowners who are 65 or older (and whose co-owners are 60 or older), who have lived in Concord for at least 10 years, do not exceed certain income requirements tied to the State Income Tax Circuit Breaker, and whose houses are assessed at not more than the town's median single-family value. Eligible seniors whose applications for the Exemption are accepted will have their property tax bills discounted by 10% of their gross income, for up to 50% of total property tax.

The value of all Exemptions granted in the Town cannot exceed more than ½ of 1% of the Town's property tax levy in the first year, and each year after that, the Select Board will set a new cap of up to 1%. The caps are flexible, such that if the number of eligible applicants would result in a dollar amount of exemptions greater than the Select Board's selected cap, the total annual qualifying income percentage may be raised as necessary. If the cap exceeds the need for the exemptions, the total cap shall be reduced to meet the need.

**Proposed Motion 2:**

That the polling place for precincts 4 and 5 be changed to the National Guard Armory located at 91 Everett Street for this election only.

**Proposed June 25, 2024 Special Town Election Timeline**

ACTION	TIME FRAME	COMPLETION DATE	NOTES
Select Board votes on Town Election date and final ballot question	36 days	Monday, May 20, 2024	
Select Board provides question to Town Counsel & Town Clerk	35 days	Tuesday, May 21, 2024	35 days prior to Special Town Election (MGL 54:42C)
Ballot coding and printing	35 days	Tuesday, May 21, 2024	
<i>Town Counsel provides arguments for ballot information mailing to Select Board</i>	28 days	<i>Tuesday, May 28, 2024</i>	<i>MGL 53:18B: information relating to questions on town ballot (deadline is 20 days prior)</i>
<i>Ballot information is mailed to voters</i>	27 days	<i>Wednesday, May 29, 2024</i>	<i>allows more time for voters to receive information</i>
Warrant to Select Board for	22 days	Monday, June 3, 2024	

signature			
Town Counsel provides arguments for ballot information mailing to Select Board	22 days	Monday, June 3, 2024	MGL 53:18B: information relating to questions on town ballot (deadline is 20 days prior)
Absentee & Early Ballot mailing begins	21 days	Tuesday, June 4, 2024	
Ballot information is mailed to voters	21 days	Tuesday, June 4, 2024	MGL 53:18B - (deadline)
Test Tabulators and Automark printers	12 days	Thursday, June 13, 2024	950 CMR: 54.02(5) Voting & Counting Procedures for Electronic Voting Systems
Voter registration deadline for Special Town Election	11 days	Friday, June 14, 2024	MGL 51:1F
Warrant is posted at each precinct	7 days	Tuesday, June 18, 2024	MGL 39:10
Deadline to apply for voting by mail	7 days	Tuesday, June 18, 2024	5:00pm on the 5th business day (MGL 54:25B [a][2])
Deadline to apply for absentee voting in person 12:00 PM	1 days	Monday, June 24, 2024	MGL 54:89
Election Day		Tuesday, June 25, 2024	

# From the TMSC, Potential Advisory Questions for the June Local Election

Eric Moore, Town Meeting Study Committee (TMSC) Chair

May 16, 2024

I am writing as the Chair of the Town Meeting Study Committee (TMSC) on behalf of the committee.

At our 5/15/24 meeting, the TMSC voted to authorize the Chair to draft and submit questions to the Select Board for potential inclusion in the forthcoming special town election as Nonbinding Public Opinion Advisory Questions, as permitted under Mass. Gen. Laws ch. 53, § 18A.

The intention here is to opportunistically use this special town election as a survey instrument to inform the TMSC as to voter sentiment about the three Town Meeting-specific Citizen Petition proposals from the past Town Meeting that were referred to TMSC for further consideration. This survey instrument would complement additional survey(s) that we intend later in the study project. Additionally, we believe it valuable to signal to voters that TMSC has a direct interest in understanding their preferences on these questions.

I am submitting our questions below for review. As an reference, I am including the Warrant text and Town Meeting motions from these Articles

## Proposed Questions

These questions are NOT BINDING.

### Question 1

Would you be in favor of authorizing the Select Board to petition the General Court for special legislation to authorize remote participation at Annual Town Meetings and Special Town Meetings in the Town of Concord?

### Question 2

Are you in favor of utilizing electronic voting devices ("clickers") as the primary method to tabulate and record votes at Concord Special and Annual Town Meetings?

### Question 3

Would you be in favor of authorizing the Select Board to petition for special legislation to allow all Town Meeting warrant articles to be presented to registered voters in a special town election ~~to be held within three weeks~~ following Town Meeting, with the results of the special election to be binding on the town, notwithstanding any contrary Town Meeting vote?

## Appendix: reference questions and motions

### Article 28

#### From the Warrant

ARTICLE 28. To determine whether the Town will authorize the Select Board to petition the General Court for special legislation as outlined below:

“An Act authorizing remote participation at Annual Town Meetings and Special Town Meetings in the Town of Concord”

SECTION 1. Notwithstanding chapter 39 of the General Laws, or any general or special law or charter provision to the contrary, the Town of Concord may hold Annual and Special Town Meetings with voters located in a common, physical location, fully remote or partially remote, to be known as a hybrid town meeting.

SECTION 2. Any Annual or Special Town meeting held remotely or in hybrid form in accordance with this act shall be recorded and the recording shall be made available for public viewing on the town’s website or You Tube at the Town’s preference for no fewer than 30 days following the conclusion of the meeting. The recording shall also be a permanent record of the Town, subject to disclosure upon request.

SECTION 3. All actions taken at a remote or hybrid Annual or Special Town Meeting held in accordance with this act shall be ratified, validated and confirmed to the same extent as if the Annual or Special Town Meeting had been conducted entirely in person.

SECTION 4. This act shall take effect upon its passage.

## The motion

That the Town Meeting authorize the Select Board to request a home rule petition from the General Court to allow remote participation at Concord Annual and Special Town Meetings with language substantially in the form the draft bill printed in the current Town Warrant.

## Article 29

### Warrant

ARTICLE 29. To determine whether the Town will vote to utilize "clickers", a smart device "app" or a similar form of electronic voting to tabulate and record votes at Concord Town Meetings and Special Meetings beginning in 2025 and thereafter; or take any other action relative thereto.

## The motion

Mark Martines\* moves: the Town utilize electronic voting devices ("clickers") as the primary method to tabulate and record votes at Concord Special and Annual Town Meetings beginning in 2025 or thereafter.

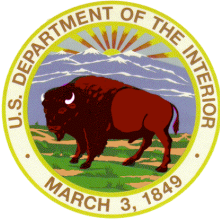
## Article 27

### Warrant

ARTICLE 27. Beginning in 2025 and thereafter, all warrant articles for Town Meeting shall be presented to all registered voters in a Town special election to be held within three weeks of Town Meeting. The special election shall bind the Town, any vote to the contrary in Town Meeting notwithstanding.

## The motion

Mr. Gonatas moves that: Beginning in 2025 and thereafter, all warrant articles for Town Meeting shall be presented to all registered voters in a Town special election to be held within three weeks of Town Meeting, and that the special election shall bind the town, any vote to the contrary in Town Meeting notwithstanding.



United States Department of the Interior  
NATIONAL PARK SERVICE  
Minute Man National Historical Park  
174 Liberty Street  
Concord, Massachusetts 01742



1.A.2 (MIMA)

May 6, 2024

MEMORANDUM

TO: Chair, Town of Concord Select Board

FROM: Superintendent, Minute Man National Historical Park

RE: Request for Approval of North Bridge Trail Rehabilitation

The National Park Service, as part of Minute Man National Historical Park's (NHP) Great American Outdoors Act project, is proposing to rehabilitate the North Bridge Trail. This trail work will improve the current condition of the trail surface and drainage features to provide a more pleasant experience for the visiting public to the site of the opening battle of the American Revolution. This project is key in preparing the park for the 250<sup>th</sup> Anniversary in April 2025.

Per Article III(b) of the 1963 agreement between the National Park Service and the Town of Concord, Minute Man NHP is requesting the Select Board approve the proposed plans for this rehabilitation at the North Bridge Trail.

Minute Man NHP anticipates that once all approvals and concurrences have been received through both this process and Section 106 of the National Historical Preservation Act that work will commence in August 2024.



## APPENDIX G

### COOPERATIVE AGREEMENT WITH TOWN OF CONCORD

COOPERATIVE AGREEMENT BETWEEN THE TOWN OF CONCORD MASSACHUSETTS, AND THE NATIONAL PARK SERVICE RELATING TO THE TOWN PROPERTY KNOWN AS THE BATTLE GROUND AREA

THIS AGREEMENT, made and entered into this 6th day of June 1963, by and between the United States of America, acting in this behalf by Conrad L. Worth, Director of the National Park Service, party of the first part, and the Town of Concord, Commonwealth of Massachusetts, hereinafter referred to as the "Town," party of the second part,

WITNESSETH:

WHEREAS, the Minute Man Statue, Old North Bridge, and associated historic structures and objects, located in the Town on land bounded northerly by land now or formerly of Tanner, easterly by Monument Street, southerly by land of the Trustees of Reservations, and westerly by land now or formerly of Buttrick, hereinafter referred to as the "Battle Ground area," which reference shall include the parking lot adjacent thereto bounded northerly by Simmons Landing Lane and easterly by Great Meadows Road, are recognized as possessing national significance as associated with the American Revolution; and

WHEREAS, the Act of Congress approved September 21, 1959, (73 Stat. 590-591) has provided for the establishment of the Minute Man National Historical Park for the purpose of preserving for the benefit of the American people the above-named and other nationally important historic lands and structures in the Town associated with the American Revolution and the founding and growth of the United States; and

WHEREAS, the Town by vote of its Annual Town Meeting held March 11, 1963, has authorized the Selectmen and Town Manager to execute and deliver this agreement on behalf of the Town; and

WHEREAS, the United States in all matters hereinafter referred to will act through the National Park Service or such other body as may be legally substituted therefore; and

WHEREAS, it is the desire of the Town to bring about the preservation of the said historic structures, objects, and grounds in the Battle Ground area as a national historical park that they may be devoted to public use and to the perpetuation of the greatest traditions of the United States of America; and

WHEREAS, it is the desire of the United States to cooperate with the Town in preserving the integrity of the above-mentioned historic structures, objects, and area, and to interpret them to the American people as a great national heritage.

NOW THEREFORE, in consideration of the foregoing and pursuant to the authority contained in the act of Congress approved August 21, 1935 (49 Stat. 666). entitled "An Act to Provide for the Preservation of

Historic American Buildings, Objects, and Antiquities of National Significance, and for Other Purposes," and the act of Congress approved September 21, 1959 (73 Stat. 590-591), entitled "An Act to Provide for

the Establishment of the Minute Man National Park, and for Other Purposes," the said parties have covenanted and agreed, and by these presents do covenant and agree to and with each other and in consideration of the mutual promises herein expressed, as follows:

ARTICLE 1. The Town will retain ownership of the said historic structures, objects, and grounds in the Battle Ground area but hereby agrees: (a) To permit the United States to occupy them exclusively, except as otherwise provided herein, during the term of this agreement for the purpose of preserving, exhibiting, and interpreting them to the American people and otherwise utilizing them for national historical park purposes.

(b) To permit the United States to have curatorial responsibility for the care and display of such exhibits of historical interest as may be available in the Battle Ground area for exhibit and interpretive purposes.

(c) To supply customary municipal services, including police and fire protection and water facilities without charge therefore.

ARTICLE II. The Director hereby agrees, on behalf of the United States:

(a) That he will occupy the grounds and associated structures for the purposes set forth in Article I of this agreement, and for no other purposes. and that he will not sublet or assign to another person or organization any part of the structures, objects, or grounds without prior approval in writing by the Town; that he will (as funds become available through appropriations by Congress) operate and maintain the structures, objects, and grounds and make all repairs thereto; remedy all defects in the structures and objects which may arise from any cause whatsoever, including ordinary wear and tear; and undertake such work of restoration or major alteration as may be mutually agreed upon under the provisions of Article III (b).

The director may apply such reasonable rules and regulations therein as may be necessary properly to perform his functions.

(b) That he will exercise reasonable care to prevent damage to, or destruction of, any part of the structures, objects, or grounds.

(c) That he will provide public access to the area at all reasonable times, and will provide the services of a competent person, or persons, to furnish information to the visiting public.

(d) That he will encourage and cooperate with the Town, Civic groups, and patriotic societies in the annual observance of Patriots' Day and other celebrations in which the area and its facilities may be appropriately used which have the approval of the Selectmen.

ARTICLE III. It is mutually understood and agreed:

(a) That nothing herein contained shall be construed as binding the United States to expend in any one fiscal year any sum in excess of appropriations made by Congress for that fiscal year, or to involve the United States in any contract or other obligation for the future expenditure of money in excess of such appropriations.

(b) That any work of restoration or any alterations or major repairs in the area shall not be undertaken until the plans for such work shall have been mutually agreed upon with the Selectmen.

(c) That neither of the parties to this agreement will erect or place, or permit the erection or emplacement of any monument, marker, tablet, or other memorial in the area without the written consent of the other. This section shall not be construed as prohibiting the placing of signs within the area for the information and direction of the public. The design and location of any signs within the area to indicate that it is occupied and operated by the National Park Service acting in cooperation with the Town, shall be subject to the approval of the Selectmen.

(d) That it is the purpose of both parties to this agreement to develop a unified, long-range program of preservation, development, protection, and interpretation for the area for the inspiration and benefit of the people of the United States, and, to secure this result, a high degree of cooperation is necessary with each other, and the parties hereto pledge themselves to consult on all matters of importance to the program.

(e) That nothing herein contained shall be held to deprive the Commonwealth of Massachusetts or the Town of their civil and criminal jurisdiction in and over the said structures, objects, and grounds.

(f) That wherever in this agreement the Director is referred to, the term shall include his duly authorized representative or representatives.

(g) No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this agreement or to any benefit that may arise there from, but this restriction shall not be construed to extend to this agreement if made with a corporation or company for its general benefit.

(h) This agreement shall become effective upon its execution, but occupation, operation, and maintenance by the United States in accordance with Article II shall begin on July 1, 1963, or as soon thereafter as practicable. It shall continue in effect until such time as Congress enacts legislation inconsistent with its continuance or expressly providing for its termination, or until terminated by the Director, National Park Service, who shall give six months' notice to the Town of such intention, or if the Town at an annual or special town meeting, held after January 1, 1968, shall vote to terminate this agreement, it shall terminate not less than six months from the date on which such vote is taken by the town meeting.

IN WITNESS WHEREOF, the parties hereto have subscribed their names and affixed their seals (in quintuple) the day, month, and year aforesaid.

UNITED STATES OF AMERICA

By /s/ Conrad L. Worth

TOWN OF CONCORD

By /s/ John B. Finigan, Chairman

Robert E. Sheehan

Herbert P. Wilkins

Frederick J. Robbins

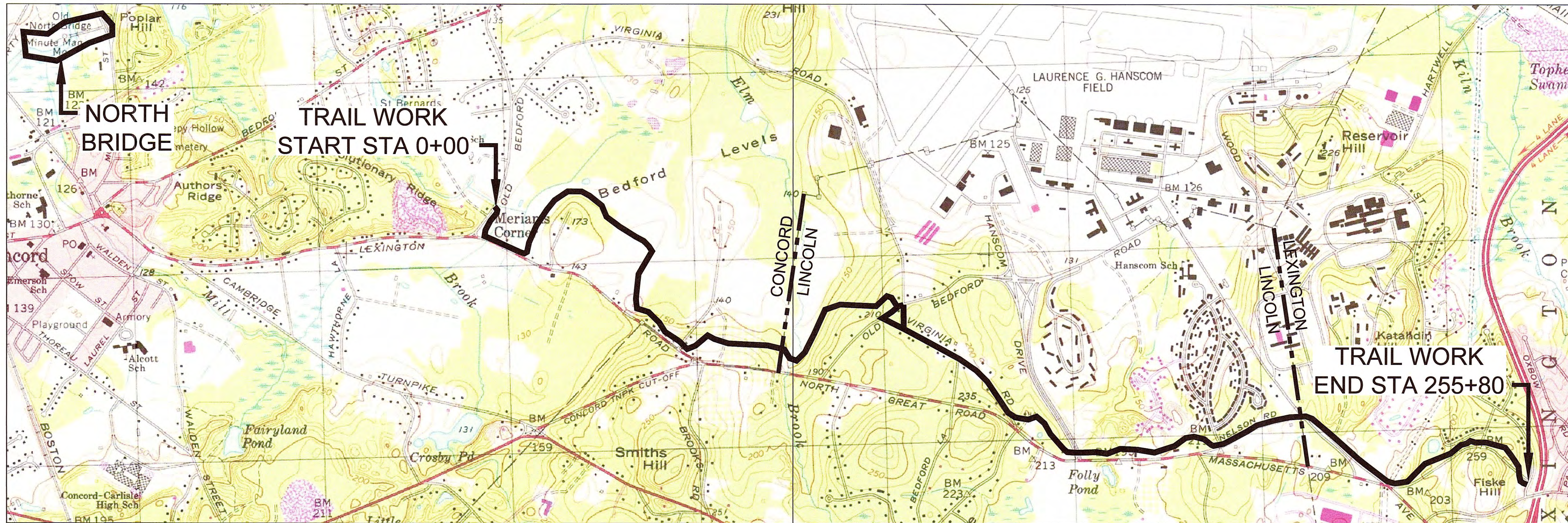
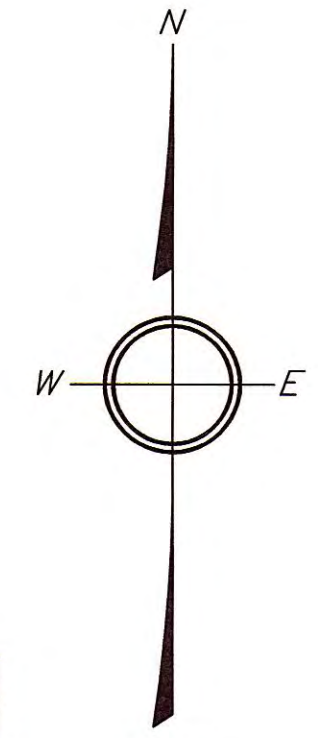
Robert J. Rodday

Board of Selectmen

Theodore M. Nelson

Town Manager

# NATIONAL PARK SERVICE DEVELOPMENT MINUTE MAN NATIONAL PARK CONCORD, LINCOLN, AND LEXINGTON, MA



VICINITY MAP

SCALE: 1" = 1,000'

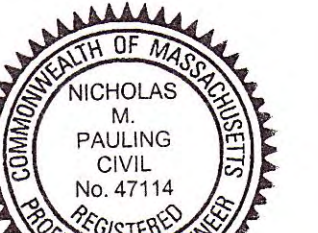
## HISTORICAL PRESERVATION NOTES

- ALL WORK MUST BE IN KEEPING WITH THE SECRETARY OF THE INTERIOR'S STANDARDS FOR THE TREATMENT OF HISTORIC PROPERTIES WITH GUIDELINES FOR PRESERVING, REHABILITATING, RESTORING, & RECONSTRUCTING HISTORIC BUILDINGS (2017) AND THE SECRETARY OF INTERIOR'S GUIDELINES FOR THE TREATMENT OF CULTURAL LANDSCAPES (1996).
- LANDSCAPES AND STRUCTURES ARE CULTURALLY AND HISTORICALLY SIGNIFICANT. THIS PROPERTY IS MANAGED IN ACCORDANCE WITH DOI AND NPS STANDARDS TO PROTECT RESOURCES FROM DAMAGE OR LOSS OF HISTORIC INTEGRITY.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW BEST PRESERVATION PRINCIPLES AND PRACTICES, NOT ONLY IN IMPLEMENTING WORK IN ACCORDANCE WITH THE HISTORIC PRESERVATION TREATMENT PLAN REQUIRED, BUT IN OCCUPYING THE SITE AND PERFORMING TASKS RELATED TO THE WORK ON THE SITE OR WITHIN THE BUILDING.
- CONTRACTOR SHALL COORDINATE WITH CONTRACTING OFFICER DESIGNATED ARCHEOLOGIST TO IDENTIFY PROTECTION NECESSARY FOR SENSITIVE AREAS.

## DRAWING ISSUED FOR:

- CONCEPT     CONSTRUCTION  
 PERMIT         CONSTRUCTION RECORD

THIS DRAWING MAY NOT SHOW CONSTRUCTION DETAILS AND SPECIFICATIONS FOR ALL PROPOSED IMPROVEMENTS, AND MAY NOT IDENTIFY ALL CONSTRUCTION WORK ITEMS/AREAS OF CONTRACTOR JURISDICTION.



PER 250 CMR 5.03(13), THE FOLLOWING ARE EXCLUDED FROM THE PROFESSIONAL ENGINEER'S RESPONSIBILITY: ALL BOUNDARY INFORMATION; LOCATION OF EXISTING STRUCTURES, TREES, UTILITIES, TOPOGRAPHY OR SIMILAR FEATURES; DESIGN OF RETAINING WALLS, PROPRIETARY EQUIPMENT. SEE EXISTING CONDITION NOTES.

NO.	DATE	BY	APP.	REVISION DESCRIPTION
2	4/9/24	DJG	NMP	ISSUED FOR CONSTRUCTION
1	3/6/24	DJG	NMP	NPS COMMENTS & TOWN OF CONCORD C.C.

## GENERAL NOTES

- LOCATIONS OF EXISTING UNDERGROUND UTILITIES/OBSTRUCTIONS/SYSTEMS SHOWN HEREON ARE APPROXIMATE ONLY. ALL UTILITIES/OBSTRUCTIONS/SYSTEMS MAY NOT BE SHOWN. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UNDERGROUND UTILITIES/OBSTRUCTIONS/SYSTEMS, WHETHER OR NOT SHOWN HEREON.
- UNLESS OTHERWISE SHOWN, ALL NEW UTILITIES SHALL BE UNDERGROUND.
- BURIED UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THEIR RESPECTIVE COMPANY SPECIFICATIONS.
- CONSTRUCTION LAYOUT OF BUILDING AND SITE IMPROVEMENTS SHALL BE PERFORMED BY A LICENSED PROFESSIONAL LAND SURVEYOR. LOCATIONS OF EXISTING FEATURES OR PROPOSED IMPROVEMENTS DERIVED BY SCALING DRAWINGS MAY NOT BE ACCURATE. PROPERTY LINES SHOWN HEREON ARE APPROXIMATE. SEE PLAN REFERENCE HEREON.
- SAFETY MEASURES, CONSTRUCTION METHODS, AND CONTROL OF WORK SHALL BE RESPONSIBILITY OF CONTRACTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ANY EXISTING UTILITY OR STRUCTURE DAMAGED DURING CONSTRUCTION THAT ARE NOT DESIGNATED FOR DEMOLITION AND/OR REMOVAL HEREON. DAMAGED UTILITY OR STRUCTURE SHALL BE REPAIRED TO THE SATISFACTION OF THEIR RESPECTIVE OWNERS.
- ANY INTENDED REVISION OF THE HORIZONTAL AND/OR VERTICAL LOCATION OF IMPROVEMENTS TO BE CONSTRUCTED AS SHOWN HEREON SHALL BE REVIEWED AND APPROVED BY ENGINEER PRIOR TO IMPLEMENTATION.
- CONTRACTOR SHALL NOTIFY ENGINEER UPON COMMENCEMENT OF CONSTRUCTION IN ORDER TO ENSURE THAT REQUIRED INSPECTIONS ARE PERFORMED IN A TIMELY AND EFFICIENT MANNER.
- CONTRACTOR SHALL PROMPTLY NOTIFY ENGINEER UPON DISCOVERY OF ANY UNFORESEEN SURFACE OR SUBSURFACE CONDITIONS THAT MAY IMPACT SITE CONSTRUCTION.
- FINISH RIM ELEVATIONS SHOULD MATCH PAVEMENT, GRADING OR LANDSCAPING, UNLESS SPECIFICALLY INDICATED OTHERWISE.
- WHERE EXISTING UTILITY LINES/STRUCTURES ARE TO BE CUT/BROKEN DOWN/ABANDONED, LINES/STRUCTURES SHALL BE PLUGGED/CAPPED/FILLED IN ACCORDANCE WITH UTILITY OWNER REQUIREMENTS.
- EROSION CONTROL MEASURES, SUCH AS SILT FENCE OR HAY BALES AS MAY BE SHOWN HEREON, SHALL BE INSTALLED BEFORE EARTH DISTURBANCE OCCURS WITHIN BUFFER ZONE, AND SHALL SERVE AS THE LIMIT OF WORK.
- WHERE THE WORD "INSTALL" IS USED HEREIN, IT IS INTENDED TO DIRECT CONTRACTOR TO "FURNISH, INSTALL, AND PLACE IN OPERATION" THE COMPONENT REFERRED TO.
- LIMITS OF WORK SHALL BE STAKED IN THE FIELD PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- ALL STORM DRAIN PIPE TO BE SMOOTH INTERIOR HDPE PIPE, 2.0 PSI GASKETED JOINT, UNLESS OTHERWISE NOTED.
- WHERE SHOWN, CONSTRUCTION NOTES ARE INTENDED TO SUMMARIZE AND CLARIFY MAJOR ITEMS OF WORK. THESE NOTES SHOULD NOT BE CONSTRUED AS AN EXHAUSTIVE LISTING OF ALL WORK REQUIRED. CONTRACTOR SHOULD CONTACT ENGINEER WHEN FURTHER CLARIFICATION OF DEPICTED WORK IS DESIRED.
- CONSTRUCTION OF FIRE AND DOMESTIC WATER SUPPLY IMPROVEMENTS SHALL CONFORM TO UTILITY'S OWNER REQUIREMENTS.
- WHERE DIMENSIONS INVOLVE CURB, DIMENSIONS ARE TO FACE OF CURB. WHERE SLOPED GRANITE CURB OR CAPE COD BERM SPECIFIED, FACE OF CURB IS EDGE OF FINISH PAVEMENT AT TOE OF CURB.
- NO DEBRIS, JUNK, RUBBISH OR OTHER NON-BIODEGRADABLE MATERIALS, FILL CONTAINING HAZARDOUS MATERIALS OR WASTES, OR STUMPS SHALL BE BURIED ON ANY LAND ON THIS SITE, OR LEFT ON ANY LOT OR ON THE STREET RIGHT OF WAY.

## EXISTING CONDITIONS NOTES:

- EXISTING CONDITION INFORMATION BASED ON AN ON-THE-GROUND TOPOGRAPHIC AND BOUNDARY SURVEY PERFORMED BY GOLDSMITH, PREST & RINGWALL, INC. DATING FROM MARCH TO OCTOBER 2023.
- EDGE OF RESOURCE AREAS DELINEATED BY OXBOW ASSOCIATES, INC. DATING FROM MARCH 2022 TO OCTOBER 2023. SEE REFERENCE NO. 2.

## REFERENCES:

- "REHABILITATE AND REPAIR STRUCTURES AND LANDSCAPES: TRAIL REPAIRS - MINUTE MAN NATIONAL HISTORICAL PARK" AS PREPARED BY NATIONAL PARK SERVICE HACE, DATED 10/31/2022. NPS PMIS #317529. DRAWING NO. 406/184184.
- "WETLAND RESOURCE AREA EVALUATIONS - MINUTE MAN NATIONAL PARK BOARDWALK REPLACEMENT PROJECT" AS PREPARED BY OXBOW ASSOCIATES, INC. DATED MARCH 10, 2022.
- "TRAIL REROUTE FOR SAFETY AT INFERRERA FARM" AS PREPARED BY NATIONAL PARK SERVICE. DATED 03/28/2022. PMIS #MIMA-170863. DRAWING NO. 406/178327.
- "NATIONAL PARK SERVICE DEVELOPMENT - MINUTE MAN NATIONAL PARK - CONCORD, LINCOLN, AND LEXINGTON, MA" CONCORD NOTICE OF INTENT PLAN SET (SHEETS C1.1 - C4.1, & C8.1 - C9.2) PREPARED BY THIS OFFICE. DATED FEBRUARY 2024. REVISED 3/6/24. ORDER OF CONDITIONS ISSUED BY TOWN OF CONCORD ON 3/22/24. DEP FILE #137-1865. RECORDED AT MIDDLESEX SOUTH REGISTRY OF DEEDS ON MARCH 28, 2024. BK 82610, PG 139.
- "NATIONAL PARK SERVICE DEVELOPMENT - MINUTE MAN NATIONAL PARK - CONCORD, LINCOLN, AND LEXINGTON, MA" LINCOLN NOTICE OF INTENT PLAN SET (SHEETS C1.1, C2.1, C4.1 - C6.1, & C8.1 - C9.2) PREPARED BY THIS OFFICE. DATED FEBRUARY 2024. ORDER OF CONDITIONS ISSUED BY TOWN OF LINCOLN ON 3/20/24. DEP FILE #203-0969. RECORDED AT MIDDLESEX SOUTH REGISTRY OF DEEDS ON APRIL 9, 2024. BK 82649, PG 58.
- "NATIONAL PARK SERVICE DEVELOPMENT - MINUTE MAN NATIONAL PARK - CONCORD, LINCOLN, AND LEXINGTON, MA" LEXINGTON NOTICE OF INTENT PLAN SET (SHEETS C1.1, C2.1, C6.1 - C9.2) PREPARED BY THIS OFFICE. DATED FEBRUARY 2024. ORDER OF CONDITIONS ISSUED BY TOWN OF LEXINGTON ON 3/18/24. DEP FILE #201-1310. RECORDED AT MIDDLESEX SOUTH REGISTRY OF DEEDS ON APRIL 9, 2024. BK 82649, PG 105.

## REGULATORY NOTES

- CONTRACTOR SHALL CONTACT DIG-SAFE FOR UNDERGROUND UTILITY MARKING AT 888.344.7233 AT LEAST 72 HOURS PRIOR TO COMMENCEMENT OF ANY WORK. CONTRACTOR SHALL GIVE TWENTY-FOUR (24)-HOUR NOTICE TO PERTINENT TOWN DEPARTMENTS BEFORE COMMENCING ANY WORK IN THE FIELD.
- CONTRACTOR SHALL COORDINATE AND OBTAIN ALL CONSTRUCTION PERMITS REQUIRED BY REGULATORY AUTHORITIES.
- CONTRACTOR SHALL BE AWARE OF ALL CONSTRUCTION REQUIREMENTS, CONDITIONS, AND LIMITATIONS IMPOSED BY PERMITS AND APPROVALS ISSUED BY REGULATORY AUTHORITIES PRIOR TO COMMENCEMENT OF ANY WORK.
- ALL WORK OUTSIDE OF BUILDING THAT IS LESS THAN 10 FEET FROM THE INSIDE FACE OF BUILDING FOUNDATION SHALL CONFORM WITH THE UNIFORM STATE PLUMBING CODE OF MASSACHUSETTS, 248 CMR 2.00.
- GENERAL COMPLIANCE WITH 28 CFR PART 36 - 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN AND 521 CMR PART C, EXTERIOR OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD REGULATIONS IS INTENDED. CONTRACTOR SHALL VERIFY COMPLIANCE DURING CONSTRUCTION AND SHALL NOTIFY THE OWNER OF ANY NON-COMPLIANCE ISSUES AS SOON AS DISCOVERED.

## SHEET INDEX

- C1.1 TITLE SHEET
- C2.1 INDEX PLAN
- C3.1 SITE PLAN (NORTH BRIDGE) - CONCORD
- C3.2 SITE PLAN (STA 0+00 - 15+00) - CONCORD
- C3.3 SITE PLAN (STA 15+00 - 34+00) - CONCORD
- C3.4 SITE PLAN (STA 34+00 - 50+00) - CONCORD
- C3.5 SITE PLAN (STA 50+00 - 64+00) - CONCORD
- C4.1 SITE PLAN (STA 64+00 - 90+00) - CONCORD & LINCOLN
- C5.1 SITE PLAN (STA 90+00 - 112+00) - LINCOLN
- C5.2 SITE PLAN (STA 112+00 - 123+00) - LINCOLN
- C5.3 SITE PLAN (STA 123+00 - 128+50) - LINCOLN
- C5.4 SITE PLAN (STA 128+50 - 133+00) - LINCOLN
- C5.5 SITE PLAN (STA 133+00 - 142+50) - LINCOLN
- C5.6 SITE PLAN (STA 142+50 - 155+50) - LINCOLN
- C5.7 SITE PLAN (STA 155+50 - 166+00) - LINCOLN
- C5.8 SITE PLAN (STA 166+00 - 182+50) - LINCOLN
- C6.1 SITE PLAN (STA 182+50 - 204+00) - LINCOLN & LEXINGTON
- C7.1 SITE PLAN (STA 204+00 - 215+00) - LEXINGTON
- C7.2 SITE PLAN (STA 215+00 - 229+00) - LEXINGTON
- C7.3 SITE PLAN (STA 229+00 - 245+00) - LEXINGTON
- C7.4 SITE PLAN (STA 245+00 - 255+08) - LEXINGTON
- C8.1 EROSION CONTROL AND CONSTRUCTION DETAILS
- C8.2 CONSTRUCTION DETAILS
- C8.3 CONSTRUCTION DETAILS AND MATERIAL SPECIFICATIONS
- C8.4 MATERIAL SPECIFICATIONS
- C8.5 MATERIAL SPECIFICATIONS
- C9.1 CONSTRUCTION STAGING PLAN
- C9.2 CONSTRUCTION STAGING PLAN

# GPR

Engineering Solutions  
for Land & Structures

**GOLDSMITH, PREST & RINGWALL, INC.**  
39 MAIN STREET, SUITE 301, AYER, MA 01432  
CIVIL ENGINEERING • LAND SURVEYING • LAND PLANNING  
VOICE: 978.772.1590 FAX: 978.772.1591  
www.gpr-inc.com

NATIONAL PARK SERVICE DEVELOPMENT  
TRAIL REPAIR

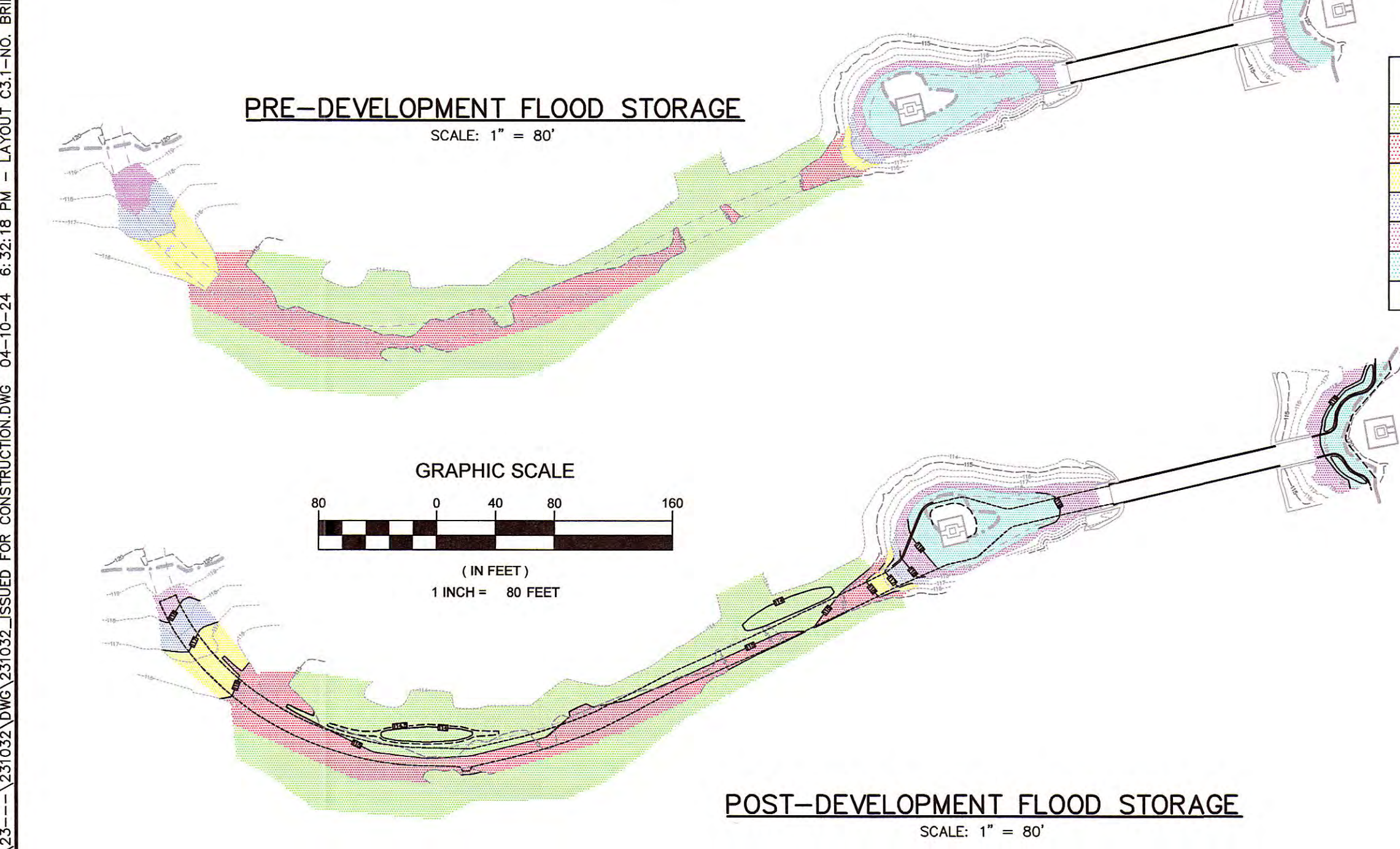
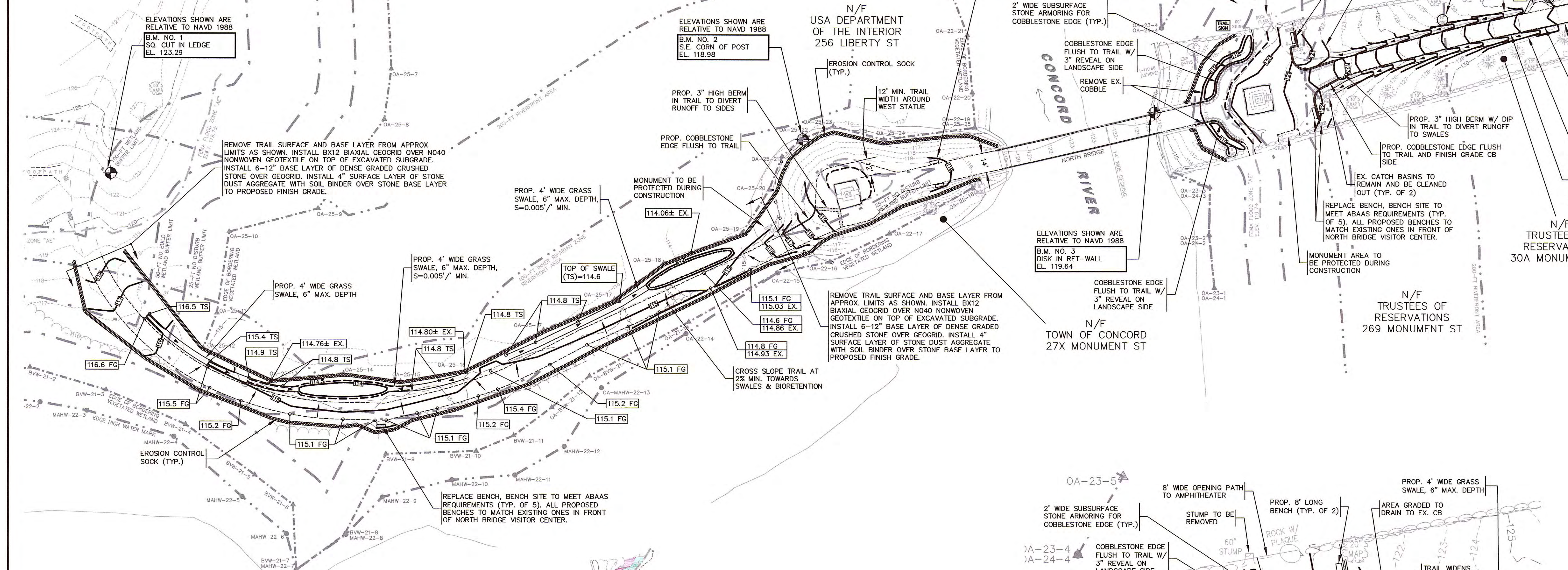
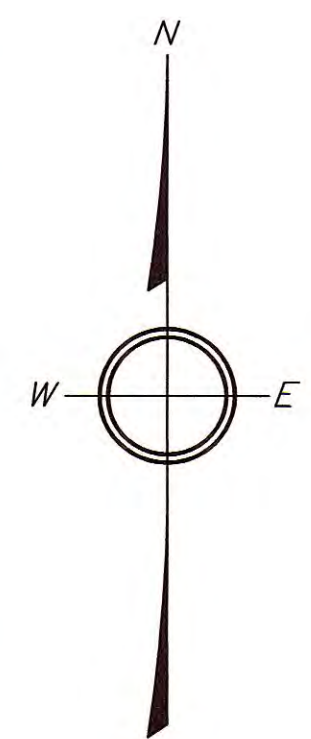
TITLE SHEET

MINUTE MAN NATIONAL PARK  
CONCORD, LINCOLN AND LEXINGTON

PREPARED FOR:  
NATIONAL PARK SERVICE  
174 LIBERTY STREET  
CONCORD, MA 01742

DES. BY: LT/DG	DATE: FEBRUARY 2024	JOB 231032	C1.1
CHK. BY: NMP			

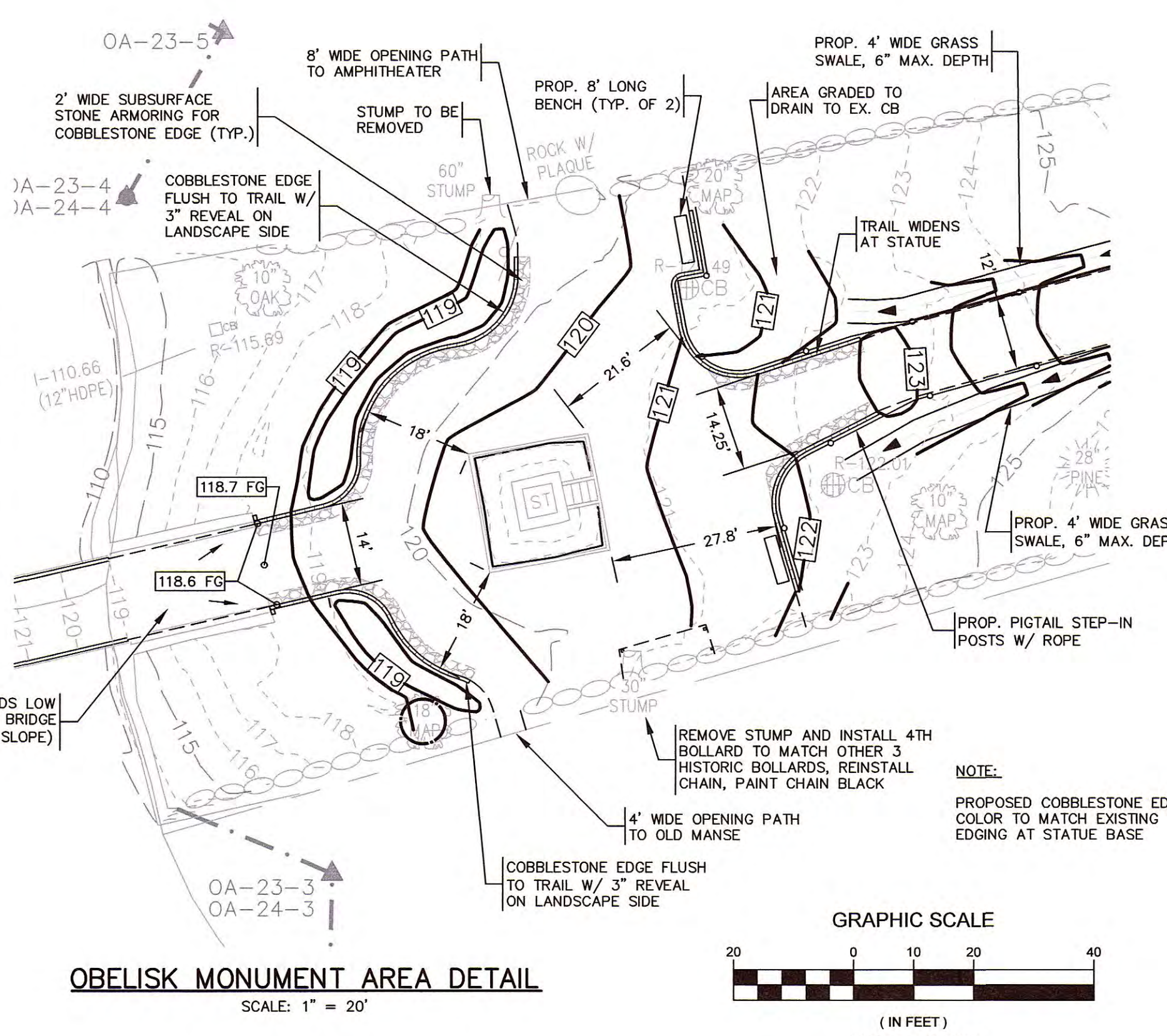




**INCREMENTAL FLOOD STORAGE SUMMARY:**

INCREMENTAL ELEVATION	FLOOD STORAGE GAINED (CF)	FLOOD STORAGE LOST (CF)	NET FLOOD STORAGE PROVIDED (CF)
114 - 115	1,057	810	247
115 - 116	479	186	293
116 - 117	405	115	290
117 - 118	336	16	320
118 - 119	492	138	354
119 - 119.7	412	18	394
<b>TOTAL</b>	<b>3,181</b>	<b>1,283</b>	<b>1,898</b>

- NOTES:**
- INSTALL AND MAINTAIN STRAW WATTLE CHECK DAMS EVERY 50 FT FOR PROPOSED SWALES UNTIL CONSTRUCTION IS COMPLETE.
  - NO WORK SHALL BE PERMITTED WITHIN RESOURCE AREA'S BUFFER LIMITS WITHOUT PRIOR ISSUANCE OF AN ORDER OF CONDITIONS BY THE LOCAL JURISDICTIONAL AUTHORITY.
  - MULCH IS TO BE USED ONLY FOR TEMPORARY TREE PROTECTION AND NOT FOR ANY OTHER PART OF THE NORTH BRIDGE PROJECT AREA.



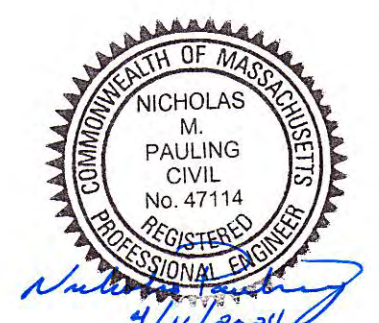
**DRAWING ISSUED FOR:**

CONCEPT     CONSTRUCTION  
 PERMIT         CONSTRUCTION RECORD

THIS DRAWING MAY NOT SHOW CONSTRUCTION DETAILS AND SPECIFICATIONS FOR ALL PROPOSED IMPROVEMENTS, AND MAY NOT IDENTIFY ALL CONSTRUCTION WORK ITEMS/AREAS OF CONTRACTOR JURISDICTION.

PER 250 CMR 5.03(13), THE FOLLOWING ARE EXCLUDED FROM THE PROFESSIONAL ENGINEER'S RESPONSIBILITY: ALL BOUNDARY INFORMATION; LOCATION OF EXISTING STRUCTURES, TREES, UTILITIES, TOPOGRAPHY OR SIMILAR FEATURES; DESIGN OF RETAINING WALLS, PROPRIETARY EQUIPMENT. SEE EXISTING CONDITION NOTES.

NO.	DATE	BY	APP.	REVISION DESCRIPTION
2	4/9/24	DJG	NMP	ISSUED FOR CONSTRUCTION
1	3/6/24	DJG	NMP	NPS COMMENTS & TOWN OF CONCORD C.C.
				REVISION DESCRIPTION



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**NATIONAL PARK SERVICE DEVELOPMENT TRAIL REPAIR**

SITE PLAN (NORTH BRIDGE)  
TOWN OF CONCORD

MINUTE MAN NATIONAL PARK  
CONCORD, LINCOLN AND LEXINGTON

PREPARED FOR:  
NATIONAL PARK SERVICE  
174 LIBERTY STREET  
CONCORD, MA 01742

DES. BY: LT/DC    DATE: FEBRUARY 2024    JOB 231032    C3.1  
 CHK. BY: NMP

P:\231032\DWG\231032\_ISSUED FOR CONSTRUCTION.DWG 04-10-24 6:32:18 PM - LAYOUT C3.1-NO. BRIDGE

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**EROSION AND SEDIMENT CONTROL REQUIREMENTS**

**PART 1 - GENERAL**

- 1.01 SUMMARY
- A. FURNISH, INSTALL, AND MAINTAIN TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS, BUT NOT NECESSARILY LIMITED TO, STRAW WATTLES, RIPRAP, DIVERSION CHANNELS AND BERMS, CHECK DAMS, STRATEGICALLY LOCATED STOCKPILES, SEDIMENT BASINS, MULCH, AND SEED MIX (HEREINAFTER "CONTROL MEASURES") ADEQUATE TO PREVENT THE CONVEYANCE OF EROSION PRODUCTS (E.G. SOIL, MULCH, SOO) OFF SITE, OR INTO ENVIRONMENTALLY SENSITIVE AREAS, OR INTO AREAS WHERE WORK WILL BE ADVERSELY IMPACTED, ENVIRONMENTALLY SENSITIVE AREAS INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, WETLANDS, TRIBUTARIES TO WETLANDS, WETLAND BUFFER ZONES, INTERMITTENT AND PERENNIAL STREAMS / RIVERS, AND THEIR ATTENDANT BUFFER ZONES.
1. REFER TO DRAWINGS FOR LOCATION AND DETAILS OF CONTROL MEASURES REQUIRED TO COMMENCE WORK. THESE CONTROL MEASURES WILL BE ADEQUATE ONLY FOR VEGETATION CLEARING. THE DRAWINGS ARE NOT INTENDED TO GRAPHICALLY DEPICT ALL CONTROL MEASURES THAT WILL BE REQUIRED TO MEET THE REQUIREMENTS DESCRIBED IN 1.01.A.
2. DEVEISE AND EMPLOY CONTROL MEASURES THROUGHOUT THE DURATION OF PROJECT, OVER ALL AREAS DISTURBED OR UNDISTURBED BY CONSTRUCTION, AS NECESSARY TO MEET THE REQUIREMENTS DESCRIBED IN 1.01.A.
3. DEVEISE AND EMPLOY TEMPORARY CONTROL MEASURES AS NECESSARY TO MEET THE REQUIREMENTS DESCRIBED IN 1.01.A, WHILE ALLOWING WORK TO PROCEED IN AN EFFICIENT, COST EFFECTIVE MANNER.
4. DEVEISE, EMPLOY AND MAINTAIN CONTROL MEASURES UNTIL SUCH TIME AS THE ENTIRE SITE IS PERMANENTLY STABILIZED BY ESTABLISHED VEGETATION, FINISH LANDSCAPE MATERIALS, PAVED SURFACES, AND/OR ROOF AREA.
5. ONCE THE SITE IS PERMANENTLY STABILIZED AND CERTIFIED AS SUCH BY ENGINEER, REMOVE TEMPORARY CONTROL MEASURES WHILE PROTECTING STABILIZED SURFACES.

- 1.02 SUBMITTALS
- A. SUBMIT PRODUCT DATA, WARRANTY, AND TEST REPORTS AS INDICATED ON THE DRAWINGS.

- 1.03 QUALITY ASSURANCE
- A. COMPLY WITH GOVERNING CODES AND REGULATIONS. PROVIDE PRODUCTS FROM ACCEPTABLE MANUFACTURERS. USE EXPERIENCED INSTALLERS. DELIVER, HANDLE, AND STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- B. CONFORM TO CONDITIONS OF APPROVAL ISSUED BY REGULATORY AGENCIES INCLUDING, BUT NOT NECESSARILY LIMITED TO, LOCAL PLANNING BOARD, CONSERVATION COMMISSION, BOARD OF SELECTMEN, BOARD OF HEALTH, PUBLIC WORKS / HIGHWAY DEPARTMENT, STATE ENVIRONMENTAL PROTECTION DEPARTMENT, AND U.S. GOVERNMENT, ENVIRONMENTAL PROTECTION AGENCY, WHERE CONDITIONS OF REGULATORY APPROVAL DIFFER FROM REQUIREMENTS CONTAINED HEREIN OR ON THE DRAWINGS, COMPLY WITH THE MORE STRINGENT REQUIREMENT.

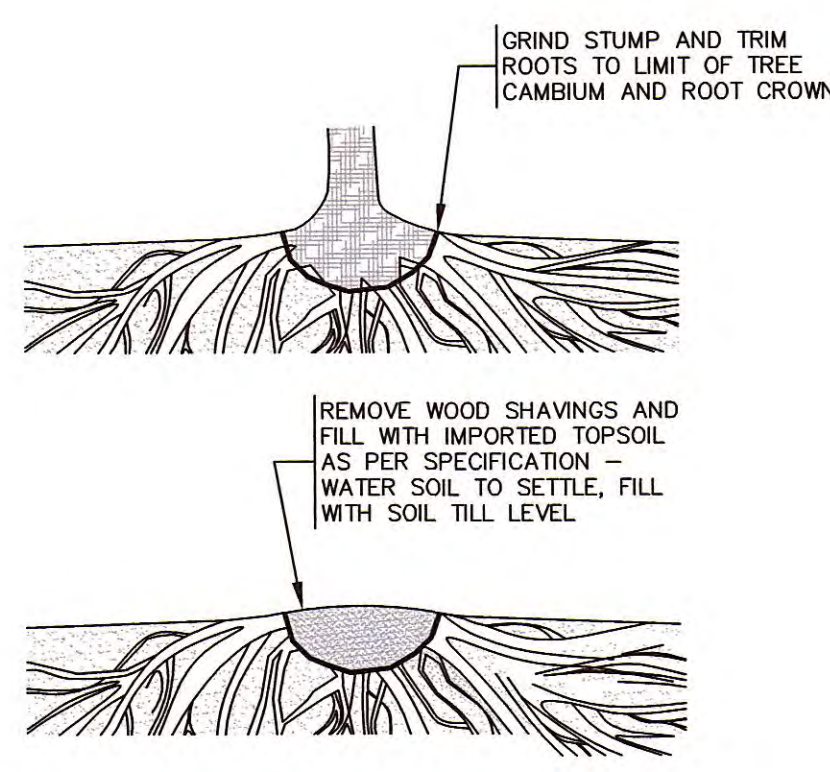
**PART 2 - PRODUCTS**

- 2.01 MATERIALS
- A. STRAW WATTLES: 100% WHEAT STRAW WITH NATURAL BIO-DEGRADABLE JUTE NETTING. MINIMUM 9-INCH DIAMETER AND 10 FEET LONG. USE 12-INCH OR 20-INCH DIAMETER WATTLES TO PROTECT LARGER UNSTABLE AREAS.
- B. FILTERMITT: 100% ORGANIC HESSIAN FABRIC (BURLAP) FILLED WITH A BLEND OF COMPOST AND PARTIALLY DECOMPOSED CHIPPED OR SHREDDED WOODY MATERIAL. MINIMUM 9-INCH DIAMETER AND 10 FEET LONG. USE 12-INCH OR 18-INCH DIAMETER TO PROTECT LARGER UNSTABLE AREAS.
- C. MULCH: ORGANICS INCLUDING STRAW, PROCESSED PINE / HEMLOCK TWIGS AND NEEDLES.
- D. SEED MIXES: PERENNIAL RYEGRASS, KENTUCKY BLUEGRASS, AND / OR FINE FESCUE, DISEASE RESISTANT. NON-MAINTAINED AREA OPTION - NEW ENGLAND WETLAND PLANTS, INC. SEMI-SHADE GRASS AND FORBS MIX (VIRGINIA WILDRYE, CANADA WILD RYE, PARTRIDGE PEA, RED FESCUE, SPIKED GAYFEATHER / MARSH BLAZING STAR, SENSITIVE FERN, ZIGZAG ASTER, HOLLOW-STEM JOE PYE WEED, WHITE AVENS, EASTERN COLUMBINE, & PATH RUSH).
- E. ROCK RIPRAP: SOUND, ANGULAR, 6-INCH MINUS PROCESSED ROCK, BLAST ROCK, OR TAILINGS.
- F. CRUSHED STONE: SOUND, ANGULAR, 2-INCH MINUS PROCESSED CRUSHED STONE.

**PART 3 - EXECUTION**

- 3.01 THROUGHOUT CONSTRUCTION
- A. DEVEISE WORK SEQUENCE SO AS TO LIMIT DRAINAGE AREA THAT IS TRIBUTARY TO DISTURBED AREAS. DEVEISE, EMPLOY, AND MAINTAIN CONTROL MEASURES SUCH AS DIVERSION CHANNELS AND BERMS, STRATEGICALLY LOCATED STOCKPILES, AND SEDIMENT BASINS TO SUBDIVIDE DRAINAGE AREAS INTO SMALL, MANAGEABLE SUBAREAS, THEREBY MINIMIZING RUNOFF AND THE POTENTIAL FOR EROSION.
- B. MAINTAIN BARRIER AT LIMIT OF WORK AND PROTECT EXISTING VEGETATION / FACILITIES OUTSIDE OF LIMIT OF WORK.
- C. MAINTAIN SPARE MATERIAL STOCKPILES FOR IMMEDIATE EMPLOYMENT / REPAIR / EXPANSION OF CONTROL MEASURES. AT A MINIMUM, SUCH MATERIALS SHALL INCLUDE STRAW WATTLES, FILTERMITT, STAKES, AND CRUSHED STONE.
- D. INSPECT AND MAINTAIN EFFECTIVENESS OF CONTROL MEASURES BY REPAIRING AS NECESSARY TO ENSURE INTENDED FUNCTION; BY SUPPLEMENTING AS NECESSARY FOR ADEQUATE EXTENT; BY REMOVING TRAPPED PRODUCTS OF EROSION AS NECESSARY TO MAINTAIN EFFECTIVE TRAP VOLUME.
- E. LIMIT EXTENT OF WORK AREA SO THAT ALL DISTURBED AREAS CAN BE STABILIZED WITH CONTROL MEASURES WITHIN A 24-HOUR PERIOD.
- F. INSTALL CONTROL MEASURES AS SOON AS PRACTICABLE AFTER EACH MANAGEABLE PORTION OF EARTHWORK IS COMPLETE. EMPLOY TEMPORARY MEASURES AS NECESSARY TO STABILIZE DISTURBED AREAS, EVEN WHERE SUBSEQUENT CONSTRUCTION OPERATIONS MAY REQUIRE RE-DISTURBANCE.

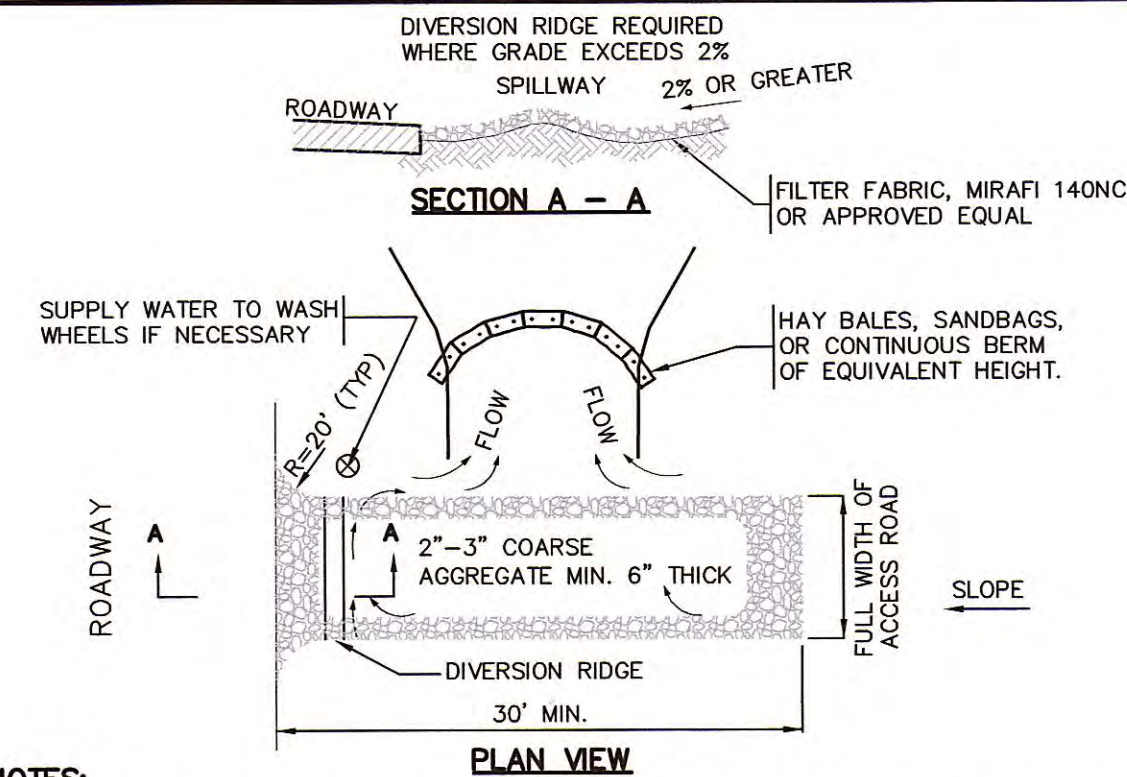
- G. WHEN INTENSE RAINFALL IS EXPECTED, CONSIDER, DEVEISE, AND EMPLOY REINFORCING CONTROL MEASURES PRIOR TO THE RAINFALL EVENT TO MEET THE REQUIREMENTS DESCRIBED IN 1.01.A. IF NECESSARY, EMPLOY TEMPORARY CONTROL MEASURES ON MATERIAL STOCKPILES TO COUNTERACT POTENTIAL SEDIMENT TRANSPORT DURING INTENSE RAINFALL.
- H. WHEN VEHICLE REFUELING IS REQUIRED ON SITE, CONDUCT REFUELING OPERATIONS OUTSIDE OF ENVIRONMENTALLY SENSITIVE AREAS.
- I. PROPERLY DISPOSE OF DEBRIS, SOLID WASTE, TRASH, AND CONSTRUCTION WASTE / BYPRODUCTS OFF SITE.
- J. SWEEP ON-SITE PAVED AREAS AND OFF-SITE STREETS AS NECESSARY TO PREVENT SILT AND DEBRIS ORIGINATING ON SITE FROM ENTERING CLOSED DRAINAGE SYSTEMS AND / OR ENVIRONMENTALLY SENSITIVE AREAS.
- 3.02 SITE PREPARATION AND ACCESS
- A. WALK SITE AND IDENTIFY LOCATIONS OF LIMIT OF WORK AND ENVIRONMENTALLY SENSITIVE AREAS. ESTABLISH CONSTRUCTION STAGING AREA, LOCATED BEYOND ENVIRONMENTALLY SENSITIVE AREAS.
- B. INSTALL CONTROL MEASURES AS SHOWN ON THE DRAWINGS, INCLUDING THOSE DEFINING THE LIMIT OF WORK.
- C. LIMIT VEHICULAR TRAFFIC TO AND FROM SITE TO MINIMIZE TRANSPORT OF SEDIMENT.
- 3.03 CLEARING, GRUBBING, AND STRIPPING
- A. SCHEDULE GRUBBING AND STRIPPING TO OCCUR IMMEDIATELY PRIOR TO EARTH DISTURBANCE, DEPENDING ON SITE AREA. CONSIDER MULTIPLE GRUBBING PHASES, SEQUENCED TO TAKE ADVANTAGE OF THE EROSION PREVENTION POTENTIAL OF EXISTING VEGETATIVE COVER.
- B. MINIMIZE THE AREA OF EXISTING VEGETATION REMOVED WHEREVER POSSIBLE.
- C. LOCATE AND SIZE STOCKPILES TO MINIMIZE EROSION POTENTIAL, TAKING ADVANTAGE OF TERRAIN SLOPE AND ASPECT, WHERE APPROPRIATE.
- D. PROTECT VEGETATION, INCLUDING ROOT SYSTEMS, BEYOND LIMIT OF CLEARING.
- E. PROCESS TIMBER, STUMPS, SLASH, AND BRUSH SO AS TO PROTECT ENVIRONMENTALLY SENSITIVE AREAS AND INSTALL CONTROL MEASURES. PROPERLY DISPOSE OF EXCESS OFF SITE. BURIAL OF STUMPS ON SITE IS PROHIBITED.
- 3.04 SITE GRADING
- A. WHERE APPLICABLE, FOLLOW EXCAVATION AND FILL PRACTICES SHOWN ON DRAWINGS TO LOCALIZE AND MINIMIZE EROSION.
- B. MONITOR SEDIMENT VOLUME IN TEMPORARY SEDIMENT BASINS AND AT DIVERSION BERMS AND CHECK DAMS. IN ALL AREAS EXCEPT THOSE THAT DO NOT PRESENT POTENTIAL PROBLEMS WITH REGARD TO FUTURE SOIL STABILITY, DRAINAGE, OR BEARING CAPACITY, REMOVE AND PROPERLY DISPOSE OF TRAPPED SEDIMENT BEFORE BRINGING SITE TO FINAL SUBGRADE.
- 3.05 STORMWATER MANAGEMENT SYSTEM
- A. THE STORMWATER MANAGEMENT SYSTEM INCLUDES, BUT IS NOT NECESSARILY LIMITED TO, DRYWELLS, DISCHARGE STRUCTURES / WEIRS, CULVERTS, OPEN CHANNELS, CURBS, GUTTERS, SWALES, CATCH BASINS, SWALE LEAK-OFFS, DRAINAGE PIPES, AND SIMILAR STORMWATER RUNOFF CONVEYANCE, TREATMENT, AND STORAGE FACILITIES.
- B. INSTALL STORMWATER MANAGEMENT SYSTEM COMPONENTS STARTING AT THE DOWNSTREAM END AND PROCEED UPSTREAM, WHERE POSSIBLE, COMPLETE INSTALLATION OF BASINS PRIOR TO BEGINNING WORK ON UPSTREAM SYSTEM COMPONENTS.
- C. INSTALL CONTROL MEASURES AT FINISHED UPSTREAM AND DOWNSTREAM PIPE ENDS AS SOON AS POSSIBLE AFTER COMPLETION OF PIPE RUN. SUCH MEASURES INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, RIPRAP, CHECK DAMS, STRAW WATTLES, AND VELOCITY DISPENSERS.
- D. AT THE END OF EACH DAY OR WHEN RAINFALL IS EXPECTED, PLUG UPSTREAM END OF PIPES / DAM OPEN CHANNELS OR OTHERWISE REDIRECT POTENTIAL RUNOFF AND PREVENT FLOW FROM ENTERING PARTIALLY COMPLETED SYSTEM / SYSTEM COMPONENTS.
- E. WHERE PORTIONS OF A NEW SYSTEM ARE TO BE ACTIVATED PRIOR TO COMPLETION OF THE ENTIRE SYSTEM, EMPLOY CONTROL MEASURES TO PREVENT SILT AND DEBRIS FROM ENTERING THE SYSTEM. EMPLOY SILT SACKS OR FABRIC ON CATCH BASIN INLETS, AND PIPE AND CULVERT OPENINGS. EMPLOY CHECK DAMS AND TEMPORARY SEDIMENT BASINS UPSTREAM OF AND ALONG OPEN CHANNELS, SWALES, AND DITCHES TO TRAP SEDIMENT UPGRADIENT OF ENVIRONMENTALLY SENSITIVE AREAS.
- F. REMOVE TRAPPED SEDIMENT AND DEBRIS FROM ALL SYSTEM COMPONENTS AFTER COMPLETION OF INSTALLATION, AND AGAIN AFTER THE ENTIRE SITE IS PERMANENTLY STABILIZED BY ESTABLISHED VEGETATION, FINISH LANDSCAPE MATERIALS, PAVED SURFACES, AND/OR ROOF AREA. REMOVE TRAPPED SEDIMENT AND DEBRIS FROM DETENTION / RETENTION BASIN BOTTOMS SO THAT FINISH BOTTOM MATERIALS / INFILTRATION FUNCTION CONFORM TO DESIGN.
- 3.06 LANDSCAPING
- A. COMPLETE LANDSCAPING AS SOON AS POSSIBLE AFTER COMPLETION OF FINAL SUBGRADE.
- B. IMMEDIATELY AFTER PLACEMENT OF TOPSOIL, STABILIZE WITH CONTROL MEASURES INCLUDING, BUT NOT NECESSARILY LIMITED TO, SEED MIXES (AS STATED IN PART 2 - PRODUCTS, 2.01.D) OR MULCH. IN NON-MAINTAINED AREAS OF CONCORD, SEED MIX AND MULCH TO BE USED.



NOTE:  
1. NOTIFY C.O. IMMEDIATELY IN THE EVENT ARCHEOLOGICAL REMAINS ARE DISCOVERED.

**STUMP GRINDING & REMOVAL**

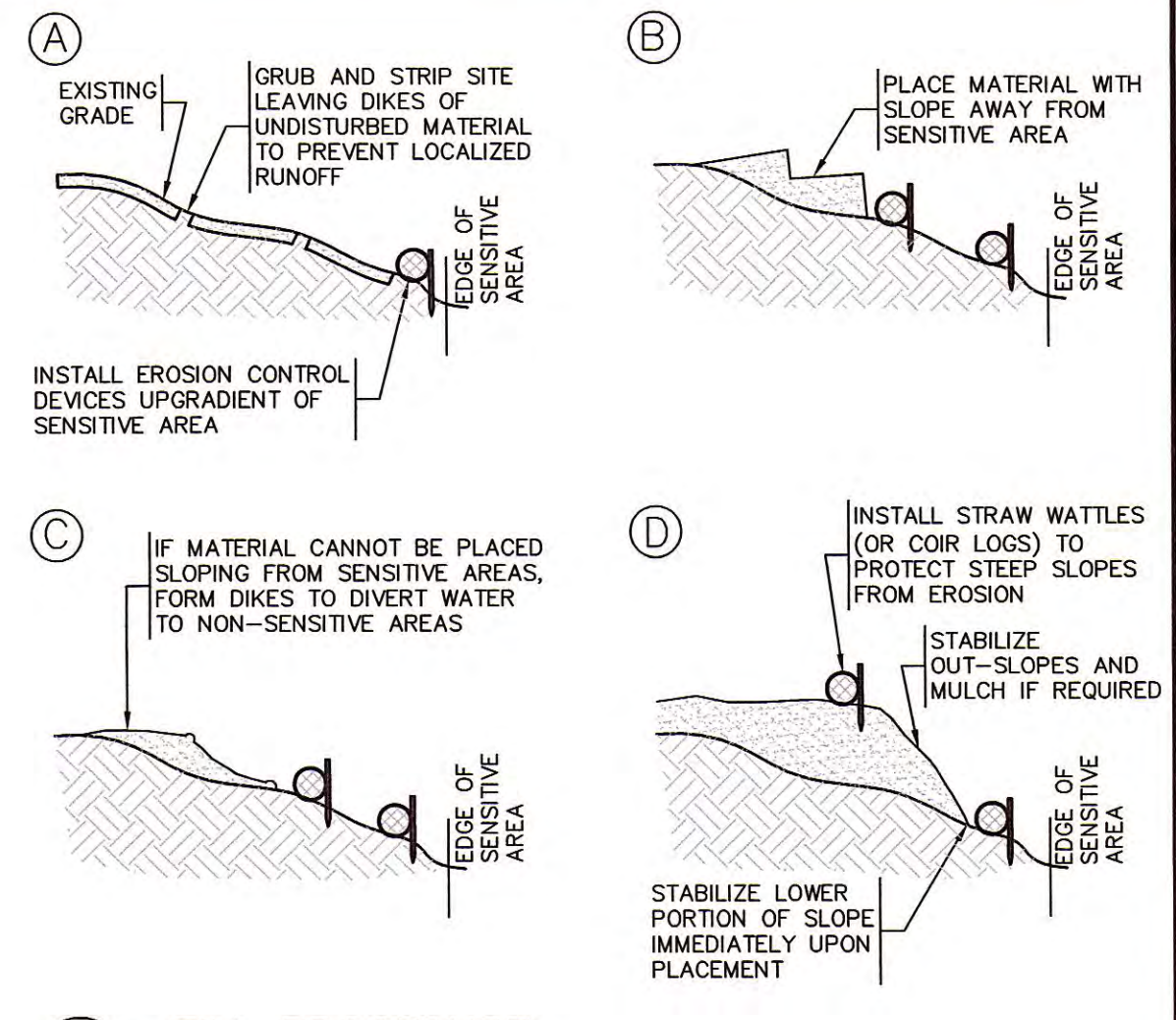
TYPICAL CROSS SECTION  
NOT TO SCALE



NOTES:  
[1] THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.  
[2] WHEN WASHING IS REQUIRED, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.  
[3] WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.  
[4] USE SANDBAGS, HAY BALES OR OTHER APPROVED METHODS TO CHANNELIZE RUNOFF TO BASIN AS REQUIRED.

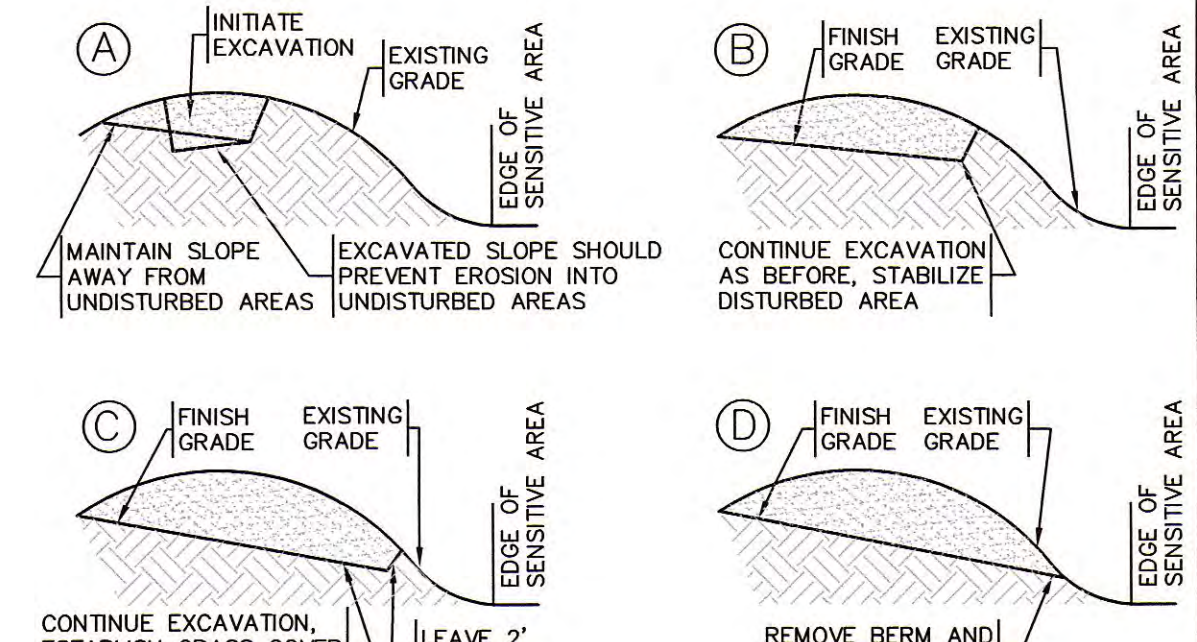
**CONSTRUCTION ENTRANCE**

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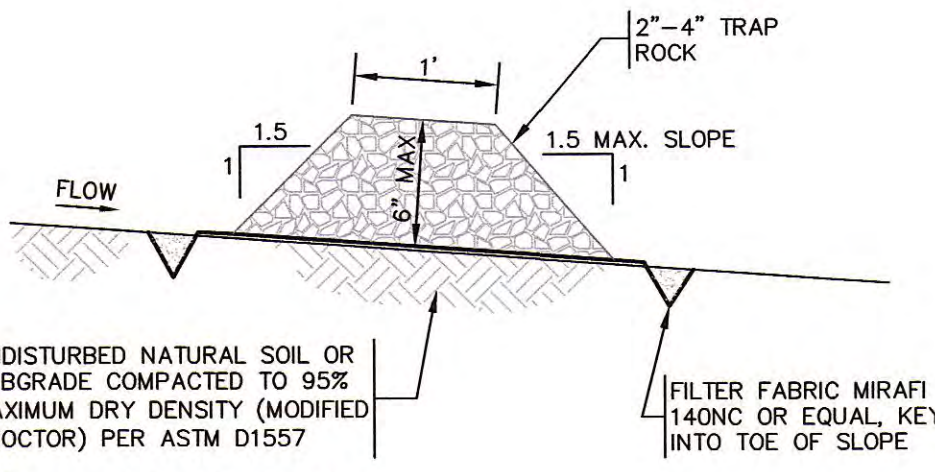
**FILL PROCEDURE**

SLOPE PROFILES  
NOT TO SCALE



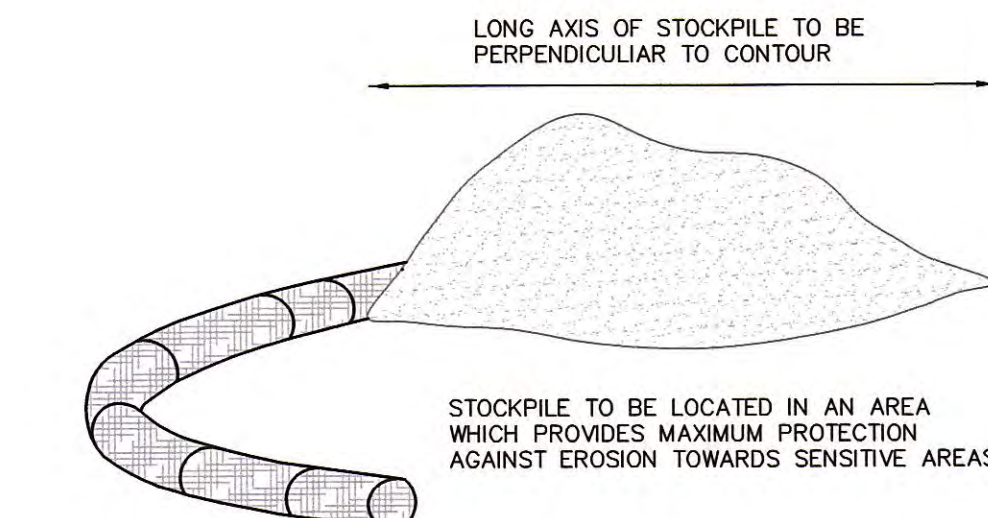
**EXCAVATION PROCEDURE**

TYPICAL CROSS SECTION  
NOT TO SCALE



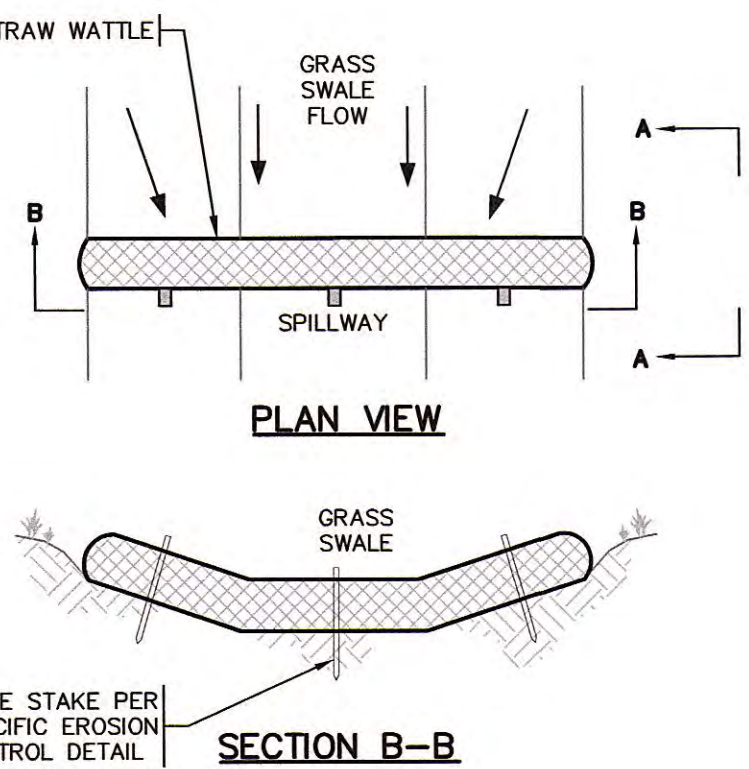
**CHECK DAM**

TYPICAL CROSS SECTION  
NOT TO SCALE



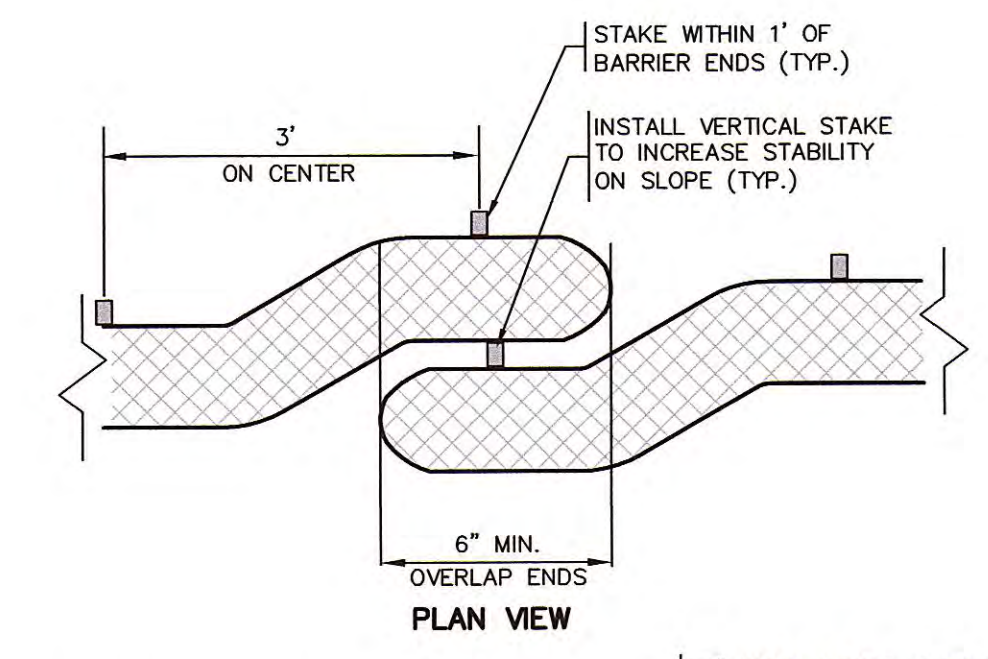
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ISOMETRIC VIEW  
NOT TO SCALE



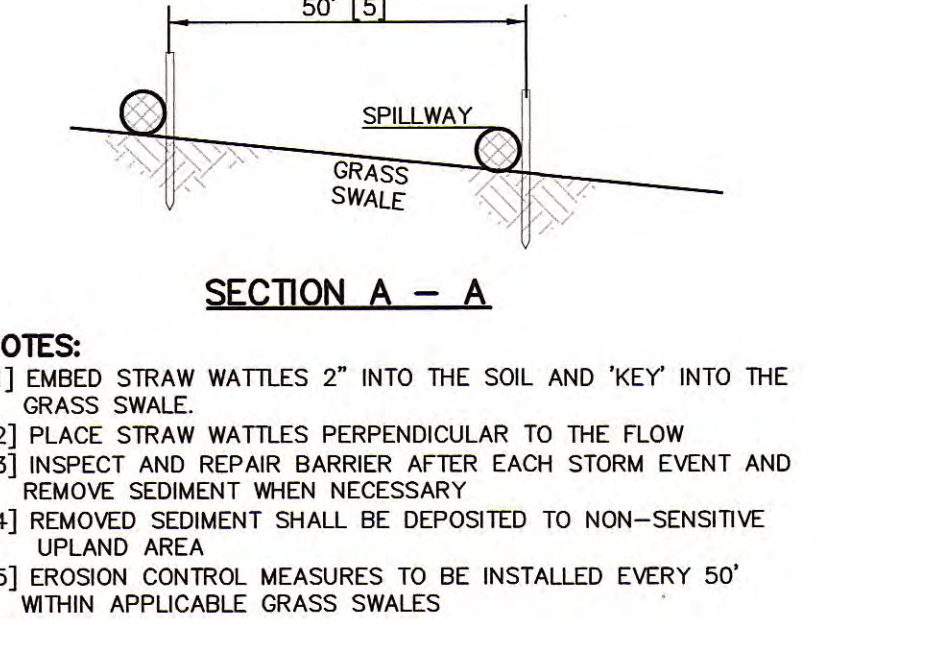
**SECTION A - A**

TYPICAL CROSS SECTION  
NOT TO SCALE



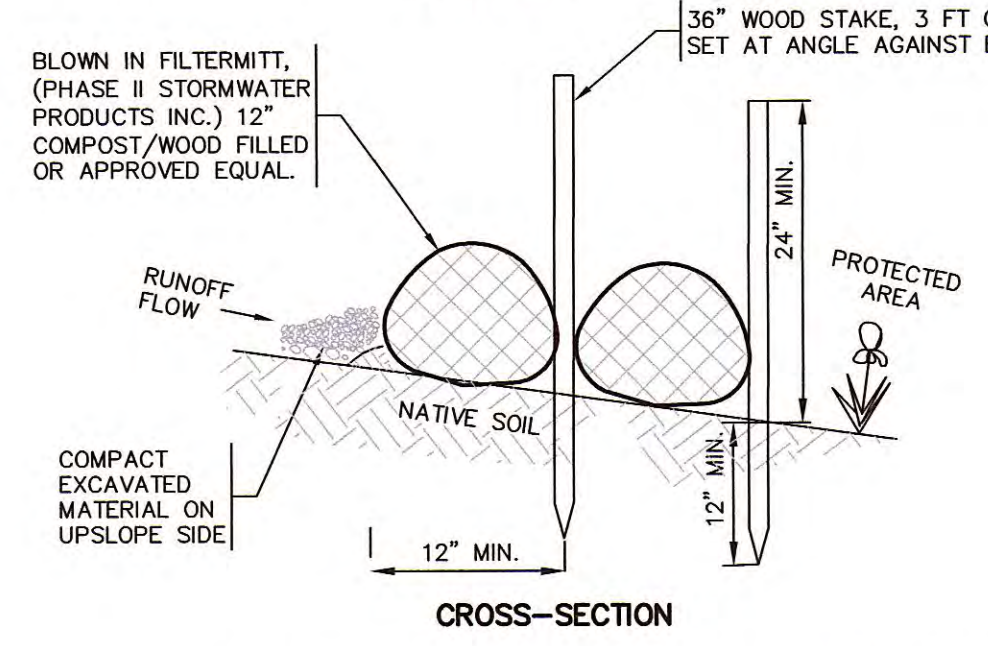
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NOT TO SCALE



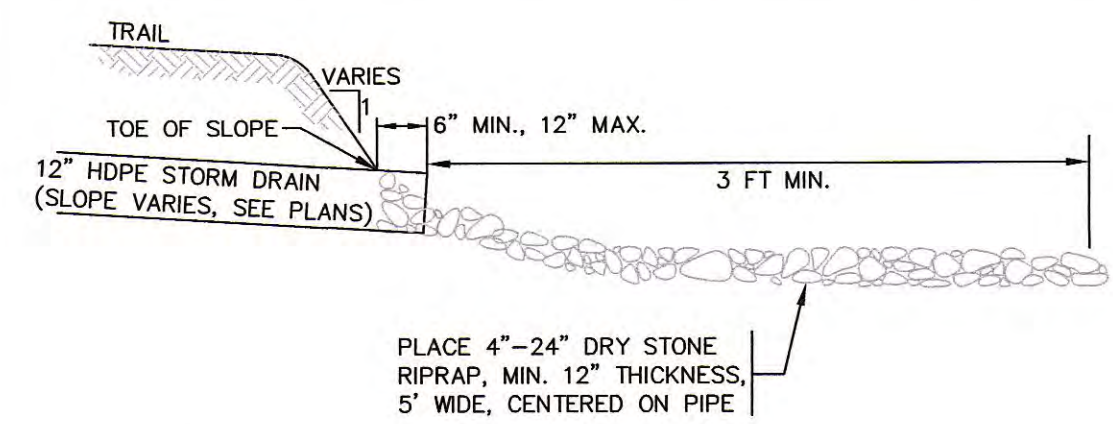
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NOT TO SCALE



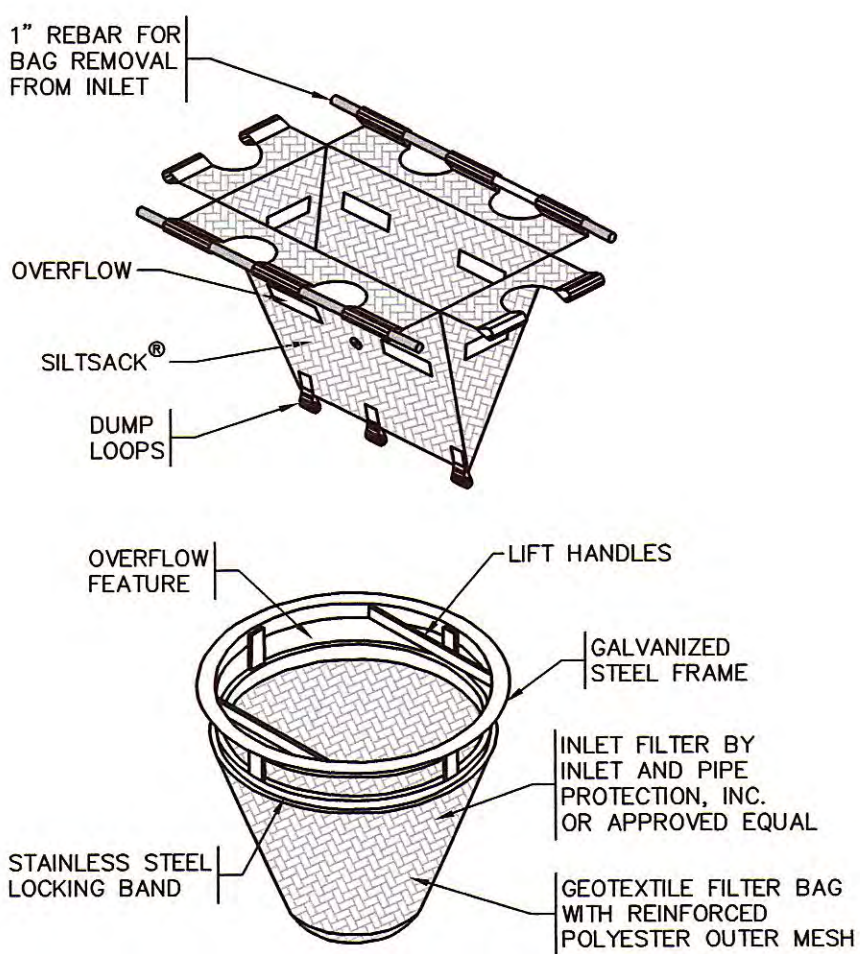
**GRASS SWALE LEAK OFF**

NOT TO SCALE



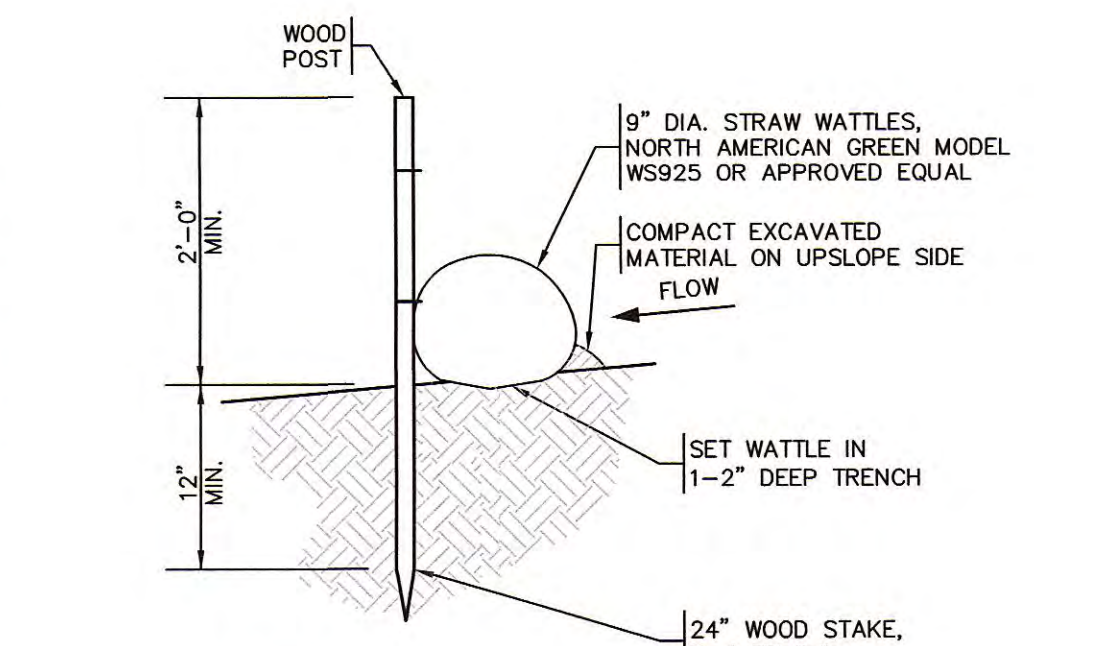
**RIPRAP AT PIPE OUTLET**

TYPICAL CROSS SECTION  
NOT TO SCALE



**SILT SACK**

TYPICAL CROSS SECTION  
NOT TO SCALE



**STRAW WATTLE**

TYPICAL CROSS SECTION  
NOT TO SCALE

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- CONCEPT  CONSTRUCTION  
 PERMIT  CONSTRUCTION RECORD

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2	4/9/24	DJG	NMP	ISSUED FOR CONSTRUCTION
1	3/6/24	DJG	NMP	NPS COMMENTS & TOWN OF CONCORD C.C.

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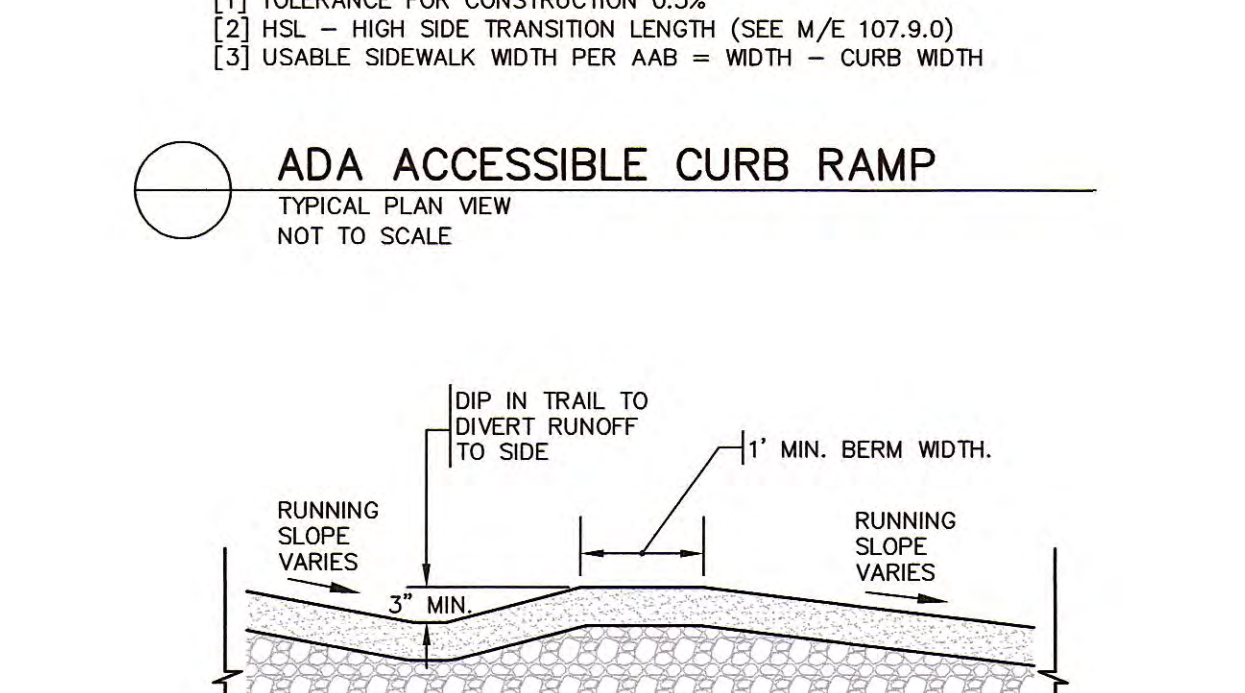
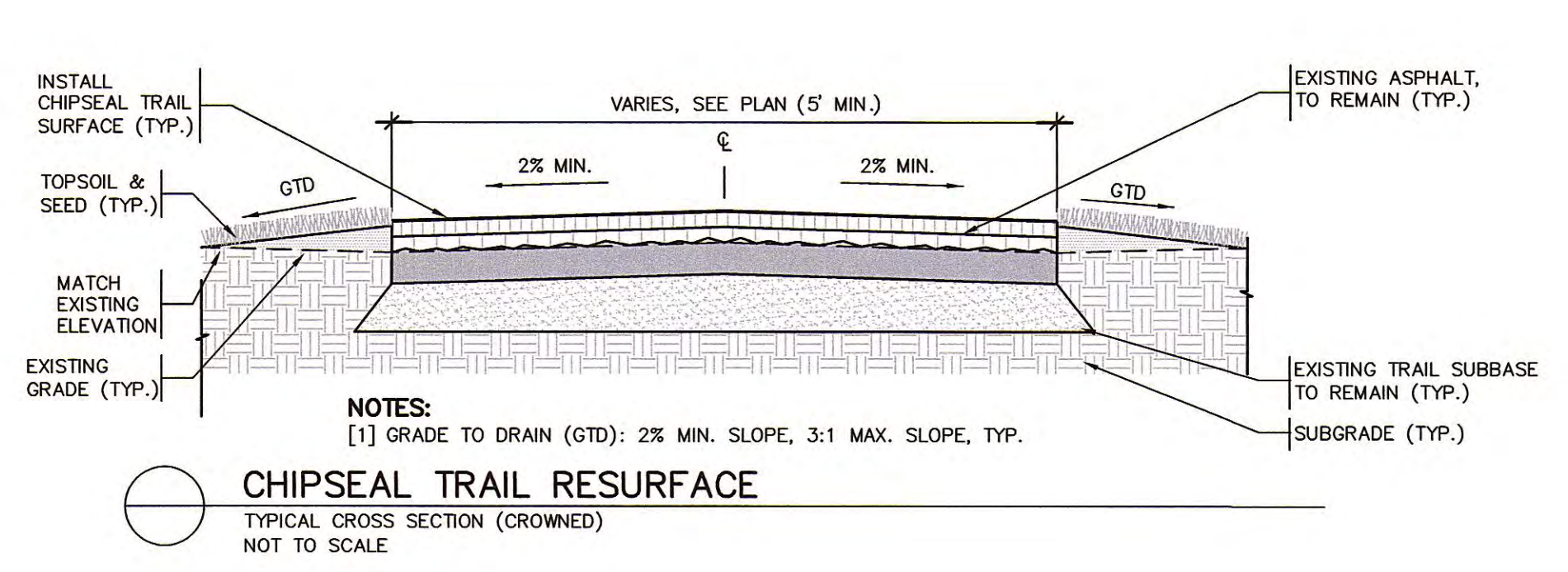
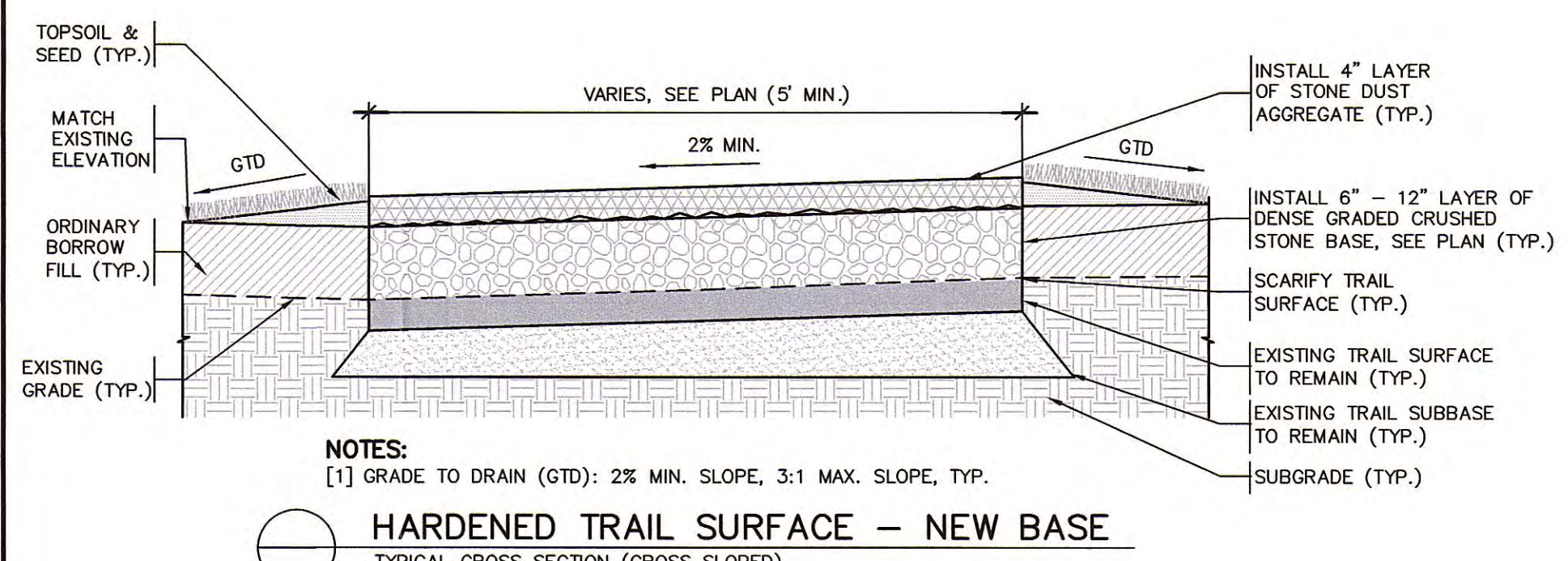
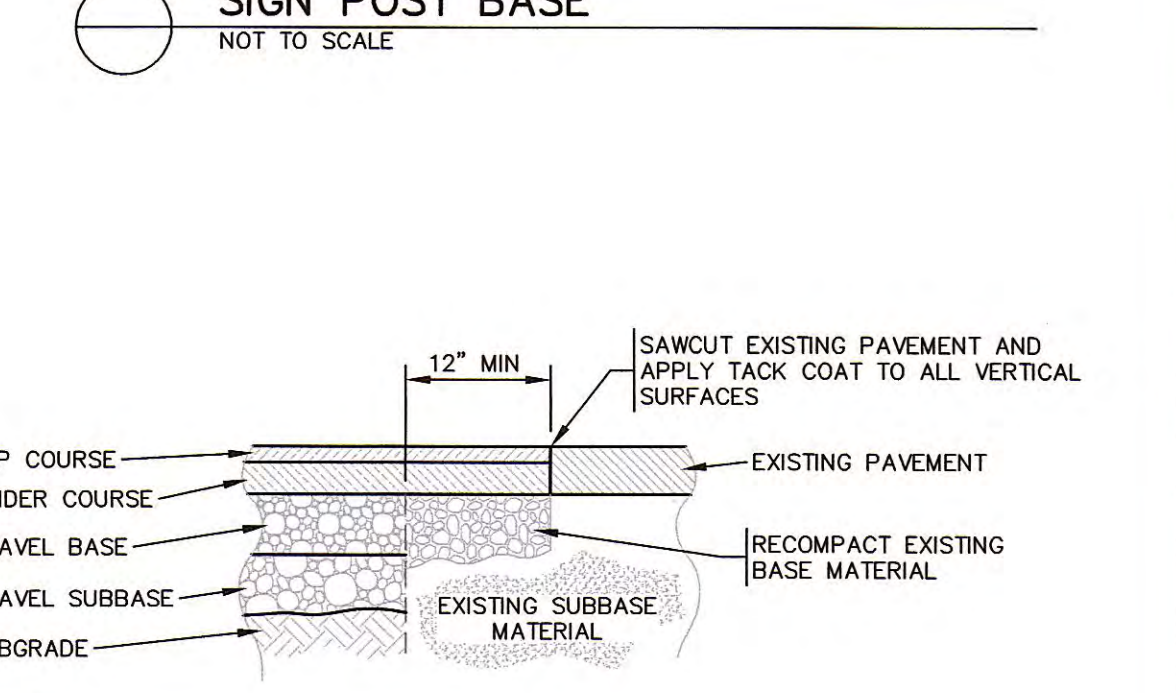
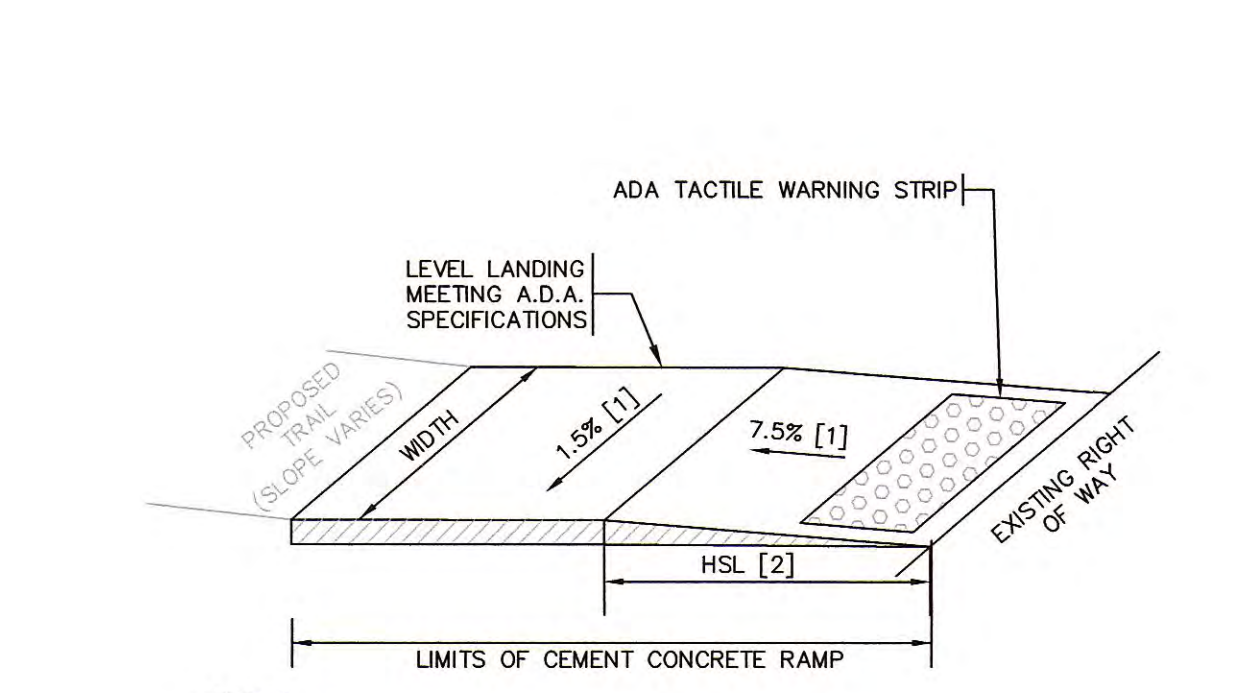
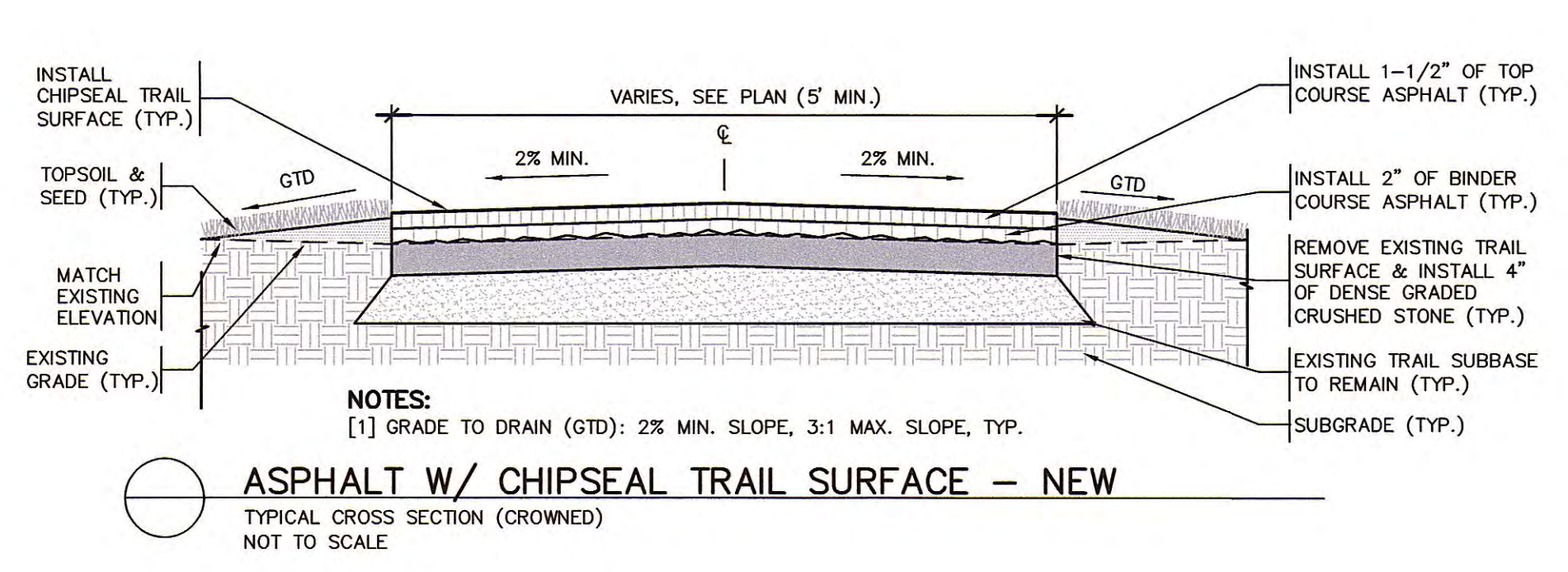
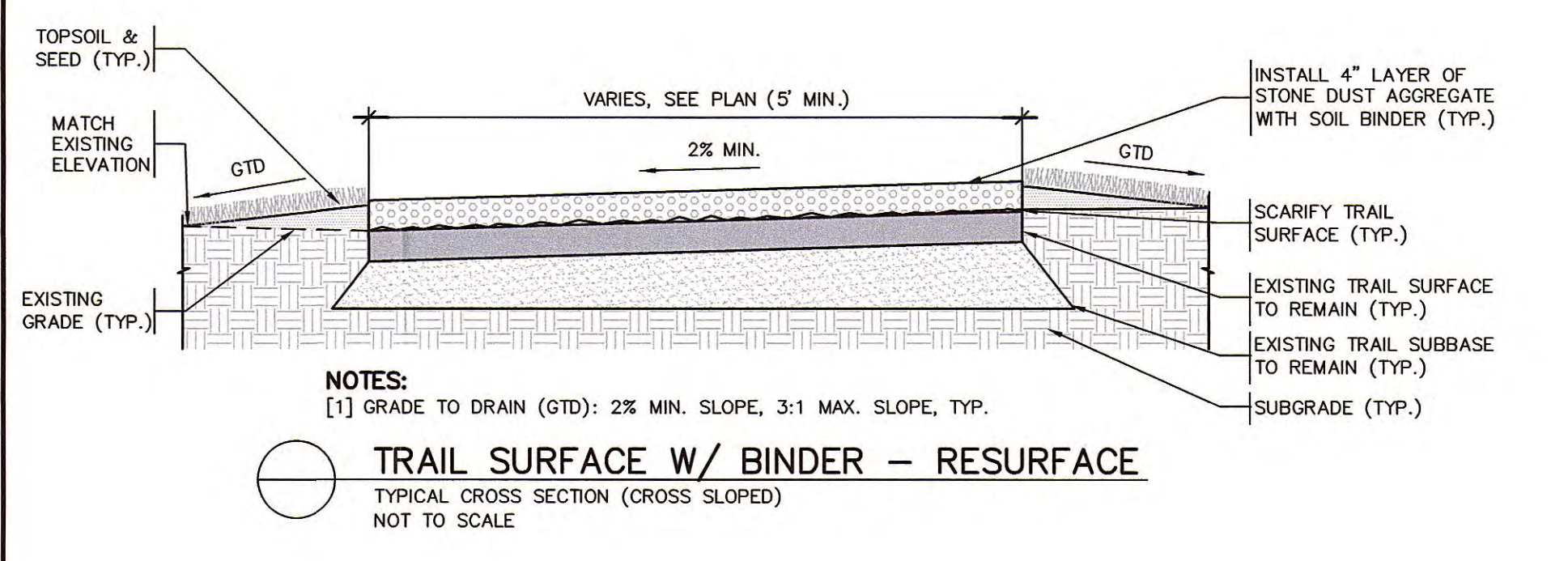
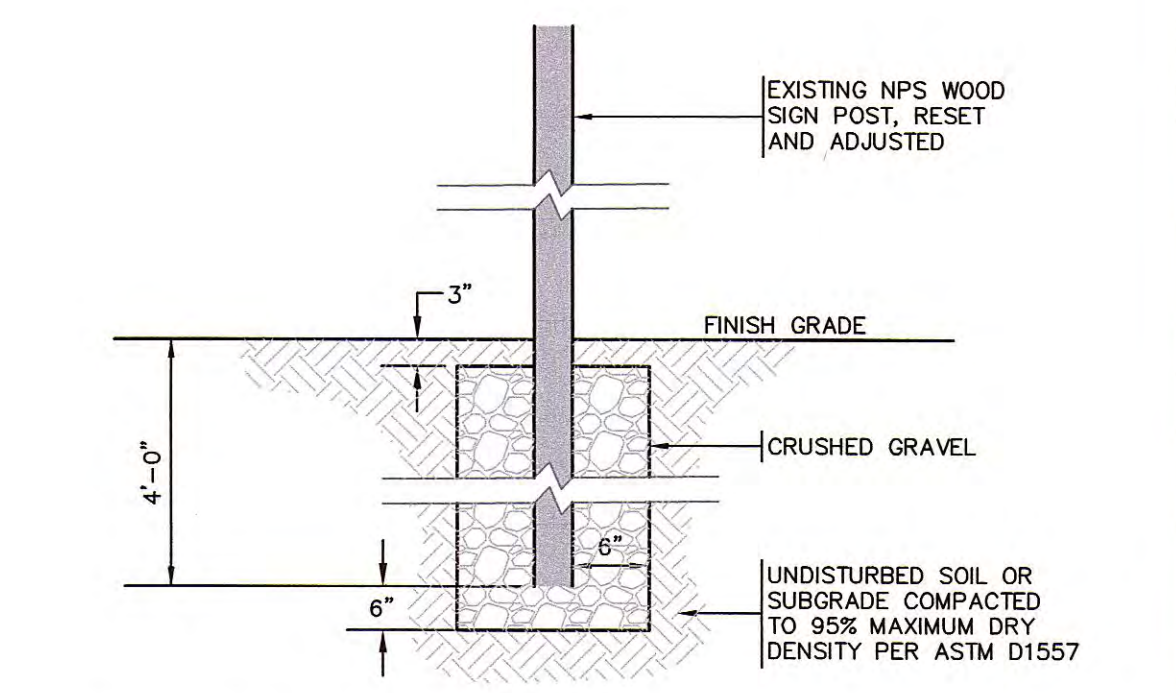
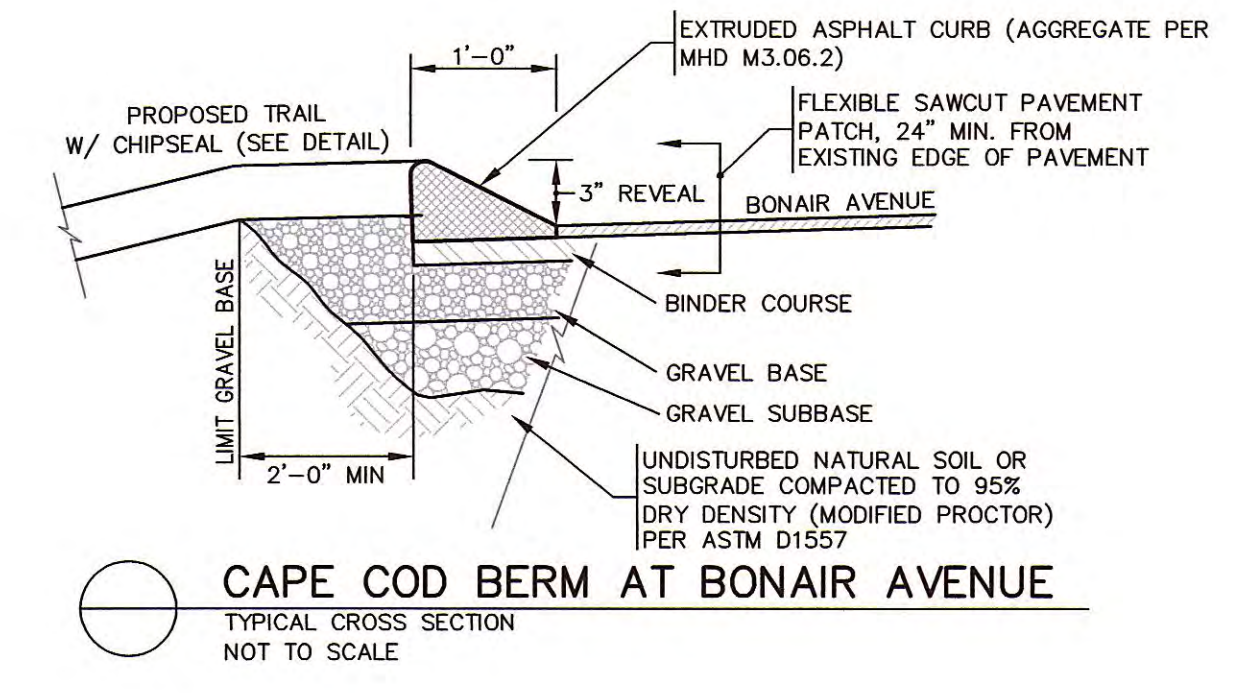
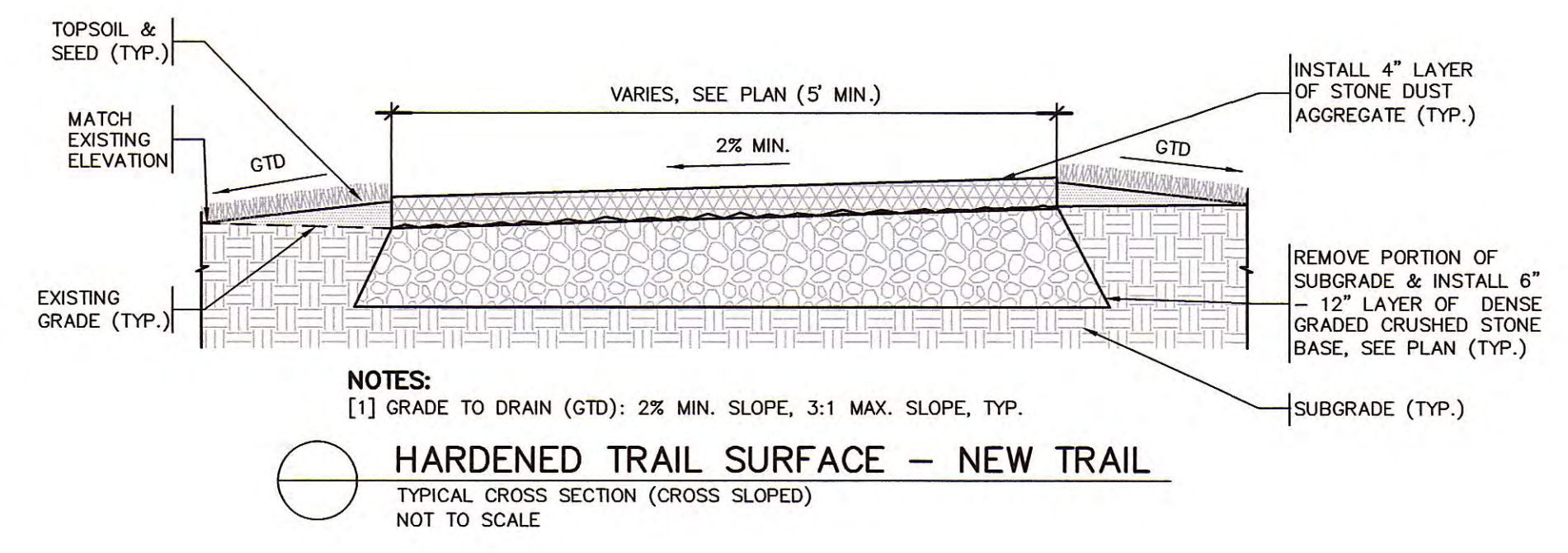
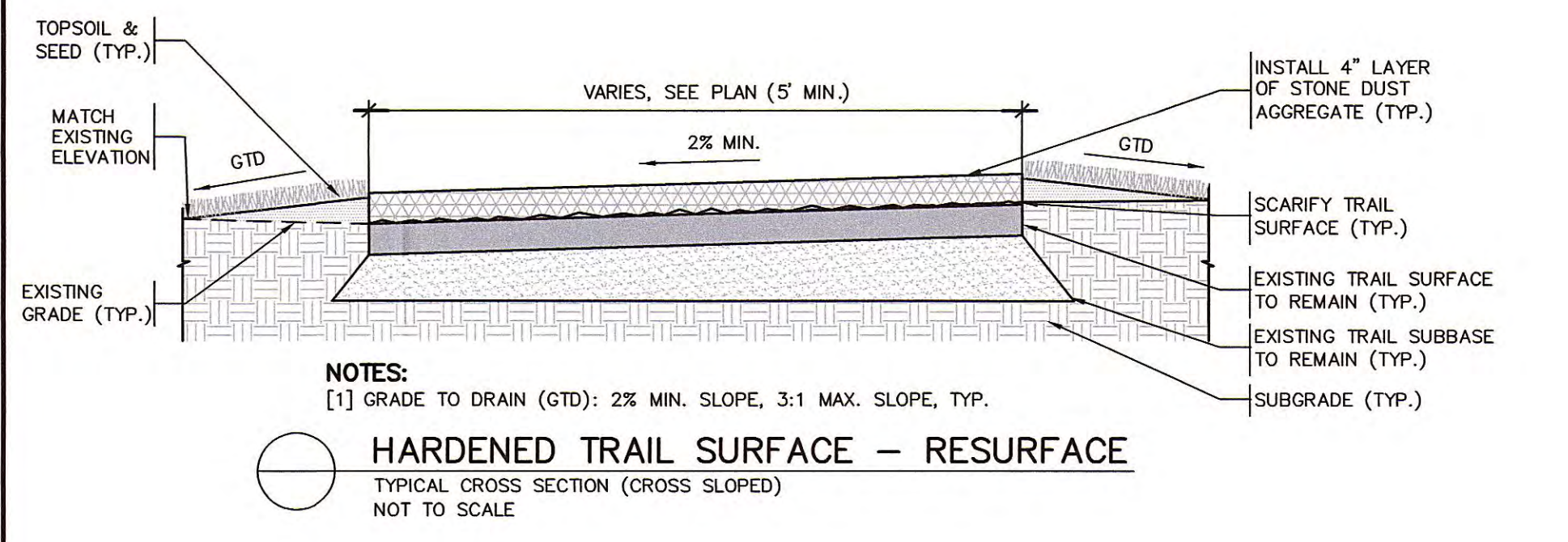
**EROSION CONTROL & CONSTRUCTION DETAILS**

**MINUTE MAN NATIONAL PARK CONCORD, LINCOLN AND LEXINGTON**

PREPARED FOR:  
NATIONAL PARK SERVICE  
174 LIBERTY STREET  
CONCORD, MA 01742

DES. BY: LT/DG	DATE: FEBRUARY 2024	JOB 231032	C8.1
CHK. BY: NMP			

P:\23-11-24-131032\DWG\231032\_ISSUED FOR CONSTRUCTION.DWG 04-11-24 1:59:29 PM - LAYOUT CB-2-CONST.DET.



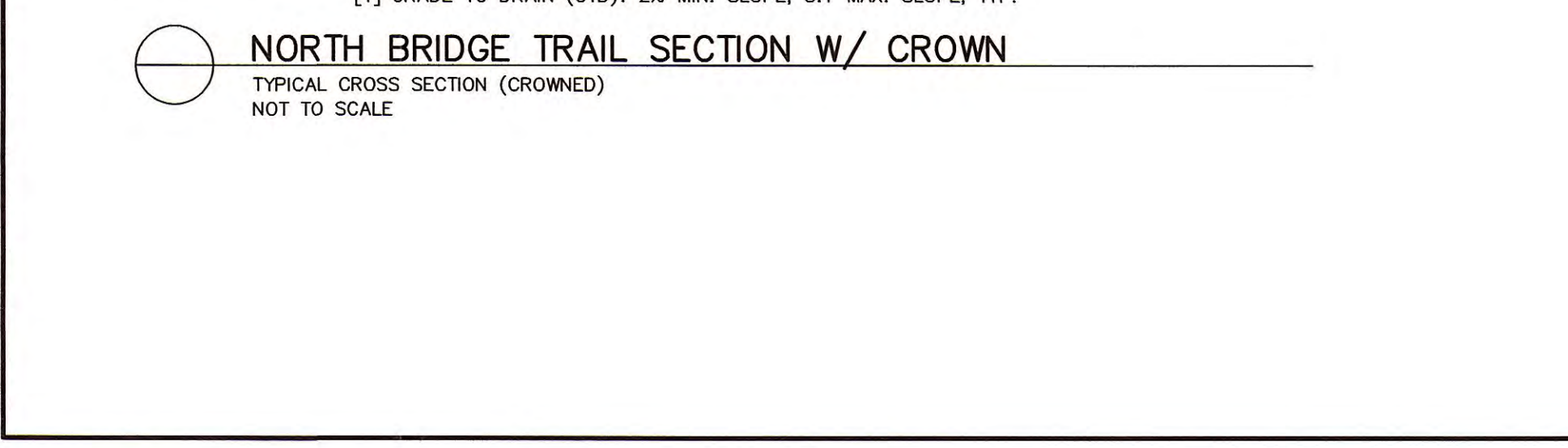
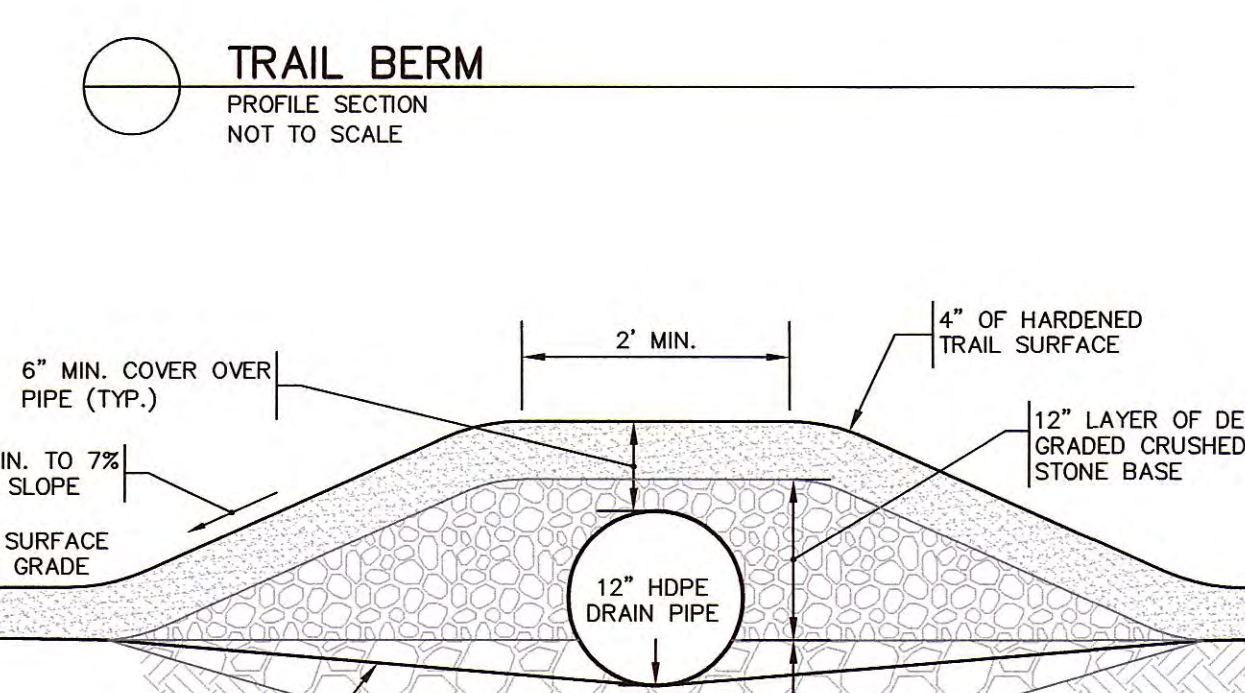
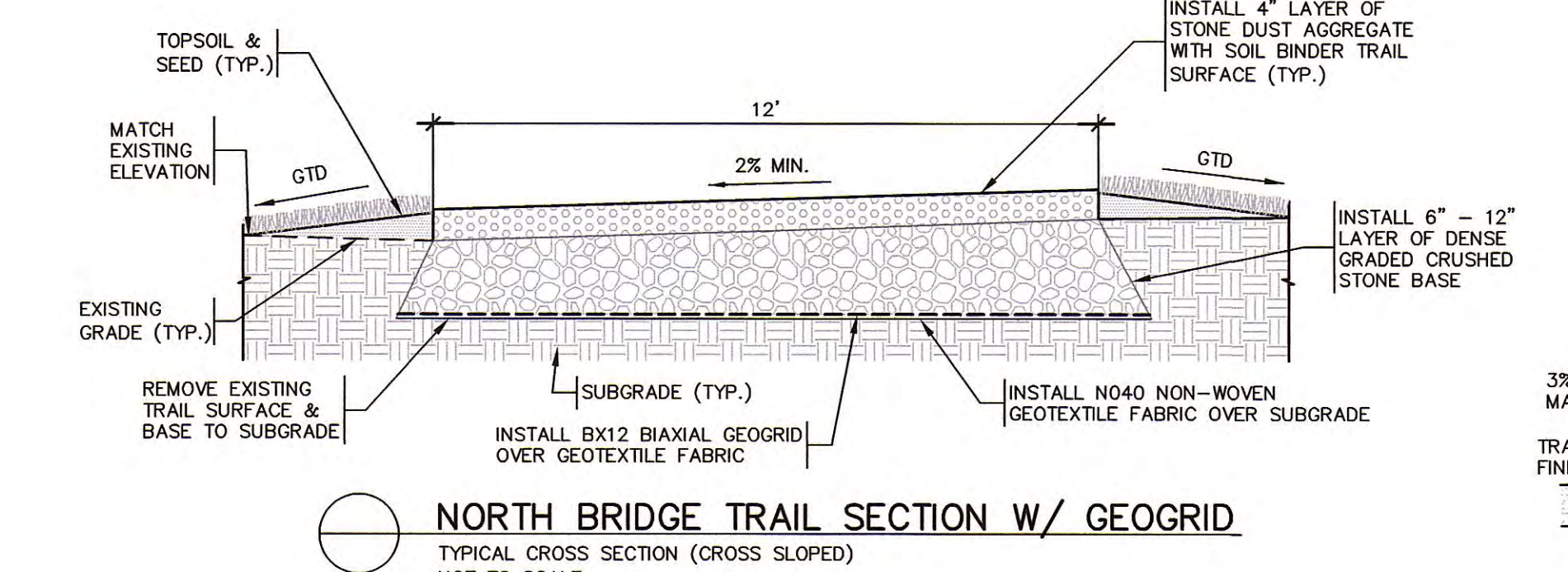
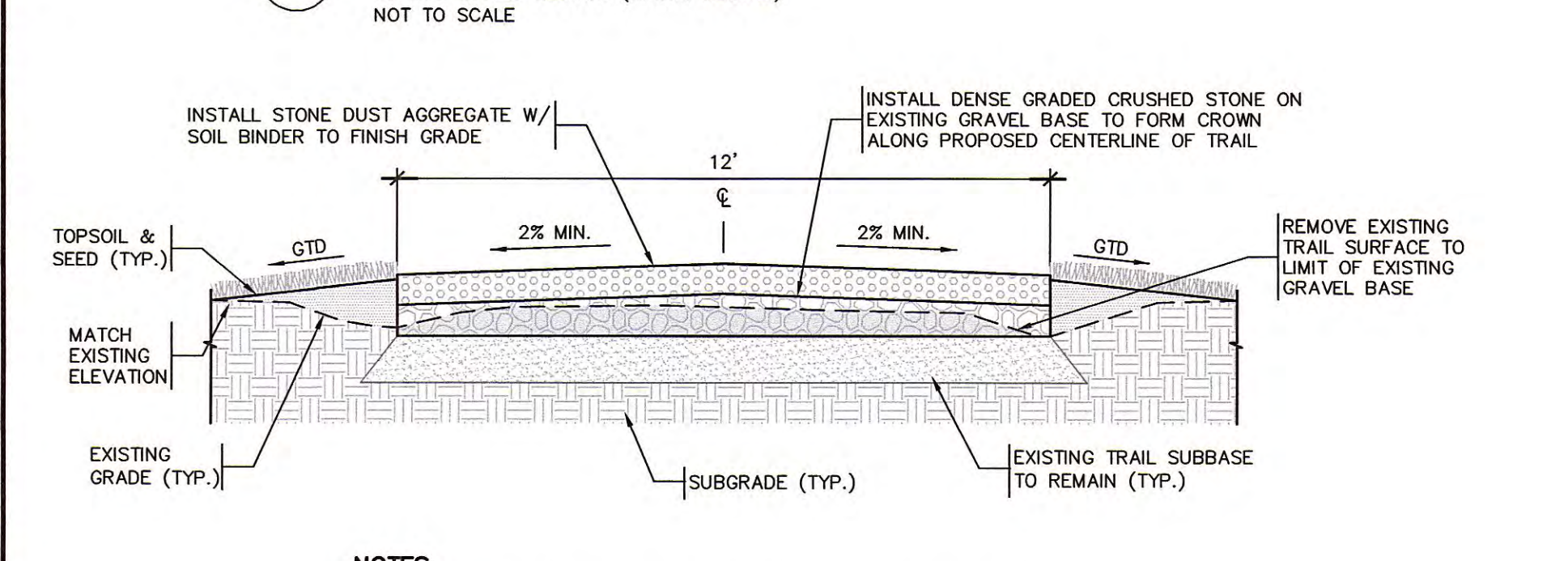
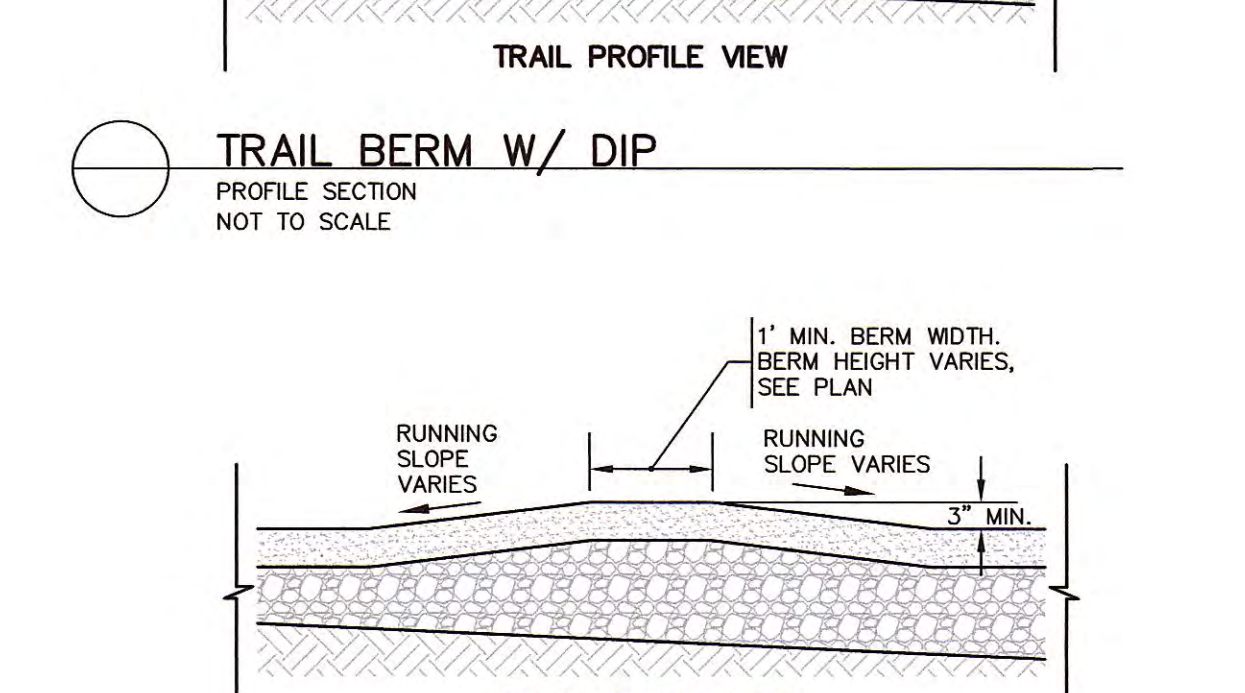
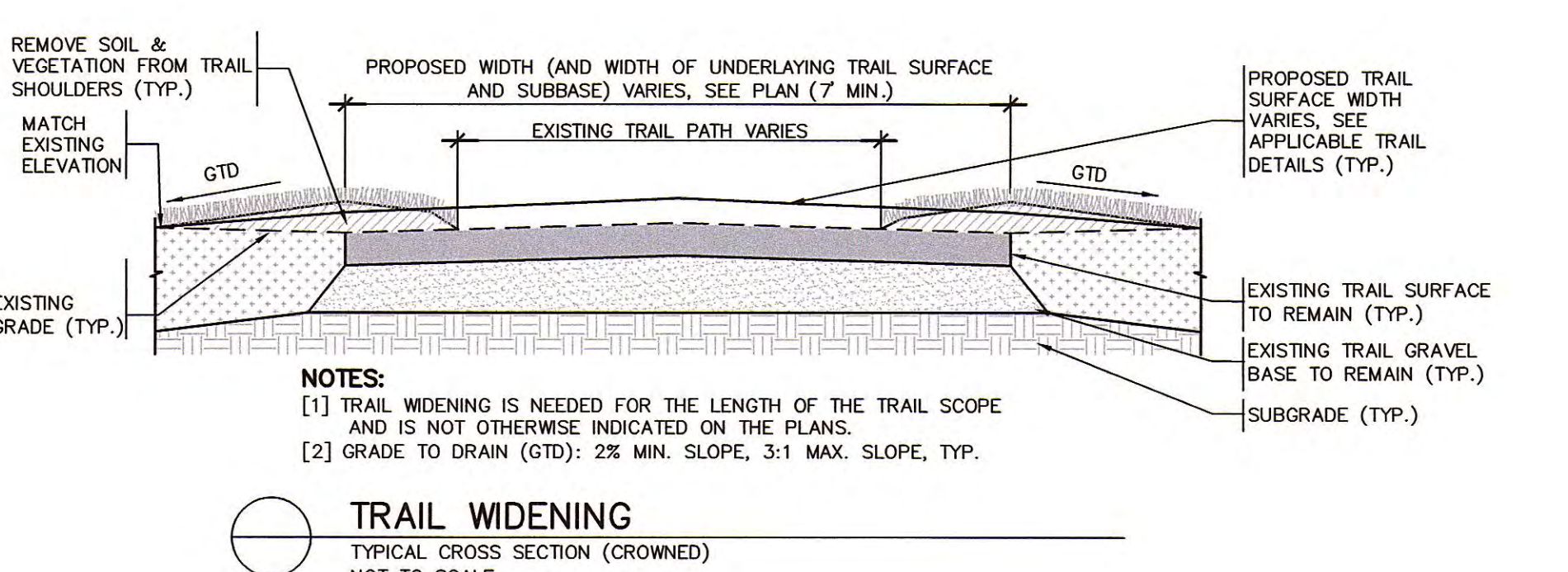
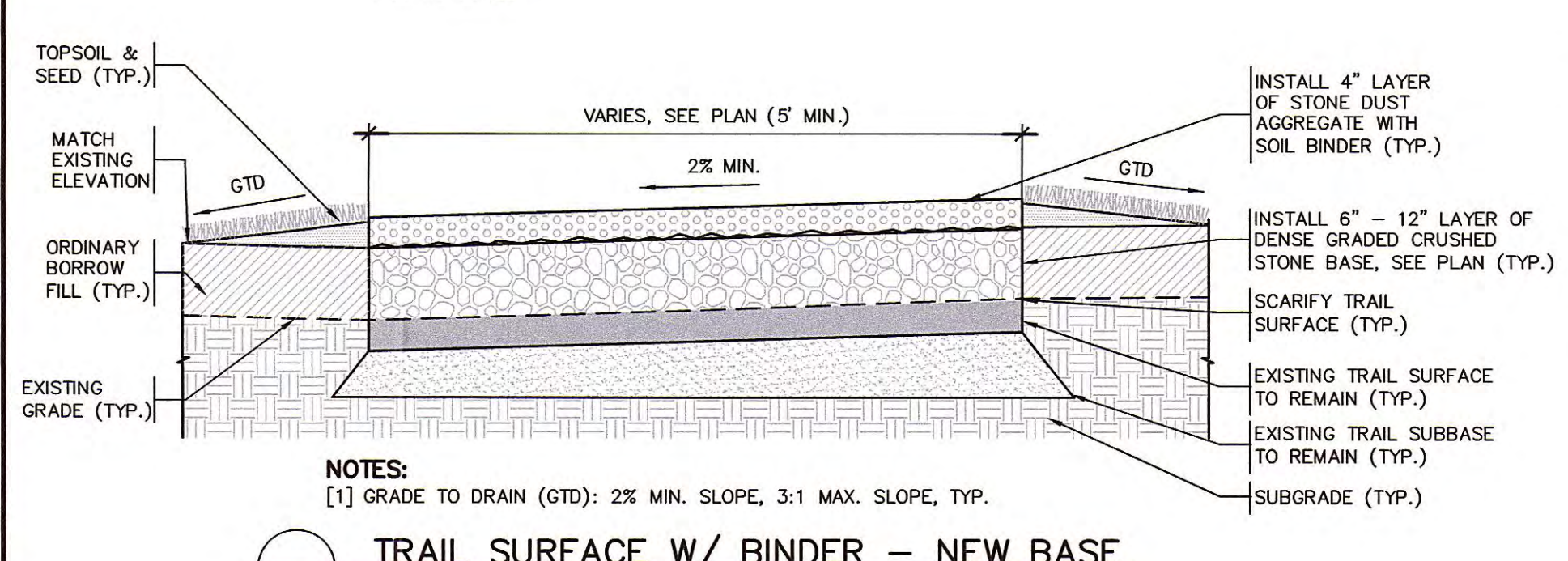
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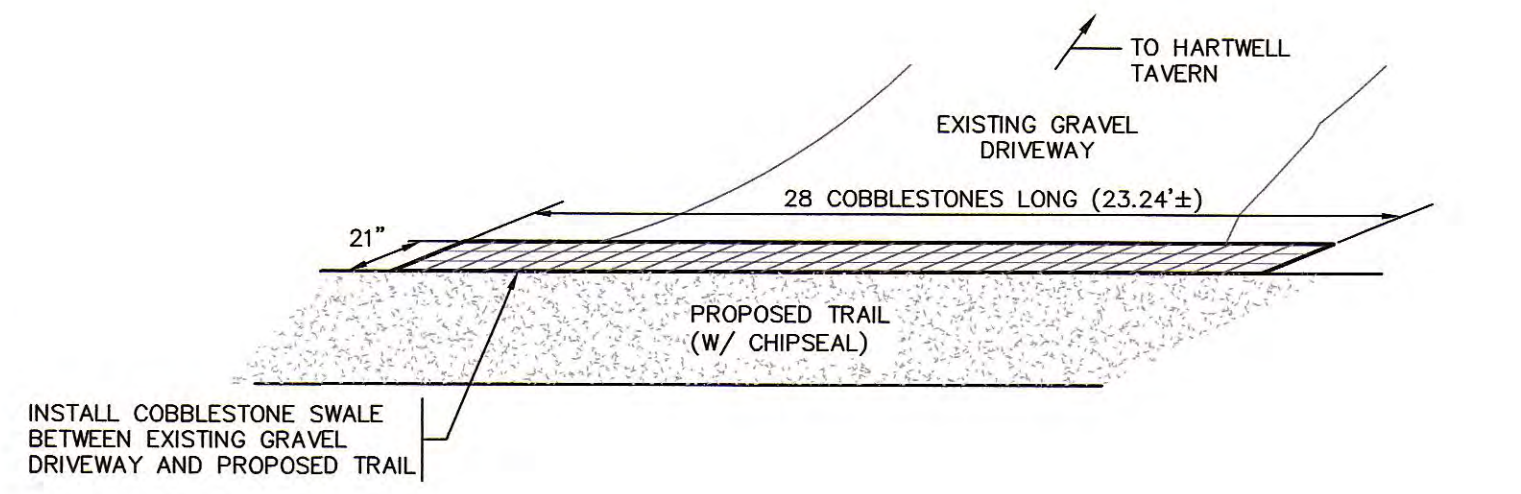
CONSTRUCTION DETAILS

MINUTE MAN NATIONAL PARK  
CONCORD, LINCOLN AND LEXINGTON

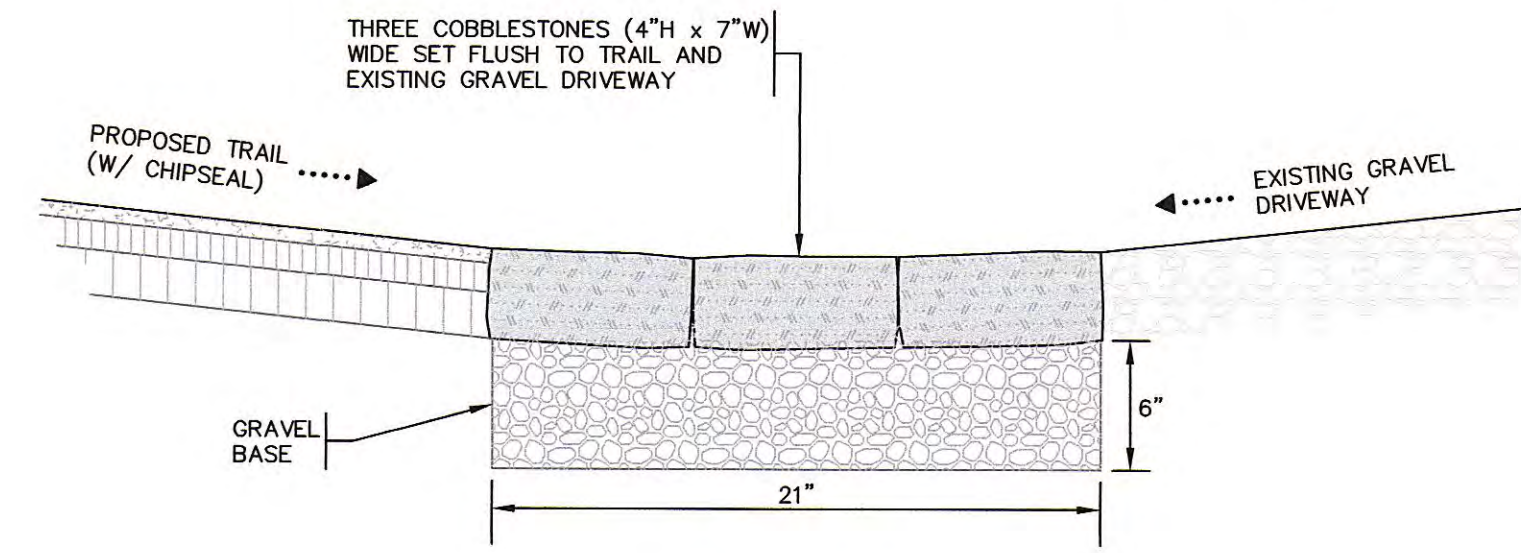
PREPARED FOR:  
NATIONAL PARK SERVICE  
174 LIBERTY STREET  
CONCORD, MA 01742

DES. BY: LT/DG	DATE: FEBRUARY 2024	JOB 231032	CB.2
CHK. BY: NMP			

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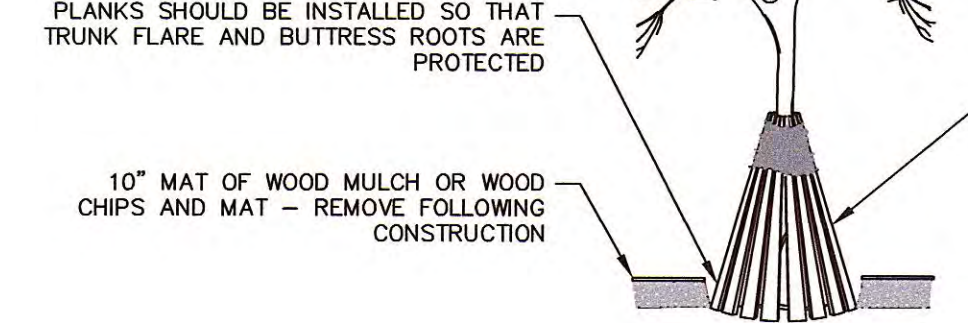


**ISOMETRIC VIEW**



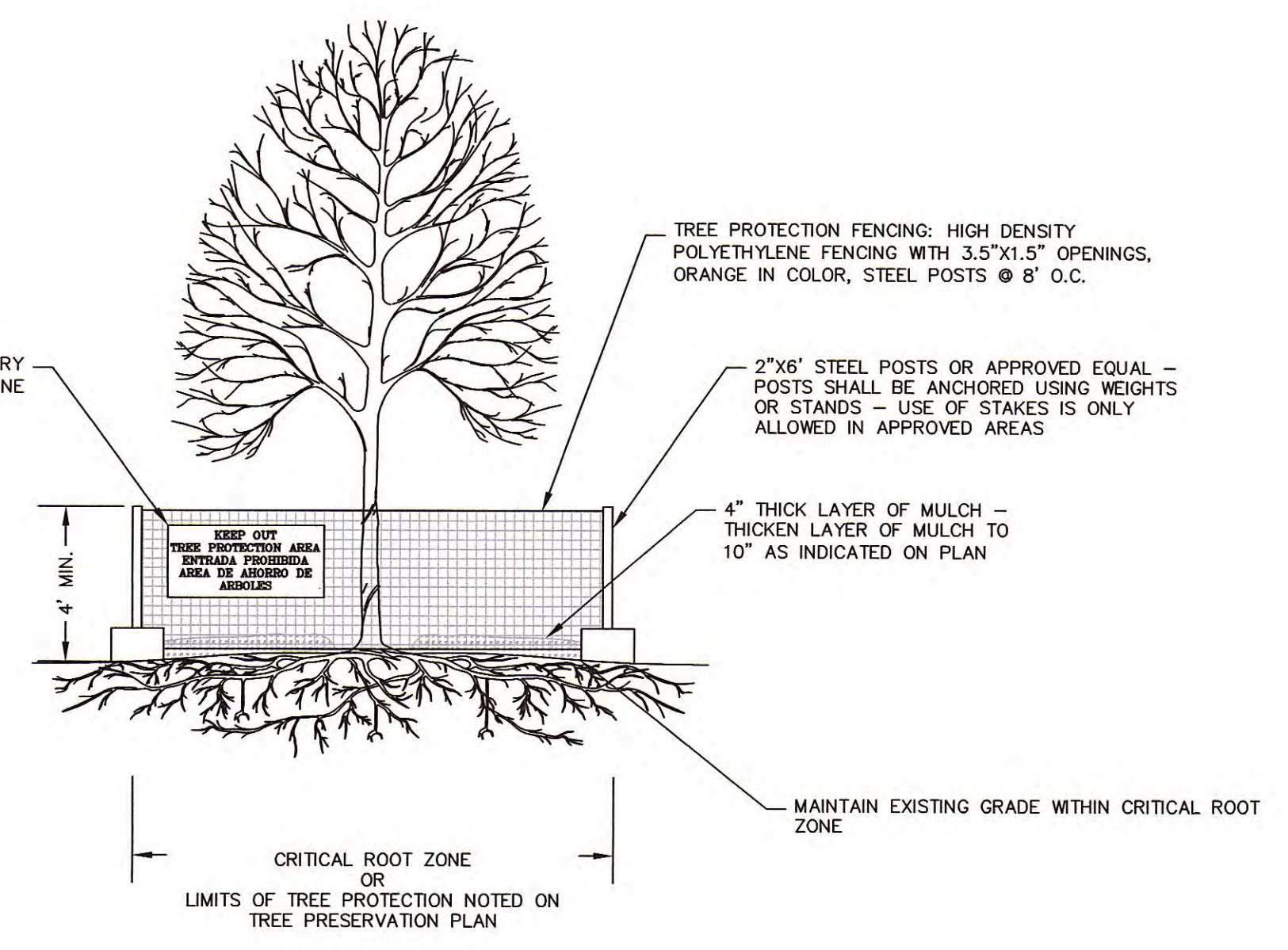
**CROSS-SECTION**

NOTE:  
SIZE OF COBBLESTONES SHALL BE 10" LENGTH X 7" WIDTH X 4" HEIGHT



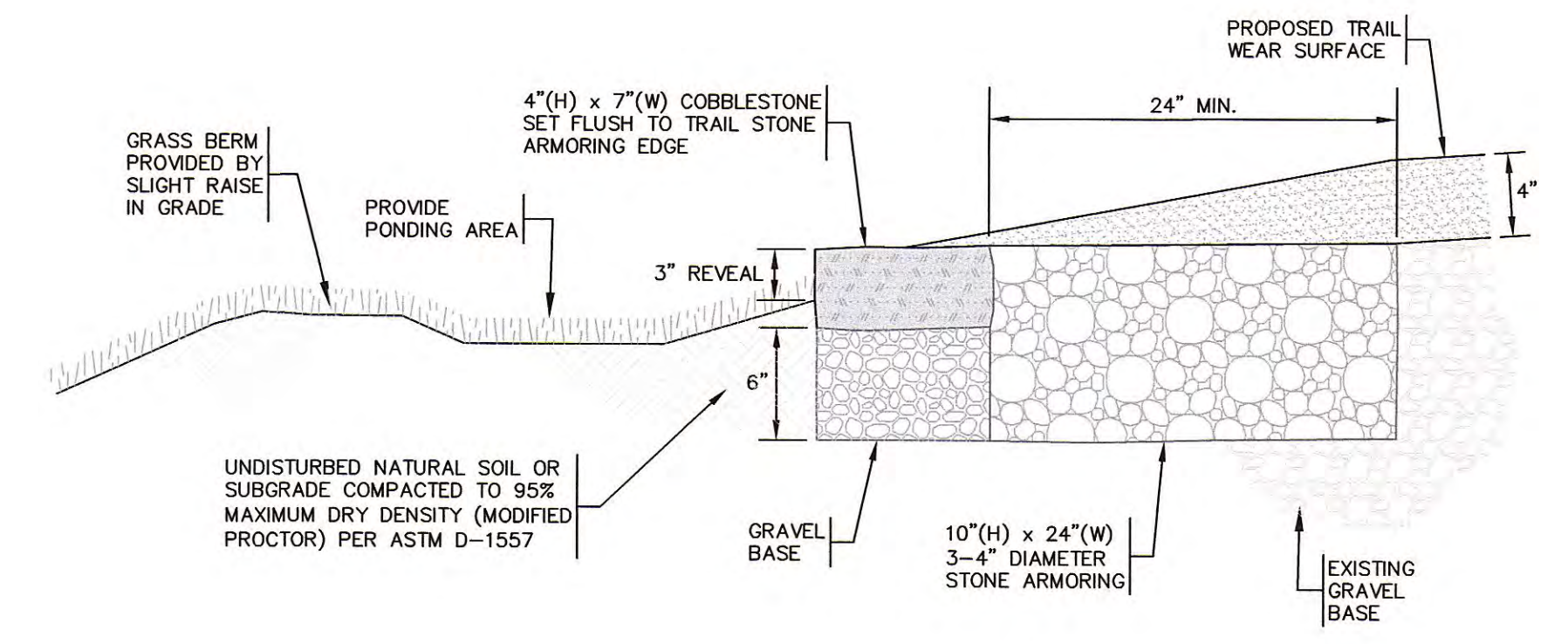
**NOTES:**

- TREE PROTECTION SHALL BE PROVIDED AS INDICATED ON DRAWINGS, OR AS DETERMINED BY CONTRACTING OFFICER DURING PROJECT COORDINATION.
- PLANK PROTECTION SHALL ONLY BE PROVIDED AS INDICATED ON PLANS. DO NOT INSTALL UNLESS EXPRESSLY INDICATED OR APPROVED BY CONTRACTING OFFICER.
- ANY DAMAGE TO TREES ON ANY PORTION OF SITE SHALL BE REPORTED TO CONTRACTING OFFICER OR PARK REPRESENTATIVE AS SOON AS POSSIBLE.
- OVERMATURE TREES SHALL BE DESIGNATED BY CONTRACTING OFFICER BEFORE CONSTRUCTION.

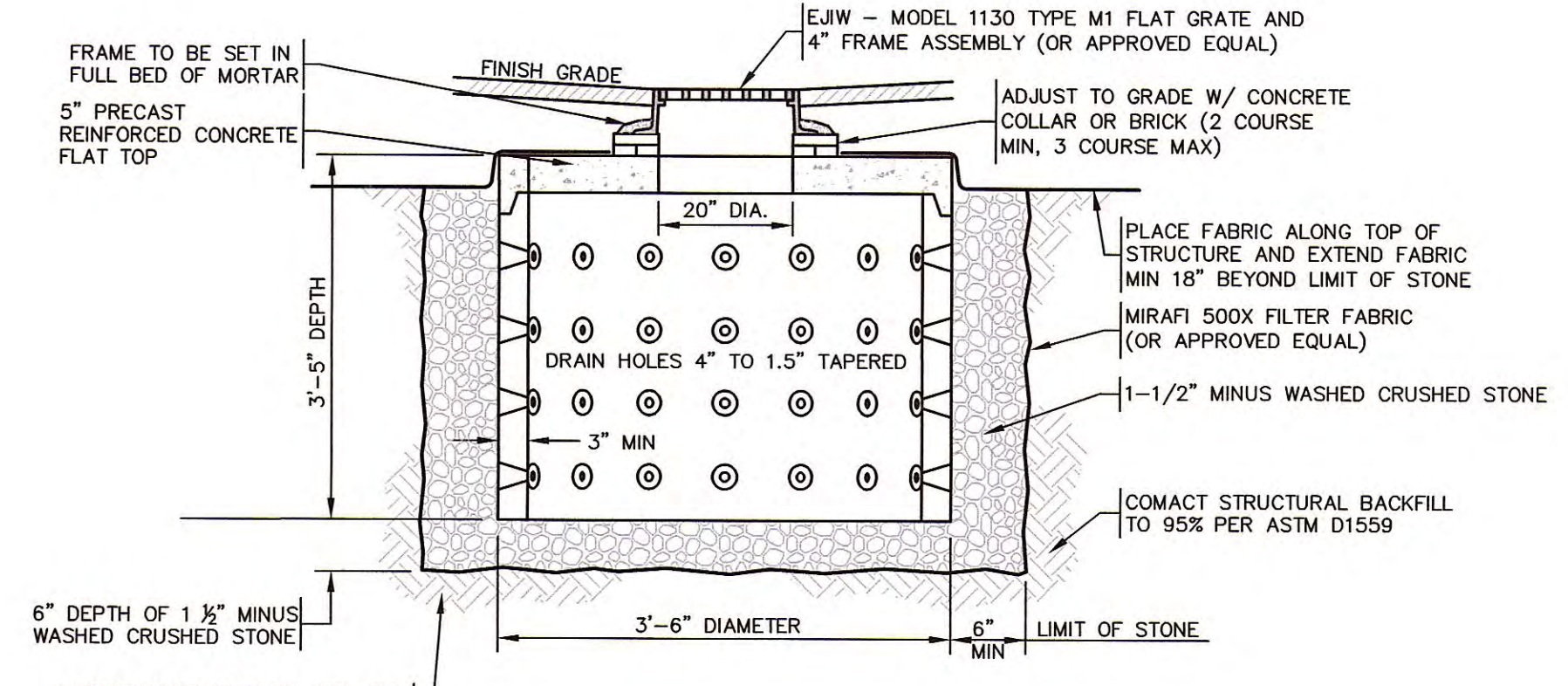


**TREE PROTECTION DETAIL**  
NOT TO SCALE

**COBBLESTONE SWALE FOR DRIVEWAY JUNCTION**  
NOT TO SCALE



**COBBLESTONE EDGE WITH STONE ARMORING**  
TYPICAL CROSS SECTION  
NOT TO SCALE



- NOTES:**
- 4,000 PSI PRECAST CONCRETE AFTER 28 DAYS CONFORMING WITH LATEST ASTM C478.
  - REINFORCING PER LATEST ASTM A185.
  - PRECAST 160-GAL MINI-DRY WELL BY SHEA CONCRETE (OR APPROVED EQUAL).
  - FILTER FABRIC SHALL BE WRAPPED AROUND ENTIRE DIAMETER AND BOTTOM OF STONE.

**DRYWELL**  
TYPICAL CROSS SECTION  
NOT TO SCALE

**MATERIAL SPECIFICATIONS**

**31 05 19.13 - GEOTEXTILES FOR EARTHWORK**

**MIRAFI 140NC**

MIRAFI 140NC IS A NEEDLE PUNCHED NON-WOVEN GEOTEXTILE COMPOSED OF POLYPROPYLENE FIBERS, WHICH ARE FORMED INTO A STABLE NETWORK SUCH THAT THE FIBERS RETAIN THEIR RELATIVE POSITION. MIRAFI 140NC IS INERT TO BIOLOGICAL DEGRADATION AND RESISTS NATURALLY ENCOUNTERED CHEMICALS, ALKALIS, AND ACIDS.

REFER TO CHECK DAM & CONSTRUCTION ENTRANCE DETAILS (SHEET C8.1).

MECHANICAL PROPERTIES	TEST METHOD	UNIT	MINIMUM AVERAGE ROLL VALUE	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	100 (445)	100 (445)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	45 (200)	45 (200)
CBR Puncture Strength	ASTM D6241	lbs (N)	250 (1113)	
<b>MAXIMUM OPENING SIZE</b>				
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
<b>MINIMUM ROLL VALUE</b>				
Permittivity	ASTM D4491	sec <sup>-1</sup>	2.0	
Flow Rate	ASTM D4491	gal/min/ft <sup>2</sup> (l/min/m <sup>2</sup> )	140 (5704)	
<b>MINIMUM TEST VALUE</b>				
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	
<b>PHYSICAL PROPERTIES</b>			<b>ROLL SIZE</b>	
Roll Dimensions (width x length)		ft (m)	12.5 x 360 (3.8 x 110)	15 x 360 (4.57 x 110)
Roll Area		yd <sup>2</sup> (m <sup>2</sup> )	500 (418)	600 (502)
Roll Weight		lbs (kg)	145 (66)	170 (77)

**MIRAFI 500X**

MIRAFI 500X GEOTEXTILE IS COMPOSED OF HIGH-TENACITY POLYPROPYLENE FIBERS, WHICH ARE WOVEN INTO A STABLE NETWORK SUCH THAT THE YARNS RETAIN THEIR RELATIVE POSITION. MIRAFI 500X IS INERT TO BIOLOGICAL DEGRADATION AND RESISTANT TO NATURALLY ENCOUNTERED CHEMICALS, ALKALIS, AND ACIDS.

REFER TO DRYWELL DETAIL (THIS SHEET).

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	200 (890)	200 (890)
Grab Tensile Elongation	ASTM D4632	%	15	15
Trapezoid Tear Strength	ASTM D4533	lbs (N)	75 (334)	75 (334)
CBR Puncture Strength	ASTM D6241	lbs (N)	700 (3115)	
<b>MAXIMUM OPENING SIZE</b>				
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	40 (0.425)	
<b>MINIMUM ROLL VALUE</b>				
Permittivity	ASTM D4491	sec <sup>-1</sup>	0.05	
Flow Rate	ASTM D4491	gal/min/ft <sup>2</sup> (l/min/m <sup>2</sup> )	4 (163)	
<b>MINIMUM TEST VALUE</b>				
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	
<b>Physical Properties</b>			<b>Roll Sizes</b>	
Roll Dimensions (width x length)	ft (m)	12.5 x 432 (3.8 x 132)	15 x 360 (4.57 x 110)	17.5 x 309 (5.3 x 94.2)
Roll Area	yd <sup>2</sup> (m <sup>2</sup> )	600 (502)		

**31 25 00 - EROSION AND SEDIMENT CONTROL MEASURES**

**FILTERMITT (EROSION CONTROL SOCK)**

PROVIDED BY:  
GROUNDCAPES EXPRESS, INC.  
P.O. BOX 737  
WRENTHAM, MA 02093  
508-384-7140  
OFFICE@GROUNDCAPESEXPRESS.COM

FILTERMITT DETAINS SEDIMENT, ABSORBS ODORS AND DEGRADES VOLATILE ORGANIC COMPOUNDS, ALLOWS WATER BY-PASS, AND IS A FOOD RESOURCE FOR BENEFICIAL MICROORGANISMS, WHICH REMEDIATE BY METABOLIZING WOOD PRESERVATIVES, PETROLEUM PRODUCTS, PESTICIDES, AND BOT CHLORINATED AND NON-CHLORINATED HYDROCARBONS IN STORMWATER RUNOFF FROM REACHING WATER RESOURCES. PREVENTS EROSION AND SILTING ON EMBANKMENTS PARALLEL TO CREEKS, LAKES, AND RIVERS, PREVENTS EROSION AND TURF LOSS ON ROADSIDES, HILLSIDES, PLAYING FIELDS, AND GOLF COURSES.

REFER TO FILTERMITT (EROSION CONTROL SOCK) DETAIL (SHEET C8.1)

Performance Design Diameter	9 in.	12 in.	18 in.	Testing Lab Reference
Effective height	9 in. plus or minus 1"	12 in. plus or minus 1"	13.5 in. plus or minus 1"	Soil Control Lab Inc.
Effective circumference	25.1 in.	38 in.	66.5 in.	Soil Control Lab Inc.
Density dry	11.5 Lbs./per linear ft.	25.5 Lbs./per linear ft.	55.25 Lbs./per linear ft.	Soil Control Lab Inc.
Maximum sediment storage height	4 in.	6 in.	6.75 in.	Soil Control Lab Inc.
Maximum continuous length	1-100/per linear ft.	1-100/per linear ft.	1-100/per linear ft.	Soil Control Lab Inc.
Staking requirement	Maximum every 10 linear ft.	Maximum every 10 linear ft.	Maximum every 10 linear ft.	Soil Control Lab Inc.
Outside casing 100% biodegradable hessen	50% 7 Mill-50% 10 Mill	50% 7 Mill-50% 10 Mill	50% 7 Mill-50% 10 Mill	Soil Control Lab Inc.
Maintenance requirement (remove sediment)	2 in.	3 in.	3.5 in.	Soil Control Lab Inc.
Functional Longevity	2 - 7 yrs.	2 - 7 yrs.	2 - 7 yrs.	Soil Control Lab Inc.
Maximum Slope Length (-2%)	750 ft.	1000 ft.	1300 ft.	Soil Control Lab Inc.
Hydraulic Flow Through Rate	6 -14 Gpm per linear ft.	6 -14 Gpm per linear ft.	6 -14 Gpm per linear ft.	Soil Control Lab Inc.
Total Solids Removal	98%	98%	98%	Soil Control Lab Inc.

**STRAW WATTLES**

WATTLES ARE MADE WITH 100% CLEAN, CERTIFIED WEED FREE WHEAT STRAW FIBER MATRIX AND ARE BOUND INTO A TIGHT TUBULAR ROLL OF SPECIFIC LENGTH AND DIAMETER. WHEN WATTLES ARE PLACED ON THE FACE OF SLOPES OR CHANNELS THEY INTERCEPT STORMWATER RUNOFF, REDUCE ITS HYDRAULIC ENERGY, RELEASE THE RUNOFF AS SHEET FLOW AND PROVIDE REMOVAL OF SEDIMENT FROM THE RUNOFF. STRAW WATTLES HAVE A CAPTURE RATE OF ROUGHLY 5 TO 18 PERCENT PER FOOT OF LENGTH WITH A MEDIAN EFFECTIVENESS OF 85%. WATTLES ARE FLEXIBLE AND CONFORM TO THE SOIL SURFACE AND ARE INSTALLED AND SECURED BY STAKING. STRAW WATTLE NETTING SHALL BE 100% BIODEGRADABLE NATURAL JUTE FIBER.

**9" DIAMETER**  
25 FT LENGTH  
35 LBS  
1.4 LBS/FT  
PLUS OR MINUS 10%

**12" DIAMETER**  
20 FT LENGTH  
50 LBS  
2.5 LBS/FT  
PLUS OR MINUS 10%

REFER TO STRAW WATTLE DETAIL (SHEET C8.1).

**TREE AND PLANT PROTECTION:**

- NO PRUNING OF LIMBS OR ROOTS ON ANY PART OF THE TREE SHALL BE PERFORMED EXCEPT UNDER GUIDANCE OF CERTIFIED ARBORIST OR AN APPROVED PARK REPRESENTATIVE.
- INSTALL PROTECTION FENCING, SIGNAGE, AND ANY NECESSARY ACCESSORIES AS INDICATED IN DRAWINGS AND SPECIFICATIONS.
- REMOVE TREES AND OTHER VEGETATION ONLY AS INDICATED ON THE DRAWINGS AND AS PER SPECIFICATIONS. REMOVAL SHALL BE COMPLETED USING INDUSTRY BEST PRACTICES. TRANSPORT OFFSITE TO AN APPROVED DISPOSAL SITE.
- TREES MARKED ALONG TRAIL FOR PROTECTION ARE VERY CLOSE TO TRAIL AND IN THE PATH OF CONSTRUCTION. TREES REQUIRE TRUNK PROTECTION DURING CONSTRUCTION. IF TREE REQUIRES REMOVAL, THIS TREE SHOULD BE REPLACED IN KEEPING WITH OTHER TREES, IN APPROPRIATE, APPROVED SIZES FOR LOCATION.
- ALL TREES AND NATURAL AREAS NOTED IN TREE PROTECTION PLAN SHALL BE PROTECTED DURING CONSTRUCTION WITH TEMPORARY FENCING AT THE START OF ANY SITE PREPARATION WORK THROUGH THE ENTIRETY OF CONSTRUCTION. PROTECTIVE FENCING SHALL EXPAND TO INCLUDE TREES WHOSE TRUNKS ARE WITHIN FIVE FEET OF CONSTRUCTION ZONE. EXTRA CARE SHOULD BE TAKEN TO AVOID DAMAGE BY CONSTRUCTION ACTIVITY.
- EROSION AND SEDIMENTATION CONTROL BARRIERS SHALL BE MAINTAINED TO PREVENT SOIL BUILDUP IN PROTECTED AREA.
- REMOVAL OF SUB-GRADE MATERIALS WITHIN CRITICAL ROOT ZONE SHALL BE DONE BY HAND UTILIZING HAND TOOLS AND/OR AN AIR SPADE WHEN LARGE (2" DIAMETER OR GREATER) ROOTS ARE UNCOVERED. EXPOSED ROOTS WITHIN THE EXCAVATED AREA SHALL BE PRUNED AND KEPT MOST UNTIL SUBGRADE MATERIALS HAVE BEEN LIFTED INTO SITE AND COMPACTED. ROOT PRUNING SHALL BE OVERSEEN BY CERTIFIED ARBORIST OR AN APPROVED PARK REPRESENTATIVE.
- PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC, AND EQUIPMENT SHALL TAKE PLACE BEFORE CONSTRUCTION BEGINS THROUGH COORDINATION WITH CONTRACTING OFFICER.
- IN THE EVENT OF DAMAGE TO TREES OR LANDSCAPE, CONTRACTOR SHALL CONTACT PARK REPRESENTATIVE IMMEDIATELY.
- REFER TO SPECIFICATIONS FOR ADDITIONAL TREE PROTECTION REQUIREMENTS.

**TREE REPLACEMENT:**

- TREES MAY BE DAMAGED DURING CONSTRUCTION OR CALLED OUT FOR REMOVAL ON PLANS. ANY REMOVED TREE MUST BE REPLACED. REPLACEMENT SPECIES SHALL BE APPROVED BY CONTRACTING OFFICER.
- PLANTS SHOWN FOR REMOVAL OR NEEDING PROTECTION ON PLAN ARE PRELIMINARY. CONTRACTOR SHALL FLAG TREES ALONG TRAIL WHICH REQUIRE PROTECTION OR REMOVAL BEFORE CONSTRUCTION BEGINS FOR REVIEW BY CONTRACTING OFFICER. FINAL DETERMINATION FOR REMOVAL SHALL BE MADE BY CONTRACTING OFFICER.
- NEWLY PLANTED TREES SHALL BE UNDER CARE OF CONTRACTOR DURING PERIOD OF ESTABLISHMENT, UNTIL ACCEPTED BY CONTRACTING OFFICER. TREE SHALL BE GIVEN WATER AND CARE DURING THAT PERIOD. TREE SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITY.
- EVERY NEW TREE SHALL RECEIVE A SLOW RELEASE WATERING DEVICE AND PROTECTIVE DEER FENCING.

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**CONSTRUCTION DETAILS AND MATERIAL SPECIFICATIONS**  
**MINUTE MAN NATIONAL PARK**  
**CONCORD, LINCOLN AND LEXINGTON**

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CONCORD, MA 01742

DES. BY: LT/DG	DATE: FEBRUARY 2024	JOB 231032	C8.3
CHK. BY: NMP			

**31 25 00 – EROSION AND SEDIMENT CONTROL MEASURES (CONTINUED)**

**SILT SACK**

MANUFACTURER:  
FERGUSON ENTERPRISES LLC  
DBA ACF ENVIRONMENTAL  
2831 CARDWELL RD  
RICHMOND, VA 23234  
1-800-448-3636  
WWW.FERGUSONSS.COM

SILT SACK SHALL BE MANUFACTURED FROM A SPECIFICALLY DESIGNED WOVEN POLYPROPYLENE GEOTEXTILE AND SEWN BY A DOUBLE NEEDLE MACHINE, USING A HIGH STRENGTH NYLON THREAD.

SILT SACK SEAMS HAVE BEEN TESTED BY A THIRD PARTY LABORATORY UNDER ASTM D-4884 (STANDARD TEST METHOD FOR STRENGTH OF SEWN OR BONDED SEAMS OF GEOTEXTILES).

SILT SACK SHALL BE MANUFACTURED TO FIT THE OPENING OF THE CATCH BASIN OR DROP INLET. SILT SACK WILL HAVE THE FOLLOWING FEATURES: TWO DUMP STRAPS ATTACHED AT THE BOTTOM TO FACILITATE THE EMPTYING OF THE SILT SACK; SILT SACK SHALL HAVE LIFTING STRAPS AS AN INTEGRAL PART OF THE SYSTEM TO BE USED TO LIFT THE SILT SACK FROM THE BASIN; SILT SACK SHALL HAVE A RESTRAINT CORD APPROXIMATELY HALFWAY UP THE DEPTH OF THE SACK TO KEEP THE SIDE FROM EXPANDING TOWARD THE CATCH BASIN WALL (THIS CORD IS ALSO A VISUAL MEANS OF INDICATING WHEN THE SACK SHOULD BE EMPTIED) ONCE THE CORD IS COVERED IN SEDIMENT, THE SILT SACK SHOULD BE EMPTIED, CLEANED, AND PLACED BACK INTO THE BASIN FOR REUSE.

REFER TO SILT SACK DETAIL (SHEET C8.1)

**31 32 16 – CHEMICAL TREATMENT SOIL STABILIZATION**

**ORGANIC-LOCK (SOIL BINDER)**

PROVIDED BY:  
ENVIROBOND PRODUCTS CORPORATION  
6191-2100 BLOOR STREET WEST  
TORONTO, ONTARIO, CANADA  
M6S 5A5  
1-866-636-8476

ORGANIC-LOCK LICENSED DEALERS TO BLEND THE ORGANIC-LOCK WITH THEIR LOCAL PRE-APPROVED AGGREGATE, THIS ENSURES THE ORGANIC-LOCK BINDER IS HOMOGENEOUSLY BLENDED WITH THE SPECIFIED AGGREGATE.

ORGANIC-LOCK BLENDED AGGREGATE SURFACE TO BE ELEVATED IN COMPARISON TO ADJACENT MATERIAL TO ENSURE SURFACE WATERSHED OFF AND AWAY FROM SPECIFIED MATERIAL.

COMPACT SLOPED EDGE WITH HAND TAMPER PRIOR TO SURFACE COMPACTION. WHEN COMPACTION FINAL SURFACE, OVERHANG THE ROLLER NO MORE THAN 4" PAST EDGE OF ORGANIC-LOCK BLENDED AGGREGATE TO ENSURE COMPACTION OF ENTIRE SURFACE.

MANUFACTURER NOTE: FOR ANY SPECIFICATION OR DETAIL ORIENTED QUESTIONS, CONTACT TECHNICAL TEAM AT INFO@ORGANIC-LOCK.COM.

**NOTES:**

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.

REFER TO TRAIL SECTION DETAILS (SHEET C8.2).

**31 37 16.13 – RUBBLE--STONE RIPRAP**

**RIPRAP**

RIPRAP SHALL BE SOUND, DURABLE ROCK WHICH IS ANGULAR IN SHAPE. ROUNDED STONES, BOULDERS, SANDSTONE OR SIMILAR SOFT STONE OR RELATIVELY THIN SLABS WILL NOT BE ACCEPTABLE. EACH STONE SHALL WEIGH NOT LESS THAN 25 LBS NOT MORE THAN 125 LB AND AT LEAST 75% OF THE VOLUME SHALL CONSIST OF STONES WEIGHING NOT LESS THAN 75 LB EACH. THE REMAINDER OF THE STONES SHALL BE GRADED SO THAT WHEN PLACED WITH THE LARGER STONES THE ENTIRE MASS WILL BE COMPACT.

REFER TO RIPRAP AT PIPE OUTLET DETAIL (SHEET C8.1).

**32 01 90.24 – STUMP GRINDING & REMOVAL**

**STUMP GRINDING & REMOVAL**

EQUIPMENT AND MACHINERY INVOLVED: THE PRIMARY MACHINERY FOR THIS TASK IS THE STUMP GRINDER. THIS POWERFUL MACHINE USES A ROTATING CUTTING DISK THAT CHIPS AWAY AT THE STUMP.

INITIAL SETUP AND SAFETY PRECAUTIONS: BEFORE STARTING, ENSURE THE AREA IS CLEAR OF ROCKS AND DEBRIS. ALSO, WEARING SAFETY GOGGLES, GLOVES, AND EAR PROTECTION IS CRUCIAL.

ASSESSING THE SIZE AND TYPE OF STUMP: THE STUMP'S SIZE AND TREE SPECIES CAN INFLUENCE THE GRINDING TIME AND EFFORT.

REFER TO STUMP GRINDING & REMOVAL DETAIL (SHEET C8.1).

**32 05 13 – LOAM**

**LOAM**

LOAM SHALL BE FERTILE, FRIABLE SOIL OBTAINED FROM NATURALLY WELL-DRAINED AREAS OR SHALL BE THE PRODUCT OF A COMMERCIAL SAND AND GRAVEL PROCESSING FACILITY. IT SHALL BE UNCONTAMINATED BY SALT WATER, FOREIGN MATTER, OR SUBSTANCES HARMFUL TO PLANT GROWTH. LOAM SHALL BE FREE OF DEBRIS, ROCKS, CLODS, AND ANY OTHER EXTRANEIOUS MATTER. LOAM FOR ROADSIDES SHALL HAVE NO MATERIAL GREATER THAN 1 INCH IN DIAMETER. LOAM FOR LAWNS SHALL HAVE NO MATERIAL GREATER THAN 1/2 INCH IN DIAMETER.

REFER TO TRAIL SECTION DETAILS (SHEET C8.2).

**32 05 16 – AGGREGATES FOR SURFACE WEAR LAYER**

**STABILIZED STONEDUST**

PROVIDED BY:  
READ CUSTOM SOILS.  
37 POWER ROAD  
WESTFORD, MA 01886  
(781) 828 - 6300  
WWW.READCUSTOMSOILS.COM

STABILIZED STONEDUST IS A 3/8" MINUS PULVERIZED STONE (LOCALLY SOURCED) PRECISION BLENDED WITH A WATER-ACTIVATED BINDER.

STABILIZED STONEDUST HAS A BULK DENSITY OF APPROXIMATELY 111 POUNDS PER CUBIC FOOT, SO ONE CUBIC YARD WEIGHS 1.5 TONS. AVERAGE COMPACTION FACTOR IS 15 - 18%. COVERAGE RATE AT A 4" DEPTH = 50 SQ. FT. / TON (LIGHT VEHICLE TRAFFIC)

REFER TO TRAIL SURFACE W/ BINDER DETAILS (SHEET C8.2).

**STABILIZED STONEDUST (CONTINUED)**

		GRAIN SIZE - mm.					
% #3"		% Gravel		% Sand			% Fines
0.0		Coarse	Fine	Coarse	Medium	Fine	22.8
0.0		0.0	1.0	22.0	38.5	22.8	15.7
SIEVE SIZE	PERCENT FINER	SPEC. PERCENT	PASS? (X=NO)	Material Description			
#3	100.0			Nickel Stone Dust			
#4	99.0						
#8	72.6						
#16	59.3						
#30	44.1						
#60	33.3						
#100	18.9						
#200	14.7						
(no specification provided)							
Source of Sample: Nickel Stone Dust		Sample Number: S-3		Date: 1-20-2022			

**3/8" MINUS BEIGE DENSE GRADE (ALTERNATIVE)**

PROVIDED BY:  
READ CUSTOM SOILS.  
37 POWER ROAD  
WESTFORD, MA 01886  
(781) 828 - 6300  
WWW.READCUSTOMSOILS.COM

3/8" MINUS CRUSHED GRAVEL IS A COMBINATION OF COARSE AGGREGATES WITH A MAXIMUM SIZE OF 3/8" AND FINE AGGREGATES UNIFORMLY PREMIXED WITH A PREDETERMINED QUANTITY OF WATER.

COARSE AGGREGATE SHALL CONSIST OF HARD, DURABLE PARTICLES OF FRAGMENTS OF STONE. MATERIALS THAT BREAK UP WHEN ALTERNATELY FROZEN OR THAWED OR WETTED AND DRIED SHALL NOT BE USED.

COARSE AGGREGATE SHALL HAVE A PERCENTAGE OF WEAR, BY THE LOS ANGELES TEST, OF NOT MORE THAN 45.

FINE AGGREGATE SHALL CONSIST OF NATURAL OR CRUSHED SAND.

THE COMPOSITE MATERIAL SHALL BE FREE FROM CLAY, LOAM OR OTHER PLASTIC MATERIAL, AND SHALL CONFORM TO THE GRADATION REQUIREMENTS LISTED BELOW.

REFER TO TRAIL SECTIONS AND NEW CULVERT CROSSING UNDER TRAIL DETAIL (SHEET C8.2).

Sample ID: Beige Dense Grade		Source of Material: Westford			
Sieve Analysis					
Sieve Size					
Standard	Alternate	% Passing on Each Sieve	USDA Specification Ranges (Min.) (Max.)		
10	2.00 mm	44.5	100%	100%	100%
18	1.00 mm	32.6	60%	80%	80%
35	0.50 mm	23.8	25%	45%	45%
60	0.25 mm	15.3	8%	20%	20%
140	0.11 mm	7.06	0%	8%	8%
270	0.05 mm	2.97	0%	3%	3%

**32 05 19.13 – GEOTEXTILES FOR EXTERIOR IMPROVEMENTS**

**ACF N040**

ACF N040 IS A POLYPROPYLENE, NEEDLE PUNCHED NON-WOVEN GEOTEXTILE FOR USE IN DRAINAGE AND SEPARATION APPLICATIONS. IT HAS BEEN STABILIZED TO RESIST DEGRADATION DUE TO ULTRAVIOLET EXPOSURE AND IS RESISTANT TO COMMONLY ENCOUNTERED MILDEW, INSECTS AND SOIL CHEMICALS, AND IS NON-BIODEGRADABLE. POLYPROPYLENE IS STABLE WITH pH RANGE OF 2 TO 13.

REFER TO NORTH BRIDGE TRAIL SECTION W/ GEOGRID DETAIL (SHEET C8.2).

Geotextile Property	Test Method	Minimum Average Roll Values
Grab Tensile Strength	ASTM D4632	100 Lbs
Grab Tensile Elongation	ASTM D4632	50 %
CBR Puncture Strength	ASTM D6241	250 Lbs
Trapezoid Tear Strength	ASTM D4533	45 Lbs
UV Resistance @ 500 Hours	ASTM D4355	70 %
AOS	ASTM D4751	70 Sieve
Permittivity (sec <sup>-1</sup> )	ASTM D4491	1.7 sec <sup>-1</sup>
Flow Rate	ASTM D4491	140 gpm/ft <sup>2</sup>
<i>Results quoted above are the mean of multiple tests conducted at an independent testing facility. N040 meets or exceeds values listed.</i>		
Packaging		
Roll Width	12.5 ft.	15 ft.
Roll Length	380 ft.	360 ft.
Roll Area	500 sq	600 sq

**32 05 19.19 – GEOGRID FOR EXTERIOR IMPROVEMENTS**

**ACF BX12**

ACF BX12 GEOGRID IS COMPOSED OF POLYPROPYLENE RESIN WHICH IS EXTRUDED INTO A STABLE GEOGRID STRUCTURE. ACF BX12 GEOGRID IS INERT TO BIOLOGICAL DEGRADATION AND RESISTANT TO NATURALLY ENCOUNTERED CHEMICALS, ALKALIS, AND ACIDS. ACF BX12 GEOGRID INCREASES ROADBED AND FOUNDATION WEARING CAPACITY, WHILE PROLONGING THE SERVICE LIFE OF EACH BY THE CONFINEMENT OF THE BASE COURSE. ACF BX12 PREVENTS LATERAL SPREADING OF THE BASE OR SUB-BASE AGGREGATE AND ALLOWS FOR SHEAR INTERACTION TO DEVELOP BETWEEN THE AGGREGATE AND THE GEOGRID. ACF BX12 GEOGRID REDUCES THE APPLIED VERTICAL PRESSURE OF HEAVY LOADS AT DEPTH OF AGGREGATE BY SPREADING THE LOAD OVER A WIDER AREA.

REFER TO NORTH BRIDGE TRAIL SECTION W/ GEOGRID DETAIL (SHEET C8.2).

Geogrid Property	Test Method	Typical Roll Value	
		MD	GD
Ultimate Tensile Strength <sup>1</sup>	ASTM D6637	1310 lbs/ft	1970 lbs/ft
Tensile Strength @ 2% <sup>1</sup>	ASTM D6637	410 lbs/ft	620 lbs/ft
Tensile Strength @ 5% <sup>1</sup>	ASTM D6637	810 lbs/ft	1340 lbs/ft
UV Resistance	ASTM D4355	100%	
Junction Efficiency <sup>2</sup>	ASTM D7737	93%	
Flexural Stiffness <sup>3</sup>		750,000 mg-cm	
Aperture Stability <sup>4</sup>		0.65 m-N/deg	
Resistance to UV Degradation <sup>5</sup>	ASTM D4355	100%	
Rib Thickness		0.05 in	
Aperture Size		1.0 in	1.3 in
Roll Size (width x length)		12.5 ft x 246 ft	
Roll Area		341 yds <sup>2</sup>	

**32 11 16.16 – AGGREGATE SUBBASE COURSE**

**2-4" TRAP ROCK (RUBBLE BEDDING)**

TRAP ROCK SHALL CONSIST OF HARD, DURABLE ANGULAR SHAPED STONES WHICH ARE THE PRODUCT OF THE PRIMARY CRUSHING OF A STONE CRUSHER. ROUNDED STONE, BOULDERS, SANDSTONE AND SIMILAR SOFT STONE OR RELATIVELY THIN SLABS WILL NOT BE ACCEPTABLE.

STONE SHALL BE FREE FROM OVERBURDEN, SPOIL, SHALE, ORGANIC MATERIAL AND MEET THE GRADATION REQUIREMENTS LISTED BELOW.

REFER TO NEW CULVERT CROSSING UNDER TRAIL DETAIL (SHEET C8.2).

TRAP ROCK	
SIZE OF STONE (IN.)	PERCENT PASSING BY WEIGHT
6 IN.	100
4 IN.	25-75
2 IN.	0-5

**32 11 23 – AGGREGATE BASE COURSE**

**DENSE GRADED CRUSHED STONE BASE**

DENSE GRADED CRUSHED STONE IS A COMBINATION OF CRUSHER-RUN COARSE AGGREGATES OF CRUSHED STONE AND FINE AGGREGATES UNIFORMLY PREMIXED WITH A PREDETERMINED QUANTITY OF WATER.

COARSE AGGREGATE SHALL CONSIST OF HARD, DURABLE PARTICLES OF FRAGMENTS OF STONE. MATERIALS THAT BREAK UP WHEN ALTERNATELY FROZEN OR THAWED AND WETTED AND DRIED SHALL NOT BE USED.

COARSE AGGREGATE SHALL HAVE A PERCENTAGE OF WEAR, BY THE LOS ANGELES TEST, OF NOT MORE THAN 45.

FINE AGGREGATE SHALL CONSIST OF NATURAL OR CRUSHED SAND.

THE COMPOSITE MATERIAL SHALL BE FREE FROM CLAY, LOAM OR OTHER PLASTIC MATERIAL, AND SHALL CONFORM TO THE GRADATION REQUIREMENTS LISTED BELOW.

REFER TO TRAIL SECTIONS AND NEW CULVERT CROSSING UNDER TRAIL DETAIL (SHEET C8.2).

DENSE GRADED CRUSHED STONE BASE	
SIEVE DESIGNATION	PERCENT PASSING BY WEIGHT
2 IN.	100
1-1/2 IN.	70-100
3/4 IN.	50-85
#4	30-55
#50	8-24
#200	3-10

**32 12 16 – HOT MIX ASPHALT**

**HOT MIX ASPHALT**

A. COARSE AGGREGATE  
THE COARSE MINERAL AGGREGATE SHALL BE CLEAN, HARD, DURABLE, CRUSHED ROCK CONSISTING OF THE ANGULAR FRAGMENTS OBTAINED BY BREAKING AND CRUSHING SHATTERED NATURAL ROCK, REASONABLY FREE FROM THIN AND/OR ELONGATED PIECES, FREE FROM DIRT OR OTHER OBJECTIONABLE MATERIALS. IT SHALL BE SURFACE DRY AND SHALL HAVE A MOISTURE CONTENT OF NOT MORE THAN 0.5 PERCENT AFTER DRYING. AGGREGATES FROM MULTIPLE SOURCES OF SUPPLY SHALL NOT BE MIXED OR STORED IN THE SAME STOCKPILE.

B. FINE AGGREGATE  
THE FINE AGGREGATE SHALL CONSIST OF ONE OF THE FOLLOWING: 100% NATURAL SAND, 100% STONE SAND, A BLEND OF SAND AND STONE SCREENINGS, A BLEND OF NATURAL SAND AND STONE SAND.

NATURAL SAND SHALL CONSIST OF INERT, HARD, DURABLE GRAINS OF QUARTZ OR OTHER HARD, DURABLE ROCK, FREE FROM TOPSOIL OR CLAY, SURFACE COATINGS, ORGANIC MATTER OR OTHER DELETERIOUS MATERIALS.

STONE SAND SHALL BE A PROCESSED MATERIAL PREPARED FROM STONE SCREENINGS TO PRODUCE A CONSISTENTLY GRADED MATERIAL CONFORMING TO SPECIFICATION REQUIREMENTS.

STONE SCREENINGS SHALL BE THE PRODUCT OF A SECONDARY CRUSHER AND SHALL BE FREE FROM DIRT, CLAY, ORGANIC MATTER, EXCESS FINES OR OTHER DELETERIOUS MATERIAL.

REFER TO TRAIL SECTION DETAILS (SHEET C8.2).

**32 12 33 – PAVING SURFACE TREATMENT**

**CHIPSEAL**

**MATERIALS:**

A) ASPHALTIC BINDER: LATEX MODIFIED ASPHALTIC EMULSION CONSISTING OF PLANT MIXED BLEND OF RAPID SETTING HOMOGENEOUS ASPHALT EMULSION, LATEX ADDITIVE AND ANTI-STRIPPING AGENT AS REQUIRED IN CONFORMANCE WITH MASSDOT SECTION M3 "BITUMINOUS MATERIALS."

1. ASPHALT EMULSION SHALL BE ANIONIC EMULSIFIED ASPHALT CONFORMING TO AASHTO M-140 (ASTM D977); OR CATIONIC EMULSIFIED ASPHALT CONFORMING TO AASHTO-M208 (ASTM D 2397). FIELD DILUTED EMULSIONS AND MIXTURE OF ANIONIC AND CATIONIC EMULSIONS ARE PROHIBITED.

2. LATEX ADDITIVE SHALL BE STYRENE BUTADIENE RUBBER (SBR) LATEX SPECIFICALLY FORMULATED FOR USE WITH EMULSIFIED BITUMINOUS CEMENT AND BLENDED INTO THE ASPHALT OR EMULSIFIER SOLUTION AT THE EMULSION PLANT PRIOR TO EMULSIFICATION PROCESS AT A RATE OF 3 PARTS PER 100.

3. ANTI-STRIPPING OR WETTING ADDITIVE AS REQUIRED BY AGGREGATE/BITUMEN AFFINITY TEST AASHTO T182 (ASTM D 1664), SHALL BE SPECIFICALLY FORMULATED FOR USE WITH ASPHALT EMULSIONS.

B) COVER AGGREGATE. COMPLIES WITH THE LATEST EDITION OF MASSDOT "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES" SECTION M2 "AGGREGATES AND RELATED MATERIALS." COVER AGGREGATE SHALL BE FREE FROM DUST, CLAY, SOOT AND ALL OTHER DELETERIOUS SUBSTANCES, HAVING MOISTURE CONTENT LESS THAN 0.5%.

1. TESTING OF AGGREGATE SHALL BE IN ACCORDANCE WITH THE FOLLOWING METHODS.

- a. SIEVE ANALYSIS. AASHTO T27
- b. MATERIAL PASSING THE #200 SIEVE. AASHTO T11
- c. WATER CONTENT. AASHTO T142
- d. AGGREGATE/BITUMEN AFFINITY. AASHTO T182 (ASTM D1664)

2. WHEN TESTED IN ACCORDANCE WITH AASHTO T192 (ASTM D1664), AGGREGATE SHALL HAVE A RETAINED BITUMINOUS FILM ABOVE 95 PERCENT. USE OF AGGREGATES WHICH DO NOT MEET THIS REQUIREMENT MAY BE PERMITTED IN CONJUNCTION WITH AN APPROVED ANTI-STRIPPING ADDITIVE.

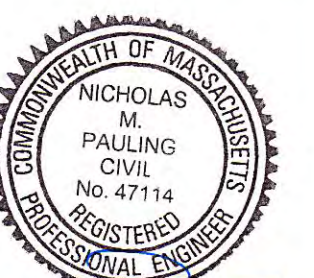
C) MATERIAL FOR BLOTTING OVERSPRAY OR SPILL OF LIQUID ASPHALT SHALL BE FINE AGGREGATE MATCHING THE COVER AGGREGATE MATERIAL, WITH STONES OF APPROXIMATELY HALF THE SIZE.

REFER TO ASPHALT W/ CHIPSEAL TRAIL SURFACE - NEW & CHIPSEAL TRAIL RESURFACE DETAILS (SHEET C8.2).

**DRAWING ISSUED FOR:**

- CONCEPT  CONSTRUCTION  
 PERMIT  CONSTRUCTION RECORD

THIS DRAWING MAY NOT SHOW CONSTRUCTION DETAILS AND SPECIFICATIONS FOR ALL PROPOSED IMPROVEMENTS, AND MAY NOT IDENTIFY ALL CONSTRUCTION WORK ITEMS/AREAS OF CONTRACTOR JURISDICTION.



PER 250 CMR 5.03(13), THE FOLLOWING ARE EXCLUDED FROM THE PROFESSIONAL ENGINEER'S RESPONSIBILITY: ALL BOUNDARY INFORMATION; LOCATION OF EXISTING STRUCTURES, TREES, UTILITIES, TOPOGRAPHY OR SIMILAR FEATURES; DESIGN OF RETAINING WALLS, PROPRIETARY EQUIPMENT. SEE EXISTING CONDITION NOTES.

NO.	DATE	BY	APP.	REVISION DESCRIPTION
2	4/9/24	DJG	NMP	ISSUED FOR CONSTRUCTION
1	3/6/24	DJG	NMP	NPS COMMENTS & TOWN OF CONCORD C.C.

**GPR** Engineering Solutions for Land & Structures

**GOLDSMITH, PREST & RINGWALL, INC.**  
39 MAIN STREET, SUITE 301, AYER, MA 01432  
CIVIL ENGINEERING • LAND SURVEYING • LAND PLANNING  
VOICE: 978.772.1590 FAX: 978.772.1591  
www.gpr-inc.com

**NATIONAL PARK SERVICE DEVELOPMENT TRAIL REPAIR MATERIAL SPECIFICATIONS**

**MINUTE MAN NATIONAL PARK CONCORD, LINCOLN AND LEXINGTON**

PREPARED FOR:  
NATIONAL PARK SERVICE  
174 LIBERTY STREET  
CONCORD, MA 01742

DES. BY: LT/DG	DATE: FEBRUARY 2024	JOB 231032	C8.4
CHK. BY: NMP			

32 14 40 – STONE PAVING

COBBLESTONES

PROVIDED BY:  
TLC SUPPLY, INC.  
36 VERNON STREET  
QUINCY, MA 02169  
(617) 773 - 0055  
WWW.TLCSUPPLY.COM

SIZE: (JUMBO) – 4" X 7" X 10"  
# PIECES PER PALLET: 105  
APPROXIMATE WEIGHT PER PALLET: 2,994 LBS  
APPROXIMATE WEIGHT PER PIECE: 28.5 LBS  
APPROXIMATE PIECES PER SQUARE FOOT: 2.06 PCS  
APPROXIMATE PIECES PER LINEAR FOOT: 1.2 PCS  
COLOR: LIGHT GRAY (OR APPROVED EQUAL)

REFER TO COBBLESTONE SWALE FOR DRIVEWAY JUNCTION & COBBLESTONE EDGE W/ STONE ARMORING DETAILS (SHEET C8.3)

32 16 23 – SIDEWALKS (CONCRETE CURB RAMP)

ADA ACCESSIBLE CURB RAMP

MATERIALS:  
GRAVEL BORROW, TYPE B (M1.03.0)  
CEMENT CONCRETE – 4,000 PSI, 3/4 INCH, 610 (M4.02.00)  
PERFORMED EXPANSION JOINT FILLER (M9.14.0)

SIDE FORMS AND TRANSVERSE FORMS SHALL BE SMOOTH, FREE FROM WARP, OF SUFFICIENT STRENGTH TO RESIST SPRINGING OUT OF SHAPE, OF A DEPTH TO CONFORM TO THE THICKNESS OF THE PEDESTRIAN CURB RAMP AND OF A TYPE SATISFACTORY TO THE ENGINEER.

ALL MORTAR OR DIRT SHALL BE COMPLETELY REMOVED FROM FORMS THAT HAVE BEEN PREVIOUSLY USED, THE FORMS SHALL BE WELL STAKED AND THOROUGHLY GRADED AND SET TO THE ESTABLISHED LINES WITH THEIR UPPER EDGE CONFORMING TO THE GRADE OF THE FINISHED PEDESTRIAN CURB RAMP WHICH SHALL HAVE SUFFICIENT PITCH TO THE ROADSIDE EDGE TO PROVIDE FOR SURFACE DRAINAGE.

ALL PEDESTRIAN CURB RAMP JOINTS AND TRANSITION SECTIONS WHICH DEFINE GRADE CHANGES SHALL BE FORMED STAKED AND CHECKED FOR DIMENSION, GRADE AND SLOPE PERFORMANCE PRIOR TO PLACING CEMENT CONCRETE.

ALL FORMS SHALL BE OILED BEFORE PLACING CONCRETE.

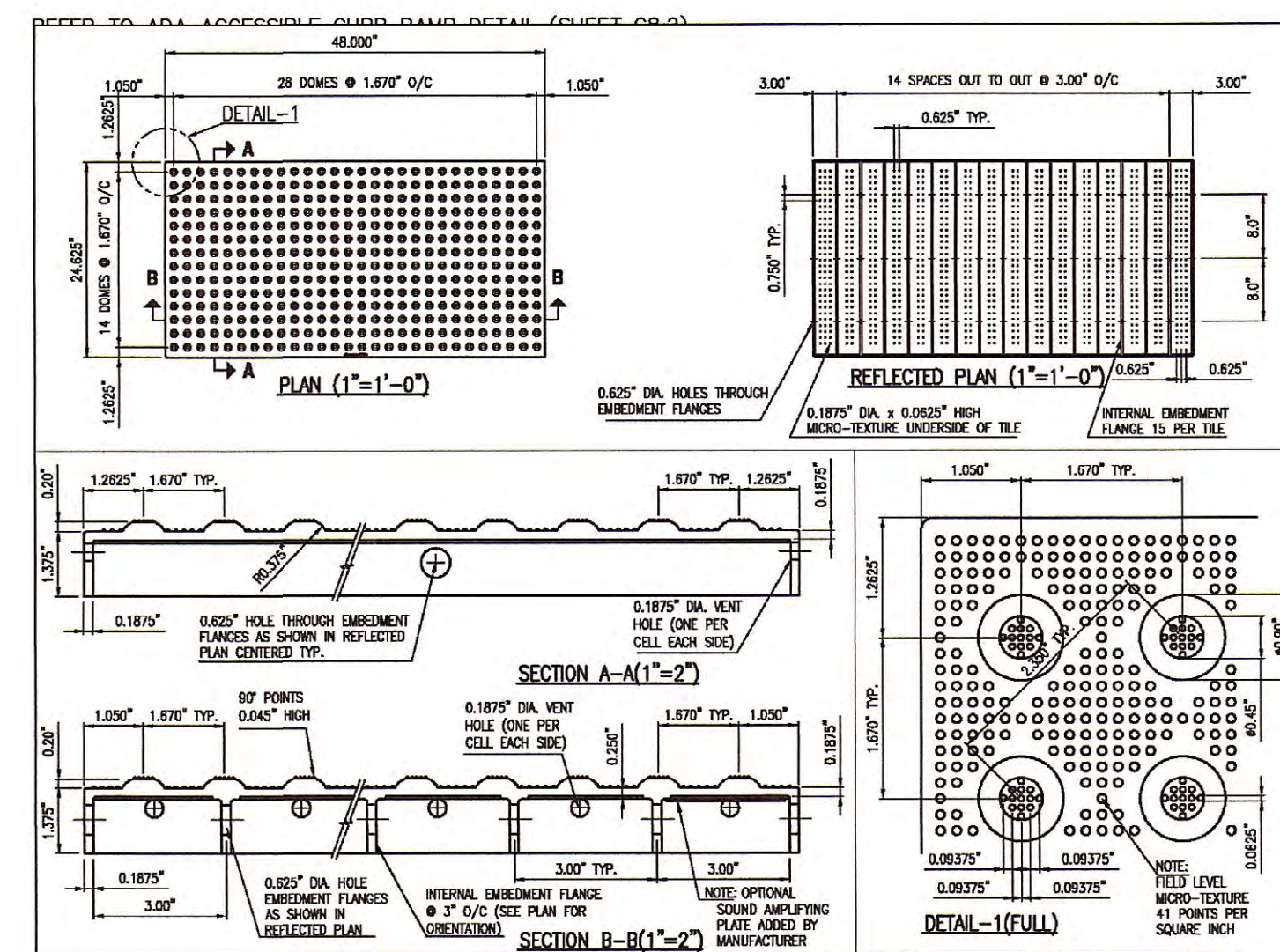
REFER TO ADA ACCESSIBLE CURB RAMP (SHEET C8.2)

32 17 26 – TACTILE WARNING SURFACING

ADA TACTILE WARNING STRIP

A) VITRIFIED POLYMER COMPOSITE (VPC) CAST IN PLACE WARNING TILES SHALL INCLUDE: CONTINUOUS STRAND WOVEN FIBERGLASS SHEET MATRIX EMBEDDED WITHIN AN EPOXY POLYMER COMPOSITION WITH AN ULTRA-VIOLET COATING EMPLOYING ALUMINUM OXIDE PARTICLES IN THE TRUNCATED DOMES; "ARMOR TILE" AS DISTRIBUTED UNDER LICENSE BY ENGINEERED PLASTICS INC. (1-800-682-2525) OR EQUIVALENT APPROVED PRODUCT.

B) DIMENSIONS: THE TILE SHALL INCORPORATE AN IN-LINE PATTERN OF TRUNCATED DOMES MEASURING NOMINAL 0.2" HEIGHT, 0.9" BASE DIAMETER, 0.45" TOP DIAMETER SPACED CENTER-TO-CENTER 2.35" AS MEASURED ON A DIAGONAL AND 1.57" AS MEASURED SIDE BY SIDE IN-LINE. FOR WHEELCHAIR SAFETY THE FIELD AREA SHALL CONSIST OF A NON-SLIP SURFACE WITH A MINIMUM OF 40 - 90° RAISED POINTS 0.045" HIGH, PER SQUARE INCH. CAST IN PLACE WARNING TILES SHALL BE HELD WITHIN THE FOLLOWING DIMENSIONS AND TOLERANCES: 24" (L) X 48" (W), PART NO. ADA-C-2448.



32 31 19 – DECORATIVE METAL FENCES AND GATES

PIGTAIL STEP-IN FENCE POST

PROVIDED BY:  
ZAREBA SYSTEMS, INC.  
69 N LOCUST STREET  
LITITZ, PA 17543  
(855) 592 - 7322

MODEL #PTP39  
SIZE: 1/4" DIA. X 39" LONG  
STEEL POST WITH INSULATED LOOP AND WELDED FOOT STEP

32 33 43 – SITE SEATING AND TABLES

BENCHES & ADA PICNIC TABLES

PROVIDED BY:  
NATIONAL OUTDOOR FURNITURE, INC.  
144 MURDOCK ROAD  
POMFRET CENTER, CT 06259  
(888) 516 - 8873  
(860) 974 - 1551  
EMAIL: NOFIN@EARTHLINK.NET  
WWW.NATIONALOUTDOORFURNITURE.COM

8' HEAVY DUTY TABLE – ADA PORTABLE (OR APPROVED EQUAL)  
• OVERALL DIMENSIONS: 95"L X 60-1/8"D X 30"H  
• AVAILABLE IN SINGLE OR DOUBLE SIDED AVAILABILITY  
• WOOD STYLE OR ALUMINUM STYLE, 2" X 10" PLANKS  
• ALL MIG WELDED FRAME WITH ZINC PLATED HARDWARE  
• FRAME AVAILABLE IN 1-5/8" AND 2-3/8" O.D. PIPE WITH 1-5/16" O.D. BRACE  
• ZINC COATED, GALVANIZED, POWDER COATED FINISH OR GALVANIZED FRAME  
• AVAILABLE IN UNTREATED PINE, TREATED PINE, REDWOOD STAINED PINE AND ALUMINUM PLANKS  
• SOME ASSEMBLY REQUIRED  
• STANDARD POWDER COAT COLORS AVAILABLE: BURGANDY, RED, ORANGE, YELLOW, SPRING GREEN, GREEN, ROYAL PURPLE, ULTRA BLUE, BLUE, SKY BLUE, BEIGE, BROWN, BLACK, MATTE BLACK, DARK GREY, CHAMPAGNE, WHITE

BOULEVARD BACKLESS BENCH – GROUND MOUNTED (OR APPROVED EQUAL)  
• 1-5/8"W X 2" THICK OAK OR REDWOOD SLATS  
• SEVEN GAUGE COLD ROLLED STEEL  
• POWDER COATED STEEL FRAME  
• 1/4"-20 STAINLESS MACHINE SCREW, ALLOW DRIVE NUT (TAMPER RESISTANT)  
• 2" X 2" SQ. TUBE 0.095 WALL WITH STEEL PLATE AND MOUNTING HOLES  
• DIMENSIONS: 20-1/2" SEAT DEPTH X 17" SEAT HT.  
• 6' LENGTH (UNLESS OTHERWISE NOTED, AVAILABLE IN 8' LENGTH)

32 92 19 – SEEDING

GRASS SEED

GRASS SEED SHALL BE OF THE PREVIOUS YEAR'S CROP AND IN NO CASE SHALL THE WEED SEED CONTENT EXCEED 1% BY MASS. THE GRASS SEED SHALL CONFORM TO THE REQUIREMENTS OF THE FOLLOWING TABLE:

GRASS SEED			
GRASS TYPE	PROPORTION (%)	GERMINATION MIN. (%)	PURITY MIN. (%)
CREeping RED FESCUE AND/OR CHEWINGS FESCUE	59	85	95
KENTUCKY BLUE	30	85	90
PERENNIAL RYE	5	90	98
REDDTOP	5	85	92
DUTCH WHITE CLOVER	1	85	96

NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX

PROVIDED BY:  
NEW ENGLAND WETLAND PLANTS, INC.  
820 WEST STREET  
AMHERST, MA 01002  
(413) 548-8000  
EMAIL: INFO@NEWP.COM  
WWW.NEWP.COM

THE NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX CONTAINS A BROAD SPECTRUM OF NATIVE GRASSES AND FORBS THAT WILL TOLERATE SEMI-SHADE AND EDGE CONDITIONS. ALWAYS APPLY ON CLEAN BARE SOIL. THE MIX MAY BE APPLIED BY HYDRO-SEEDING, BY MECHANICAL SPREADER, OR ON SMALL SITES IT CAN BE SPREAD BY HAND. LIGHTLY RAKE OR ROLL TO ENSURE PROPER SEED TO SOIL CONTACT. BEST RESULTS ARE OBTAINED WITH A SPRING SEEDING. LATE SPRING AND EARLY SUMMER SEEDING WILL BENEFIT WITH A LIGHT MULCHING OF WEED-FREE STRAW TO CONSERVE MOISTURE. IF CONDITIONS ARE DRIER THAN USUAL, WATERING WILL BE REQUIRED. LATE FALL AND WINTER DORMANT SEEDING REQUIRE AN INCREASE IN THE SEEDING RATE. FERTILIZATION IS NOT REQUIRED UNLESS THE SOILS ARE PARTICULARLY INFERTILE. PREPARATION OF A CLEAN, WEED FREE SEED BED IS NECESSARY FOR OPTIMAL RESULTS.

APPLY: 30 LBS/ACRE (1450 SQ. FT./LB)

NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX		
BOTANICAL NAME	COMMON NAME	INDICATOR
Elymus virginicus	Virginia Wild Rye	FACW-
Elymus canadensis	Canada Wild Rye	FACU+
Festuca rubra	Red Fescue	FACU
Chamaecrista fasciculata	Partridge Pea	FACU
Liatris spicata	Spiked Gayfeather/Marsh Blazing Star	FAC+
Onoclea sensibilis	Sensitive Fern	FACW
Aster prenanthoides (Symphyotrichum prenanthoides)	Zigzag Aster	FAC
Eupatorium fistulosum (Eutrochium fistulosum)	Hollow-Stem Joe Pye Weed	FACW
Eupatorium perfoliatum	Boneset	FACW
Juncus tenuis	Path Rush	FAC

33 01 30 – MANHOLE ADJUSTMENT

BUILDING BRICKS

BRICKS ARE MANUFACTURED FROM CLAY, SHALE, OR SIMILAR NATURALLY OCCURRING EARTHLY SUBSTANCES AND SUBJECTED TO A HEAT TREATMENT AT ELEVATED TEMPERATURES (FIRING). THE HEAT TREATMENT MUST DEVELOP SUFFICIENT FIRED BOND BETWEEN THE PARTICULATE CONSTITUENTS TO PROVIDE THE STRENGTH AND DURABILITY REQUIREMENTS OF THIS SPECIFICATION.

BRICKS ARE SHAPED DURING MANUFACTURE BY MOLDING, PRESSING, OR EXTRUSION, AND THE SHAPING METHOD IS A WAY TO DESCRIBE THE BRICK.

33 01 30 – MANHOLE ADJUSTMENT (CONTINUED)

MORTAR

ALL MORTAR FOR USE IN THE CONSTRUCTION OF NON-REINFORCED UNIT MASONRY STRUCTURES SHALL CONFORM TO THE STANDARDS OF ASTM C270-10, STANDARD SPECIFICATION FOR MORTAR FOR UNIT MASONRY.

REFER TO DRYWELL DETAIL (SHEET C8.3)

33 41 23.16 – GRAVEL DRAINAGE LAYERS

1-1/2" MINUS WASHED CRUSHED STONE

DURABLE CRUSHED ROCK CONSISTING OF THE ANGULAR FRAGMENTS OBTAINED BY BREAKING AND CRUSHING SOLID OR SHATTERED NATURAL ROCK, AND FREE FROM A DETRIMENTAL QUANTITY OF THIN, FLAT, ELONGATED OR OTHER OBJECTIONABLE PIECES. A DETRIMENTAL QUANTITY WILL BE CONSIDERED AS ANY AMOUNT IN EXCESS OF 15% OF THE TOTAL WEIGHT.

THE CRUSHED STONE SHALL BE REASONABLY FREE FROM CLAY, LOAM OR DELETERIOUS MATERIAL AND NOT MORE THAN 1.0% OF SATISFACTORY MATERIAL PASSING A #200 SIEVE WILL BE ALLOWED TO ADHERE TO THE CRUSHED STONE.

REFER TO DRYWELL DETAIL (SHEET C8.3)

1-1/2" MINUS WASHED CRUSHED STONE	
SIEVE DESIGNATION	PERCENT PASSING BY WEIGHT
2 IN.	100
1-1/2 IN.	95-100
1 IN.	35-70
3/4 IN.	0-25

33 42 11 – STORMWATER PIPING

ADS 12" HDPE N-12 PIPE

WWW.ADSPIPE.COM

PIPE REQUIREMENTS: N-12 PIPE SHALL HAVE A SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS. 12" PIPE SHALL MEET AASHTO M294, TYPE S OR SP, OR ASTM F2306.

JOINT PERFORMANCE: PIPE SHALL BE JOINED WITH COUPLING BANDS COVERING AT LEAST TWO FULL CORRUGATIONS ON EACH END OF THE PIPE. STANDARD CONNECTIONS SHALL MEET OR EXCEED THE SOIL-TIGHT REQUIREMENTS OF AASHTO M252, AASHTO M294, OR ASTM F2306.

FITTINGS: FITTINGS SHALL CONFORM TO AASHTO M252, AASHTO M294, OR ASTM F2306.

MATERIAL PROPERTIES: MATERIAL FOR PIPE AND FITTING PRODUCTION SHALL BE HIGH DENSITY POLYETHYLENE CONFORMING WITH THE MINIMUM REQUIREMENTS OF CELL CLASSIFICATION 435400C FOR 12" DIAMETER, AS DEFINED AND DESCRIBED IN THE LATEST VERSION OF ASTM D3350, EXCEPT THAT CARBON BLACK CONTENT SHOULD NOT EXCEED 4%. THE 12" PIPE MATERIAL SHALL COMPLY WITH THE NOTCHED CONSTANT LIGAMENT-STRESS (NCLS) TEST AS SPECIFIED IN SECTIONS 9.5 AND 5.1 OF AASHTO M294 AND ASTM F2306 RESPECTIVELY.

INSTALLATION: INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321 AND ADS RECOMMENDED INSTALLATION GUIDELINES, WITH THE EXCEPTION THAT MINIMUM COVER SHALL BE SIX INCHES.

REFER TO NEW CULVERT CROSSING UNDER TRAIL DETAIL (SHEET C8.2)

33 46 53 – STORMWATER LEACHING PITS

DRYWELL

PROVIDED BY:  
SHEA CONCRETE PRODUCTS, INC.  
773 SALEM STREET  
WILMINGTON, MA 01887  
(978) 658 - 2645

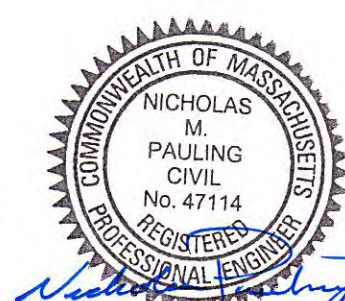
ITEM NO. MDWH1 – 3' SECTION W/ COVER (ONE PIECE)  
WEIGHT: 1,404 LBS

REFER TO DRYWELL DETAIL (SHEET C8.3)

DRAWING ISSUED FOR:

CONCEPT  CONSTRUCTION  
 PERMIT  CONSTRUCTION RECORD

THIS DRAWING MAY NOT SHOW CONSTRUCTION DETAILS AND SPECIFICATIONS FOR ALL PROPOSED IMPROVEMENTS, AND MAY NOT IDENTIFY ALL CONSTRUCTION WORK ITEMS/AREAS OF CONTRACTOR JURISDICTION.



PER 250 CMR 5.03(13), THE FOLLOWING ARE EXCLUDED FROM THE PROFESSIONAL ENGINEER'S RESPONSIBILITY: ALL BOUNDARY INFORMATION; LOCATION OF EXISTING STRUCTURES, TREES, UTILITIES, TOPOGRAPHY OR SIMILAR FEATURES; DESIGN OF RETAINING WALLS, PROPRIETARY EQUIPMENT. SEE EXISTING CONDITION NOTES.

NO.	DATE	BY	APP.	REVISION DESCRIPTION
2	4/9/24	DJG	NMP	ISSUED FOR CONSTRUCTION
1	3/6/24	DJG	NMP	NPS COMMENTS & TOWN OF CONCORD C.C.

**GPR** Engineering Solutions for Land & Structures

**GOLDSMITH, PREST & RINGWALL, INC.**  
39 MAIN STREET, SUITE 301, AYER, MA 01432  
CIVIL ENGINEERING • LAND SURVEYING • LAND PLANNING  
VOICE: 978.772.1590 FAX: 978.772.1591  
www.gpr-inc.com

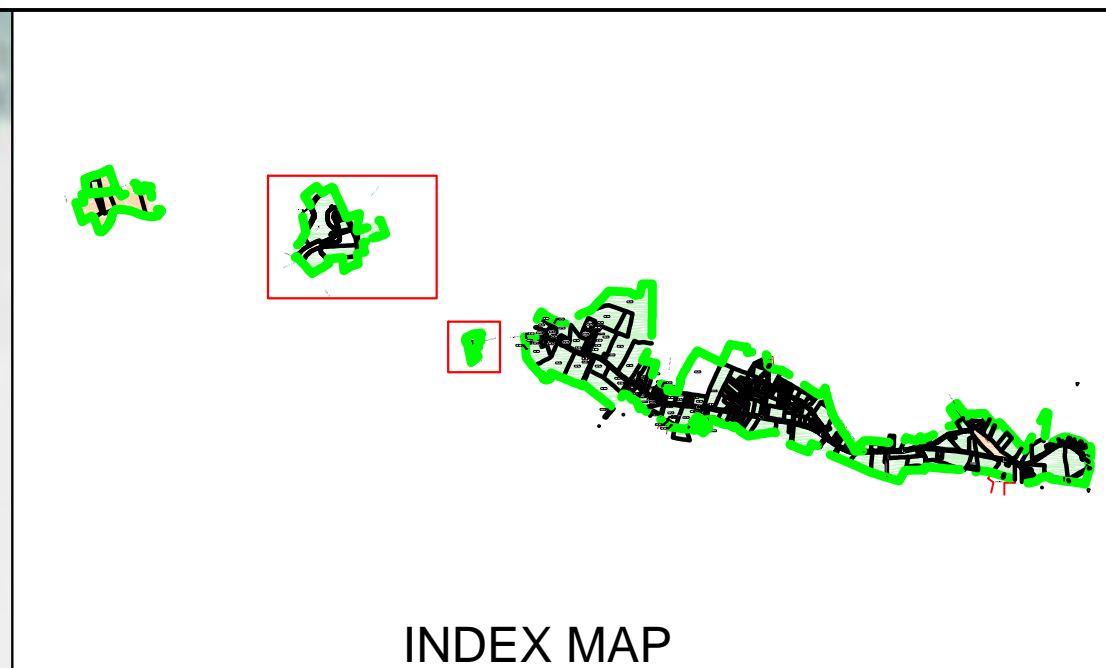
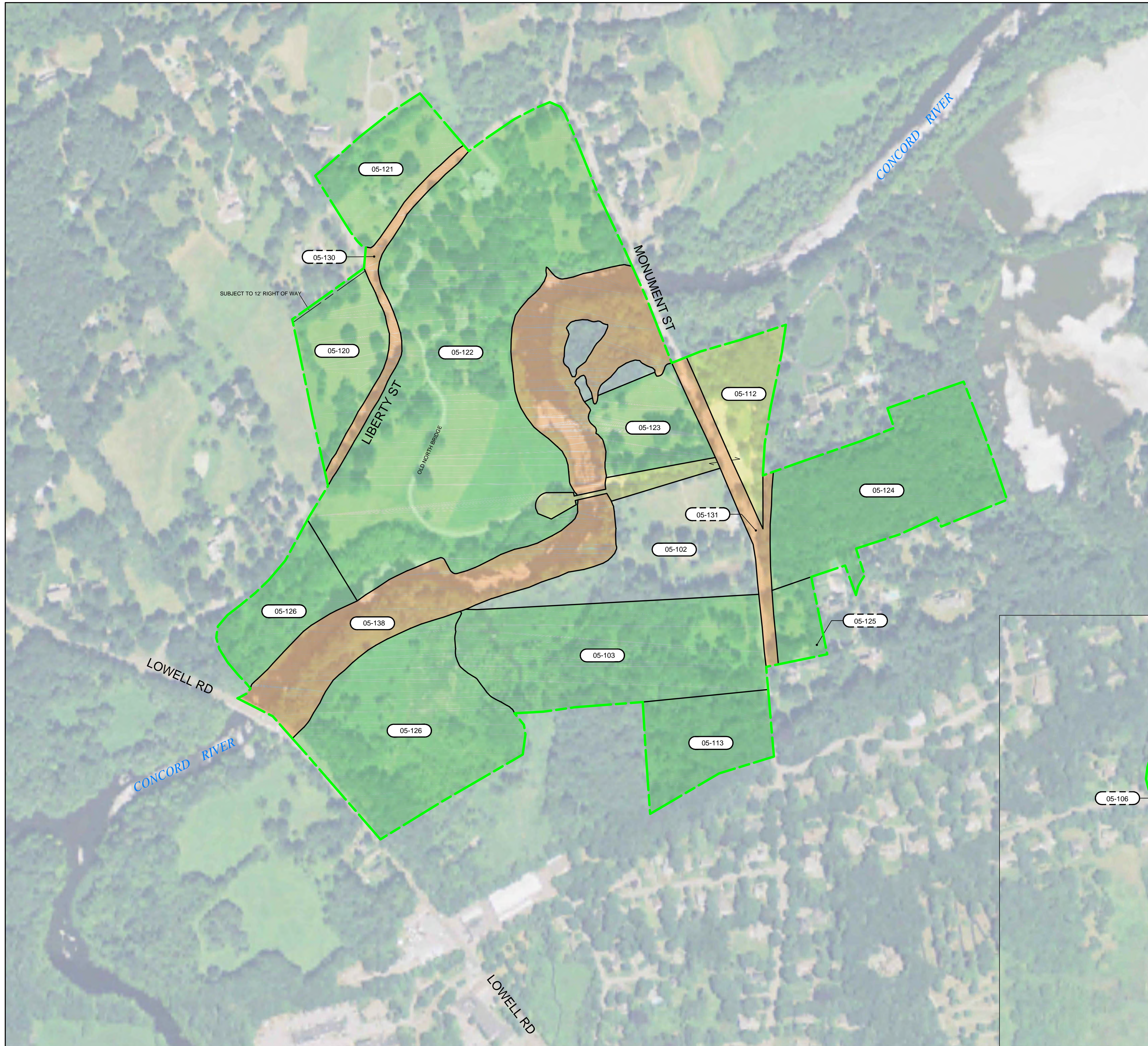
NATIONAL PARK SERVICE DEVELOPMENT TRAIL REPAIR

MATERIAL SPECIFICATIONS

MINUTE MAN NATIONAL PARK CONCORD, LINCOLN AND LEXINGTON

PREPARED FOR:  
NATIONAL PARK SERVICE  
174 LIBERTY STREET  
CONCORD, MA 01742

DES. BY: LT/DG	DATE: FEBRUARY 2024	JOB 231032	C8.5
CHK. BY: NMP			



TRACT REGISTER				
DEED	TRACT	OWNER	ACRES	INT.
UNACQ-	05-102	TRUSTEES OF RESERVATIONS	6.61	FEE
PURCH-154	05-103	SARGENT	8.70	FEE
UNACQ-	05-106	CONCORD, TOWN OF	0.60	FEE
DONAT-148	05-112	CONCORD, TOWN OF	4.08	EASEM
PURCH-155	05-113	RUGGIERO	4.10	FEE
PURCH-50	05-120	BUTTRICK, CAROLINE L.	3.76	FEE
PURCH-128	05-121	NEWBURY, EXEC.	3.77	FEE
PURCH-72	05-122	BUTTRICK, STEDMAN, ET AL	34.00	FEE
PURCH-129	05-123	CHASE, EDWARD P.	3.00	FEE
PURCH-88	05-124	CHASE T.	9.22	FEE
PURCH-73	05-125	FAY, HENRY H.	1.27	FEE
PURCH-139	05-126	KEYES, HENRY M.	17.26	FEE
PURCH-104	05-127	LOTHROP	3.60	FEE
PURCH-136	05-128	LOTHROP	1.50	FEE
PURCH-138	05-129	ALCOTT MEMORIAL ASSOCIATION	1.10	FEE
UNACQ-	05-130	CONCORD, TOWN OF	1.22	FEE
UNACQ-	05-131	CONCORD, TOWN OF	1.68	FEE
UNACQ-	05-138	MA, STATE OF	13.97	FEE

LEGEND	
	PRIVATE LAND
	FEDERAL LAND (FEE)
	FEDERAL INTEREST (LESS THAN FEE)
	OTHER FEDERAL LAND
	PUBLIC LAND
	TRACT NUMBER (FEE)
	TRACT NUMBER (LESS THAN FEE)
	TRACT BOUNDARY
	PARK BOUNDARY

GENERAL NOTES

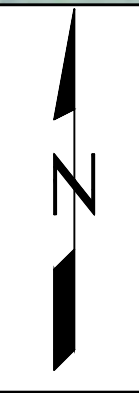
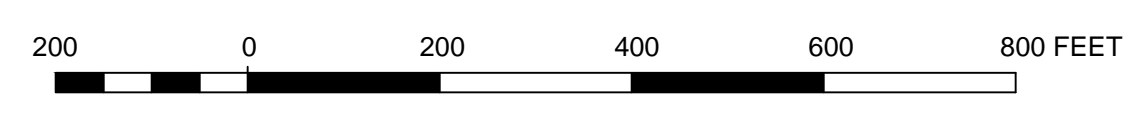
- PROPERTY OWNERSHIP DATA COMPILED FROM DEEDS, PLATS, SURVEYS, AND OTHER SOURCE DATA ARE SHOWN ON THIS BASE. THIS IS NOT AN ENGINEERING QUALITY DRAWING AND SHOULD BE USED FOR GENERAL SCALING PURPOSES ONLY. ACRES HAVE BEEN DERIVED FROM DEEDS, SURVEYS, AND OFFICE COMPILATIONS.
- TRACTS NOT LISTED HAVE BEEN DELETED.
- MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, NAD27, MAINLAND ZONE, US FOOT

DATE	REVISIONS	DATE	REVISIONS
01/28/2010	DIGITAL DATA CONVERSION		
11/08/1994	CHANGE ORDER 37		
05/11/1990	CHANGE ORDER 22		
11/05/1986	CHANGE ORDER 14		
04/05/1985	CHANGE ORDER 11		
10/05/1978	CHANGE ORDER 1		
11/08/1971	REVISED TRACT REGISTER & TRACT 05-111		
09/17/1971	REVISED TRACT 05-111		
09/17/1971	ADDED TRACT 05-113		
07/23/1971	ADDED TRACTS 05-112		

ESTABLISHED: SEPTEMBER 21, 1959  
 BOUNDARY CHANGE: DECEMBER 14, 1970;  
 OCTOBER 24, 1992, P.L. 102-488  
 MARCH 30, 2009, P.L. 111-11

DATE DRAWN: APRIL 1971  
 DATE REVISED: JANUARY 26, 2010

REGIONAL OFFICE: NORTHEAST REGIONAL OFFICE



DN. BY: JMO CK. BY: JMO  
 APPR. BY: RM  
 REGION: NERO  
 DRAWING NO: 406  
 35,000A  
 SHEET: 6 OF 7

UNITED STATES  
 DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE  
 LAND RESOURCES PROGRAM CENTER

**MINUTE MAN NATIONAL  
 HISTORICAL PARK**  
 MIDDLESEX COUNTY  
 MASSACHUSETTS

TITLE: **SEGMENT 05**

# Select Board Review

Solar Implementation Task Force

Final Report

May 20, 2024

# Task Force Charge

- Create a *Plan and Schedule* to meet Concord's Climate Action Targets in Solar Energy
- “It is recommended that the task force identify at least one site for solar installation that can be done quickly to demonstrate feasibility and build momentum.”

# Top Line Findings

- CMLP Distribution System
  - Modernization steps required
  - Grid protection steps are critical
- Solar Potential
  - CMLP Solar projects must be at least cost neutral
  - Approx 5MW of added potential currently
- Concord ***unlikely to meet its 20MW solar goal***

# CMLP Recommendations

- Install battery storage to reduce risks
- Upgrade from analog to digital monitoring, controls and switch equipment
- Re-engineer substation for bi-directional flow

# CMLP Recommendations

- Utilize storage to reduce energy costs through ISO peak reductions
- Pursue only ground mounted solar projects
- New building roof systems to be included in building projects, *not* CMLP managed

# Solar Sites Identified

- Landfill – 1.5 MW
- CCHS ‘drainage basin’ - .5 MW
- Treatment Plant Filter Beds – 2 MW
- ‘Burke Land’ portion – 1 MW

# Administrative Recommendations

- Select Board - Develop a policy requiring solar roof systems on new buildings.
- Light Board - Develop standard agreements for larger solar projects
- Town Manager – Assign an owner to be responsible for report follow through

# Suggested Schedule

Project	Notice	Technical & Cost Assessment	TM Funding Approval	Bid Award	Construction Begins
Landfill Expansion	N/A	6/2024 – CMLP	4/2025	9/2025	Spring 2026
CCHS Drainage Basin *	5/2024	8/2024 – CPW 10/2024 – CMLP	4/2025	9/2025	Spring 2026
Burke Land	5/2024	7/2026 – CMLP	4/2027	9/2027	Spring 2027
Wastewater Filter Beds	5/2027 CPW	7/2027 - CMLP	4/2028	9/2028	Spring 2029
MCI Concord	By 2027 Select Bd	TBD			
2229 Main St	By 2030 Select Bd	TBD			

\*Schedule beyond technical assessment by CPW dependent on change in position by the Concord Carlisle Regional School Committee

# Findings and Recommendations



## Final Report Solar Implementation Task Force

May 9, 2024



### **Solar Implementation Task Force**

Dean Banfield, Chair  
Gavin Colbert, Climate Action Committee Liaison Member  
Stephen Newbold  
Charles Parker  
Wendy Rovelli  
Philippe Villers

### **With Help From**

Eric Simms, Director of Sustainability  
Mary Hartman, Select Board Liaison  
David Wood/Jason Bulger, Directors, Light Plant  
Laura Scott, Light Plant Liaison

Town Manager, Kerry Lafleur

### **Acknowledgements**

The Solar Implementation Task Force is grateful for the contributions of the following individuals in the preparation of this report: Alan Cathcart, Director of Public Works, Light Board member John Dalton, as well as ConcordCAN and the Concord chapter of Mothers Out Front for their encouragement and public support.

Finally, we thank the citizens of Concord, who's vision of the future led to the creation of this task force, and is helping keep Concord on a path to a more sustainable future.

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## Executive Summary for Select Board

The Solar Implementation Task Force (STF) was established in 2023 by unanimous vote of Concord Town Meeting to create a Plan and Schedule to meet Concord's Climate Action Targets in solar energy. The charter included developing a prioritized list of Town-owned sites for solar installations; developing and evaluating financial models for solar; developing cash flow projections for identified sites; strategies to resolve technical barriers, and developing a schedule for implementation at selected sites. The Task Force was created to address these objectives in support of the Town's Climate Action Plan which called for the development of 20MWs of solar on Town-owned land by 2030, in support of and in collaboration with CMLP. The Task Force has been in place since August, 2023, and its work should be complete by April, 2024.

In evaluating site opportunities, the STF has determined that an upper limit of 5 MW of new solar capacity can be developed on Town owned land. Today, Concord has 7.5MW of solar capacity deployed. When CMS is added (1.2MW), the town will be at 8.7MW. ***If all opportunities in this report are constructed, the Town will end up with ~14MW against its goal of 20MW by 2030.*** The STF has identified additional potential at the MCI Concord and 2229 Main Street (Nuclear Metals) sites. CMLP will continue to see solar additions from private parties, (residential, institutional and commercial), but these will not be credited against our 20MW public goal.

One of the key elements of the charge for the Solar Implementation Task Force is the requirement to develop strategies to overcome barriers. 'These barriers could include technical challenges (distribution network, battery storage, etc.), conflicts with other uses of municipal land and buildings, and potential community resistance'. While identifying sites, determining cash flows, and developing a schedule are reasonably straightforward, the questions that involve 'barriers' are not. The paramount question is, 'what is the problem(s) that we are attempting to address'. Assuming that we understand the problem what are the critical success factors to get to our goal of advancing solar penetration in the Town of Concord?

As for the 'problem', it has become abundantly clear that we are dealing with technical challenges, similar to many other communities that have a similar aspiration for solar development. The Concord Distribution system has reached solar saturation on half of its system and the other half will reach the same point in the near future if steps are not taken to address the problem. As it now stands, solar saturation on the Concord MCI/WR Grace side of the system must be addressed immediately whether or not additional solar projects are pursued for connection to this branch of the system. What is solar saturation? This is a condition where the amount of solar power being generated on a given day is more that the system can handle. More specifically, solar saturation occurs when solar generation approaches the total amount of demand on the system at a given point in time. When the amount of solar exceeds the total demand, the system's breakers will trip and the result is blackouts.

For this reason, the Solar Task Force and the CMLP are recommending investment in battery storage to mitigate overgeneration of solar on the branch that is oversubscribed with solar, a problem which has been exacerbated by the closing of Concord MCI and the resulting drop in load and reduced threshold for solar saturation. The initial investment in storage needs to be focused on the problematic part of the system (MCI/WR Grace branch) and its sizing needs to be based on several considerations:

- Solar peak and its proximity to system load

- Forecast of lower load based on the loss of MCI demand,
- Need for a safety buffer that reflects the risk of sudden loss of load due to an unexpected event such as a squirrel causing a short in a line or car colliding with a pole
- Need for flexibility to enable continued development of residential solar as defined in current policies.

This storage, in conjunction with other upgrades to the distribution system, such as digital switch gear at the CMLP Forest Ridge site, puts the CMLP on a path to stability which is the prerequisite to adding new solar.

This brings us to the recommended action items outlined in the report for the growth of solar in Concord:

- CMLP will execute on its plans for storage (adjacent to WR Grace site) and for modernization of the switch gear<sup>1</sup>.
- CMLP would be well advised to complete installation, configuration and testing of the CMS storage system prior to proceeding with the WR Grace storage project.
- CMLP will complete the feasibility study for the Landfill site (due in June) and if the results are positive, the CMLP needs to complete a financial analysis for the site, along with a vote by the Light Board to proceed with contracts for design and final costing for a Town Meeting article for 2025.
- The CPW needs to establish a definitive technical position on feasibility for solar at the CCHS drainage basin. This needs to include any design elements that will be required to allow solar at this site. The Town Manager will need to engage the School Committee and School Administration for a decision on the use of this site for solar if the results of the CPW technical analysis are positive. There are no competing uses for the drainage basin.
- The Town Manager needs to develop a preliminary plan for the Burke property and needs to manage the process of review with the abutters for the use of that site for 1MW of solar.
- The Town Manager needs to develop a policy that articulates the direction for solar on the Town's and School's new construction.

Note: this plan does not contemplate efforts to identify other sites for solar, if the ones identified are not feasible.

As far as the issue of overcoming community resistance, the recommendations include a section on this. Based on the feedback at Town Meeting, there is certainly an interest in increasing the level of solar in Concord. However, we need to get these proposals for the various sites in front of Town Meeting for the ultimate test of community support.

Last, the Town Manager will need to sort-out an overall approach to project management of all of the elements of the plan/recommendations as outlined in this report. As this effort involves multiple departments, including the CPW and CMLP, we need one overall lead who will commit to managing the various elements of the plan.

## Key Terms Used in Discussion

Understanding the terms described below is critical to fully grasping the ideas expressed throughout this report.

**Substation (Distribution System):** The Concord Substation imports power in Maynard directly from the larger Eversource substation which provides Concord with the power it has purchased from suppliers (generators) throughout the region, up to a total capacity of 60MWs. The imported power is stepped down through two main transformers and distributed in Concord over CMLP infrastructure. The power on CMLP's main system is stepped down further by transformers located throughout Concord to service the various consumers at either 480 or 240 volts, depending on the type of service arrangement the consumer has with CMLP.

**Independent System Operator (ISO New England):** An independent, non-profit regional transmission organization that oversees the operation of New England's electric power system and transmission lines. The ISO ensures the consistent operation of both power generation and the transmission system and oversees the administration of the wholesale electricity markets. CMLP purchases its power contracts through the ISO market/bid process and pays for its transmission, and capacity services directly to the ISO.

**Distribution:** The substation power is distributed from the two transformers through two Concord service areas for local power distribution. Service area #2 is the problematic area of the distribution system due to low demand at times of peak solar generation.

**Bi-Directional Flow:** The distribution system is not bi-directional which means that CMLP can import but cannot export power. This means that excess power generated by solar is retained on-site rather than 'net-metered' back to Eversource, requiring battery storage at certain generation levels. The lack of export capability is problematic under conditions of high solar generation and low demand unless that generation can be stored in batteries for use later in the day.

**Capacity:** The maximum amount of power a generator can produce. When referring to solar arrays, the capacity of a system is based on the manufacturer's rated capacity of each solar panel times the number of panels in the project. Capacity of a solar panel (or generator) is referred to as 'name plate capacity'. If a project has 1000 solar panels, each rated at 500 watts, the capacity of the array is 500,000 watts of capacity, or 500kW of capacity, or 0.5MWs of capacity. The smallest solar target the committee is pursuing is 0.5MWs and it's helpful to keep the number of 1000 solar panels as a rule of thumb for thinking about scale.

**Battery storage terms:** A battery storage system is rated both by the power/speed (measured in MW) at which it can either accept or dispatch energy, combined with the capacity of the battery to store energy for future use (measured in MWh's). The energy capacity of a battery system needs to be sized to the power consumption of the devices supported multiplied by how long you need this power to be available. For example, a battery rated at 2MW/4MWhr stores 4MWh of energy and can make 2MW of power available on a continuous basis for up to 2 hours. The battery could also be set-up to discharge more slowly over a longer period of time.

**Electricity demand (load):** This is a measure of power used at a given point in time measured in kilowatts (kW) or in megawatts (MW) and varies from minute to minute and hour to hour, based on the amount and type of devices with active connections to the distribution system and the extent to which these devices (such as refrigerators, heat pumps, EV chargers) are calling

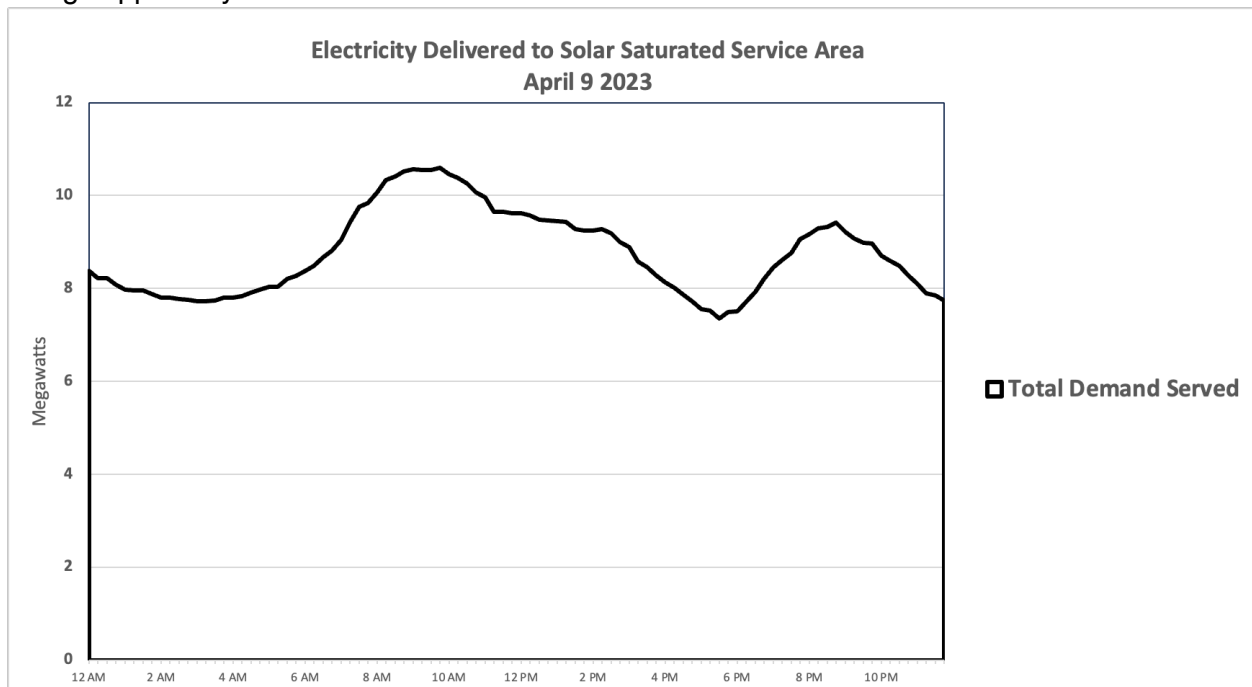
for electricity. At any given point in time, as much as 40MW of power is being used in Concord. The portion that we are actually using at any point in time is our demand.

**Solar saturation:** Solar saturation is a condition when all of the solar generation in Town (both public and private) comes close to exceeding the total demand for the system. This condition endangers the system and should be avoided by either the export of excess power from Concord or through the use of batteries to store the power at times of high solar generation for use when it is needed. Current plans to upgrade Concord’s switch gear at the substation and to install 5MWs/15MWhrs of battery storage on the solar saturated service area of the system (MCI/Grace area) should address Concord’s solar saturation problem, based on current levels of system demand and solar capacity.

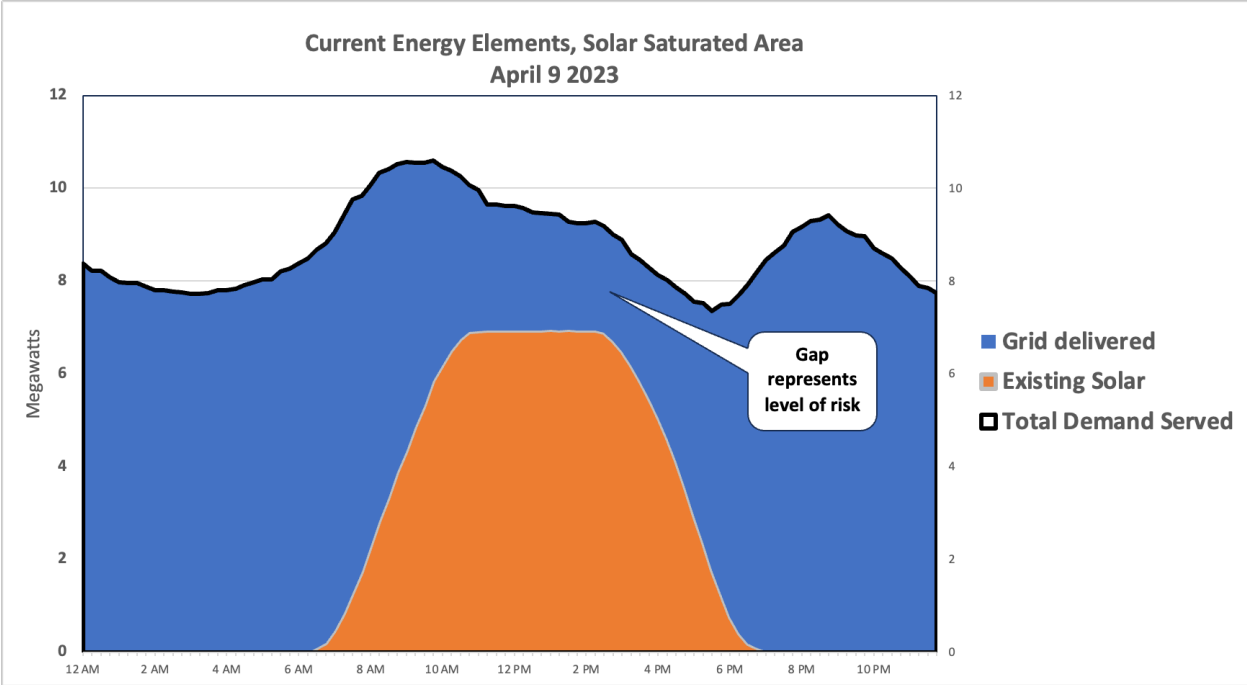
**Curtailment:** The term curtailment simply means actively disabling a solar array from delivering some or all of its available energy. This is typically done by digitally communicating to the system not to convert the DC electricity created by the panels into AC suitable for transmission and use.

### Total Load vs Solar Generation

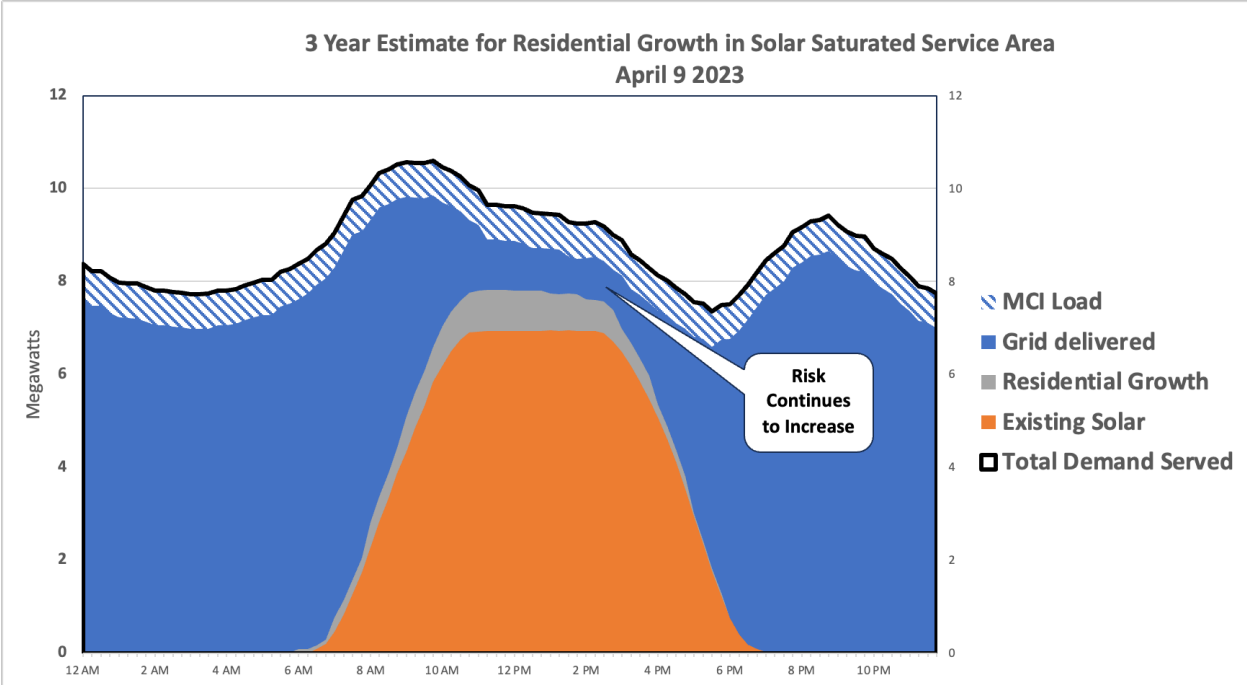
The charts below show the saturation problem pictorially. The first chart shows total demand served in the solar-saturated service area on a day (4/9/23) with very little overall demand. At any specific point in time across the continuum, this shows the total demand for everything actively connected to the CMLP distribution system in this service area. The power comes from two sources – our solar generation that’s connected to this part of the system and the power being supplied by the ISO.



The second chart (below) shows the breakout between the power delivered by solar (orange) and the ISO (blue). 100% saturation occurs if the solar generated energy satisfies or exceeds total demand. Production equaling or exceeding total demand would cause a blackout. In the chart, the gap between the two elements (~2MWs between the top of the orange cone and the black line) represents the risk. At the current time, there is enough headroom to allow the system to operate without faults.



The third chart shows increasing risk, due to the anticipated loss of demand due to the closing of MCI Concord. The reduced load brings the solar generation closer to meeting the total demand. The chart also shows the forecasted increase in solar generation from new/future residential installations, further exacerbating the problem. At this point, there would be roughly 0.5MWs of headroom above the solar and below the (reduced) demand line.



## Overview of Findings and Narrative of Solar Task Force Discovery Process

The overall frame for the Solar Task Force has been to achieve our goals on *Town-owned land* with solar arrays and/or storage devices which are *CMLP-owned* as this is the criterion for measurement against the goal of 20MWs by 2030. Additionally, we are guided by a sensitivity to the financial feasibility of any new solar capacity in Concord in a way that is appropriate to CMLP and its rate structure.<sup>2</sup> Our internal financial guideline has been to rationalize investments for in-Town solar against financial benchmarks that can be used to defend our recommendations. To this end, we established a baseline that is oriented to the wholesale market value of energy and the basic trade-off between net utility cost of purchasing solar power on the open, regional market or developing it on Town-owned land. As we proceeded through this analysis, it became clear that the only type of solar project that made financial sense for CMLP-ownership was the lower cost ground-mounted variety which, under strict financial scrutiny, is a break-even proposition for CMLP. In other words, a 20 or 30-year investment in ground-mounted solar provides a cash neutral or slightly cash positive result for CMLP and for the rate payers after factoring for the cost of capital and inflation. We did not pursue the other two modalities (Rooftop and Canopies) for the identification of new sites because CMLP financials were negative and the Task Force did not support the use of CMLP's borrowing authority for projects which do not at least meet the cash flow neutral criterion.

This left the Task Force with a diminished scope for the achievement of the 20MW goal, as we eliminated Rooftop and Parking Canopies from consideration for CMLP ownership. Under the revised scope, we need sufficient unencumbered sites for an additional 11MWs of solar and which do not require tree cutting. *After extensive review of Town-owned land, we do not think there are a sufficient number of appropriately sized sites in the Town to meet the 20MW goal, as we have only identified four sites for a total of ~5MWs of ground mount, increasing our in-Town, CMLP-owned solar to 14MWs. Future parcels at MCI and 2229 Main Street could add another ~4MWs to our portfolio; however, these are not currently Town-owned and are long-term propositions, subject to a variety of competing priorities, should they enter the Town's land inventory.*

Also, one of the disappointing aspects of the Task Force's effort has been the inability to complete full technical feasibility on two sites that were identified for funding for the Town Meeting Article 33 (scheduled for April, 2024). In both cases, the Town was unable to complete the required technical feasibility analyses<sup>3</sup> prior to our Town Meeting deadline; however, these two sites which total ~2MWs of capacity should be high priority for future funding and development in the next phase of the Town's efforts.

This setback is off-set by the good news that we were able to reach closure on resolving critical structural issues with the distribution system that have been impeding our ability as a Town to continue to develop new solar capacity in Concord (at the present time, approximately 50% of the distribution system is already solar-saturated and cannot handle more installations). The fundamental problem has been the excess solar generation at times of low overall Concord load that could cause Town-wide black-outs. The proposed strategy to resolve this problem is the installation of battery storage to allow the mitigation of this risk by storing excess generation at solar peak and dispatching it to the Concord Town peak later in the day. The battery storage, in conjunction with a management and control system, enables the implementation of a more adaptive and scalable distribution system, providing an environment where we can install additional ground mount systems and where we can allow for the continuing growth of privately-

owned solar arrays. Importantly, privately-owned solar continues to grow and has already reached a total capacity of ~5MWs. We want this trend to continue.

In addition to allowing us to build-out a scalable architecture using storage, this technology provides us with the opportunity to participate in another important sustainability objective – managing the peak<sup>4</sup>. While we cannot participate directly in the Commonwealth’s Clean Peak Standard in Massachusetts, which encourages the delivery of clean energy during peak demand in Massachusetts, we can contribute indirectly by the dispatching of Concord’s clean energy at the time of the ISO peak. The result is reduced use of fossil-fuel based energy at the ISO peak, reducing the necessity for additional capacity at the peak. This contributes in two ways: first by eliminating the need to fire-up stand-by fossil-fuel generators and second by reducing the need for the development of new fossil-fuel based generating capacity. While there are no direct incentives for our Muni participation, we do save money by reducing our demand at the ISO peak, lowering our ISO costs. This enables us to achieve a positive cash flow for our storage and management/control investment.

While we anticipate a multi-year effort to complete these objectives, we are dependent on a time sensitive incentive, the Inflation Reduction Act’s 25.5% cash payment. The IRA has a 10-year time horizon, with sunset in 2033; however, Congress could change or roll-back the provisions of this act in whole or in part and it is incumbent on us to move quickly in order to take advantage of this largesse. The financials documented in the report are dependent on this incentive and the perspective changes dramatically if we lose access to this provision of the IRA.

## Value Proposition for Solar and Storage Investments

Before presenting the findings and recommendations, it is important to review the value proposition. ‘Why invest in solar and storage in Concord if we can purchase it from generators elsewhere in the Region?’ The Solar Implementation Task Force had to thread this needle and in doing so needed to understand the rationale. The major elements of the value proposition for these investments are listed below:

Concord’s expansion of ‘In-Town solar’ - contributes to the *achievement of the Town’s climate action plan for 20MW’s by 2030.*

The development of solar on Concord’s land allows our community to *participate directly in the generation of renewable energy* that we use, rather than depending on other towns to shoulder the burden. Using Concord’s open, unwooded areas allows us to preserve property in other areas of the state.

Concord will be able to participate in Commonwealth efforts to reduce demand for fossil-fuel based electricity at the ISO peak. Our proposed investments in storage enable us to indirectly *support the Commonwealth’s Clean Peak initiative* which is designed to avoid unnecessary, additional investments in carbon emitting peak generation plants.

Concord’s CMLP will be able to offer an *extensible and scalable grid architecture which will enable the expansion Concord-based solar generation*, both on Town-owned land and through private development. This will be achieved by dynamically monitoring system loads and managing the use of storage to avoid potentially damaging over-generation at the solar peak. The result is a more stable and secure grid which can respond to changing conditions both on a real-time daily basis and over time as the system grows.

Concord’s growth of solar and storage assets *demonstrates our commitment to the environment* and to addressing climate change. Concord’s citizens and especially the younger generation place a high value on the development of climate enhancing capabilities and are asking us to participate more directly and actively in the Commonwealth’s efforts to achieve net zero by 2050.

Concord’s investments in solar and storage will contribute a *positive return to CMLP* and its rate payers.

## Summary of Findings and Recommendations

[Note: 'F' items are findings, and 'R' items are recommendations]

### F1. Financially sustainable solar for CMLP

Of the three solar modalities, only Ground Mount (0.5MW or larger) is financially sustainable for CMLP ownership as the life cycle cost to produce energy from a ground mount system approximates CMLP's wholesale cost of energy. In other words, ground mount solar is a breakeven proposition or close to it. CMLP does not lose money on a life cycle basis where all costs and revenues are accounted for. In our analysis, the wholesale cost includes the average cost of energy from generators, plus the cost of Renewable Energy Credits, plus the savings contribution of Concord produced energy at ISO peak, plus a small inflation factor to account for the levelized cost over 20 years. CMLP's estimated wholesale cost is a proxy for what CMLP would be willing to pay for energy that's delivered to Concord. (See additional detail on financial tradeoffs in next section).

**R1.1** Light Board to re-focus CMLP to more limited scope for the development of solar assets: Ground-Mount only.

### F2. Rooftop best fits the behind-the-meter model<sup>5</sup>

The Task Force determined that the second modality, Rooftop, does not fit CMLP business model as its capital costs and life cycle cost to generate power are not positive (20-30-year LCOE is ~53%<sup>6</sup> more expensive than Ground Mounted Solar and capital cost to build is 66% more expensive). However, when repositioned as behind-the-meter, Rooftop becomes financially feasible, for any town or private entity which buys power from the CMLP at its higher retail rates, thus improving the owner's cost avoidance and payback. Behind the meter systems would not be the responsibility of CMLP. Rather, each rooftop owner, whether municipal, school, or private would take responsible for feasibility analysis, financing, design, construction, and maintenance. Besides the fact that Rooftop systems are considerably more expensive than ground-mounted systems (creating pressure on CMLP margins), a second reason for repositioning Rooftop as behind-the meter and outside the domain of CMLP is the added complexity of involving both the building owner and CMLP in developing and maintaining a rooftop. The better strategy for rooftop is to include planning and development of these systems at the time of initial construction under the Town's bidding process for a new building. With this approach, one contractor would be involved and the cost would be a small uplift to the overall cost per square foot of each new Town or School building. An additional reason to focus on rooftop at the time of construction is that designing solar as a component of a new building is less expensive than retrofitting existing buildings after initial design and construction is complete. Including solar with initial construction avoids a second RFP and bidding process, intrusive wiring from the roof to the switch gear, fresh construction for cabling to the interconnect, intrusions to the rooftop surface, etc.) One last consideration when considering Roof Mounted solar is the economics of seasonal use. Buildings that consume a high percentage of generated power are better positioned than buildings that are empty during the summer when solar production reaches peak levels. (See detail on range of opportunities on page 7.)

**R2.1** Select Board to develop a policy to require solar arrays on the roofs of all new Town, School, and Affordable Housing construction in Concord, and which encourages evaluation of feasibility for rooftop solar at time of major roof upgrades.

**R2.2** Light Board to develop communications to ensure the commercial and institutional segments understand that CMLP will authorize behind-the-meter systems, including clear policies and interconnect agreement rules for commercial and institutional segment, including responsibility for the provision of storage support and/or CMLP rights to curtail production.

**F3. Parking canopies are not feasible in Concord given CMLP's relatively low rates**

Parking canopies are not going to be financially feasible in Concord for CMLP-owned or behind-the-meter, given CMLP's rate structure. At a cost to generate of 40% more than Rooftop, parking canopies would require a substantial subsidy.

**F4. Total of four possible ground mount sites identified on Town-owned land**

Based on a detailed review of Concord's Town-owned land, at least four sites have been identified that meet Solar Task Force criteria. These include the Landfill (1.5MW), the CCHS drainage basin (0.5MW), the Wastewater Treatment Filter Beds (2MW), and a portion of the Burke land (1MW) for a total of 5MWs. In addition, there are another two sites (2229 Main Street and MCI) that are not Concord-owned but are potential solar sites, depending on the final disposition plans for these properties. As such, these are long term propositions. Each of these sites will require additional vetting, with initial primary focus on the four Town-owned sites. Finally, this should bring closure to the question of solar potential for the Town of Concord: a total of 5MWs additional solar on existing Town-owned land, plus an additional 4MWs on land that may become Town-owned. (Photos and more status information on page 6.)

Prioritized list of sites on Town-owned land is below (4.1, 4.2, 4.3, and 4.4). Dates or estimated dates in the schedule are indicated for initial action items for the first three sites on the list.

**R4.1** Landfill: CMLP to complete technical feasibility study for the landfill site (June 2024 completion). While the Solar Task Force designated the land fill site as a top priority last October, the delay of the technical feasibility analysis precluded including this opportunity for 2024 Town Meeting funding. In fact, while CMLP is positive that we will be able to proceed with the landfill, we do not have the technical greenlight as of the date of this report. As soon as we have a completed technical feasibility, CMLP will be in a position proceed with the Landfill, based on review of financials, or the site will be eliminated from consideration. CMLP to determine schedule for design, RFP creation, bid timing, and construction. The landfill should be presented to 2025 Concord Town Meeting for funding.

**R4.2** CCHS drainage basin: The Solar Task Force made a request to CPW Engineering for an evaluation of the drainage basin, including the technical parameters for its use for solar, including conformance with impervious surface cap limitations and storm water guidelines, engineering requirements to mitigate effects of run-off from solar panels, and any other factors that need consideration to enable the greenlight for solar construction. The CPW did not provide an unambiguous technical greenlight for the project. While written comments were provided, the School Administration did not consider the CPW's review to be technically dispositive and we were unable to proceed with technical design for the site. The Task Force has requested an update from the CPW. If results are positive, the Select Board will be in a position revisit the status of this site with

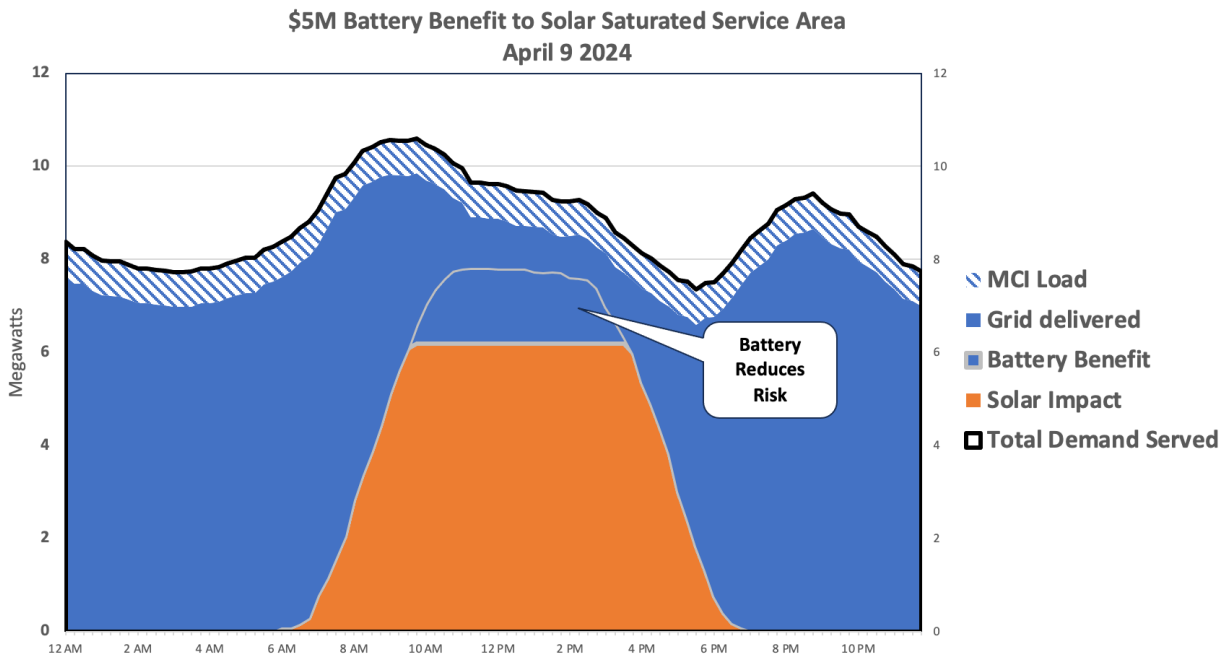
School Committee and Administration. If the School Committee approves use of basin for solar, CMLP to schedule design, RFP/bid cycle, and construction.

- R4.3** Town Land in Agricultural Use: This opportunity is unvetted and the previous proposal for solar on the nearby Ammendolia property was rejected by the Town in 2010. Meanwhile, times have changed and the climate crisis has worsened. Revisiting the use of agricultural land may bring different results if we present a better, scaled-back plan. While agriculture is a core priority for the Town, the development of solar energy is a competing priority. The STF recommends pursuing a relatively small project of 1MW of solar on a portion of one parcel currently in agricultural use. The STF proposes repurposing a portion of a different parcel known as the 'Burke land' off Old Bedford Rd. The proposed area is adjacent to the Ripley parking lot, the Little League baseball field and conservation land around Gowing's Swamp to the west. The process would be a three-year effort before breaking ground. Some of this is to include a notice period for the farmer currently leasing the land. Farmers make investments in the land by renewing and making amendments to the soil through cover crop plantings and other enrichments, and those investments are intended to produce benefits over several future planting seasons. For this reason, a lengthy notice period is warranted. During this window, the Town should notify abutters and hold a Public Hearing (approx. Spring 2026). Presuming a positive outcome, CMLP should prepare a cost estimate and preliminary design for funding consideration by Town Meeting in April 2027 with construction slated for fall 2027. A portion of this land is listed as a priority habitat for rare species by Mass Wildlife, which will require a regulatory process to determine whether the installation of solar panels will result in a 'taking' of habitat. While no conclusions can be drawn until the process is engaged, it would be reasonable to presume that a no-till area of panels would represent less habitat disruption than regular cultivation practices. The Select Board or their assignee(s) will take responsibility for notifying the farmer and engaging with the public to clear the way for a CMLP project. Target date for construction: 2027.
- R4.4** Wastewater Filter Beds: The use of the CPW's wastewater filter beds for solar is an opportunity that is contingent on the outcome of transition planning at the MCI site. The CPW's wastewater treatment capacity is now at its statutory capacity limit and two options are under consideration for expansion. The preferred alternative is the integration of the existing MCI treatment facility to the Concord system. If successful, that would render the existing filter beds as excess for at least the next 30 years. If unsuccessful in negotiating this integration, the CPW would need to retain its filter beds for use in their expansion at the current site. According to the CPW Director, the transition planning will require three years before a determination could be made as to the 30-year lease availability of the filter beds. Once CMLP has clearance, CMLP could proceed with feasibility analysis. If both are positive, CMLP could proceed to schedule the design, RFP/bid cycle, and construction.
- R4.5** MCI and 2229 Mainstreet (former Nuclear Metals site): It's premature to attempt to plan for either site as these are not Town-owned. However, a formal letter from the Task Force to the 2229 Committee would be appropriate, detailing our request (2MW of solar plus space for storage).

## F5. Addressing CMLP grid vulnerability

CMLP has a grid vulnerability problem due to solar generation at times of low overall demand, which can be exacerbated by other outage events which could disrupt the distribution system. The recommended solution involves installing battery storage. The batteries would be charged during the solar peak(s) to reduce the convergence of generation with Concord demand and dispatched to Concord's peak later in the day. This process would be supported by intelligent digital controllers attached to Concord's solar assets, using a commercially-available power distribution management system. Battery storage, used in conjunction with this control system, should enable CMLP to manage the solar peak without curtailment of solar generation. Battery storage along with a proper control system will resolve the technical issues that were impeding the expansion of solar in Concord. At this time, we are not aware of any other technical issues preventing solar expansion.

The chart below shows the effect of a \$5M investment in battery technology (a 4MW/8MWh system composed of two 2MW/4MWh batteries) to mitigate the risk by storing the solar energy at the top of the solar cone shown with the 'battery reduces risk' arrow. This results in a ~1MW- 2MWs of buffer to allow for unexpected events.



**R5.1** Install 2MW/4MWhrs battery<sup>7</sup> on the vulnerable service area as a matter of high priority. Both the WR Grace array and MCI Concord are attached to this area and the combined impact would be mitigated by the battery.

**R5.2** Using batteries to provide critical protection for the distribution system, should be done using redundancy in the design of the storage solution. Battery unplanned outage rates are sufficiently high that redundancy is a key consideration to ensure availability when grid protection is required.

- R5.3** Install intelligent controllers to enable charge/dispatch cycles on this battery and configure to support mitigation of solar peak with discharge to Concord's peak.
- R5.4** CMLP should continue to pursue its planned implementation of a 'metering domain' configuration of the Forest Ridge substation, which will permit bi-directional energy flow as an additional safeguard for the distribution system.
- R5.5** Evaluate impact of mitigation measures and adjust approach as required to allow for continued growth of solar.

## **F6. Peak shaving and Battery Storage**

The use of storage technologies is essential to pursue this goal in a way that has significant impact. More specifically, the use of battery storage would enable CMLP to reduce its ISO costs by reducing Concord's use of energy at the monthly and yearly ISO peaks (which reduces charges from the ISO to CMLP for both capacity and transmission). These savings would provide a cash positive result for the storage investment and would have a positive impact on Concord's rate payers. The sustainability benefits include reducing the need for peak generator investments in the Commonwealth by smoothing regional peak demand for electricity.

An additional \$5M in battery investment (\$10M for a 5MW/15MWh battery) adds more energy storage capacity to provide wider and deeper coverage with respect to dispatching excess solar to the ISO peak and may improve the revenue opportunity for the CMLP. However, a smaller battery configuration achieves a similar result, albeit with less impact on capacity and transmission costs

- R6.1** Configure controllers to support peak shaving strategy (capacity and transmission at ISO hour) for battery installed to address grid vulnerability (ref. finding #5).
- R6.2** Include requirements for controllers in CMLP project bid package for storage purchase.
- R6.3** Complete an analysis of future storage requirements based on forecasts of the growth in load and the expansion of solar capacity.

## **F7. Battery storage futures**

Battery storage is being deployed across both transportation and the built environment at a variety of scales. The Climate Action Committee (CAC) is charged with evaluating the relevance of the various technologies for meeting Concord's climate action goals. To further mitigate solar saturation, enable continued public and private solar expansions, and improve grid flexibility, the STF recommends pursuing feasibility analysis in the following areas aligned with increases in solar penetration in Concord:

- R7.1** Electric school bus (ESB) vehicle to grid (V2G) infrastructure to utilize the Town's fleet of 42 school buses, parked near the WR Grace Solar array, as dispatchable battery backup, particularly during the summers when much of the school bus fleet is unused and solar output is high.

- R7.2** Virtual power plant (VPP) protocols and incentives to leverage ratepayers' distributed energy resources (DERs), such as in-situ batteries.
- R7.3** Requires reviews of technical literature, determining and evaluating course(s) of action, and making recommendations in these areas.

### **F8. Community Buy-In and Acceptance**

Developing community buy-in for solar is challenging. There is a broad consensus that solar is desirable but little agreement about where it should be located. And, other than the broadly defined benefits of addressing climate change, there is no actual requirement to locate solar in any specific area, unlike schools, new roads, and sewer and power lines. Making matters more difficult, solar energy contracts can be purchased from generators outside of Concord at reasonable prices and CMLP has already done a good job with decarbonizing our electricity through purchases of nuclear energy and various renewables (hydro, landfill gas, solar, and wind). For these reasons, we need to be sensitive to the needs of neighbors who may be concerned about the intrusiveness of a solar installation. Proper notifications and public hearings, along with the concurrence of the Select Board, are going to be required as we proceed. And, reasonable objections will be reviewed carefully. Overall, efforts to minimize intrusiveness on views and encroachment on the community areas become paramount.

### **Four Key Points of Summary**

Solar Implementation Task Force has completed its charge to evaluate Town-owned properties to identify solar expansion opportunities and is recommending four new sites for solar for a total of 5MWs of capacity. This brings the total of solar on Town-owned land to 14MWs and this is the limit under our assessment for Town-owned solar expansion under current conditions. This is because Town-owned land that is suitable for ground mounted solar is extremely limited.

*While there are other theoretical opportunities for solar on Town-owned open land in Concord, the available parcels are agricultural or otherwise encumbered. If the Select Board decides to pursue the Burke property for solar and if this proceeds to Town Meeting, a positive vote on the Burke site would be positive indicator that the Town has an appetite for more solar beyond the 5MWs recommended by the Committee.*

*Behind-the-meter rooftop solar on Town-owned buildings will enable us to increase our solar penetration further, however this will take time as the recommended strategy is for rooftop on new Town Construction or where feasible, in conjunction with major renovations. Additionally, there may be opportunities for additional ground mounted solar at two properties that may become Town-owned.*

*Life cycle cost of ownership evaluations were completed and indicate neutral or positive cash flow for ground-mounted solar. This means we can pursue ground mounted solar without burdening CMLP with new debt that cannot be offset with revenue. And, as for the battery, the cash flow is attractive, showing that we can support expansion of solar and storage in Concord in a positive financial way.*

*We determined that the grid vulnerability issues can be resolved via the addition of battery storage and that this investment will be cash flow positive, producing a stream of expense mitigation for CMLP, while shaving the peak for a significant sustainability contribution.*

*Lastly, removing the technical barriers opens the door to a brighter future with respect to privately-owned, residential, institutional and commercial solar in Concord which should see continued growth.*

## Detailed Back-Up on Key Findings

### Financial Trade-offs and Overall Financial Context

[Note: The detailed financials provided are current as of the date of this report. If CMLP energy costs or solar project costs change, this will vary the financial outlook for any given solar or battery project. Advances in technology, along with changes in subsidies, energy markets, and regulations will affect the financial feasibility of solar in our community.]

To evaluate the financial viability of solar of Town-owned properties, we need to understand CMLP's view of market value of a kWh ('the Energy Value'). Put another way, we need to understand the what CMLP is willing to pay for a kWh of solar energy, based on their estimate of the value of the various components'. These include (1) the average cost of energy purchased by CMLP, (2) the avoided cost of RECs which do not need to be purchased when we generate our own kWh's, and (3) the contribution of in-Town solar resources to reduced CMLP's ISO charges for Capacity and Transmission.

The market value assigned by CMLP is:

Cost of energy:	\$0.06
Cost of RECs:	\$0.025
Savings contribution at peak:	<u>\$0.025</u>
Total value:	\$0.11

This means that 11.0 cents/kwh is the highest acceptable cost for a kWh of solar that's generated on Town-property. Locally generated solar can support higher prices because the RECs that CMLP would otherwise need to purchase are bundled at time of generation and CMLP does not need to purchase these RECs. Additionally, Town-generated kWh's are not incurring peak related expenses (transmission and capacity) and this makes the in-Town kWh more valuable than a kWh sourced from an outside of Concord power contract.

As such, 11 cents/kWh is a threshold value. To be acceptable for investment, a kWh must achieve a cost that's lower than this rate.

<b>20-year</b>	<b>Ground Mount</b>	<b>Rooftop</b>
Wholesale Levelized Value of Solar Electricity	11.21 c/kWh	
Levelized Cost of Electricity from In-Town Solar	11.60 c/kWh	17.26 c/kWh

Whereas the ground-mount opportunity is costing a modest premium per kWh for each kWh generated over 20 years, the CCHS rooftop would cost an additional \$0.0605 per kWh with a loss of \$470,596 over the 20-year period. This demonstrates that rooftop installations are not financially viable under the models and assumptions presented here.

This is reinforced by cost models from the National Renewable Energy Laboratory (NREL), which show capital costs for ground-mount at \$1.50/watt, rooftop at \$2.50/watt, and parking canopies at \$3.50 per watt for installations ~0.5MW. This pretty much eliminates any site from contention for solar investment, except for ground mount.

## **Financial Model for Solar – Cash Flow and Assumptions**

Financial modeling of solar installations leveraged an industry standard tool from NREL. This tool incorporates weather files from National Solar Radiation Database (NSRDB) representing a complete collection of hourly and half-hourly meteorological data. Using these weather files in combination with nameplate capacity for a given solar installation location, the model generates the projected kWh generation for solar, incorporating projections for DC to AC conversion, system losses, and annual system degradation. Using annual generation and market energy pricing, revenues are calculated and compared to total expenses (including operating costs, reserves for inverter replacement, debt expenses net of IRA credits expected in year 2). The net cash flows are then evaluated to assess net present value, internal rate of return and levelized cost of energy over a 20-year time horizon.

Industry analysis of solar implementations from NREL indicates that ground mounted solar has an installation cost of roughly \$1.50/watt. In the STF models an additional 15%, or \$0.22/watt was included to recognize expenses associated with local siting, permitting and CMLP grid integration expenses. Financial modeling also included a pre-construction bridge loan, reserves for inverter replacement (year 10), and an assumption that an IRA credit would be received in year 2 and used to retire outstanding debt.

Using a 500 kWdc nameplate capacity, and the following assumptions, the STF has confirmed that a project of this size will generate a positive net present value (\$11K) for CMLP.

<i>System Parameter</i>		<i>Financial Parameters (20-yr period)</i>	
Nameplate capacity (kWdc)	500	Energy inflation rate	1.5%
Inverter efficiency	96%	Inflations rate	2.5%
Total system loss	16%	Real discount	3.5%
Annual degradation	0.5%	Nominal Discount (used for NPV)	6.09%
Installation cost (\$/Wdc)	\$1.72	Interest rate on reserves	1.25%
Inverter (\$/Watt)	\$0.15	IRA credit % (received in yr 2)	25.5%
Fixed cost by capacity (\$/kW-yr)	\$25	Debt term	15 yrs
		Interest on debt (%; level principal)	3.5%
Year 1 energy price	\$11.00	Pre-construction financing term (months)	6
Total Implementation Cost	\$861,750	Interest % on pre-construction debt	4.0%

## **Financial Model for Battery Storage – Cash Flow and Assumptions**

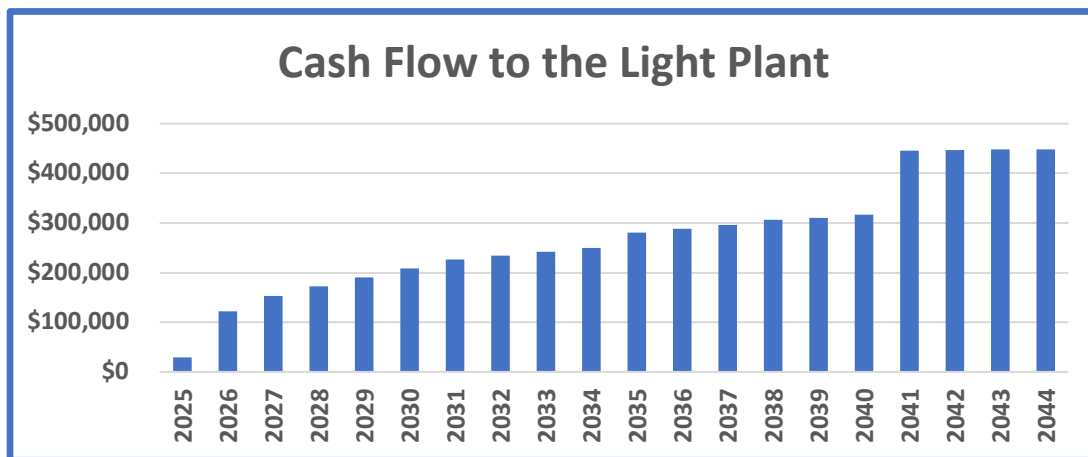
Modeling the financial value of a battery starts with estimating annual revenues represented by the market energy value of the battery annual kW hours plus the avoided ISO costs of capacity (ICAP) and transmission (RNS and LNS). In addition, revenue is calculated for energy arbitrage which represents the difference in energy value when the battery is discharged vs. when it is charged. These total revenues are then netted against total expenses (including operating costs, managed services, warranties, reserves for inverter replacement, and debt expenses net of IRA credits expected in year 2). The net cash flows are then evaluated to assess net present value and return on investment.

The model assumes that the full implementation cost is funded through debt. An IRA credit of 25.5% is expected to be received in year 2, which is subsequently applied to the principal and

revised bond schedule issued for 15 years. The installation costs include the energy storage system, engineering, warranties, managed services, shipping & duties, installation, and interconnection expenses.

Using a 2MW battery with 4 MWh energy and the following assumptions, the STF has confirmed that the project will have a positive net present value (\$289,044) and will provide positive rate returns to ratepayers.

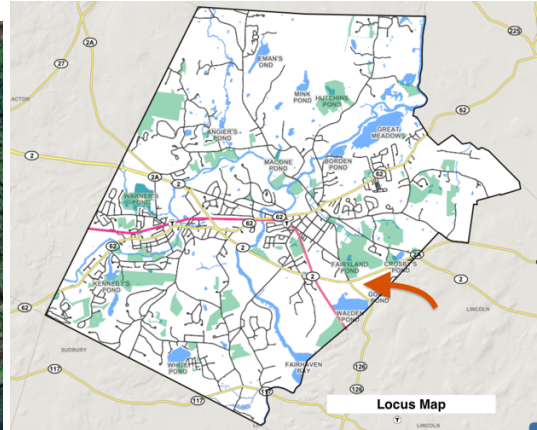
<i>System Parameter</i>		<i>Financial Parameters (20 yr period)</i>	
Power	2MW	Energy price	\$60/MWh
Energy	4 MWh	Energy inflation rate	1.5%
Inverter efficiency	97%	Inflations rate (O&M, warranties)	2.5%
RNS & LNS Accuracy	83%	Discount	5.0%
ICAP accuracy	90%		
Inverter (\$/Watt) yr 1/yr 10	\$0.22/\$0.10	IRA credit % (received in yr-2)	25.5%
Cycles per year (20%)	73	Debt term	15 yrs
Total Implementation Cost	\$2,700,175	Interest on debt (%; level principal)	4.0%



## **Ground Mount Solar Opportunities & Status**

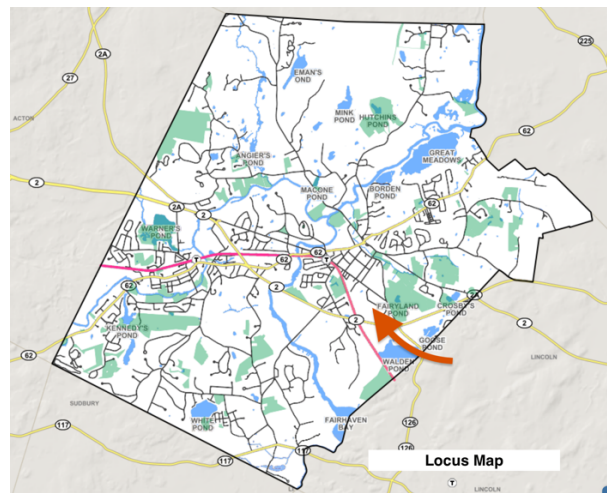
### **Concord Landfill**

The Landfill opportunity is adjacent to the existing 1.7MW array previously installed in 2017 and is currently being evaluated by CMLP. The evaluation of the site is expected to be complete by the end of June and is focused on the challenges of building a solar array on a landfill impermeable cap that is on a slope. If feasible, the expected capacity is between 1.5-2.0 MW.



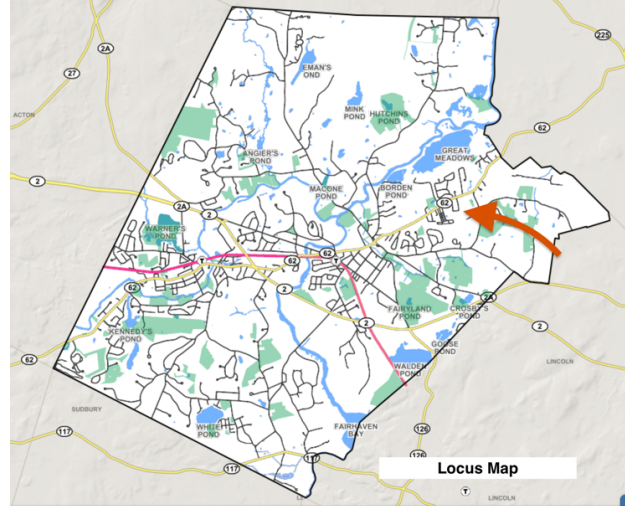
### **CCHS Stormwater Drainage Basin**

The CCHS Drainage Basin (darker vegetated area on the large field) was initially ruled out by the School Committee due to concerns over conformance with impervious surface guidelines and engineering modifications. We would like to have the CPW complete a technical review and provide guidance on whether the drainage basin is a site that is technically feasible for solar. The drainage basin could accommodate 0.5MWs of capacity and does not require additional storage.



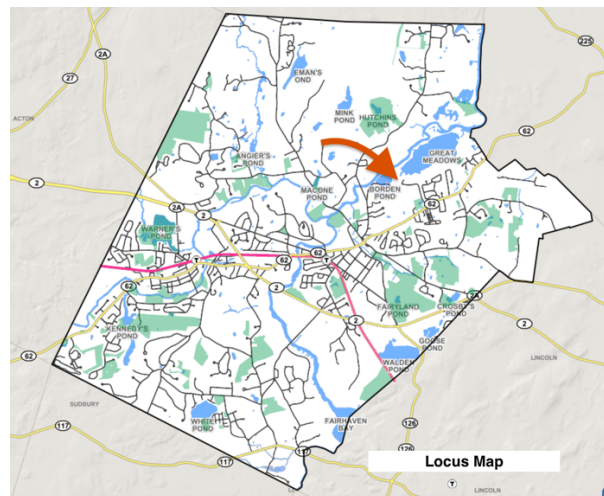
## Burke Land Agricultural Field

This Town parcel (11A Old Bedford Rd) is an 11-acre lot surrounded by conservation land to the west (Gowing's Swamp), the Ripley Building to the north, parking and ball field, and Heritage Swim and Tennis Club to the east. The STF proposed project would require roughly 2 acres. Possible capacity of 1.0MWs.



## The CPW Sewage Treatment Filter Beds

The existing and abandoned Wastewater Treatment Beds are a distinct possibility for solar but their availability is contingent on the disposition of the existing MCI facility and whether the existing MCI sewage treatment facility can be integrated with the Concord system. If available, technical feasibility and design could proceed. This property could provide an additional 2MW of solar capacity. Estimated date for determination of availability is 2027 with buildout possible by the 2030 target date of the Climate Action Plan.



## Schedule Elements

Project	Notice	Technical & Cost Assessment	TM Funding Approval	Bid Award	Construction Begins
Landfill Expansion	N/A	6/2024 - CMLP	4/2025	9/2025	Spring 2026
CCHS Drainage Basin <sup>8</sup>	5/2024	8/2024 – CPW 10/2024 – CMLP	4/2025	9/2025	Spring 2026
Burke Land	5/2024	7/2026 – CMLP	4/2027	9/2027	Spring 2027
Wastewater Filter Beds	5/2027 CPW	7/2027 - CMLP	4/2028	9/2028	Spring 2029
MCI Concord	By 2027 Select Bd	TBD			
2229 Main St	By 2030 Select Bd	TBD			

## **Roof Mounted Solar Opportunities**

The table below shows all rooftop opportunities on Town-owned buildings that are 10KW or larger. The total for these 10 opportunities is 3MW, which would count toward the Town's 20MW goal. With the exception of the CCHS and Beede rooftops, these capacity numbers need additional vetting. Additionally, each rooftop will need review to determine technical feasibility. These rooftops would not be the responsibility of CMLP. Rather the Town, and/or the respective Town Department, would need to make the decision to proceed. Funding in these cases would result in the use of funds raised through the tax levy (not CMLP ratepayers) unless other sources of non-tax funding can be found.

<b>Site Name</b>	<b>Approx. ft<sup>2</sup></b>	<b>Estimated Capacity (MW)*</b>	<b>Notes</b>
CCHS Rooftop	46,000	0.80	Strong potential for solar post feasibility study, built around rooftop equipment
CMLP Rooftop	30,000	0.52	**Pre-authorized in Article 64 from 2010 for solar deployment** Flat roof, limited equipment, limited tree shadow, southern orientation – targeted for roof replacement
Peabody Rooftop	30,000	0.52	Future is TBD, but strong potential for solar
Ripley Rooftop	25,000	0.43	Good southern orientation, multiple flat rooftops, limited equipment - might be torn down soon
Concord DPW Rooftops	21,000	0.36	**Pre-authorized in Article 64 from 2010 for solar deployment** Multiple buildings, advantageous for southern orientation and limited rooftop equipment, needs new roof, might be moved soon
Alcott Rooftop	20,000	0.35	Suitable rooftop on multiple levels
Beede Rooftop	15,000	0.26	Two levels, upper is wide flat space with no utility equipment, strong BTM potential
Thoreau Rooftop	12,000	0.21	Good southern orientation, multiple roof-faces, largest rooftop is flat with limited equipment
Harvey Wheeler Rooftop	10,000	0.17	Relatively flat, southern orientation potential but need to watch out for clock tower shadow
<b>Total</b>	<b>209,000</b>	<b>3.62</b>	<b>Sites selected are &gt;= 10k ft<sup>2</sup></b>

\* Estimated Capacity = Roof square footage/17.5 \* 0.000365 \*.83

\* Estimate based on 2016 NREL Study: [nrel.gov/docs/fy16osti/65298.pdf](http://nrel.gov/docs/fy16osti/65298.pdf)

\* Estimates represent maximum potential – actual number is potentially lower due to rooftop equipment, eaves, etc.

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<sup>1</sup> Digital switchgear provides additional flexibility by allowing solar generation to approach 100% of load without causing an outage. Clearly, we do not want this as an operational objective but the additional flexibility provides more insurance against a blackout.

<sup>2</sup> All financial modelling for both solar and battery storage has been performed using models from the National Renewable Energy Labs (NREL).

<sup>3</sup> The delays by Town Departments were both unanticipated and inexplicable. In the case of the School Committee, the initial outreach in early October yielded a response indicating no interest in pursuing the drainage basin site but interest in rooftop, referencing a Site Planning Committee Report. While we requested an opportunity to address the School Committee, the Chair was unwilling to entertain any engagement with our committee's designee and delayed discussion of solar at CCHS until January, and declined to invite anyone from the Solar Task Force to engage with the School Committee. In the meantime, the Administration and SC made it clear that they were not interested in cooperating with our efforts to move forward.

As far as CMLP is concerned, the former Director deflected our efforts to determine the feasibility of the landfill site until it was too late to find a suitable engineer for this study. The work required six weeks but sourcing for this engineer was delayed for five months which precluded having the results on a timely basis for use with our Town Meeting Article.

<sup>4</sup> When demand increases in the region, there are two alternatives to satisfy that additional demand. The Region can fire-up fossil-fuel based 'peaker plants' or the ISO participants can dispatch the renewable energy stored in their batteries at the time of the peak. The dispatched energy from the battery displaces the fossil-fuel based energy that would have been used at peak, obviating the need for it.

<sup>5</sup> There are two fundamental models for solar, from the perspective of interface to the Concord Distribution System or to any power retailer, such as Eversource, National Grid, etc. These are 'behind the meter' and 'grid connected'. The behind-the-meter model allows for the use of the energy by the site, offsetting the owner's need to purchase electricity at the retail energy rate. The interface to the distribution system is via net metering. When the array produces excess energy, it is compensated for at Concord's net metering rate. CMLP does not own any behind the meter systems, nor should it. In the grid-connected model, the energy flows directly to CMLP, for resale to CMLP rate payers.

<sup>6</sup> The National Renewable Energy Labs review of projects indicates that rooftop solar construction is \$2.50/watt of capacity vs. \$1.50 for ground-mounted solar, or 66% more expensive, while the cost of generating a kWh on a rooftop over 20 years is \$0.17/kWh vs \$0.11 for ground mount, or 53% more expensive.

<sup>7</sup> Increased by CMLP to 5MW/15MWhrs.

<sup>8</sup> Schedule beyond technical assessment by CPW dependent on change in position by the Concord Carlisle Regional School Committee

Town of Concord  
MCI Concord Advisory Board

**Goals**

The purpose of the Advisory Board is to educate and advise the Select Board on the most effective strategy to achieve a disposition of the MCI Concord property most favorable to the interests of the Town. The Board will rely on community input and the expertise of its members.

**Background**

The FY25 Recommended Governor’s Budget Bill explicitly includes the Closure of MCI Concord (Section 107) and provides for the sale, lease, transfer, or disposal of the property by the Commonwealth’s Commission of Capital Asset Management and Maintenance (DCAMM). The budget bill has not yet been approved and is moving through the process. It is reasonable to assume the budget bill will be approved late summer, 2024.

**Duration**

This board’s initial term will extend through December 2025. The work will coincide with DCAMM’s Discovery Phase and the first round of Assessment Reports from DCAMM consultants. At this time, the work of the board could expand, and a new charge will be written by the Select Board based on the recommendations made by this Advisory Board. The Select Board will also consider modifications to the board’s initial term as needed and at least every six months.

**Duties**

- Begin community outreach to learn the preferences of Concord residents and create a foundation for informed, sustained dialogue with townspeople. Hold at least one public forum to solicit community ideas.
- Convene listening sessions, focus groups and interviews with community stakeholders to deepen understanding of the site and identify the opportunities and challenges of the site.
- Coordinate and communicate with DCAMM. Serve as a community voice to DCAMM efforts regarding the site.

- Explore other state agencies (MAPC, Mass Development, MADOT, etc.) and advise the Select Board on how to integrate their services.
- Determine the criteria and priorities of the town to evaluate potential scenarios should the project advance into the Planning Phase.
- Research “Best Practices” from successful state projects and “What to Avoid” from failed – or delayed – projects.
- Work with the Town Manager’s MCI staff team to highlight municipal needs, opportunities, and concerns. e.g. Waste Water Treatment Facility.
- Keep abreast of legislation and legislative hearings to propose and/or respond to potential changes.
- Explore funding opportunities to offset lost PILOT, utility and any other revenues as well as funds for planning efforts.
- Develop likely scenarios and the fiscal impacts to the town from incremental revenues and demands on services.
- Evaluate short and longer-term zoning methods available.
- Review available traffic and transportation studies, including the Route 2 Corridor Study, and recommend other new studies if needed.
- Identify and recommend local stakeholders and community experts who can be considered for advancement to the next phase of the project, if applicable.
- Provide quarterly, written reports to the Select Board.
- Recommend duties and membership if/when the Advisory Board’s charge expands.

## Membership

Membership will consist of 7 - **9-10** Concord residents, appointed by the Select Board, who collectively bring the following skills:

### Voting Members:

- Community Outreach
- Ability to navigate complex problems with diverse stakeholders.
- Real Estate and Zoning Law
- Economic Development
- Urban Planning
- Administrative and Regulatory Practice
- Housing, esp. vis-à-vis Junction Village
- Local Business perspective

- Select Board member or designee

Notwithstanding the provisions of Article III of APP#10, the Select Board will appoint the Chair of the Advisory Board. The Advisory Board will appoint its own clerk.

Ex-Officio (non-voting) membership:

- Town Manager or her designee(s)
- Concord DPW Director or his designee
- Finance Committee Observer
- At-large appointees by the Select Board as needed

### **Other Considerations**

The Board is encouraged to use sub-committees to focus on specific tasks or areas of research. Furthermore, the Board has the discretion to recommend which duties outlined in this charge should be deferred to the Planning Phase of the project.

The Committee shall comply with the provisions of the Open Meeting Law, the Public Records Law, the Conflict-of-Interest Law and all other applicable laws and regulations of the Commonwealth as well as all relevant Bylaws and Administrative Policies of the Town. Because of the need to engage the best qualified persons for the function of the Advisory Board, some of whom may be, of necessity, currently serving on other Town Boards or Committees, Articles VII(a)(14) (Staggered terms); (c) Dual Appointments; and (d) Committee Transfer(s) will not apply to the Advisory Board.



For a thriving New England

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**BY ELECTRONIC DELIVERY ONLY**

June 14, 2024

Secretary Rebecca Tepper  
Executive Office of Energy and Environmental Affairs  
100 Cambridge Street, STE 900  
Boston, Massachusetts 02114

Re: EEA No. 16654—L.G. Hanscom Field North Airfield Development, Bedford MA  
Conservation Law Foundation Comment on Draft Environmental Impact Report

Dear Secretary Tepper:

Airports have significant pollution impacts on the communities surrounding them, and aviation is a major source of greenhouse gas emissions.<sup>1</sup> Limiting the expansion of airport operations, including Massport’s Boston Logan and L.G. Hanscom Field airports, is essential to curbing these harmful pollution sources. If our Commonwealth is to meet its legal obligations to communities and the fight against climate change, the Executive Office of Energy and Environmental Affairs (“EEA”) must ensure that environmental review of Massport projects accounts for these impacts.

Conservation Law Foundation (“CLF”)<sup>2</sup> and [X] undersigned organizations and [X] individuals appreciate the opportunity to provide comments on Runway Realty Ventures, LLC and North Airfield Ventures, LLC’s (“Proponents”) L.G. Hanscom Field North Airfield Development, Bedford Massachusetts, Draft Environmental Impact Report (“the DEIR”) as filed on March 15, 2024 pursuant to the Massachusetts Environmental Policy Act (“MEPA”)<sup>3</sup> and accompanying MEPA regulatory process<sup>4</sup> before EEA.

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<sup>1</sup> Neelakshi Hudda, *et al.*, *Impacts of Aviation Emissions on Near-Airport Residential Air Quality*, 54 ENVIRONMENTAL SCIENCE AND TECHNOLOGY 14 (2020).

<sup>2</sup> CLF is a non-profit, member-supported environmental advocacy organization working in Massachusetts and across New England to protect our environment for the benefit of all people, to build healthy communities, and to sustain a vibrant economy.<sup>2</sup> CLF works throughout New England to advance policies and decision-making that reduce greenhouse gas (“GHG”) emissions and incentivize clean energy resources.

<sup>3</sup> M.G.L. c. 30, §§ 61-62L.

<sup>4</sup> 301 CMR 11.00.

The DEIR fails to meet the standard for the Secretary’s determination of adequacy pursuant to 301 CMR 11.08(8)(b), and CLF respectfully requests that the Secretary require the Proponents to file a Supplemental Environmental Impact Report in accordance with 310 CMR 11.07 that addresses all DEIR inadequacies outlined below. The Commonwealth’s mandatory net-zero emissions limit by 2050 cannot succeed if all climate impacts to the environment are not fully considered by a DEIR filed before the EEA. It is imperative that EEA assess both climate impacts<sup>5</sup> and community concerns that are prevalent in the Proponent’s request to expand capacity for private corporate jet hangars at Hanscom Field (the “Project”).

## I. Introduction

The proposed project requires the development of aircraft hangar space, including construction of aircraft hangars, and renovation of an existing hangar building. Vehicular roadways will be constructed, parking spaces will be created in several lots across the site, and an aircraft roadway will be newly constructed between the site and Hanscom’s Taxiway R to provide access for aircraft between the site and the airport. In short, the proposed project will *double infrastructure* on behalf of private luxury jetowners at Hanscom, represent the largest single development in Hanscom’s history, dramatically increase private jet flights to and from Hanscom, and provide an avenue for continued, future growth of the private luxury jet industry in our Commonwealth.

In response to the project’s proposed scope, EEA received over 350 comment letters from legislators, local officials, residents, and community groups expressing significant concerns about the proposed project, including increased capacity for Hanscom to accommodate more flights, the proposed project’s contribution to greenhouse gas emissions contrary to the state’s mandatory climate targets, and other environmental and public health impacts of increased Hanscom operations affecting residents (including those within an environmental justice communities), historical and cultural resources, water supplies and wildlife habitat and recreational activities.<sup>6</sup>

On February 24, 2023, Secretary Tepper determined pursuant to the Massachusetts Environmental Policy Act (“MEPA”), M.G.L. c. 30 ss. 61-62L and Section 11.06 of the MEPA Regulations, 301 CMR 11.00 that project proponents needed to prepare a draft environmental impact report (“DEIR”) subject to certain requirements as outlined in the ENF and MEPA.<sup>7</sup>

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<sup>6</sup> Certificate of the Secretary of Energy and Environmental Affairs on the Environmental Notification Form, *L.G. Hanscom Field North Airfield Development*, EEA #16654, (February 24, 2023) at 1.

<sup>7</sup> *Id.*

## II. Inadequacies of the Draft Environmental Impact Report (“DEIR”)

The Draft Environmental Impact Report (“DEIR”) contains numerous inadequacies warranting a determination that such DEIR is inadequate and requiring the proponents to file a supplemental draft EIR in accordance with 30 CMR 11.07. Specifically, Secretary Tepper’s February 24, 2023 DEIR determination mandated four requirements:

- Detailed project description, data, analyses supporting the proponents’ assertion that the project will reduce the number of flights at Hanscom;
- Analysis of the project’s impacts with respect to: Air emissions....[and] water quality...;
- Evaluation of climate risks affecting the project site;<sup>8</sup> and
- An assessment of potential environmental and public health impacts and mitigation measures pursuant to 301 CMR 11.07(3).

The proponents’ DEIR fails to comply with all four of these requirements as requested by the Secretary in the ENF and as required by MEPA.

### A. The Assertion that the Proposed Project Will Reduce the Number of Flights at Hanscom is a *Non Sequitur* Fallacy

#### 1. Increasing Hangar Space Will Induce Demand for General Aviation at Hanscom

The paradox of creating more aircraft hangar space to accommodate private jets at Hanscom is that it will create less hangar availability and increase the number of private flights – akin to parking availability at home having a strong association with car ownership and use, and how availability of office parking correlates with more employees driving to work alone.<sup>9</sup> In fact, there “is a strong case for reducing parking capacity in urban areas, particularly as a means for curbing high levels of automobile use”<sup>10</sup> – which has similar implications for aircraft hangar “parking” and high levels of aircraft operations and flights to and from Hanscom. The proponents’ assertion that an increase in aircraft hangar space will reduce the number of flights to and from Hanscom is misleading, as even if the assumption that some ferry flights will be reduced is true, the proponents’ have clearly

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<sup>8</sup> *Id.*

<sup>9</sup> Emily Badger, *Economic Policy: The Problem with Too Much Parking*, The Washington Post (January 15, 2016).

<sup>10</sup> Chris McCahill, *Effects of Parking Provision on Automobile Use in Cities: Inferring Causality*, Submitted to the Transportation Research Board (November 13, 2015), available at <https://highroad.wisc.edu/wp-content/uploads/sites/1368/2020/04/2015-Effects-of-Parking-Provision-on-Automobile-Use-in-Cities-Inferring-Causality.pdf>.

failed to consider the convenience of Hanscom storage of aircraft serving as an incentive for increased aircraft flights amongst private jet owners

2. The Delivery of 10,000 to 20,000 gallons of Jet Fuel Per Day Will Induce Demand for General Aviation at Hanscom

The delivery of 10,000 to 20,000 gallons of jet fuel per day seemingly would support the assertion that *increased* aircraft operations will occur, not that the number of flights will be reduced as incorrectly asserted in the DEIR. Increased aircraft operations are certainly anticipated as the proposed project seeks to replace an existing fuel storage tank with four, new 20,000-gallon jet fuel tanks as well as one 5,000-gallon underground fuel storage tank. The DEIR’s failure to account for human behavior—the incentives of both hangar space and expanded fuel capacity—and only consider FAA projections of private jet travel forecasting severely underestimates future aircraft operations at the jetfield.

3. The Proposed Project’s Net Zero Claims Fail to Account for Aircraft Emissions and Convenience of Aircraft Storage and Jet Fuel Availability

Finally, as discussed *infra.*, the assertion that the proposed project is net-zero is net-zero greenwash. While the proponents allege “net zero design elements” such as electrified buildings, tree planting, and on-site solar photovoltaic systems, the proposed project will simultaneously result in hundreds of thousands of tons of aircraft emissions – far from a net zero claim.

On its face, the proponents’ assertion that the proposed project will create a reduction in the number of flights at Hanscom is an unsupported *non sequitur* fallacy that needs to be re-evaluated and appropriately analyzed by taking into consideration aircraft emissions and the convenience of aircraft storage and ample jet fuel availability incentivizing future aircraft flight operations. The failure to consider these factors constitutes sufficient grounds for the Secretary to deem the DEIR inadequate under MEPA.

B. Failure to Include Quantitative Analysis of GHG Emissions from Aircraft Renders the DEIR Inadequate

1. Violations of MEPA and MEPA Policy

a. Greenhouse Gas (“GHG”) Emissions

All proponents’ data and analyses regarding the proposed project are incomplete due to the intentional exclusion of GHG emissions and other significant sources of pollutants

emitted from aircraft taking off and landing at Hanscom. Failure to include aircraft emissions significantly skews proponents' data and analyses quantifying emissions of the proposed project. The proponents' failure to include aircraft emissions from increased operations in the project analyses also violates MEPA GHG policy, which clearly requires analysis of both direct and indirect emissions.<sup>11</sup>

#### b. Non-GHG Emissions

The combustion of jet fuel creates significant quantities of other gases and pollutants in addition to CO<sub>2</sub>, such as NO<sub>x</sub>, CO, SO<sub>x</sub>, unburned or partially combusted hydrocarbons known as VOC, particulates, and other trace compounds.<sup>12</sup> All such gases and pollutants must be quantitatively analyzed and both reduction and mitigation measures sufficiently identified in alignment with MEPA GHG policy. Under MEPA statutory requirements, MEPA GHG policy and protocol, and ENF requirements, the proponents' GHG emissions data is inadequate and must be re-done in a supplemental DEIR.

The failure to account for other significant pollutants and trace compounds stemming from jet engines does not provide an adequate assessment of potential environmental and health impacts due to the proposed project. The failure to account for these additional pollutants has significant ramifications for people who live near the jetfield. Communities surrounding Hanscom will suffer environmental and public health impacts because of existing and expanded aircraft operations, as studies have consistently shown elevated levels of black carbon, criteria pollutants, ultrafine particulate matter, and polycyclic aromatic hydrocarbons occur within communities surrounding airports.<sup>13</sup> In a systematic review of peer-reviewed literature on air quality near commercial airports, a number of adverse health effect impacts were identified, including increased rates of premature death, pre-term births, decreased lung function, oxidative DNA damage, and childhood leukemia.<sup>14</sup>

Quantification and analysis of aircraft emissions due to the proposed project and accompanying increased aircraft operations are essential. Without such analysis, the DEIR provides an inadequate assessment of the proposed project's environmental impacts. See, *i.e.*, N. Hudda, *Aviation-Related Impacts on Ultrafine Particle Number Concentrations Outside and Inside Residences Near an Airport*, 52 *Environmental Science and Technology* 4, 1765-1772 (2018), available at <https://pubs.acs.org/doi/epdf/10.1021/acs.est.7b05593>

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<sup>11</sup> MEPA Greenhouse Gas Emissions Policy and Protocol at 3.

<sup>12</sup> Jermanto S. Kurniawan, *Comparison of Methodologies Estimating Emissions of Aircraft Pollutants*, *Environmental Impact Assessment Around Airports*, 31 ENVIRONMENTAL IMPACT ASSESSMENT REVIEW 3 (April 2011), at 240-252.

<sup>13</sup> Karie Riley *et al.*, *A Systematic Review of the Impact of Commercial Aircraft Activity on Air Quality Near Airports* 11 CITY AND ENVIRONMENT INTERACTIONS 100066 (August 2021).

<sup>14</sup> *Id.*

(aircraft engine exhaust emissions are a significant source of ultrafine particles and can cause several-fold increases in ground-level particle number concentrations (“PNC”) over large areas downwind of airports; impact-sector winds increased both outdoor and indoor PNC within Boston Logan International Airport study area).

The DEIR must consider all air pollution emissions within the surrounding communities of Hanscom jet field, such as the results of the ongoing Air Quality Study currently being conducted by Professor Neelakshi Hudda, Ph.D., Department of Civil and Environmental Engineering at Tufts University, who has been commissioned by the four Hanscom-area towns, the Hanscom Field Advisory Committee, and Massport Community Advisory Committee. The results of this study are of particular relevance to the proposed project, as it reviews five particles with chemical signatures specifically associated with jet aviation fuel emissions; it *must* be considered as part of the project’s environmental impact assessment within a supplemental DEIR. The DEIR’s failure to include an evaluation of how jet aviation fuel emissions impact communities surrounding Hanscom jetfield constitutes an insufficient analysis of potential environmental and public health impacts, warranting a determination that the DEIR is inadequate and necessitates a supplemental DEIR filing pursuant to 30 CMR 11.07.

## 2. Contradiction of the GWSA Climate Law and Public Policy

The Global Warming Solutions Act (“GWSA”)<sup>15</sup> is one of the most robust climate change laws in the nation, positioning the Commonwealth as a leader in climate change solutions and a future built on clean, renewable energy. The Roadmap Law<sup>16</sup> amended the GWSA to impose a net-zero emissions mandate, and the subsequent 2022 Energy Law<sup>17</sup> established new measures for clean energy, energy efficiency, and transportation emissions.

The Massachusetts 2050 Decarbonization Roadmap<sup>18</sup> (“2050 Roadmap”) was published by the EEA in response to the Roadmap Law, further cementing the Commonwealth’s public policy position toward an electrified future and transition away from fossil fuels. The electrification of light-duty transportation, and medium and heavy-duty transportation, aviation, and shipping were specifically identified within the 2050 Roadmap as core strategies to achieve net zero. Emission from medium and heavy duty

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<sup>15</sup> St. 2008, c. 298.

<sup>16</sup> St. 2021, ch. 8.

<sup>17</sup> St. 2022, c. 179.

<sup>18</sup> Massachusetts Executive Office of Energy and Environmental Affairs, *Massachusetts 2050 Decarbonization Roadmap*, (December 2020), available at <https://www.mass.gov/doc/ma-2050-decarbonization-roadmap/download>.

(“MHD”) vehicles, aviation and rail were acknowledged by the 2050 Roadmap as “mak[ing] up a considerable portion of the [state’s] GHG inventory” and:

...[I]f left reliant on fossil fuels, emissions from these subsectors alone would approach Massachusetts’ statewide 2050 emissions limit. Compared to [light-duty vehicles], the technological solutions are less certain, and in the next 30 years, most vehicles in these classes [MHD, aviation, and rail] will only turn over once, ideally coinciding with commercial availability of a suitable, competitively priced zero-emissions alternative...the Commonwealth, together with regional and federal partners, must pursued strategies that encourage decarbonized options...<sup>19</sup>

The state’s adoption of the Advanced Clean Cars II (ACC II) rule last year is projected to reduce well-to-wheel<sup>20</sup> CO<sub>2</sub> emissions through 2040 by 94.3 metric tons from the light-duty vehicles alone.<sup>21</sup> Yet, in a study conducted between January 2022 and July 2023, 31,599 private flights were taken by 2,915 jets at Hanscom field, amounting to a whopping 106,676 metric tons of CO<sub>2</sub> emissions in only 18 months – in effect, cancelling out all light-duty vehicle ACC II benefits through 2040 less than two years after adoption of the rule.

Using the most recent GHG reduction estimates by the Commonwealth as provided within its Priority Climate Action Plan (“PCAP”), the projected annual reduction of carbon emissions in 2030 from light-duty vehicles is projected to be 2.00 MMTCO<sub>2</sub>e, with a cumulative reduction of 155.87 MMTCO<sub>2</sub>e between 2025 and 2050.<sup>22</sup> The PCAP further outlines the carbon emissions “savings” realized through 2030 and between 2025 and 2050 with MDH vehicles and alternatives to personal vehicles (*i.e.*, rail, passenger van service, e-bikes, ride-share programs, etc.):

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<sup>19</sup> *Id.* at 43.

<sup>20</sup> Well-to-wheel emissions include all emissions related to fuel production, processing, distribution, and use. See, U.S. Department of Energy, *Emissions from Vehicles – Alternative Fuels Data Center*, at <https://afdc.energy.gov/vehicles/electric-emissions#:~:text=Well%2Dto%2Dwheel%20emissions%20include,and%20burning%20it%20in%20vehicles>.

<sup>21</sup> The International Council on Clean Transportation, *Fact Sheet United States: Benefits of Adopting California’s Advanced Clean Cars II (ACC II) Standards in Massachusetts* (May 2023), available at <https://theicct.org/wp-content/uploads/2023/05/ma-acc-ii-benefits-fs-may23.pdf>.

<sup>22</sup> Office of Climate Innovation & Resilience and Department of Transportation, *Massachusetts Priority Climate Action Plan, Submitted to the Environmental Protection Agency* (March 2024) at 53, available at <https://www.epa.gov/system/files/documents/2024-03/massachusetts-pcap.pdf>.

Projected annual GHG Reductions in 2030:

MHD Vehicles:	0.14 MMTCO <sub>2</sub> e
Light Duty Vehicles:	2.00 MMTCO <sub>2</sub> e
Alternatives to Personal Vehicles:	0.40 MMTCO <sub>2</sub> e

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Total: 2.54 MMTCO<sub>2</sub>e carbon emissions ‘savings’ through 2030

The Hanscom jetfield proposed expansion project, however, is estimated to result in a *net increase* in annual GHG emissions of 133,643 to 161,348 metric tons of CO<sub>2</sub>e (where the low end of this range reflects an added 66 jet aircraft at Hanscom combined with high-end estimate of avoided emissions from eliminated ferry flights, and the high end of the range reflects an added 79 jet aircraft at Hanscom based on the low-end estimate of avoided GHG emissions from eliminated ferry flights).<sup>23</sup>

The proponents’ reliance on national and local economic trends to conclude that flight operations will be unaffected by the proposed project and will thus result in a net GHG savings (due to avoided ferry flights) is misplaced. In a recent study of the proposed project, analysis strongly suggests that expansion of hangar capacity at Hanscom jetfield would lead to a *significant* increase of aviation-related CO<sub>2</sub> emissions, concluding that the emissions associated with full utilization of planned capacity far outweighs any emissions savings (*i.e.*, that the increase in GHG emissions from additional based aircraft at Hanscom would be 950 to 3,900 times greater than the GHG emissions avoided from eliminated ferry flights).<sup>24</sup> These figures completely defeat the transportation electrification efforts from all other non-aviation transportation sector classes. The proponents’ proposed project is not exempt from the requirements of the GWSA Climate Law and the significant carbon emissions contributions of the proposed project to state greenhouse gas emissions is in gross contradiction of the GWSA Climate Law, Roadmap Law, 2050 Roadmap and the Commonwealth’s public policy of low-and zero-emissions transportation incentivization and infrastructure development.

The failure of the proponents to include accurate GHG emissions data from the proposed project in the context of the GWSA Climate Law, Roadmap Law, 2050 Roadmap and other public policy documents supporting transportation electrification (*i.e.*, Clean

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<sup>23</sup> See CLF Exhibit 3, Industrial Economics, Incorporated, *Analysis of Greenhouse Gas Emissions Impact of Proposed Expansion of Hangar Capacity at Hanscom Field* (April 4, 2024) at 19.

<sup>24</sup> *Id.*, at 23.

Energy and Climate Plans<sup>25</sup>) is a remarkable omission warranting the Secretary’s declaration of the DEIR as inadequate pursuant to MEPA. The DEIR’s failure to quantify aircraft emissions and contaminants pursuant to MEPA and MEPA GHG Policy and Protocol does not provide a sufficient analysis of potential environmental and public health impacts, warranting a determination that the DEIR is inadequate necessitating a supplemental DEIR filing pursuant to 30 CMR 11.07.

### 3. Superfund, MassDEP Sites Environmental Impacts Certain, Yet Inadequately Analyzed

The proposed project falls within the boundaries of two federal Superfund sites, as well as a MassDEP disposal site. The National Environmental Policy Act (“NEPA”)<sup>26</sup> review process for the proposed project is anticipated to “further evaluate the impact categories of Hazardous Materials, Solid Waste, and Pollution Prevention...specifically, the NEPA review process will address the following, per FAA Order 1050.1F<sup>27</sup>:

- Waste streams generated by the Project and the potential for the wastes to impact environmental resources, as well as impacts on waste handling and disposal facilities that would likely receive the wastes;
- Potential hazardous materials that could be used during construction and operation, and applicable pollution prevention procedures;
- Potential to encounter existing hazardous materials at contaminated sites during construction, operation, and decommissioning; and
- Potential to interfere with any ongoing remediation of existing contaminated sites at the [proposed project site] or in the immediate vicinity.”<sup>28</sup>

While the NEPA process of review operates separately from the Commonwealth’s MEPA of review, the mere involvement of federal agencies and their respective federal review and requirements warrant delay until the NEPA review process formally concludes; only at that time can the DEIR appropriately inform and provide proper consideration of environmental impacts and accompanying remedies. Waste streams, hazardous

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<sup>25</sup> Executive Office of Energy and Environmental Affairs, *Massachusetts Clean Energy and Climate Plan for 2025 and 2030* (June 30, 2022), available at <https://www.mass.gov/doc/clean-energy-and-climate-plan-for-2025-and-2030/download>.

<sup>26</sup> 42 U.S.C. § 4321 *et seq.*

<sup>27</sup> U.S. Department of Transportation, Federal Aviation Administration, *Environmental Impacts: Policies and Procedures*, Order 1050.1F (July 16, 2015), available at [https://www.faa.gov/documentlibrary/media/order/faa\\_order\\_1050\\_1f.pdf](https://www.faa.gov/documentlibrary/media/order/faa_order_1050_1f.pdf).

<sup>28</sup> VHB c/o Runway Realty Ventures, LLC & North Airfield Ventures, LLC, L.G. Hanscom Field North Airfield Development, Bedford, Massachusetts, *Draft Environmental Impact Report*, EEA No. 16654 (March 2024) at Chapter 10.

materials, and interference of ongoing remediation (i.e., Superfund cleanup sites) are all matters of concern to be appropriately addressed within the DEIR. As the NEPA process has not yet concluded, the DEIR is on its face unable to provide a full understanding of environmental impact assessment and mitigation measures under MEPA – and thus inadequate under 301 CMR 11.00 *et seq.*

The DEIR inadequately assesses the impact of disturbing remedial Superfund activities at the MassDEP disposal site. While the cleanup work affiliated with the federal Superfund sites fall within the purview of the U.S. Air Force and the U.S. Navy, in alignment with several federal agency requirements, a sole August 2023 group conference call<sup>29</sup> and parroting of information from federal agency websites<sup>30</sup> is insufficient to properly provide an appropriate understanding of water and environmental quality impacts due to the proposed project.

Currently, the U.S. Air Force has ongoing long-term monitoring of groundwater and surface water at the Operable Unit 1 and 2 sites (notably, only Operable Unit 1 falls within the boundaries of the proposed project). Remedial activities also include injections of chemical oxidant for treatment of chlorinated volatile organic compounds as well as the installation of filter socks with concentrated oxygen release compounds, for treatment of petroleum hydrocarbons.<sup>31</sup> However, due to the extent of emerging contaminants perfluorooctane sulfonate and perfluorooctanoic acid, the Air Force determined a need for a remedial investigation as of late 2022 for per-and polyfluorinated (“PFAS”) substances<sup>32</sup> – dangerous ‘forever chemicals’ that can move through both soil and water without degrading – as well as the emerging contaminant 1,4-dioxane.<sup>33</sup> While the last 5-year review for Operable Unit 1 was conducted in late 2022 and appeared to be in compliance, site contaminants remain in high concentrations.<sup>34</sup> The disturbance of this site by the construction and future operations of the proposed project is concerning, as high concentrations of these site contaminants present and have significant implications for environmental harm.

In addition, the Navy Weapons Industrial Reserve Plant Site 4 has included a variety of remedies by the Navy since 2009, including selective excavation of the source area as a result of investigation sampling; on-site treatment of such excavated soil or off-site

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<sup>29</sup> *Id.* at 10.1.

<sup>30</sup> *Id.* at 10.2.1.1.

<sup>31</sup> U.S. Environmental Protection Agency, *Superfund Site: Hanscom Field/Hanscom Air Force Base, Bedford, MA* (last accessed April 27, 2024), available at <https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&id=0100967#Status>.

<sup>32</sup> PFAS chemicals have the ability to remain in the human bloodstream for years, posing significant health risks.

<sup>33</sup> *Supra* note 25.

<sup>34</sup> *Supra* note 22 at 10.2.2.

disposal of the same; application of enhanced bioremediation measures within the excavated source area, and monitoring of pollutant concentrations in groundwater, including long-term groundwater quality monitoring.<sup>35</sup> Five-year reviews are currently ongoing by the U.S. Navy, alongside EPA and MassDEP, “until site conditions are suitable for unlimited use and unrestricted exposure.”<sup>36</sup> Coupled with the most-recent semi-annual groundwater monitoring report affirmed continued presence of contaminants requiring continued long-term monitoring and testing, this warrants no disturbance of the Naval Weapons Industrial reserve Plant Site 4 at all.

Finally, on May 9, 2024, the U.S. Air Force sent a notice<sup>37</sup> to Bedford neighborhoods near drilling sites for PFAS sampling on Hanscom jet field and the Bedford Hartwell Town Forest and the Jordan Conservation Area (both bordering the North Airfield). PFAS sampling is anticipated to occur through August 2024, and will likely continue long-term by the Air Force for monitoring of PFAS levels. The results of this and all future reports by the Air Force regarding PFAS and other water contamination found on Hanscom jet field should be considered by the proponent in a supplemental EIR. In addition, community concerns regarding the groundwater must be acknowledged as an environmental impact within a supplemental EIR, as future water access issues due to climate change may arise. *See, i.e., Comments of Cindy Arens, Chair, Sustainable Lexington Committee*, EEA No. 16654 – L.G. Hanscom Field North Airfield Development, Bedford (April 25, 2024).

The environmental and public health impacts of the proposed project’s construction warrants delay of the proposed project until all sites are remedied – both Superfund sites and the MassDEP site. The DEIR’s failure to quantify aircraft emissions and contaminants pursuant to MEPA and MEPA GHG Policy and Protocol does not provide a sufficient analysis of air and water quality impacts due to the proposed project’s construction and operations on or around both Superfund sites and the MassDEP site.

#### 4. Last Minute Federal and State Endangered Species Act Analysis Will Fail to Include Impact of Aircraft Emissions

Proponents intend to conduct a last-minute review of the Massachusetts Endangered Species Act (MESA)<sup>38</sup> prior to construction of the proposed project and leave federal Endangered Species Act<sup>39</sup> consultation as an afterthought during the NEPA review process. Both Acts seek to protect rare species and their habitats, with respect to both

<sup>35</sup> *Supra* note 22 at 10.2.1.2.

<sup>36</sup> *Id.*

<sup>37</sup> U.S. Air Force, 66<sup>th</sup> Air Base Group, Air Force Civil Engineer Center, *Installation Restoration Program: Neighborhood Notice* (April 24, 2024).

<sup>38</sup> M.G.L. c. 131A; 321 CMR. 10.00.

<sup>39</sup> 16 U.S.C. § 1531 *et seq.*

animals and plants. The failure to quantify aircraft emissions and its accompanying pollutants due to the proposed project prevents an understanding of the extent of this aviation environmental pollution upon areas surrounding Hanscom jetfield.

Both priority habitats of rare species (for use with MESA) and estimated habitats of rare wildlife (for use with the Massachusetts Wetlands Protection Act, or “MWPA”<sup>40</sup>) entirely surround communities surrounding Hanscom jetfield, including the Towns of Concord, Bedford, Lincoln, Acton, Wayland, and Sudbury.<sup>41</sup> With respect to the Town of Concord alone, there are over 50 species<sup>42</sup> of animals and plants that are of special concern, endangered, or threatened under MESA. Proponents do not account for the impact of aircraft emissions and pollutants upon nearby species, habitats or wetlands, and have presented a DEIR that solely views environmental impact through the lens of project construction. This alone is sufficient grounds for the Secretary’s determination of the DEIR as inadequate, as the magnitude of aviation operations emissions have profound potential to impact endangered species, their habitats, and nearby wetlands.

#### C. The No-Build Option Must be Considered as a Viable Alternative After Appropriately Considering the Impact of Aviation Emissions from Increased Aircraft Operations

MEPA regulations require applicants to provide “[a] description and assessment of physical, biological, and chemical measures and management techniques designed to limit negative environmental and public health impacts [and specify in detail] the measures to be taken...to avoid, minimize, and mitigate potential environmental and public health impacts.” The proponents view that the no-build option is not a viable alternative due to the proposed project meeting a purported private jet aviation industry need is unwarranted. As discussed above, the construction of the proposed project will certainly result in an increase in aviation emissions, contrary to Commonwealth transportation decarbonization goals and GWSA climate law mandates. In addition to contributing to the worsening of climate change, construction of the proposed project will increase aircraft operations at the expense of surrounding communities’ public health, including pollutant seepage into groundwater, the ground, and atmosphere. The proponents’ assertion that the proposed project is necessary to meet economic and private aviation sector needs is wholly inadequate. Based on the information provided and reasonably available to commenters, the no-build option would meet the Commonwealth’s public policy requirements and the Proposed Project would not.

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<sup>40</sup> M.G.L. c. 131 § 40; 310 CMR 10.00

<sup>41</sup> See CLF Exhibit 1.

<sup>42</sup> See CLF Exhibit 2.



### III. Conclusion

For the reasons provided herein, CLF and the undersigned request that you determine that the proponents did not adequately and properly comply with the requirements of MEPA and its implementing regulations. Specifically, we request a determination that the DEIR is inadequate and that the proponents be required to file a supplemental DEIR in accordance with 310 CMR 11.07, providing the necessary additional information described herein. Further, we request that the supplemental DEIR follow the conclusion of NEPA, MESA and MWPA reviews, federal Superfund site remediation, and Massport's overdue 2022 Environmental Planning and Status Report ("ESPR") filing. Delaying a supplemental DEIR until these processes are complete will provide the Secretary with important updates on Hanscom operations and long-range projections of environmental conditions and, for the first time, resilience and mitigation measures. Finally, with respect to the Massport 2022 ESPR filing, the proponents should be required to consider all alternative analyses for the proposed project, using data on environmental trends as provided by the 2022 ESPR.

Sincerely,

Katherine Lee Goyette  
Staff Attorney  
Conservation Law Foundation

## Concord ~~Select Board~~Select Board Citizen Correspondence Publication Policy

~~October 3, 2022~~May 20, 2024

### Purpose

Letters from Concord citizens to the ~~Select Board~~Select Board enhance participation in town government and sharpen the debate on current issues. Citizen correspondence complements other input, such as verbal public comment during ~~board~~Select Board and committee meetings, citizen feedback in public forums and informal discussions between members of the public and individual ~~board~~Select Board or committee members.

According to the Commonwealth's Division of Open Government, the manner that a public body chooses to receive and disseminate public comment is at its discretion. There is no requirement in the Open Meeting Law requiring distribution of the meeting packet in advance of a meeting. Nonetheless, publishing citizen correspondence is a recommended practice. It increases the transparency of government by sharing information used in ~~board~~Select Board and committee decision making.

### Scope

Any letter or document sent to ~~Select Board~~Select Board members or town staff in their capacity as municipal employees is a public record. Public records law already allows anyone to request and review these materials. However, many citizen communications are not of general public interest. This policy clarifies when to publish letters addressed from members of the public to ~~Select Board~~Select Board and supporting town staff.

To be published, correspondence must be from a Concord resident or business owner, and include the author's name and physical address.

Letters and emails should be addressed to:

- The ~~Select Board~~Select Board by name,
- A quorum of ~~Select Board~~Select Board members, or
- To a town staff person with an explicit request to distribute the letter to ~~Select Board~~Select Board members.

The correspondence should also discuss matters related to a recent, current, or potential future agenda topic that is within the scope of the ~~Select Board~~Select Board charge.

### Process

~~Letters will be attached to the minutes for the next meeting after they are received. Recognizing that some letters are time sensitive, and meant to be input to deliberations, town staff will also include any letters received in advance in the meeting packet on a best effort basis. The Select Board chair will acknowledge any other letters received when there has not been an opportunity to publish them before a meeting.~~

~~Correspondence will be posted to the ~~Select Board~~Select Board's webpage on the Town website, which can be found here: [https://concordma.gov/3636//~~Select Board~~Select Board-Correspondence](https://concordma.gov/3636//<del>Select Board</del><u>Select Board</u>-Correspondence).~~

~~Correspondence will be compiled and posted every Monday by 12:00 PM. per week, with the week ending on Friday at 12:00 PM (last business day per week). The ~~Select Board~~Select Board and Town staff will coordinate correspondence received to be posted online, as correspondence are not always sent to the same group of recipients.~~

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Paper-based correspondence will be scanned and shared online as image files. Messages will be printed in their entirety, including any typographical errors.

The maximum length for publication is two pages (~~800-1,000~~ words). Shorter letters are preferred and are usually more effective. ↪

## Exceptions

~~To manage the volume of correspondence and encourage a broad representation of views, the Board may limit the number of pieces of correspondence from the same individual on a single issue, or the total number of letters from a resident in a calendar year. When many similar letters are received on the same topic, the Chair may also choose a representative sample, while noting the total number received when acknowledging the correspondence.~~

Letters will not generally be published<sup>1</sup> that:

1. Do not relate to a recent, current or potential future agenda topic that is within the scope of the ~~Select Board~~Select Board charge
2. Are sent to individual ~~Board~~Select Board members who collectively form less than a quorum (~~three or more members~~) of the ~~associated board~~Select Board ~~or committee~~
3. ~~Exceed 3 letters by the same individual on the same issue.~~
4. ~~Exceed 15 letters per year from the same individual.~~
- ~~2-5.~~ Are "form" letters sent by many individuals.
- ~~3-6.~~ Are sent to town staff, and do not include a request to distribute the letter to the ~~Select Board~~Select Board
- 4-7. Contain personally identifiable information (PII) of individuals other than the writer
- ~~5-8.~~ Discuss the reputation, character, physical condition, mental health or professional competence of an individual
- ~~6-9.~~ Recommend discipline or dismissal of a town employee, or make complaints or charges against them
- 7-10. ~~Make threats to the Board~~Select Board, town staff, or the town, or ~~any other person~~bodies
- ~~8-11.~~ Relate to Executive Session matters, such as litigation or collective bargaining

The ~~Board~~Select Board chair and/or the Town Manager may make the determination not to publish any letter ~~in consultation with the Board, when they fall into one or more of the above categories.~~ In this case, the ~~Board~~Select Board chair ~~may will~~ inform the letter writer of the reason and invite resubmission the letter without the disqualifying material if the author still desires its publication.

<sup>1</sup> Note, however, that these are still public records.