

ATTACHMENT E
Stormwater Compliance Documents

Stormwater Report

TEC Project File No. T0967.02

Apple Street Roadbed Elevation and Culvert Replacement Project

Essex, MA

Prepared for: **Town of Essex**
30 Martin Street
Essex, MA 01929



Prepared by: **TEC, Inc.**
282 Merrimack Street
Lawrence, MA 01843



February 15, 2023

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STORMWATER MANAGEMENT

The intention of this project is to provide safety improvements and replace the existing culvert under Apple Street. The project will also raise the elevation of Apple Street to address flooding concerns associated with coastal storm flooding of the roadway which currently splits the community in half. The roadway surface over the bridge and associated road reconstruction is an entirely impervious surface and will remain an impervious surface once construction takes place. There is one catch basin along the project length with water draining primarily through a country drainage system naturally into the Unnamed Tributary to the Essex River. The proposed improvements will significantly reduce erosion of the embankments with the addition of stable slopes, a concrete wingwall, and riprap embankments, limiting the amount of sediment being carried into the Unnamed Tributary to the Essex River by the runoff from Apple Street. During construction, all necessary erosion and sediment control measures will be installed to prevent any silt from construction activities from entering the tributary.

STORMWATER STANDARDS

This section of the report serves to accompany the attached Stormwater Checklist and describes the project scope, including existing conditions and proposed work as it pertains to stormwater management.

Standard 1: No New Untreated Discharges

The proposed project conditions introduce no new stormwater sources to adjacent wetlands that are subject to coastal flooding.

Standard 2: Peak Rate Attenuation

The project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

Standard 3: Recharge

There is a single existing catch basin with a discharge pipe beneath the roadway which is proposed to be replaced as part of the project. Other than the single basin, all stormwater flows over land and discharges directly into either the basin or unnamed tributary. There are no areas within the project limits that would provide feasibility to propose any infiltrating BMP's due to existing topography, limited right-of-way, and bordering land subject to coastal flooding. As this is a redevelopment project of an existing roadway with the culvert being an ecologically limited project, no groundwater recharge has been proposed.

Standard 4: Water Quality

No stormwater best management practices are included as part of this project and there is a single catch basin and drainage pipe within the project limits. As this is a redevelopment project, it is required to meet the MassDEP Stormwater Standards to the maximum extent practicable.

Standard 5: Land Uses with Higher Potential Pollutant Loads

The land use is not considered a land use with a higher potential pollutant load.

Standard 6: Critical Areas

Stormwater will not discharge to critical areas.

Standard 7: Redevelopment Projects

This project is considered a redevelopment project, and as such meets Standards 2, 3, 4, 5, and 6, only to the maximum extent practicable.

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

This project will "disturb" greater than one acre of land, and therefore the project is covered by a NPDES Construction General Permit.

Sedimentation controls will be in place during construction. A floating silt fence will be placed in the Unnamed Tributary to the Essex River to trap sediment and debris that may float down the Unnamed Tributary from the construction area. Water from within the control of water cofferdam will be pumped to stilling basins before reentering the Unnamed Tributary to Essex River to remove any sediment created from construction activities. The sediment control measures will be installed prior to the start of construction.

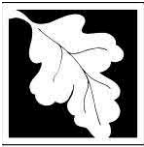
During construction, the floating silt fence will be cleaned as needed. Any items that fall into the unnamed tributary will be removed immediately. Daily roadway sweeping will also be conducted to control sediment created from construction activities.

Standard 9: Operation and Maintenance Plan

The roadway is currently and will continue to be maintained by the Town of Essex. Standard O&M procedures will continue to be used on the roadway and within the culvert.

Standard 10: Illicit Discharges

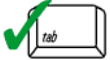
No illicit discharges are expected nor will be permitted as part of this project.



Checklist for Stormwater Report

A. Introduction

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



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

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.¹ This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8²
- Operation and Maintenance Plan required by Standard 9

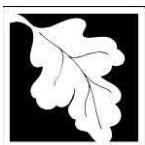
In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans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

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

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

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

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



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



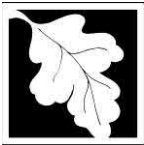
02/15/2023

Signature and Date

Checklist

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

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



Checklist for Stormwater Report

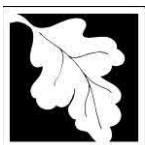
Checklist (continued)

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

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

Standard 1: No New Untreated Discharges

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



Checklist for Stormwater Report

Checklist (continued)

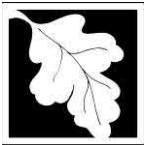
Standard 2: Peak Rate Attenuation

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

Standard 3: Recharge

- Soil Analysis provided.
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
 - Static
 - Simple Dynamic
 - Dynamic Field¹
- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
 - Site is comprised solely of C and D soils and/or bedrock at the land surface
 - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
 - Solid Waste Landfill pursuant to 310 CMR 19.000
 - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

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



Checklist for Stormwater Report

Checklist (continued)

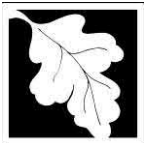
Standard 3: Recharge (continued)

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

Standard 4: Water Quality

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

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



Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

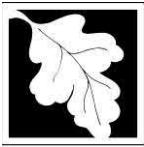
- The BMP is sized (and calculations provided) based on:
 - The ½" or 1" Water Quality Volume or
 - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary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

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

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

Standard 6: Critical Areas

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



Checklist for Stormwater Report

Checklist (continued)

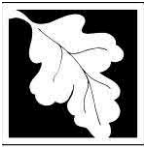
Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

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

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

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

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



Checklist for Stormwater Report

Checklist (continued)

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

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

Standard 9: Operation and Maintenance Plan

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

Standard 10: Prohibition of Illicit Discharges

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

Stormwater Management Operations & Maintenance Plan

TEC Project File No. T0967.02

Apple Street Roadbed Elevation and Culvert Replacement Project

Essex, MA

Prepared for: **Town of Essex**
30 Martin Street
Essex, MA 01929



Prepared by: **TEC, Inc.**
282 Merrimack Street
Lawrence, MA 01843



February 15, 2023

Stormwater Management Operation and Maintenance Plan
February 15, 2023

Name of Owner: Town of Essex
Name of Responsible Party: Town of Essex, Department of Public Works
Name of Facility: Apple Street over Unnamed Tributary to Essex River
Location: Apple Street, Essex, MA 01929

A detailed, written log of all scheduled preventative and corrective maintenance performed for the stormwater management measures must be kept on site, including a record of all inspections and copies of maintenance-related work orders.

An "Inspection and Maintenance Check List" shall be maintained as a record of regularly scheduled inspection and maintenance items as outlined below for every year. Maintenance required and actions taken shall be recorded in a "Inspection and Maintenance Log".

Maintenance routine and schedule: Routine inspections will be conducted on a monthly basis and thorough investigations will be conducted twice a year. Tasks systems include regular removal of accumulated sediments, floatables and debris, and scour inspection. Inspections will occur after every major storm event throughout construction and for the first six (6) months after construction is completed. Inspections will be conducted by a qualified person experienced in drainage design and stormwater management systems. Annual reports will be prepared detailing the status of the stormwater system and the maintenance performed. A copy of the annual report will be kept by the Town of Essex, if requested.

The owner agrees with a minimum maintenance schedule as follows:

- 1. Grass Landscaping.** The grass landscaping will be inspected after every major storm event for the two (2) months after seeding to ensure functionality. Thereafter, inspections should take place every six (6) months in the spring and fall and after severe storm events. Grass and mulched landscaping showing signs of wear and erosion will be re-loamed/reseeded or re-mulched as necessary to prevent further erosion from taking place.
- 2. Snow removal.** During large storm events, snow will be trucked off site.

The Long-Term Pollution Prevention Plan

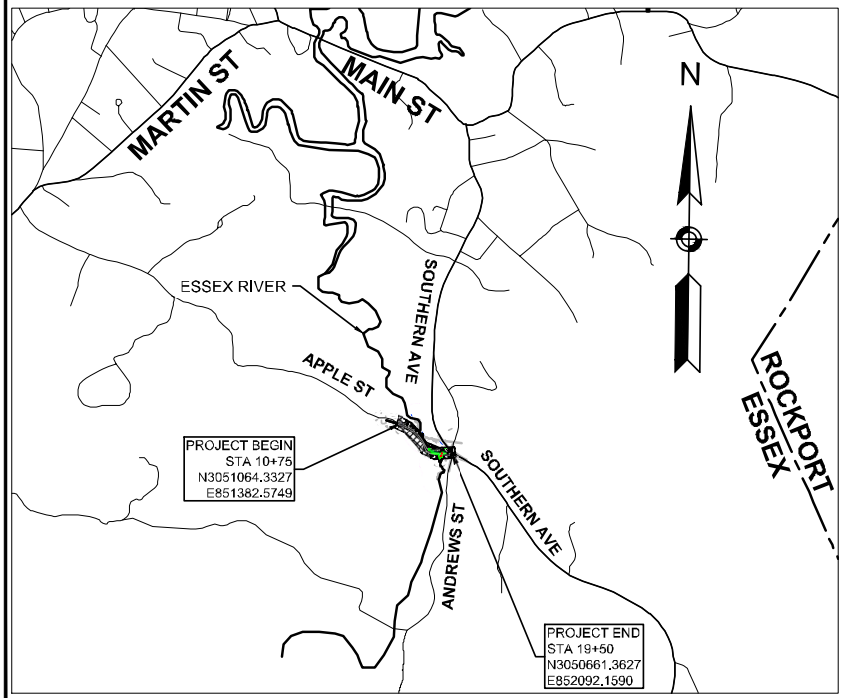
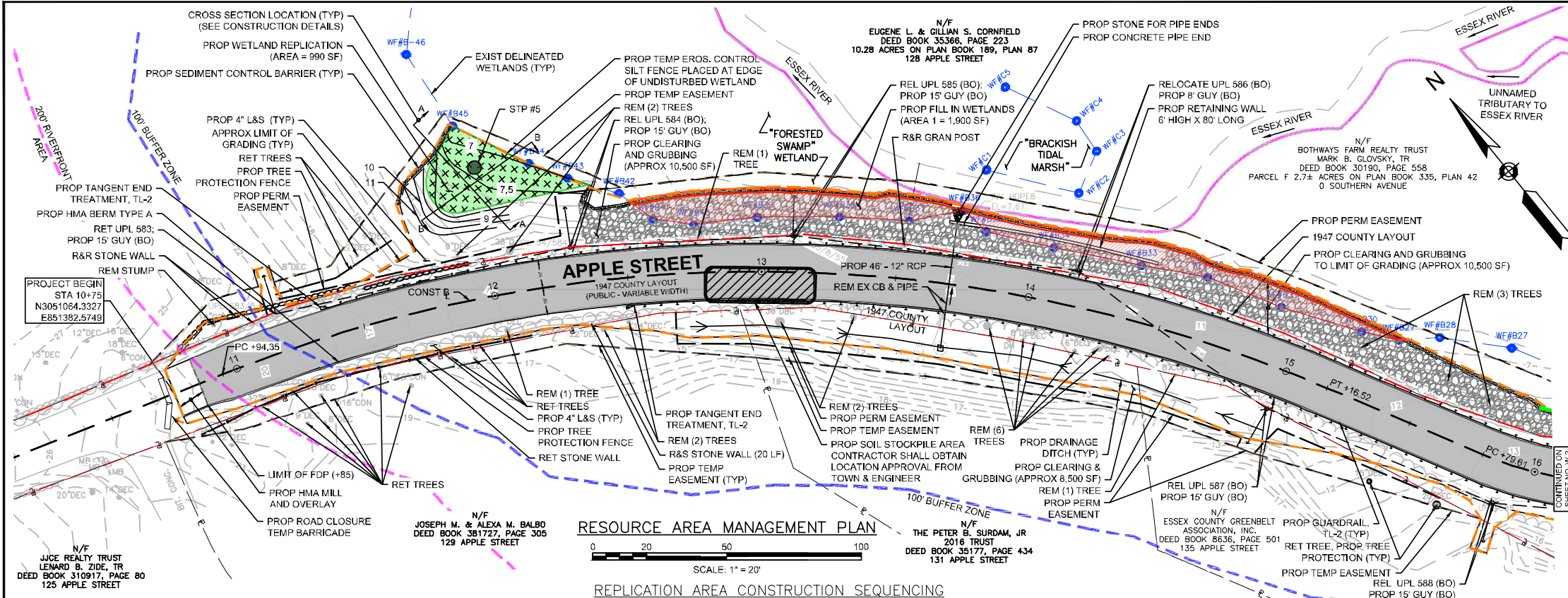
The Owner agrees to comply with the following Long-Term Pollution Prevention Plan to ensure long-term stormwater quality discharge from the site:

- *Good housekeeping practices:* The project is a town roadway that will be maintained by the owners, including snow removal, de-icing, street sweeping and BMP inspection/maintenance.
- *Provisions for storing materials and waste products inside or under cover:* Waste products are not anticipated to be produced or stored on this site.
- *Vehicle washing controls:* Vehicle washing is not anticipated as a reasonably foreseeable use of the site.
- *Spill prevention and response plans:* There are no proposed uses at the site that would provide an opportunity for a spill of oil or hazardous materials, other than a sudden, catastrophic, vehicle failure. If a vehicle release is the result of an accident, the police and fire department will respond and address any release.
- *Provisions for maintenance of lawns, gardens, and other landscaped areas:* The owner will provide long-term maintenance for the landscaped areas and stormwater BMPs.
- *Requirements for storage and use of fertilizers, herbicides, and pesticides:* At this time there would be no foreseeable need for fertilizers, herbicides, and pesticides.
- *Provisions for operation and management of septic systems:* Not Applicable
- *Provisions for solid waste management:* Not Applicable.
- *Snow disposal and plowing plans relative to Wetland Resource Areas:* No snow will be stored or disposed of in surrounding resource areas.
- *Street sweeping:* The owner will perform street sweeping that is consistent with the Town of Essex's current scheduled sweeping.
- *Provisions for prevention of illicit discharges to the stormwater management system:* No illicit materials will be permitted to be discharged. The owners will be responsible to maintain this.
- *Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from Land Uses with Higher Potential Pollutant Loads (LUHPPL):* The project location is not considered a LUHPPL.

- *Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan:* Prior to implementation of the LTPPP, the owners shall provide an on-site meeting with the maintenance personnel to present the contents and requirements of the Stormwater Operation and Maintenance Plan and the LTPPP.
- *List of Emergency contacts for implementing Long-Term Pollution Prevention Plan:*

Town of Essex
Department of Public Works
44 Centennial Grove Road
Essex, MA 01929
Primary Phone (978) 768-6262
Alternate Phone (978) 768-6431

ATTACHMENT F
Project Plans



REPLICATION AREA CONSTRUCTION SEQUENCING

- THE FOLLOWING IS A PROPOSED SEQUENCE OF CONSTRUCTION FOR THE COMPLETION OF THE WETLAND REPLICATION:
- A PRE-CONSTRUCTION CONFERENCE WITH THE CONTRACTOR AND A QUALIFIED WETLAND SPECIALIST SHALL BE CONDUCTED TO ENSURE ALL ASPECTS OF THE PROJECT, AS WELL AS ANY ORDER OF CONDITIONS ARE UNDERSTOOD. EQUIPMENT NEEDS AND ACCESS ROUTES TO THE PROPOSED REPLICATION AREA SHALL BE FIRMLY ESTABLISHED.
 - THE BOUNDARY OF BORDERING VEGETATED WETLAND SHALL BE RE-ESTABLISHED IN THE FIELD AS NEEDED.
 - EROSION CONTROL BARRIERS SHALL BE INSTALLED ALONG THE EXISTING WETLAND EDGE OF THE REPLICATION AREAS. THE EROSION CONTROL BARRIERS SHALL ALSO SERVE AS A LIMIT OF WORK. ONLY SILTATION FENCE SHALL BE USED FOR EROSION CONTROL IN ORDER TO MINIMIZE THE POTENTIAL FOR INVASION BY WEED SPECIES.
 - VEGETATION SHALL BE CLEARED WITHIN THE LIMITS OF GRADING FROM THE REPLICATION AREAS.
 - MATURE RED MAPLE TREES SHALL BE LEFT IN PLACE TO PROVIDE SHADING.
 - REMOVE AND TRANSPLANT WETLAND SHRUBS FROM EXISTING WETLANDS. DETAILS PROVIDED ON PLANTING PLANS.
 - SOIL SHALL BE INSTALLED TO AN ELEVATION APPROXIMATELY 12 INCHES BELOW FINAL GRADE. FINAL DESIGN GRADE IS APPROXIMATELY EQUAL TO THE AREA OF THE IMMEDIATELY ADJACENT WETLAND. THE EXCAVATED AREA SHALL BE "FEATHERED" INTO THE SURROUNDING LANDSCAPE SO AS NOT TO CREATE ABRUPT CHANGES IN GRADE AND IN NO CASE STEEPER THAN 2:1. ALL EXCAVATION EQUIPMENT OPERATING WITHIN THE REPLICATION AREA SHALL BE ON TRACKS TO REDUCE SOIL COMPACTION. MACHINE MOVEMENT SHALL BE MINIMIZED TO THE EXTENT PRACTICABLE.
 - ROUGH GRADES SHALL BE VERIFIED BY FIELD SURVEY TO CONFIRM DESIGN ELEVATIONS HAVE BEEN MET. ADJUSTMENTS SHALL BE MADE AS APPROPRIATE.
 - DUE TO THE POTENTIAL PRESENCE OF INVASIVE SPECIES IT IS NOT RECOMMENDED THAT TOPSOIL FROM THE IMPACTED WETLANDS BE RE-USED. THEREFORE, CLEAN LOAM SHALL BE IMPORTED ON SITE AND INSTALLED TO A DEPTH OF AT LEAST 12 INCHES. LOAM SHALL CONTAIN AT LEAST 15% ORGANIC MATTER CONTENT BY DRY WEIGHT OR 50% BY VOLUME. LEAF COMPOST SHALL BE USED TO AMEND LOAM TO ACHIEVE DESIRED ORGANIC MATTER CONTENT.
 - THE REPLICATION AREAS SHALL BE GENTLY COMPACTED AND HAND RAKED TO ENHANCE SURFACE WATER RETENTION. SPOT ELEVATIONS SHALL BE TAKEN AGAIN TO CONFIRM DESIGN ELEVATIONS.
 - PLANTINGS WILL BE OBTAINED AS CONTAINER GROWN NURSERY STOCK. SUBSTITUTIONS MAY BE REQUIRED DEPENDING ON AVAILABILITY AND COST, AS APPROVED BY THE ENGINEER.
 - A WETLAND SEED MIX SHALL BE HAND SOWN AS AN UNDERSTORY COVER TO PROVIDE SHORT-TERM EROSION CONTROL, WILDLIFE FOOD, AND COVER, AND TO DISCOURAGE THE ESTABLISHMENT OF INVASIVE, NON-NATIVE SPECIES SUCH AS PURPLE LOOSESTRIPE (LYTHRUM SALICARIA) AND COMMON REED (PHRAGMITES AUSTRALIS). SEEDING AREAS SHALL BE MULCHED WITH SALT HAY. THE SIDE SLOPES OF THE REPLICATION AREA WILL BE SOWN WITH NEW ENGLAND EROSION CONTROL RESTORATION MIX FOR DRY SITES.
 - THE REPLICATION AREA SHALL BE MONITORED IN ACCORDANCE WITH ANY ORDER OF CONDITIONS ISSUED FOR THIS PROJECT BY THE ESSEX CONSERVATION COMMISSION.

SURVEY NOTES:

- THE TOPOGRAPHY, SITE DETAIL & SURFACE IMPROVEMENTS DEPICTED HEREON WERE OBTAINED FROM AN INSTRUMENT SURVEY CONDUCTED ON THE GROUND BY MERIDIAN ASSOCIATES, INC. (MAI) BETWEEN OCTOBER 29 & NOVEMBER 2, 2020.
- THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE AND ARE BASED UPON A PARTIAL FIELD SURVEY AND COMPILATION OF PLANS OF RECORD. MERIDIAN ASSOCIATES, INC. DOES NOT WARRANT NOR GUARANTEE THE LOCATION OF ALL UTILITIES DEPICTED OR NOT DEPICTED. THE CONTRACTOR, PRIOR TO COMMENCEMENT OF CONSTRUCTION, SHALL VERIFY THE LOCATION OF ALL UTILITIES AND CONTACT DIG SAFE AT 811.
- THIS PLAN DOES NOT SHOW ANY UNRECORDED OR UNWRITTEN EASEMENTS WHICH MAY EXIST. A REASONABLE AND DILIGENT ATTEMPT HAS BEEN MADE TO OBSERVE ANY APPARENT, VISIBLE USES OF THE LAND; HOWEVER, THIS DOES NOT CONSTITUTE A GUARANTEE THAT NO SUCH EASEMENTS EXIST.
- THE ELEVATIONS DEPICTED HEREON WERE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), AS DERIVED FROM GPS OBSERVATIONS.
- PROPERTY LINES DEPICTED HEREON ARE BASED ON COMPILED DEEDS AND PLANS OF RECORD. THIS PLAN IS NOT TO BE USED FOR THE RECONSTRUCTION OF BOUNDARY LINES OR FOR TITLE INSURANCE PURPOSES.
- THE WETLAND LIMITS DEPICTED WERE DEMARCATED BY DEROSA ENVIRONMENTAL CONSULTANTS, INC. ON FEBRUARY 7, 2020.
- DEROSA FLAGGED WETLANDS WERE VERIFIED BY DUBOIS & KING ON OCTOBER 27, 2022.
- SOIL TEST PITS (STP) IN WETLAND AND WETLAND REPLICATION AREAS WERE CONDUCTED WITH TILE SPADE AND MANUAL SOIL AUGER BY DUBOIS & KING ON JANUARY 17, 2023.
 - FLOOD ZONE X (UNSHADED), AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN
 - FLOOD ZONE AE, AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT DETERMINED BY DETAILED METHODS (ELEV=10). (NAVD 88)
- THE SUBJECT PREMISES IS LOCATED IN THE FOLLOWING FLOOD ZONES PER FEMA FLOOD INSURANCE RATE MAP NUMBER 25009C0432G DATED JULY 16, 2014:



TEC, Inc.
 282 Merimack Street | 169 Ocean Boulevard
 2nd Floor | Unit 101, PO Box 249
 Lawrence, MA 01834 | Hampton, NH 03842
 (978) 794-1792 | (603) 601-8154
 www.TheEngineeringCorp.com

DESIGNED BY: ADC
 DRAWN BY: DPS
 CHECKED BY: GDG
 DATE: 2/15/2023
 SCALE: AS SHOWN

PREPARED FOR:
Town of Essex
 30 Martin Street
 Essex, MA 01929

REVISIONS

ISSUED FOR:
Permitting

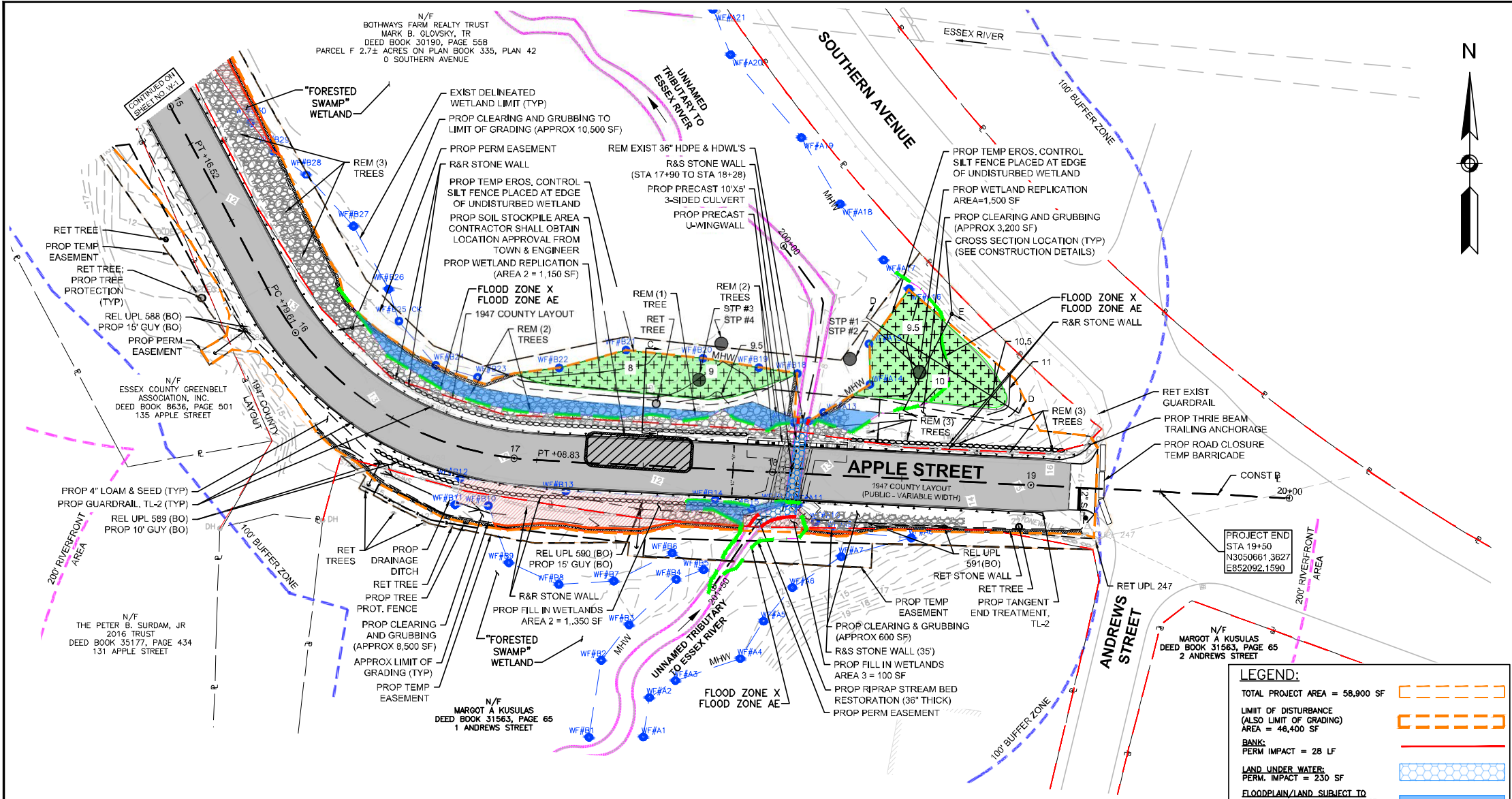
PROJECT TITLE:
**Apple Street Roadbed
 Elevation & Culvert
 Replacement Project**

PROJECT LOCATION:
**Essex,
 Massachusetts**

DRAWING TITLE:
**Resource Area
 Impact Plans -
 Plan 1 of 2**

PROJECT NO. T0957
 TEC CAD FILE
 DRAWING NO. W-1
 SHEET 1 OF 4

T0957-02_EV_RESOURCES\PLANS\DWG PERM on 16-FEB-2023 1:46 PM



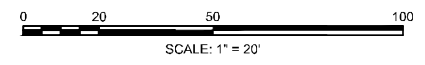
STAGED CONSTRUCTION SEQUENCE NOTES:

1. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION MEETING WITH TOWN OF ESSEX CONSERVATION COMMISSION AGENT, THE ENGINEER AND TOWN STAFF AS NECESSARY.
2. **STAGE 1 CONSTRUCTION:**
 - a. INSTALL ALL TEMPORARY TRAFFIC MANAGEMENT DETAILS INCLUDING ROAD CLOSURE MEASURES AT BOTH ENDS AND ALL ASSOCIATED TEMPORARY DETOUR SIGNAGE PER THE TTP PLANS.
 - b. INSTALL ALL TEMPORARY EROSION CONTROL MEASURES ALONG APPLE STREET AS REQUIRED FOR STAGE 1 CULVERT CONSTRUCTION.
 - c. INSTALL CONTROL OF WATER MEASURES PER CONTRACT PLANS AND AS APPROVED BY THE ENGINEER.
 - d. EXCAVATE EXISTING PAVEMENT WITHIN THE LIMITS NECESSARY TO CONSTRUCT THE PROPOSED CULVERTS.
 - e. CONSTRUCT PROPOSED BRIDGE CULVERT, 12" HDPE CULVERT AND RETAINING WALL.
 - f. INSTALL PROPOSED MODIFIED ROCK SLOPE WHERE POSSIBLE TO DEFINE THE TDE OF SLOPES PRIOR TO RAISING THE ROADWAY.
3. **STAGE 2 CONSTRUCTION:**
 - a. INSTALL ALL TEMPORARY TRAFFIC MANAGEMENT AND EROSION CONTROL MEASURES AS REQUIRED FOR STAGE 2.
 - b. REMOVE C.O.W. MEASURES INSTALLED IN STAGE 1.
 - c. CONSTRUCT WETLAND MITIGATION AREAS PER PLANS.
 - d. CLEAN SITE OF ALL MATERIALS AND EQUIPMENT OUTSIDE OF THE ROADWAY FOOTPRINT.

5. **STAGE 3 CONSTRUCTION:**
 - a. MILL TRANSITION AREAS AT EACH END OF THE FULL DEPTH LIMITS.
 - b. EXCAVATE PAVEMENT TO TOP OF EXISTING SUBBASE FOR REMAINING LIMITS OF PAVEMENT RECONSTRUCTION. REMOVE & DISPOSE BITUMINOUS MATERIAL OFF-SITE.
 - c. REMOVE AND DISPOSE OF THE EXISTING GUARDRAIL.
 - d. APPLY BITUMINOUS DAMP-PROOFING TO TOP OF CONCRETE.
 - e. CONSTRUCT FULL DEPTH PAVEMENT FOR PROJECT LIMITS.
 - f. INSTALL REMAINING PROPOSED MODIFIED ROCK SLOPE.
 - g. CONSTRUCT THE PROPOSED GUARDRAIL PER PLAN.
 - h. OPEN ROADWAY TO TRAFFIC.
6. PERFORM FINAL INSPECTION AND ADDRESS PUNCH LIST ITEMS.
7. FINAL ACCEPTANCE BY TOWN.
8. OBTAIN CERTIFICATE OF COMPLIANCE FROM CONSERVATION COMMISSION.

GENERAL STAGING NOTES:

1. ALL ROADWAY DIMENSIONS ARE TAKEN PERPENDICULAR TO THE BASELINE OF CONSTRUCTION (APPLE STREET).
2. ALL EROSION CONTROL MEASURES SHALL BE IN PLACE BEFORE THE START OF WORK.
3. THE CONTRACTOR SHALL MAKE ALL EFFORTS NECESSARY TO PREVENT DEBRIS FROM ENTERING THE TRIBUTARY BROOK. ANY CONSTRUCTION DEBRIS THAT FALLS INTO THE BROOK SHALL BE REMOVED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.



LEGEND:

- TOTAL PROJECT AREA = 58,900 SF
- LIMIT OF DISTURBANCE (ALSO LIMIT OF GRADING) AREA = 46,400 SF
- BANK:** PERM IMPACT = 28 LF
- LAND UNDER WATER:** PERM. IMPACT = 230 SF
- FLOODPLAIN/LAND SUBJECT TO COASTAL STORM FLOWAGE IMPACT:** PERM. IMPACT AREA = 1,140 SF; PERM. FILL VOLUME = 50 CY
- FILL WITHIN WETLANDS:** AREA 1 = 1,900 SF; AREA 2 = 1,350 SF; AREA 3 = 100 SF
- WETLAND REPLICATION AREAS:** AREA 1 = 990 SF; AREA 2 = 1,150 SF; AREA 3 = 1,500 SF
- PROP. TEMP WETLAND IMPACT AREA = 650 SF**
- PROP. EROSION CONTROL**
- PROP. RIPRAP SLOPE**
- MEAN ANNUAL HIGH WATER (MHW)**
- 200' RIVERFRONT AREA**
- 100' BUFFER ZONE**
- FLAGGED WETLANDS**
- FLOODPLAIN LIMIT**
- COUNTY LAYOUT LINE**
- PROP. PAVEMENT RECONSTRUCTION**
- SOIL TEST PIT - STP #**



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 282 Merimack Street | 169 Ocean Boulevard
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 Lawrence, MA 01834 | Hampton, NH 03842
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DESIGNED BY: ADC
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 SCALE: AS SHOWN

PREPARED FOR:
 Town of Essex
 30 Martin Street
 Essex, MA 01929

REVISIONS:
 ISSUED FOR:
 Permitting

PROJECT TITLE:
 Apple Street Roadbed
 Elevation & Culvert
 Replacement Project

PROJECT LOCATION:
 Essex,
 Massachusetts

DRAWING TITLE:
 Resource Area
 Impact Plans -
 Plan 2 of 2

PROJECT NO. 10967.02
 TEC CAD FILE
 DRAWING NO. W-2
 SHEET 2 OF 4

T0967.02_EV_RESOURCES\PLANS\DWG
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CONTROL OF WATER NOTES:

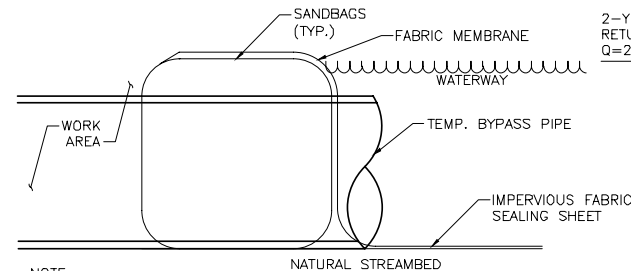
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE CONTROL OF WATER (C.O.W.) SYSTEM AND SHALL SUBMIT A C.O.W. PLAN TO THE ENGINEER AND ESSEX CONSERVATION FOR APPROVAL. THE C.O.W. SYSTEM SHOWN IS CONCEPTUAL ONLY. THE C.O.W. SYSTEM SHALL BE DESIGNED TO BYPASS NORMAL STREAM FLOW CONDITIONS WITH PROVISIONS TO PASS THE 2-YEAR DESIGN FLOOD OF 24.8 CFS IF THERE IS A FORECASTED STORM EVENT.
2. APPLE STREET SHALL BE CLOSED TO VEHICULAR AND PEDESTRIAN TRAFFIC AT THE BRIDGE CROSSING PRIOR TO BEGINNING EXCAVATION. DETOUR SIGNAGE WILL BE INSTALLED IN ACCORDANCE WITH THE MUTCD AND THE TEMPORARY TRAFFIC CONTROL PLANS INCLUDED IN THESE CONSTRUCTION DRAWINGS.
3. C.O.W. SYSTEM SHALL BE INSPECTED DAILY FOR WATER LEAKS OR EROSION AND REPAIRS PROCEDURES SHALL BE IMPLEMENTED ACCORDINGLY.
4. THE CONSTRUCTION SEQUENCE WITH REGARDS TO THE C.O.W. SYSTEM SHALL BE AS FOLLOWS:
 - 4.1. CLOSE THE ROADWAY TO VEHICULAR AND PEDESTRIAN TRAFFIC AT THE BRIDGE CROSSING.
 - 4.2. INSTALL EROSION CONTROLS: TEMPORARY EROSION CONTROL AROUND PROJECT LIMITS TO PROTECT THE TRIBUTARY BROOK FROM WORK ZONE SEDIMENT; FLOATING SILT FENCE IN THE TRIBUTARY BROOK TO THE ESSEX RIVER DOWNSTREAM OF THE PROJECT LIMITS TO TRAP ANY FLOATING DEBRIS/SILT THAT MAY ENTER THE TRIBUTARY.
 - 4.3. INSTALL C.O.W. COFFERDAMS, BYPASS PUMPS, DEWATERING PUMPS, AND TEMPORARY STILLING BASIN.
 - 4.4. PLACE TEMPORARY RIPRAP AT OUTLET FOR BYPASS DISCHARGE.
 - 4.5. DEWATER THE WORK AREA PRIOR TO (AND THROUGHOUT) EXCAVATION TO FACILITATE INSTALLING THE PRECAST CULVERT AND WINGWALLS IN THE DRY CONDITION. ALL DEWATERING FLOW SHALL PASS THROUGH THE STILLING BASIN TO REMOVE SEDIMENT PRIOR TO DEPOSITING BACK INTO THE STREAM.
 - 4.6. INSTALL THE THREE-SIDED PRECAST CULVERT AND WINGWALLS. RESTORE THE STREAMBED IN ACCORDANCE WITH THESE PLANS. INSTALL MODIFIED ROCKFILL EMBANKMENT AND LOAM AND SEED WITH EROSION CONTROL BLANKET IN FRONT OF THE WINGWALLS. INSTALL COIR LOGS ALONG UPLAND SIDES OF STREAMBED.
 - 4.7. REDIRECT STREAM FLOW THROUGH THE PRECAST CULVERT.
 - 4.8. REMOVE THE C.O.W. COFFERDAMS, BYPASS PUMPS, AND TEMPORARY STILLING BASIN.

SANDBAG PREPARATION:

1. UTILIZE 36" X 36" X 36" POLYPROPYLENE BAGS.
2. A HEAVY BODIED OR SANDY SOIL IS MOST DESIRABLE FOR FILLING SANDBAGS. ON-SITE SOURCES MAY BE UTILIZED, AS APPROPRIATE WITH THE APPROVAL OF THE ENGINEER.
3. BAGS SHOULD BE FILLED BETWEEN ONE-THIRD TO ONE-HALF OF THEIR CAPACITY TO PREVENT THE BAG FROM BEING TOO HEAVY AND PERMITS THE BAGS TO BE STACKED WITH A GOOD SEAL.

SANDBAG PLACEMENT:

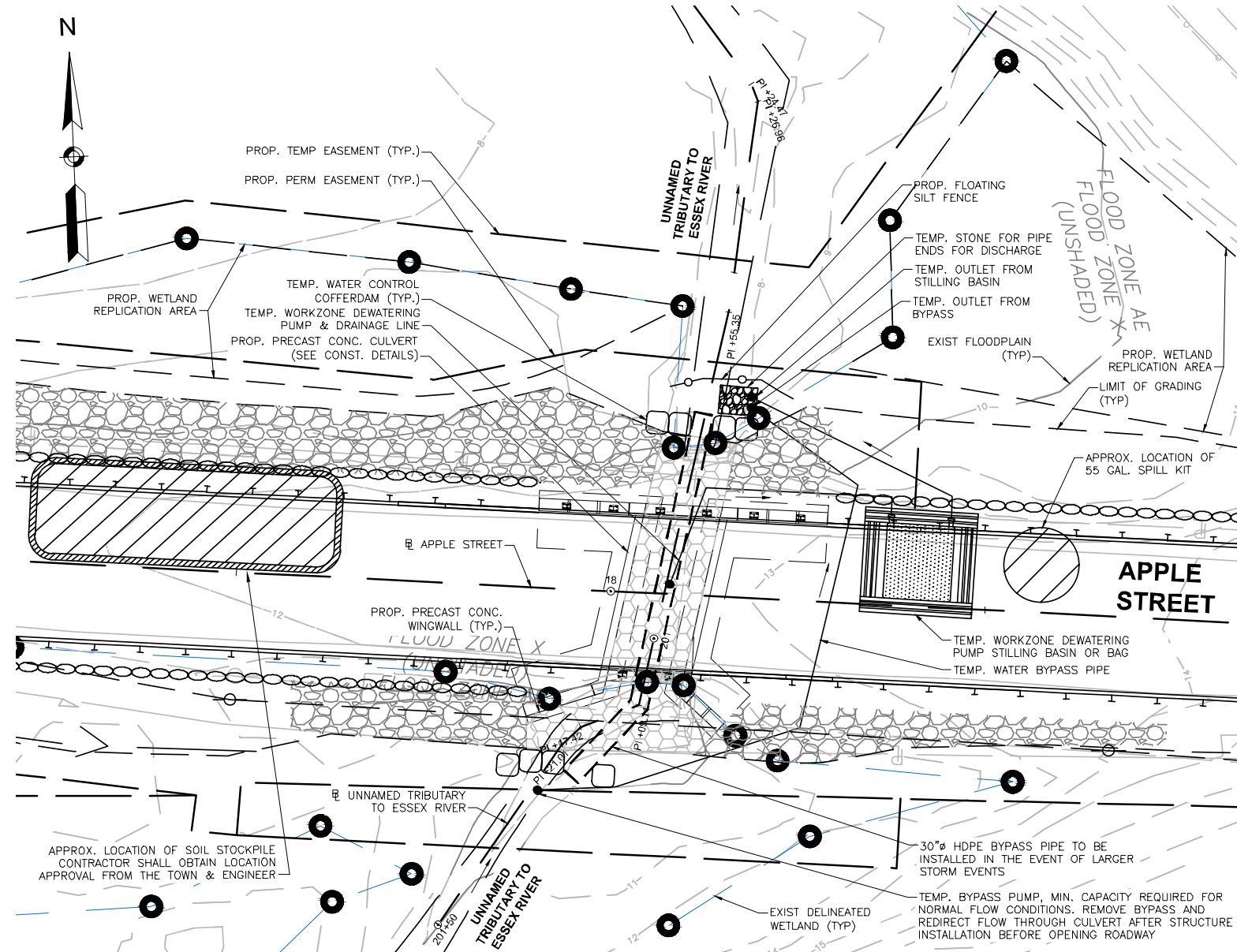
1. REMOVE ANY DEBRIS FROM THE AREA WHERE THE BAGS ARE TO BE PLACED.
2. FOLD THE OPEN END OF THE UNFILLED PORTION OF THE SANDBAG TO FORM A TRIANGLE.
3. PLACE THE PARTIALLY FILLED BAGS LENGTHWISE AND PARALLEL TO THE DIRECTION OF FLOW WITH THE OPEN END FACING AGAINST THE WATER FLOW.
4. TUCK THE FLAPS UNDER, KEEPING THE UNFILLED PORTION UNDER THE WEIGHT OF THE SACK.
5. STAGGER THE JOINT CONNECTIONS WHEN MULTIPLE LAYERS ARE NECESSARY USING THE PYRAMID PLACEMENT METHOD.
6. ALL SANDBAG BERMS SHALL BE A MINIMUM OF 3- FEET HIGH, UNLESS NOTED OTHERWISE.
7. PLACE POLYETHYLENE LINER ALONG WATER SIDE OF COFFERDAM AND TUCK LINER INTO TOP COURSE OF SANDBAGS AS SHOWN ON THE DETAIL ON THIS PLAN. STABILIZE LINE WITH WOODEN STAKE AND ADDITIONAL SANDBAG IN STREAM.



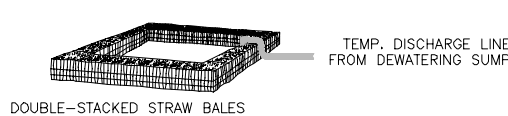
NOTE:

THE SANDBAG COFFERDAM SHOWN ABOVE IS SHOWN IN CONCEPT ONLY AS ONE OPTION FOR CONTROL OF WATER. THE CONTRACTOR SHALL DETERMINE THE APPROPRIATE SYSTEM FOR CONTROLLING THE WATER (I.E. BULK SANDBAGS, SHEETING, ETC). THE CONTRACTOR SHALL SUBMIT THEIR PROPOSED CONTROL OF WATER DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL.

TEMPORARY SANDBAG COFFERDAM
SCALE: N.T.S.



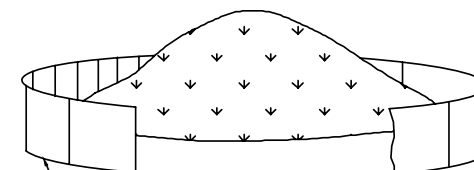
CONTROL OF WATER PLAN
SCALE: 1/8" = 1'-0"



NOTE:

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/ DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR APPROVED EQUAL BY ESSEX CONSERVATION COMMISSION. SYSTEM SHOWN IS CONCEPTUAL ONLY AND IS TO BE DESIGNED BY CONTRACTOR.

TEMPORARY STILLING AREA
SCALE: N.T.S.



STOCKPILES SHALL BE SURROUNDED COMPOST FILTER TUBES STAKED INTO THE GROUND WHERE POSSIBLE, AND WEIGHTED DOWN WITH SAND BAGS IF ON PAVEMENT.

NOTES: SOIL STOCKPILES SHALL BE COVERED WITH ANCHORED TARPS AND THE END OF EACH WORK DAY.

SOIL STOCKPILE
SCALE: N.T.S.



TEC, Inc.
282 Merimack Street | 169 Ocean Boulevard
2nd Floor | Unit 101, PO Box 249
Lawrence, MA 01834 | Hampton, NH 03842
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DESIGNED BY: ADC
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CHECKED BY: GDG
DATE: 2/15/2023
SCALE: AS SHOWN

PREPARED FOR:

Town of Essex
30 Martin Street
Essex, MA 01929

REVISIONS

ISSUED FOR:

Permitting

PROJECT TITLE

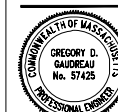
Apple Street Roadbed
Elevation & Culvert
Replacement Project

PROJECT LOCATION

Essex,
Massachusetts

DRAWING TITLE

Resource Area
Impact Plans -
Control of Water Plan



PROJECT NO.
T0967.02

TEC CAD FILE

DRAWING NO.

W-3

SHEET 3 OF 4

T0967.02_EV_RESOURCEPLANS/DWG PLOTTED ON 1/24/2023 1:45 PM

REVISIONS

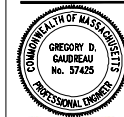
ISSUED FOR:
Permitting

PROJECT TITLE:
Apple Street Roadbed Elevation & Culvert Replacement Project

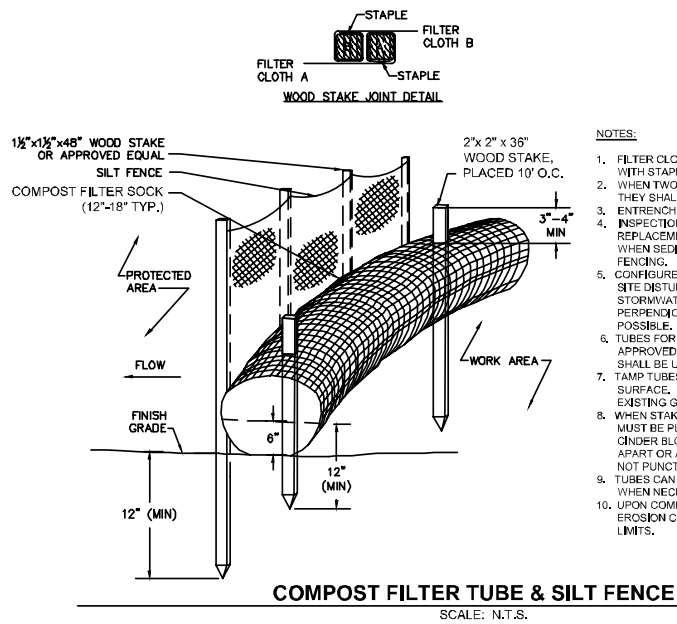
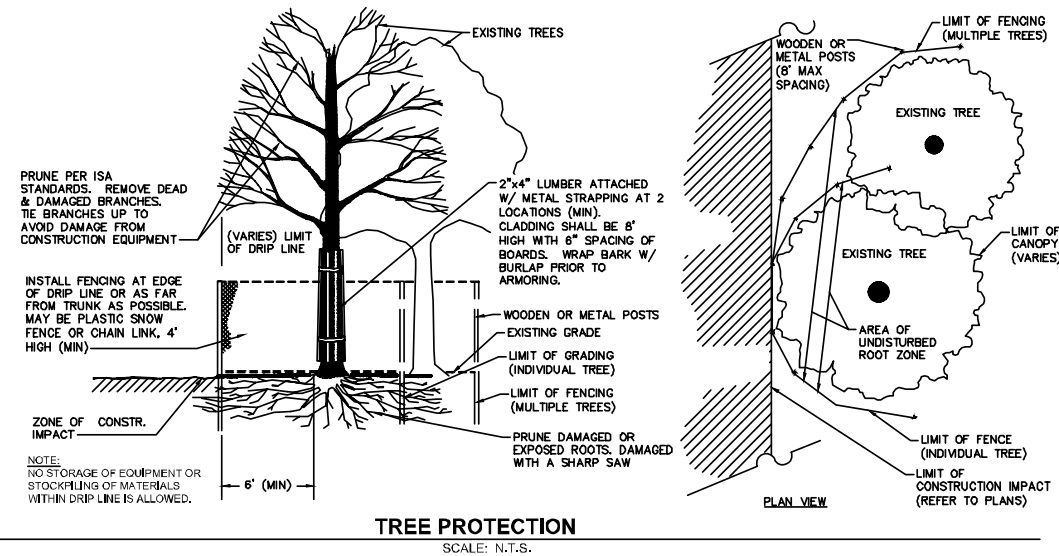
PROJECT LOCATION:
Essex, Massachusetts

DRAWING TITLE:
Resource Area Impact Plans - Construction Details

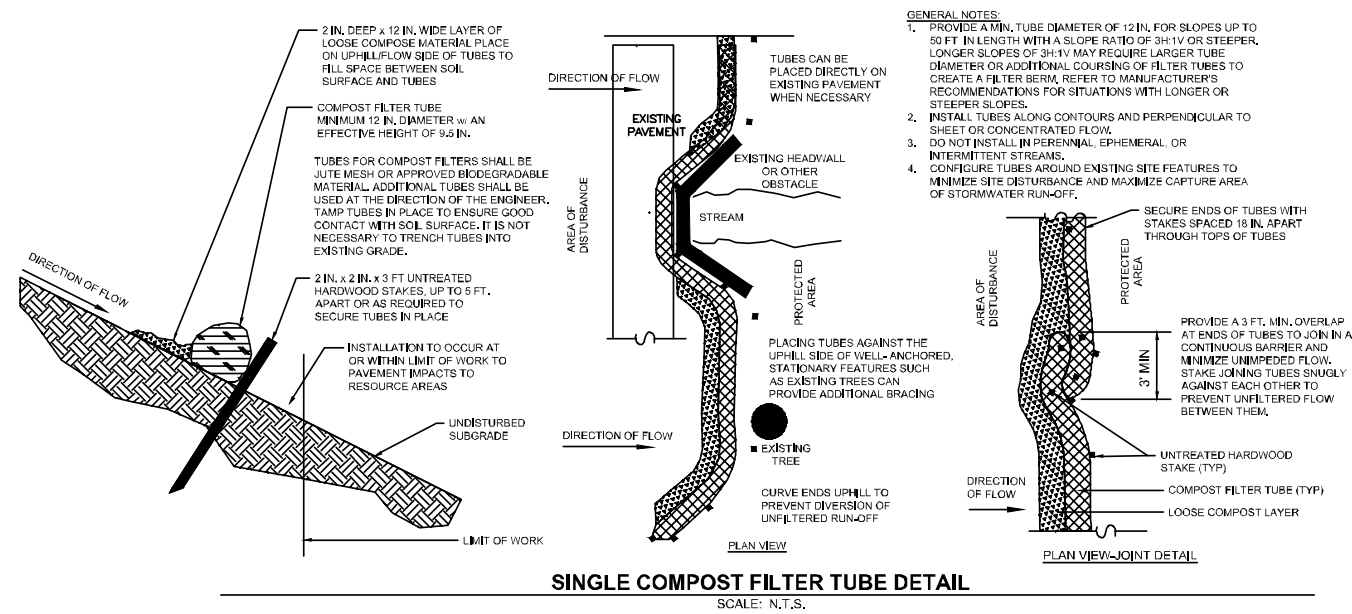
PROJECT NO.: T0967.02
TEC CAD FILE:
DRAWING NO.: **W-4**
SHEET 4 OF 4



Gregory D. Gaudreau



- NOTES:**
1. FILTER CLOTH SHALL BE FASTENED SECURELY TO POSTS WITH STAPLES. POSTS SHALL BE SPACED 8'-10' ON CENTER. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 3" INCHES AND FOLDED.
 2. ENTRENCH SILT FENCE BUT NOT FILTER TUBE.
 3. INSPECTIONS SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED, OR WHEN SEDIMENT ACCUMULATES TO HALF THE HEIGHT OF FENCING.
 4. CONFIGURE TUBES AROUND EXISTING FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF. TUBES SHALL BE PLACED PERPENDICULARLY TO STORMWATER FLOW WHERE POSSIBLE.
 5. TUBES FOR COMPOST FILTERS SHALL BE JUTE MESH OR APPROVED BIODEGRADABLE MATERIAL. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER.
 6. TAMP TUBES IN PLACE TO ENSURE GOOD CONTACT WITH SOIL SURFACE. IT IS NOT NECESSARY TO TRENCH TUBES INTO EXISTING GRADE.
 7. WHEN STAKING IS NOT POSSIBLE, SUCH AS WHEN TUBES MUST BE PLACED ON PAVEMENT, HEAVY CONCRETE OR CURB BLOCKS CAN BE USED BEHIND TUBES UP TO 5 FT. APART OR AS REQUIRED TO SECURE TUBES IN PLACE. DO NOT PUNCTURE TUBES WITH STAKES.
 8. TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.
 9. UPON COMPLETION OF PROJECT, ALL TUBES USED FOR EROSION CONTROL SHALL BE REMOVED FROM PROJECT LIMITS.





NO.	DATE	DESCRIPTION	BY	CK'D

TOWN OF ESSEX
 30 MARTIN STREET
 ESSEX, MA 01929

APPLE STREET
 ROADBED
 ELEVATION &
 CULVERT
 REPLACEMENT
 PROJECT

SHEET TITLE

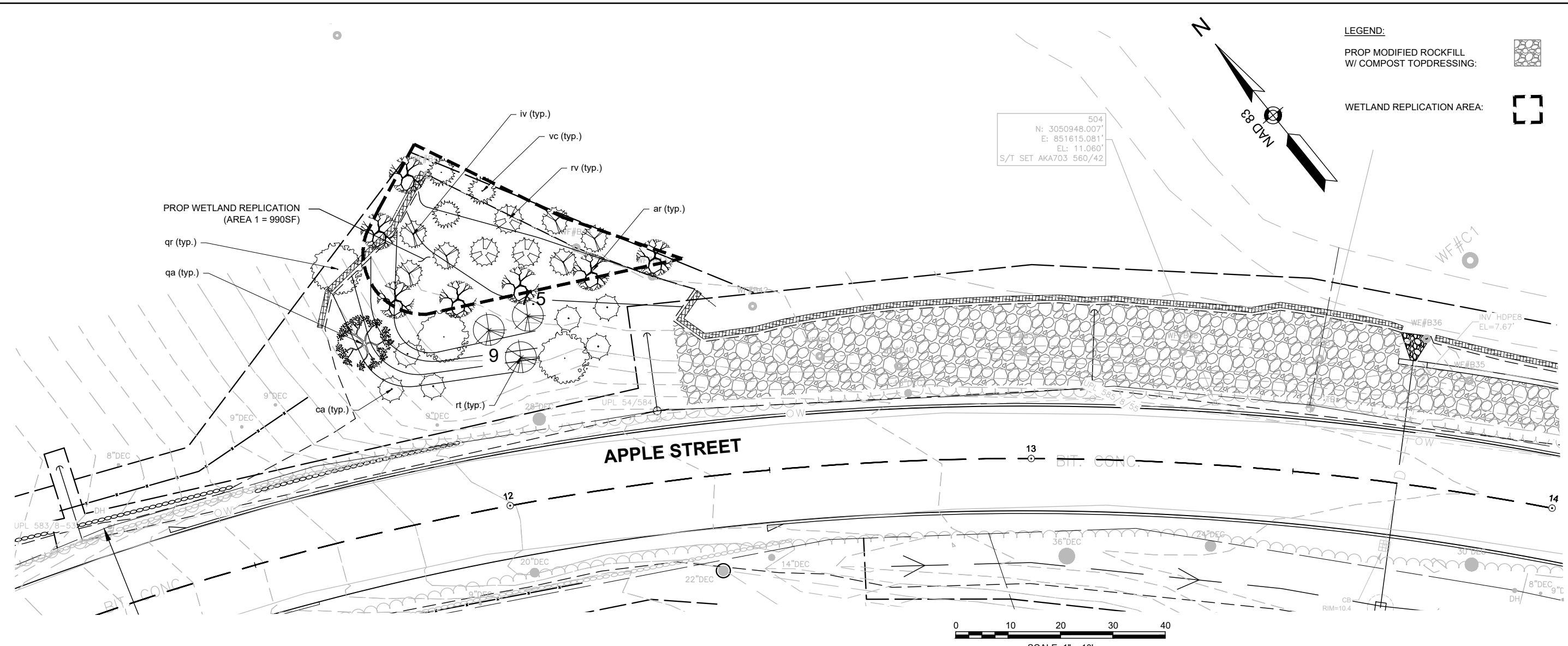
RESOURCE AREA
 IMPACT PLANTING
 PLAN 01

DRAWN BY	DATE
SANZ	FEB. 15, 2023
CHECKED BY	D&K PROJECT #
ANR	126268
PROJ. ENG.	D&K ARCHIVE #
ATH	

SHEET NUMBER

01

SHEET 01 OF 04



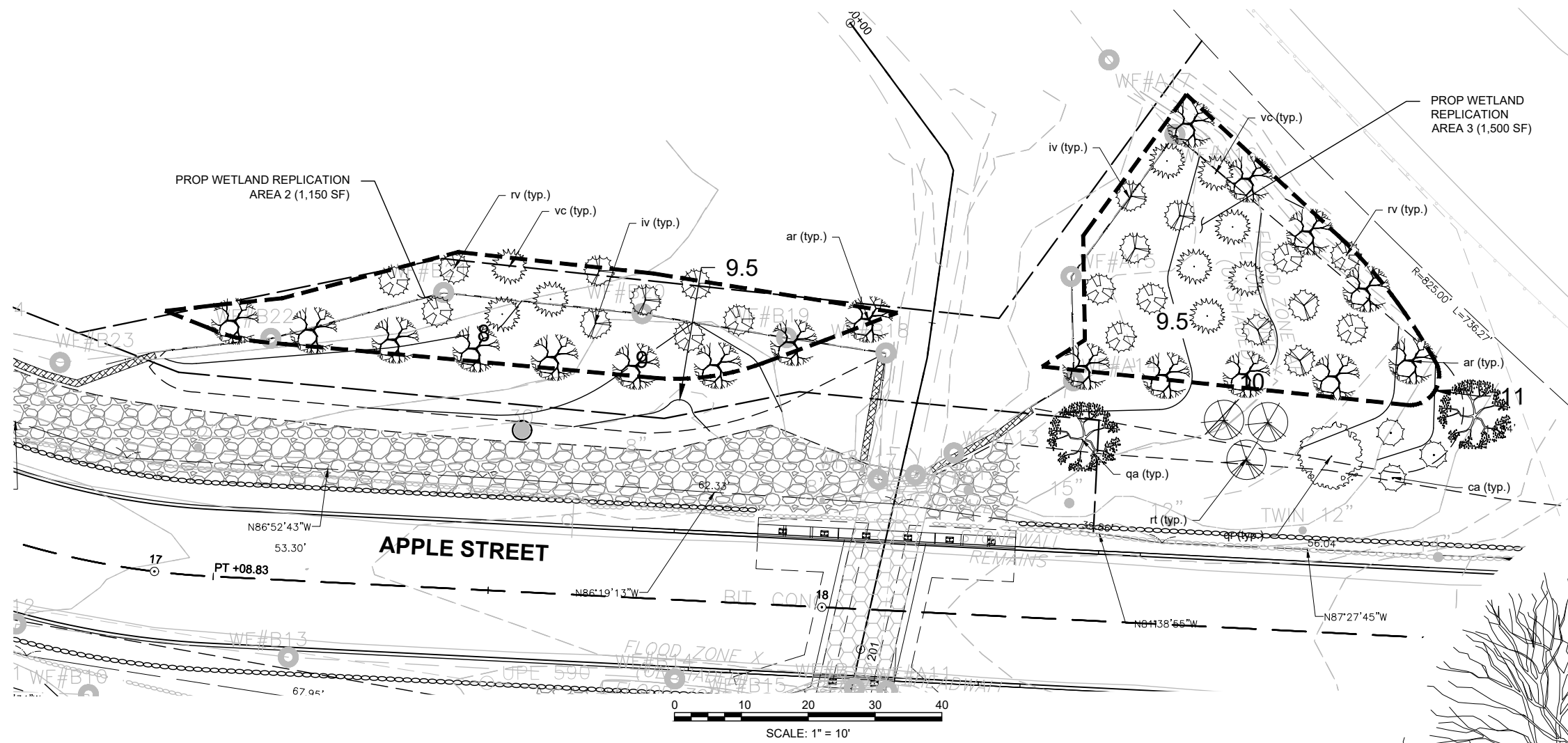
NOTES:

- To the extent possible, leave mature Red Maple trees within replication areas to provide shade and hummock topography and mature trees within the construction access and adjacent buffer zone for shade. Mature Red Maple and Shagbark Hickory trees to remain shall be marked in the field prior to construction.
 - Transplant existing FACW shrub species from wetland impact areas into replication areas. Transplanted shrub species shall include winterberry, highbush blueberry, and swamp azalea.
 - Species proposed for transplantation shall be removed in plugs or culms and protected against desiccation.
 - Typical plant storage may include the following:
 - Outside storage that is shaded and protected from the wind.
 - Plants covered with burlap, tarpaulin, or mulching material to protect against freezing or drying.
 - Plants that are "heeled-in" (recommended for plants not planted within 2 days of delivery or removal). "Heeling-in" involves covering the bare root or root balls with moist sawdust, wood chips, shredded bark, peat moss, or other approved mulching material(s). Place plants in a trench or group plants together on ground surface. Fill around all roots and root balls with mulch. Water (as needed)
 - At least 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species within two growing seasons, and prior to said vegetative reestablishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with standard U.S. Soil Conservation Service methods.
 - The construction and subsequent growth will be monitored for at least two years or until the 75% criteria is met following construction. In the event that the replication area does not meet the 75% reestablishment standard, monitoring reports shall recommend additional plantings and/or seeding.
- Invasive Species Control:**
- Trucks that have previously been on other sites should be washed prior to introduction to the replication site so that mud/dirt with exotic/invasive seeds is not inadvertently brought to the replication site.
 - It is essential to minimize areas of soil disturbance in the vicinity of invasive species, specifically Common Reed near Replication Area 1.
 - Monitoring for invasive species should be conducted and any invasive handpicked before becoming widespread and established.
- All planting should occur at the beginning or end of the growing season. Fall plantings should be done before the first frost. Shrubs and trees, however, may be planted up to November 15, weather permitting.
 - Monitoring shall be in accordance with Massachusetts Inland Wetland Replication Guidelines and the Conservation Commission Order of Conditions.

KEY	QTY	Botanical Name	Common Name	Wetland Indicator Status	Size	Root	Spacing
PLANT SCHEDULE							
BVW Replication Areas							
Trees							
ar	25	Acer rubrum	Red Maple	FAC	4-5' Ht.	Container	12' O.C.
Shrubs							
iv	15	Ilex verticillata	Winterberry	FACW	24" Ht.	#2 Cont.	8' O.C.
rv	15	Rhododendron viscosum	Swamp Azalea	FACW	24" Ht.	#2 Cont.	8' O.C.
vc	12	Vaccinium corymbosum	Highbush blueberry	FACW	24" Ht.	#2 Cont.	8' O.C.
Transplanted Shrubs	12	Variety of the above shrubs		FACW	Minimum 24" Ht.	Bare root	8' O.C.
Wetland Seed Mix - Choose one of the following or similar.							
New England Wetmix (New England Wetland Plants, Inc.)							
Vermont Wetland Hummock Mix (VT Wetland Plant Supply)							
Buffer Zone							
Trees							
qr	4	Quercus rubra	Red Oak	FACU	4-5' Ht.	Container	15' O.C.
qa	3	Quercus alba	White Oak	FACU	4-5' Ht.	Container	15' O.C.
Shrub							
rt	6	Rhus typhina	Staghorn Sumac	FACU	24" Ht.	#2 Cont.	10' O.C.
ca	9	Cornus alternifolia	Alternate-leaved Dogwood	UPL	24" Ht.	#2 Cont.	10' O.C.
Buffer Zone Seed Mix							
New England Erosion Control/Restoration Mix for Dry Sites (New England Wetland Plants, Inc.)							

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LEGEND:

PROP MODIFIED ROCKFILL W/ COMPOST TOPDRESSING: [Symbol]

PROP STREAMBED RESTORATION: [Symbol]

WETLAND REPLICATION AREA: [Symbol]

NAD 83

DuBois & King Inc.
 ENGINEERING • PLANNING • MANAGEMENT • DEVELOPMENT
 28 NORTH MAIN ST.
 RANDOLPH, VT 05060
 TEL: (802) 728-3376
 FAX: (802) 783-7101
 www.dubois-king.com
 SO. BURLINGTON, VT
 SPRINGFIELD, VT
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 BEDFORD, NH LACONIA, NH
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 PROFESSIONAL SEAL



NO.	DATE	DESCRIPTION	BY	CK'D

TOWN OF ESSEX
 30 MARTIN STREET
 ESSEX, MA 01929

APPLE STREET
 ROADBED
 ELEVATION &
 CULVERT
 REPLACEMENT
 PROJECT

SHEET TITLE

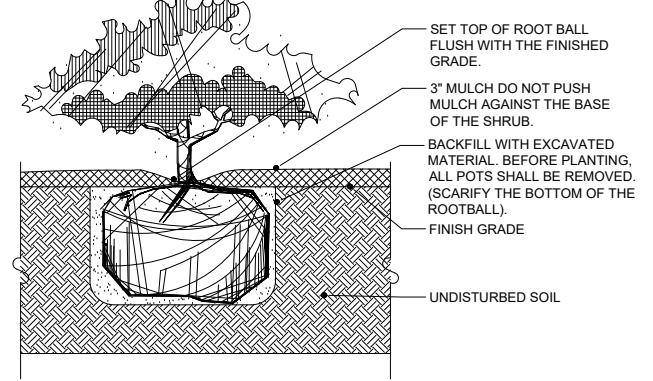
RESOURCE AREA
 IMPACT PLANTING
 PLAN 02

DRAWN BY	DATE
SANZ	FEB. 15, 2023
CHECKED BY	D&K PROJECT #
ANR	126268
PROJ. ENG.	D&K ARCHIVE #
ATH	

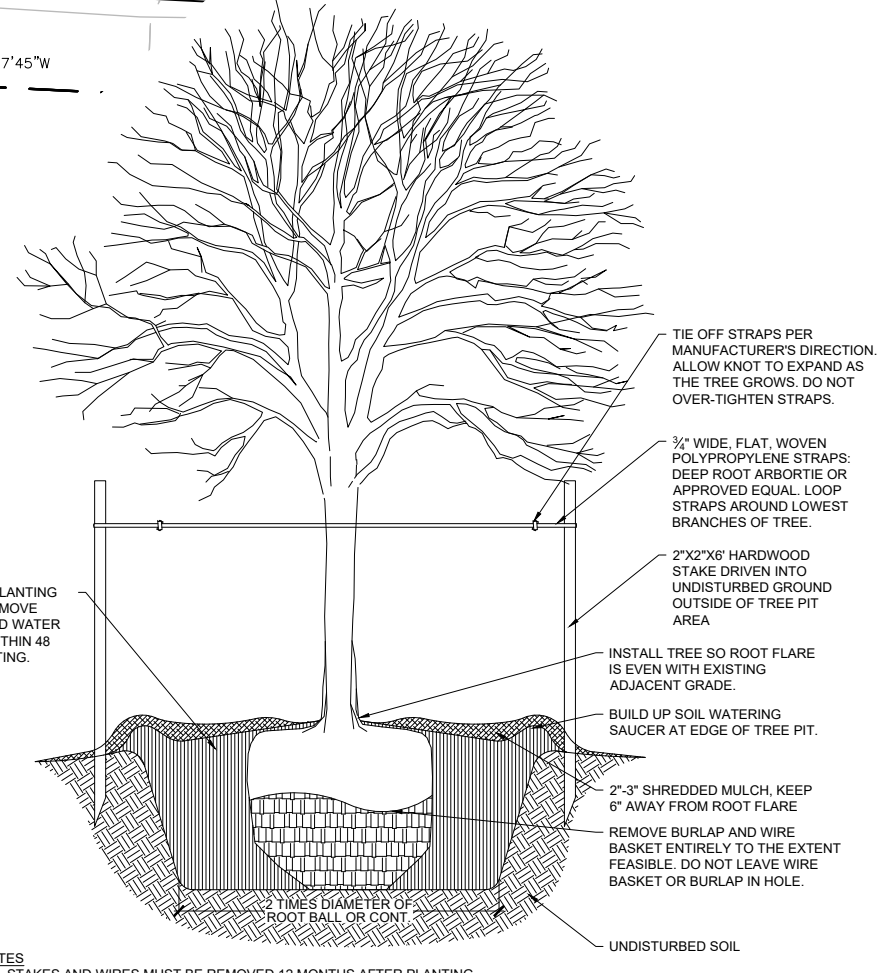
SHEET NUMBER

02

SHEET 02 OF 04



SHRUB PLANTING DETAIL
 SCALE: NTS



DECIDUOUS TREE PLANTING DETAIL
 SCALE: NTS

- NOTES**
1. STAKES AND WIRES MUST BE REMOVED 12 MONTHS AFTER PLANTING.
 2. ALL NURSERY TAGS, TAPE, AND SIMILAR MATERIALS SHALL BE REMOVED.
 3. PLANTING HOLE SHALL BE DUG BY BACKHOE OR OTHER MACHINE AND FINISHED BY HAND.
 4. IF SURROUNDING SOIL IS COMPACTED, AN AREA UP TO 5 TIMES THE DIAMETER OF THE ROOT MASS MAY BE EXCAVATED OR ROTOTILLED TO A 1' DEPTH AND SOIL SHALL BE AMENDED.
 5. PRUNE ONLY DEAD, DECAYING, BROKEN, CROSSING OR INWARD GROWING BRANCHES. NEVER DAMAGE OR CUT LEADER.



NO.	DATE	DESCRIPTION	BY	CK'D

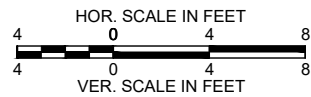
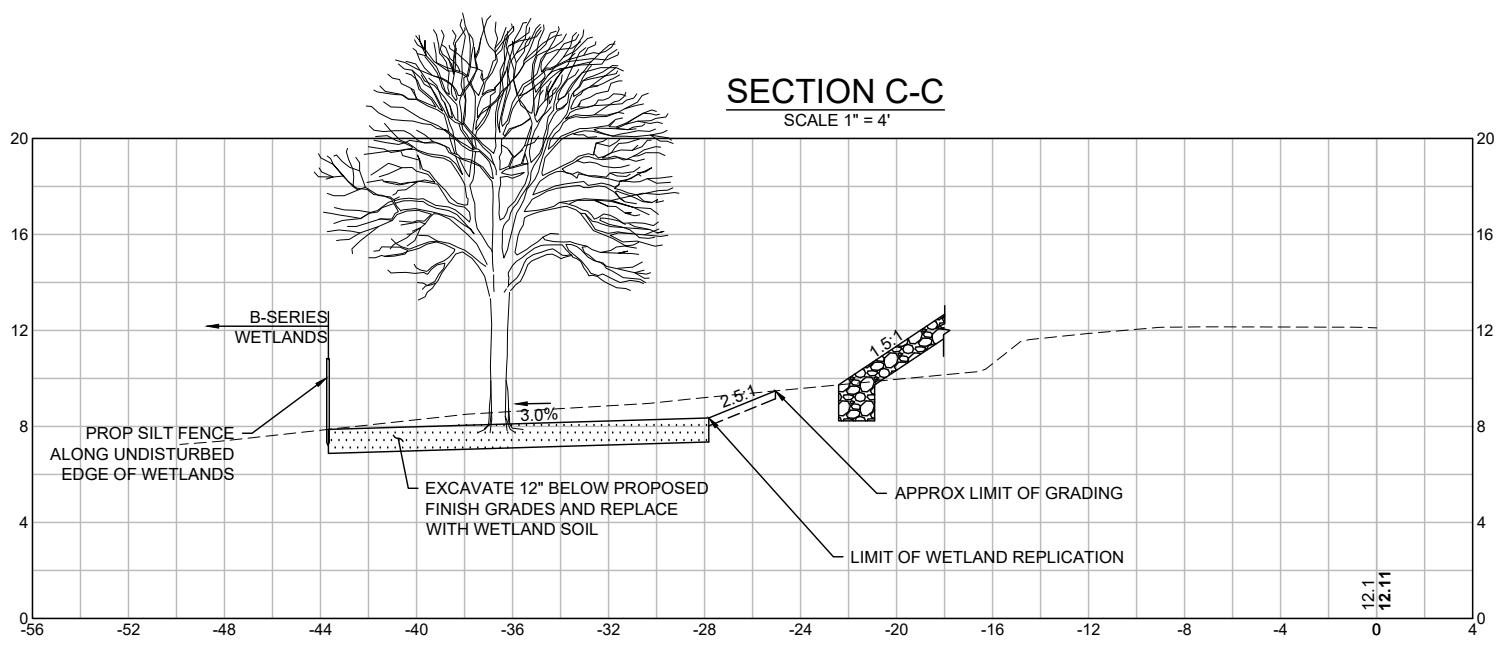
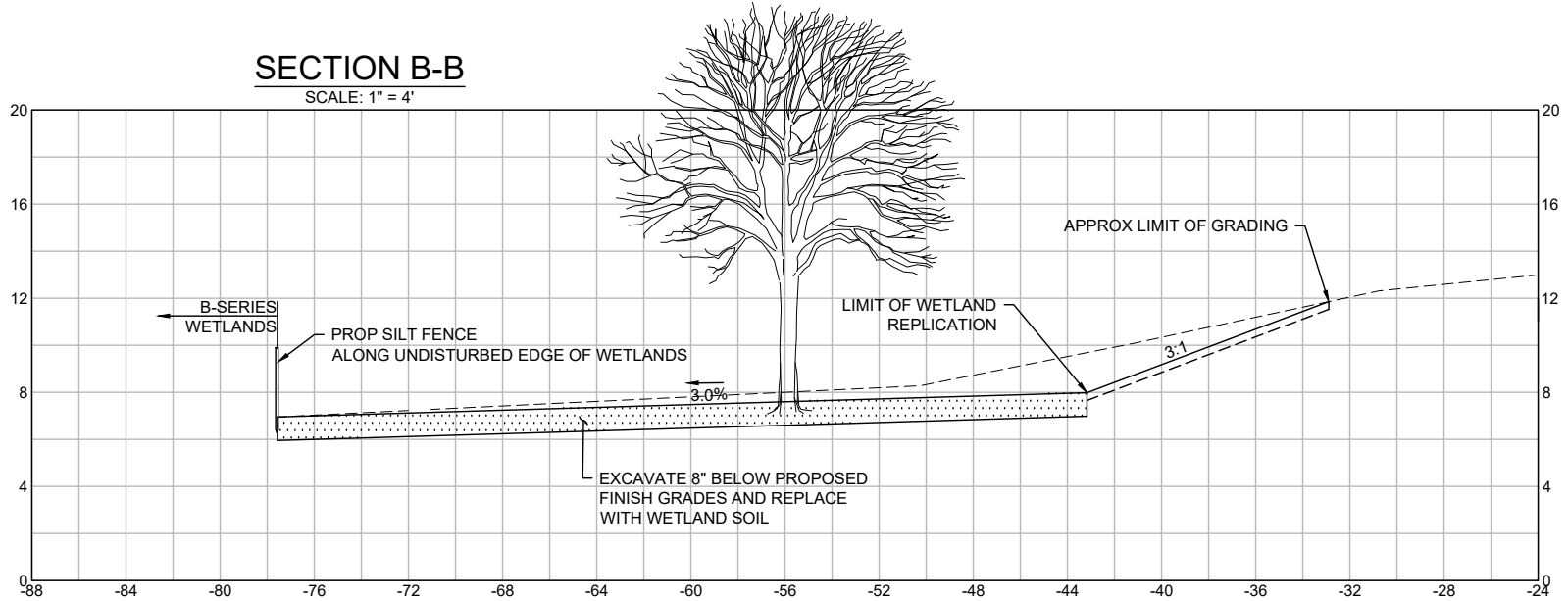
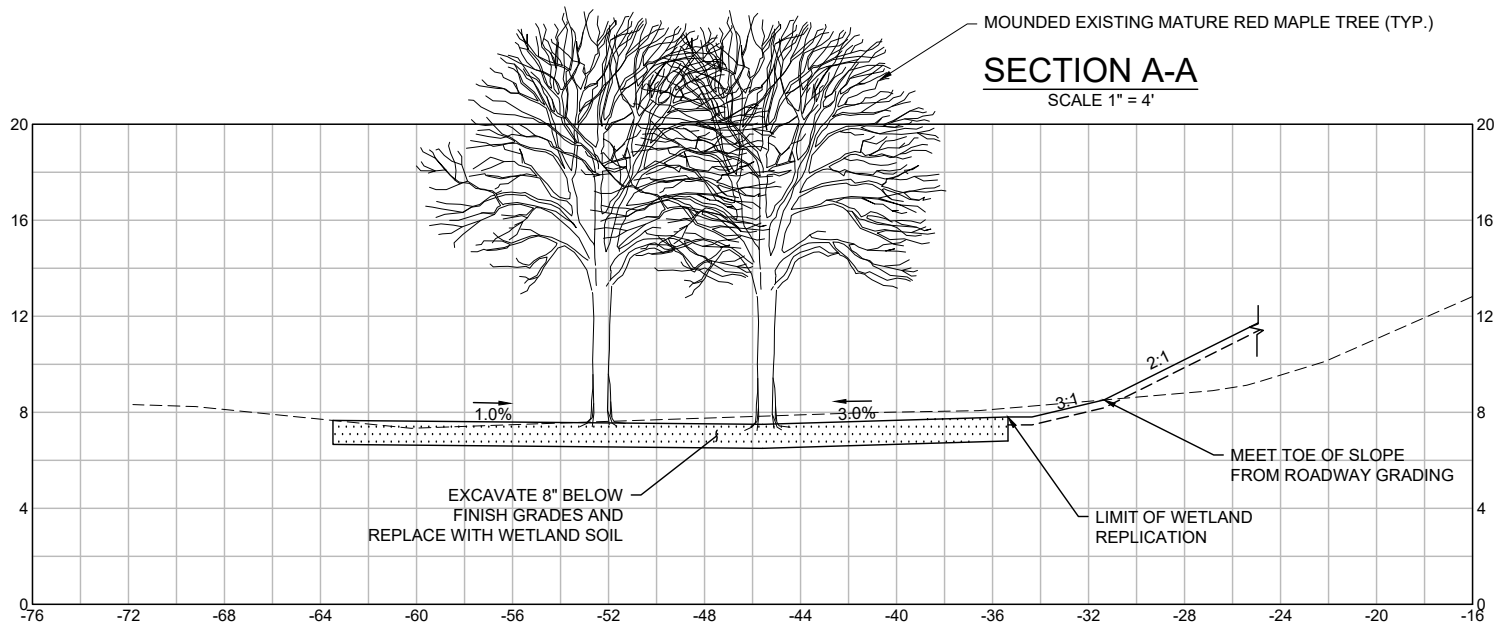
TOWN OF ESSEX
30 MARTIN STREET
ESSEX, MA 01929

APPLE STREET
ROADBED
ELEVATION &
CULVERT
REPLACEMENT
PROJECT

SHEET TITLE
RESOURCE AREA
IMPACT CROSS
SECTIONS 01

DRAWN BY	DATE
CHECKED BY	D&K PROJECT #
PROJ. ENG.	D&K ARCHIVE #

SHEET NUMBER
03
SHEET 03 OF 04



I:\1\26268 TEC Apple Street Culvert Replacement\Drawings\CAD\126268_Wetland Planting Plan.dwg 2/15/2023 2:53 PM



NO.	DATE	DESCRIPTION	BY	CK'D

TOWN OF ESSEX
30 MARTIN STREET
ESSEX, MA 01929

APPLE STREET
ROADBED
ELEVATION &
CULVERT
REPLACEMENT
PROJECT

SHEET TITLE

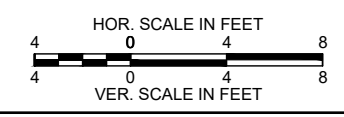
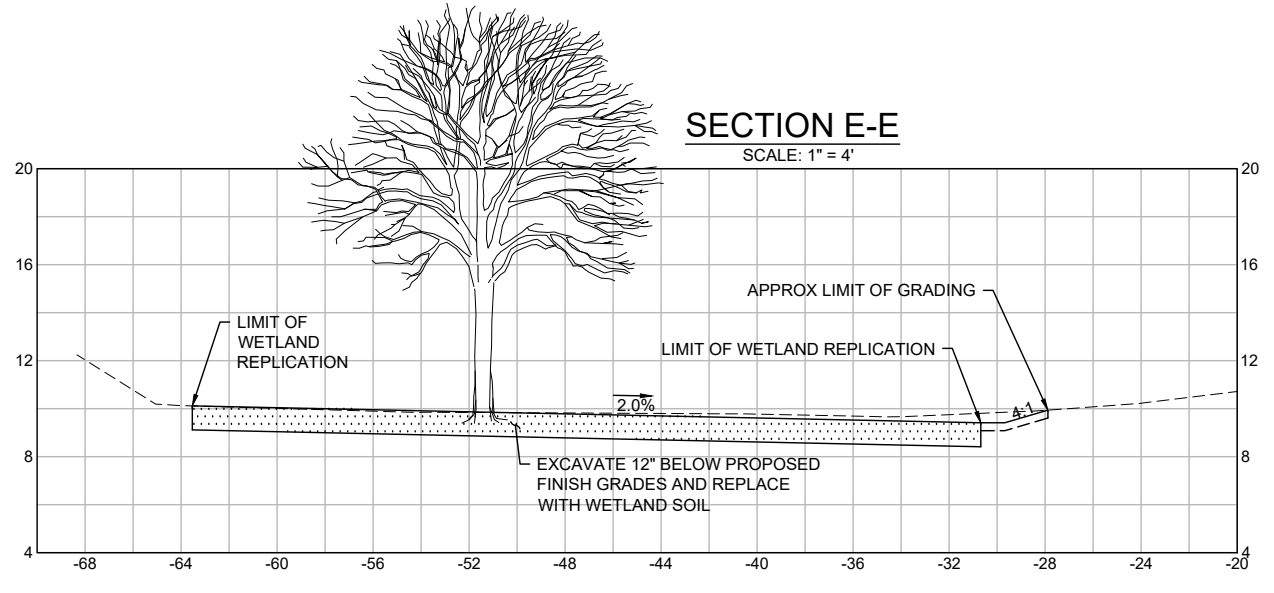
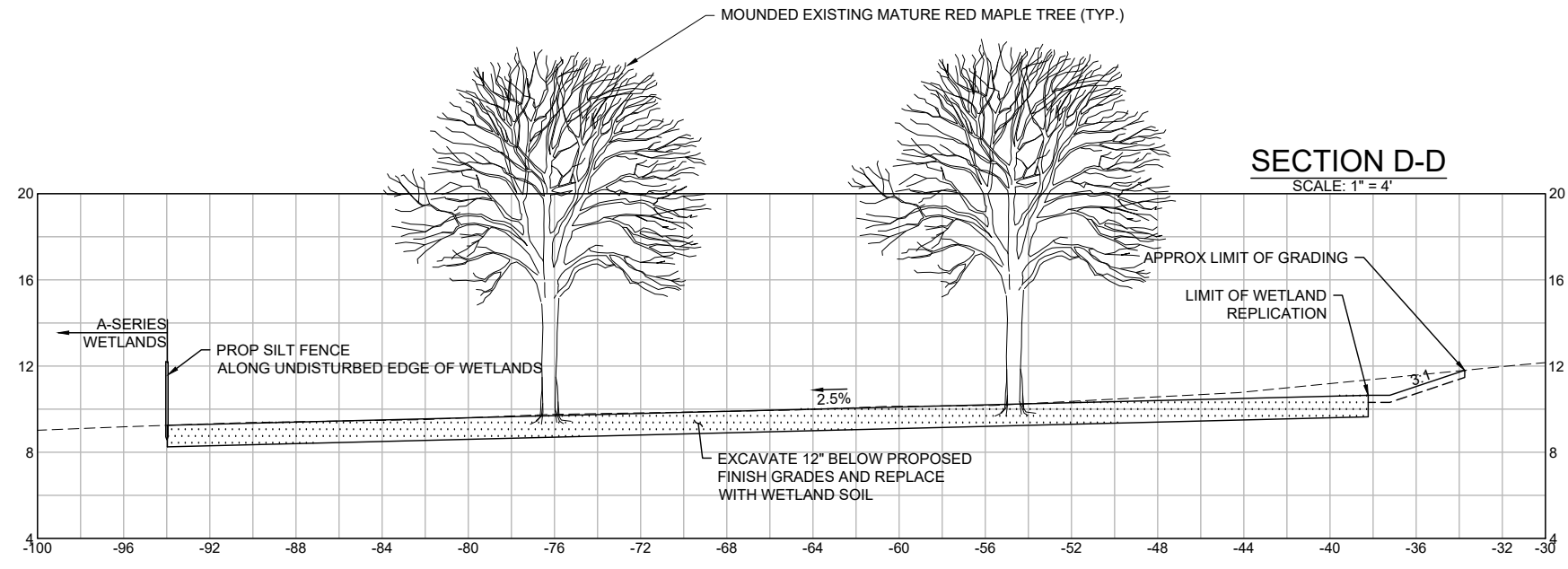
RESOURCE AREA
IMPACT CROSS
SECTIONS 02

DRAWN BY	DATE
CHECKED BY	D&K PROJECT #
PROJ. ENG.	D&K ARCHIVE #

SHEET NUMBER

04

SHEET 04 OF 04



ATTACHMENT H
Miscellaneous NOI Documents

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act
And the Town of Sudbury Wetlands Administration Bylaw (Article XXII)

*(To be submitted to the Massachusetts Department of Environmental Protection
and the Conservation Commission when filing a Notice of Intent)*

I, Aimee Rutledge,
Name of person making affidavit

hereby certify under the pains and penalties of perjury that on February 13, 2023
date


I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, Section 5 of the Town of Sudbury Wetlands Administration Bylaw (Article XXII), and the DEP Guide to Abutter Notification dated April 8, 1994, in connection with the following matter:

A Notice of Intent was filed under the Massachusetts Wetlands Protection Act by
Town of Essex with the
Name of Applicant

Essex Conservation Commission on February 15, 2023 for the property
date

located at 0 Apple Street
Address of land where work is proposed

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

 February 15, 2023
Applicant Signature Date

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Peter B Jr. Tr Surdan
131 Apple St
Essex, MA 01929



9590 9402 5135 9092 9414 42

2. Article Number (Transfer from service label)

7019 0700 0002 2519 7974

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

- Agent
- Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? Yes
If YES, enter delivery address below: No

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail (over \$500)
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053

Domestic Return Receipt

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Essex County Greenbelt Assoc.
82 Eastern Ave.
Essex, MA 01929



9590 9402 5135 9092 9414 35

2. Article Number (Transfer from service label)

7019 0700 0002 2519 7981

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

- Agent
- Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? Yes
If YES, enter delivery address below: No

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail (over \$500)
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053

Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

James Ansara
P.O. Box 502
Essex, MA 01929



9590 9402 5135 9092 9406 98

2. Article Number (Transfer from service label)

7019 0700 0002 2519 8001

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

-
- Agent
-
-
- Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? Yes
If YES, enter delivery address below: No

3. Service Type

- | | |
|--|---|
| <input type="checkbox"/> Adult Signature | <input type="checkbox"/> Priority Mail Express® |
| <input type="checkbox"/> Adult Signature Restricted Delivery | <input type="checkbox"/> Registered Mail™ |
| <input checked="" type="checkbox"/> Certified Mail® | <input checked="" type="checkbox"/> Registered Mail Restricted Delivery |
| <input type="checkbox"/> Certified Mail Restricted Delivery | <input type="checkbox"/> Return Receipt for Merchandise |
| <input type="checkbox"/> Collect on Delivery | <input type="checkbox"/> Signature Confirmation™ |
| <input type="checkbox"/> Collect on Delivery Restricted Delivery | <input type="checkbox"/> Signature Confirmation Restricted Delivery |
| <input type="checkbox"/> Insured Mail | |
| <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500) | |

Domestic Return Receipt

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Joseph Balbo
129 Apple St.
Essex, MA
01929



9590 9402 5135 9092 9405 37

2. Article Number (Transfer from service label)

7019 0700 0002 2519 7943

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

-
- Agent
-
-
- Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? Yes
If YES, enter delivery address below: No

3. Service Type

- | | |
|--|---|
| <input type="checkbox"/> Adult Signature | <input type="checkbox"/> Priority Mail Express® |
| <input type="checkbox"/> Adult Signature Restricted Delivery | <input type="checkbox"/> Registered Mail™ |
| <input checked="" type="checkbox"/> Certified Mail® | <input type="checkbox"/> Registered Mail Restricted Delivery |
| <input type="checkbox"/> Certified Mail Restricted Delivery | <input checked="" type="checkbox"/> Return Receipt for Merchandise |
| <input type="checkbox"/> Collect on Delivery | <input type="checkbox"/> Signature Confirmation™ |
| <input type="checkbox"/> Collect on Delivery Restricted Delivery | <input type="checkbox"/> Signature Confirmation Restricted Delivery |
| <input type="checkbox"/> Insured Mail | |
| <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500) | |

Domestic Return Receipt

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Margo Kusulas
2 Andrews St.
Essex, MA 01929



9590 9402 5135 9092 9414 59

2. Article Number (Transfer from service label)

7019 0700 0002 2519 7967

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

- Agent
- Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? Yes
If YES, enter delivery address below: No

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery (over \$500)
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

Domestic Return Receipt

PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT OF THE RETURN ADDRESS, FOLD AT DOTTED LINE

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Glorsky Mark B Trustee
8 Washington St.
Beverly, MA
01929



9590 9402 5135 9092 9414 66

2. Article Number (Transfer from service label)

7019 0700 0002 2519 7950

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

- Agent
- Addressee

B. Received by (Printed Name)

C. Date of Delivery

D. Is delivery address different from item 1? Yes
If YES, enter delivery address below: No

3. Service Type

- Adult Signature
- Adult Signature Restricted Delivery
- Certified Mail®
- Certified Mail Restricted Delivery
- Collect on Delivery
- Collect on Delivery Restricted Delivery
- Insured Mail
- Insured Mail Restricted Delivery (over \$500)
- Priority Mail Express®
- Registered Mail™
- Registered Mail Restricted Delivery
- Return Receipt for Merchandise
- Signature Confirmation™
- Signature Confirmation Restricted Delivery

Domestic Return Receipt


PLACE STICKER AT TOP OF ENVELOPE TO THE RIGHT OF THE RETURN ADDRESS FOR ADDITIONAL MAILING

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Eugene Cornfield
128 Apple St.
Essex, MA 01929



9590 9402 5135 9092 9406 05

2. Article Number (Transfer from service label)

7019 0700 0002 2519 7998

COMPLETE THIS SECTION ON DELIVERY

A. Signature Agent
 Addressee

X

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? Yes
If YES, enter delivery address below: No

3. Service Type
- | | |
|--|---|
| <input type="checkbox"/> Adult Signature | <input type="checkbox"/> Priority Mail Express® |
| <input type="checkbox"/> Adult Signature Restricted Delivery | <input type="checkbox"/> Registered Mail™ |
| <input checked="" type="checkbox"/> Certified Mail® | <input type="checkbox"/> Registered Mail Restricted Delivery |
| <input type="checkbox"/> Certified Mail Restricted Delivery | <input checked="" type="checkbox"/> Return Receipt for Merchandise |
| <input type="checkbox"/> Collect on Delivery | <input type="checkbox"/> Signature Confirmation™ |
| <input type="checkbox"/> Collect on Delivery Restricted Delivery | <input type="checkbox"/> Signature Confirmation Restricted Delivery |
| <input type="checkbox"/> Insured Mail | |
| <input type="checkbox"/> Insured Mail Restricted Delivery (over \$500) | |



Aimee Rutledge <arutledge@dubois-king.com>

Re: Request for Publication 11222620

1 message

GTLegals@gloucestertimes.com <GTLegals@gloucestertimes.com>

Mon, Feb 13, 2023 at 2:54 PM

To: Conservation <conservation@essexma.org>

Cc: Aimee Rutledge <arutledge@dubois-king.com>, Brendhan Zubricki <bzubricki@essexma.org>

Good day,

The following information confirms the date(s) and publication(s) for your notice. Please take note to ensure this matches with your requirement and request any changes needed.

Print Date: February 15

Publication: Gloucester Times

Cost: \$102.02

Payment: An invoice will be sent.

Please note if there are any necessary changes. If no changes are requested, the notice will publish as shown here. Approval of the proof is assumed if no changes are requested.

Cordially,
Christa MacDonald

Gloucester Times
36 Whittemore St.
Gloucester, MA 01930
978-675-2710

gtleghals@northofboston.com

All customers will receive a price and proof prior to publication. Please review the proof carefully. If we do not receive instructions for changes or corrections we will assume the notice is acceptable for publication.


To our active customers-- the notice will run as requested unless we are contacted to make changes.

To our pre-pay customers--payment will be required before publication. The notice will run as shown in the proof unless we are contacted to make changes.

From: Conservation <conservation@essexma.org>
To: Gloucester Times Legal Ads <gtleghals@northofboston.com>
Cc: Aimee Rutledge <arutledge@dubois-king.com>, Brendhan Zubricki <bzubricki@essexma.org>
Date: 02/12/2023 06:36 PM
Subject: Request for Publication

Attached is a legal notice for publication on Wednesday, February 15, 2023. The applicant is responsible for payment and is copied on this email. The Town of Essex has an account and the notice can be billed. Please let me know if you have any questions.

Deborah Cunningham, Administrative Clerk | Essex Conservation Commission | 30 Martin Street, Essex, MA 01929 | Phone 978-768-2509 : Email conservation@essexma.org | Office Hours Mondays, Wednesdays and Thursdays by Appointment Only[attachment "Apple St Legal Notice.pdf" deleted by Christa MacDonald/NOB]

 **11222620.PDF**
51K

NOTICE OF PUBLIC HEARING

The Essex Conservation Commission will hold a public hearing under the Massachusetts Wetlands Protection Act, MGL Chapter 131, Section 40, on a Notice of Intent filed by the Town of Essex for proposed reconstruction/widening of approximately 850' of roadway including installation of an 80' retaining wall and replacement of the culvert at Apple St/Southern Ave to 129 Apple St. The hearing will be held on February 21, 2023 at 8:10 PM.

Essex Conservation Commission
GT - 2/15/23



Aimee Rutledge <arutledge@dubois-king.com>

Re: Apple Street Improvements - WPA NOI

1 message

Aimee Rutledge <arutledge@dubois-king.com>

Wed, Feb 15, 2023 at 3:49 PM

To: Conservation <conservation@essexma.org>

Cc: dmf.enreview-north@mass.gov, Brendhan Zubricki <bzubricki@essexma.org>, Gregory Gaudreau <ggaudreau@theengineeringcorp.com>

Hello,

The original email to the Division of Marine Fisheries was sent back due to file size. "Therefore, I am sending the NOI and attachments in 2 separate emails.

Sincerely,

Aimee N. Rutledge, PWS, CPESC, CPSWQ (she/her)

DuBois & King, Inc.

802-878-7661 x7242 (O)

401-529-5034 (C)

On Wed, Feb 15, 2023 at 3:27 PM Aimee Rutledge <arutledge@dubois-king.com> wrote:

Hello,

Please find enclosed the WPA Notice of Intent for the Apple Street Roadbed Elevation and Culvert Replacement Project for your review.

Sincerely,

Aimee N. Rutledge, PWS, CPESC, CPSWQ (she/her)

DuBois & King, Inc.

6 Green Tree Drive

South Burlington, VT 05403

802-878-7661 x7242 (O)

401-529-5034 (C)

2 attachments **Apple St_WPA NOI_Project Narrative.pdf**

136K

 **Apple St_WPA NOI Attachments A-D.pdf**

12250K



Aimee Rutledge <arutledge@dubois-king.com>

Re: Apple Street Improvements - WPA NOI

1 message

Aimee Rutledge <arutledge@dubois-king.com>

Wed, Feb 15, 2023 at 3:50 PM

To: Conservation <conservation@essexma.org>

Cc: dmf.envreview-north@mass.gov, Brendhan Zubricki <bzubricki@essexma.org>, Gregory Gaudreau <ggaudreau@theengineeringcorp.com>

Email 2

Aimee N. Rutledge, PWS, CPESC, CPSWQ (she/her)

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6 Green Tree Drive

South Burlington, VT 05403

802-878-7661 x7242 (O)

401-529-5034 (C)

 **Apple St_WPA NOI Attachments E-H.pdf**
3141K