Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Hudson, Stow, Marlborough, and Sudbury

PREPARED FOR

EVERSOURCE ENERGY

NSTAR Electric Company
d/b/a Eversource Energy
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Westwood, MA, 02090

dcr MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION

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PREPARED BY

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JULY 2020

July 31, 2020

Ref: 12970.00/14424.00

Alan Anacheka-Nasemann
Sr. Project Manager/Ecologist, Regulatory Division
New England District, US Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Re: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Dear Mr. Anacheka-Nasemann,

On behalf of the co-applicants, the Massachusetts Department of Conservation and Recreation ("DCR") and NSTAR Electric Company d/b/a Eversource Energy, VHB is submitting this Pre-Construction Notification for coverage under the Section 404 Massachusetts General Permit. The Project involves the installation of Eversource's new Sudbury-Hudson electric transmission line and construction of DCR's Mass Central Rail Trail within an existing inactive railroad right-of-way owned by the Massachusetts Bay Transportation Authority, in the towns of Hudson, Stow, Marlborough, and Sudbury, Massachusetts.

We appreciate your consideration of this application and look forward to working with you on the environmental review of this project. Please do not hesitate to contact Vivian Kimball (508-513-2713, vkimball@vhb.com) or Gene Crouch (617-607-2783, gcrouch@vhb.com) should you require additional information or clarification pertaining to the enclosed information.

Sincerely,

Vivian Kimball and Gene Crouch

CC: Denise Bartone, Eversource
Paul Jahnige, DCR

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Table of Contents

List of Tables

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1

Introduction

On behalf of the co-applicants, the Massachusetts Department of Conservation and Recreation ("DCR") and NSTAR Electric Company d/b/a Eversource Energy, VHB is submitting this Pre-Construction Notification ("PCN") with the US Army Corps of Engineers ("USACE") requesting a Section 404 permit under the federal Clean Water Act ("CWA") (33 USC § 1344) and its implementing rules, regulations, and policies.

Eversource is proposing to install a new 115-kilovolt ("kV") underground electric transmission line and DCR is proposing to construct a portion of the Mass Central Rail Trail ("MCRT") within an inactive Massachusetts Bay Transportation Authority ("MBTA") railroad right-of-way ("ROW") located in Hudson, Stow, Marlborough, and Sudbury, Massachusetts. A locus map is provided as Figure 1 in Appendix A. This Project is the direct result of a collaborative project-planning process among DCR, Eversource, and the MBTA. This coordinated effort combines two compatible uses within a single existing and under-utilized transportation corridor, with a proposed phased construction sequence to minimize cost, the overall construction schedule, and potential impacts to wetland resource areas.

Throughout the design phase of the Project, Eversource and DCR have coordinated closely and have jointly met with local municipalities as well as state regulatory agencies such as Massachusetts Department of Environmental Protection ("MassDEP") Wetlands Division,

MassDEP Waterways (Chapter 91) Division, and the Natural Heritage & Endangered Species Program ("NHESP") to discuss the details for the proposed MCRT and the underground transmission line. DCR and Eversource are developing a Memorandum of Understanding ("MOU") to memorialize agreements to design, permit, construct, operate, and maintain the Project, and have made a concerted effort to design the Project to avoid and minimize impacts to wetland resource areas.

The Project will serve the dual purpose of increasing the reliability of the regional electric transmission system and advancing state-wide multi-use trail network initiatives. The underground electric transmission component of the Project will resolve thermal overloads and low voltage conditions and will support the increased demand for electricity within this portion of the transmission system.

1.1 Project Overview

The Project is approximately 9.0 miles long, of which 7.6 miles is located within the MBTA ROW from the Sudbury Substation west to Wilkins Street in Hudson. At Wilkins Street, the Project continues southwest within Wilkins Street and Forest Avenue for approximately 1.4 miles to its termination at the Hudson Light and Power Department ("HLPD") Substation. There are no wetland impacts along the segment of the Project located within Wilkins Street and Forest Avenue. The land within the MBTA ROW is previously developed consistent with its former use as a railroad ROW. In its present condition, the track structure (rail, ties, and ballast) occupies a footprint that is approximately 11 feet wide throughout the ROW.

1.2 Summary of Impacts to Waters of the US

A summary of the work proposed within Waters of the US is provided in Table 1. Further descriptions of these resource areas is provided in Section 3.

Permanent impacts (1,014 square feet) to Waters of the US are primarily the result of grading to provide a safe construction work platform and satisfy DCR design criteria for bicycle paths. Temporary impacts (3,633 square feet) are primarily due to either lowering the existing grade (that will not result in wetland loss) or placement of crane mats to support construction at Bridges 127 and 130. The Project also proposes to rehabilitate Bridge 128, but the crane mats in this location can be placed in uplands and this work will not result in impacts to Waters of the US. Table 2 provides a detailed breakdown of impacts to Waters of the US.

The Project will result in a total of less than 5,000 square feet of permanent and temporary impacts to Waters of the US and is eligible for Self-Verification based on these impacts. However, based on feedback from the Massachusetts Historical Commission ("MHC"), the Project has the potential to cause effects to historic properties eligible for listing on the National Register of Historic Places. Therefore, this PCN is being filed in accordance with MA GP General Condition 7c.

Table 1 Summary of Work within Jurisdictional Waters of the US

Activity and Resource Type	Permanent Impact (sf)	Temporary Impact (sf)	Total Impact (sf)
Stream Crossings			
Bridge 130 Replacement (Fort Meadow Brook)			
Crane Mats in BVW	-	1,936	1,936
Bridge 128 Rehabilitation (Hop Brook)	-	-	-
Bridge 127 Replacement (Hop Brook)			
Crane Mats in BVW	-	296	296
Crane Mats in Stream	-	1,146	1,146
Crane Mats along Bank (lf)	-	246	246
Grading in Wetlands			
In BVW	85	201	286
In IVW	925	27	952
Headwall Installations			
In BVW	4	27	31
TOTAL (sf)	**1,014**	**3,633**	**4,647**
In BVW	89	2,460	2,549
In IVW	925	27	952
In Stream	0	1,146	1,146

Source: VHB
IVW = Isolated Vegetated Wetland
BVW = Bordering Vegetated Wetland

Table 2 Breakdown of Impacts to Waters of the US

Station	Wetland #	Wetland Type[1]	Permanent Impact (sf)	Temporary Impact (sf)	Work
Hudson					
105+40 to 105+53	21	IVW, PFO	-	27	Grading (cut; no wetland loss)
116+05 to 116+56	3	IVW, PEM	312	-	Grading (fill)
147+85 to 150+15 (north of ROW)	7	BVW, PEM	-	663	Crane mats
147+85 to 150+15 (south of ROW)	6	BVW, PEM	-	1,273	Crane mats
309+91 to 311+70	12	IVW, PSS	310	0	Grading (fill)

Station	Wetland #	Wetland Type[1]	Permanent Impact (sf)	Temporary Impact (sf)	Work
Sudbury					
713+57 to 713+69 (north of ROW)	18	BVW, PSS	4	23	Permanent: Concrete headwall (fill) Temporary: Grading (cut; no wetland loss)
713+61 to 713+69 (south of ROW)	19	BVW, PSS	-	4	Grading (cut; no wetland loss) for concrete headwall
724+33 to 724+97 (west side of Bridge 127; north of ROW)	15	BVW, PEM	-	118	Crane mats
	N/A	Stream (Hop Brook)	-	333	Crane mats
724+33 to 724+93 (west side of Bridge 127; south of ROW)	16	BVW, PEM	-	60	Crane mats
	N/A	Stream (Hop Brook)	-	263	Crane mats
725+74 to 726+36 (east side of Bridge 127; north of ROW)	14	BVW, PFO/PEM	-	118	Crane mats
	N/A	Stream (Hop Brook)	-	155	Crane mats
725+75 to 726+36 (east side of Bridge 127; south of ROW)	N/A	Stream (Hop Brook)	-	395	Crane mats
732+24 to 732+73	13	IVW, PFO	303	-	Grading (fill)
764+57 to 764+65	4	BVW, PSS	85	201	Permanent: Grading (fill) Temporary: Grading (cut)
		TOTAL	**1,014**	**3,633**	
TOTAL PERMANENT + TEMPORARY				**4,647**	

Source: VHB

1 IVW = Isolated Vegetated Wetland
BVW = Bordering Vegetated Wetland
PFO = Palustrine Forested
PSS = Palustrine Scrub-Shrub
PEM = Palustrine Emergent

This PCN seeks written authorization under Section 404 of the federal Clean Water Act for permanent, temporary, and secondary impacts associated with rail trail and underground transmission line installation within wetlands. The Project is subject to General Permit 9 (Utility Line Activities) and General Permit 10 (Linear Transportation Projects and Stream

Crossings), with all of their terms and conditions, as well as the general conditions under the General Permits for the Commonwealth of Massachusetts (2018).

Eversource and DCR have filed Notices of Intent in Hudson, Stow, and Sudbury under the Massachusetts Wetlands Protection Act and will work to obtain Orders of Conditions that will serve as the §401 Water Quality Certification.

1.3 Proposed Work

The Project will be constructed in a two-phased approach. Phase 1 will be under the control and responsibility of Eversource and will include all major earthwork, bridge reconstruction, construction of the wetland replication area, and the installation of the underground transmission line and stormwater management features. Phase 2 will be under the control and responsibility of DCR and will include installation of facilities at road crossings, paving the MCRT, and final restoration. Eversource and DCR will employ a qualified environmental monitor ("EM") during both Phases of construction. The EM will be responsible for daily inspections of work areas and will address potential issues related to the environment, if any (e.g., sediment migration, erosion controls, swamp mat installation, rare species, etc.). The EM will have stop work authority if site conditions are found to not be in conformance with permit conditions. During Phase 1, an Eversource EM will be responsible for ensuring that all construction activities are completed in accordance with applicable permit conditions. Once Phase 1 is complete, DCR's EM will assume all monitoring responsibilities during Phase 2 construction.

1.3.1 Stream Crossings

The Project proposes to replace existing railroad Bridges 130 and 127 and rehabilitate existing railroad Bridge 128. Erosion controls will be installed prior to grading the approaches to the bridges. In addition to silt fence and compost filter tubes, debris containment measures will be installed for the removal of the existing structure. Depending on the water depth at the time of construction, turbidity controls may consist of a geotextile fabric suspended from flotation booms and weighted at the bottom (turbidity curtains) or staked tall silt fence. All disturbed areas will be loamed and seeded with a native seed mix as described in Section 1.3.3. In addition, the crane mat locations will be stabilized with jute mesh and coconut fiber erosion control blankets, and the crane mat areas as well as the slopes adjacent to Bridges 130 and 127 will be planted with native trees and shrubs.

1.3.1.1 Fort Meadow Brook Crossing (Bridge 130)

The existing timber open deck bridge is in poor condition due to damage from a recent fire with widespread rot of the remaining timber, most notably in the ties, pile caps, and tops of the stringers. The bridge is supported with timber lagging on the eastern embankment but the west abutment wall and westernmost span are washed out, and the west embankment is eroded.

The existing decaying bridge structure will be removed and a new replacement bridge will be built in the same location to support the MCRT and transmission line. Crane mats will be

temporarily installed at either side of the crossing partially within wetlands to facilitate replacement of the bridge. These mats will result in 1,936 square feet of temporary wetland impact.

The new bridge will consist of a single span structure with new abutments that will be constructed landward of the existing abutment locations. The low chord of the new bridge will be at the same elevation as the existing bridge's low chord, which is at elevation 180.4 feet, NAVD88. The existing timber piers will be cut at the mudline and removed by hand. Steel sheeting will be installed around the bridge abutments to provide future scour protection during storm events and act as a retaining wall to minimize grading. The sheeting will also support temporary excavation to install the proposed abutments below ground. There will be no obstructions under the new bridge, which will improve the existing condition. Fort Meadow Brook bridge will be reconstructed in full compliance with the Massachusetts Stream Crossing Standards as discussed in Section 4.3.

1.3.1.2 Hop Brook Crossing (Bridge 128)

The existing superstructure of the steel girder bridge is in satisfactory condition, and the intermediate timber piers are in fair to satisfactory condition. However, the existing superstructure will not adequately support the rail trail and transmission line, so the existing bridge deck will be upgraded. No foundation work will be necessary as part of the bridge rehabilitation because the existing stone abutments of this bridge are suitable for reuse.

Crane mats will be temporarily installed at either side of the crossing to facilitate rehabilitation of the bridge. These mats will be placed in uplands and will not result in any wetland impacts. Bridge 128 will be rehabilitated in full compliance with the Massachusetts Stream Crossing Standards as discussed in Section 4.3.

1.3.1.3 Hop Brook Crossing (Bridge 127)

The existing stone masonry abutments for the steel girder bridge are in satisfactory condition, and the existing steel is in fair to satisfactory condition. However, the piers are in poor condition, with the easterly pier showing total section loss and no longer providing effective bearing. In addition, the existing structure is partially submerged in the water, causing deterioration to the bridge.

The existing bridge structure will be removed except for the existing stone abutments, and a new replacement bridge will be built in the same location to support the MCRT and transmission line. Crane mats will be temporarily installed at either side of the crossing partially within wetlands to facilitate replacement of the bridge. These mats will result in 296 square feet of temporary wetland impacts and 1,146 square feet of temporary stream impacts.

The new bridge will consist of a single span structure with new abutments that will be constructed landward of the existing abutment locations. The low chord of the new bridge will be located above the existing bridge's low chord so that the new bridge will not be partially submerged. The existing timber piers will be cut at the mudline and removed by hand.

The removal of the existing piers and the increased height of the span will have the benefit of increasing the hydraulic opening at the bridge, providing additional clearance over the two-year design storm event, and reducing the likelihood of trapping debris. Bridge 127 will be reconstructed in full compliance with the Massachusetts Stream Crossing Standards as discussed in Section 4.3.

1.3.2 Grading and Installation of Bike Path

Erosion and sediment controls will be installed between construction areas and resource areas to mark the limit of work and prevent and minimize the transport of sediment carried by stormwater into resource areas down-gradient. The proposed erosion and sediment controls for the Project include "syncopated" silt fence, silt fence, and compost filter tubes. Syncopated silt fence is staked silt fence installed in a specific layout that permits wildlife movement, to be used within state-listed rare species habitat and within 450 feet of vernal pools. Other types of erosion and sediment controls that might be used during construction include jute mesh with coconut fiber erosion control blankets and hydro seeding.

Once erosion controls are installed, the existing rail bed will be graded and leveled and stormwater features (swales and check dams) will be installed as shown on the plans in Appendix B. Eight inches of gravel and four inches of pavement will be installed for the MCRT.

In bordering vegetated wetlands, this work will result in 85 square feet of permanent fill and 201 square feet of temporary disturbance from the extension of an existing drainage pipe and creation of the wetland replication area (described further in Section 2.2). In isolated vegetated wetlands, this work will result in 925 square feet of permanent fill and 27 square feet of temporary disturbance from lowering the existing grade of the railbed and wetland.

1.3.3 Headwall Installation

At Station 713+63, the existing 24-inch cast iron pipe is lined with a metal pipe which is heavily corroded at the south end. The existing pipe will be replaced with a 24-inch ductile iron pipe with concrete headwalls. Installation of the headwalls will result in 4 square feet of permanent wetland impacts and 27 square feet of temporary wetland impacts.

1.3.4 Restoration

All disturbed areas will be restored by loaming and seeding with a seed mix that contains only species native to New England such as Canada wild rye (*Elymus canadensis*), little bluestem (*Schizachyrium scoparium*), fox sedge (*Carex vulpinoidea*), soft rush (*Juncus effusus*), New England aster (*Symphyotrichum novae-angliae*), woodland goldenrod (*Solidago caesia*), joe-pye weed (*Eutrochium maculatum*), hazelnut (*Corylus americana*), and arrowwood (*Viburnum dentatum*). All restoration plantings and seed mixes will consist of native species and, if feasible, be from local nursery stock. A qualified environmental monitor or qualified biologist will direct the locations of the woody plantings to the contractor in the field.

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2

Avoidance, Minimization, and Mitigation

2.1 Avoidance & Minimization Measures

The Project has undergone an extensive and collaborative design process that included evaluation of methods to avoid and minimize impacts to wetland resource areas to the maximum extent practicable, including:

- Reducing the construction platform (available flat work area) width from 30 feet to 22 feet in most locations, and in some locations reducing further to 18 feet to balance safe and efficient construction with minimization of wetland and cultural resources impacts.
- Using retaining walls rather than riprap or turf reinforcement. This allows for a vertical drop in the proposed grade down to the existing elevation, eliminating the need to grade the slope back to the existing ground.
- Using steel sheeting at bridge crossings to keep the limit of disturbance a constant three feet from the edge of the construction platform, rather than having a varying footprint of disturbance based on the existing topography.
- Spacing manholes a maximum of 2,100 feet apart where the curvature of the MBTA ROW allowed, which is greater than typical manhole spacing. This design consideration eliminated all manholes within wetlands.

2.2 Compensatory Wetland Mitigation

The Project will result in the loss of 89 total square feet of BVW and 924 total square feet of IVW. Most of the BVW impact (85 square feet) is located on the south side of the ROW at

Station 764+57 to 764+65, in Wetland 4 in Sudbury. In accordance with the Massachusetts Wetlands Protection Act, the 401 Water Quality Certification regulations at 314 CMR 9.00, and the Sudbury Wetlands Administration Bylaw, the Project proposes to provide 819 square feet of wetland replication in the area surrounding this impact.

Existing Conditions

Wetland 4 is an excavated wetland channel formed from an old drainage ditch that is approximately six to eight feet wide and approximately 30 feet long, with abrupt and clearly defined slopes. The channel is hydrologically connected to Wetland 3 on the north side of the ROW via a mostly blocked 12-inch reinforced concrete pipe under the railroad tracks. During a site visit in April 2019, the channel held approximately 12 inches of standing water, with no vegetation in the center of the channel and a small fringe of wetland vegetation at the south end of the channel. Typical species include silky dogwood (*Swida amomum*) and sensitive fern (*Onoclea sensibilis*). The surrounding upland area has been historically disturbed by the construction and operation of the railroad, with a few mature trees and an understory of several vines and shrubs. Typical species include red maple (*Acer rubrum*), silky dogwood, glossy buckthorn (*Frangula alnus*), Oriental bittersweet (*Celastrus orbiculatus*), fox grape (*Vitis labrusca*), and multiflora rose (*Rosa multiflora*).

Two groundwater monitoring wells were installed on either side of Wetland 4 in 2018. Groundwater levels between December 2018 and April 2019 were consistently observed approximately 18 inches below the existing ground surface, which is consistent with the observed water levels in the channel itself.

Pipe Extension

To maintain the hydrologic connection between Wetland 3 and Wetland 4, the Project will extend the existing pipe that connects under the railroad tracks. The existing bottom of Wetland 4 will be excavated down to allow the end of the pipe extension to remain open, and the surrounding area will be graded up from this point.

Proposed Replication

The proposed conditions will provide a larger, wider, and deeper wetland area with more gradual slopes than the existing drainage ditch. Hydrology in the replication area is expected to function in a similar manner to that of the existing wetland, and groundwater flows will have an unrestricted connection to the wetland replication area and will be contiguous with the existing adjacent wetland area in the channel.

Once erosion controls are installed, existing vegetation will be removed and grubbed as necessary, removing roots and stumps from the site. The replication area will be excavated to approximately 12 inches below the final grade and the soil will be removed from the site. The area will be backfilled with approximately 12 inches of manmade organically enriched soil. Due to the potential to introduce invasive species into the replacement wetland via translocated soils, a manmade soil mixture consisting of equal volumes of organic (compost) and mineral material such as rich loamy sand with a loose to friable consistency will be used.

No wood chips will be added to the manmade soil. Soil material will be spread in a manner that will minimize soil compaction in the wetland replication areas.

A palustrine scrub-shrub community of native shrubs along with a native seed mix will then be planted in the replication area in spring or fall. The immediate buffer zone around the wetland will be planted with transitional plants that are found in both wetlands and uplands. These areas will be irrigated as necessary to ensure successful establishment. An Environmental Monitor ("EM") will inspect planting stock to ensure that plants are healthy, disease-free stock from a regional nursery. Plantings will be guaranteed for one year following the date of final acceptance. Plant material that fails to become established within one year will be replaced in-kind. Alternative species may be added to the landscape plan upon consultation with the EM and pending availability of plant species identified for use. Table 3 lists recommended species and other details of the proposed plantings.

Table 3 Wetland Replication Area Planting Schedule

Specimen	Wetland Status	Plant Type	Plant Size	Quantity	Density/Spacing
Basin Embankment					
Buttonbush (*Cephalanthus occidentalis*)	OBL	Shrub	18-24 inches	10	6-8 ft. on center
Arrow arum (*Peltandra virginica*)	OBL	Herbaceous	2" plug	20	2-3 ft. on center
Giant bur-reed (*Sparganium eurycarpum*)	OBL	Herbaceous	2" plug	20	2-3 ft. on center
Silky dogwood (*Swida amomum*)	FACW	Shrub	18-24 inches	5	6 ft. on center
Wetland seed mix[1]	--	Herbaceous	--	--	18 lb./ac
Surrounding Buffer Zone					
Red maple (*Acer rubrum*)	FAC	Tree	1-2" caliper	3	15 ft. on center
Sweet pepperbush (*Clethra alnifolia*)	FAC	Shrub	18-24 inches	10	6 ft. on center
Wetland seed mix[1]	--	Herbaceous	--	--	18 lb./ac

1 Wetland seed mix: "New England Wetmix" from New England Wetland Plants, Inc. or similar. Typical species: fox sedge (*Carex vulpinoidea*), sallow sedge (*Carex lurida*), broom sedge (*Carex scoparia*), sensitive fern (*Onoclea sensibilis*), blue vervain (*Verbena hastata*), hop sedge (*Carex lupulina*), dark-green bulrush (*Scirpus atrovirens*), nodding bur-marigold (*Bidens cernua*), bristly sedge (*Carex comosa*), fringed sedge (*Carex crinita*), tall mannagrass (*Glyceria grandis*), wool-grass (*Scirpus cyperinus*), soft rush (*Juncus effusus*),

spotted Joe-Pye-weed (*Eutrochium maculatum*), boneset (*Eupatorium perfoliatum*), American water-plantain (*Alisma subcordatum*), New England aster (*Symphyotrichum novae-angliae*), rattlesnake mannagrass (*Glyceria canadensis*), purple-stem aster (*Symphyotrichum puniceum*), soft-stemmed bulrush (*Schoenoplectus tabernaemontani*), blueflag (*Iris versicolor*), swamp milkweed (*Asclepias incarnata*), and Allegheny monkey-flower (*Mimulus ringens*).

The wetland seed mix will provide an herbaceous layer that will help prevent the establishment of invasive species. Due to the small size of the replication area, the seed mix will also be applied to the buffer zone around the wetland, since it contains species that can also grow in transitional areas adjacent to wetlands such as sensitive fern, spotted Joe-Pye-weed, New England aster, and soft rush.

Standing Dead Tree (Snag)

A single dead standing tree (snag) is present adjacent to the existing channel and will be preserved and reused in the wetland replication area. The snag will be pushed over rather than cut to preserve the root structure for use as a stable base and will be pruned as needed with as many of the large upper limbs preserved as possible. The root mass of the snag will be firmly entrenched into the ground to provide support and minimize the possibility of future windthrow.

Monitoring

The wetland replication area will be inspected during the first two growing seasons following planting to evaluate the effectiveness of the replication and to monitor the replication area for invasive species. If any invasive species are found, they will be uprooted and removed from the area.

The vegetation community in the replication area will be inventoried late in the growing season to determine the percent cover of hydrophytes. Yearly monitoring reports will be prepared summarizing the year's findings and will provide recommendations to ensure the success of the replication effort. The first year of monitoring will be the first year that the site has been through a full growing season after planting. For monitoring purposes, a growing season starts no later than May 31.

Success standards for the replication area include the following:

- Area is free of invasive plant species;
- Established plantings are healthy and vigorous;
- Plantings provide vegetated cover of at least 75% surface area; and
- Area exhibits wetland hydrology indicators.

In addition to an evaluation against the success standards above, monitoring reports will provide the following:

- Descriptions of inspections that occurred since the last report (to be completed in year 2);
- Descriptions of any remedial actions taken;
- Descriptions of general health and vigor of planted specimens, prognosis for future survival, and diagnosis of cause(s) of any morbidity or mortality;

- Percent cover and survival for each species of planted specimens;
- Observed wetland hydrology during spring and fall for the first two years;
- If necessary, recommended remedial measures to achieve or maintain achievement of success standards; and
- Representative photographs taken from the same location for each monitoring event.

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3

Wetlands and Waterways

3.1 Delineation Methods

All wetland resource areas were delineated in September and October 2017 following methodologies described in the 1987 US Army Corps of Engineers ("USACE") *Wetlands Delineation Manual* and the 2012 *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region*. Data regarding vegetation, soils, and hydrology were collected in the field using the USACE Northcentral and Northeast Data Forms. A wetland and upland data form were collected at every wetland where possible and are provided in Appendix C. In some areas where the wetland was immediately adjacent to railroad fill or the MBTA ROW boundary, an upland data plot was not able to be collected. All points that were delineated in the field (e.g., BVW, bank, vernal pool) were field located by traditional plane surveying methods (i.e., instrument survey). All delineated wetlands and waterways were classified in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States*, 2nd Edition, commonly referred to as the "Cowardin" classifications (Federal Geographic Data Committee, 2013).

3.2 Wetland Descriptions

The Project will result in impacts to eight wetland locations along the MBTA ROW, consisting of three wetland community types:

- **Palustrine Forested, Broad-leaved Deciduous (PFO)** wetlands are dominated by woody tree species that lose their leaves in the fall and become dormant until the spring. The hydrology of PFO wetlands vary significantly and may be inundated or saturated for

different lengths of the year. Because hydrology is variable, soil and vegetation types may vary as well. On the Project corridor, vegetation within these wetlands includes red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), swamp white oak (*Quercus bicolor*), gray birch (*Betula populifolia*), highbush blueberry (*Vaccinium corymbosum*), glossy buckthorn (*Frangula alnus*), American elm (*Ulmus americana*), eastern white pine (*Pinus strobus*), common winterberry (*Ilex verticillata*), southern arrow-wood (*Viburnum dentatum*), coastal sweet-pepperbush (*Clethra alnifolia*), speckled alder (*Alnus incana*), silky dogwood (*Cornus amomum*), eastern poison ivy (*Toxicodendron radicans*), black elder (*Sambucus nigra*), rice cut grass (*Leersia oryzoides*), eastern marsh fern (*Thelypteris palustris*), royal fern (*Osmunda spectabilis*), spotted touch-me-not (*Impatiens capensis*), skunk-cabbage (*Symplocarpus foetidus*), New York fern (*Parathelypteris noveboracensis*), and cinnamon fern (*Osmundastrum cinnamomeum*).

- **Palustrine Scrub-Shrub, Broad-leaved Deciduous (PSS)** wetlands are dominated by woody deciduous plants that are less than 20 feet tall. The hydrology of a PSS wetland can vary between wetlands but is generally categorized as having shallow inundation or soil saturation in the early spring followed by extended periods of dry conditions during the late spring, summer and fall. Soils within PSS wetlands generally consist of mineral soils with minor amounts of organics. On the Project corridor, vegetation within these wetlands includes highbush blueberry, glossy false buckthorn, silky dogwood, southern arrow-wood, leatherleaf (*Chamaedaphne calyculata*), red maple, poison ivy, evergreen wood fern (*Dryopteris intermedia*), spotted touch-me-not, small-spike false nettle (*Boehmeria cylindrica*), sensitive fern (*Onoclea sensibilis*), eastern marsh fern, stinging nettle (*Urtica dioica*), cinnamon fern, and black tupelo (*Nyssa sylvatica*).
- **Palustrine Emergent (PEM)** wetlands are dominated by herbaceous vegetation, though there can be some trees and shrubs present. The hydrology of PEM wetlands can vary considerably from being seasonally inundated in certain situation to permanently flooded in others. Substrates in PEM wetlands vary with hydrology. Soils associated with permanently flooded areas may consist entirely of organic soils, or mineral soils enriched with organic materials. PEM wetlands that are saturated for only portions of the year are generally mineral soils. On the Project corridor, vegetation within these wetlands includes spotted touch-me-not, woolgrass (*Scirpus cyperinus*), fringed willow herb (*Epilobium ciliatum*), broad-leaf cat-tail (*Typha latifolia*), poison ivy, stinging nettle, common reed (*Phragmites australis*), American burr-reed (*Sparganium americanum*), duckweed, purple loosestrife (*Lythrum salicaria*), bluejoint (*Calamagrostis canadensis*), rice cutgrass, green arrow-arum (*Peltandra virginica*), skunk cabbage, cinnamon fern, royal fern, climbing nightshade (*Solanum dulcamara*), eastern marsh fern, common winterberry, glossy false buckthorn, highbush blueberry, red maple, and swamp white oak.

Each of the eight wetland locations are described in more detail below, from west to east.

In Hudson

1. **Wetland 21** (PFO): This is a small isolated wetland dominated by red maple and highbush blueberry.

2. **Wetland 3** (PEM1D): This isolated wetland is a small manmade seep forming at the intersection of a hillside bank cut and a rail ditch. It is dominated by jewelweed, woolgrass, and fringed willow herb.
3. **Fort Meadow Brook**:
   - **Wetland 6** (PEM1H): This wetland borders Fort Meadow Brook on the south side of the rail embankment. This permanently to semi-permanently flooded emergent freshwater marsh is dominated with broad-leaved cattail.
   - **Wetland 7** (PEM1F): This wetland borders Fort Meadow Brook on the north side of the rail embankment. This semi-permanently flooded emergent freshwater marsh is dominated by broad-leaved cattail.
4. **Wetland 12** (PSS1E): This isolated wetland is a narrow railbed ditch between the bank cut and the rail bed. It is dominated by highbush blueberry and glossy buckthorn.

In Sudbury

5. **At Drainage Pipe #127A**:
   - **Wetland 18** (PSS): This wetland system is associated with Hop Brook on the north side of the pipe and appears disturbed. It is dominated by red maple, sugar maple, glossy buckthorn, evergreen wood fern, and poison ivy.
   - **Wetland 19** (PSS1): This wetland is hydrologically connected to Wetland 18 via the drainage pipe. It is dominated by red maple, glossy buckthorn, and false nettle.
6. **Hop Brook (Bridge 127)**:
   - **Wetland 15** (PEM): This emergent wetland had surface water and is associated with Hop Brook on the northwest side of the bridge. It is dominated by American bur-reed, duckweed, rice cutgrass, and green arrow arum.
   - **Wetland 16** (PEM): This emergent wetland had limited vegetation and is associated with Hop Brook on the southwest side of the bridge. There were areas of standing water that varied from one to six inches in depth; there was no flow present. It is dominated by cinnamon fern and glossy buckthorn.
   - **Wetland 14** (PFO1E/PEM): This emergent wetland had surface water and is associated with Hop Brook on the northeast side of the bridge. It is dominated by duckweed, rice cutgrass, and bluejoint.
   - **Wetland 12** (PFO1E/PEM): This emergent wetland is associated Hop Brook on the southeast side of the bridge. It is dominated by red maple, glossy buckthorn, highbush blueberry, royal fern, and eastern marsh fern.
7. **Wetland 13** (PFO1): This is a small, isolated wetland depression dominated by red maple, highbush blueberry, gray birch, and royal fern.
8. **Wetland 4** (PSS1): This wetland is a small depression that is approximately four to five feet lower in elevation than the surrounding uplands. A culvert was historically present that provided a hydrologic connection to the north side of the rail bed. The wetland is dominated by silky dogwood, glossy buckhorn, and sensitive fern.

Photographs of representative wetlands and waterways are provided in Appendix D. An analysis was also completed to identify the existing functions and values of the resource areas along the Project, using the procedures described in the USACE *Highway Methodology Workbook* and *The Highway Methodology Workbook Supplement*. The analysis results are provided in Appendix E.

4

Regulatory Compliance

The following sections demonstrate the Project's compliance with the the criteria for General Permits 9 and 10 and the applicable General Conditions in the General Permits for the Commonwealth of Massachusetts, effective April 16, 2018.

4.1 General Condition 1: Other Permits

The Project will obtain the following State approval prior to the commencement of work in Corps jurisdiction: WQC (see GC 30).

4.2 General Condition 2: Federal Jurisdictional Boundaries

The boundaries used satisfy the Federal criteria defined at 33 CFR 328-329.

4.3 General Condition 3: Mitigation (Avoidance, Minimization, and Compensatory Mitigation)

As described above, activities were designed and will be constructed to avoid and minimize direct, indirect, secondary and cumulative adverse effects, both permanent and temporary, to waters of the U.S. to the maximum extent practicable. Compensatory mitigation is also provided. Riparian/forested buffer best management practices (BMPs) are used for stormwater management.

4.4 General Condition 4: Single and Complete Project

This is a linear project that includes multiple crossings. As required in GC4e, this project requiring PCN review shall be reviewed as one project under PCN procedures.

4.5 General Condition 7: Historic Properties

The Project is subject to review under Section 106 of the National Historic Preservation Act (36 CFR 800, "Section 106") as it requires a permit from the USACE. The Project is also subject to review by MHC under G.L. c. 9 §§ 26–27C.

As described further in the sections that follow, the Applicants have coordinated with the State Historic Preservation Officer and applicable THPOs. MHC has indicated that Bridges 127 and 128 may be eligible for listing in the National Register of Historic Places, and that the proposed rehabilitation and replacement of these bridges constitute an adverse effect. The THPOs have indicated to the Company that they do not consider further discussions necessary, and neither the Wampanoag Tribe of Gay Head (Aquinnah) or the Mashpee Wampanoag Tribe responded to the USACE's invitation to provide consultation.

The Applicants will develop an avoidance and protection plan for the Project, and will provide photographic documentation of the railroad bridges to Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) standards prior to any construction activity. The Company looks forward to working with the USACE, DCR, and any other applicable parties to develop the MOA for the Project.

The Mashpee Wampanoag Tribe has stated that they will require a Tribal Cultural Resource Monitor during ground-disturbing activities associated with construction. Both the Wampanoag Tribe of Gay Head (Aquinnah) have indicated that no further discussions are necessary.

4.5.1 Resource Identification

Commonwealth Heritage Group, Inc. ("CHG") of Littleton, Massachusetts, is the cultural resources consultant for the Project. As a result of the Massachusetts Environmental Policy Act ("MEPA") certificate process, CHG has been formally consulting with MHC and appropriate Tribal Historic Preservation Officers ("THPOs") regarding the Project since June 2017.

CHG conducted an initial review of the Massachusetts Cultural Resource Information System ("MACRIS") to identify known historic and archaeological resources in the vicinity of the project. This review identified one known archaeological site, two historic districts, and four historic sites, three of which are existing bridges along the MBTA ROW.

CHG then conducted an archaeological reconnaissance survey and a reconnaissance-level historic properties survey, and reports were provided to MHC in December 2017. These surveys addressed 188 historic properties and 9 potentially significant archaeological sites and identified 14 archaeologically sensitive areas recommended for intensive (locational) archaeological survey.

As requested by MHC in their letter dated March 19, 2018, in the summer of 2018 CHG conducted an intensive (locational) archaeological survey and submitted a report to MHC on March 5, 2019. The intensive (locational) survey identified a total of 16 potentially significant archaeological sites. In a response letter dated April 3, 2019 (provided in Appendix F), MHC indicated that two of the bridges (#127 and #128 over Hop Brook in Sudbury) could be eligible for listing in the National Register of Historic Places, and recommended that the Applicants evaluate alternatives to avoid, minimize, or mitigate project impacts and/or develop avoidance and protection plans for a number of potentially significant historic and archaeological resources.

On July 10, 2019, the Applicants provided to the USACE a detailed summary of the cultural resources investigations/studies and consultations with MHC and THPOs that had been completed up until that date. A brief description of the tribal coordination to date is described in the next section.

4.5.2 Tribal Coordination

In June 2018, CHG reached out to representatives of the Mashpee Wampanoag Tribe, Wampanoag Tribe of Gay Head (Aquinnah), and the Narragansett Tribe, and offered to meet with a tribal representative on the project site during field testing. Only the Mashpee Wampanoag Tribe provided a tribal representative for this purpose. Copies of the archaeological reconnaissance report were provided to both Wampanoag tribes. On August 14, 2018, the Applicants received a consultation response from the Mashpee Wampanoag Tribe indicating they would require a Tribal Cultural Resource Monitor during ground-disturbing activities associated with archaeology or construction.

In late August 2018, CHG reached out again to Mashpee Wampanoag Tribe and Wampanoag Tribe of Gay Head (Aquinnah). Both tribes indicated that they did not consider further discussions necessary.

In letters dated September 24, 2019, the USACE invited the Wampanoag Tribe of Gay Head (Aquinnah) and the Mashpee Wampanoag Tribe to consult under Section 106 on any cultural resources that may be affected by portion of the Project subject to USACE jurisdiction. The USACE did not receive a response from either tribe within the requested 30-day period.

4.5.3 Permit Area Determination

On November 8, 2018, the Applicants filed a Request for Permit Area Determination to the USACE, and on November 20, 2018, received email concurrence with the permit areas outlined in the plans dated November 1, 2018, that were attached to the Request.

In September 2019, the Applicants provided to the USACE an updated set of plans showing the Corps permit areas that were previously approved, and the resources identified in MHC's April 3rd letter. On September 24, 2019, the USACE confirmed via email that only two historic resources, Bridges #127 and #130, are located within the Corps permit areas.

4.5.4 Project Impacts

The Project is proposing to rehabilitate and replace bridges 127 and 128, which MHC has indicated may be eligible for listing in the National Register of Historic Places.

On November 14, 2019, the Applicants provided an update to the USACE that included information regarding the following items. A copy of this update was also provided to MHC as well as the Hudson and Sudbury Historical Commissions.

- Consistency of the proposed bridge design with the Secretary of Interior's Standards and Guidelines for Rehabilitation (36 CFR 67);
- Consultation with the Sudbury and Hudson Historical Commissions to consider further alternatives to avoid, minimize, or mitigate the adverse effects to railroad-related features and historic bridges;
- Avoidance, minimization, or mitigation of impacts to the George Pitt Tavern Historic District (SUD.P) and the Boston and Maine Railroad Section Tool House (SUD.282);
- Recommendations for avoidance of identified Native American and historical period archaeological sites; and
- Design changes since receiving MHC's April 3rd letter.

In a letter dated December 18, 2019, MHC stated that the Project includes modification of abutments and demolition of architectural elements, which constitute an adverse effect.

4.6 General Condition 10: Federal Threatened or Endangered Species

The Project was reviewed for the presence of federally listed or proposed threatened or endangered species, designated critical habitat, or other natural resources of concern through the United States Fish and Wildlife Service ("USFWS") Information Planning and Conservation ("IPaC") System. The IPaC species list is provided in Appendix G. The Applicants have completed the necessary consultation with the USFWS and NHESP related to federally listed species along the Project and concluded that the Project is within an area mapped by the USFWS as potential northern long-eared bat ("NLEB") habitat. According to the latest NHESP mapping, provided as Figure 2 in Appendix A, there are no known NLEB maternity roost trees or hibernacula within 0.25 miles of the Project. The Applicants received a verification letter confirming that the Project will not result in prohibited "take" of this species (provided in Appendix G).

4.7 General Condition 12: Utility Line Installation

The transmission line will not adversely alter existing hydrology, and the trench will not be constructed or backfilled in such a manner as to drain waters of the U.S.

4.8 General Condition 13: Heavy Equipment

To the maximum extent practicable, heavy equipment will not be operated within wetlands or mudflats and measures will be taken to minimize soil or substrate disturbance, and equipment will not be stored, maintained or repaired in wetlands. An adequate supply of spill containment equipment will be maintained on site.

Construction mats will be placed in wetland areas from the upland. Construction mats will be managed in accordance with the Corp's Construction Mat BMPs.

4.9 General Condition 14: Temporary Fill

Construction mats will be entirely removed as soon as they are no longer needed to construct the authorized work.

4.10 General Condition 15: Removal of Temporary Fill and Restoration

Construction mats will be removed in their entirety as soon as they are no longer needed to construct the authorized work. The affected areas will be restored to their preconstruction conditions, functions and elevations, and revegetated as appropriate. Restoration will commence no later than the completion of construction. The trench will be constructed and backfilled so that the trench does not drain waters of the U.S.

4.11 General Condition 16: Soil Erosion and Sediment Controls

Appropriate soil erosion and sediment controls willl be used and maintained in effective operating condition during construction, and all exposed soil will be permanently stabilized at the earliest practicable date.

Dewatering will not occur with direct discharge to waters or wetlands. If dewatering is required based on field conditions, efforts will be made to locate the discharge within the limits of work either in the construction trench or in uplands at least 100 feet from wetlands. Three dewatering methods have been identified that may be employed:

- Overland flow to vegetated upland areas within the limits of work where it will infiltrate naturally;
- Dewatering to a filter bag that has been secured with a hose clamp and surrounded by straw wattles or using other erosion control methods that is set up ahead of the active construction area; and
- Discharging excess water within other sections of the open existing trench.

Controls will be removed upon completion of work, but not until all exposed soil is permanently stabilized at the earliest practicable date. Sediment and debris collected by these devices will be removed and placed at an upland location in a manner that will prevent its later erosion into a waterway or wetland.

4.12 General Condition 19: Stream and Wetland Crossings

The Project proposes to replace two stream crossings, Bridges 130 and 127 over Fort Meadow Brook in Hudson and Hop Brook in Sudbury. No new structures are proposed.

Both replacement stream crossings have been designed in accordance with the Massachusetts River and Stream Crossing Standards, and the proposed bridge replacements will span the waterways such that they are at least 1.2 times bankfull width and have an openness ratio of greater than 0.82 feet, as described in Table 4 below. There will be no changes to the slope, structure, or dimensions of the natural streambed, and no effects on the ability of aquatic species to move through the channel.

Table 4 Compliance with Stream Crossing Standards

Bridge	Bankfull Width[1]	Proposed Span	Openness
#130 (Fort Meadow Brook, Hudson)	54.5 feet	70.5 feet	23.9 feet
#127 (Hop Brook, Sudbury)	› 44.0 feet	70.5 feet	20.2 feet

1 Based on field measurements, which yielded a larger width compared to using the Scientific Investigations Report 2013–5155: Equations for Estimating Bankfull Channel Geometry and Discharge for Streams in Massachusetts ("BFW Equation") or 2006 Bent Equations

4.13 General Condition 20: Floodplains and Floodways

The Project was designed to provide compensatory storage for any flood storage volume that will be lost as a result of the Project. The proposed cut areas result in compensatory flood storage at each one-foot incremental elevation within floodplain where fill is proposed. The Project will comply with all applicable FEMA-approved state and/or local floodplain management permitting requirements.

4.13.1 Delineation Methods

Flood data for the Project area was compiled using existing Flood Insurance Rate Map information published by FEMA and provided in MassGIS. The Project area crosses seven areas mapped as 100-year flood zones, associated with the Assabet River, Fort Meadow Brook, White Pond, Hop Brook, and Dudley Brook. The Project also crosses four Regulatory Floodways:

- Associated with a tributary to the Assabet River between Wilkins Street and Chestnut Street in Hudson
- Associated with Hop Brook west of Dutton Road in Sudbury
- Associated with Dudley Brook east of Peakham Road in Sudbury
- Associated with Hop Brook east of Boston Post Road in Sudbury

Flood zones and floodways are depicted on the plans in Appendix B.

4.13.2 Project Impacts

Although work is proposed in the 100-year flood zones and Regulatory Floodways, there will be no net fill and the Project will result in a net gain of flood storage. In three of the four Floodways, project activities will take place above the floodplain elevation and there will be no impact to the Floodway. At the eastern Hop Brook crossing (Bridge 127), proposed grading will result in a net gain of flood storage; there will be no increases in upstream flood elevations. Table 5 provides a summary of the proposed changes to flood storage volumes.

Table 5 Summary of Changes to Flood Storage Volumes (cubic yards)

Floodplain	Fill	Cut	Net Gain (Cut)
Tributary to Assabet River (Station 131+10 to 132+00)	0.00	1.59	-1.59
Fort Meadow Brook (Station 142+30 to 154+90)	31.41	465.31	-433.90
Unnamed Tributary to Hop Brook (Station 702+18 to 710+52)	25.13	31.26	-6.13
Hop Brook (Bridge 127, Station 713+57 to 729+26)	29.30	101.63	-72.33
Total	**85.84**	**599.79**	**-513.95**

Source: VHB.

4.14 General Condition 23: Vernal Pools

There is no discharge proposed in a vernal pool and the Project has been designed such that there will be no adverse impacts to vernal pools.

The boundary of vernal pool habitat is certified by the Massachusetts Division of Fisheries and Wildlife ("MassWildlife"). Certified vernal pools were initially identified using available MassGIS data. These areas were then visited in the field (2015, 2016, and 2017) and data was collected documenting physical and biological vernal pool criteria if present. The limits of each noted "pool" was delineated and mapped based on observed water levels.

The following vernal pool resources were identified along the Project:

- Three MassWildlife-certified vernal pools ("CVPs")
- Nine "certifiable" vernal pools
- Five potential vernal pools ("PVPs")

"Certifiable" vernal pools were identified as such based on the MassWildlife Natural Heritage & Endangered Species Program's "Guidelines for the Certification of Vernal Pool Habitat." Photographs and a summary table of the vernal pool survey results are included in Appendix H.

The Project has been designed to fully avoid any disturbance within the VP depression. The Project will not impede amphibian terrestrial passage and will remove current impedances by removing the existing rails. Erosion and sediment controls will be installed prior to any

grading to protect adjacent wetland resource areas, and syncopated silt fence (installed in a specific layout that permits wildlife movement) will be used within 450 feet of vernal pools. In addition, no construction will be conducted within 450 feet of a vernal pool during the migratory breeding period (March 1 to June 1).

The Project will restore all disturbed areas outside of the 10-foot-wide MCRT using a native seed mix with a focus on developing an herbaceous and low-growing woody vegetation community over the duct bank (a 5-foot corridor). In addition, any areas outside of the 19-foot-wide maintained corridor that includes the paved MCRT, two 2-foot shoulders, and 5-foot area over the duct bank will be allowed to naturally revegetate with herbaceous and taller woody vegetation.

4.15 General Condition 25: Invasive and Other Unacceptable Species

In compliance with General Condition 25, several measures will be implemented to avoid introduction or spread of invasive or other unacceptable species.

4.15.1 During Construction and Restoration

- All imported soil shall be certified as clean and free of invasive species by the site contractor.
- All swamp mats will be certified clean of plant material prior to installation. Immediately upon removal of swamp matting and again following final restoration, the footprint of all work areas within wetland resource areas will be inspected for the presence of non-indigenous invasive vegetation not previously observed within each wetland.
- Only native indigenous plantings and seed mixes will be used to revegetate and restore disturbed areas within the limits of work, and, if possible, will be obtained from a local nursery. If used, straw mulch will be spread over the seed mix in place of hay to prevent the spread of invasive plant species seed stock, retain moisture and encourage growth.
- Restoration of crane mat areas will include planting of native woody plant species and reseeding with a wetland seed mix that will allow for the regrowth of indigenous, non-invasive herbaceous species to supplement natural recruitment.

4.15.2 Monitoring and Maintenance

The wetland replication area will be monitored for invasive species during the first two growing seasons, and any that are found will be uprooted and removed from the area.

Once construction of the MCRT is complete, DCR will monitor for invasive species as part of its regular trail maintenance and will generally follow its BMPs for managing invasive plants as resources and priorities allow. The BMPs include the following guidelines:

- **Prevention:** Monitor properties annually for potential introductions, especially near boundaries and disturbed areas (e.g., roadsides, trailheads). Eliminate new infestations using hand pulling or weed wrenches when feasible.

- **Management Planning:** Identify population sizes and locations. Prioritize populations for management based on significance of the resource, aggressiveness of the species, and potential for long-term control.
- **Mechanical Control:** Hand pulling recommended for young plants and small populations. Cutting or mowing, repeatedly through the season before plants flower, can be good for large monocultures or when root systems are extensive. For species where a small fragment of root can start a new plant, one option may be to remove all above-ground invasive vegetation and cover the area with layers of black plastic, to remain in place for 1 to 4 growing seasons depending on the species.
- **Chemical Control:** Chemical treatments will only be used when another approach is not effective. Herbicides must be applied only by a licensed applicator. For woody stemmed species, herbicide can be applied locally to the cut surface immediately after cutting. Generally speaking, broadcast chemical foliar application is not an appropriate control method along improved-surface trails and greenways.

Due to the linear nature of rail trails and their history of previous disturbance, it is usually not feasible to attempt to control invasive plants beyond the mowed area, with the following exceptions:

- Small, emerging populations of invasive plants within an otherwise native landscape matrix can be prioritized for control efforts.
- Species or individuals that may result in user safety issues should be addressed. For example, Oriental Bittersweet can impact canopy trees adjacent to rail trails and can create “hazard tree” conditions in certain cases.
- Species or individuals that are resulting in damage to the improved surface pathway infrastructure should be removed. For example, the roots of Black Locust and Japanese Knotweed can both cause significant damage to the paved trail surface.

If DCR finds it necessary to use chemical treatment, this work will be done in compliance with the Massachusetts Department of Agricultural Resources regulations at 333 CMR 11.00, which protect sensitive areas such as groundwater and drinking water wells.

4.16 General Condition 30: Water Quality Certification

The Applicants have filed Notices of Intent in Hudson, Stow, and Sudbury and will work to obtain Orders of Conditions that will serve as the §401 Water Quality Certification.

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Appendix A: Figures

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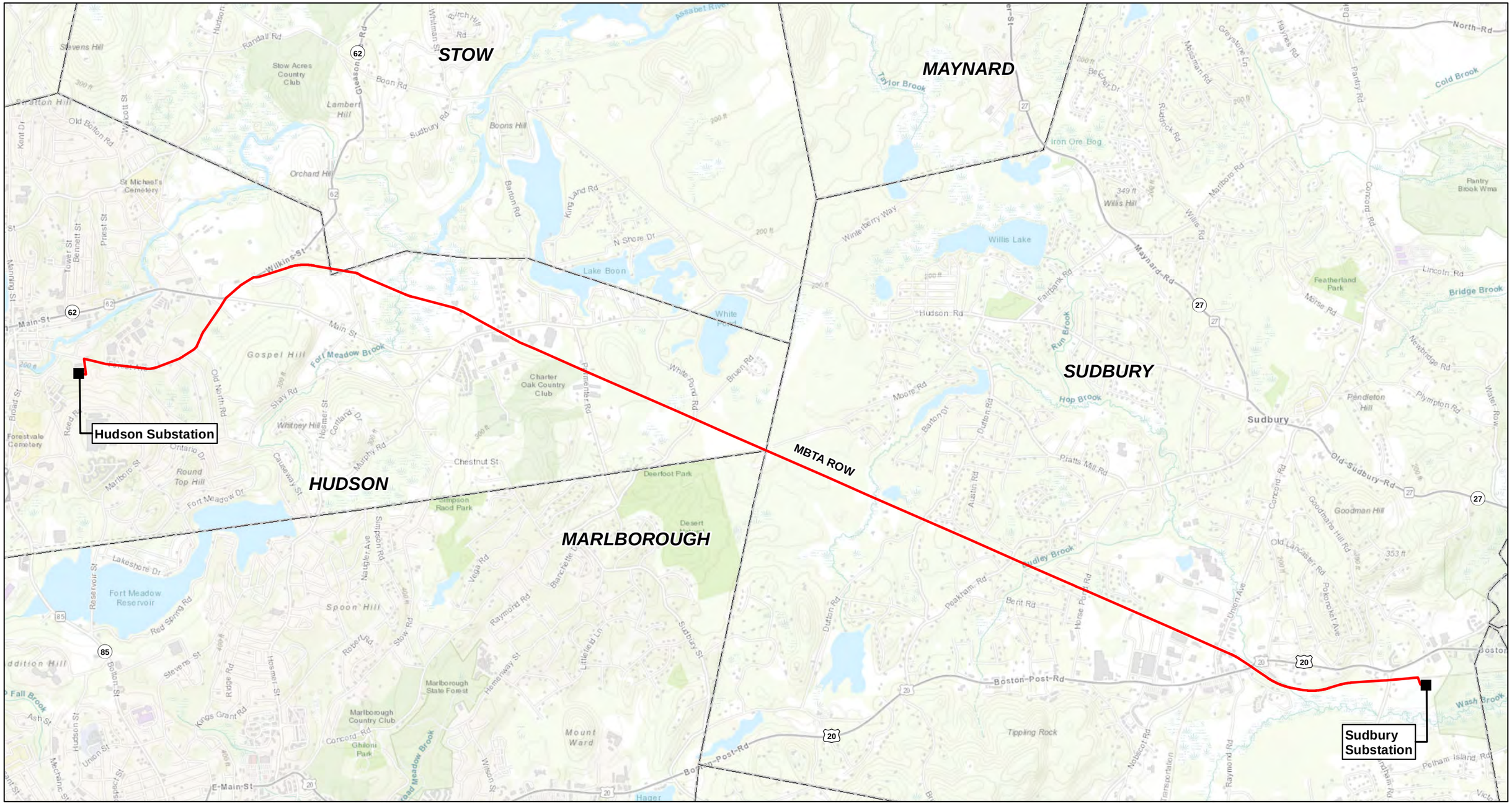


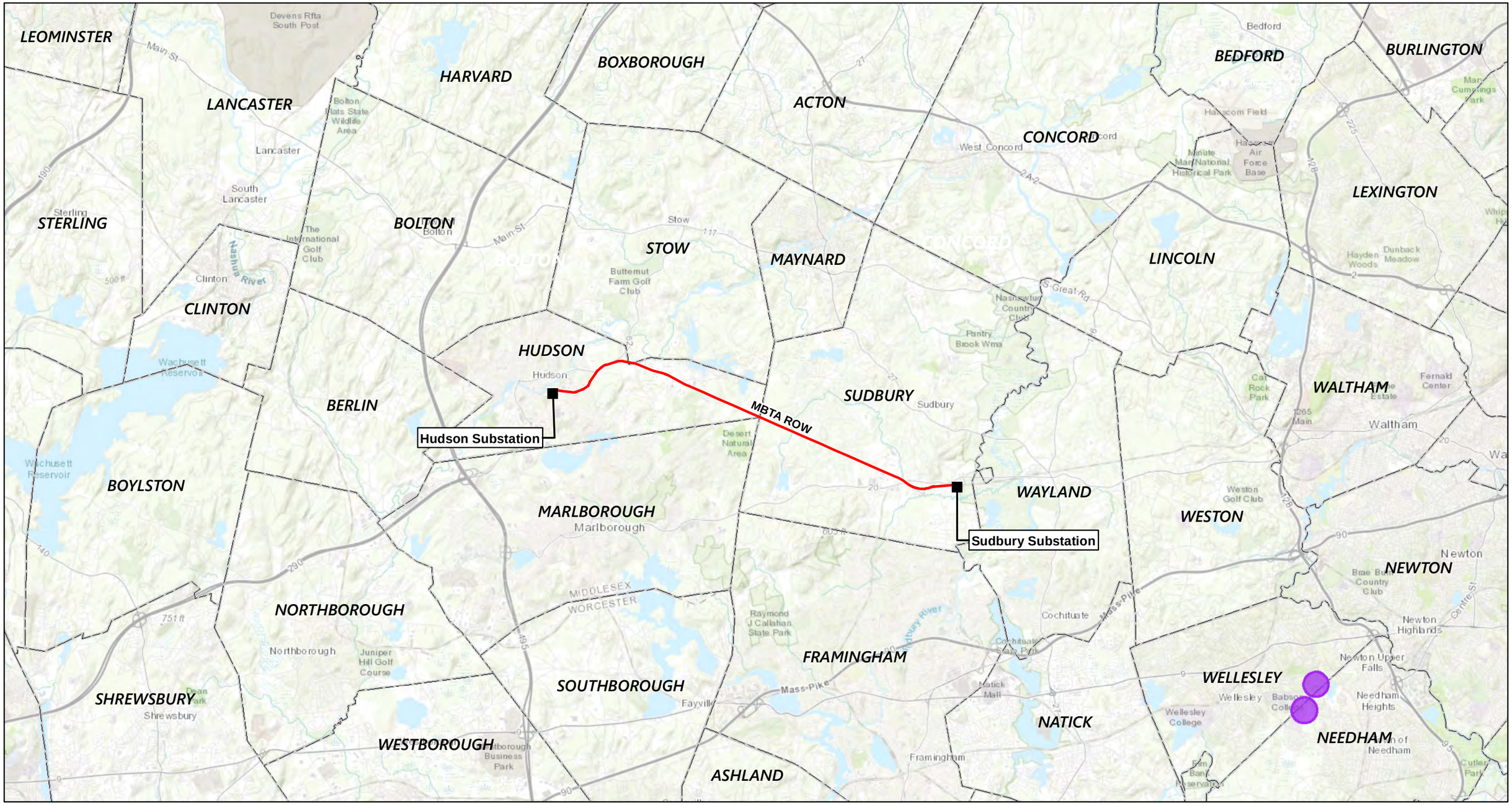
EVERSOURCE ENERGY

Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Figure 1
Locus Map

vhb

\\WHBEDATA\gislib\WSTAR\SudburytoHudson\Figures\PNC_Figures\Figure 2 Northern Long-Eared Bat Hibernacula and Maternity Roost Trees.mxd



Project Location
MA Northern Long-eared Bat Winter Hibernacula (with 1/4 mile buffer)
Municipal Boundary

EVERSOURCE ENERGY
dcr MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECREATION

N

Source:
MassGIS, VHB

7/27/2020

0 10,000 20,000 Feet

Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Figure 2
Northern Long-Eared Bat Hibernacula and Maternity Roost Trees

vhb

Appendix B: Plans

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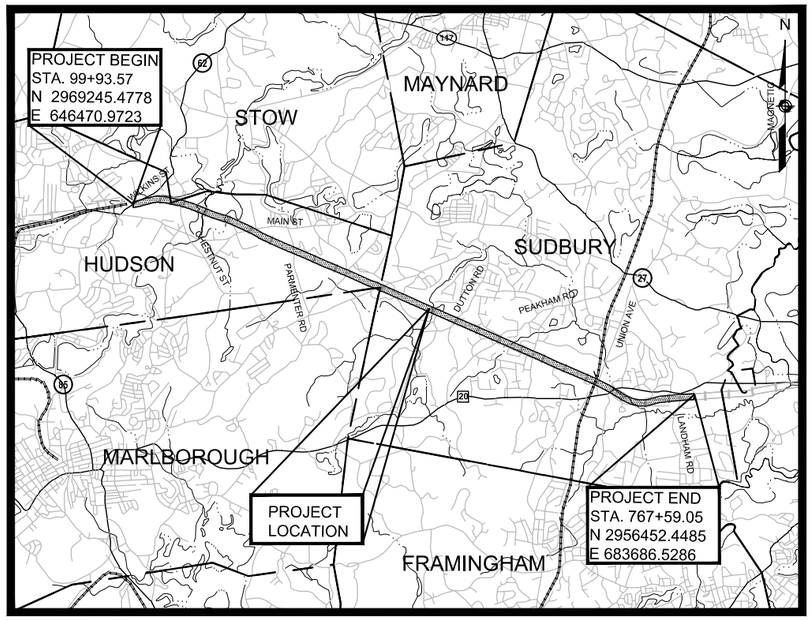
EVERSOURCE

SUDBURY-HUDSON
TRANSMISSION RELIABILITY PROJECT
PRE-CONSTRUCTION NOTIFICATION

INDEX



REFERENCE MANUALS
THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK.

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VANASSE HANGEN BRUSTLIN, INC.
WATERTOWN, MASSACHUSETTS

0 5000 10000 15000 20000
SCALE: 1" = 5000'

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
TITLE SHEET & INDEX
PLAN 1 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=5000'	JULY 2020	MS	SK	MS	.	.

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		TRAFFIC SIGNAL
CB		CATCH BASIN / DROP INLET
		CATCH BASIN CURB INLET
GP		GAS PUMP
MB		MAIL BOX
		POST SQUARE
		POST CIRCULAR
GAS VENT		GAS VENT
EHH		ELECTRIC HANDHOLE
		FENCE GATE POST
GG		GAS GATE
BM		BENCHMARK
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
MHB		MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SBDH		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY		TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB		UTILITY POLE W/ FIREBOX
UPDL		UTILITY POLE WITH DOUBLE LIGHT
ULT		UTILITY POLE W / 1 LIGHT
UPL		UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		WATER GATE
		OVERHEAD CABLE/WIRE
		STEEL SHEETING
99		CONTOURS (ON-THE-GROUND SURVEY DATA)
99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
CATV		UNDERGROUND CATV CONDUIT
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
SEWER		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		CONSTRUCTION FENCE
		EROSION CONTROL BARRIER
		CHECK DAM
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		LIMIT OF NHESP PRIORITY & ESTIMATED HABITAT
AWL		APPROXIMATE WETLAND LINE
100'BZ		100 FT WETLAND BUFFER
100' BLSF BZ		100 FT BORDERING LAND SUBJECT TO FLOODING BUFFER
200'RA		200 FT RIVERFRONT AREA BUFFER
APX 200'RA		APPROX 200 FT RIVERFRONT AREA BUFFER
100'RA		100 FT RIVERFRONT AREA BUFFER
APX 100'RA		APPROX 100 FT RIVERFRONT AREA BUFFER
AURA		AURA BUFFER
100'BZ-AURA		100 FT AURA BUFFER
100'VPBZ		100 FT VERNAL POOL AREA BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		CONSTRUCTION BASELINE

GENERAL SYMBOLS (cont.)

EXISTING	PROPOSED	DESCRIPTION
		EXISTING WALKING TRAIL
		LIMIT OF GRADING
		TRAFFIC SIGNAL CONDUIT
		EASEMENT
		PERMANENT EASEMENT ON MBTA PROPERTY
		SUPPLEMENTAL PLANTING AREA
		FLOODWAY
		PERMANENT DISTURBANCE TO VEGETATED WETLAND
		TEMPORARY DISTURBANCE TO VEGETATED WETLAND
		100-YEAR FLOOD
		500-YEAR FLOOD

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
	CW	CROSSWALK - 12" WHITE
	SWL	SOLID WHITE LINE - 4"
	DBYL	DOUBLE YELLOW LINE - 4"

ABBREVIATIONS

GENERAL	
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
AURA	ADJACENT UPLAND RESOURCE AREA
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BLSF	BORDERING LAND SUBJECT TO FLOODING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
BVW	BORDERING VEGETATED WETLAND
BZ	BUFFER ZONE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ECB	EROSION CONTROL BARRIER
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FAC	FACULTATIVE
FACU	FACULTATIVE UPLAND
FACW	FACULTATIVE WETLAND
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GD	GROUND
GG	GAS GATE
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
ILSF	ISOLATED LAND SUBJECT TO FLOODING
IVW	ISOLATED VEGETATED WETLAND
JCT	JUNCTION

ABBREVIATIONS (cont.)

GENERAL	
L	LENGTH OF CURVE
LP	LIGHT POLE
LT	LEFT
LUW	LAND UNDER WATER
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
OBL	OBLIGATE WETLAND
PB	PULL BOX
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
R	RADIUS OF CURVATURE
RA	RIVERFRONT AREA
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TYP	TYPICAL
UP	UTILITY POLE
UPL	OBLIGATE UPLAND
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
VP	VERNAL POOL
WCR	WHEEL CHAIR RAMP
WG	WATER GATE
WM	WATER METER/WATER MAIN

GENERAL NOTES:

1. THE PROPERTY LINES SHOWN ON THIS PLAN OF THE PARCELS AT 44 FOREST AVENUE IN HUDSON, 163 BOSTON POST ROAD IN SUDBURY AND THE FORMER RAILROAD RIGHT-OF-WAY ARE BASED UPON AN ACTUAL FIELD SURVEY CONDUCTED BY VHB, INC. IN 2015 AND FROM DEEDS AND PLANS OF RECORD.
2. THE EXISTING CONDITIONS SHOWN ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY EASTERN TOPOGRAPHICS, INC., BASED ON AERIAL PHOTOGRAPHS TAKEN ON FEBRUARY 22, 2013, AND AUGMENTED BY AN ON-THE-GROUND SURVEY PERFORMED BY VHB DURING 2015 AND 2017.
3. THE HORIZONTAL CONTROL IS BASED ON THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATE SYSTEM AND THE NATIONAL GEODETIC SURVEY (NAD83). ALL ELEVATION IS US FEET, REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD88).
4. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND GRADES IN THE FIELD BEFORE COMMENCING WORK AND PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
5. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON FIELD OBSERVATIONS AND INFORMATION OF RECORD. THEY HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
6. THE DELINEATED WETLANDS SHOWN ON THIS PLAN WERE FLAGGED BY THE VHB ENVIRONMENTAL DEPARTMENT AND FIELD SURVEYED BY THE VHB SURVEY DEPARTMENT IN SEPTEMBER AND OCTOBER 2017 AND WERE UPDATED IN MAY 2018 (SUDBURY ONLY).
7. THE APPROXIMATE WETLANDS AND STREAMS, AND THEIR ASSOCIATED BUFFERS AND RIVERFRONT AREAS, WHERE APPLICABLE, WERE TAKEN FROM AVAILABLE MASSGIS DATA. THESE WERE NOT FIELD DELINEATED OR FIELD VERIFIED.
8. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES THAT MAY CONFLICT WITH PROPOSED TRANSMISSION LINE. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER.
9. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
10. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SEWER STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK.
11. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
12. EXISTING UTILITY POLES WILL BE RELOCATED BY OTHERS IF REQUIRED.
13. TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.
14. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE OWNER.
15. THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
16. ALL PROP LOAM AND SEED CALLED OUT ON THE CONSTRUCTION PLANS TO ADHERE TO PLANTING SCHEDULE C PROVIDED ON DETAIL SHEET 131 UNLESS NOTED OTHERWISE.
17. JOINTS BETWEEN NEW ASPHALT CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSANDED.
18. EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
19. IF SUITABLE, ALL EXISTING GRANITE CURB & EDGING SHALL BE RE-USED IN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN PROPOSED CURB.
20. ALL PROPOSED HOT MIX ASPHALT CURB SHALL BE MASSDOT TYPE 2.
21. ALL EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATIONS ARE NOT GUARANTEED.
22. ALL PROPOSED BOUNDS SHALL BE PLACED BY A LICENSED PROFESSIONAL SURVEYOR. THE CONTRACTOR SHALL EXERCISE DUE CARE WHEN WORKING AROUND ALL PROPERTY BOUNDS WHICH ARE TO REMAIN. SHOULD ANY DAMAGE TO A BOUND RESULT FROM THE ACTIONS OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE THE BOUND REPLACED AND/OR REALIGNED BY A LICENSED PROFESSIONAL SURVEYOR AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
23. DISPOSAL OF ALL SURPLUS MATERIAL SHALL BE AS APPROVED BY THE ENGINEER AND OWNER AND IN ACCORDANCE WITH ALL PERMITS AND LAWS REGULATING SOIL DISPOSAL.
24. LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE PLANS.
25. WHERE DEWATERING IS REQUIRED, CONTRACTOR SHALL TREAT WATER WITH DEWATERING BASIN OR DEWATERING FILTER BAGS BASED ON INPUT FROM LOCAL CONSERVATION COMMISSIONS.
26. SYNCOPATED SILT FENCE TO BE USED AS AN EROSION CONTROL BARRIER WITHIN 450' OF VERNAL POOLS AND PRIORITY HABITAT AREAS.
27. THE LOCATIONS OF ALL EROSION CONTROL BARRIER SHALL BE ESTABLISHED BY SURVEY-GRADE EQUIPMENT AND ARE SUBJECT TO CHANGE BASED ON FIELD CONDITIONS.

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

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EVERSOURCE

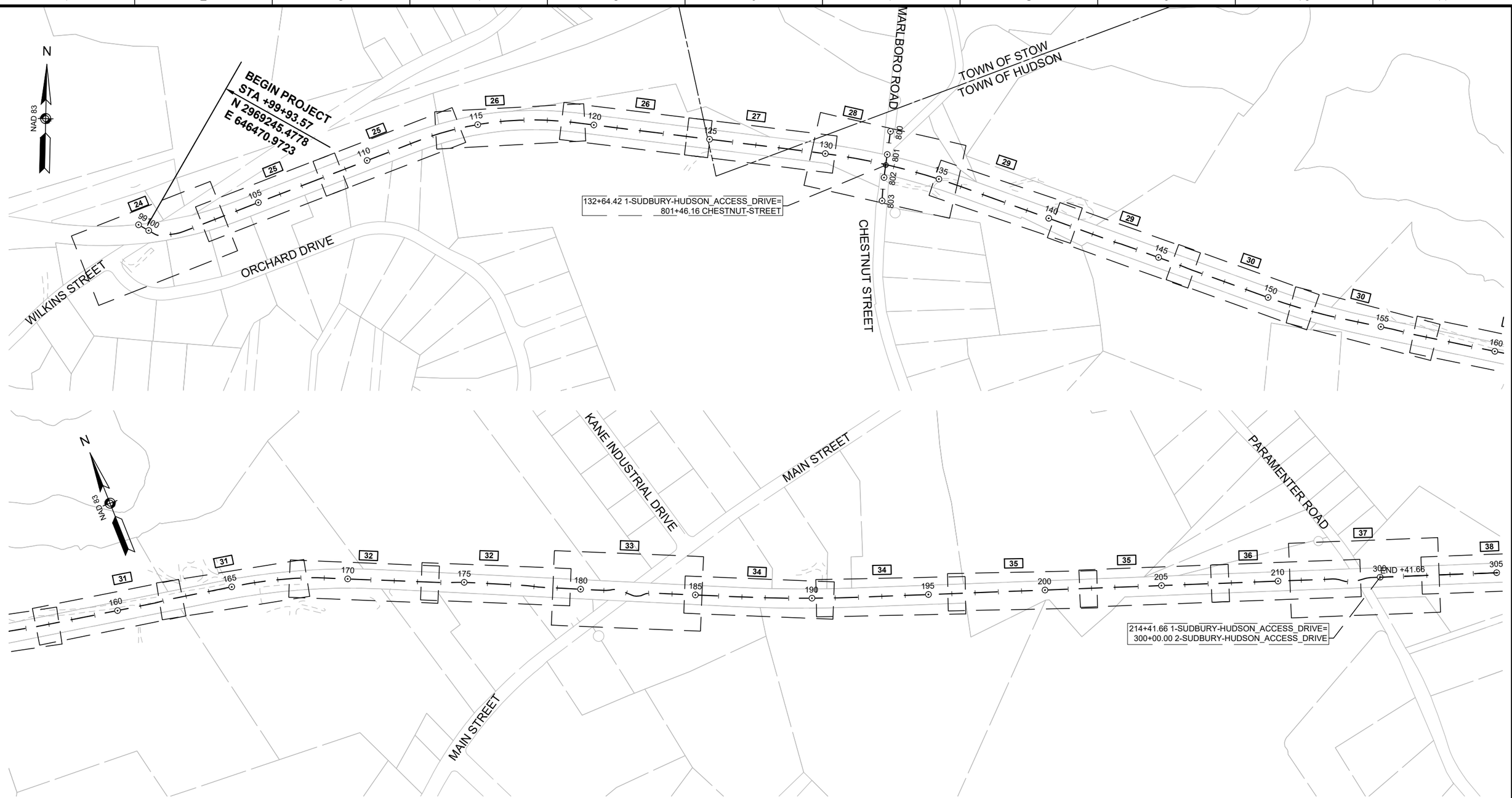
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

LEGEND, ABBREVIATIONS, & GENERAL NOTES

PLAN 2 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
NTS	JULY 2020	MS	SK	MS	.	.



LEGEND

XX CONSTRUCTION PLANS

200 0 200 400
SCALE IN FEET

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NO.	DESCRIPTION	BY	DATE	APPR.
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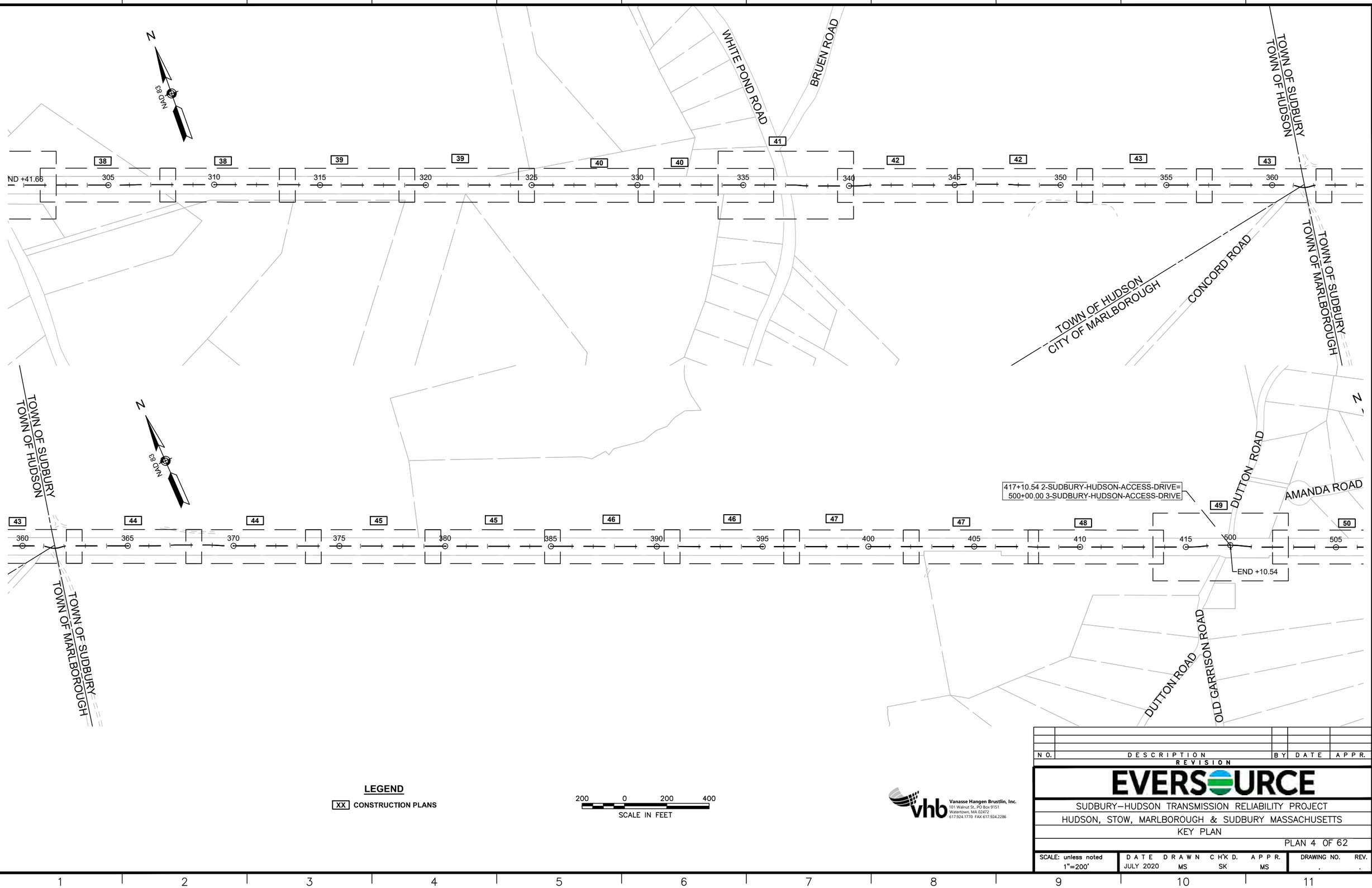
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
KEY PLAN
PLAN 3 OF 62

SCALE: unless noted	DATE	DRAWN	CH'KD.	APPR.	DRAWING NO.	REV.
1"=200'	JULY 2020	MS	SK	MS	.	.



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NO.	DESCRIPTION	BY	DATE	APPR.
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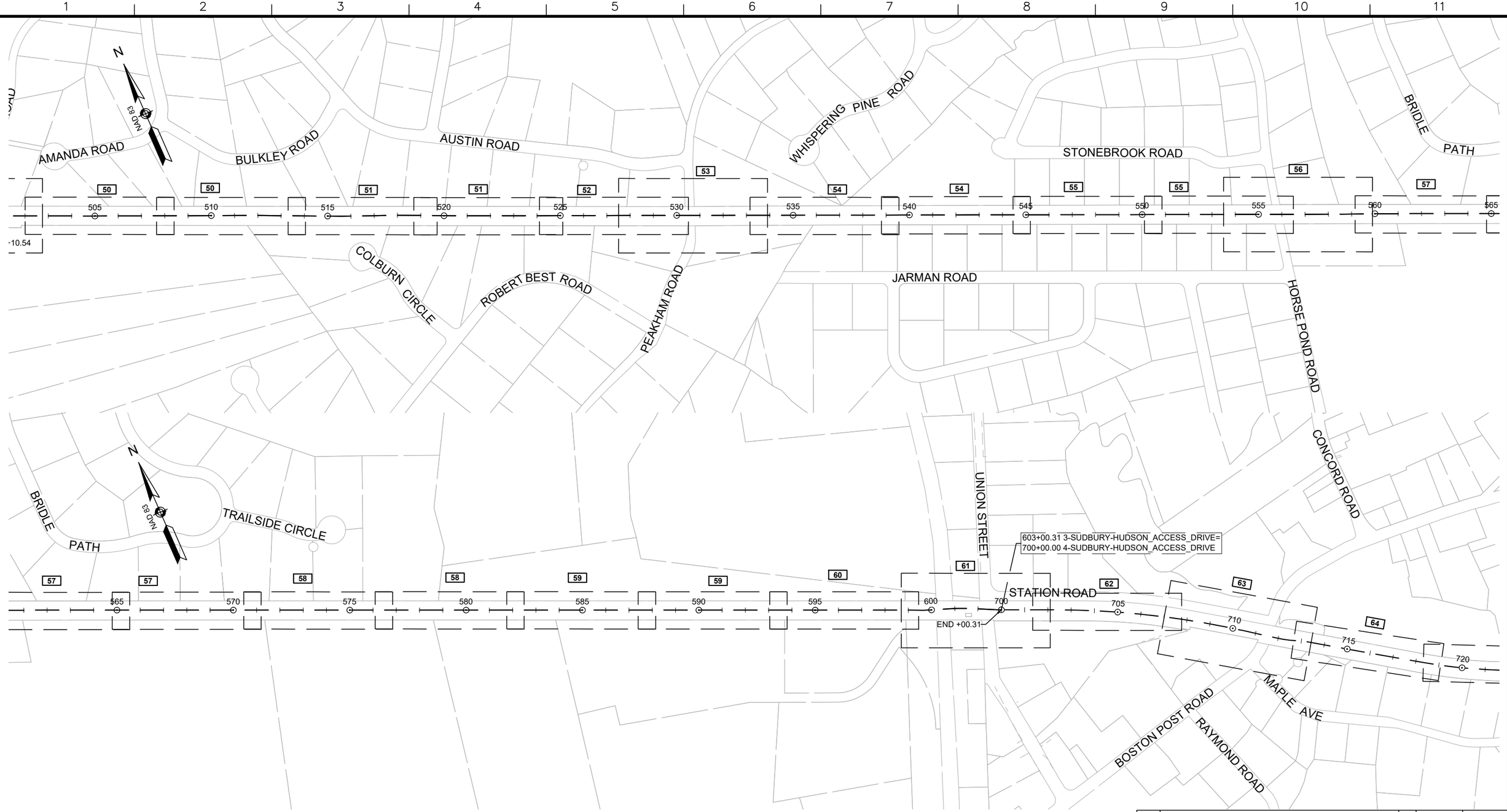
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
KEY PLAN
PLAN 4 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=200'	JULY 2020	MS	SK	MS	.	.



LEGEND

XX CONSTRUCTION PLANS

200 0 200 400
SCALE IN FEET

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NO.	DESCRIPTION	BY	DATE	APPR.
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SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
KEY PLAN
PLAN 5 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=200'	JULY 2020	MS	SK	MS	.	.

LEGEND

XX CONSTRUCTION PLANS

200 0 200 400
SCALE IN FEET

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NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

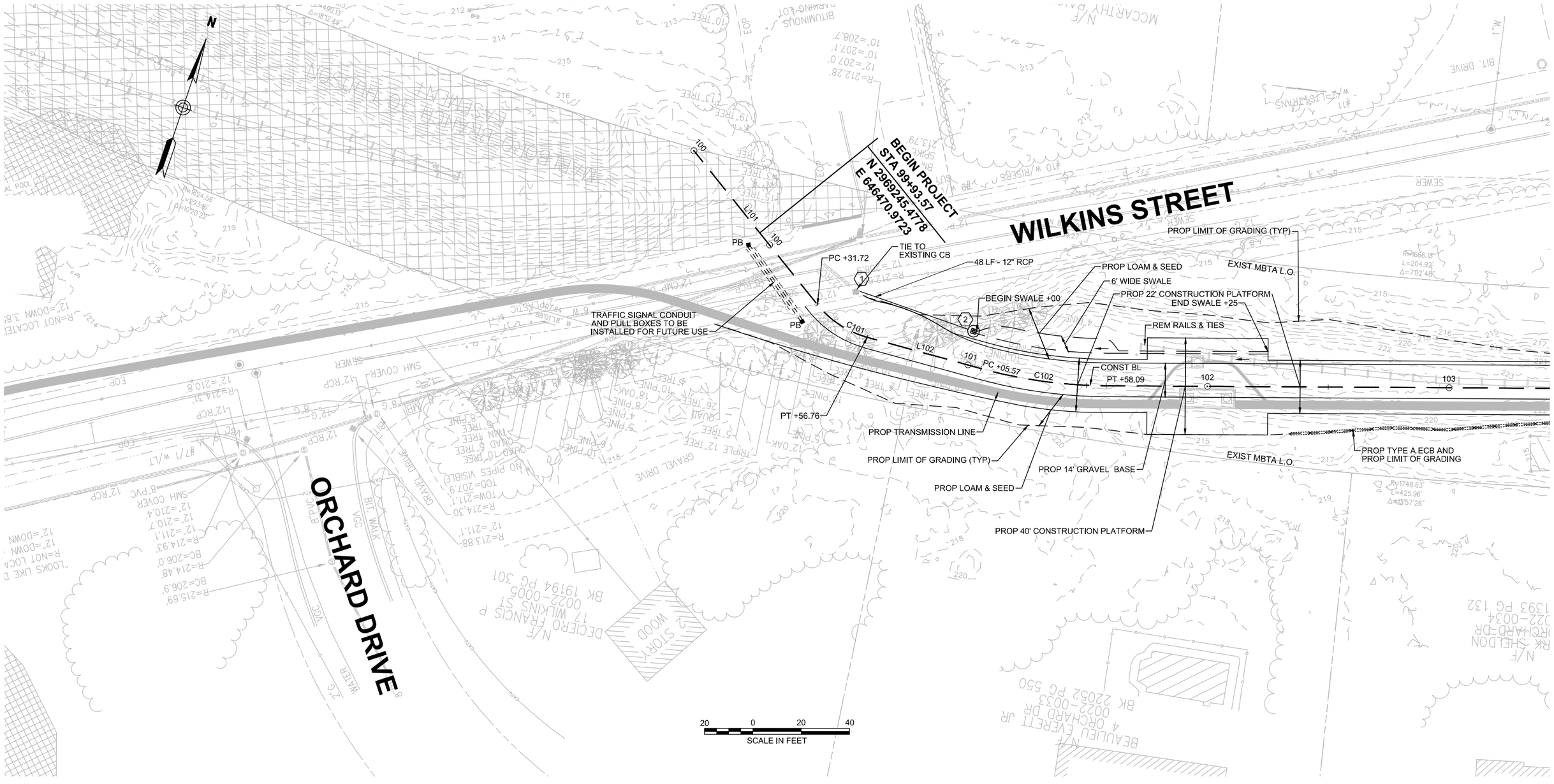
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

KEY PLAN

PLAN 6 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=200'	JULY 2020	MS	SK	MS	.	.



DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
1	EX CB	STA 100+39, 15.5' LT	212.68 (EX)	209.00' (2)	208.9' (EX)	
2	SHALLOW CB	STA 100+99, 14.1' LT	212.55		209.60'	SEE CONSTRUCTION DETAIL ON SHEET 126

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).

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	REVISION			

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EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 7 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 24

CONT. BELOW

N

EXIST MBTA L.O.

PROP LIMIT OF GRADING (TYP)

PROP LOAM & SEED

PROP 14' GRAVEL BASE

REM TRACKS & TIES

PROP 22' CONSTRUCTION PLATFORM

PROP TYPE A ECB AND PROP LIMIT OF GRADING

CONST BL

103 104 105 106 L103 107 108

100-YEAR FLOOD

DELINEATED LIMIT OF BORDERING VEGETATED WETLAND

DELINEATED TOP OF BANK

UNNAMED PERENNIAL STREAM

WETLAND 2

WETLAND 20

WETLAND 21

WETLAND 1

PROP TYPE A ECB AND PROP LIMIT OF GRADING

PROP TRANSMISSION LINE

27 SF PERMANENT DISTURBANCE TO IVW

RET 30" CLAY CULVERT #132A

PROP LOAM & SEED

DELINEATED LIMIT OF ISOLATED VEGETATED WETLAND

DELINEATED LIMIT OF BORDERING VEGETATED WETLAND

DELINEATED TOP OF BANK

100-YEAR FLOOD

STREAM 1

20 0 20 40

SCALE IN FEET

NO DISTURBANCE TO 100-YEAR FLOOD - ABOVE FLOODPLAIN ELEVATION
SEE STA 107+50 TO STA 109+50 IN CROSS-SECTIONS FOR MORE INFORMATION

CONT. ABOVE

CONT. ON SHEET 26

100-YEAR FLOOD

DELINEATED TOP OF BANK

UNNAMED PERENNIAL STREAM

EXIST MBTA L.O.

DELINEATED LIMIT OF BORDERING VEGETATED WETLAND

PROP TYPE A ECB AND PROP LIMIT OF GRADING

PROP LOAM & SEED

PROP 22' CONSTRUCTION PLATFORM

PROP 18' CONSTRUCTION PLATFORM

108 109 CONST BL 110 111 112 PC +21.25 113 114

RET 30" CLAY CULVERT #132A

PROP TRANSMISSION LINE

PROP TYPE A ECB AND PROP LIMIT OF GRADING

PROP LIMIT OF GRADING (TYP)

PROP LOAM & SEED

REM TRACKS & TIES

PROP 14' GRAVEL BASE

BEGIN SWALE +00

PROP CHECK DAM

EXIST MBTA L.O.

DELINEATED LIMIT OF BORDERING VEGETATED WETLAND

DELINEATED TOP OF BANK

100-YEAR FLOOD

20 0 20 40

SCALE IN FEET

NO DISTURBANCE TO 100-YEAR FLOOD - ABOVE FLOODPLAIN ELEVATION
SEE STA 107+50 TO STA 109+50 IN CROSS-SECTIONS FOR MORE INFORMATION

NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 8 OF 62

SCALE: unless noted	DATE	DRAWN	CH'KD.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	SB	SK	MS	.	.

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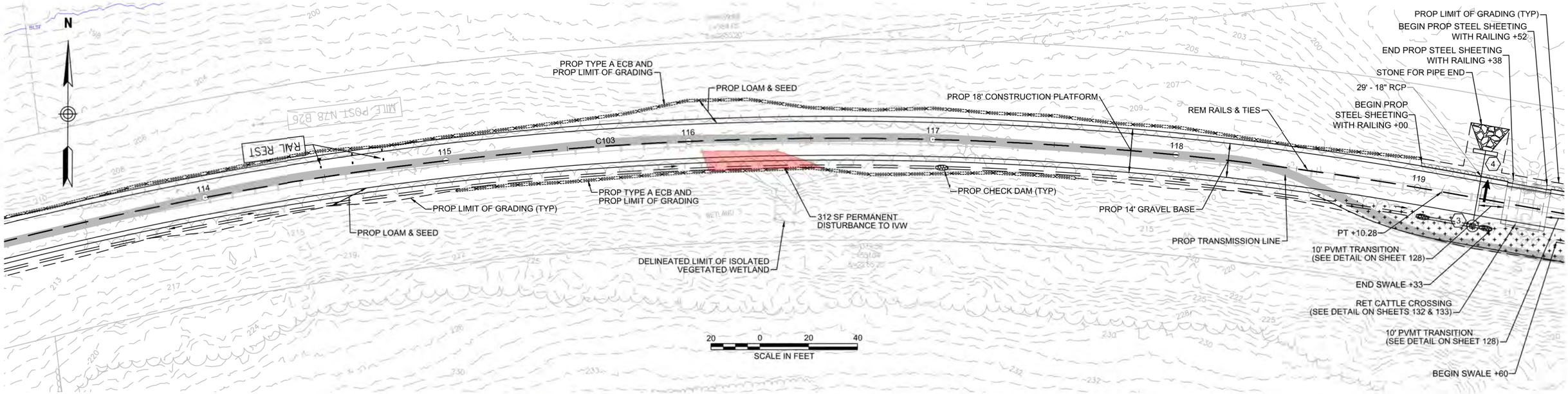

DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
3	Leaching Catch Basin	STA 119+25, 11.5' RT	207.24		199.17'	CONTRACTOR TO PROVIDE
4	Concrete Headwall	STA 119+25, 19.1' LT			197.91'	12" REVEAL

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).

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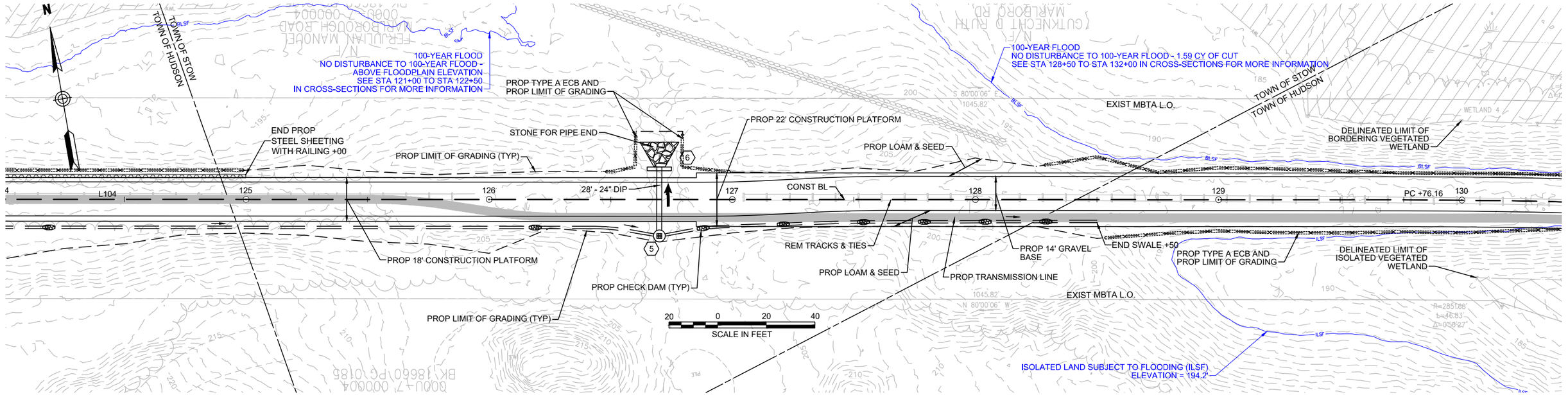
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 9 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APP'R.	DRAWING NO.	REV.
1"=20'	JULY 2020	SB	SK	MES	.	.



DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
5	SHALLOW CB	STA 126+70, 15.0' RT	201.58		198.10'	SEE CONSTRUCTION DETAIL ON SHEET 126
6	Concrete Headwall	STA 126+70, 13.3' LT			197.61'	12" REVEAL

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).

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NO.	DESCRIPTION	BY	DATE	APPR.
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	JULY 2020	MS		

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS
PLAN 10 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MS	.	.

N

TOWN OF STOW
TOWN OF HUDSON

100-YEAR FLOOD
NO FILL IN 100-YEAR FLOOD - 1.59 CY OF CUT
SEE STA 128+50 TO STA 132+00 IN CROSS-SECTIONS FOR MORE INFORMATION

R&R
R5-1
(SEE NOTE 3)

R&R
R5-1
(SEE NOTE 3)

R&R
R6-1R
(SEE NOTE 3)

REM HMA CURB, REGRADE AREA TO BE
FLUSH WITH ADJACENT ROADWAYS, AND
PLACE 4" COMPACTED GRAVEL (SEE NOTE 3)

800

L501

SAWCUT
MEET EXIST PVMT & CURB
+85

PROP 20' PVMT TRANSITION

ADJ OR REMOD EXIST CB
TRANSITION TO
NCHRP 350

ADJ OR REMOD EXIST CB

GUARDRAIL TANGENT
END TREATMENT, TL-2

PROP HMA CURB TYPE 2

801

132+63.92 1-SUDBURY-HUDSON-ACCESS-ROAD=
801+43.67 CHESTNUT-STREET

PROP. CHESTNUT
STREET UNDERPASS
H-25-011

PROP LIMIT OF GRADING (TYP)

RELOCATE OR ABAN
GAS LINE (BO)

LIMIT OF WORK
STA 800+85
N 2969427.9073
E 649662.3557

PROP CONSTRUCTION FENCE
WITH "NO TRESPASSING" SIGN
(PER ARCHEOLOGIST'S DIRECTION)

PROP LOAM & SEED

PROP GEOTEXTILE
FABRIC (SEE NOTE 2)

PROP 22' CONSTRUCTION PLATFORM

PROP TYPE A ECB AND
PROP LIMIT OF GRADING

DELINEATED LIMIT OF
BORDERING VEGETATED WETLAND

PROP 22' CONSTRUCTION PLATFORM

PC +76.16

130

131

132

CONST BL

133

C104

134

135

PROP 14' GRAVEL BASE

PROP TYPE A ECB AND
PROP LIMIT OF GRADING

PROP TRANSMISSION LINE

PROP LOAM
& SEED

REM RAILS
& TIES

GUARDRAIL, TL-2 (SINGLE FACED)

BEGIN SWALE +25

END SWALE +75

LIMIT OF WORK
STA 802+27
N 2969288.2170
E 649636.2937

LIMIT OF
GRADING (TYP)

PROP HMA CURB
TYPE 2

GUARDRAIL, TL-2
(SINGLE FACED)

PROP FULL-DEPTH PAVEMENT

PC +81.91

802

DELINEATED LIMIT OF
ISOLATED VEGETATED
WETLAND

PROP 20' PVMT TRANSITION

SAWCUT
MEET EXIST PVMT & CURB
+00

GUARDRAIL TANGENT
END TREATMENT, TL-2

GUARDRAIL TANGENT
END TREATMENT, TL-2

C501

CHESTNUT STREET

PT +58.23

L502

803

ISOLATED LAND SUBJECT TO FLOODING (ILSF)
ELEVATION = 194.2'

ILSF

WETLAND 4

WETLAND 5

BLSF

20 0 20 40
SCALE IN FEET

CONT. ON SHEET 27

CONT. ON SHEET 29

NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO. 190-0611).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 4" LOAM & SEED WITHIN LIMITS SHOWN.
3. CONTRACTOR TO HAVE COMPACTED GRAVEL IN PLACE AND SIGNS REMOVED AND RESET BEFORE CHESTNUT STREET IS CLOSED TO TRAFFIC. CONTRACTOR TO RESTORE AREA TO ORIGINAL CONDITIONS AFTER CHESTNUT STREET UNDERPASS IS CONSTRUCTED AND CHESTNUT STREET IS REOPENED TO TRAFFIC.
4. FOR CHESTNUT STREET PROFILE, SEE SHEET 95.

vhb
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NO.	DESCRIPTION	BY	DATE	APP'R.

REVISION

EVERSOURCE

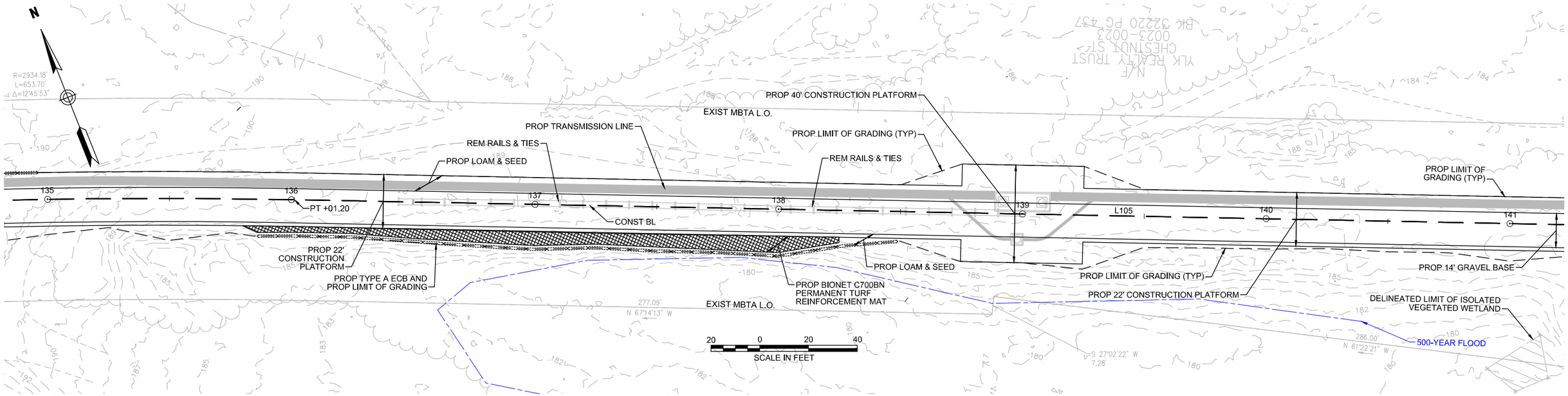
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS

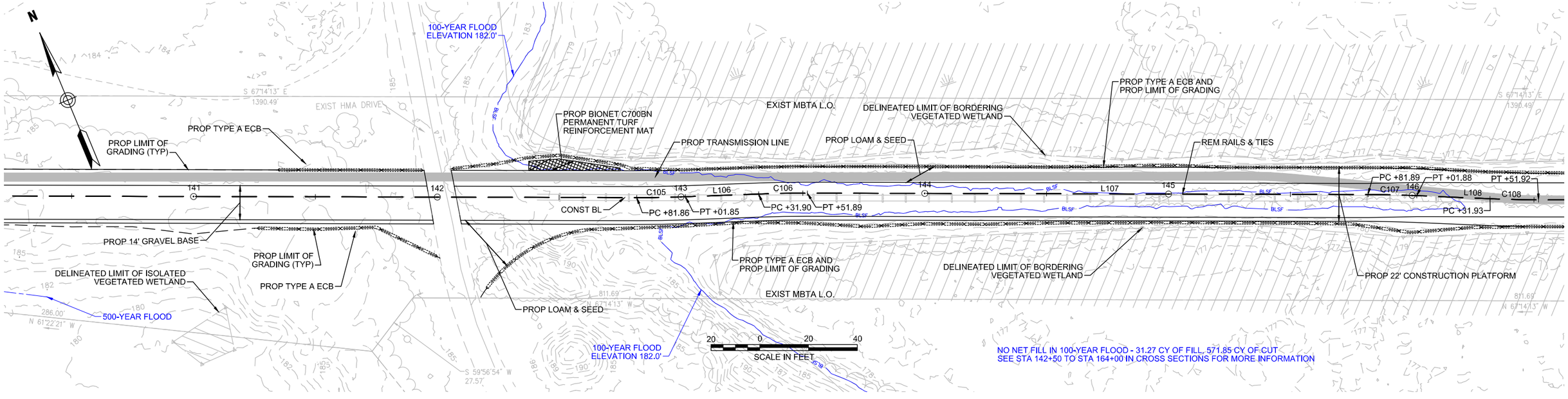
PLAN 11 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APP'R.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 28

CONT. BELOW





CONT. ABOVE

CONT. ON SHEET 30

NO NET FILL IN 100-YEAR FLOOD - 31.27 CY OF FILL, 571.85 CY OF CUT
SEE STA 142+50 TO STA 164+00 IN CROSS SECTIONS FOR MORE INFORMATION

NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
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EVERSOURCE

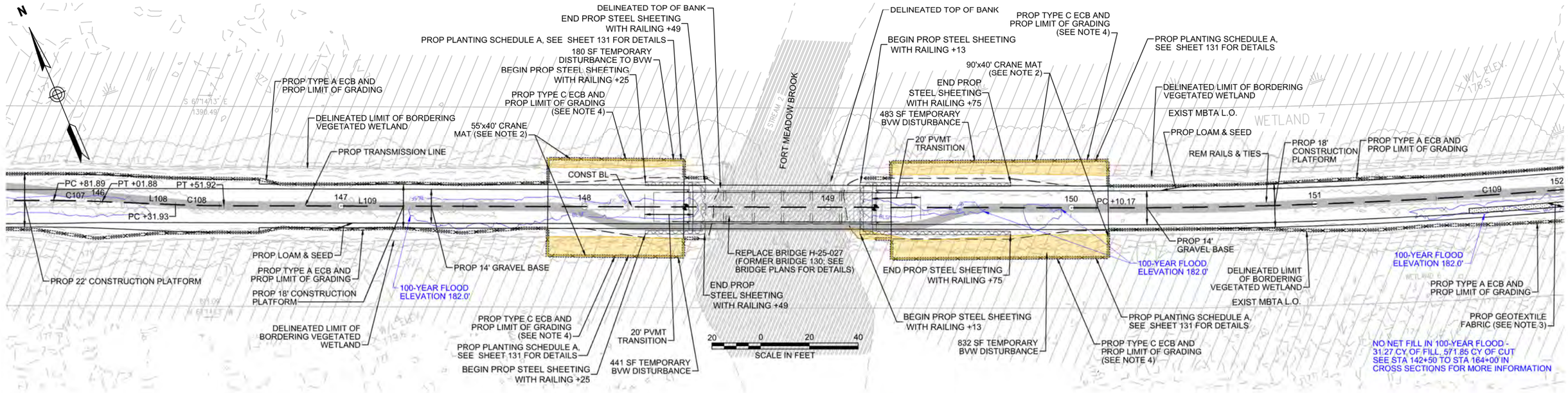
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

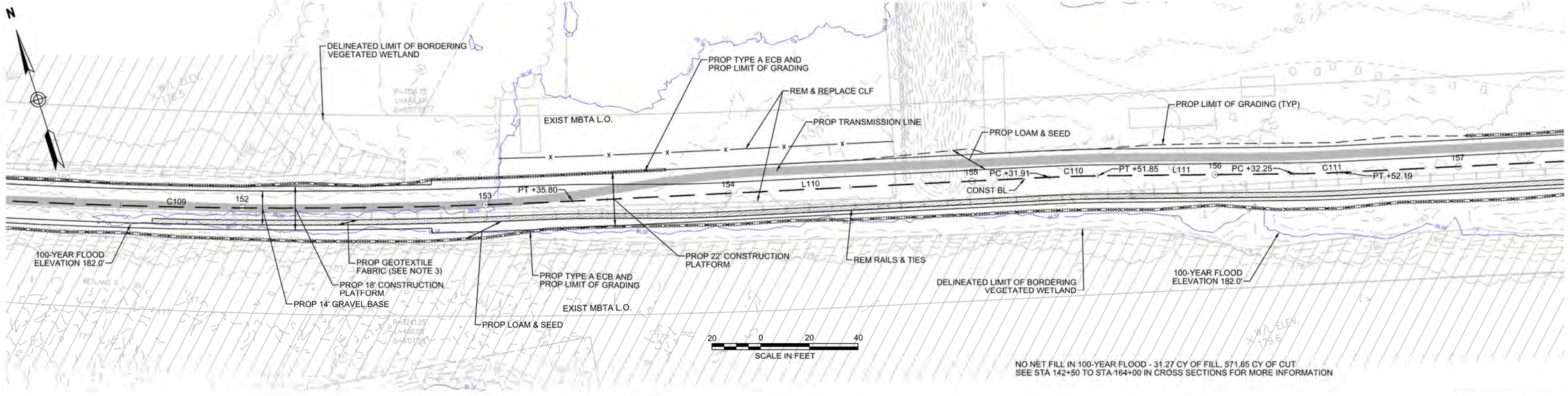
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 12 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.





NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. MAXIMUM CRANE PAD DIMENSIONS OF 40'X40' ARE ALLOWED AT ANY GIVEN TIME. A LONGER CRANE MAT FOOTPRINT IS SHOWN HERE TO ALLOW THE CRANE MAT LOCATION TO BE SHIFTED DURING CONSTRUCTION OF THE STEEL SHEETING AND BRIDGE. SEE SHEET 130 FOR CRANE MAT RESTORATION DETAILS.
3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.
4. TYPE C ECB SHALL CONSIST OF EITHER STAKED 4' HIGH SILT FENCE OR BOTTOM-ANCHORED TURBIDITY CURTAIN DEPENDING ON WATER LEVELS AT THE TIME OF CONSTRUCTION. THE APPROPRIATE ECB SHALL BE INSTALLED AT THE DIRECTION OF THE ENVIRONMENTAL MONITOR.

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NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

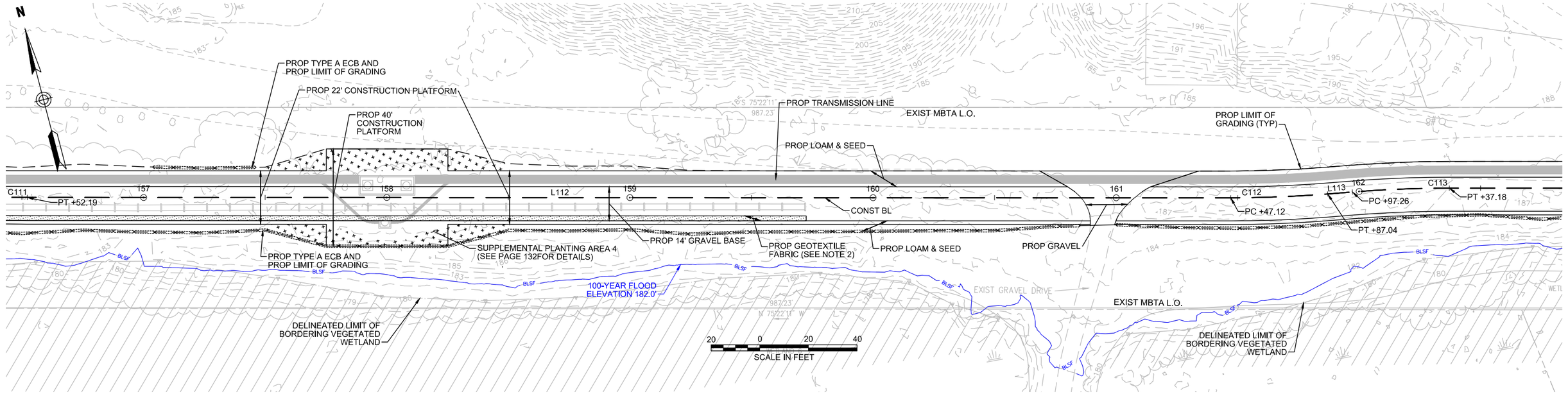
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 13 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APP R.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NO NET FILL IN 100-YEAR FLOOD - 31.27 CY OF FILL, 571.85 CY OF CUT
SEE STA 142+50 TO STA 164+00 IN CROSS SECTIONS FOR MORE INFORMATION

NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.

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NO.	DESCRIPTION	BY	DATE	APPR.

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EVERSOURCE

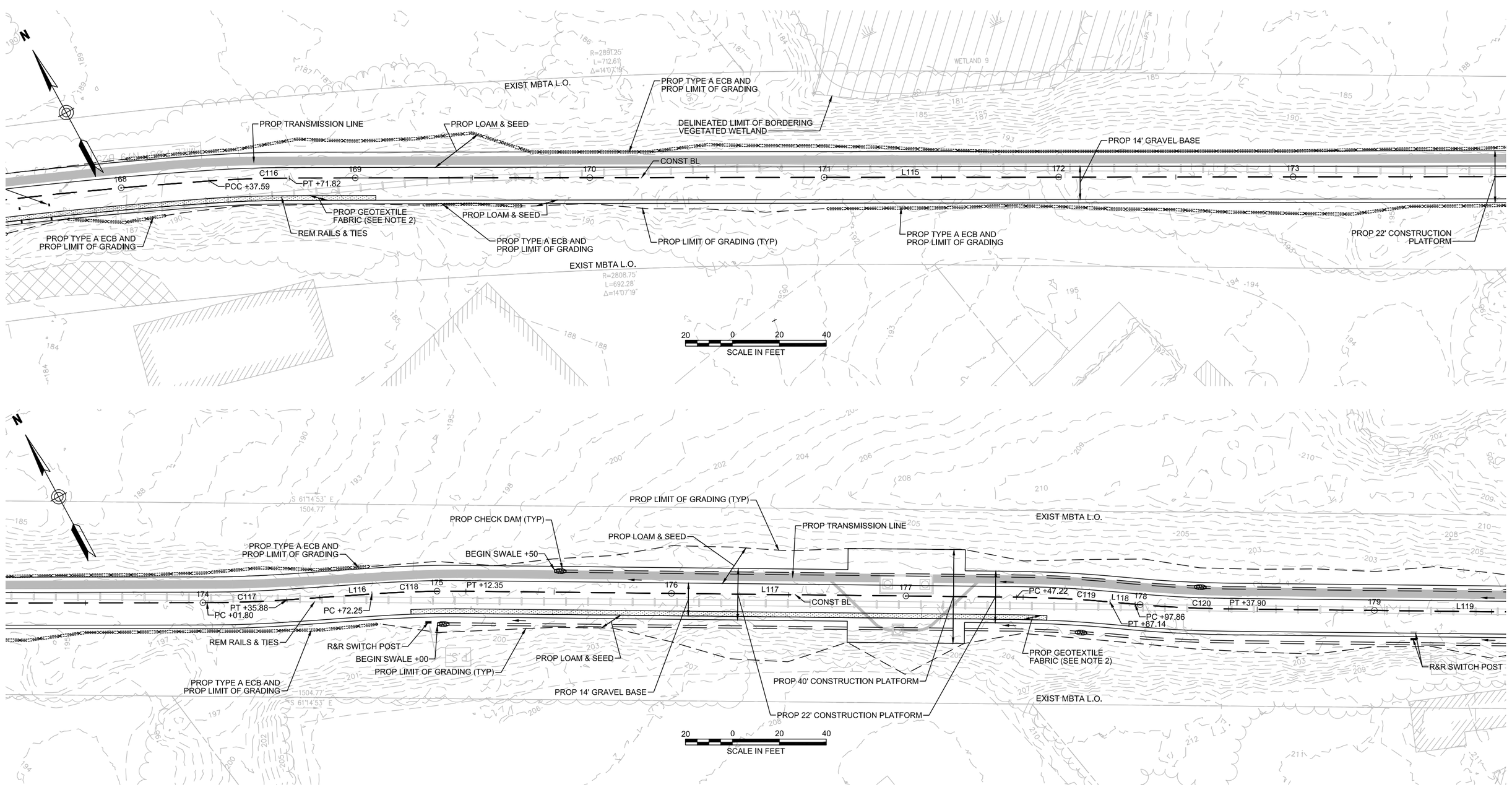
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 14 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.

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NO.	DESCRIPTION	BY	DATE	APPR.

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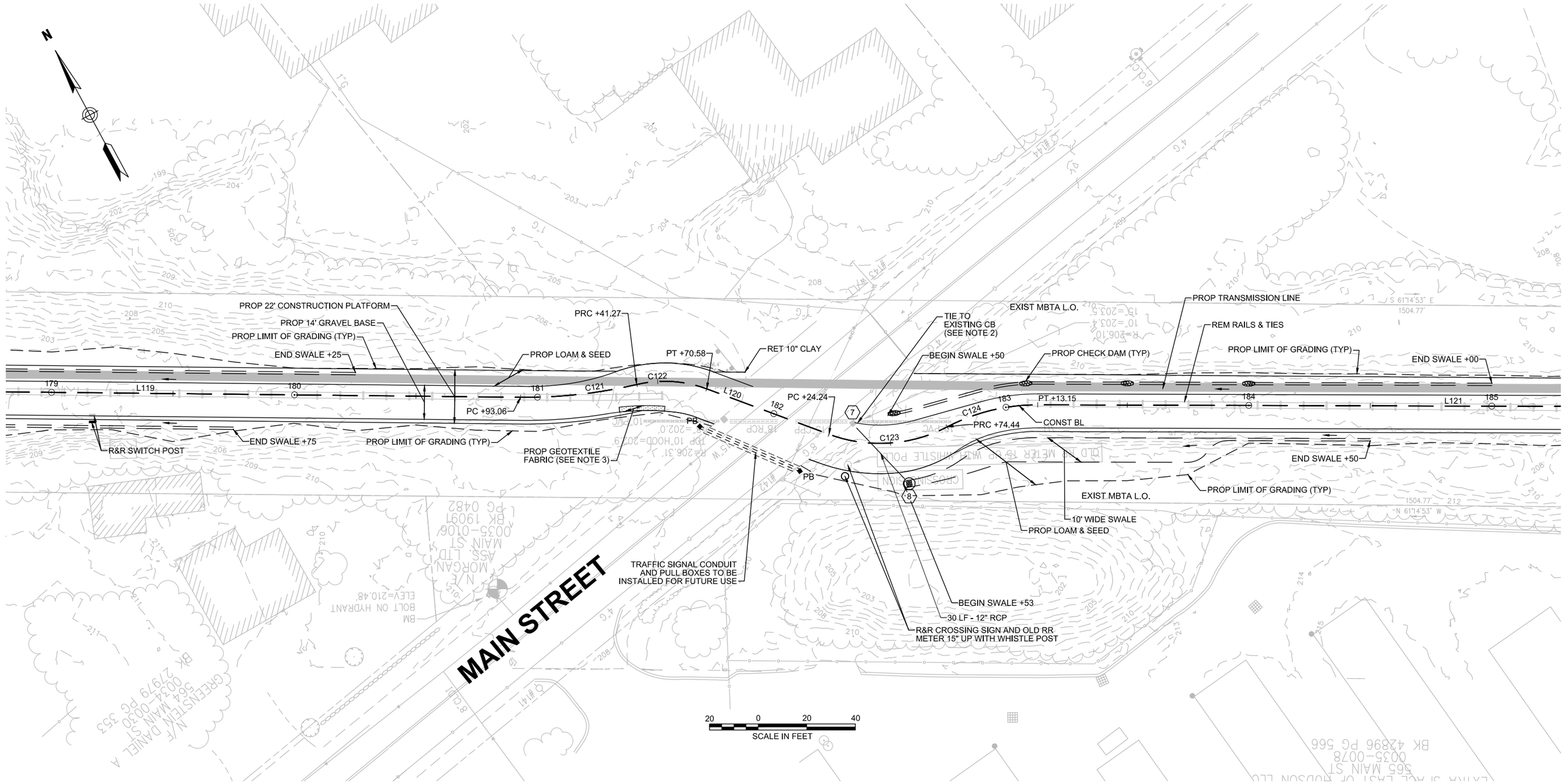
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 15 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
7	EX CB	STA 182+32, 6.9' RT	206.10 (EX)	203.90' (8)	203.5 (EX)	
8	SHALLOW CB	STA 182+55, 15.3' RT	205.44		203.50'	SEE CONSTRUCTION DETAIL ON SHEET 126

NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. CONTRACTOR TO VERIFY EXISTING DRAINAGE DISCHARGE PRIOR TO CONSTRUCTION.
3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.

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NO.	DESCRIPTION	BY	DATE	APPR.
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EVERSOURCE

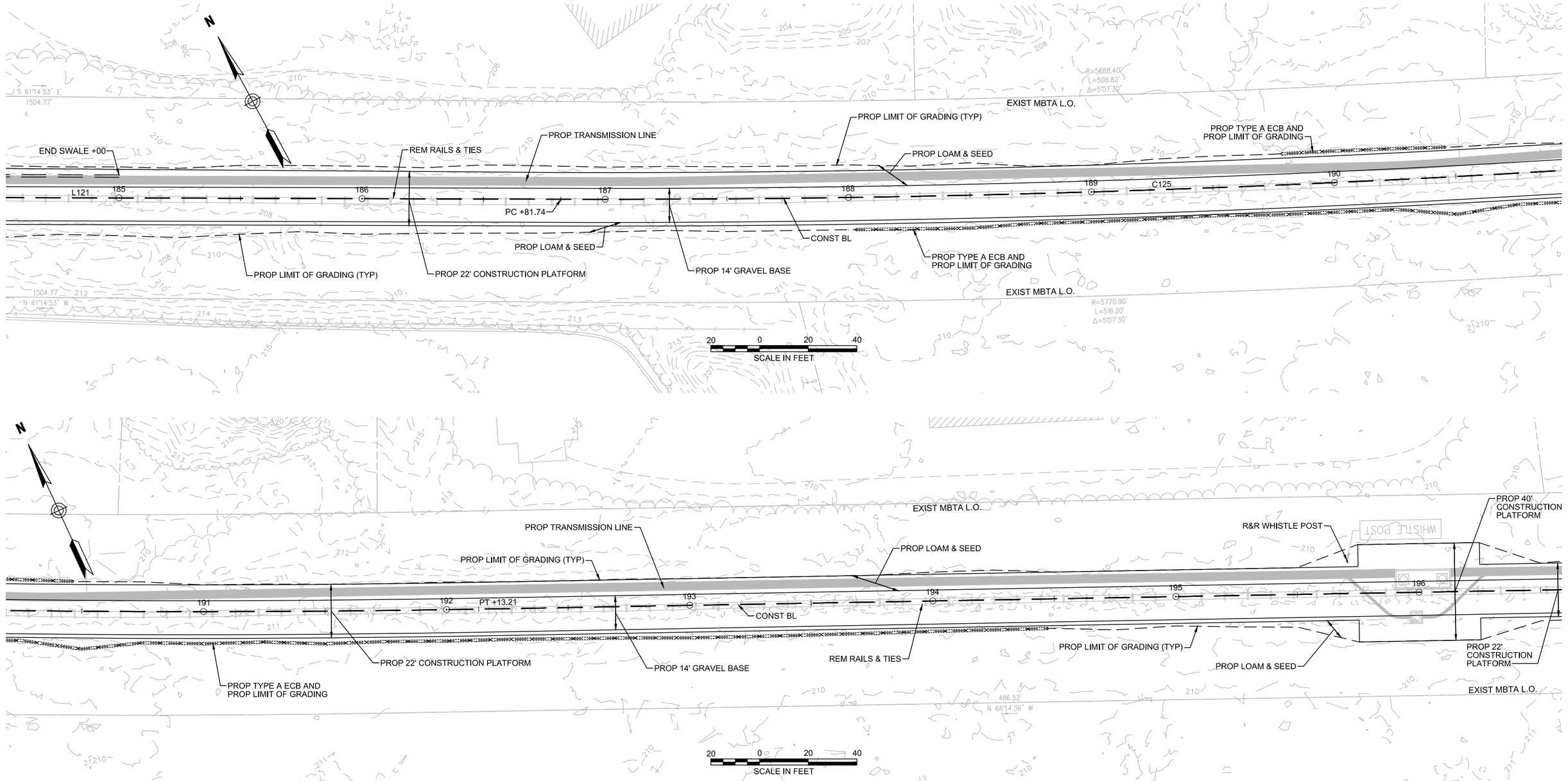
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 16 OF 62

SCALE: unless noted	DATE	DRAWN	CH'KD.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).

NO.	DESCRIPTION	BY	DATE	APPR.

REVISION

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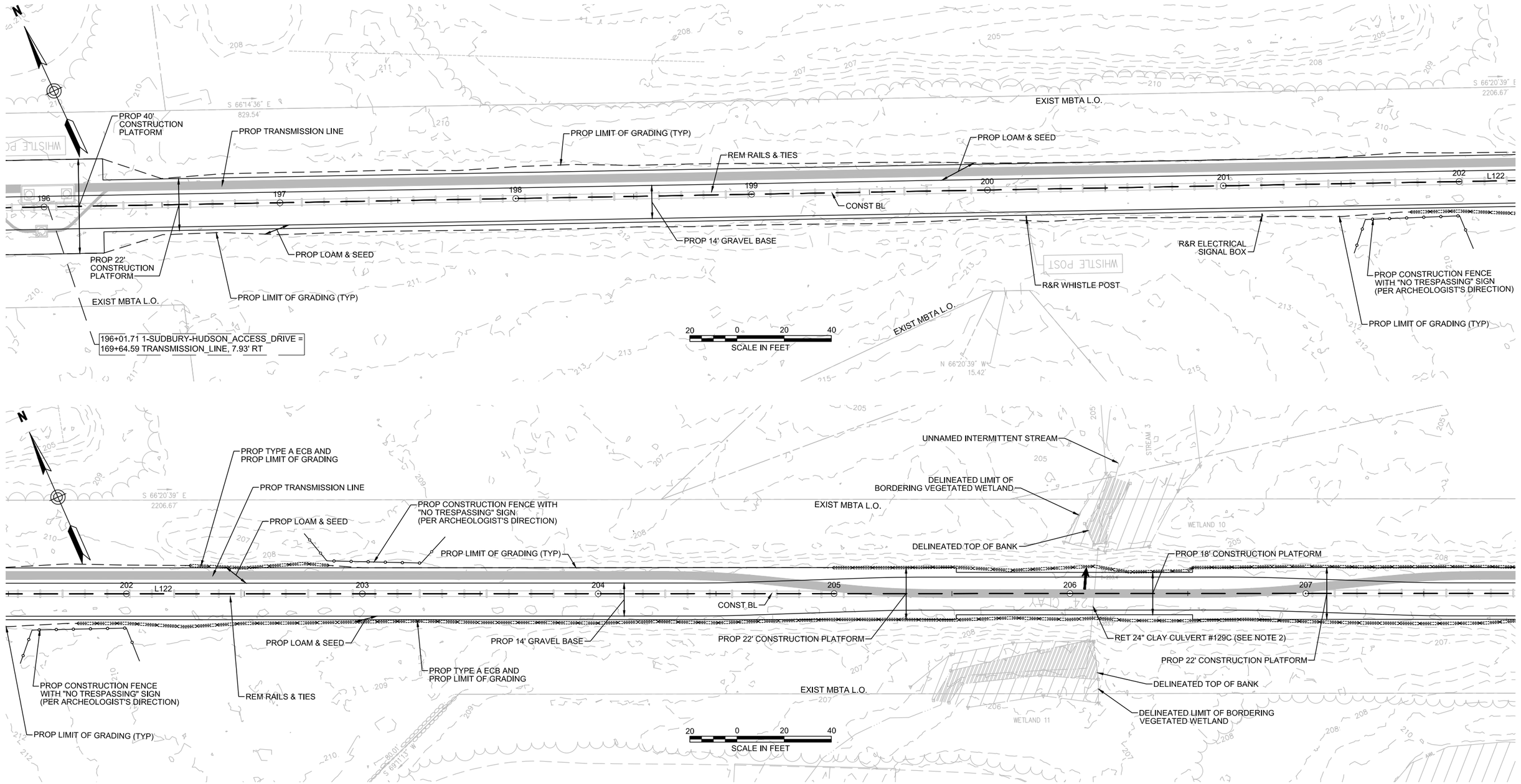
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 17 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. CONTRACTOR TO CUT TREE ON NORTHEAST CORNER OF PIPE. NO GRUBBING TO BE PERFORMED OUTSIDE OF LIMITS OF GRADING.

NO.	DESCRIPTION	BY	DATE	APPR.

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EVERSOURCE

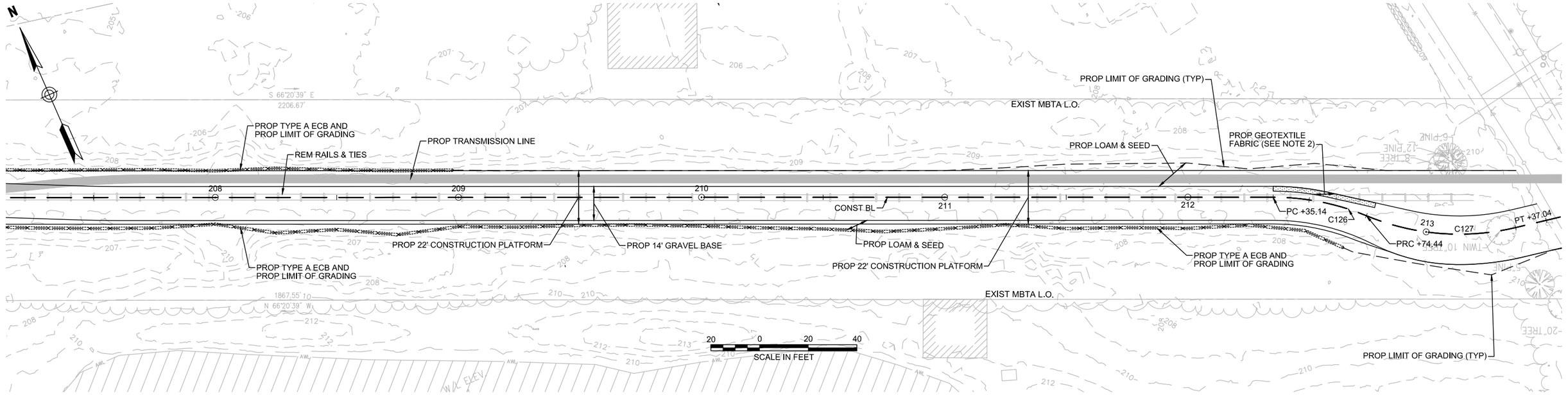
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 18 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.

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NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

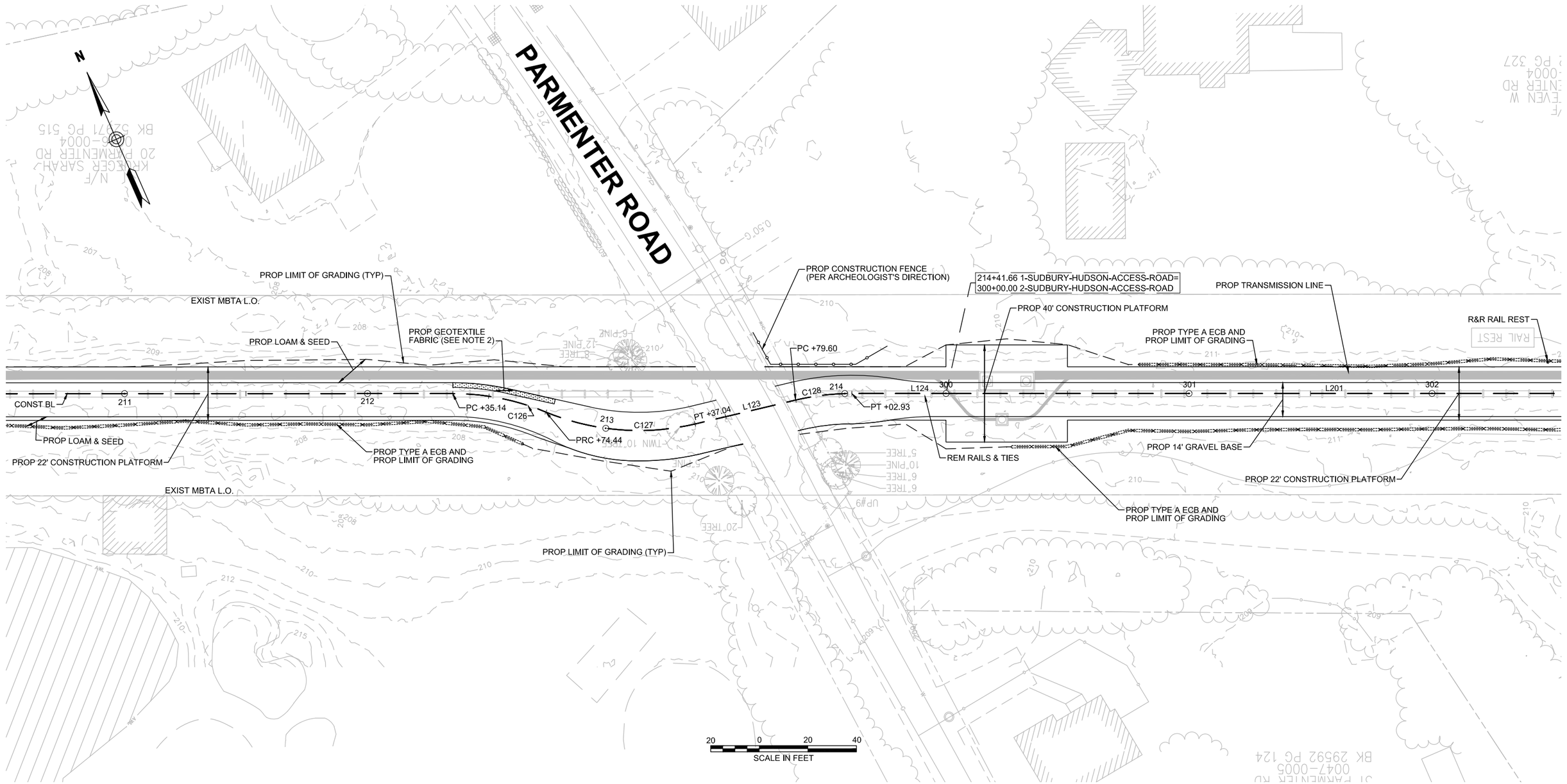
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 19 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



CONT. ON SHEET 36

CONT. ON SHEET 38

NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.

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NO.	DESCRIPTION	BY	DATE	APPR.

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EVERSOURCE

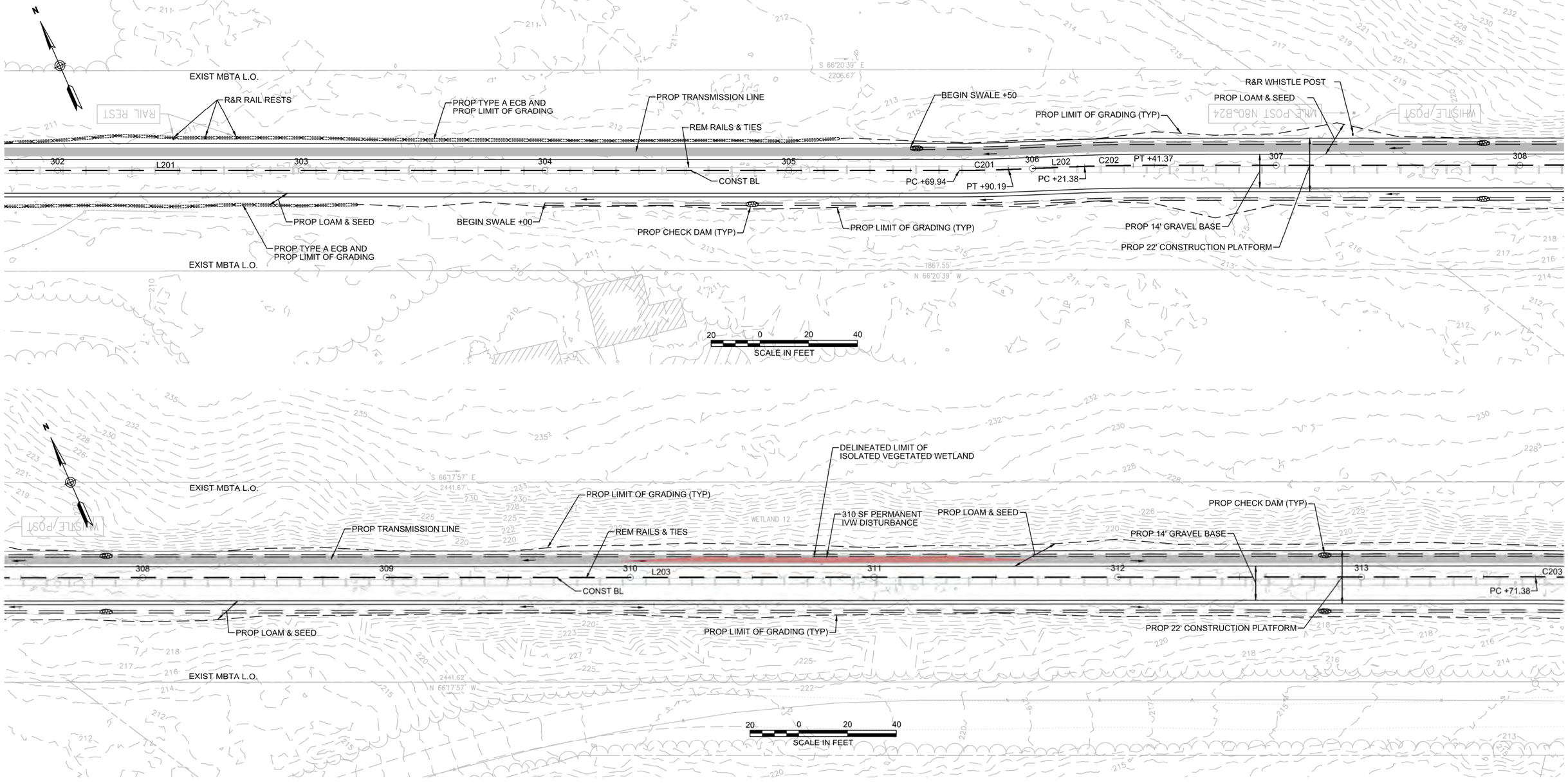
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 20 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).

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NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 21 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 38

EXIST MBTA L.O.

PROP LIMIT OF GRADING (TYP)

PROP 22' CONSTRUCTION PLATFORM

PROP TRANSMISSION LINE

END SWALE +25

PROP 22' CONSTRUCTION PLATFORM

PROP TYPE A ECB AND PROP LIMIT OF GRADING

PROP LOAM & SEED

C203 314 L204 C204 PT +40.99 315 316 317 318 319

PC +71.38

PT +91.37

PC +21.05

CONST BL

REM RAILS & TIES

PROP CHECK DAM (TYP)

END SWALE +75

PROP 40' CONSTRUCTION PLATFORM

PROP LOAM & SEED

PROP 14' GRAVEL BASE

PROP LIMIT OF GRADING (TYP)

EXIST MBTA L.O.

20 0 20 40

SCALE IN FEET

CONT. BELOW

CONT. ABOVE

EXIST MBTA L.O.

PROP TRANSMISSION LINE

PROP TYPE A ECB AND PROP LIMIT OF GRADING

REM RAILS & TIES

PROP LOAM & SEED

PROP 22' CONSTRUCTION PLATFORM

319 320 321 322 323 324 325

CONST BL

PROP LOAM & SEED

PROP LIMIT OF GRADING (TYP)

PROP TYPE A ECB AND PROP LIMIT OF GRADING

PROP 14' GRAVEL BASE

EXIST MBTA L.O.

S 66°17'57" E 2441.67

N 66°17'57" W 2441.62

BM STONE BOUND ELEV=202.07

20 0 20 40

SCALE IN FEET

100-YEAR FLOOD

CONT. ON SHEET 40

NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).

NO.	DESCRIPTION	BY	DATE	APPR.

REVISION

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 22 OF 62

Vanasse Hangen Brustlin, Inc.
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Watertown, MA 02472
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SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

NO IMPACTS TO 100-YEAR FLOOD - NO FILL IN FLOODPLAIN
SEE STA 326+00 TO STA 331+50 IN CROSS- SECTIONS FOR
MORE INFORMATION

100-YEAR FLOOD)

EXIST MBTA L.O.

PROP 22' CONSTRUCTION PLATFORM

PROP TYPE A ECB AND
PROP LIMIT OF GRADING

PROP TRANSMISSION LINE

DELINEATED LIMIT OF BORDERING
VEGETATED WETLAND

PROP LOAM & SEED

WETLAND 14

CONT. ON SHEET 39

CONT. BELOW

325 L205 326 327 328 329 330

CONST BL

REM RAILS & TIES

PROP LOAM & SEED

PROP TYPE A ECB AND
PROP LIMIT OF GRADING

PROP 14' GRAVEL BASE

DELINEATED LIMIT OF BORDERING
VEGETATED WETLAND

EXIST MBTA L.O.

WETLAND 13

100-YEAR FLOOD

20 0 20 40
SCALE IN FEET

100-YEAR FLOOD

NO IMPACTS TO 100-YEAR FLOOD - NO FILL IN
FLOODPLAIN
SEE STA 326+00 TO STA 331+50 IN CROSS- SECTIONS
FOR MORE INFORMATION

DELINEATED LIMIT OF BORDERING
VEGETATED WETLAND

EXIST MBTA L.O.

PROP TYPE A ECB AND
PROP LIMIT OF GRADING

PROP TRANSMISSION LINE

PROP TYPE B ECB AND
PROP LIMIT OF GRADING

PROP 22' CONSTRUCTION PLATFORM

PROP LIMIT OF GRADING (TYP)

PROP LOAM & SEED

REM RAILS & TIES

CONT. ABOVE

CONT. ON SHEET 41

331 332 333 334 335 336

CONST BL

PROP LOAM & SEED

PROP 14' GRAVEL BASE

PROP TYPE B ECB AND
PROP LIMIT OF GRADING

PROP LIMIT OF GRADING (TYP)

PROP TYPE A ECB AND
PROP LIMIT OF GRADING

PROP 40' CONSTRUCTION PLATFORM

EXIST MBTA L.O.

20 0 20 40
SCALE IN FEET

DELINEATED LIMIT OF BORDERING
VEGETATED WETLAND

00-YEAR FLOOD

NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND WITHIN 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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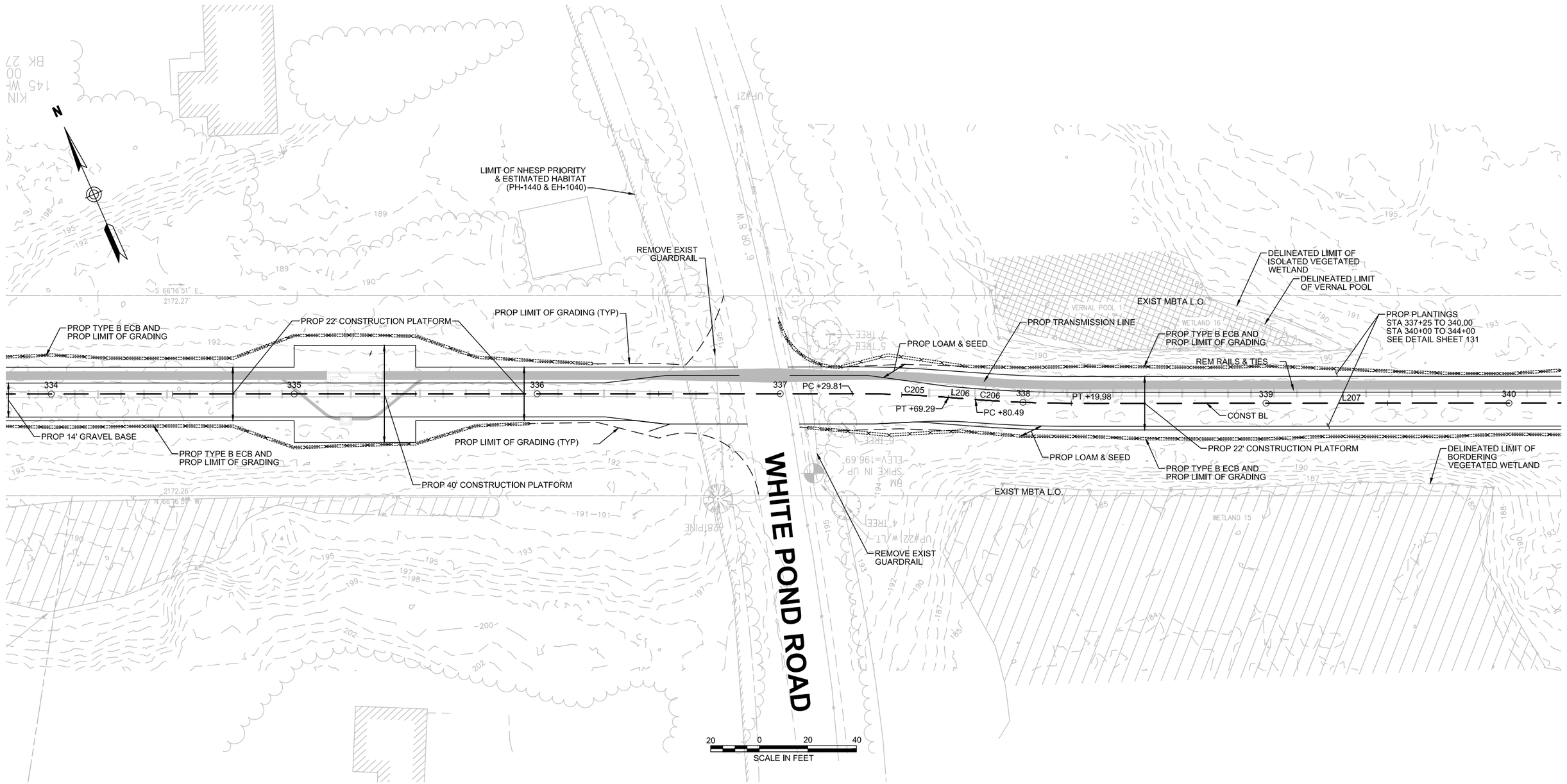
NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS
PLAN 23 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



CONT. ON SHEET 40

CONT. ON SHEET 42

NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND WITHIN 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

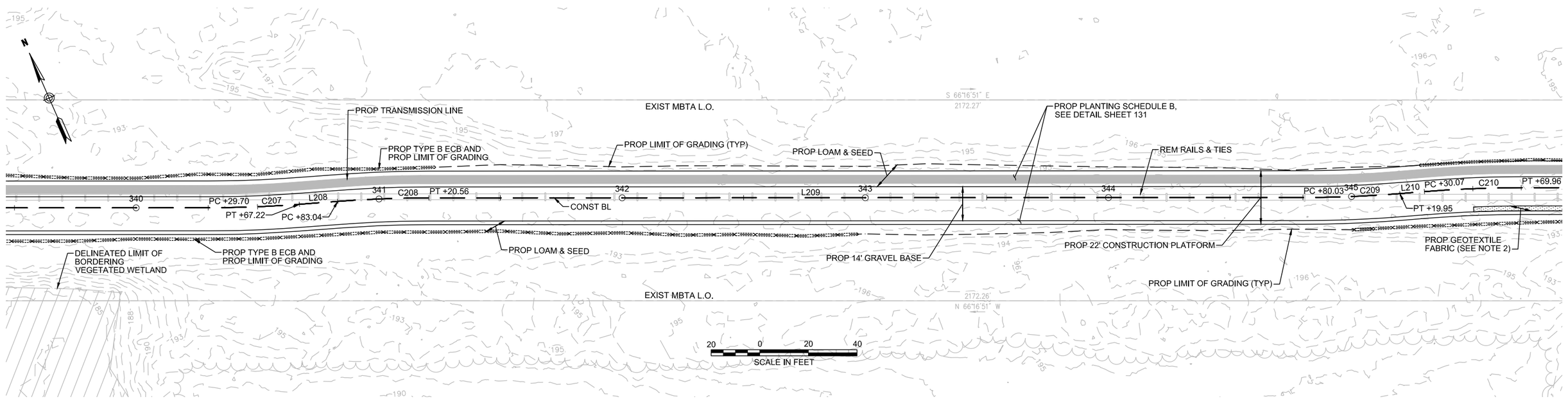
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

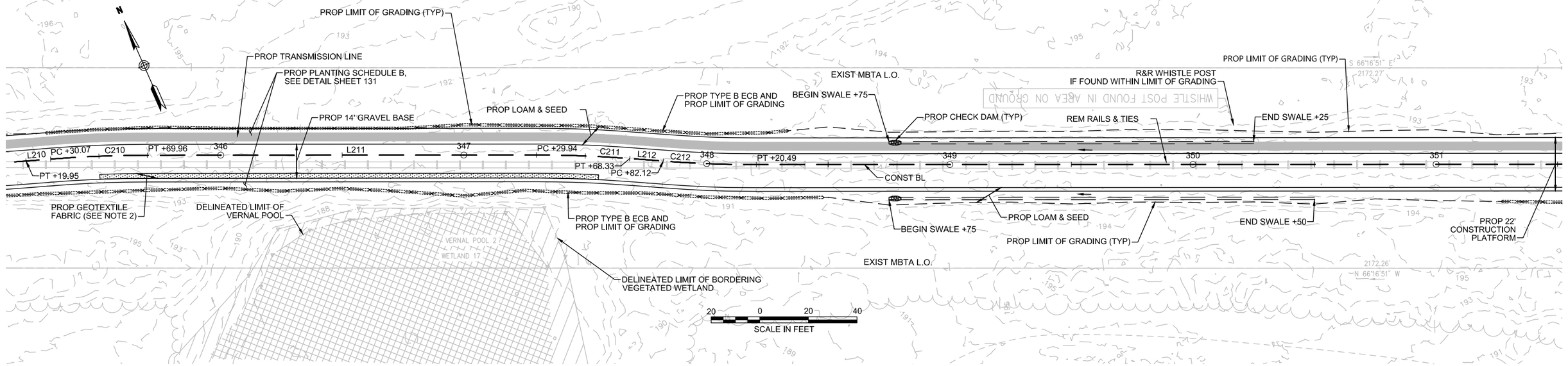
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 24 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.





NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.
3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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Watertown, MA 02472
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NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 25 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 42

PROP TRANSMISSION LINE
PROP LIMIT OF GRADING (TYP)
EXIST MBTA L.O.
PROP PLANTING SCHEDULE B, SEE DETAIL SHEET 131
SUPPLEMENTAL PLANTING AREA 5 (SEE PAGE 132FOR DETAILS)
PROP TYPE B ECB AND PROP LIMIT OF GRADING
PROP LOAM & SEED
DELINEATED LIMIT OF VERNAL POOL
VERNAL POOL 3
WETLAND 19
DELINEATED LIMIT OF BORDERING VEGETATED WETLAND
351 352 353 354 L213 355 356 357
CONST BL
REM RAILS & TIES
PROP 14' GRAVEL BASE
PROP LOAM & SEED
PROP 22' CONSTRUCTION PLATFORM
PROP TYPE B ECB AND PROP LIMIT OF GRADING
PROP 40' CONSTRUCTION PLATFORM
PROP 22' CONSTRUCTION PLATFORM
DELINEATED LIMIT OF BORDERING VEGETATED WETLAND
EXIST MBTA L.O.
WETLAND 18
S 66°16'36" E 2487.66'
N 66°16'36" W 2487.66'
20 0 20 40
SCALE IN FEET

CONT. BELOW

CONT. ABOVE

PROP TRANSMISSION LINE
PROP TYPE B ECB AND PROP LIMIT OF GRADING
EXIST MBTA L.O.
REM RAILS & TIES
PROP LIMIT OF GRADING (TYP)
PROP LOAM & SEED
PROP 22' CONSTRUCTION PLATFORM
RET TOWN MONUMENT
PROP PLANTING SCHEDULE B, SEE SHEET 131 FOR DETAILS
TOWN OF SUDBURY
TOWN OF HUDSON
PROP CONSTRUCTION FENCE WITH "NO TRESPASSING" SIGN (PER ARCHEOLOGIST'S DIRECTION)
BEGIN SWALE +50
PT +74.35
PT +15.72
357 358 359 360 C213 361 L214 PC +88.26 PT +11.58 PC +28.41 C214 L215 362 PC +93.10 C215
CONST BL
PROP 14' GRAVEL BASE
PROP TYPE B ECB AND PROP LIMIT OF GRADING
PROP LOAM & SEED
BEGIN SWALE +25
PROP CHECK DAM (TYP)
PROP LIMIT OF GRADING (TYP)
EXIST MBTA L.O.
TOWN OF HUDSON
CITY OF MARLBOROUGH
TOWN OF SUDBURY
CITY OF MARLBOROUGH
TOWN BOUNDARY MARKER
S 66°16'36" E 2487.66'
N 66°16'36" W 2487.66'
20 0 20 40
SCALE IN FEET

CONT. ON SHEET 44

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED FEBRUARY 5, 2018 (MADEP FILE NO.190-0611).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

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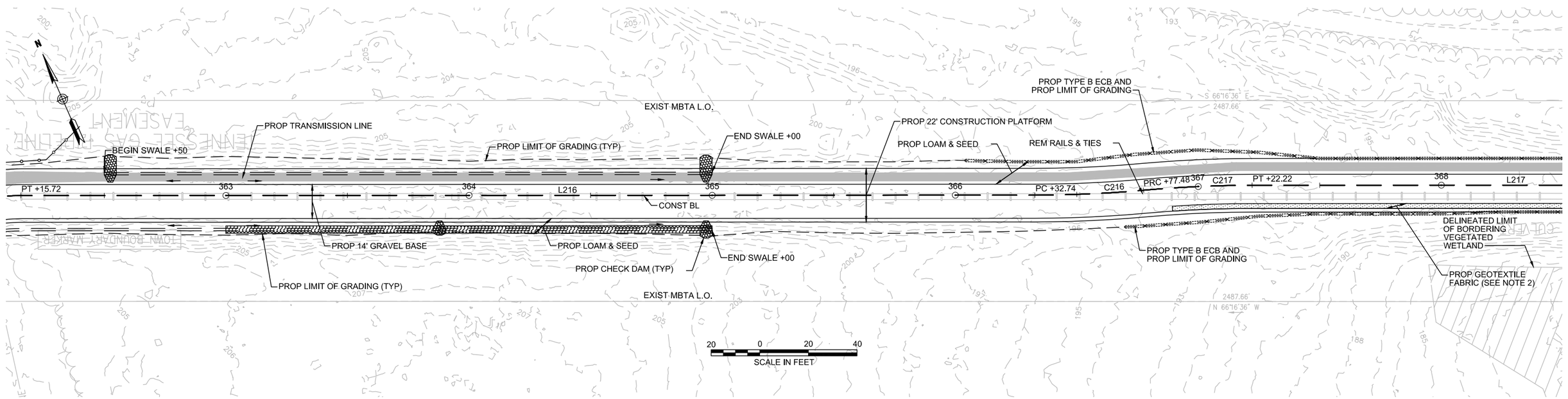
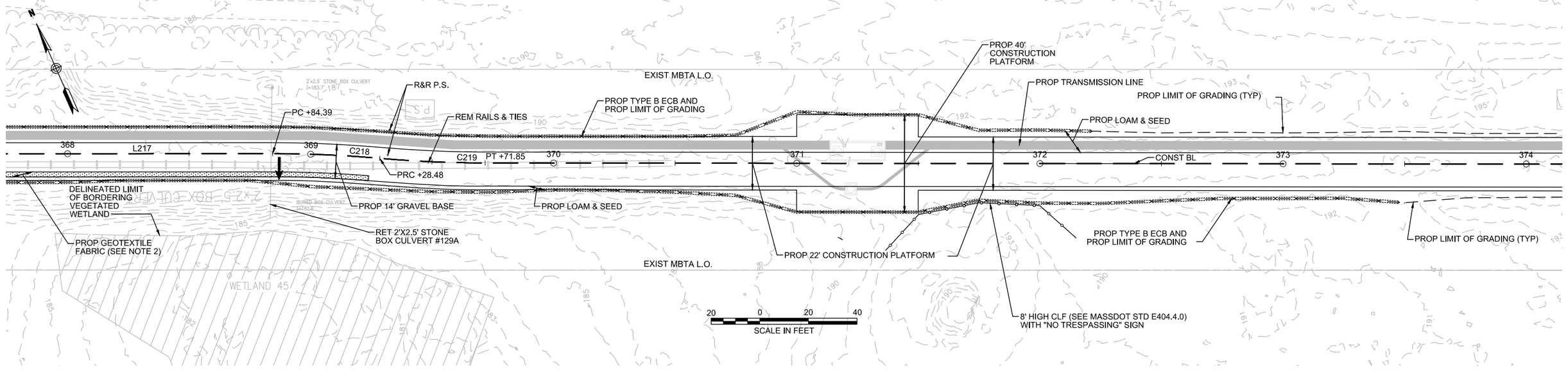
EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS
PLAN 26 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.





NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 8" GRAVEL BORROW WITHIN LIMITS SHOWN.
3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

vhb Vanasse Hangen Brustlin, Inc.
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EVERSOURCE

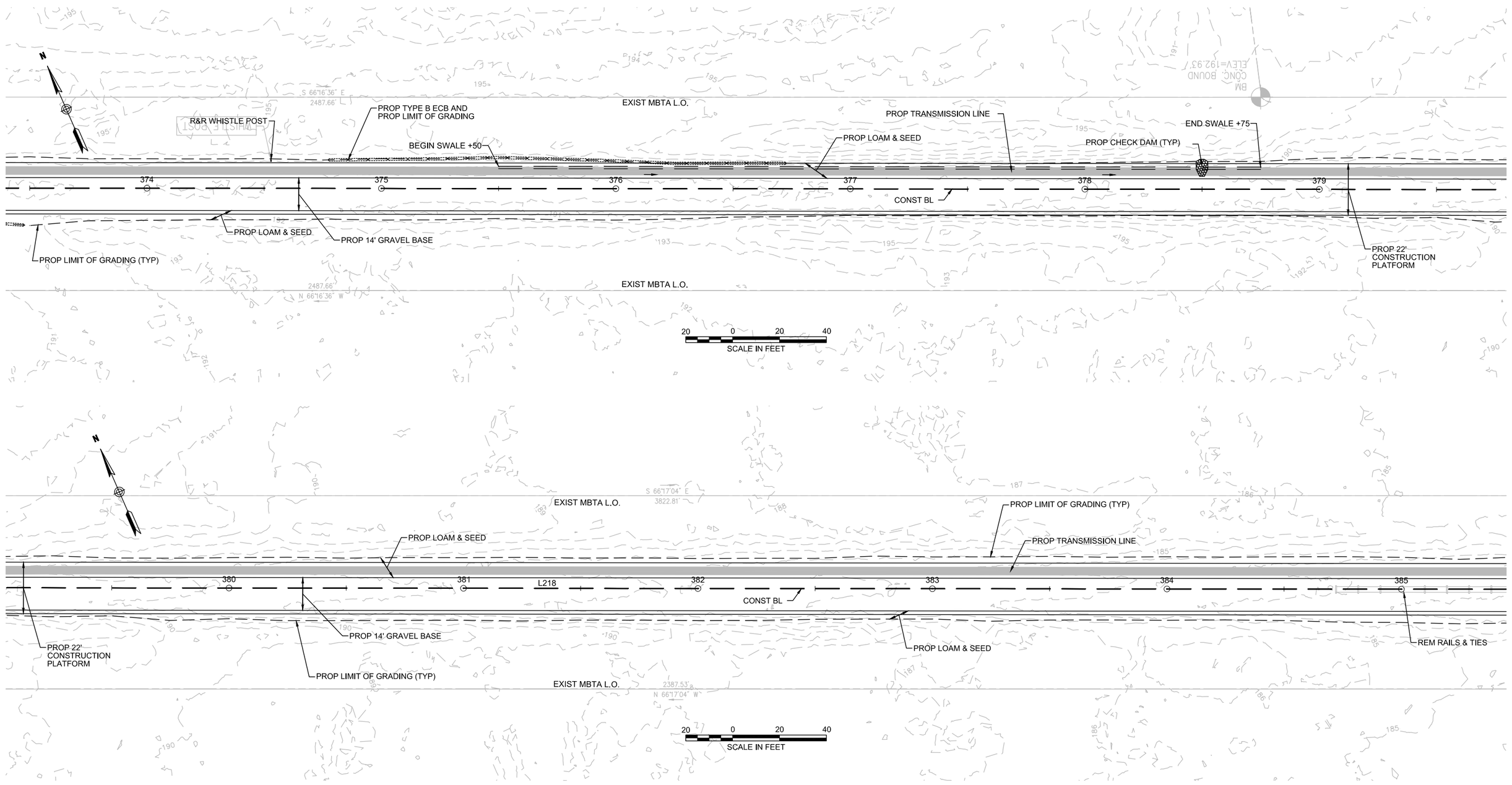
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 27 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTE:

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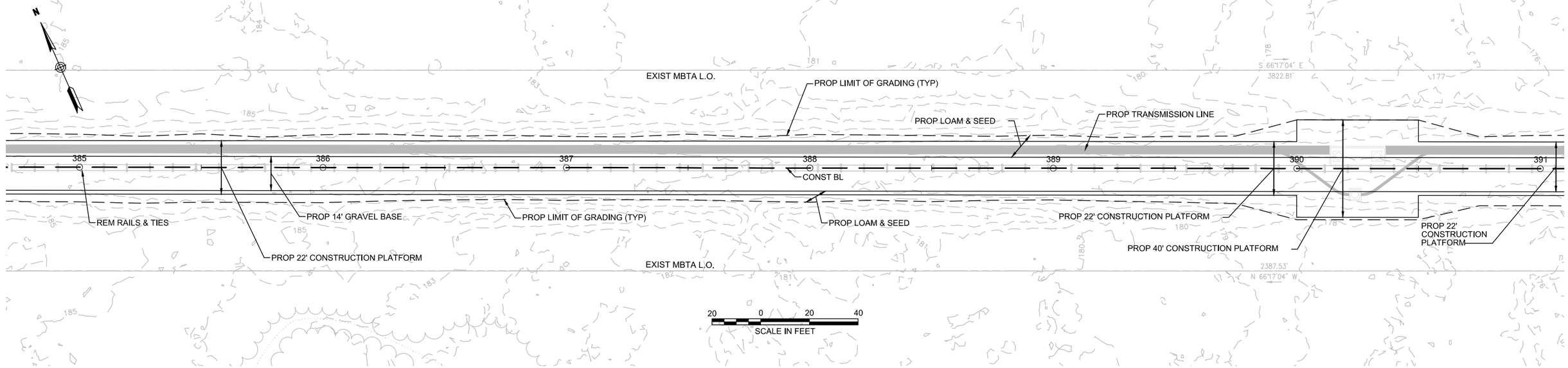
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

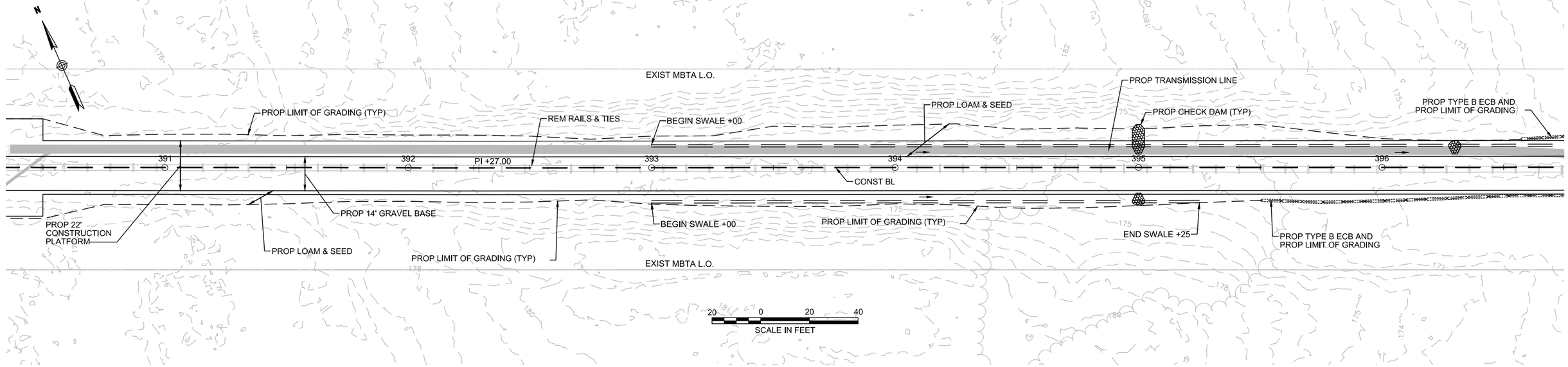
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 28 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.





NOTE:

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2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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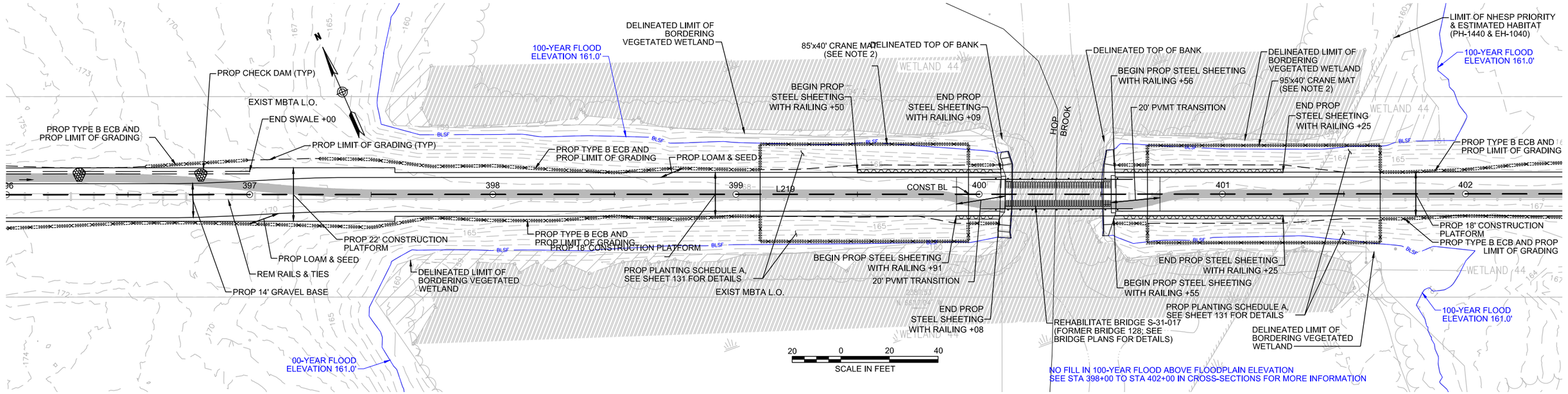
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

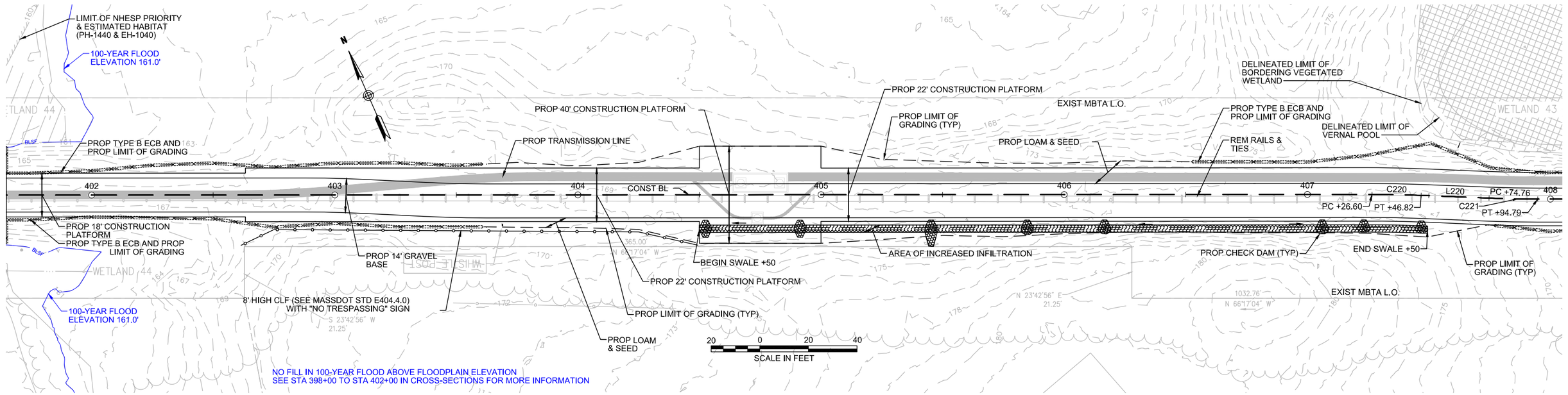
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 29 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.





NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).
2. MAXIMUM CRANE PAD DIMENSIONS OF 40'X40' ARE ALLOWED AT ANY GIVEN TIME. A LONGER CRANE MAT FOOTPRINT IS SHOWN HERE TO ALLOW THE CRANE MAT LOCATION TO BE SHIFTED DURING CONSTRUCTION OF THE STEEL SHEETING AND BRIDGE.
3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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NO.	DESCRIPTION	BY	DATE	APPR.

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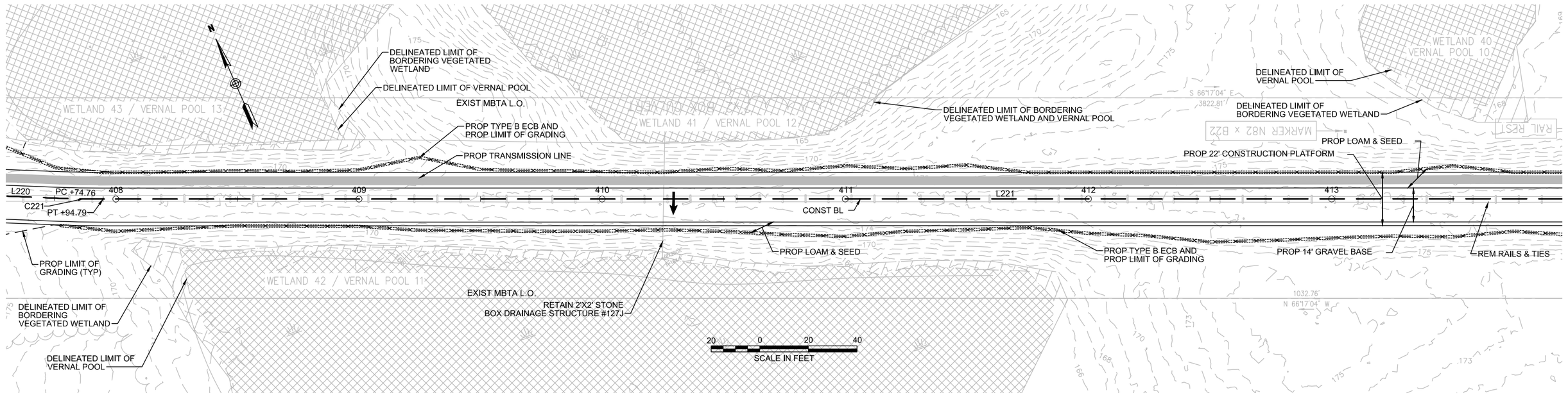
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 30 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTE:

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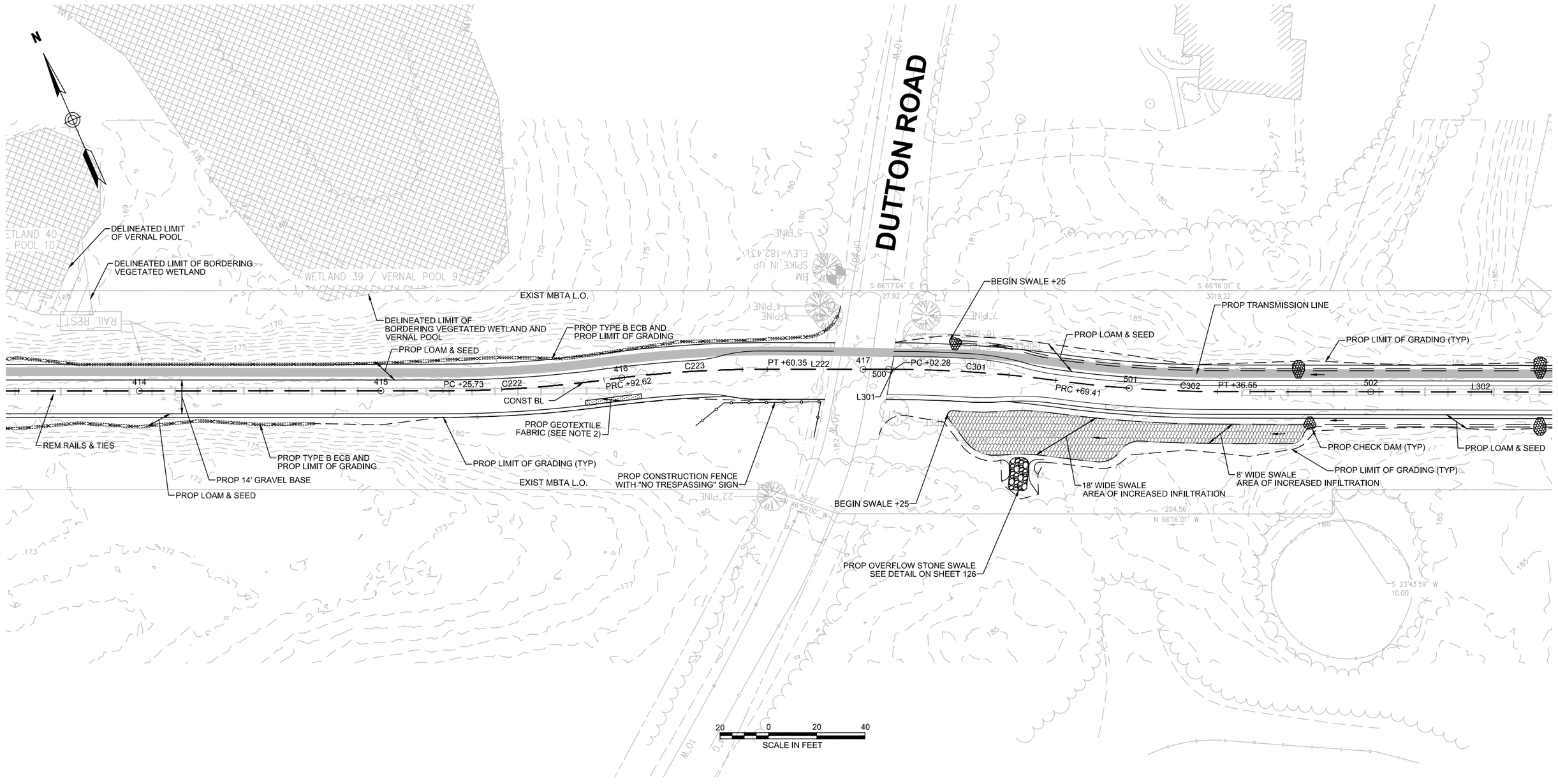
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 31 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO.301-1227).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 32 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 49

EXIST MBTA L.O.

PROP 40' CONSTRUCTION PLATFORM

PROP LIMIT OF GRADING (TYP)

PROP LOAM & SEED

PROP TRANSMISSION LINE

L302 503 504 505 506 507 508 L303

PI +88.78

PROP LIMIT OF GRADING (TYP)

PROP LOAM & SEED

CONST BL

REM RAILS & TIES

PROP 22' CONSTRUCTION PLATFORM

PROP CHECK DAM (TYP)

PROP 14' GRAVEL BASE

EXIST MBTA L.O.

S 66°16'01" E 3019.22'

N 66°16'01" W 2851.85'

20 0 20 40

SCALE IN FEET

CONT. BELOW

CONT. ABOVE

PROP LIMIT OF GRADING (TYP)

PROP TRANSMISSION LINE

EXIST MBTA L.O.

PROP LOAM & SEED

PROP 22' CONSTRUCTION PLATFORM

BEGIN SWALE +25

R&R WHISTLE POST

END SWALE +50

508 L303 509 510 511 512 513 L304 514

PI +03.31

PROP CHECK DAM (TYP)

PROP LOAM & SEED

AREA OF INCREASED INFILTRATION

PROP LIMIT OF GRADING (TYP)

CONST BL

REM RAILS & TIES

PROP 14' GRAVEL BASE

EXIST MBTA L.O.

S 66°16'01" E 3019.22'

N 66°16'01" W 2851.85'

20 0 20 40

SCALE IN FEET

CONT. ON SHEET 51

NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

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EVERSOURCE

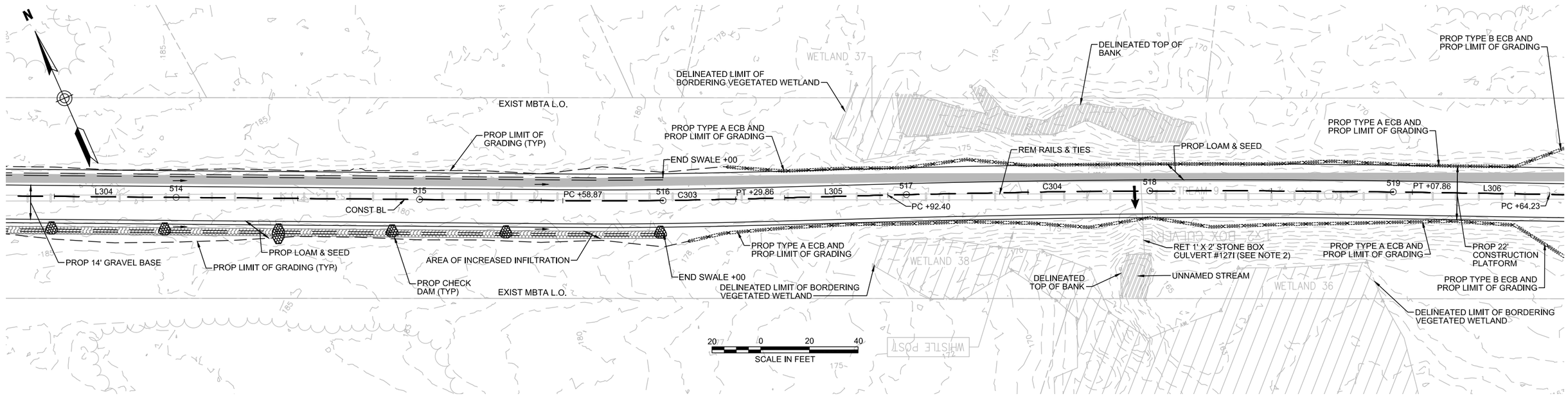
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

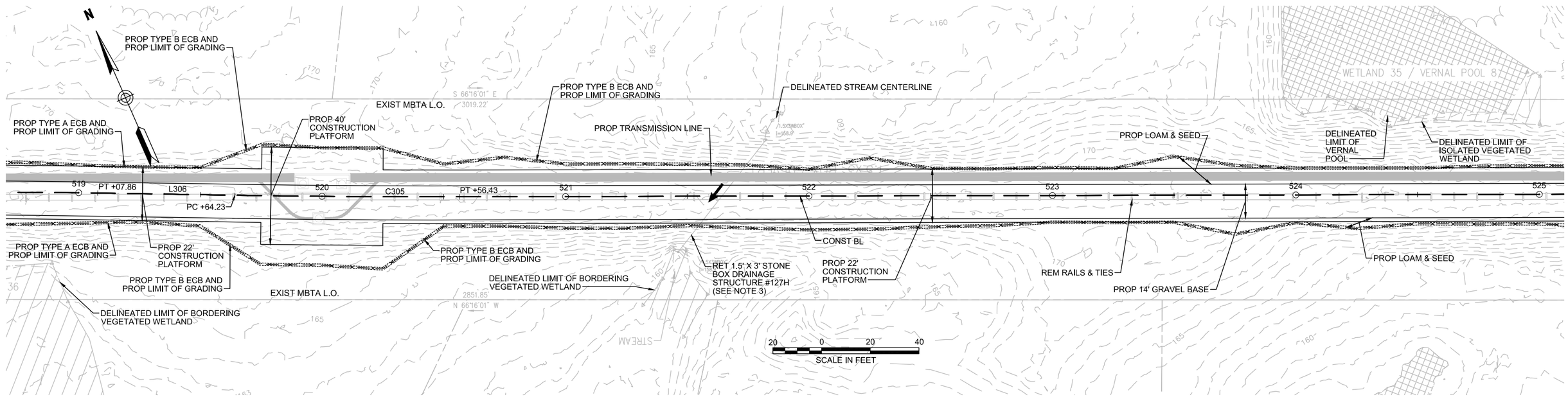
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 33 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.





NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. CONTRACTOR TO CLEAR OUT DEBRIS IN NORTH END OF STONE BOX CULVERT BY HAND.
3. CONTRACTOR TO CUT TWO 12" TREES ON SOUTHWEST WINGWALL OF STONE BOX DRAINAGE STRUCTURE. NO GRUBBING TO BE PERFORMED OUTSIDE OF LIMITS OF GRADING.
4. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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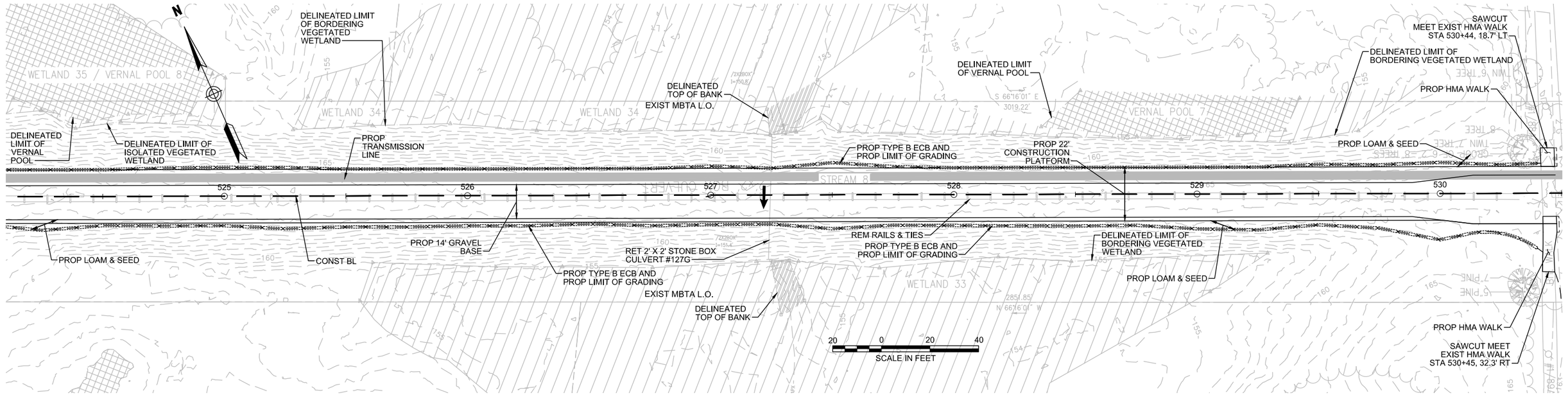
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 34 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTE:

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2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED IN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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	REVISION			

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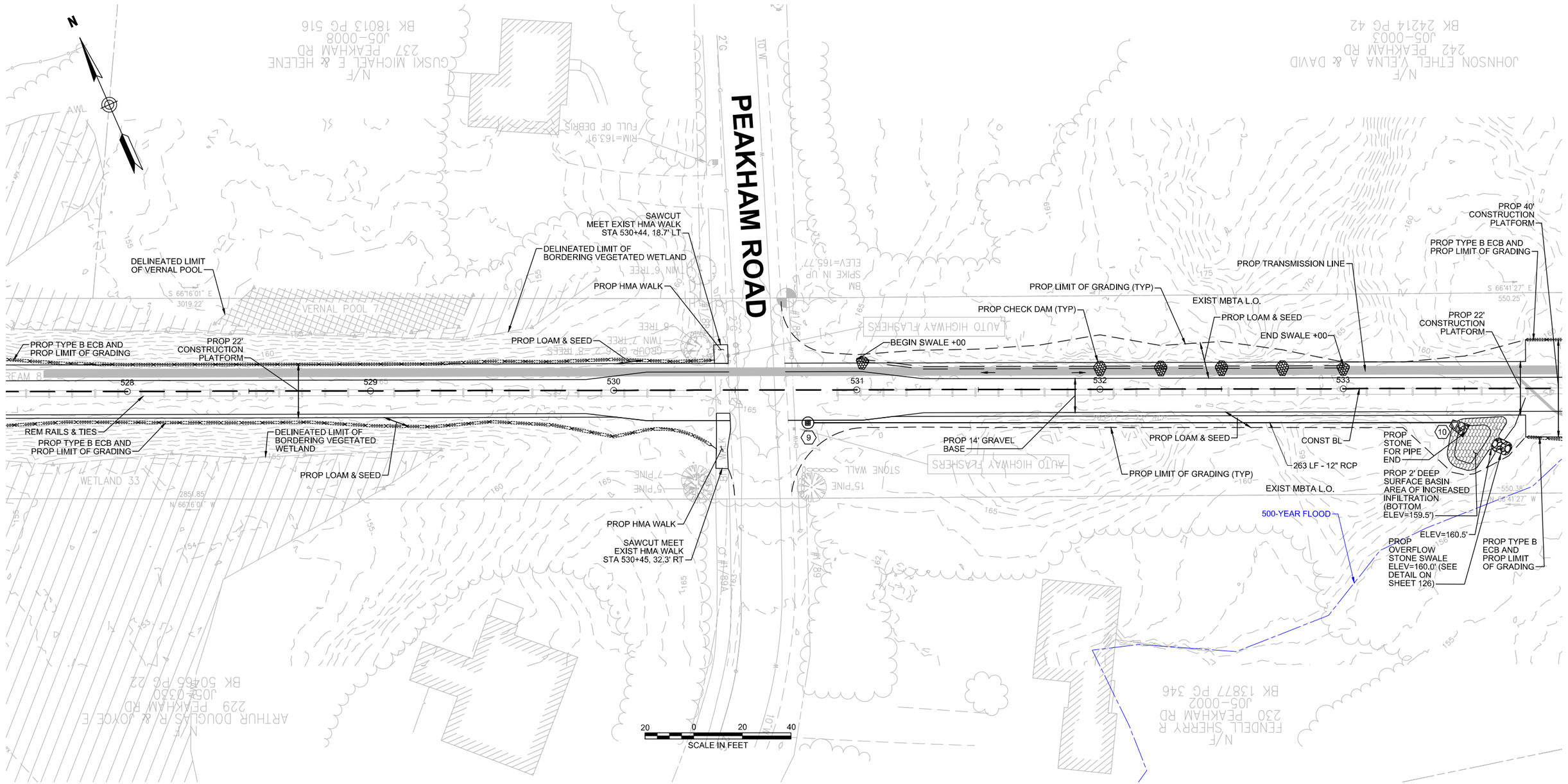
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 35 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
9	SHALLOW CB	STA 530+80, 10.4' RT	164.85		162.00'	SEE CONSTRUCTION DETAIL ON SHEET 126
10	FES	STA 533+46, 14.9' RT	161.68	160.50' (9)		

NOTE:

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EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 36 OF 62

SCALE: unless noted	DATE	DRAWN	CH'KD.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 53

PROP TYPE B ECB AND PROP LIMIT OF GRADING
PROP 22' CONSTRUCTION PLATFORM
PROP 40' CONSTRUCTION PLATFORM
DELINEATED LIMIT OF ISOLATED VEGETATED WETLAND
WETLAND 32
CONST BL
PROP 22' CONSTRUCTION PLATFORM
PROP LOAM & SEED
PROP 14' GRAVEL BASE
DELINEATED TOP OF BANK
DELINEATED LIMIT OF BORDERING VEGETATED WETLAND
EXIST MBTA L.O.
100-YEAR FLOOD ELEVATION 152.2'
500-YEAR FLOOD
100-YEAR FLOOD ELEVATION 148.6'
DELINEATED LIMIT OF BORDERING VEGETATED WETLAND
PROP LOAM & SEED
PROP TRANSMISSION LINE
REM RAILS & TIES
EXIST MBTA L.O.
WETLAND 31
DUDLEY BROOK
RET 36" CORRUGATED METAL CULVERTS #127F
DELINEATED TOP OF BANK
PROP STONE FOR PIPE END
PROP 2' DEEP SURFACE BASIN AREA OF INCREASED INFILTRATION (BOTTOM ELEV=159.5')
ELEV=160.5'
PROP OVERFLOW STONE SWALE ELEV=160.0' (SEE DETAIL ON SHEET 126)
PROP TYPE B ECB AND PROP LIMIT OF GRADING
534 535 536 537 538 539
S 66°26'22" E 1984.06'
N 66°26'22" W 1984.00'
550.25'
550.38'
20 0 20 40
SCALE IN FEET

NO IMPACT TO 100-YEAR FLOOD - ABOVE FLOODPLAIN ELEVATION
SEE STA 535+50 TO STA 542+50 IN CROSS-SECTIONS FOR MORE INFORMATION

CONT. BELOW

CONT. ABOVE

RET 36" CORRUGATED METAL CULVERTS #127F
DUDLEY BROOK
DELINEATED TOP OF BANK
PROP TYPE B ECB AND PROP LIMIT OF GRADING
STREAM 7
L307
100-YEAR FLOOD ELEVATION 148.6'
DELINEATED LIMIT OF BORDERING VEGETATED WETLAND
PROP 22' CONSTRUCTION PLATFORM
PROP LOAM & SEED
PROP TRANSMISSION LINE
CONST BL
REM RAILS & TIES
PROP LIMIT OF GRADING (TYP)
EXIST MBTA L.O.
539 540 541 542 543 544 545
PROP 14' GRAVEL BASE
RET WHISTLE POST
PROP TYPE B ECB AND PROP LIMIT OF GRADING
PROP LOAM & SEED
PROP LIMIT OF GRADING (TYP)
100-YEAR FLOOD ELEVATION 152.2'
DELINEATED LIMIT OF BORDERING VEGETATED WETLAND
DELINEATED TOP OF BANK
EXIST MBTA L.O.
S 66°26'22" E 1984.06'
N 66°26'22" W 1984.00'
20 0 20 40
SCALE IN FEET

NO IMPACT TO 100-YEAR FLOOD - ABOVE FLOODPLAIN ELEVATION
SEE STA 535+50 TO STA 542+50 IN CROSS-SECTIONS FOR MORE INFORMATION

500-YEAR FLOOD

NOTE:

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2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

NO.	DESCRIPTION	BY	DATE	APPR.

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SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 37 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 54

PROP TRANSMISSION LINE
REM RAILS & TIES
PROP LOAM & SEED
PROP 22' CONSTRUCTION PLATFORM
PROP LIMIT OF GRADING (TYP)
EXIST MBTA L.O.
RET RAIL RESTS
545
546
547
548
549
550
PROP LIMIT OF GRADING (TYP)
CONST BL
PROP LOAM & SEED
PROP 14' GRAVEL BASE
EXIST MBTA L.O.

20 0 20 40
SCALE IN FEET

CONT. BELOW

CONT. ABOVE

PROP TRANSMISSION LINE
REM RAILS & TIES
PROP LIMIT OF GRADING (TYP)
PROP 14' GRAVEL BASE
PROP LOAM & SEED
PROP 22' CONSTRUCTION PLATFORM
PROP 40' CONSTRUCTION PLATFORM
EXIST MBTA L.O.
551
552
553
554
555
556
PROP LOAM & SEED
CONST BL
PROP LIMIT OF GRADING (TYP)
R&R ELECTRICAL BOX
R&R BLOCK SIGNAL #M208
EXIST MBTA L.O.

20 0 20 40
SCALE IN FEET

HORSE POND ROAD

RET UP
SAWCUT MEET EXIST HMA WALK STA 555+61, 30.3' LT
PROP HMA WALK
R&D CROSSING SIGN
PROP LOAM & SEED
PROP HMA WALK
SAWCUT MEET EXIST HMA WALK STA 555+71, 19.4' RT
PROP LOAM & SEED

CONT. ON SHEET 56

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

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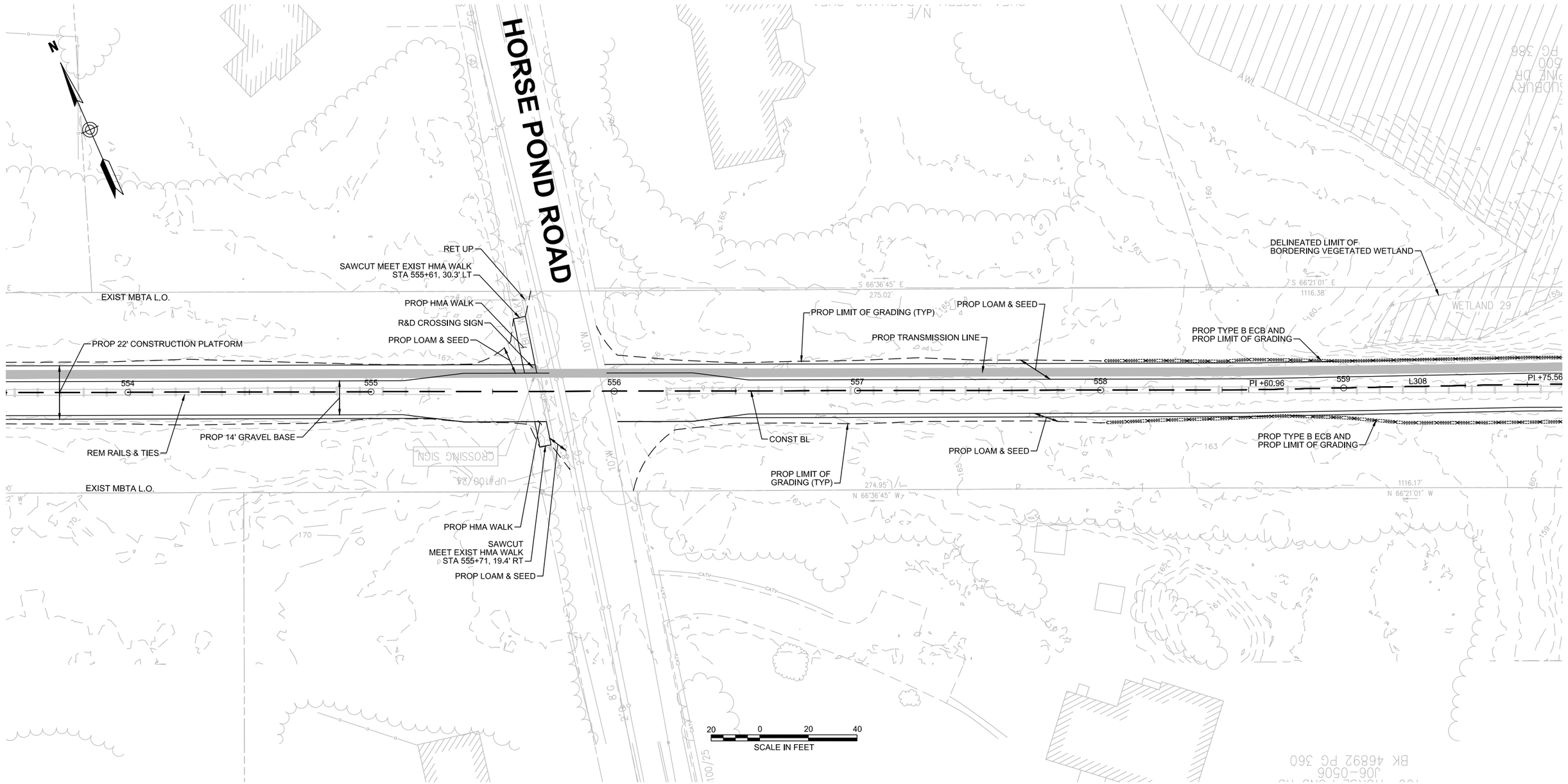
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS
PLAN 38 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



CONT. ON SHEET 55

CONT. ON SHEET 57

NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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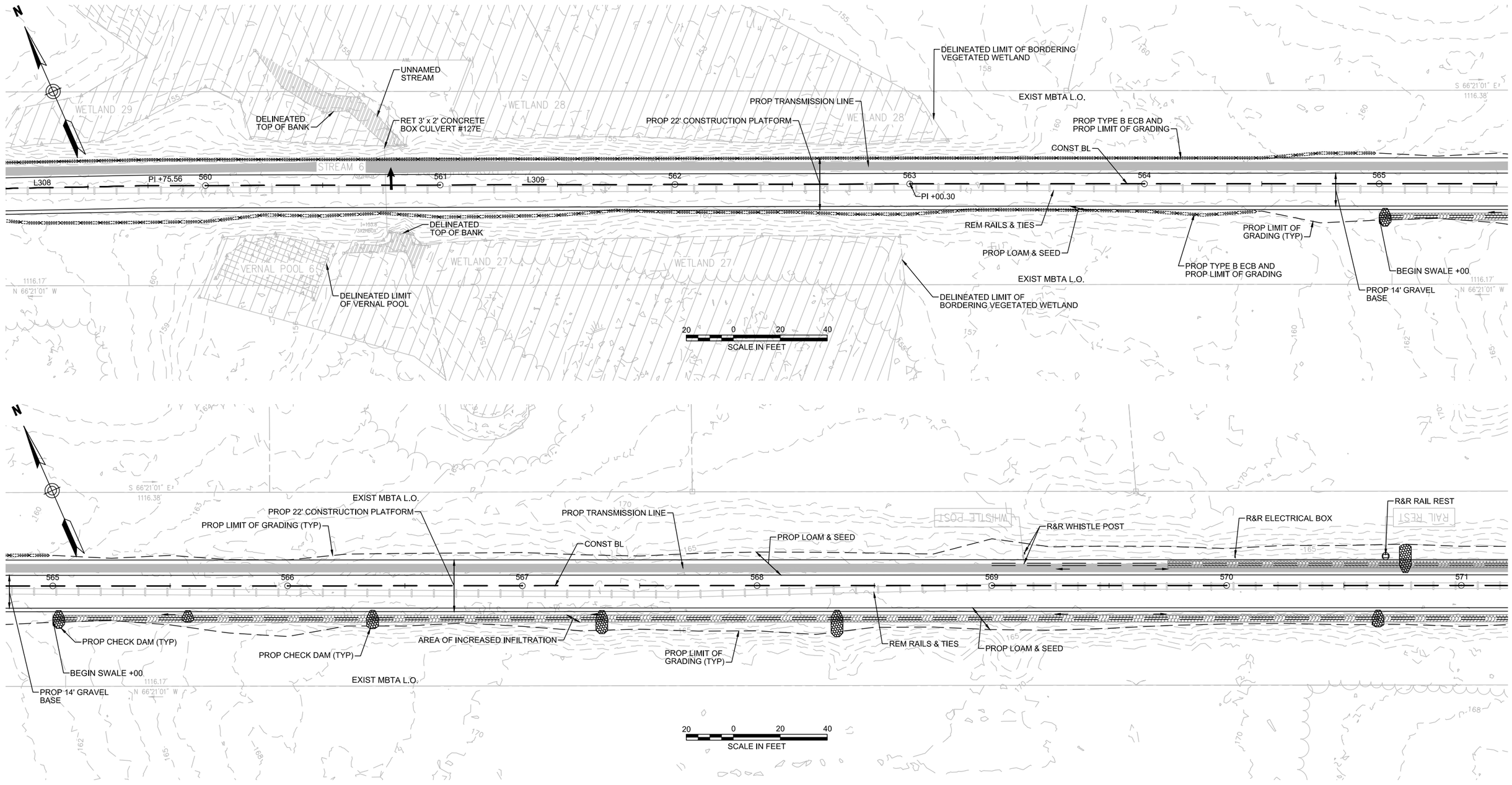
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 39 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



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EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

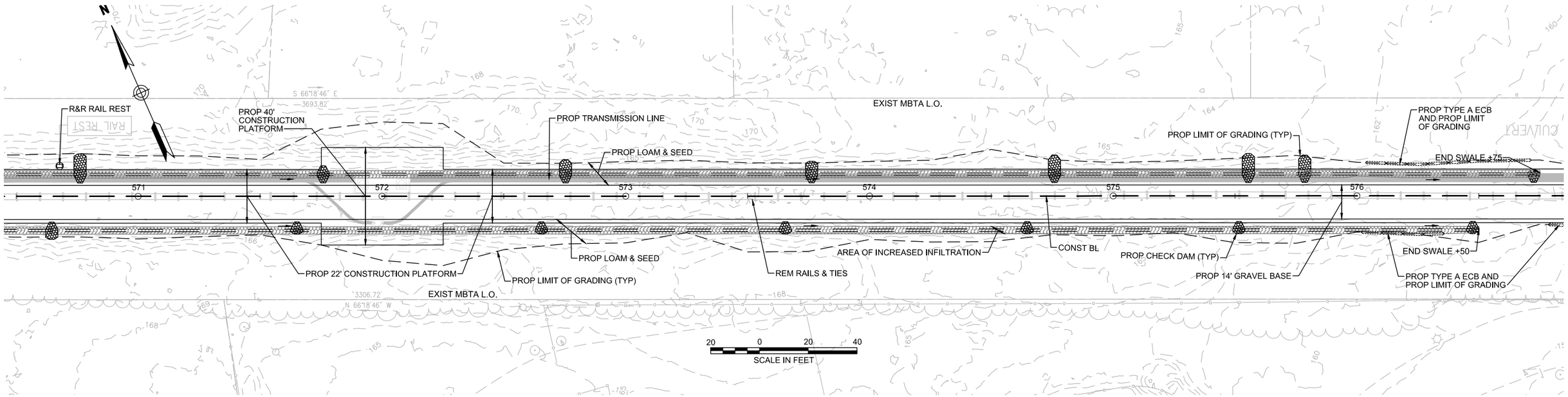
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 40 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 57



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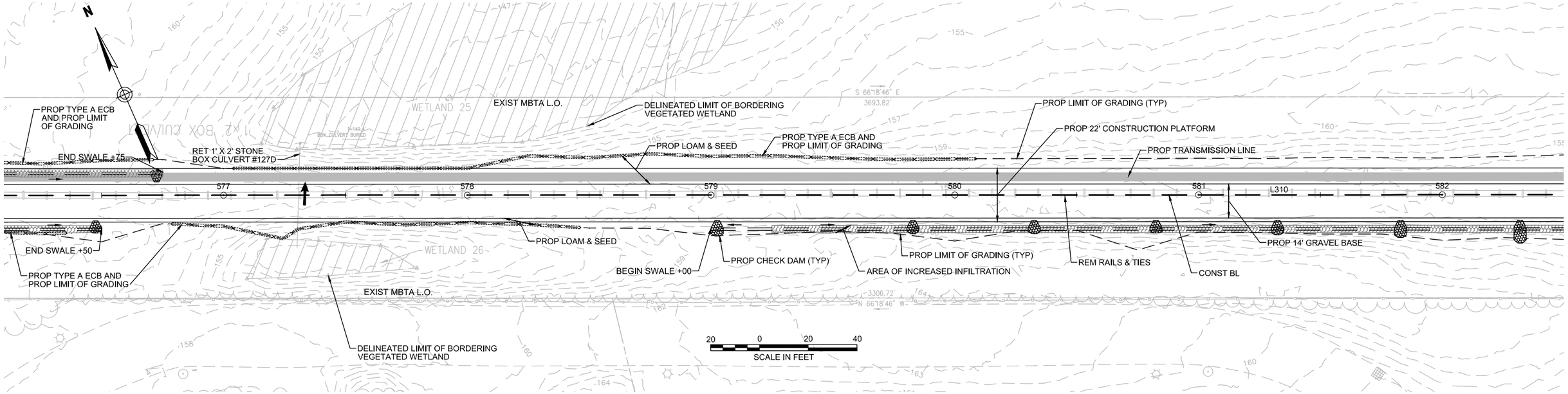

CONT. ON SHEET 59

NOTE:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

NO.	DESCRIPTION	BY	DATE	APPR.

REVISION

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 41 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

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CONT. ON SHEET 58

EXIST MBTA L.O.

PROP LIMIT OF GRADING (TYP)

PROP LOAM & SEED

REM RAILS & TIES

CONST BL

PROP 22' CONSTRUCTION PLATFORM

PROP TYPE A ECB AND PROP LIMIT OF GRADING

582 583 584 585 586 587 588

PROP CHECK DAM (TYP)

PROP LOAM & SEED

AREA OF INCREASED INFILTRATION

PROP 40' CONSTRUCTION PLATFORM

PROP 14' GRAVEL BASE

PROP TYPE A ECB AND PROP LIMIT OF GRADING

PROP LIMIT OF GRADING (TYP)

EXIST MBTA L.O.

DELINEATED TOP OF BANK

20 0 20 40

SCALE IN FEET

CONT. BELOW

CONT. ABOVE

EXIST MBTA L.O.

PROP TRANSMISSION LINE

PROP TYPE A ECB AND PROP LIMIT OF GRADING

PROP LOAM & SEED

REM RAILS & TIES

500-YEAR FLOOD

DELINEATED TOP OF BANK

PROP 22' CONSTRUCTION PLATFORM

PROP TYPE B ECB AND PROP LIMIT OF GRADING

588 589 590 591 592 593

PROP TYPE A ECB AND PROP LIMIT OF GRADING

PROP 14' GRAVEL BASE

END SWALE +25

PROP CHECK DAM (TYP)

R&R WHISTLE POST

DELINEATED TOP OF BANK

PROP LOAM & SEED

EXIST MBTA L.O.

CONST BL

PROP 22' CONSTRUCTION PLATFORM

PROP TYPE B ECB AND PROP LIMIT OF GRADING

PROP 18' CONSTRUCTION PLATFORM

PROP 14' GRAVEL BASE

RET EXIST 2'X2' STONE BOX CULVERT #127C

UNNAMED STREAM

20 0 20 40

SCALE IN FEET

CONT. ON SHEET 60

NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

NO.	DESCRIPTION	BY	DATE	APPR.

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EVERSOURCE

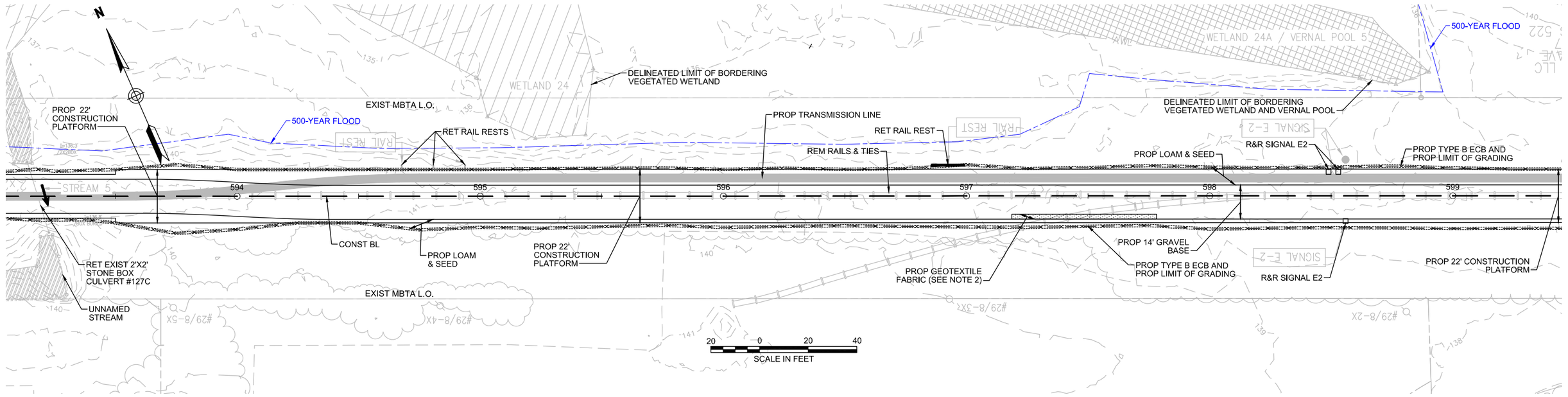
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 42 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

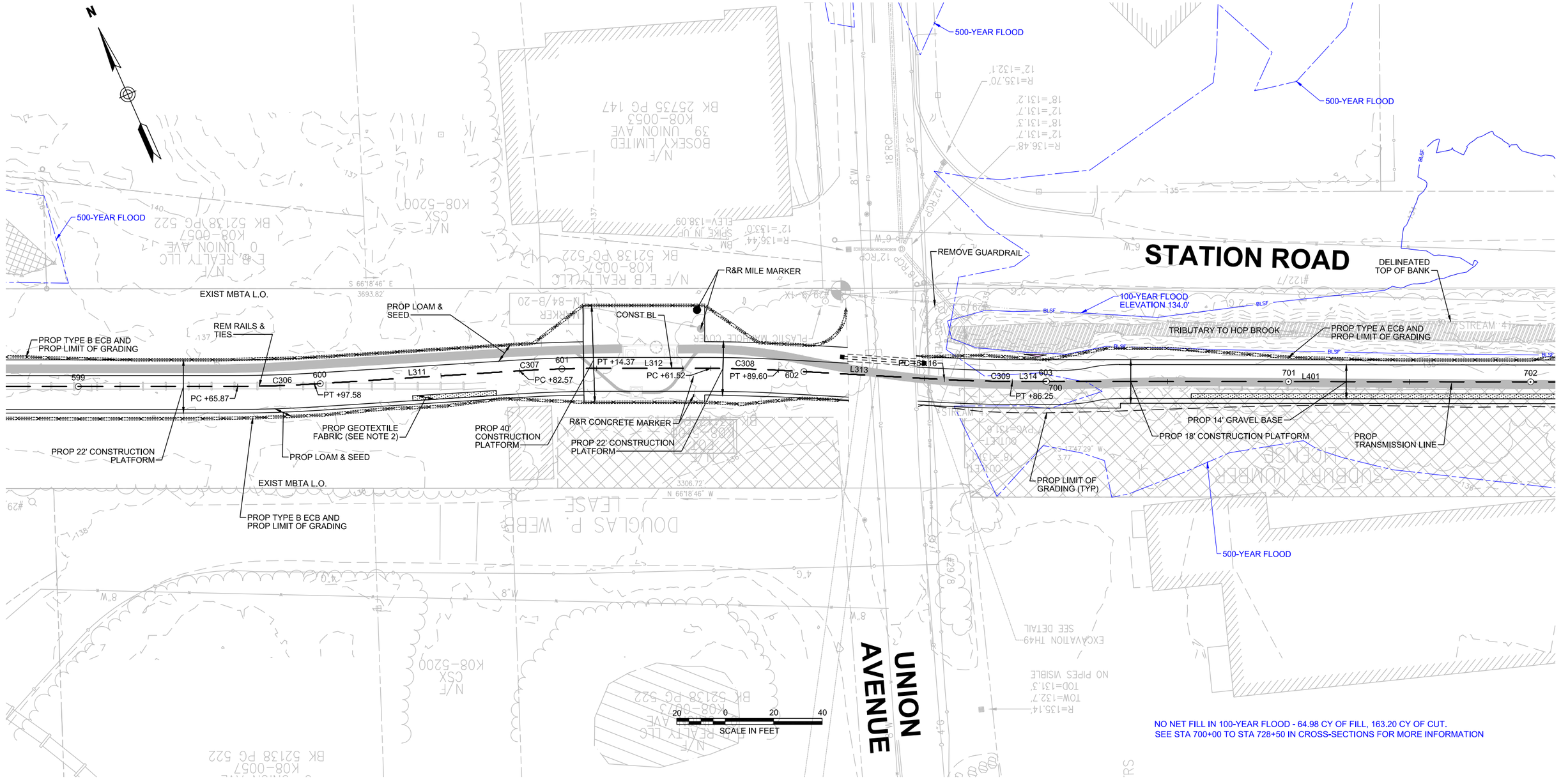
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 43 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NO NET FILL IN 100-YEAR FLOOD - 64.98 CY OF FILL, 163.20 CY OF CUT.
SEE STA 700+00 TO STA 728+50 IN CROSS-SECTIONS FOR MORE INFORMATION

NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

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NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

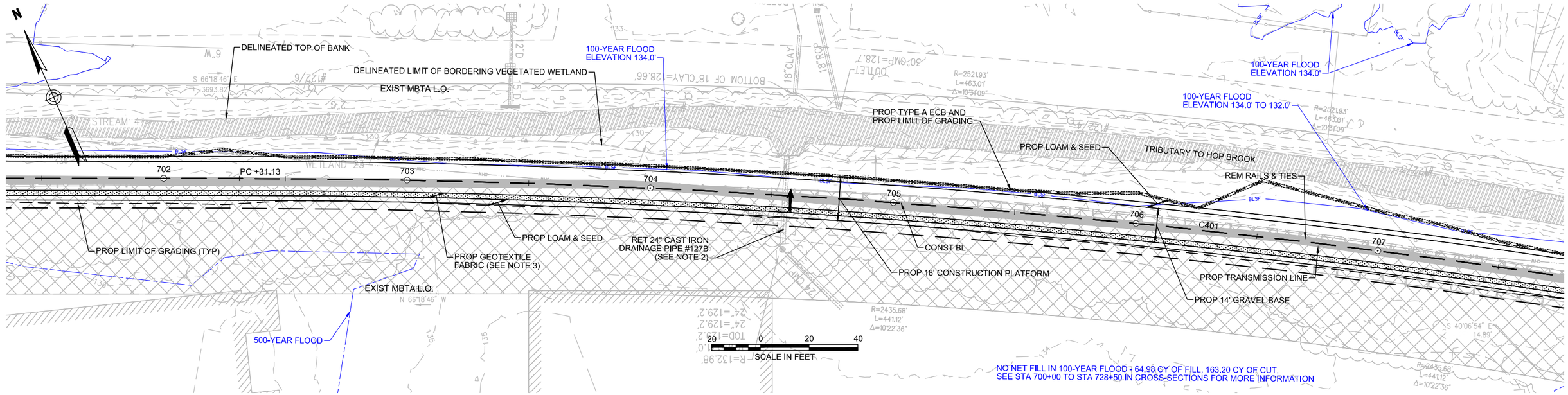
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 44 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. TRANSMISSION LINE TO RUN UNDERNEATH DRAINAGE PIPE (SEE DETAIL ON SHEET 127).
3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.

vhb
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NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

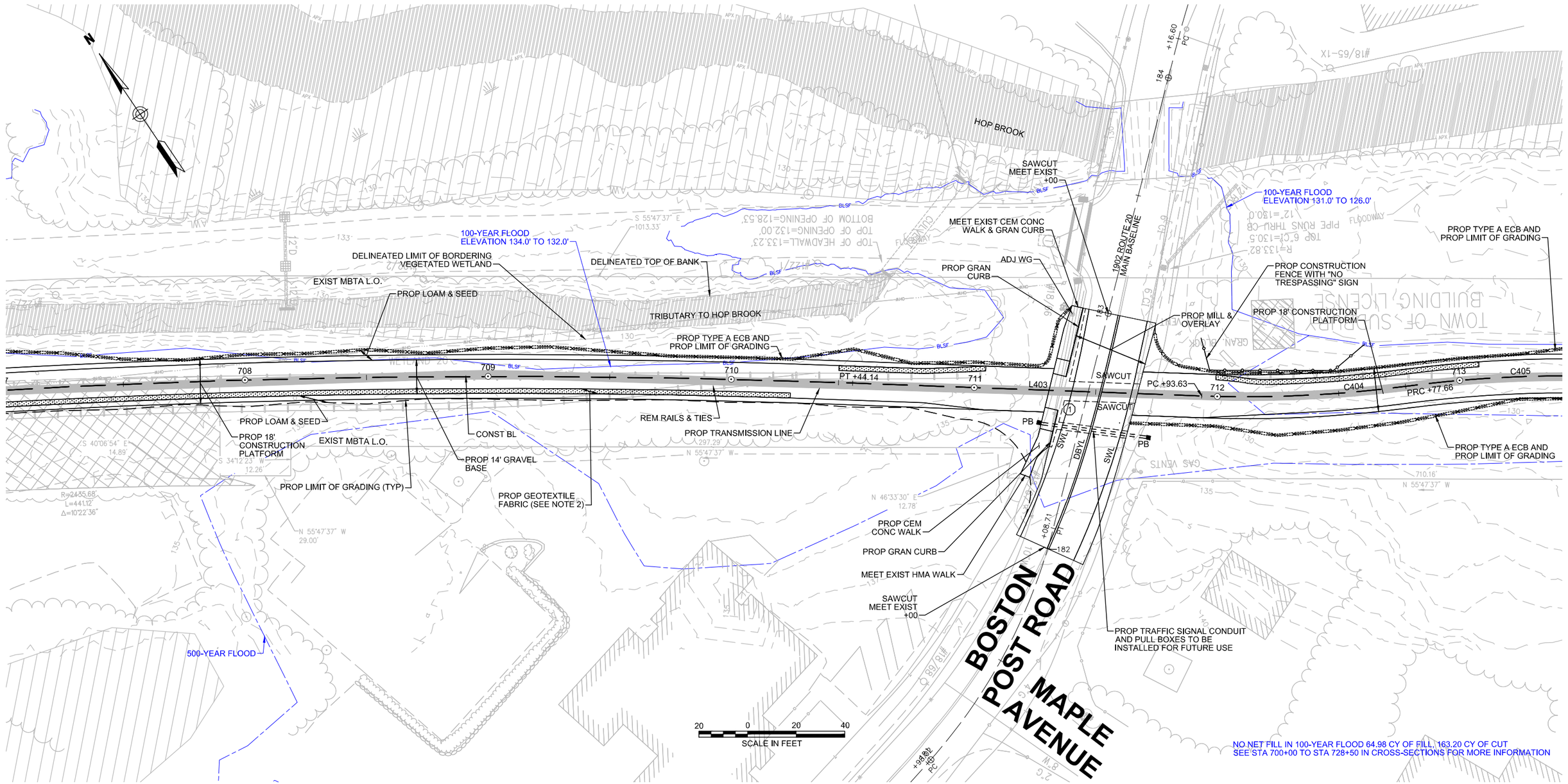
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 45 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
3. MODIFY MASSDOT STD E404.6.0 SUCH THAT CEMENT CONCRETE BASE UNDER LATCH ROD IS 12" DEEP.

LEGEND:

[X] WCR NUMBER

(X) ACCESS ROAD CROSSING NUMBER

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NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

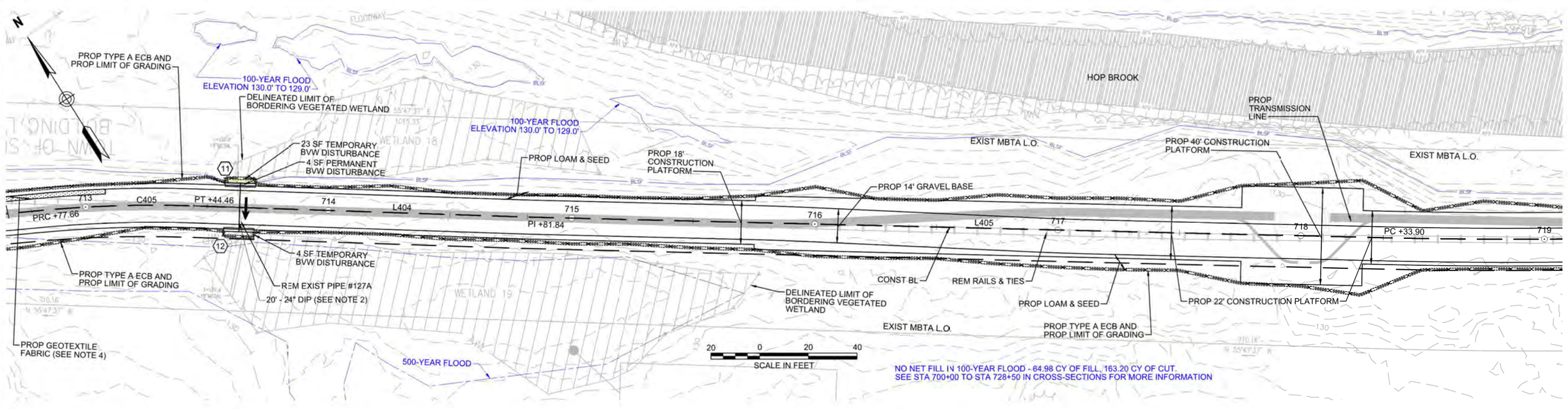
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 46 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
11	Concrete Headwall	713+63, 10.0' LT		128.81'		18" REVEAL
12	Concrete Headwall	713+63, 10.0' RT			128.55'	18" REVEAL

NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. TRANSMISSION LINE TO RUN UNDERNEATH DRAINAGE PIPE.
3. MAXIMUM CRANE PAD DIMENSIONS OF 40'X40' ARE ALLOWED AT ANY GIVEN TIME. A LONGER CRANE MAT FOOTPRINT IS SHOWN HERE TO ALLOW THE CRANE MAT LOCATION TO BE SHIFTED DURING CONSTRUCTION OF THE STEEL SHEETING AND BRIDGE.
4. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
5. TYPE C ECB SHALL CONSIST OF EITHER STAKED 4' HIGH SILT FENCE OR BOTTOM-ANCHORED TURBIDITY CURTAIN DEPENDING ON WATER LEVELS AT THE TIME OF CONSTRUCTION. THE APPROPRIATE ECB SHALL BE INSTALLED AT THE DIRECTION OF THE ENVIRONMENTAL MONITOR.

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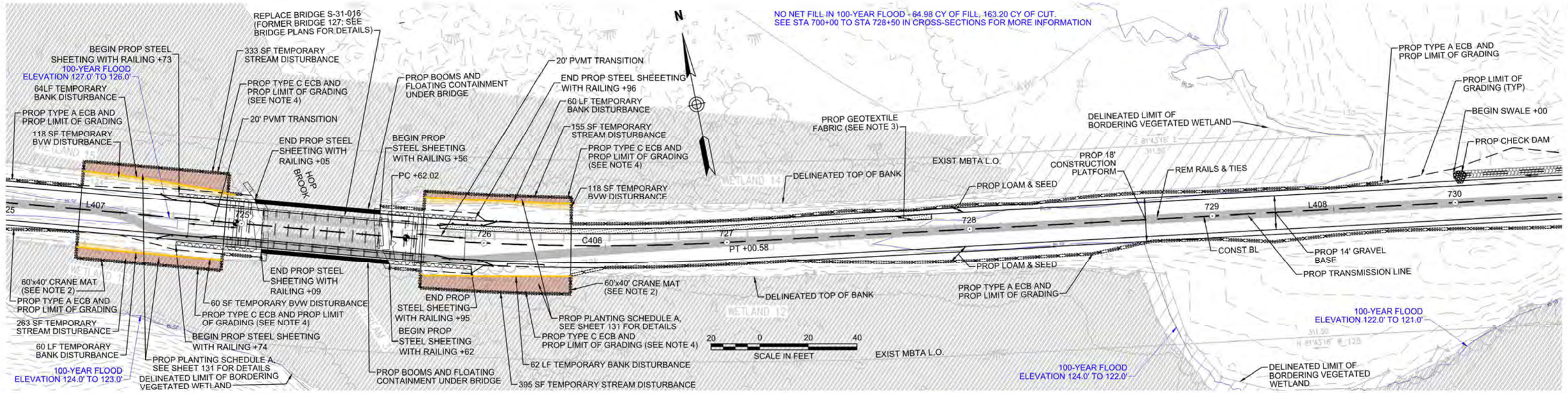
NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS

PLAN 47 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.



NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. MAXIMUM CRANE PAD DIMENSIONS OF 40'X40' ARE ALLOWED AT ANY GIVEN TIME. A LONGER CRANE MAT FOOTPRINT IS SHOWN HERE TO ALLOW THE CRANE MAT LOCATION TO BE SHIFTED DURING CONSTRUCTION OF THE STEEL SHEETING AND BRIDGE.
3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
4. TYPE C ECB SHALL CONSIST OF EITHER STAKE 4' HIGH SILT FENCE OR BOTTOM-ANCHORED TURBIDITY CURTAIN DEPENDING ON WATER LEVELS AT THE TIME OF CONSTRUCTION. THE APPROPRIATE ECB SHALL BE INSTALLE AT THE DIRECTION OF THE ENVIRONMENTAL MONITOR.

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NO.	DESCRIPTION REVISION	BY	DATE	APPR.

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 48 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

NO DISTURBANCE TO 100-YEAR FLOOD ABOVE FLOODPLAIN ELEVATION
SEE STA 733+00 TO STA 741+00 IN CROSS-SECTIONS FOR MORE INFORMATION

PROP CHECK DAM (TYP)
EXIST MBTA L.O.
AREA OF INCREASED INFILTRATION
PROP LIMIT OF GRADING (TYP)
PROP TYPE B ECB AND PROP LIMIT OF GRADING
PROP TRANSMISSION LINE
DELINEATED LIMIT OF ISOLATED VEGETATED WETLAND
PROP 40' CONSTRUCTION PLATFORM
CONST BL
REM RAILS & TIES
PROP LOAM & SEED
PROP TYPE A ECB AND PROP LIMIT OF GRADING
PROP 22' CONSTRUCTION PLATFORM
REM EXIST PIPE #126D
PROP TYPE B ECB AND PROP LIMIT OF GRADING
PROP 14' GRAVEL BASE
27' - 18" DIP (SEE NOTE 5)
DELINEATED LIMIT OF BORDERING VEGETATED WETLAND
500-YEAR FLOOD
PROP LOAM & SEED
100-YEAR FLOOD ELEVATION = 121.0'
DELINEATED TOP OF BANK
SCALE IN FEET

DELINEATED LIMIT OF VERNAL POOL
EXIST MBTA L.O.
DELINEATED LIMIT OF ISOLATED VEGETATED WETLAND
PROP TYPE B ECB AND PROP LIMIT OF GRADING
DELINEATED LIMIT OF BORDERING VEGETATED WETLAND
500-YEAR FLOOD'
DELINEATED LIMIT OF VERNAL POOL
DELINEATED TOP OF BANK
PROP 22' CONSTRUCTION PLATFORM
PROP TRANSMISSION LINE
PROP 18' CONSTRUCTION PLATFORM
CONST BL
PROP BIONET C700BN PERMANENT TURF REINFORCEMENT MAT
PROP LOAM & SEED
PROP GEOTEXTILE FABRIC (SEE NOTE 3)
PROP TYPE B ECB AND PROP LIMIT OF GRADING
REM RAILS & TIES
PROP 14' GRAVEL BASE
DELINEATED LIMIT OF VERNAL POOL
DELINEATED LIMIT OF BORDERING VEGETATED WETLAND
DELINEATED LIMIT OF BORDERING VEGETATED WETLAND
EXIST MBTA L.O.
RET 2.5' X 2' STONE BOX CULVERT #126B (SEE NOTE 2)
DELINEATED TOP OF BANK
UNNAMED STREAM
100-YEAR FLOOD ELEVATION = 121.0'
SCALE IN FEET

DRAINAGE STRUCTURE TABLE						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
13	Concrete Headwall	738+77, 12.0' LT			127.10'	
14	Concrete Headwall	738+77, 15.4' RT		125.07'		

NOTES:
1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. CONTRACTOR TO CUT VEGETATION ON NORTHEAST WINGWALL OF STONE BOX CULVERT. NO GRUBBING SHALL BE PERFORMED OUTSIDE LIMITS OF GRADING.
3. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
4. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.
5. TRANSMISSION LINE TO RUN UNDERNEATH DRAINAGE PIPE. SEE DETAIL ON SHEET 127.

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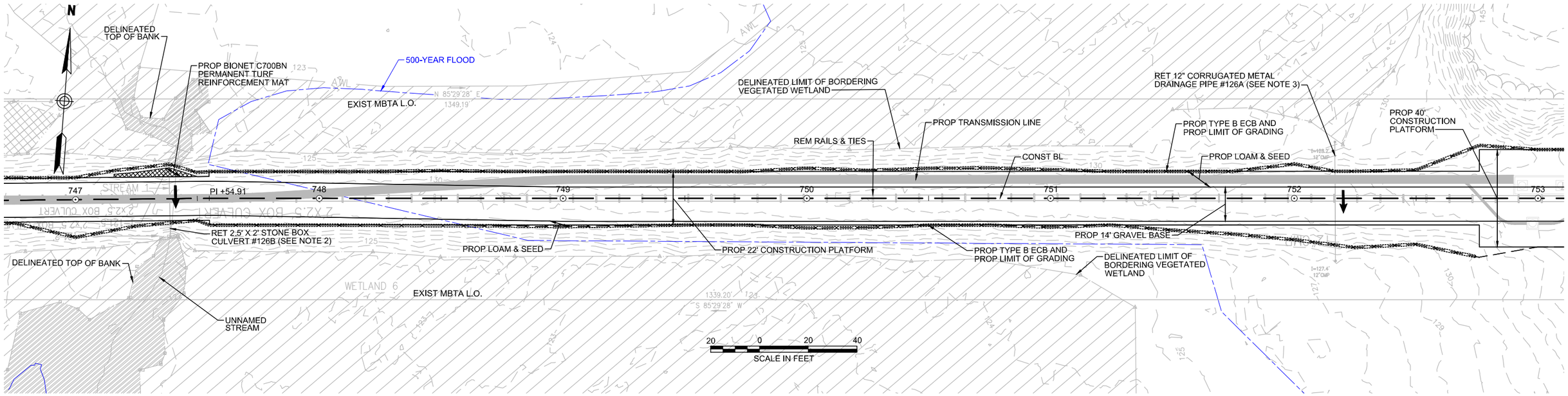
NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

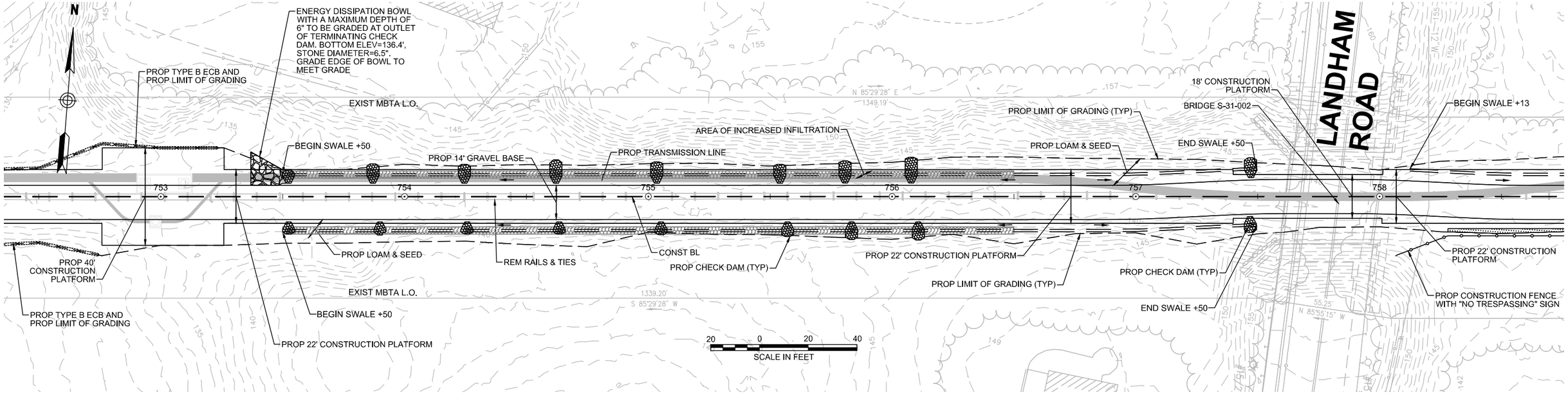
EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
CONSTRUCTION PLANS
PLAN 49 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APP R.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 65
CONT. BELOW
CONT. ABOVE
CONT. ON SHEET 67





NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. CONTRACTOR TO CUT VEGETATION ON NORTHEAST WINGWALL OF STONE BOX CULVERT. NO GRUBBING SHALL BE PERFORMED OUTSIDE LIMITS OF GRADING.
3. CONTRACTOR TO CLEAR SEDIMENT IN DRAINAGE PIPE BY HAND.
4. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOLS. SEE DETAIL ON SHEET 124.

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

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EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 50 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 67

BEGIN SWALE +13

PROP TRANSMISSION LINE

EXIST MBTA L.O.

REM RAILS & TIES

PROP CHECK DAM (TYP)

PROP TRANSMISSION LINE

PROP LIMIT OF GRADING (TYP)

WETLAND 3A

DELINEATED LIMIT OF BORDERING VEGETATED WETLAND

PROP LOAM & SEED

DELINEATED LIMIT OF BORDERING VEGETATED WETLAND AND VERNAL POOL

PROP TYPE B ECB AND PROP LIMIT OF GRADING

END SWALE +20

WETLAND 3 / VERNAL POOL 1

PROP GEOTEXTILE FABRIC (SEE NOTE 4)

PI +75.00

PI +88.36

PROP 22' CONSTRUCTION PLATFORM

CONST BL

PROP LOAM & SEED

PROP LIMIT OF GRADING (TYP)

PROP 14' GRAVEL BASE

PROP TYPE B ECB AND PROP LIMIT OF GRADING

PROP 18' CONSTRUCTION PLATFORM

PROP CONSTRUCTION FENCE WITH "NO TRESPASSING" SIGN

EXIST MBTA L.O.

SCALE IN FEET

CONT. BELOW

CONT. ABOVE

DELINEATED LIMIT OF BORDERING VEGETATED WETLAND AND VERNAL POOL

EXIST MBTA L.O.

WETLAND 3 / VERNAL POOL 1

PROP TYPE B ECB AND PROP LIMIT OF GRADING

PROP GEOTEXTILE FABRIC (SEE NOTE 4)

REM RAILS & TIES

CONST BL

PI +88.36

PROP 18' CONSTRUCTION PLATFORM

PROP 14' GRAVEL BASE

PROP LOAM & SEED

PROP TYPE B ECB AND PROP LIMIT OF GRADING

85 SF PERMANENT BVW DISTURBANCE

EXIST MBTA L.O.

PROPOSED WETLAND REPLICATION SEE SHEETS 139-140 FOR DETAILS

EXTEND 12" REINFORCED CONCRETE DRAINAGE PIPE #125B (SEE NOTE 2)

DELINEATED LIMIT OF BORDERING VEGETATED WETLAND

201 SF TEMPORARY BVW DISTURBANCE

EVERSOURCE DRIVEWAY

PRESUMED VERNAL POOL HABITAT PER SUDBURY BYLAW

WETLAND 1

END PROJECT
STA 767+59.05
N 2956452.4485
E 683686.5286

CONT. ON SHEET 69

NOTE:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. CONTRACTOR TO CUT VEGETATION ON NORTHEAST WINGWALL OF STONE BOX CULVERT. NO GRUBBING SHALL BE PERFORMED OUTSIDE LIMITS OF GRADING.
3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OFF VERNAL POOLS. SEE DETAIL ON SHEET 124.
4. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

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EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

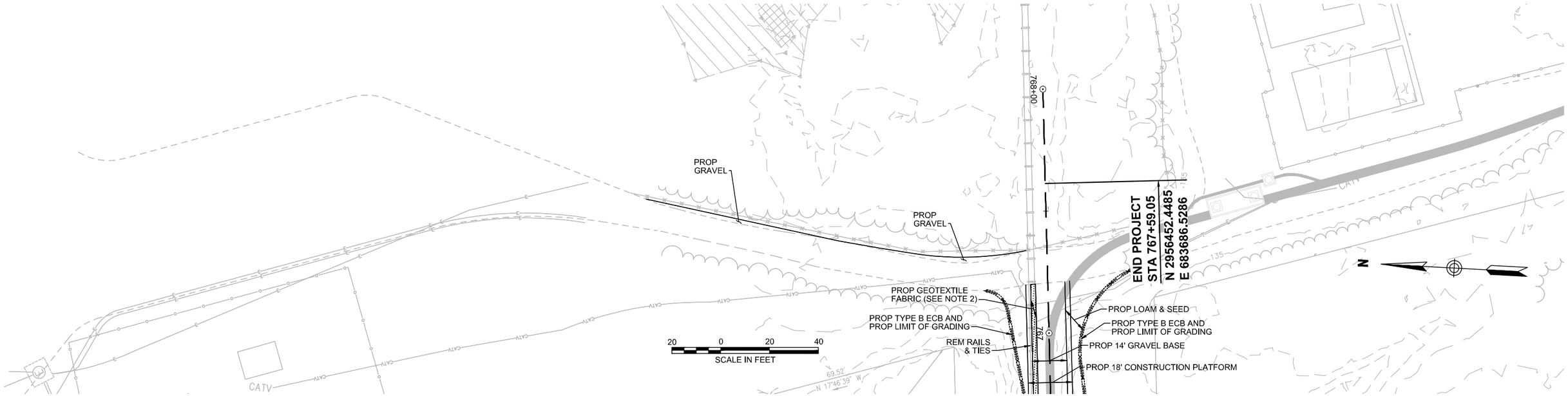
CONSTRUCTION PLANS

PLAN 51 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

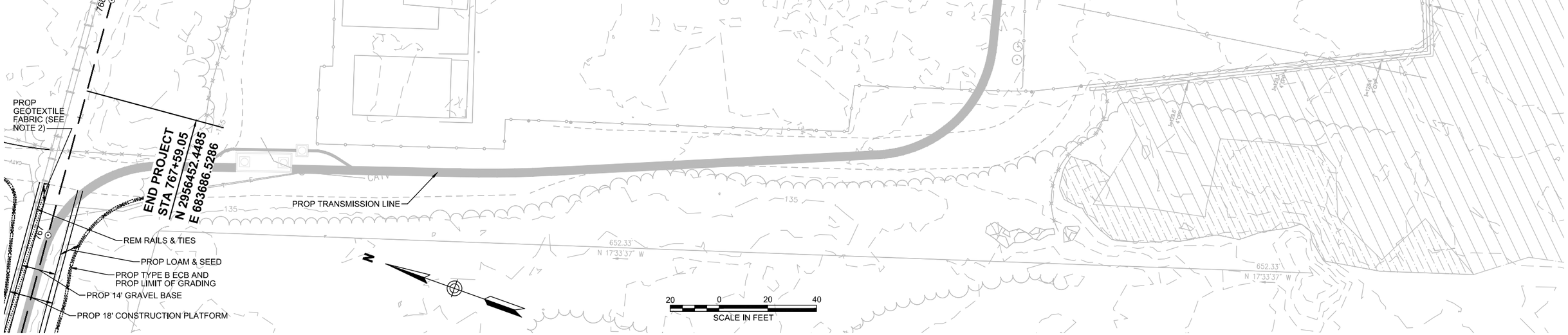
CONT. ON SHEET 68

CONT. BELOW



CONT. ABOVE

CONT. ON SHEET 71



NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.
3. SYNCOPATED SILT FENCE (TYPE B ECB) TO BE USED WITHIN PRIORITY HABITAT AREA AND 450' OF VERNAL POOL. SEE DETAIL ON SHEET 124.

NO.	DESCRIPTION	BY	DATE	APPR.

REVISION

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EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

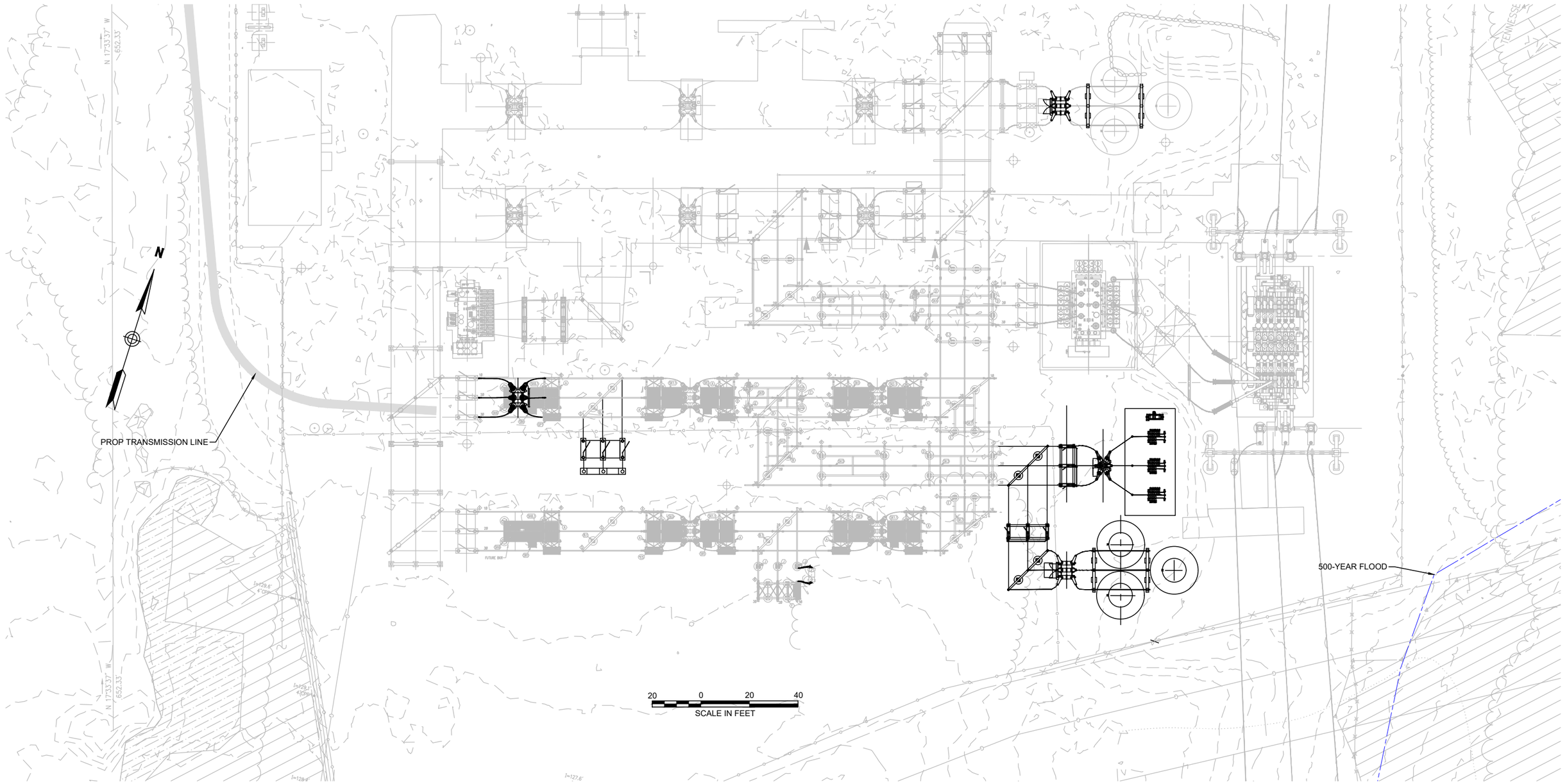
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 52 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MES	.	.

CONT. ON SHEET 69



NOTES:

1. WETLAND RESOURCE AREA BOUNDARIES SHOWN HEREIN WERE APPROVED IN AN ORAD DATED AUGUST 27, 2018 (MADEP FILE NO. 301-1227).

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION PLANS

PLAN 53 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=20'	JULY 2020	MS	SK	MS	.	.

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Watertown, MA 02472
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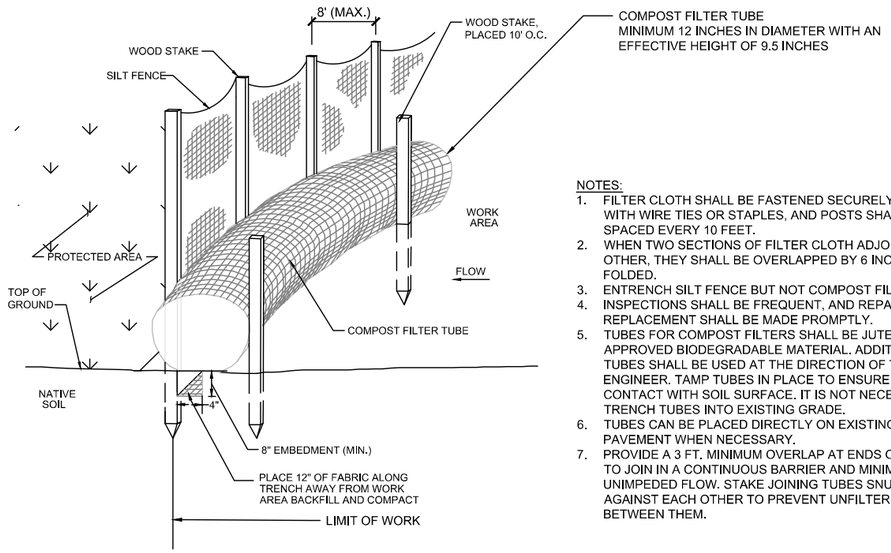
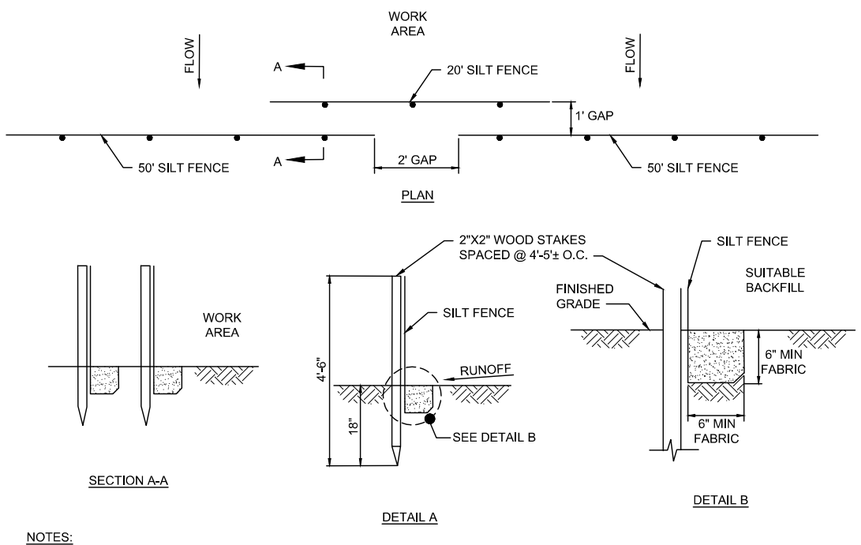


NOTES:
1. FILTER CLOTH SHALL BE FASTENED SECURELY TO POSTS WITH WIRE TIES OR STAPLES, AND POSTS SHALL BE SPACED EVERY 10 FEET.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES AND FOLDED.
3. ENTRENCH SILT FENCE BUT NOT COMPOST FILTER TUBE.
4. INSPECTIONS SHALL BE FREQUENT, AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY.
5. TUBES FOR COMPOST FILTERS SHALL BE JUTE MESH OR APPROVED BIODEGRADABLE MATERIAL. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER. TAMP TUBES IN PLACE TO ENSURE GOOD CONTACT WITH SOIL SURFACE. IT IS NOT NECESSARY TO TRENCH TUBES INTO EXISTING GRADE.
6. TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.
7. PROVIDE A 3 FT. MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDED FLOW. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM.

COMPOST FILTER TUBE AND SILT FENCE DETAIL - TYPE A EROSION CONTROL BARRIER

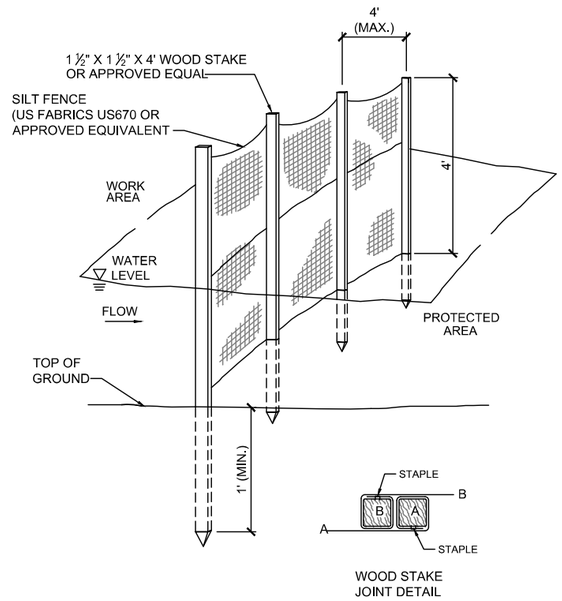
SCALE: NTS



NOTES:
1. SYNCOPATED SILT FENCE SHALL BE USED WITHIN ALL PRIORITY HABITAT AREAS AND WITHIN 450' OF VERNAL POOLS.
2. INSTALL GAP AFTER EVERY 50' OF EROSION CONTROL BARRIER.

SYNCOPATED SILT FENCE DETAIL - TYPE B EROSION CONTROL BARRIER

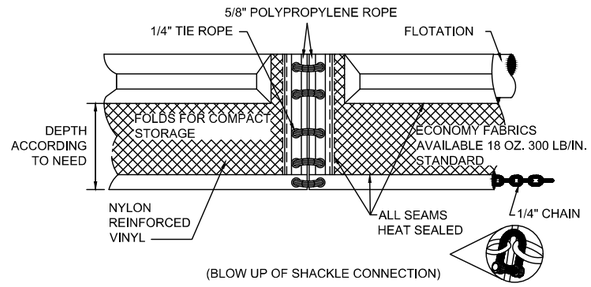
SCALE: N.T.S.



WOOD STAKE JOINT DETAIL

4' HIGH SILT FENCE BARRIER DETAIL - EROSION CONTROL BARRIER TYPE C (OPTION 1)

SCALE: N.T.S.



TURBIDITY CURTAIN DETAIL - EROSION CONTROL BARRIER TYPE C (OPTION 2)

SCALE: N.T.S.

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

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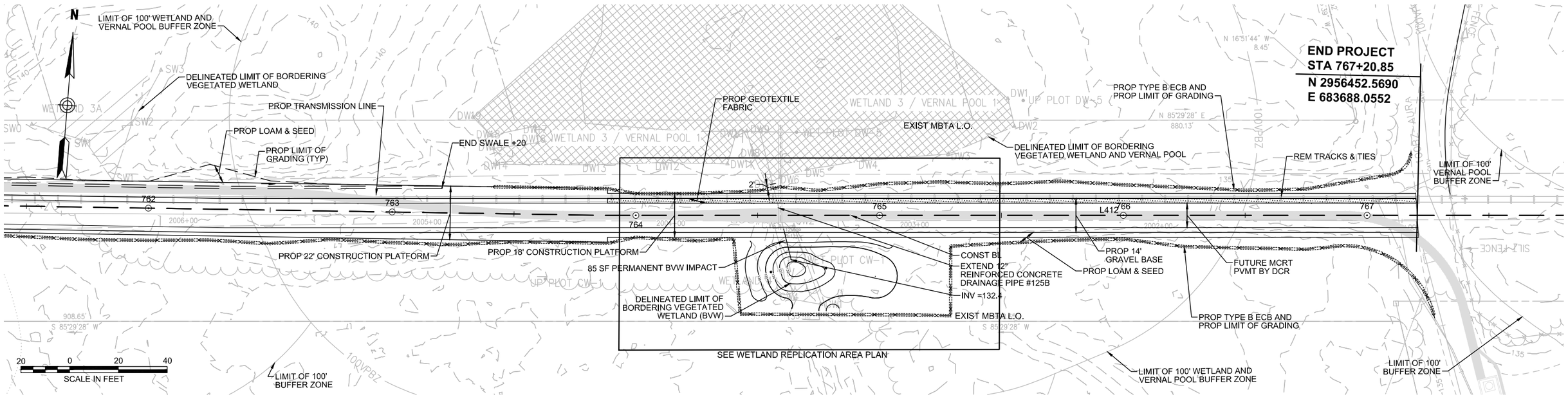
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

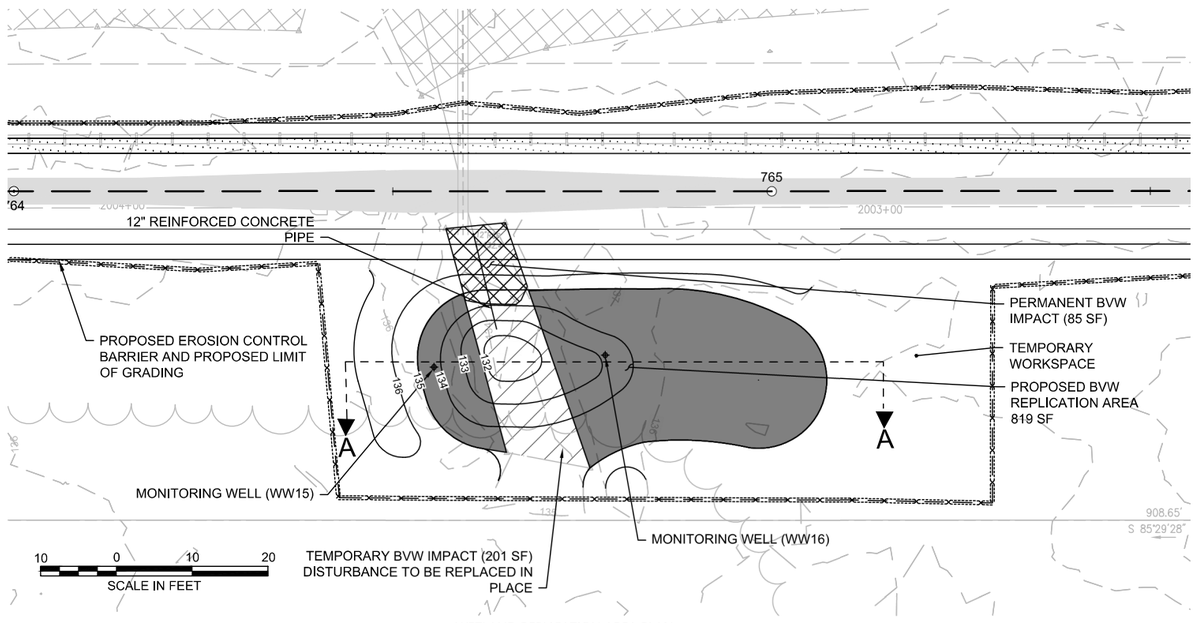
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

CONSTRUCTION DETAILS

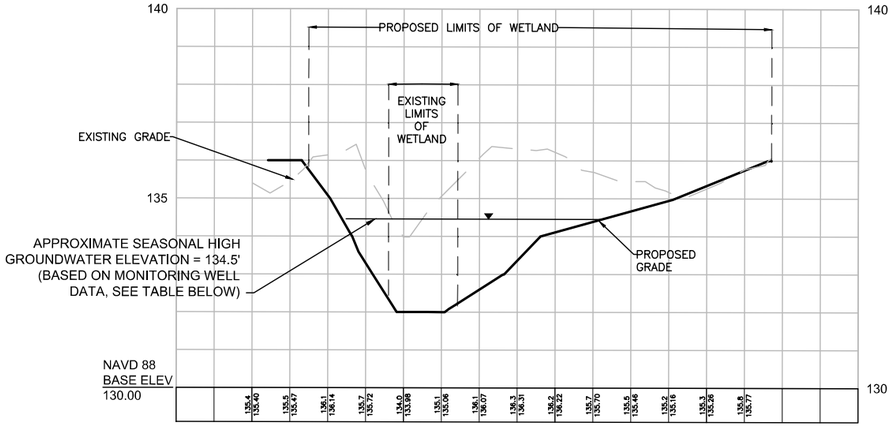
PLAN 54 OF 62

SCALE: unless noted	DATE	DRAWN	CH'KD.	APPR.	DRAWING NO.	REV.
NTS	JULY 2020	MS	SK	MS	.	.





WETLAND REPLICATION AREA PLAN
SCALE 1"= 10'



SECTION A-A
VERTICAL SCALE 1"= 5'
HORIZONTAL SCALE 1"= 30'

LEGEND

- TEMPORARY BVW IMPACTS (201 SF)
- PERMANENT BVW IMPACTS (85 SF)
- PROPOSED BVW REPLICATION AREA (819 SF)

GROUNDWATER DEPTH (FT)		
DATE	WW15*	WW16*
12/5/2018	1.50	1.46
1/10/2019	1.55	1.58
2/12/2019	1.60	N/A
3/27/2019	1.56	1.55
4/18/2019	1.57	1.54
4/25/2019	1.48	1.46
5/23/2019	1.58	1.62

*WW15 AND WW16 LOCATED AT APPROXIMATELY ELEV 136'

NOTES:
1. WETLAND BOUNDARIES SHOWN HEREIN ARE THE SAME AS THOSE SHOWN ON HUDSON AND SUDBURY ANRAD PLANS (2018).
2. CONTRACTOR TO INSTALL GEOTEXTILE FABRIC UNDERNEATH 12" GRAVEL BORROW WITHIN LIMITS SHOWN.

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NO.	DESCRIPTION	BY	DATE	APP'R.
	REVISION			

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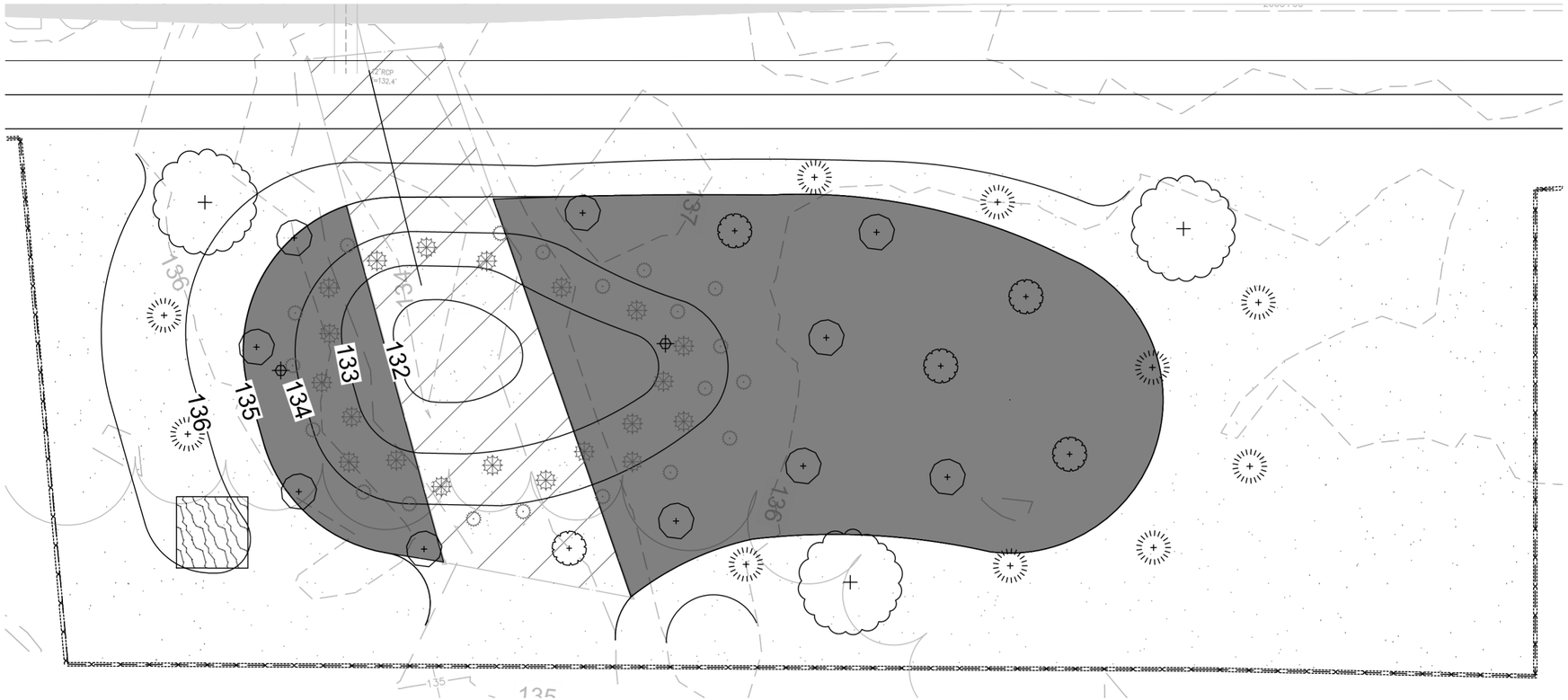
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
WETLAND REPLICATION GRADING PLAN
PLAN 55 OF 62

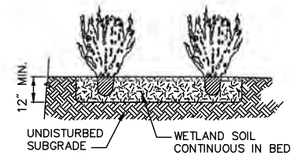
SCALE: unless noted	DATE	DRAWN	CH'KD.	APP'R.	DRAWING NO.	REV.
1"=20'	JULY 2020	MBB	EJM	MAC		



WETLAND REPLICATION PLANTING PLAN
SCALE 1"= 4'

Specimen	Wetland Status	Plant Type	Plant Size	Quantity	Density/Spacing
Basin Embankment:					
buttonbush (*Cephalanthus occidentalis*)	OBL	Shrub	18-24 inches	10	8 ft. on center
arrow arum (*Peltandra virginica*)	OBL	Herbaceous	2" plug	20	2-3 ft. on center
giant bur-reed (*Sparganium eurycarpum*)	OBL	Herbaceous	2" plug	20	2-3 ft. on center
silky dogwood (*Swida amomum*)	FACW	Shrub	18-24 inches	5	6 ft. on center
Wetland seed mix[1]	--	Herbaceous	--		18 lb./ac
Surrounding Buffer Zone:					
red maple (*Acer rubrum*)	FAC	Tree	1-2" caliper	3	15 ft. on center
sweet pepperbush (*Clethra alnifolia*)	FAC	Shrub	18-24 inches	10	6 ft. on center
Wetland seed mix[1]	--	Herbaceous	--		18 lb./ac

[1]Wetland seed mix "New England Wetmix" from New England Wetland Plants, Inc. or similar. Typical species: fox sedge (Carex vulpinoidea), sallow sedge (Carex lurida), broom sedge (Carex scoparia), sensitive fern (Onoclea sensibilis), blue vervain (Verbena hastata), hop sedge (Carex lupulina), dark-green bulrush (Scirpus atrovirens), nodding bur-marigold (Bidens cernua), bristly sedge (Carex comosa), fringed sedge (Carex crinita), tall mannagrass (Glyceria grandis), wool-grass (Scirpus cyperinus), soft rush (Juncus effusus), spotted Joe-Pye-weed (Eutrochium maculatum), boneset (Eupatorium perfoliatum), American water-plantain (Alisma subcordatum), New England aster (Symphyotrichum novae-angliae), rattlesnake mannagrass (Glyceria canadensis), purple-stem aster (Symphyotrichum puniceum), soft-stemmed bulrush (Schoenoplectus tabernaemontani), blueflag (Iris versicolor), swamp milkweed (Asclepias incarnata), and Allegheny monkey-flower (Mimulus ringens).



Shrub Planting 6/08
N.T.S. Source: VHB LD_691

NOTES:

1. CONSTRUCTION OF THE WETLAND REPLICATION AREA WILL INCLUDE GRADING, SOILS PLACEMENT, AND PLANTING, AND ALL WORK SHALL BE PERFORMED UNDER THE SUPERVISION OF AN EXPERIENCED WETLAND SCIENTIST. ALL PLANTINGS SHALL BE PERFORMED IN SPRING (APRIL 15 TO JUNE 15) OR FALL (SEPTEMBER 1 TO OCTOBER 31).
2. AN EROSION CONTROL BARRIER WILL CONSIST OF SYNCOPATED SILT FENCE (TYPE B EROSION CONTROL BARRIER) AND SHALL BE INSTALLED ALONG THE ENTIRE PERIMETER OF THE REPLICATION AREA EXCEPT AT THE UPGRADIENT EDGE TO ALLOW ACCESS TO MACHINERY.
3. ALL AREAS TO BE PLANTED AS PART OF THE REPLICATION AREA SHALL BE CLEARED AND GRUBBED (AS NEEDED) AND SHALL BE EXCAVATED TO A DEPTH OF 12 INCHES BELOW THE FINAL DESIGN ELEVATIONS. MINOR MODIFICATIONS TO THE GRADING PLAN MAY BE MADE IN THE FIELD BY THE SUPERVISING WETLAND SCIENTIST IN RESPONSE TO HYDROLOGIC CONDITIONS. THE SUPERVISING WETLAND SCIENTIST WILL INSPECT THE FINAL SUB-GRADE OF THE REPLICATION AREA TO ENSURE THAT THE PROPER HYDROLOGY HAS BEEN ESTABLISHED.
4. THE TWELVE-INCH DBH SNAG THAT WILL BE REMOVED DURING CONSTRUCTION WILL BE REINSTALLED WITH A SIGNIFICANT PORTION OF THE ROOT MASS INTACT. THE SNAG WILL BE FIRMLY ENTRENCHED TO PREVENT FUTURE WINDTHROW.
5. THE REPLICATION AREA WILL THEN BE BACKFILLED WITH PREPARED WETLAND SOIL. PREPARED SOILS SHALL CONSIST OF A 1:1 MIXTURE (OR EQUAL VOLUMES) OF ORGANIC AND MINERAL MATERIALS (IN THE SILT LOAM, LOAM, OR LOAMY SAND RANGE) TO INCREASE THE ORGANIC CARBON CONTENT TO BETWEEN 4 AND 12 PERCENT BY WEIGHT. CLEAN LEAF OR COMMERCIALLY AVAILABLE COMPOST IS THE PREFERRED AMENDMENT TO ACHIEVE THIS STANDARD, ALTHOUGH OTHER MATERIALS MAY BE USED IF APPROVED BY THE SUPERVISING WETLAND SCIENTIST. AREAS TO BE PLANTED AS BVW SHOULD BE GRADED IN A SLIGHTLY IRREGULAR FASHION TO ALLOW FOR SMALL HUMMOCKS AND HOLLOWS APPROXIMATELY 6 INCHES ABOVE AND BELOW GRADE TO CREATE A PIT AND MOUND TOPOGRAPHY.
6. FALLEN LOGS, BRANCHES, AND OTHER NATURAL MATERIALS SHALL BE DISTRIBUTED IN THE REPLICATION AREA TO PROVIDE ADDITIONAL WILDLIFE HABITAT. THESE MATERIALS SHALL COVER 2 TO 4 PERCENT OF THE REPLICATION AREA'S SURFACE AND SHALL NOT INCLUDE ANY KNOWN INVASIVE SPECIES. WOODY MATERIAL SHOULD VARY IN SIZE AND DEGREE OF DECOMPOSITION.
7. ONCE WETLAND SOILS AND ANY NATURAL MATERIALS HAVE BEEN PLACED, ANY EQUIPMENT OR VEHICLES EXERTING A GROUND PRESSURE OF 3 PSI OR GREATER SHALL NO LONGER BE ALLOWED IN THE REPLICATION AREA TO AVOID COMPACTING THE WETLAND SOILS.
8. PLANTINGS WILL BE INSTALLED ONCE THE ABOVE TASKS HAVE BEEN COMPLETED. ALL SHRUB PLANTING WORK SHALL BE PERFORMED BY HAND USING HAND TOOLS ONLY. THE SPECIES, SIZE, AND QUANTITY OF PLANTINGS SHALL FOLLOW THE PLANTING SCHEDULE. ONLY PLANT MATERIALS NATIVE TO THE REGION SHALL BE USED. IN THE EVENT THAT PLANT SUBSTITUTIONS ARE NECESSARY, THE SUPERVISING WETLAND SCIENTIST OR ANOTHER QUALIFIED WETLAND SCIENTIST OR BOTANIST SHALL BE CONSULTED. ALL WOODY PLANT STOCK SHALL EITHER BE BARE-ROOT OR CONTAINER-GROWN. PLANTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE DESIGN SPECIFIED ON THE PLAN, ALTHOUGH THE SUPERVISING WETLAND SCIENTIST MAY DIRECT THE PROJECT CONTRACTOR TO RELOCATE PLANTINGS BASED ON FIELD CONDITIONS.
9. FOLLOWING SHRUB PLANTINGS, THE AREA WILL BE SEEDED WITH A NATIVE WETLAND SEED MIX AS SPECIFIED IN THE PLANTING SCHEDULE OR A SIMILAR MIX. THE SEED MIX SHALL BE APPLIED AT A RATE AND IN A MANNER ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.
10. FOLLOWING COMPLETION OF PLANTING AND SEEDING, A LINE OF EROSION CONTROLS WILL BE INSTALLED ALONG THE UPGRADIENT EDGE OF THE REPLICATION AREA. ALL EROSION CONTROLS AROUND THE REPLICATION AREA SHALL REMAIN IN PLACE UNTIL VEGETATION IS WELL-ESTABLISHED AND SOILS HAVE STABILIZED. EROSION CONTROLS WILL REMAIN IN PLACE UNTIL REMOVAL HAS BEEN APPROVED BY THE ENVIRONMENTAL MONITOR.
11. THE REPLICATION AREA WILL BE MONITORED FOR TWO FULL GROWING SEASONS AFTER PLANTING. THE AREA WILL BE INSPECTED TWICE PER YEAR TO ASSESS WHETHER THE AREA HAS ACHIEVED 75 PERCENT COVER BY REGIONAL INDIGENOUS WETLAND SPECIES. CONSIDERATION WILL BE GIVEN TO OTHER NATIVE WETLAND PLANT SPECIES THAT BECOME ESTABLISHED IN THE REPLICATION.
12. INVASIVE SPECIES WITHIN THE REPLICATION AREA SHALL BE REMOVED BY HAND FOR TWO GROWING SEASONS AFTER PLANTING. IF NECESSARY ANY AREAS WHERE INVASIVE SPECIES HAVE BEEN REMOVED WILL BE RESEEDED WITH A SUITABLE WETLAND SEED MIX.
13. SHRUBS AND SEED MIX ARE SUBJECT TO CHANGE OR SUBSTITUTION PENDING AVAILABILITY AND ACTUAL SITE CONDITIONS.

LEGEND

WETLAND SEED MIX
BUTTONBUSH
GIANT BUR-REED
REPLICATION AREA/WETLAND SEED MIX
SWEET PEPPERBUSH
ARROW ARUM
SILKY DOGWOOD
TREE SNAG
RED MAPLE

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

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SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
WETLAND REPLICATION PLANTING PLAN
PLAN 56 OF 62

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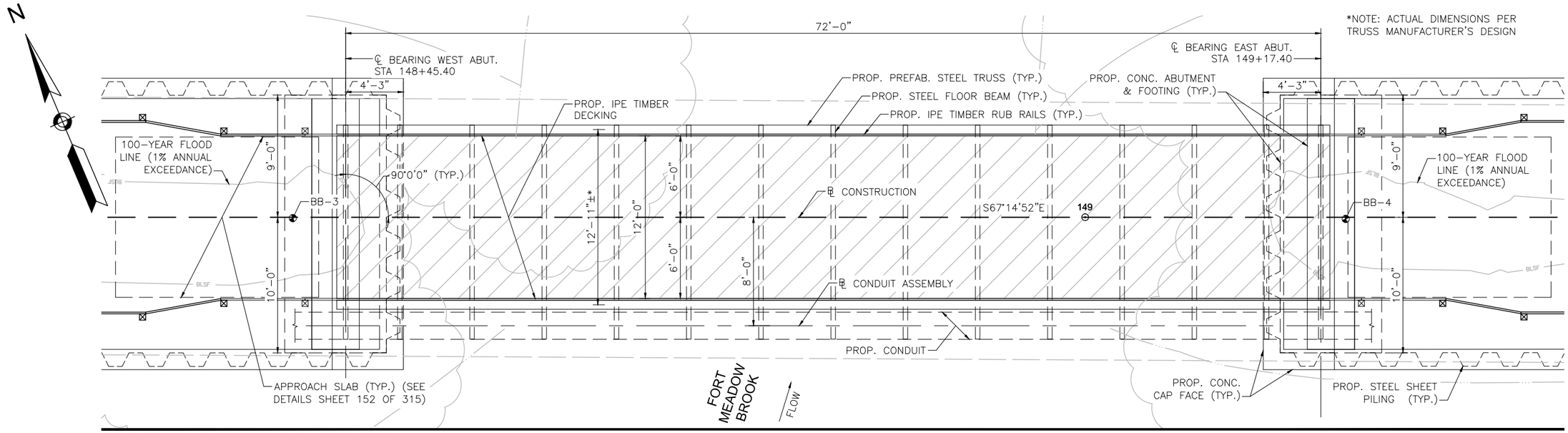
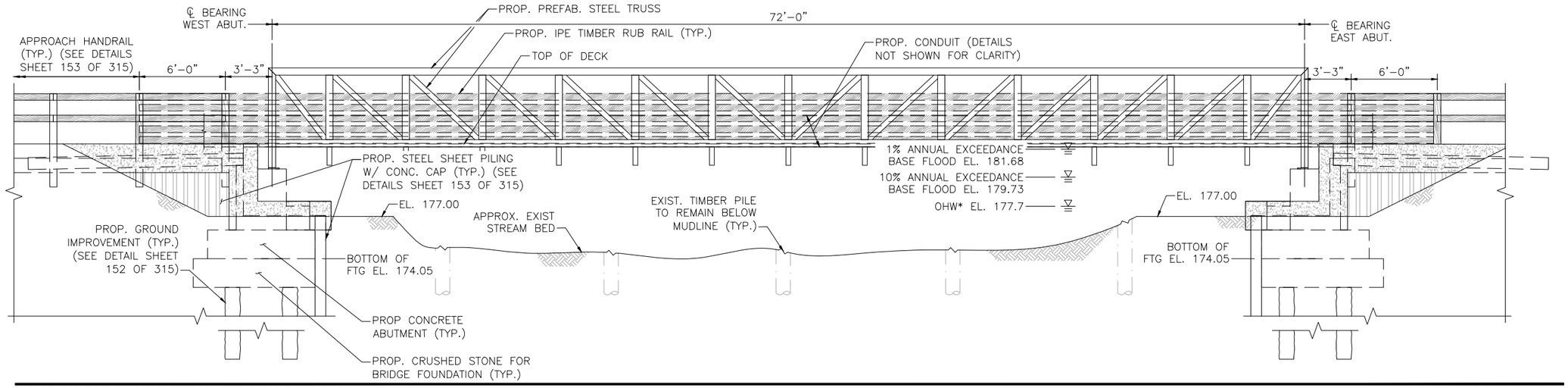
SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=4'	JULY 2020	MBB	EJM	MAC		



BRIDGE 130 (FORT MEADOW BROOK) PLAN

SCALE: ¼"=1'-0"

*NOTE: OHW = ESTIMATED ORDINARY HIGH WATER



BRIDGE 130 (FORT MEADOW BROOK) ELEVATION

SCALE: ¼"=1'-0"

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

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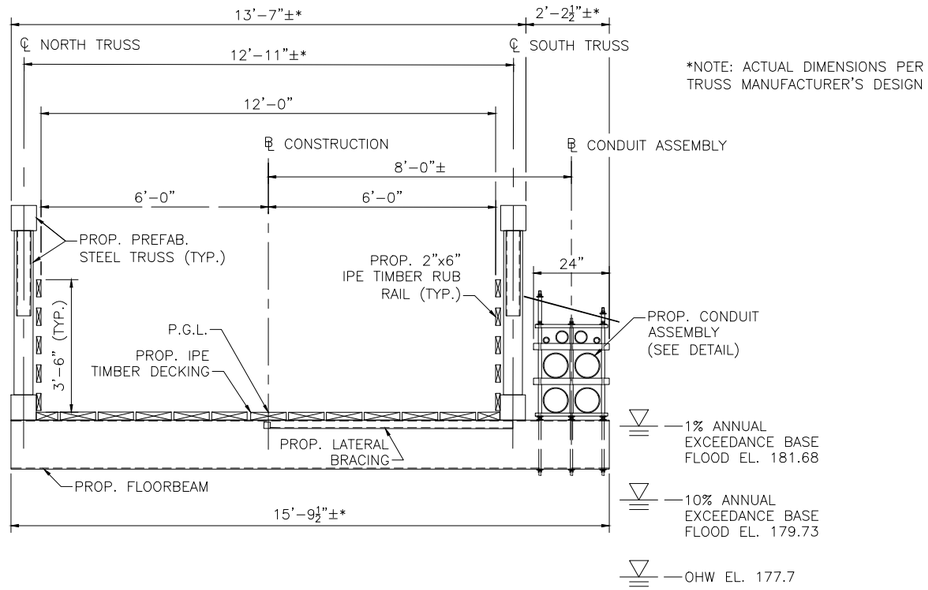
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

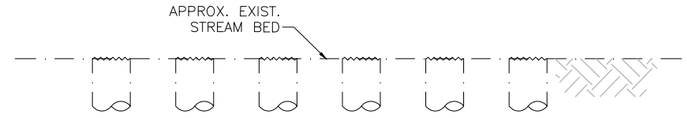
BRIDGE H–25–027 (BRIDGE 130) – PLAN & ELEVATION

PLAN 57 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=4'	JULY 2020	AMS	SBK	KGK	.	.



*NOTE: ACTUAL DIMENSIONS PER TRUSS MANUFACTURER'S DESIGN



BRIDGE TRANSVERSE SECTION

SCALE: ½"=1'-0"

NO.	DESCRIPTION	BY	DATE	APPR.

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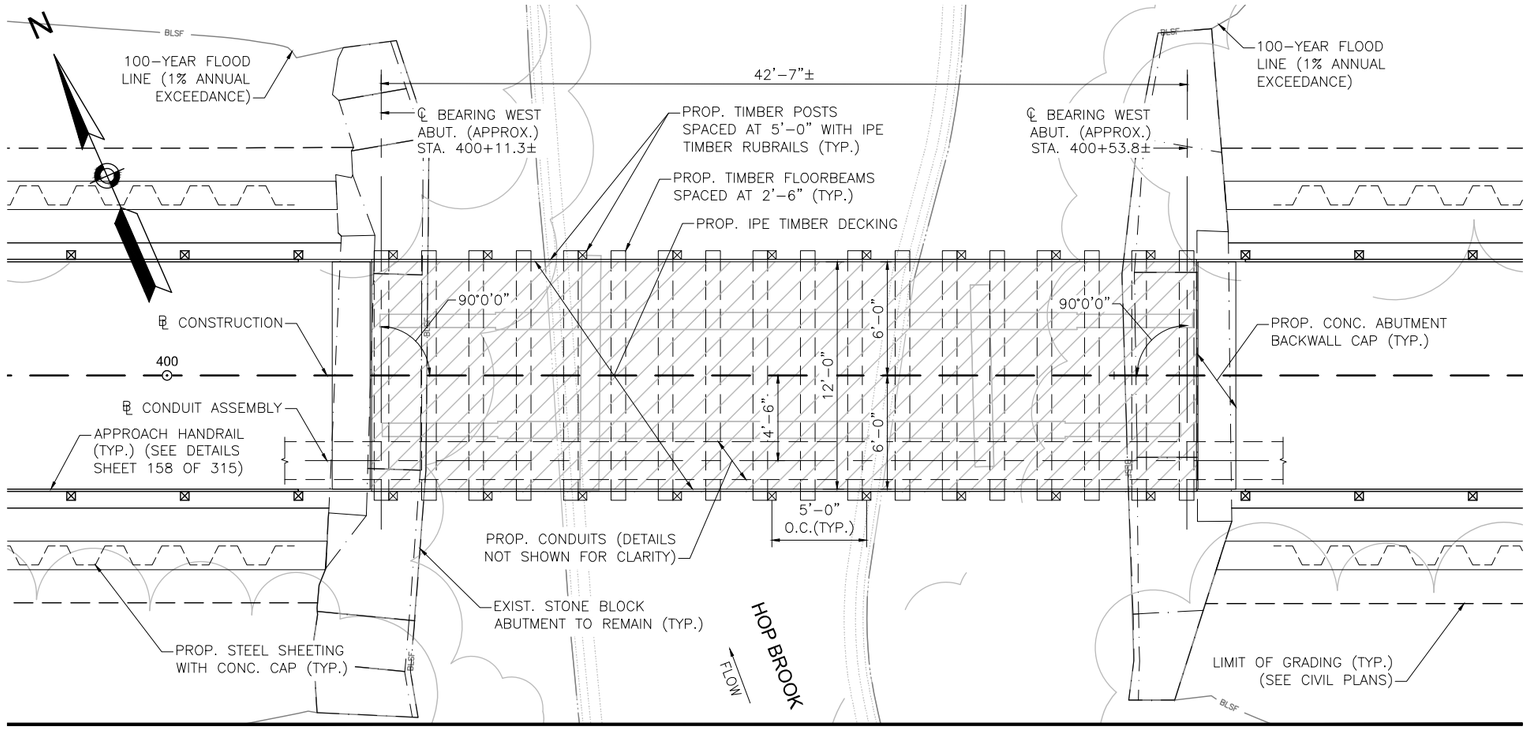
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

BRIDGE H–25–027 (BRIDGE 130) – SECTION & DETAILS

PLAN 58 OF 62

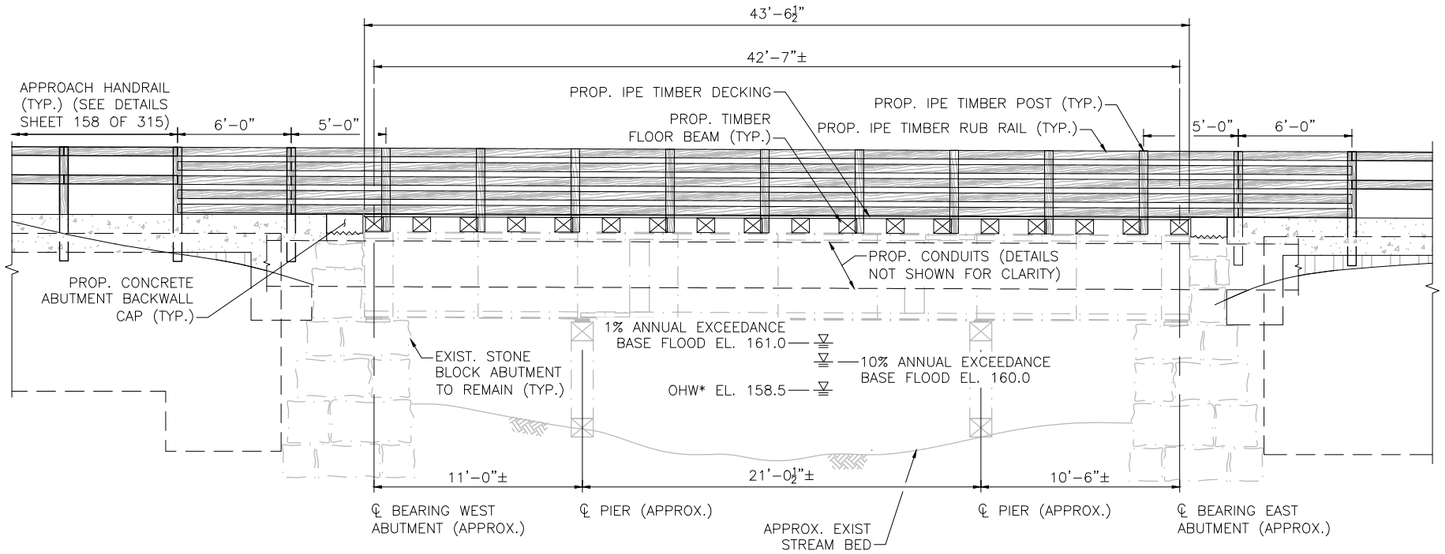
SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
VARIES	JULY 2020	AMS	SBK	KGK	.	.



BRIDGE 128 (HOP BROOK) PLAN

SCALE: $\frac{1}{4}$"=1'-0"

*NOTE: OHW = ESTIMATED ORDINARY HIGH WATER



BRIDGE 128 (HOP BROOK) ELEVATION

SCALE: $\frac{1}{4}$"=1'-0"

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NO.	DESCRIPTION	BY	DATE	APPR.
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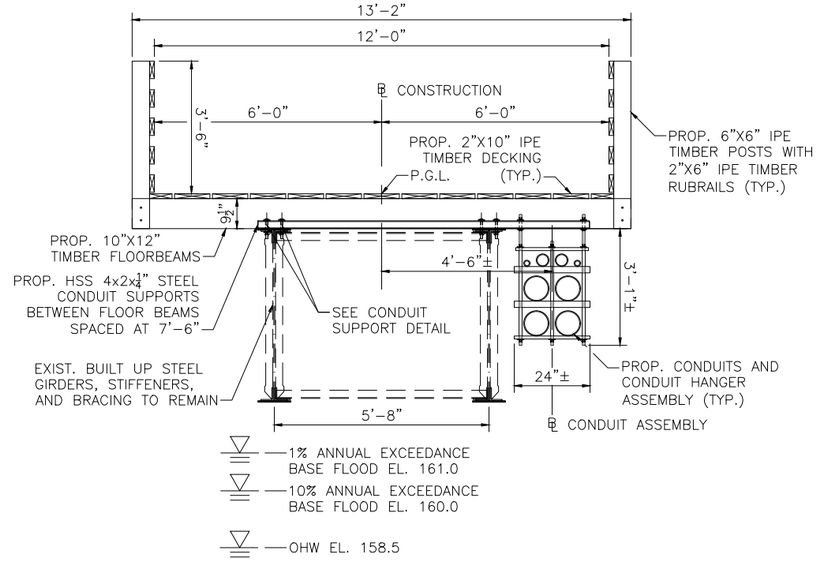
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
BRIDGE S–31–017 (BRIDGE 128) – PLAN & ELEVATION
PLAN 59 OF 62

SCALE: unless noted	DATE	DRAWN	CHK'D.	APPR.	DRAWING NO.	REV.
1"=4'	JULY 2020	AMS	SBK	KGK	.	.



BRIDGE TRANSVERSE SECTION

SCALE: ½"=1'-0"

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NO.	DESCRIPTION	BY	DATE	APPR.

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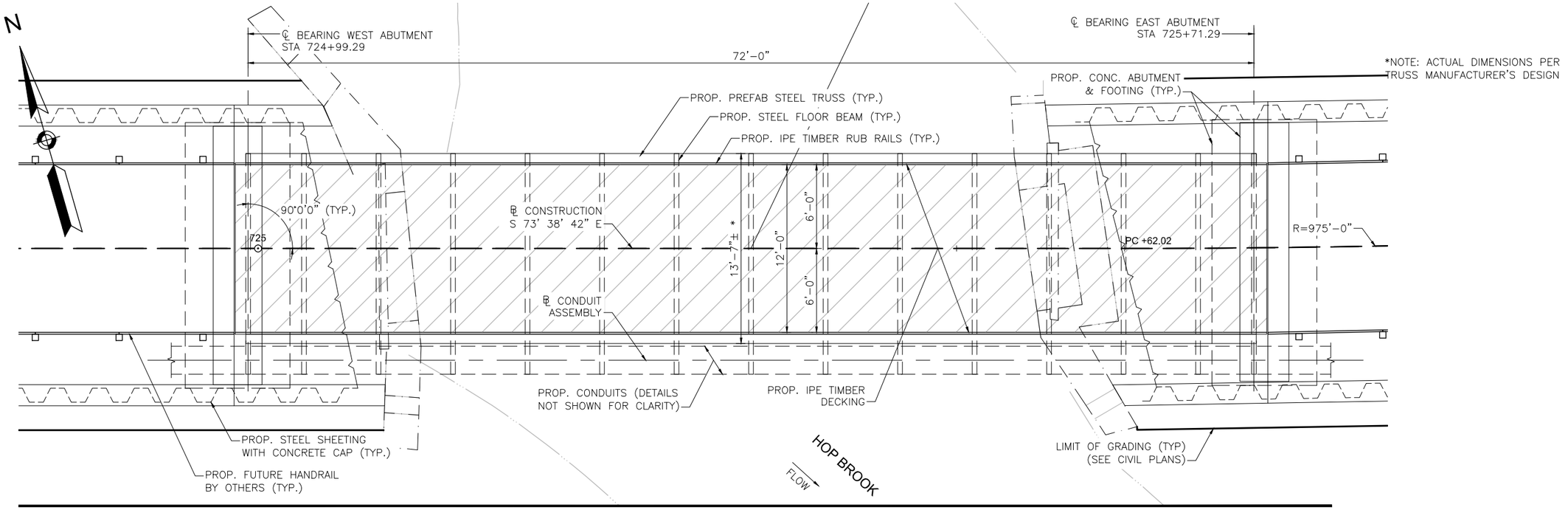
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

BRIDGE S–31–017 (BRIDGE 128) – SECTION & DETAILS

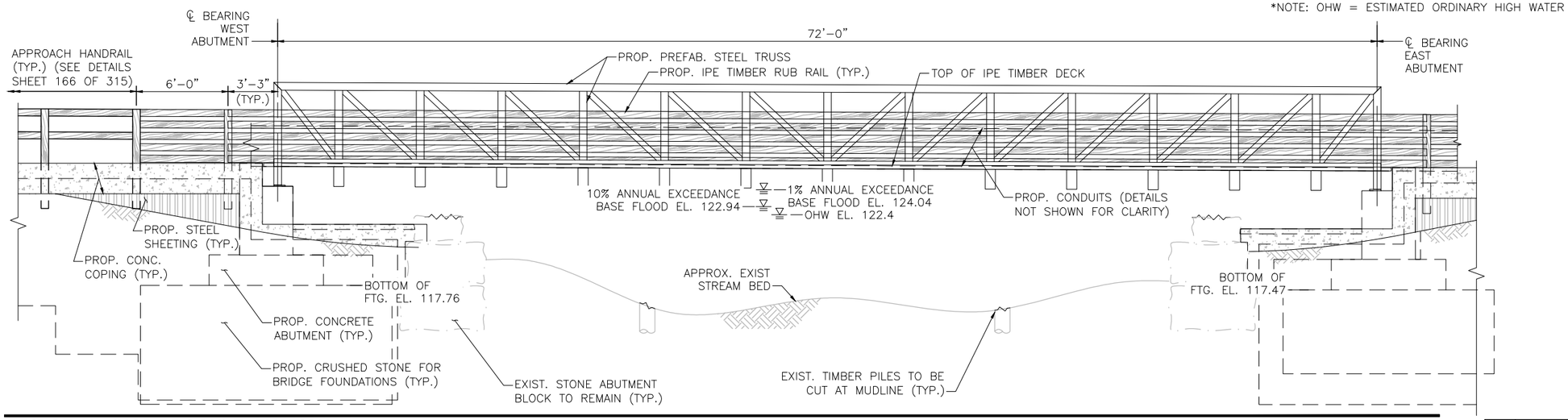
PLAN 60 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
VARIES	JULY 2020	AMS	SBK	KGK	.	.



BRIDGE 127 (HOP BROOK) PLAN

SCALE: $\frac{1}{4}$"=1'-0"



BRIDGE 127 (HOP BROOK) ELEVATION

SCALE: $\frac{1}{4}$"=1'-0"

NO.	DESCRIPTION	BY	DATE	APPR.

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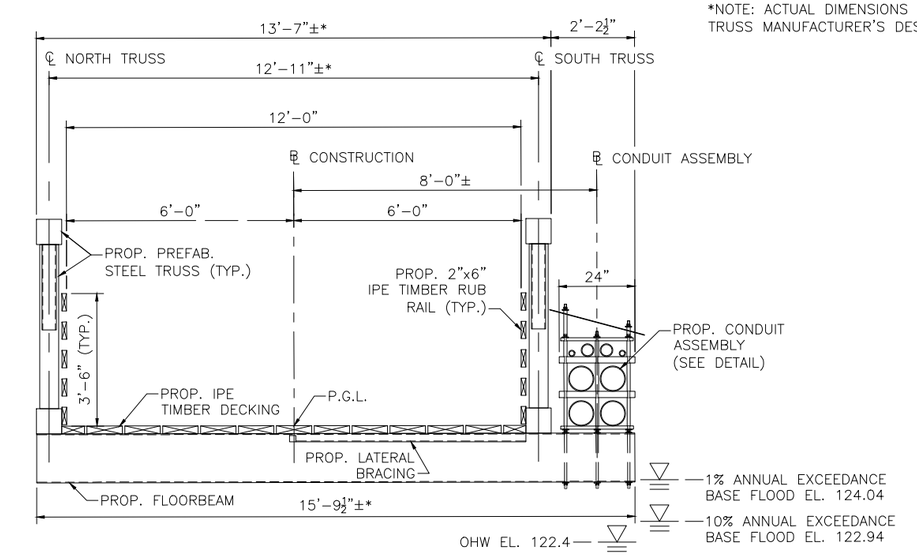
SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
BRIDGE S–31–016 (BRIDGE 127, HOP BROOK) – PLAN & EL.
PLAN 61 OF 62

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
1"=4'	JULY 2020	AMS	SBK	KGK	.	.

*NOTE: ACTUAL DIMENSIONS PER TRUSS MANUFACTURER'S DESIGN



BRIDGE TRANSVERSE SECTION

SCALE: ½"=1'-0"

NO.	DESCRIPTION	BY	DATE	APPR.

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SUDBURY–HUDSON TRANSMISSION RELIABILITY PROJECT

HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS

BRIDGE S–31–016 (BRIDGE 127) – SECTION OF DETAILS

PLAN 62 OF 62

SCALE: unless noted	DATE	DRAWN	CH'KD.	APPR.	DRAWING NO.	REV.
VARIES	JULY 2020	AMS	SBK	KGK	.	#

Appendix C: Wetland Delineation Data Sheets

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Hudson: Wetland 3

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Hudson/ Middlesex Sampling Date: 9-5-17

Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet AW-8

Investigator(s): A. Finamore, S. Donohue Section, Township, Range:

Landform (hillside, terrace, etc.): Railroad ROW Local relief (concave, convex, none): Concave Slope %: 0-3

Subregion (LRR or MLRA): LRR R Lat: Long: Datum: NAD83

Soil Map Unit Name: Paxton fine sandy loam NWI classification: PEM

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No	**within a Wetland?** **Yes** X **No**
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Small manmade wetland in railroad ditch and hillside bank cut. Transect is located between flags AW-8 and AW-13.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Located partially in railroad swale.

VEGETATION – Use scientific names of plants.

Sampling Point: Wet AW-8

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5)			
1. *Impatiens capensis*	55	Yes	FACW
2. *Scirpus cyperinus*	20	Yes	OBL
3. *Epilobium ciliatum*	20	Yes	FACW
4. *Typha latifolia*	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Wet AW-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 2/1	30	5YR 4/6	10	C	M	Loamy/Clayey	Grav. Sandy loam, ^AC, rail ballast
	2.5Y 3/2	30						and fill at bank cut.
	5Y 4/2	30						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None within 14 inches

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Hydric soils determination was based on professional judgement. Disturbed bank cut and rail ballast fill. Strong vegetative and hydrology indicators also present.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Hudson/Middlesex Sampling Date: 9/5/17

Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet AW-8

Investigator(s): A. Finamore, S. Donohue Section, Township, Range:

Landform (hillside, terrace, etc.): Toe Slope Local relief (concave, convex, none): Convex Slope %: 30

Subregion (LRR or MLRA): LRR R Lat: 2969620.66 Long: 648051.50 Datum: NAD83

Soil Map Unit Name: Paxton fine sandy loam NWI classification: UPL

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ? Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet AW-8

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Populus tremula*	15	Yes	FAC
2. *Rubus allegheniensis*	15	Yes	FACU
3. *Betula populifolia*	10	No	FAC
4. *Ulmus americana*	10	No	FACW
5. *Quercus rubra*	5	No	FACU
6.			
7.			
	55 =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Solidago canadensis*	50	Yes	FACU
2. *Rubus idaeus*	20	Yes	FACU
3. *Phytolacca americana*	20	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	25	x 3 =	75
FACU species	110	x 4 =	440
UPL species	0	x 5 =	0
Column Totals:	145 (A)		535 (B)

Prevalence Index = B/A = 3.69

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Wet AW-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/2	100					Loamy/Clayey	Sandy Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rubble

Depth (inches): 15

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Hudson: Wetland 6

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Hudson/Middlesex Sampling Date: 9/5/17

Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet AW-22

Investigator(s): A. Finamore, S. Donohue Section, Township, Range:

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 0

Subregion (LRR or MLRA): LRR R Lat: 2969358.00 Long: 649514.91 Datum: NAD83

Soil Map Unit Name: Freetown muck NWI classification: PFO

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Expansive PEM floodplain wetland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 12
Water Table Present?	Yes X	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet AW-22

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Frangula alnus*	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10 =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Persicaria pensylvanica*	20	Yes	FACW
2. *Bidens frondosa*	15	Yes	FACW
3. *Urtica dioica*	15	Yes	FAC
4. *Lythrum salicaria*	8	No	OBL
5. *Lythrum salicaria*	5	No	OBL
6. *Impatiens capensis*	3	No	FACW
7. *Cirsium muticum*	2	No	OBL
8.			
9.			
10.			
11.			
12.			
	68 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Wet AW-22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-30	2.5Y 3/1	100					Muck	sapric

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Hudson/ Middlesex Sampling Date: 9-6-17

Applicant/Owner: Eversource Energy State: MA Sampling Point: Up AW-22

Investigator(s): A. Finamore, S. Donohue Section, Township, Range:

Landform (hillside, terrace, etc.): Bank Cut/Railroad ROW Local relief (concave, convex, none): None Slope %: 5

Subregion (LRR or MLRA): LRR R Lat: Long: Datum: NAD83

Soil Map Unit Name: Freetown muck NWI classification: UPL

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes	No X	**within a Wetland?** **Yes** **No** X
Wetland Hydrology Present?	Yes	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Old bank cut adjacent to wetland in abandoned railroad ROW. Transect is located between flags AW-22 and AW-23.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up AW-22

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Yes	FAC
2. *Pinus strobus*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Frangula alnus*	30	Yes	FAC
2. *Polygonum cuspidatum*	30	Yes	FACU
3. *Quercus rubra*	10	No	FACU
4.			
5.			
6.			
7.			
	70	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Frangula alnus*	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5	=Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	65	x 3 =	195
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	125 (A)		435 (B)

Prevalence Index = B/A = 3.48

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Up AW-22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y 2.5/1	100					Loamy/Clayey	Gravelly sandy loam fill, ^AC
12-20	7.5YR 3/2	100					Loamy/Clayey	Gravelly sandy loam fill, ^AC2

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None within 20 inches

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Hudson: Wetland 7

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Hudson/ Middlesex Sampling Date: 9-6-17

Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet BW-67

Investigator(s): A. Finamore, S. Donohue Section, Township, Range:

Landform (hillside, terrace, etc.): Slight Hillside Local relief (concave, convex, none): None Slope %: 0-3

Subregion (LRR or MLRA): LRR R Lat: Long: Datum: NAD83

Soil Map Unit Name: Gravel pit NWI classification: PSS

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No	**within a Wetland?** **Yes** X **No**
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches): 12

Wetland Hydrology Present? **Yes** X **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Wet BW-67

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	50	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Frangula alnus*	50	Yes	FAC
2. *Clethra alnifolia*	30	Yes	FAC
3. *Salix bebbiana*	10	No	FACW
4.			
5.			
6.			
7.			
	90	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Onoclea sensibilis*	40	Yes	FACW
2. *Clethra alnifolia*	25	Yes	FAC
3. *Frangula alnus*	20	Yes	FAC
4. *Typha latifolia*	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Wet BW-67

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3	100						A horizon
2-8	2.5Y 4/3	95	10YR 5/8	5	C	M	Loamy/Clayey	Gravelly sandy loam, Bw horizon
8-15	2.5Y 5/2	60	10YR 5/8	10	C	M	Loamy/Clayey	Gravelly sandy loam, Bg horizon
			2.5Y 5/3	30	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None within 15 inches

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Hudson/ Middlesex Sampling Date: 9-6-17

Applicant/Owner: Eversource Energy State: MA Sampling Point: Up BW-67

Investigator(s): A. Finamore, S. Donohue Section, Township, Range:

Landform (hillside, terrace, etc.): Hillslope, slight Local relief (concave, convex, none): None Slope %: 0-3

Subregion (LRR or MLRA): LRR R Lat: Long: Datum: NAD83

Soil Map Unit Name: NWI classification: UPL

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes	No X	**within a Wetland?** **Yes** **No** X
Wetland Hydrology Present?	Yes	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up BW-67

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula populifolia*	40	Yes	FAC
2. *Pinus strobus*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Frangula alnus*	30	Yes	FAC
2. *Clethra alnifolia*	30	Yes	FAC
3. *Betula populifolia*	10	No	FAC
4. *Populus grandidentata*	5	No	FACU
5.			
6.			
7.			
	75	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Onoclea sensibilis*	20	Yes	FACW
2. *Clethra alnifolia*	15	Yes	FAC
3. *Frangula alnus*	10	No	FAC
4. *Celastrus orbiculatus*	10	No	UPL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	55	=Total Cover	
Woody Vine Stratum (Plot size: 30)			
1. *Celastrus orbiculatus*	10	Yes	UPL
2.			
3.			
4.			
	10	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	135	x 3 =	405
FACU species	25	x 4 =	100
UPL species	20	x 5 =	100
Column Totals:	200 (A)		645 (B)

Prevalence Index = B/A = 3.23

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Up BW-67

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/3	100					Loamy/Clayey	Sandy loam, A horizon
3-7	10YR 4/4	100					Loamy/Clayey	Sandy loam, Bw1 horizon
7-12	10YR 4/3	100					Loamy/Clayey	Sandy loam, Bw2 horizon
12-16	10YR 5/4	98	7.5YR 4/6	2	C	M	Loamy/Clayey	Sandy loam, Bw3 horizon

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None within 16 inches

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Hudson: Wetland 12

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Hudson/ Middlesex Sampling Date: 9-12-17

Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet AW-160

Investigator(s): A. Finamore, S. Donohue Section, Township, Range:

Landform (hillside, terrace, etc.): Railroad ROW Local relief (concave, convex, none): Concave Slope %: 0-3

Subregion (LRR or MLRA): LRR R Lat: Long: Datum: NAD83

Soil Map Unit Name: Deerfield loamy sand NWI classification: PSS

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No	**within a Wetland?** **Yes** X **No**
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
3' wid rail ditch in bank cut. Transect is between flags 159 and 160.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
3' wide rail ditch in bank cut.

VEGETATION – Use scientific names of plants.

Sampling Point: Wet AW-160

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. *Frangula alnus*	20	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	20 =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Frangula alnus*	10	Yes	FAC
2. *Vaccinium corymbosum*	10	Yes	FACW
3. *Symplocarpus foetidus*	5	No	OBL
4. *Urtica dioica*	2	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	27 =Total Cover		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Wet AW-160

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					Loamy/Clayey	Sandy loam, A horizon
6-15	10YR 4/3	65	10YR 4/4	20	C	M	Loamy/Clayey	Sandy loam, BC horizon
			7.5YR 5/8	5	C	M		
			2.5Y 5/1	10	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ? Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None within 15 inches

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Railroad ditch within historic +/-15' deep bank cut into glacial parent materials. Atypical soil morphology. Dark organic rich A horizon forming over glacial parent materials with abundant redoximorphic features.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Hudson/Middlesex Sampling Date: 9/12/17

Applicant/Owner: Eversource Energy State: MA Sampling Point: Up AW-160

Investigator(s): A. Finamore, S. Donohue Section, Township, Range:

Landform (hillside, terrace, etc.): Railroad Slope Cut Local relief (concave, convex, none): Convex Slope %: 25

Subregion (LRR or MLRA): LRR R Lat: Long: Datum: NAD83

Soil Map Unit Name: Paxton fine sandy loam NWI classification: UPL

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Railroad cut sideslope

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): 0

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Up AW-160

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	20	Yes	FACU
2. *Quercus alba*	20	Yes	FACU
3. *Acer rubrum*	10	Yes	FAC
4.			
5.			
6.			
7.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Acer rubrum*	15	Yes	FAC
2. *Quercus rubra*	15	Yes	FACU
3. *Quercus rubra*	10	Yes	FACU
4. *Pinus strobus*	5	No	FACU
5.			
6.			
7.			
	45	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Vaccinium angustifolium*	8	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	8	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1. *Vitis labrusca*	10	Yes	FACU
2.			
3.			
4.			
	10	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	88	x 4 =	352
UPL species	0	x 5 =	0
Column Totals:	113 (A)		427 (B)

Prevalence Index = B/A = 3.78

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Up AW-160

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					Loamy/Clayey	sandy loam
4-8	10YR 4/4	100					Sandy	loamy sand
8-15	10YR 4/6	100					Sandy	loamy sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
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- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: none observed

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Hudson: Wetland 21

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