



**STANDARD DREDGE AND FILL
WETLANDS PERMIT APPLICATION**
Water Division/Land Resources Management
Wetlands Bureau
[Check the Status of your Application](#)



RSA/Rule: RSA 482-A/Env-Wt 100-900

APPLICANT'S NAME: NH Dept. Transportation

TOWN NAME: Loudon

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

A person may request a waiver of the requirements in Rules Env-Wt 100-900 to accommodate situations where strict adherence to the requirements would not be in the best interest of the public or the environment but is still in compliance with RSA 482-A. A person may also request a waiver of the standards for existing dwellings over water pursuant to RSA 482-A:26, III(b). For more information, please consult the [Waiver Request Form](#).

SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2))	
Please use the Wetland Permit Planning Tool (WPPT) , the Natural Heritage Bureau (NHB) DataCheck Tool , the Aquatic Restoration Mapper , or other sources to assist in identifying key features such as: priority resource areas (PRAs) , protected species or habitats , coastal areas, designated rivers, or designated prime wetlands.	
Has the required planning been completed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Does the property contain a PRA? If yes, provide the following information:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<ul style="list-style-type: none"> • Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&G) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No • Protected species or habitat? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <ul style="list-style-type: none"> ○ If yes, species or habitat name(s): Northern Long-eared Bat, Monarch Butterfly, Blandings Turtle, Bridle Shiner, and Wood Turtle <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ○ NHB Project ID #: NHB22-3104 • Bog? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No • Floodplain wetland contiguous to a tier 3 or higher watercourse? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No • Designated prime wetland or duly-established 100-foot buffer? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No • Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 	
Is the property within a Designated River corridor? If yes, provide the following information:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<ul style="list-style-type: none"> • Name of Local River Management Advisory Committee (LAC): 	

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<ul style="list-style-type: none"> A copy of the application was sent to the LAC on Month: <input type="text"/> Day: <input type="text"/> Year: <input type="text"/> 	
<p>For dredging projects, is the subject property contaminated?</p> <ul style="list-style-type: none"> If yes, list contaminant: <input type="text"/> 	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>Is there potential to impact impaired waters, class A waters, or outstanding resource waters?</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>For stream crossing projects, provide watershed size (see WPPT or Stream Stats):</p> <p><input type="text"/> N/A</p>	
<p>SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))</p> <p>Provide a brief description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached"; please use the space provided below.</p>	
<p>The NH Department of Transportation (NHDOT) is proposing the subject project, which consists of 2 culvert replacements and one culvert rehabilitation utilizing sliplining along NH 106 in the Town of Loudon. The three locations are as follows: Location 1 is approximately 2,070' south of NH 129, Location 2 is approximately 1,070' south of NH 129, and Location 3 is approximately 2,880' north of NH 129. Location 1 is an existing 30" corrugated metal pipe (cmp), 165' long, with a severely rusted outlet with approximately 1' of sediment, and no history of flooding. Location 2 is an existing 18" cmp, 164' long. The pipe inlet and outlet are buried below the wetland elevations. This pipe may not be functional, but there is no history of flooding at Location 2. Location 3 is a 43" wide x 27" high x 91.5' long cmp with heavy rust and severe corrosion along the bottom of the pipe, and no history of flooding.</p> <p>The proposed rehabilitation for Location 1 is to slipline the existing 30" cmp with a 24" Polymer Coated Metal Liner. A stone apron will be installed at the outlet as an energy dissipater. At Location 2, the existing 18" cmp will be replaced with a 24" plastic pipe at the same location with higher inverts. The higher inverts will shorten the pipe length to 133' and place the inlet and outlet inverts at the existing wetland elevation. End sections will be installed at both ends of the pipe. The existing pipe at Location 3 will be replaced with 92 LF of 36" reinforced concrete pipe (rcp) in the same location and at similar elevation. Upsizing the pipe will improve openness ratio and potential for wildlife passage. Short channel matches at both ends of the rcp will be constructed so there is no perch or barrier after construction.</p> <p>Traffic control for the project will be shoulders closures and night work with alternating one-way traffic with flaggers.</p>	
<p>SECTION 3 - PROJECT LOCATION</p> <p>Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.</p>	
<p>ADDRESS: <input type="text"/> NH Route 106, in the vicinity of NH 129</p>	
<p>TOWN/CITY: <input type="text"/> Loudon</p>	
<p>TAX MAP/BLOCK/LOT/UNIT: <input type="text"/> N/A - NH Route 106 ROW</p>	
<p>US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: <input type="text"/> wetlands at either end of pipes</p> <p><input checked="" type="checkbox"/> N/A</p>	
<p>(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places): <input type="text"/> ° North</p>	

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° West		
SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a))		
If the applicant is a trust or a company, then complete with the trust or company information.		
NAME: NH DEPT. TRANSPORTATION		
MAILING ADDRESS: PO BOX 483		
TOWN/CITY: CONCORD	STATE: NH	ZIP CODE: 03301
EMAIL ADDRESS: Kirk.Mudgett@dot.nh.gov		
FAX: N/A	PHONE: 271-1598	
ELECTRONIC COMMUNICATION: By initialing here: KOM, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c))		
<input type="checkbox"/> N/A		
LAST NAME, FIRST NAME, M.I.: [REDACTED]		
COMPANY NAME: [REDACTED]		
MAILING ADDRESS: [REDACTED]		
TOWN/CITY: [REDACTED]	STATE: [REDACTED]	ZIP CODE: [REDACTED]
EMAIL ADDRESS: [REDACTED]		
FAX: [REDACTED]	PHONE: [REDACTED]	
ELECTRONIC COMMUNICATION: By initialing here [REDACTED], I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b))		
If the owner is a trust or a company, then complete with the trust or company information.		
<input type="checkbox"/> Same as applicant		
NAME: NHDOT		
MAILING ADDRESS: 7 Hazen Drive		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03301
EMAIL ADDRESS: Andrew.OSullivan@dot.nh.gov		
FAX: N/A	PHONE: 603-271-3226	
ELECTRONIC COMMUNICATION: By initialing here [REDACTED], I hereby authorize NHDES to communicate all matters relative to this application electronically.		

SECTION 7 - RESOURCE-SPECIFIC CRITERIA ESTABLISHED IN Env-Wt 400, Env-Wt 500, Env-Wt 600, Env-Wt 700, OR Env-Wt 900 HAVE BEEN MET (Env-Wt 313.01(a)(3))

Describe how the resource-specific criteria have been met for each chapter listed above (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters):
 In accordance with Env-Wt 400 the jurisdictional areas within the project limits have been delineated by: NHDOT Personnel Joshua Brown and Dillan Schmidt on October 20, 2022. The jurisdictional areas are referenced on the attached included wetland impact plans. The project has been designed in accordance with Env-Wt 527 to the maximum extent practicable. The application includes a technical report as well as details within the supplemental narrative to address various items including: existing conditions, natural and cultural resources, hydraulics, etc. Unavoidable impacts to wetlands have been minimized to the maximum extent practicable. Project specific information is contained within this permit application.

SECTION 8 - AVOIDANCE AND MINIMIZATION

Impacts within wetland jurisdiction must be avoided to the maximum extent practicable (Env-Wt 313.03(a)).* Any project with unavoidable jurisdictional impacts must then be minimized as described in the [Wetlands Best Management Practice Techniques For Avoidance and Minimization](#) and the [Wetlands Permitting: Avoidance, Minimization and Mitigation Fact Sheet](#). For minor or major projects, a functional assessment of all wetlands on the project site is required (Env-Wt 311.03(b)(10)).*

Please refer to the application checklist to ensure you have attached all documents related to avoidance and minimization, as well as functional assessment (where applicable). Use the [Avoidance and Minimization Checklist](#), the [Avoidance and Minimization Narrative](#), or your own avoidance and minimization narrative.

**See Env-Wt 311.03(b)(6) and Env-Wt 311.03(b)(10) for shoreline structure exemptions.*

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

If unavoidable jurisdictional impacts require mitigation, a mitigation [pre-application meeting](#) must occur at least 30 days but not more than 90 days prior to submitting this Standard Dredge and Fill Permit Application.

Mitigation Pre-Application Meeting Date: Month: Day: Year:

N/A - Mitigation is not required

SECTION 10 - THE PROJECT MEETS COMPENSATORY MITIGATION REQUIREMENTS (Env-Wt 313.01(a)(1)c)

Confirm that you have submitted a compensatory mitigation proposal that meets the requirements of Env-Wt 800 for all permanent unavoidable impacts that will remain after avoidance and minimization techniques have been exercised to the maximum extent practicable: I confirm submittal.

N/A – Compensatory mitigation is not required

SECTION 11 - IMPACT AREA (Env-Wt 311.04(g))

For each jurisdictional area that will be/has been impacted, provide square feet (SF) and, if applicable, linear feet (LF) of impact, and note whether the impact is after-the-fact (ATF; i.e., work was started or completed without a permit).

For intermittent and ephemeral streams, the linear footage of impact is measured along the thread of the channel. *Please note, installation of a stream crossing in an ephemeral stream may be undertaken without a permit per Rule Env-Wt 309.02(d), however other dredge or fill impacts should be included below.*

For perennial streams/ivers, the linear footage of impact is calculated by summing the lengths of disturbances to the channel and banks.

Permanent impacts are impacts that will remain after the project is complete (e.g., changes in grade or surface materials).

Temporary impacts are impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.

JURISDICTIONAL AREA		PERMANENT			TEMPORARY		
		SF	LF	ATF	SF	LF	ATF
Wetlands	Forested Wetland			<input type="checkbox"/>			<input type="checkbox"/>
	Scrub-shrub Wetland	37		<input type="checkbox"/>	995		<input type="checkbox"/>
	Emergent Wetland	406		<input type="checkbox"/>	3,898		<input type="checkbox"/>
	Wet Meadow			<input type="checkbox"/>			<input type="checkbox"/>
	Vernal Pool			<input type="checkbox"/>			<input type="checkbox"/>
	Designated Prime Wetland			<input type="checkbox"/>			<input type="checkbox"/>
	Duly-established 100-foot Prime Wetland Buffer			<input type="checkbox"/>			<input type="checkbox"/>
Surface Water	Intermittent / Ephemeral Stream			<input type="checkbox"/>			<input type="checkbox"/>
	Perennial Stream or River			<input type="checkbox"/>			<input type="checkbox"/>
	Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - River			<input type="checkbox"/>			<input type="checkbox"/>
Banks	Bank - Intermittent Stream			<input type="checkbox"/>			<input type="checkbox"/>
	Bank - Perennial Stream / River			<input type="checkbox"/>			<input type="checkbox"/>
	Bank / Shoreline - Lake / Pond			<input type="checkbox"/>			<input type="checkbox"/>
Tidal	Tidal Waters			<input type="checkbox"/>			<input type="checkbox"/>
	Tidal Marsh			<input type="checkbox"/>			<input type="checkbox"/>
	Sand Dune			<input type="checkbox"/>			<input type="checkbox"/>
	Undeveloped Tidal Buffer Zone (TBZ)			<input type="checkbox"/>			<input type="checkbox"/>
	Previously-developed TBZ			<input type="checkbox"/>			<input type="checkbox"/>
	Docking - Tidal Water			<input type="checkbox"/>			<input type="checkbox"/>
TOTAL		443				4,893	

SECTION 12 - APPLICATION FEE (RSA 482-A:3, I)

<input type="checkbox"/> MINIMUM IMPACT FEE: Flat fee of \$400.
<input type="checkbox"/> NON-ENFORCEMENT RELATED, PUBLICLY-FUNDED AND SUPERVISED RESTORATION PROJECTS, REGARDLESS OF IMPACT CLASSIFICATION: Flat fee of \$400 (refer to RSA 482-A:3, 1(c) for restrictions).
<input type="checkbox"/> MINOR OR MAJOR IMPACT FEE: Calculate using the table below:
Permanent and temporary (non-docking): 5,336 SF × \$0.40 = \$ 2,134.40
Seasonal docking structure: SF × \$2.00 = \$
Permanent docking structure: SF × \$4.00 = \$
Projects proposing shoreline structures (including docks) add \$400 = \$
Total = \$ 2,134.40
The application fee for minor or major impact is the above calculated total or \$400, whichever is greater = \$ 2,134.40

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SECTION 13 - PROJECT CLASSIFICATION (Env-Wt 306.05)
 Indicate the project classification.

<input type="checkbox"/> Minimum Impact Project	<input checked="" type="checkbox"/> Minor Project	<input type="checkbox"/> Major Project
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SECTION 14 - REQUIRED CERTIFICATIONS (Env-Wt 311.11)

Initial each box below to certify:

Initials: KOM _____ _____	To the best of the signer's knowledge and belief, all required notifications have been provided.
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Initials: KOM _____ _____	The information submitted on or with the application is true, complete, and not misleading to the best of the signer's knowledge and belief.
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Initials: KOM _____ _____	The signer understands that: <ul style="list-style-type: none"> • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: <ol style="list-style-type: none"> 1. Deny the application. 2. Revoke any approval that is granted based on the information. 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. • The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. • The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact forestry SPN projects and minimum impact trail projects, where the signature shall authorize only the Department to inspect the site pursuant to RSA 482-A:6, II.
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Initials: KOM _____ _____	If the applicant is not the owner of the property, each property owner signature shall constitute certification by the signer that he or she is aware of the application being filed and does not object to the filing.
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SECTION 15 - REQUIRED SIGNATURES (Env-Wt 311.04(d); Env-Wt 311.11)

SIGNATURE (OWNER): _____	PRINT NAME LEGIBLY: _____	DATE: _____
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER): <i>Kirk Mudgett</i>	PRINT NAME LEGIBLY: Kirk Mudgett	DATE: 2-17-23
SIGNATURE (AGENT, IF APPLICABLE): _____	PRINT NAME LEGIBLY: _____	DATE: _____

SECTION 16 - TOWN / CITY CLERK SIGNATURE (Env-Wt 311.04(f))

As required by RSA 482-A:3, I(a)(1), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

TOWN/CITY CLERK SIGNATURE: _____	State Agency, Exempt per RSA 482-A:3, I(a)(1)	PRINT NAME LEGIBLY: _____
TOWN/CITY: _____	DATE: _____	

DIRECTIONS FOR TOWN/CITY CLERK:

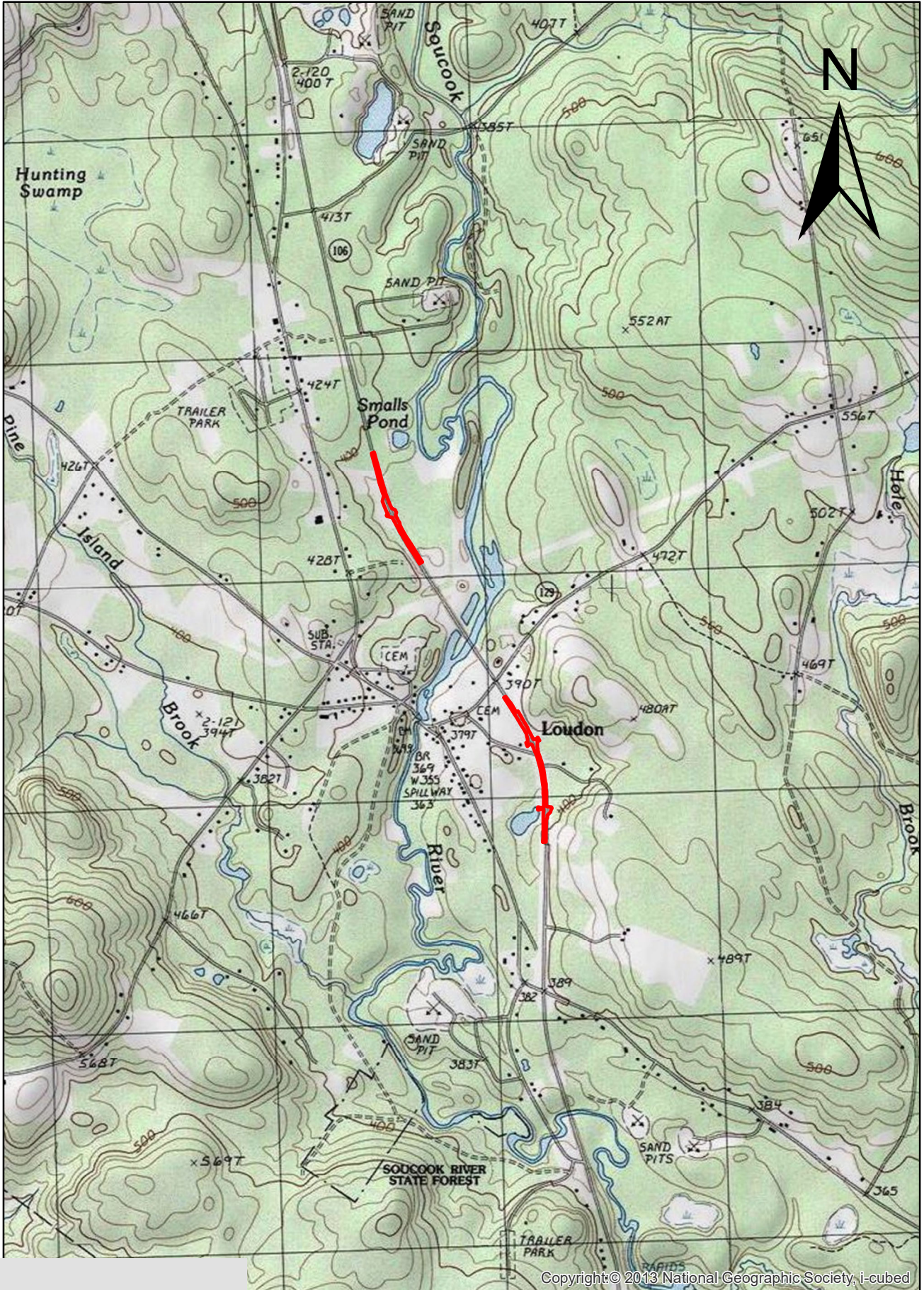
Per RSA 482-A:3, I(a)(1)

1. IMMEDIATELY sign the original application form and four copies in the signature space provided above.
2. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
3. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board.
4. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

Submit the original permit application form bearing the signature of the Town/City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery at the address at the bottom of this page. Make check or money order payable to "Treasurer – State of NH".

NHDOT Loudon 44011



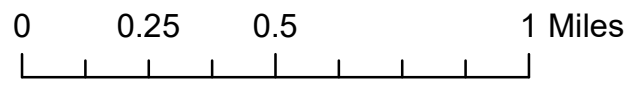
Copyright © 2013 National Geographic Society, i-cubed

Legend

Loudon 44011 Project Limits

Cad Renderer

— Continuous, 1, 40



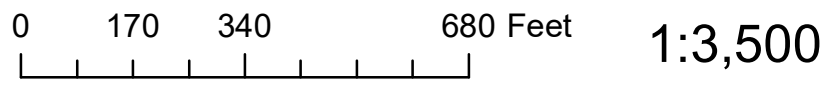
1:24,000

NHDOT Loudon 44011 Locations 1 & 2



Legend

- All parcels
- Loudon 44011 Project Limits
- Cad Renderer
- Continuous, 1, 40

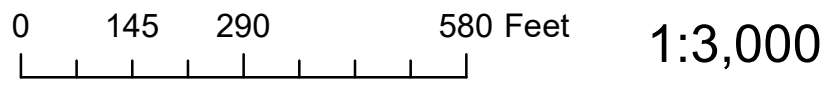


NHDOT Loudon 44011 Location 3



Legend

- All parcels
- Loudon 44011 Project Limits**
- Cad Renderer**
- Continuous, 1, 40





STANDARD DREDGE AND FILL
WETLANDS PERMIT APPLICATION
ATTACHMENT A: MINOR AND MAJOR PROJECTS



Water Division/Land Resources Management
Wetlands Bureau

[Check the Status of your Application](#)

RSA/ Rule: RSA 482-A/ Env-Wt 311.10; Env-Wt 313.01(a)(1); Env-Wt 313.03

APPLICANT'S NAME: NH Dept. of Transportation **TOWN NAME:** Loudon

Attachment A is required for *all minor and major projects*, and must be completed *in addition* to the [Avoidance and Minimization Narrative](#) or [Checklist](#) that is required by Env-Wt 307.11.

For projects involving construction or modification of non-tidal shoreline structures over areas of surface waters having an absence of wetland vegetation, only Sections I.X through I.XV are required to be completed.

PART I: AVOIDANCE AND MINIMIZATION

In accordance with Env-Wt 313.03(a), the Department shall not approve any alteration of any jurisdictional area unless the applicant demonstrates that the potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized, as described in the [Wetlands Best Management Practice Techniques For Avoidance and Minimization](#).

SECTION I.I - ALTERNATIVES (Env-Wt 313.03(b)(1))

Describe how there is no practicable alternative that would have a less adverse impact on the area and environments under the Department's jurisdiction.

THE NH DEPARTMENT OF TRANSPORTATION PROPOSES TO REHABILITATE A 30" CORRUGATED METAL PIPE (LOCATION 1), REPLACE AN 18" CMP (LOCATION 2), AND REPLACE A 47" WIDE X 27" HIGH CMP IN THE TOWN OF LOUDON.

LOCATION 1 IS APPROXIMATELY 19' -24' BENEATH NH 106 WITH WETLANDS AT EITHER END. DUE TO THE DEPTH OF THE PIPE AND ASSOCIATED IMPACTS TO TRAFFIC, UTILITIES, AND OTHER RESOURCES A FULL REPLACEMENT IS NOT CONSIDERED PRACTICABLE. SLIPLINING WITH A 24" POLYMER COATED METAL LINER IS THE MINIMUM IMPACT ALTERNATIVE THAT WILL MEET THE PROJECT PURPOSE. A SMALL STONE APRON IS PROPOSED AT THE OUTLET DUE TO THE STEEP SLOPE OF THE PIPE AND POTENTIAL HIGH OUTLET VELOCITY.

LOCATION 2 IS BURIED AT BOTH ENDS AND MAY NOT BE FUNCTIONAL. SLIPLINING OR REPLACEMENT IN-KIND IS NOT CONSIDERED PRACTICABLE DUE TO THE PIPE BEING BELOW THE GROUND/WATER LEVEL. DREDGING THE ENDS OF THE PIPE IS NOT PRACTICABLE DUE TO THE LARGE WETLANDS AT EITHER END. THE PROPOSED DESIGN IS REPLACEMENT WITH A 24" PLASTIC PIPE. THE MINIMUM (HYDRAULIC) SIZE IS 18". UPSIZING TO 24" DOES NOT REQUIRE ANY ADDITIONAL IMPACTS AND PROVIDES SOME ADDITIONAL CAPACITY. THE INVERTS OF THE 24" PLASTIC PIPE WILL BE SET AT THE CURRENT WETLAND ELEVATIONS WHICH WILL RESTORE FUNCTIONALITY AND PROVIDE FOR IMPROVED WILDLIFE PASSAGE.

THE LOCATION 3 PIPE WILL BE REPLACED WITH A 36" REINFORCED CONCRETE PIPE PER NH FISH AND GAME'S REQUEST TO MAINTAIN OR IMPROVE THE OPENESS RATIO FOR TURTLE PASSAGE. SHORT CHANNEL MATCHES WILL BE CONSTRUCTED TO ALLEVIATE ANY PERCH OR BARRIER AFTER CONSTRUCTION. THE PROPOSED DESIGN IS THE MINIMUM IMPACT ALTERNATIVE THAT MEETS HYDRAULIC AND RESOURCE AGENCY REQUIREMENTS.

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SECTION I.II - MARSHES (Env-Wt 313.03(b)(2))

Describe how the project avoids and minimizes impacts to tidal marshes and non-tidal marshes where documented to provide sources of nutrients for finfish, crustacean, shellfish, and wildlife of significant value.

N/A- there were no marshes delineated within the project area.

SECTION I.III - HYDROLOGIC CONNECTION (Env-Wt 313.03(b)(3))

Describe how the project maintains hydrologic connections between adjacent wetland or stream systems.

All 3 existing culverts are intended to provide a hydrologic connection between the upstream and downstream wetlands. Location 1's outlet is below the average existing wetland grade. A stone apron is proposed for energy dissipation and to provide a fixed area for future maintenance. All sediment will be removed and unobstructed passage will be provided by the new liner pipe. Location 2 is buried and may not be functional. The proposed 24" plastic pipe will be installed in the same location as the existing pipe with raised inverts to match the existing average wetland grade and provide hydrologic connectivity and wildlife passage. Location 3 was upsized from the hydraulically sized replacement (30" rcp) to a 36" rcp per NH fish and Game request to increase the openness ratio and provide a more suitable passage way for the Blanding's and Wood turtle. All temporary disturbance to the inlet and outlet areas of all 3 locations will be restored to existing conditions. The hydraulic connection between upstream and downstream wetlands will remain the same post construction at locations 1 and 3 with improved hydrologic connection at location 2 where the pipe was buried.

SECTION I.IV - JURISDICTIONAL IMPACTS (Env-Wt 313.03(b)(4))

Describe how the project avoids and minimizes impacts to wetlands and other areas of jurisdiction under RSA 482-A, especially those in which there are exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern, or any combination thereof.

The project has been designed in accordance with ENV-Wt 400 and 500. Unavoidable impacts to wetlands have been minimized to the maximum extent practicable; the Department has addressed Env-Wt 311.07 Avoidance and Minimization through the checklist document included with this application.

The resources present within the project area that will be impacted consist of delineated wetlands PEM1E and PEM1E/SS1E. The project area is within the range the northern long eared bat (NLEB) and Monarch Butterfly which are listed as a threatened species under the Federal Endangered Species Act. NH Fish and Game has informed the design team that there are Blanding's Turtles, Bridle Shiner, and Wood Turtles in the project area. All appropriate avoidance measures will be taken to accommodate turtle and shiner passage through the project area. NH Fish and Game will be contacted should any of the above listed species be sighted during construction activities. There are no PRA's associated with this project area. There are no Designated Rivers within a 1/4 mile of the project area. There are no waterbodies subject to the SWQPA within this project area. There are no documented coldwater fisheries in the project area.

The proposed design is the minimum impact alternative that meets the project purpose and need and avoids impacts to nearby jurisdictional areas

SECTION I.V - PUBLIC COMMERCE, NAVIGATION, OR RECREATION (Env-Wt 313.03(b)(5))

Describe how the project avoids and minimizes impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation.

The proposed design/work will allow traffic to continue to flow along NH 106 during construction minimizing the impact to local and regional commuting and commerce. In the project area, the Soucook River will not be impacted and normal water recreation and fishing can be utilized during and after construction. No permanent impacts to public commerce navigation, or recreation are anticipated as a result of the project.

SECTION I.VI - FLOODPLAIN WETLANDS (Env-Wt 313.03(b)(6))

Describe how the project avoids and minimizes impacts to floodplain wetlands that provide flood storage.

In the project area, the delineated wetlands do provide flood storage, but are outside the floodplain for the Soucook River. The project will have no effect on the flood storage capacity of the existing wetlands.

SECTION I.VII - RIVERINE FORESTED WETLAND SYSTEMS AND SCRUB-SHRUB – MARSH COMPLEXES (Env-Wt 313.03(b)(7))

Describe how the project avoids and minimizes impacts to natural riverine forested wetland systems and scrub-shrub – marsh complexes of high ecological integrity.

There are no riverine forested wetlands within the proposed limits of work. The Location 2 - 18" pipe inlet area is delineated as scrub-shrub (PEM1/SS1E). The proposed work minimizes impacts to the maximum extent practicable. The majority of impacts are temporary and will not affect the functions and values of the wetland beyond the construction period. Small permanent impacts are proposed in order to match the new pipe ends to the existing ground such that there is a smooth transition and no perch.

SECTION I.VIII - DRINKING WATER SUPPLY AND GROUNDWATER AQUIFER LEVELS (Env-Wt 313.03(b)(8))

Describe how the project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.

The project will have no effect on wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.

SECTION I.IX - STREAM CHANNELS (Env-Wt 313.03(b)(9))

Describe how the project avoids and minimizes adverse impacts to stream channels and the ability of such channels to handle runoff of waters.

The project will not effect any stream channels.

SECTION I.X - SHORELINE STRUCTURES - CONSTRUCTION SURFACE AREA (Env-Wt 313.03(c)(1))

Describe how the project has been designed to use the minimum construction surface area over surface waters necessary to meet the stated purpose of the structures.

N/A - The project does not involve shoreline structures.

SECTION I.XI - SHORELINE STRUCTURES - LEAST INTRUSIVE UPON PUBLIC TRUST (Env-Wt 313.03(c)(2))

Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.

N/A

SECTION I.XII - SHORELINE STRUCTURES – ABUTTING PROPERTIES (Env-Wt 313.03(c)(3))

Describe how the structures have been designed to avoid and minimize impacts on ability of abutting owners to use and enjoy their properties.

N/A

SECTION I.XIII - SHORELINE STRUCTURES – COMMERCE AND RECREATION (Env-Wt 313.03(c)(4))

Describe how the structures have been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.

N/A

SECTION I.XIV - SHORELINE STRUCTURES – WATER QUALITY, AQUATIC VEGETATION, WILDLIFE AND FINFISH HABITAT (Env-Wt 313.03(c)(5))

Describe how the structures have been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.

N/A

SECTION I.XV - SHORELINE STRUCTURES – VEGETATION REMOVAL, ACCESS POINTS, AND SHORELINE STABILITY (Env-Wt 313.03(c)(6))

Describe how the structures have been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.

N/A

PART II: FUNCTIONAL ASSESSMENT	
REQUIREMENTS	Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).
FUNCTIONAL ASSESSMENT METHOD USED:	Functional assessments for the permanent impacts to the Palustrine wetlands at each location are not included in the application. The proposed permanent impacts are minimal to the extent that they would not have any effect on the functions and values of the wetlands. The proposed permanent impacts would eliminate perching of the pipe and preserve or restore connectivity as well as improve wildlife passage. Please refer to page 3 of the supplemental narrative for additional information.
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT:	JOSHUA BROWN & DILLAN SCHMIDT
DATE OF ASSESSMENT:	OCTOBER 20, 2022
Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT:	<input type="checkbox"/>
For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable:	<input type="checkbox"/>
Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.	

CULVERT REHABILITATION / REPLACEMENT PROJECT

NH Route 106, Loudon, NH

NHDOT PROJECT NO. 44011

SUPPLEMENTAL NARRATIVE

Project Description

The project will rehabilitate an existing 30” corrugated metal pipe (Location 1), an replace an 18”cmp (Location 2), and a 43” wide x 27” tall cmp (Location 3) respectively, flowing underneath NH 106. The proposed rehabilitation for Location 1 is sliplining the existing pipe with a 24” polymer coated metal liner. A stone apron at the outlet will be constructed for energy dissipation and act as an open area for future maintenance. The existing 18” cmp at location 2 is buried and a 24” plastic pipe will be constructed in the same location with raised inverts to match the average existing wetland grade. End sections will be installed at the inlet and outlet. Location 3 is going to have a 36” reinforced concrete pipe (rcp) installed in the same location and at similar inverts. Short channel matches will be constructed to ensure the inlet and outlet are perch free.

This is a federally funded culvert rehabilitation project. The proposed Advertising Date is May 23, 2023, with construction anticipated in September of 2023.

This project was initiated and is funded under NHDOT’s Federal Culvert Replacement/Rehabilitation & Drainage Repair (CRDR) Program. The Program purpose is to address major culvert and drainage needs statewide that are not being addressed through current or future Capital Improvement or other programmatic projects. The Program receives \$2,000,000 in total funding annually, which includes construction, engineering, and ROW costs. Projects are selected and scheduled based primarily on the condition of the culvert (risk of failure), Road Tier, traffic volume, depth of fill, and detour length (potential impact of failure). The Program funding is fully committed for at least the next three years. These culverts were selected for the program based on road Tier, traffic volume, and structural condition/risk of failure, as follows:

Location 1: If the structural deficiency at the 30” cmp outlet is not addressed, further deterioration of the outlet will eventually lead to a sinkhole and failure of the steep embankment. Most of the existing 30” cmp still has a circular cross section making it a good candidate for sliplining. Delaying treatment of this pipe risks further deterioration and deformation that will result in the need for a full replacement with much larger impacts to traffic, utilities, and other resources.

Location 2: The 18” cmp was not found by survey or field investigation, but is shown on as-built plans. Long term sediment accumulation in the upstream and downstream wetlands is the likely cause of the pipe ends being buried. Hydraulic analysis indicates that although there is significant storage at the inlet and no history of flooding, abandoning the crossing would risk flooding of upstream property in extreme runoff events.

Location 3: Failure to address the structural deficiency of the 43” wide x 27” tall cmp could lead to collapse of the culvert which would cause serious impacts to public/private infrastructure and the travelling public.

This project is within the limits of the upcoming Loudon 29613C project involving phase 3 of the NH 106 widening. The current AD date for 29613C is October 6, 2026, with construction expected in 2027 and/or 2028.

Delaying the work proposed under the 44011 project (for at least 4 -5 years) risks failure of the 43" x 27" arch culvert, upstream flooding at the 18" cmp crossing, and further deterioration of the 30" cmp which might make rehabilitation impractical.

The pipe rehabilitation and replacement work proposed under the 44011 project will not restrict alternatives that might be considered for the 29613C widening, which is expected to be similar to previous phases. The likely alternative for 29613C is widening of the existing pavement from the current 44' – 48' wide to 60' wide (five 12' lanes). Alignment and profile are expected to closely match existing. This concept has been considered in the design of each of the 44011 crossings. Runoff calculations and hydraulic analysis assumed that NH 106 will be widened to provide 60' of pavement (5 – 12' lanes) at some time in the future. No significant modifications to these crossings are expected under 29613C. No-build is still an option for 29613C, although unlikely.

Existing Conditions

The existing pipes were constructed in 1977, by Project P-1443. Current age of the pipes is 45 years. There are no known modifications since original construction. There is no history of flooding or damage associated with the 3 pipe crossings.

NH Route 106 is a Tier 2 roadway, a regionally significant arterial, with average daily traffic volumes of 12,174 veh/day (south of NH 129) and 14,925 (north of NH 129). NH Route 106 has varying embankment slopes, from very steep with guardrail to and flat, up to the ROW line (total ROW width is about 240') within the project limits. NH Route 106 is used heavily by commuter traffic to and from Concord and Laconia. Commercial traffic utilizes NH Route 106 for regional transport and to efficiently serve local residential and commercial customers.

Location 1 is a 30" corrugated metal pipe (cmp) approximately 2,070' south of the NH 129 intersection. The pipe is 165' long with an 11% slope. The pipe connects a low area on the east side of NH 106 to a large wetland (PEM1E) on the west side. Depth of invert under the NH 106 pavement varies from 22' to 26', with a 12" high pressure gas main above the pipe on the inlet side. The inlet has a mortar rubble headwall and outlet is flush cut to the slope. A small wetland (PEM1E) was delineated at the pipe inlet. The outlet is at the bottom of a steep embankment and has about 1' of sediment build up in the end of the pipe with severe rust at the invert. The outlet invert is about 1.7' below the average wetland grade. The drainage area is 19.7 acres (LIDAR) which is equal to .031 Square Miles. The watershed is made up of a mix of woods, agricultural, and residential. The soils are mostly poorly drained east of NH 106, sandy well drained soils in the NH 106 ROW and to the west.

Location 2 is an existing 18" corrugated metal pipe located approximately 1,070' south of the NH 129 intersection (Location 2). As-Built plans from 1977 indicated that the pipe was constructed. Estimated length is about 164', at 0% assumed slope. The pipe connects large delineated wetlands at the inlet and outlet (PEM1E/SS1E, PEM1E). Estimated depth of invert under the NH 106 pavement varies from 13' to 15', with a 12" high pressure gas main below the pipe on the inlet side. The drainage area is 66.3 acres (LIDAR) which is equal to .104 square miles. A mix of woods, agricultural, and residential uses makeup the drainage area. The area is primarily made up of poorly drained soils east of NH 106 with sandy well drained soils in the NH 106 ROW and to the west.

Location 3 is an existing 43" wide x 27" high cmp. The crossing is located approximately 2,880' north of the NH 129 intersection. The pipe is 91.5' long with a 1.3% slope. The pipe connects a small wetland (PEM1E) on the west side of NH 106 to a large wetland (PEM1E) on the east side. Depth of invert under the NH 106 pavement varies from 7.5' to 8.8'. Inlet and outlet inverts are 9" to 18" below the average channel grade. The pipe has heavy rust and severe corrosion along the bottom of the pipe. There are no end sections or headwalls. A 12" high pressure gas main is present at the outlet but, outside the limits of work.

The drainage area is mostly woods, with some residential and one commercial property. The area is primarily made up of sandy well drained soils.

Natural and Cultural Resources

Threatened and Endangered Species:

Federal or State listed endangered or threatened species in the project area: the Northern Long Eared Bat and Monarch Butterfly. USFWS has verified that this project may rely on the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat. The project has a may affect - likely to adversely affect determination for NLEB due to tree clearing and no further consultation is needed. No time of year restrictions on clearing are proposed.

The Natural Heritage Bureau data check:

The Natural Heritage Bureau data check identified records of Blanding's turtle, Wood turtle, and Bridle shiner. The proposed project was reviewed by Kevin Newton of NHFG, and formal consultation was completed under Fis 1004. The project should ensure that all operators and personnel working on or entering the site shall be made aware of the potential presence of Blanding's and Wood turtles and shall be provided flyers that help to identify these species, along with NHFG contact information. Rare species information (e.g. identification, observation and reporting of observations, when to contact NHFG immediately and NHFG contact information) shall be communicated during morning tailgate meetings. All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multi-filament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches. All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation. Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG, if any, to assure the project does not appreciably jeopardize the continued existence of threatened and endangered species as defined in Fis 1002.04. And The NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

NH Fish & Game Coordination:

The proposed project was reviewed by Kevin Newton of NHFG, and formal consultation was completed under Fis 1004. NHFG recommendations are included above and correspondence with NHFG regarding formal consultation is included elsewhere in the permit application package.

Wetlands:

Wetland resources present within the project area include palustrine, emergent, persistent, and palustrine, emergent, scrub-shrub wetlands. All impacts to wetlands have been minimized to the maximum extent practicable. Small permanent impacts to the Palustrine emergent wetlands at each Location are proposed. A functional assessment of these wetlands is not included due to the minimal amount of proposed permanent impacts. The proposed permanent impacts would not have any effect on the wetlands' functions or values. The proposed permanent impacts would eliminate perching of the pipes and preserve or restore connectivity as well as improve wildlife passage capabilities.

Cultural Resources:

The proposed work was reviewed by the Department's Cultural Resources Program and was found to be consistent with the Section 106 Programmatic Agreement (Section 106 PA) among the FHWA, the New Hampshire State Historic Preservation Office, the Advisory Council on Historic Preservation and the Department. As such, the proposed work has been determined to have no potential to cause effects to historical resources under Appendix B of the Section 106 PA.

Water Quality:

The level of disturbance meets the Bureau of Alteration of terrain (AOT) threshold of greater than 2,500 SF disturbance within 50' of a surface water, however, the project is consistent with the AOT Permit-by-Rule. The project does not propose to increase the amount of impervious surface. It is anticipated that the project will not result in a negative impact on water quality in the project area and therefore, no permanent stormwater treatment is proposed. Best Management practices will be utilized to prevent and reduce the likelihood of erosion or sediment entering the wetlands system. See the included erosion control plans for more details regarding BMPs.

Prime Wetlands, Designated Rivers, and Shoreland Water Quality Protection Act:

There are no prime wetlands in the vicinity of the project area and the project is not located within the protected corridor of any designated rivers. The project is not located near any waterbodies protected by the NH Shoreland Water Quality Protection Act.

Floodplains:

The project area is not within a FEMA mapped floodplain.

Invasive Species: Populations of Type I invasive species are present within the project area. Oriental Bittersweet (*Celastrus orbiculatus*) and Japanese Honeysuckle (*Lonicera japonica*). Determination of invasive species was performed in a field review on October 20, 2022. The Contractor will be required to perform all work activities in accordance with the Department publication "Best Management Practices for the Control of Invasive and Noxious Plant Species" in order to prevent the spread of invasive species to the site during construction.

Contamination:

No point source or PFAS concerns were identified with the proposed project. Limited Reuse Soils (LRS) excavated from within the operational State right-of-way shall be addressed in accordance with applicable NHDES rules, waivers, and/or Soils Management Plans.

Wildlife Action Plan:

Supporting landscape for wildlife corridors exists within the project area but not at the immediate culvert locations. The proposed 36" RCP was upsized from original design (30" RCP) to accommodate an improvement to Blanding's turtle passage. Additionally, the proposed 24" plastic pipe at Location 2 was upsized from the minimum design (18" diameter) to help accommodate aquatic wildlife passage, and to preserve hydraulic capacity in the event of future sediment accumulation inside the pipe.

Conservation Lands: No conservation lands were identified in the project impact area.

NHDES Aquatic Restoration Mapper:

There were no records for the 3 locations included in the project.

Conservation Commission: The Town of Loudon Conservation Commission was contacted via letter on October 11, 2022, requesting information about the project area and feedback on the proposed work. To date, no response has been received.

Hydrology / Hydraulics, General

Note that LIDAR and NHDOT Survey from Summer of 2022 are both referenced to the NAVD88 vertical datum. No elevation adjustments were necessary.

Hydraulic modelling for all culverts (and alternatives) was performed using FHWA's HY-8 Culvert analysis Program. The HY-8 modelling includes tailwater effects from the wetlands at the outlets. A high tailwater condition was used to determine capacity and low tailwater condition for outlet velocity.

Where the SCS Method was used to model runoff, Cornell rainfall data was used for 24 hour rainfall depth. Where storage at a pipe inlet is significant (Location 2 only), Hydrodadd was used to model headwater elevations.

Hydraulic design criteria include passing Q50 with acceptable headwater elevation and checking Q100 for potential flooding or damage to public or private infrastructure. Outlet velocity and the need for scour protection and energy dissipation are also considered.

Location 1 Hydrology / Hydraulics:

Drainage Area 19.7 acres (LIDAR) = 0.031 SqMi The SCS method was used for runoff calculations.
Design Flows (cfs) Q2 = 5.3 Q10 = 13.6 Q50 = 28.5 Q100 = 37.6

The bypass point is about 400' north of the existing 30" cmp inlet at EL 386.9. At that elevation water will flow along the east side of NH 106 inside the tree line toward East Cooper St. Max headwater depth at inlet at bypass elevation is about 7'. NH 106 low edge of pavement is about EL 395. Overtopping is not expected for any scenario.

For a 30" pipe, design headwater for Q50 is 2 times the pipe diameter ($HW/D = 2$) = 5' = EL 384.84. Q100 check elevation is 386.9 for bypass.

The high tailwater elevation was determined from lidar contours. The max tailwater was determined to be the elevation at which the downstream wetland would bypass its storage, EL 368.5. Low tailwater elevation was the average wetland elevation at the pipe outlet based on LIDAR contours EL 363.5.

Analysis results for existing condition and alternatives are as follows:

	Q100 Headwater Elevation	Q50 Headwater Elevation	Q50 Velocity (ft/s)	Q2 Velocity (ft/s)
Existing 30" cmp 165 LF x 11% slope	383.66	382.71 HW/D=1.15	14.1	8.7
Polymer Coated 24" CMP Liner	386.73	384.34 HW/D=2.2	19.1	11.9
Solid Wall HDPE 24" OD Liner (22.5" ID)	386.96 1.6 cfs bypass	384.77 HW/D=2.6	25.7	16.8
Cured in Place Liner	384.05	382.94 HW/D=1.27	19.0	11.7

Location 1 Alternatives and Proposed Design:

Replacement is not considered feasible due to the depth under the pavement and associated impacts to traffic, utilities, and other resources. Sliplining is the preferred treatment.

Video inspection of the existing 30" cmp found a localized deformation on the top inside of the pipe. Due to the relatively small pipe size, repairing the deformation is not considered practical. The maximum pipe liner size expected to fit is 24". Corrugated metal and smooth plastic pipe liners were considered, as well as a cured in place liner.

The 24" corrugated metal pipe liner is the preferred option and proposed design. The cured in place liner performs slightly better, but prices for this treatment have been excessively high recently and the deformed area might cause excessive stress in the liner (structural design of cured in place liners typically assumes the host pipe has a consistent cross section). Pipe liners also provide the benefit of automatically filling voids around the existing pipe during the process of grouting the annular space.

The outlet will remain below the average wetland grade. It is not practical to dredge the outlet as the large wetland extends well outside ROW. A small stone apron is proposed for energy dissipation and to provide a fixed area for future maintenance.

The proposed design will maintain existing flows at acceptable headwater elevation. There will be no effect on upstream or downstream flooding and no change to the functions and values of the downstream wetland. The small wetland at the pipe inlet will be restored to existing grade.

No impact to invasive species is anticipated at Location 1.

Any LRS that is disturbed can be reused in the same location. No stockpiling or moving off-site is anticipated.

Location 2 Hydrology / Hydraulics:

Drainage Area 66.3 acres (LIDAR) = 0.104 SqMi The SCS method was used for runoff calculations.

Design Flows (cfs) Q2 = 14.4 Q10 = 37.4 Q50 = 78.4 Q100 = 103.6

Note that these flows are incoming runoff to the large wetland storage area, not the flows that need to pass through the pipe.

Pipe data was estimated from the 1977 P-1443 as-built plans, field review, and the as-built plans from the gas line installation.

The bypass point is about 590' southwest of the existing 18" cmp inlet, at EL 386.5. At that elevation water will flow south along the east side of NH 106 toward the Location 1 30" cmp. Note that water level equal to the bypass elevation would flood East Cooper St and the adjacent residential property. Bypass is not expected for any scenario.

The lowest edge of NH 106 pavement is EL 387.9. The low point on East Cooper St is approximately EL 383.5. Overtopping is not expected for any scenario.

For an 18" pipe, design headwater for Q50 is 2 times the pipe diameter ($HW/D = 2$) = 3' = EL 379.5. Q100 check elevations are EL 381 (gravel drive behind house on north side of East Cooper St) and EL 383 (house on north side of East Cooper St). Desirable max headwater depth at inlet = 4.5' (EL 381).

The high tailwater case was set at EL 381 (equal to the maximum desirable upstream headwater elevation). Tailwater elevation higher than 381 would cause flow to back up and flood the East Cooper St development regardless of the NH 106 pipe size. Low tailwater elevation was the average outlet side wetland elevation based on LIDAR contours EL 378.5.

Analysis results for existing condition and proposed design are as follows:

	Q100 Headwater Elevation	Q50 Headwater Elevation	Q50 Velocity (ft/s)	Q2 Velocity (ft/s)
Existing 18" cmp 164.3 LF x 0% slope Pipe not found by survey Length from as-built plans Estimated inverts	381.63	381.19 HW/D=3.13	3.3	1.7
Proposed Replacement 24" Plastic 133 LF x 0% slope Total Length including end sections = 140 LF	381.29	381.07 HW/D=1.29	5.2	2.8

Q50 outflow through the existing 18" pipe is 1.74 cfs vs 3.5 cfs for the proposed 24" pipe. Existing 50-year storage in the upstream wetland is about 14.3 acre-ft vs 13.6 ac-ft for the proposed 24" pipe with higher inverts. Q50 incoming runoff is about 15 ac-ft.

Note that Q50 headwater elevations are predicted to be higher than the max desirable elevation 381. Risk of damage to a gravel driveway is minimal for a short period of ponded water. Q50 and Q100 elevations are below the upstream structure elevation (EL 383) and the low point on E. Cooper St (EL 383.5). As there is no flood history at this location and the proposed design has more capacity than the existing pipe, headwater elevations are considered acceptable.

Q50 design headwater depth for the new 24" pipe is 4' (HW/D = 2) = EL 382.5

The predicted flowrate and velocity increases are not significant enough to cause flooding, scour or other adverse effects on the downstream wetland.

Location 2 Alternatives and Proposed Design:

Abandoning the existing pipe was not recommended due to the close proximity to a residence and the elevation of their driveway and house foundation. Sliplining or replacement in-kind is not recommended as the current pipe is well below ground/water level. It is not practical to dredge the inlet or outlet, due to the large wetlands that extend well outside ROW.

The proposed replacement would be in the same location, but at higher elevation, with inverts approximately equal to the existing wetland elevations. Higher elevation shortens pipe from 164 LF to 133 LF. Total length of new crossing including end sections is 140 LF. Upsizing to 24" is preferred, as some future sediment accumulation is expected, and the larger size will provide some additional open area and higher openness ratio which should benefit for AOP/ wildlife crossings.

Plastic pipe is preferred in cases where the pipe will be frequently submerged and where velocities are low. End sections are proposed at both ends of the new pipe. Small permanent impacts (about 10' long x 3' to 6' wide) are proposed in order to match the new pipe end sections to the existing ground such that there is a smooth transition and no perch. Change in grade within the match areas is less than 6".

The proposed design will maintain existing flows at acceptable headwater elevation. There will be no significant effect on upstream or downstream flooding and no change to the functions and values of the adjacent wetlands.

No impact to invasive species is anticipated at Location 2.

Any LRS that is disturbed can be reused in the same location. No stockpiling or moving off-site is anticipated.

Location 3 Hydrology / Hydraulics:

Outlet bypass at EL 372 towards 36" rcp to the North. Inlet bypass over drive at sta 276 Rt EL 368.

Drainage Area 95.87 acres (LIDAR) = 0.15 SqMi SCS Method predicted very low flows, likely due to sandy well drained soils in the area. Streamstats and Regression methods predicted higher flows. Design flows selected are similar to Streamstats.

Design Flows (cfs) Q2 = 5 Q10 = 15 Q50 = 25 Q100 = 30

The inlet side bypass would occur at EL 372, flowing north along the edge of NH 106 to the next crossing, a 36" rcp. NH 106 low edge of pavement is about EL 372.9. Overtopping is not expected for any scenario. Max headwater depth at inlet at bypass elevation is about 7.2'.

For the 27" high arch pipe, design headwater for Q50 is 2 times the pipe diameter (HW/D = 2) = 4.5' = EL 369.28. Q100 check elevation is 372 for bypass.

The high tailwater elevation was determined from LIDAR contours for the downstream wetland, where bypass would occur over the driveway to the south (EL 368). Low tailwater elevation was the average downstream wetland elevation based on LIDAR contours EL 365.

Analysis results for existing condition and proposed design are as follows:

	Q100 Headwater Elevation	Q50 Headwater Elevation	Q50 Velocity (ft/s)	Q2 Velocity (ft/s)
Existing 43"x27" cmp 91.5 LF x 1.3% slope	369.69	369.17 HW/D=3.13	5.4	1.1
Proposed Replacement 36" RCP 92 LF x .36% slope	368.49	368.34 HW/D=1.34	6.5	2.4

Q50 design headwater depth for the new 36" pipe is 4.5' (HW/D = 1.5) = EL 368.83

The predicted velocity increase is not significant enough to cause scour or other adverse effects on the downstream wetland.

Location 3 Alternatives and Proposed Design:

Replacement is preferred due to the relatively shallow depth and minimal associated impacts. Replace in kind (with corrugated metal pipe) was not considered due to frequent/prolonged standing water expected in the pipe. Concrete pipe is preferred under major roads with relatively low cover.

A Hydraulically sized replacement was considered (a 30" concrete pipe). This size resulted in a slightly reduced openness ratio (pipe area / length). NH Fish & Game requested upsizing to promote turtle passage.

The proposed design is upsizing to a 36" concrete pipe, same location and similar length and invert elevations.

Proposed inverts will still be 6" to 12" below existing average channel grade. It is not practical to dredge the outlet channel due to the large downstream wetland. Short channel matches will be constructed so there is no perch or barrier after construction. Areas below average channel grade are expected to accumulate sediment naturally.

The proposed design will maintain existing flows at acceptable headwater elevation. There will be no effect on upstream or downstream flooding and no change to the functions and values of the adjacent wetlands.

No impact to invasive species is anticipated at Location 3.

Any LRS that is disturbed can be reused in the same location. No stockpiling or moving off-site is anticipated.

Construction and access considerations

The project advertising date is May 23, 2023. Construction is expected to begin in September 2023 and be substantially complete before winter. Total duration of construction is estimated at 2 months.

Location 1

Access to the culvert inlet and outlet will be from the edges of NH Route 106. Existing guardrail will need to be removed to access the outlet and will be replaced at the end of each workday. Inlet side slopes are relatively flat (4:1) maintained grass so no special access concerns are expected. Where necessary and as directed by the NHDOT Engineer, stone over geotextile or other temporary stabilization methods will be used for stabilized construction entrances and to avoid excessive rutting and potential erosion of the roadway embankment.

Minimal clearing of trees greater than 3" dbh will be required. Approximately 260 SF of clearing at the inlet is estimated for small trees and brush to allow room to insert the liner pipe. At the outlet it is estimated that 125 SF of clearing will be needed for small trees and brush to allow room for erosion controls. No grubbing / removal of stumps is anticipated. The vegetation will be allowed to reestablish naturally. Any disturbed jurisdictional areas will be stabilized using wetland seed mix, mulch, and wildlife friendly temporary erosion control matting (where slopes are steeper than 4:1).

Total disturbed area estimate (Inlet + Outlet) = 11,325 SF

The existing culvert does not typically carry flow during dry periods. Storm runoff can be allowed to flow through or be pumped through the existing pipe for most of the project duration and during storm events. In most cases, pipe liners can be installed and grouted with a small amount of flow in the culvert.

If dewatering is necessary at the outlet, dewatering discharge will be pumped to dewatering bags at a sufficient distance away from delineated wetlands, or to another approved outlet location with appropriate sedimentation control/BMP'S.

The Contractor's water diversion plan will address specific means and methods for managing water.

Location 2

Access to the culvert inlet and outlet will be from the edges of NH Route 106. Inlet and outlet slopes are relatively flat (4:1) maintained grass so no special access concerns are expected. Where necessary and as directed by the NHDOT Engineer, stone over geotextile or other temporary stabilization methods will be used for stabilized construction entrances and to avoid excessive rutting and potential erosion of the roadway embankment.

Minimal clearing of trees greater than 3" dbh will be required for small sandbag/waterbag cofferdams and erosion controls at the pipe ends. Approximately 105 SF of clearing at the inlet is estimated for small trees and brush. At the outlet it is estimated that 305 SF of clearing will be needed for small trees and brush. No grubbing / removal of stumps is anticipated. The vegetation will be allowed to reestablish naturally. Any disturbed jurisdictional areas above water level will be stabilized using wetland seed mix, mulch, and wildlife friendly temporary erosion control matting (where slopes are steeper than 4:1).

Total disturbed area estimate (Inlet + Outlet + Pavement patch) = 12,535 SF

The existing 18" pipe ends are typically submerged by ponded water in the adjacent wetlands. A formal water diversion is not expected to be needed as proposed work can be scheduled for short periods of 2 -3 days with no significant rainfall in the forecast. Pipe ends will need to be isolated with sandbags, water bags, or other approved method. Dewatering discharge will be pumped to dewatering bags at a sufficient distance away from delineated wetlands, or to another approved outlet location with appropriate sedimentation control/BMP'S.

The inlet storage area has the capacity to hold the 2-year storm (2.78" of rain in 24 hours) with no outlet and no significant risk of flooding NH 106 or adjacent developed areas. Predicted peak elevation for the 2-year storm is EL 379.38 with a non-functional pipe. This is about 1.6' below the upstream gravel drive and about 3.6' below the upstream house.

Installation of the proposed 24" is expected to be above surface water and groundwater levels.

The Contractor's water diversion plan will address specific means and methods for managing water.

Location 3

Access to the culvert inlet and outlet will be from the edges of NH Route 106. Inlet and Outlet slopes are relatively flat (4:1) maintained grass so no special access concerns are expected. Where necessary and as directed by the NHDOT Engineer, stone over geotextile or other temporary stabilization methods will be used for stabilized construction entrances and to avoid excessive rutting and potential erosion of the roadway embankment.

No clearing at the inlet or outlet is anticipated. The vegetation will be allowed to reestablish naturally. Any disturbed jurisdictional areas will be stabilized using wetland seed mix, mulch, and wildlife friendly temporary erosion control matting (where slopes are steeper than 4:1).

Total disturbed area estimate (Inlet + Outlet + Pavement patch) = 22,305 SF

A formal water diversion is not expected to be needed as proposed work can be scheduled for short periods of 2-3 days with no significant rainfall in the forecast. Clean water bypass shall be through the existing and/or new pipe, unless otherwise approved. Proposed 36" rcp is expected to be installed ½ at a time. If necessary, a temporary connection can be made between the partially installed new pipe and the existing pipe.

If dewatering is at the pipe ends is necessary, dewatering discharge will be pumped to dewatering bags at a sufficient distance away from delineated wetlands, or to another approved outlet location with appropriate sedimentation control/BMP'S.

The Contractor's water diversion plan will address specific means and methods for managing water.

Summary

The project purpose and need is to replace or rehabilitate three culverts under NH Route 106. The existing culverts are all corrugated metal, constructed in 1977, with varying amounts of deterioration / deficiencies. The intent is to restore functionality of the crossings while meeting current hydraulic design standards, minimizing impacts to resources to the maximum extent practical, and maintaining or improving opportunity for wildlife passage.

Pavement will be replaced in-kind with the appropriate cross slope and matches. No new impervious surfaces are proposed.

Total disturbed for the three locations combined is estimated at 46,200 SF (1.06 acres).

The current construction cost estimate for all three locations combined is \$550,000.

**BUREAU OF ENVIRONMENT
CONFERENCE REPORT**

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting

DATE OF CONFERENCE: December 21, 2022

LOCATION OF CONFERENCE: Virtual meeting held via Zoom

ATTENDED BY:

NHDOT

Matt Urban
Andrew O’Sullivan
Jon Evans
Joshua Brown
Mark Hemmerlein
Kerry Ryan
Marc Laurin
Rebecca Martin
Dillan Schmidt
Chris Carucci
Kirk Mudgett
Melilotus Dube
Corey Spetelunas
Margarete Baldwin
Arin Mills
Samantha Fifield
Hans Weber
David Scott
Trent Zanes
Timothy Dunn
Anthony Puntin
Kerry Ryan
Rhona Thompson
Leah Savage
Think Tran
Dzijeme Ntumi

ACOE

Mike Hicks

USCG

Gary Croot

EPA

Absent

NHDES

Karl Benedict
Eben Lewis
Christian Williams

NHB

Ashley Litwinenko

NH Fish & Game

Mike Dionne
Kevin Newton

Federal Highway

Jamie Sikora

US Fish & Wildlife

Absent

The Nature Conservancy

Absent

**NH Transportation &
Wildlife Workgroup**

Absent

**Consultants/ Public
Participants**

David Munro
Andrew Judd
Kevin Slattery
Roch Laroche
Keith Cota
Audrey Beaulac
Jim Bouchard
Sam Cheney
Dawn Tuomala
Kyle Fox

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH: *(minutes on subsequent pages)*

Table of Contents:

Finalize Meeting Minutes.....2
Loudon, 44011 (X-A005(284)):2
Warner-Sutton, 15747 (X-A000(942)):5
Wolfeboro, 2022-M311-1:5
Andover, 20650 (X-A002(084)):6
Hampton – NH Route 1A (Ocean Boulevard), #40797 (X-A001(026)):7
Merrimack, 29174/41588 (Non-Fed):8

Finalize Meeting Minutes

Finalized and approved the November 16, 2022 meeting minutes.

Loudon, 44011 (X-A005(284)):

Dillan Schmidt discussed the overall project location, culvert locations, and existing culvert dimensions. Dillan proceeded to discuss the identified environmental resources within the project area and a brief update on status of coordination and field work. Dillan discussed the potential wildlife corridors within the project area as shown on the wildlife corridor map.

Chris Carucci began his presentation discussing the project location in greater detail, providing information on the culvert conditions and ages, roadway condition and classification, and traffic counts. Chris described why the proposed culverts have been selected for the culvert program including road tier, traffic volume, and structural condition, as well as the risk of failure.

Location One:

Chris provided an overview of location one, including culvert location, dimensions, slope, depth, drainage area, and the potential bypass path. Chris continues to discuss location one, including the outlet condition and the depth of the outlet under wetland grade and the existing sedimentation at the outlet end of the pipe. Chris continues to show photos of the location one area, including the inlet area and the associated wetland, the inlet pipe with stone headwall, the interior of the pipe, large wetland behind outlet, and the outlet pipe with sediment and severe erosion at the outlet. A profile view is shown of the location one pipe, with bypass elevations plotted. The high-pressure gas line is shown on the profile, Chris indicated that the dent in the pipe limit the liner size. Chris then continues to discuss the alternatives for location one including the no build option, the replacement option, noting that either would not be feasible due to the pipe deterioration and the risk of a sinkhole at the outlet as well as the depth under the pavement and associated impacts to traffic, utilities, and other resources. Sliplining is the preferred treatment, all sliplining options assume sliplining the full length of the existing culvert and constructing a stone apron at the outlet. Chris indicates that the 24" metal liner is the preferred option. Chris then moves on to discuss preliminary wetland impacts, displaying the delineated wetland and the proposed temporary impacts at the inlet, as well as the proposed access, clearing, and permanent and temporary impacts at the outlet. Chris indicates that LRS generated would be spread on slopes and within the ROW.

Location Two:

Chris begins discussing the 18" CMP at location two, indicating that the pipe connects two wetlands and that we have not been able to locate this pipe through field reviews however we know it is there due to archived plans and a model indicating likely flooding to an upstream property in the absence of the pipe. Chris displays a street view image of the pipe location in the roadway, assuming its 1-2 feet below the ponded or wetland elevation. Chris then displays a profile view, discussing the existing and proposed replacement. Chris indicated that sliplining would not be practical as we would not want to leave the pipe below wetland elevation and the preferred alternative for location two would be replacement with a 24" plastic pipe at a higher

elevation, noting the higher elevation would shorten the overall length of the pipe. Night work would be conducted to avoid significant traffic disruptions. Chris indicated that the smooth plastic pipe is preferred in wetland settings where velocity is low, and pipes tend to be submerged. Chris continues to discuss proposed wetland impacts, stating that due to the proposed pipe being above wetland grade, there would be no permanent impacts. There would be temporary impacts on the inlet and outlet sides due to erosion control and cofferdams, noting that the wetlands are seasonally flooded and may be storing water at the time of construction.

Location Three:

Chris begins discussing the 43x27" CMP at location three, indicating that the pipe connects two wetlands. There are no headwalls or end treatments on the existing pipe, gas line is present, no history of flooding or damage. Chris displays site photos, including the pipe location on the roadway, the inlet, inside the pipe showing missing inverts, outlet and sedimentation inside the pipe. Chris displays the profile view, discussing bypass elevations, desirable headwater ratio, depth of excavation, the lack of practicality with dredging the outlet, and that the new pipe would naturally accumulate sediment over time. A 30" RCP was originally proposed; however, Chris indicates that with a proposed 36" RCP, the increased openness ratio would be a benefit to turtle passage. Night work would be conducted to avoid significant traffic disruptions. Chris then discussed proposed temporary and permanent impacts at the inlet and outlet needed for erosion control and channel match.

Summary:

Chris provides a brief summary of the overall project including the proposed advertisement date of May 23, 2023 and a proposed construction timeframe of two months, beginning in September of 2023. Chris indicated that all work would be within the existing ROW, no anticipated impacts to invasive plant species, LRS would be managed under the department's de minimis stipulations, night work would be required to accommodate alternating two-way traffic. The estimated disturbed area is 1.03 acres, estimated permanent impacts are 355 SF, estimated temporary impacts are 4,981 SF, combined total and temporary impacts are 5,336 SF.

Chris then opens the discussion for comments and questions from the various agency attendees.

Q/A:

Karl Benedict NHDES: Karl starts with location three: looks good, no comments. Location two: comments include potential elevation difference for the pipes, commenting on requirements to not impact adjacent properties. Please include something in application to address this. Looks like you have addressed the potential for perch being that the elevation is raised there and is noting turtles in the area, indicating that a closer look may be conducted there.

Location one: at the outlet location, wetland labeled as PEM1EI would like to dig into that wetland classification a bit more, it definitely looks emergent, as far as impacts there, appears most significant throughout project. Looking to see about potential excavation, looks pretty marshy down there. My comment would be if there is any potential to reduce impacts there. Wondering how much maintenance is required there, especially if the guardrail is being removed

for access. Commenting on that one potential impact and the need for scour protection. It appears that this would be for maintenance in the future.

Chris Carucci, NHDOT: Based on the 11% slope and calculated velocities, we would normally have outlet protection. The reason it's probably holding sediment now is that there probably has not been a 50 year or a 100-year storm recently here so the sediment tends to build up, but we could get a higher-level storm at some point. Calculations are showing outlet velocity of 19.1 ft/sec and based on that and the slope, a stone apron seemed wise just to make sure that it didn't scour the bottom of this slope in some large storm event. It's a side benefit to have a delineated area for NHDOT future maintenance such as if we needed to wash this pipe out, with a stone apron, it wouldn't be a wetland impact. Whereas if we wanted to go down and clean this out today, it would be a wetland impact.

Andrew O'Sullivan, NHDOT: Chris, you probably incorporated that as a BMP as well too, like something we would use when we look at routine roadway maintenance and other items like that.

Chris Carucci, NHDOT: Theoretically anything that has a 20 ft/sec outlet velocity or about that would usually get some stone.

Andrew O'Sullivan, NHDOT: Okay

Karl Benedict, NHDES: Thanks for running through that, and the velocities too. It seems reasonable commenting on the potential minimization, but it seems that you've covered that pretty reasonably. Obviously, this is not a pipe that we can bring out of there at all. I think I will defer comments from here the only remaining one would be clarification of wetland classifications; do we have streams running through here? WPPT looks like there are maybe shows some drainage areas, I know you have summarized the areas, but maybe classifications and what I'm getting at is addressing the 900 rules if needed on this. I would like to dig into that a little more.

Andrew O'Sullivan, NHDOT: Karl, we identified as a pipe connecting wetlands on both sides, so we stayed out of the 900 rules specifically based on our field observations.

Karl Benedict, NHDES: Thanks for covering that, I would agree. Past that, I would defer our comments so thank you.

Mike Dionne, NHFG: Good project overall, I don't have many concerns the only note I made is.. (Before Mike gave his comments, Kevin Newton, NHFG let Mike know that NHFG has reviewed this project with NHDOT through FIS 1004 and that he just wanted to let Mike know before he gave his comments) I was just going to echo at location 2, just be mindful of the inlet and outlet elevations for terrestrial passage.

Andrew O'Sullivan, NHDOT: Mike Hicks (ACOE) is not here today, I don't see Jamie (FHWA),

Gary Croot, USCG: No navigable water impacts so the coast guard does not have any jurisdiction here.

Warner-Sutton, 15747 (X-A000(942)):**Wolfeboro, 2022-M311-1:**

Arin introduced the Wolfeboro culvert replacement project #2022-M311-1 as a state funded and executed project along NH 109A in Wolfeboro. The project will replace two failing 24" Corrugated Metal Pipes (CMPs) and one 15" CMP. The project is in the headwaters of Harvey Brook, although field delineation determined no stream crossing at the project location. The water flows easterly and eventually forms Harvey Brook, flowing under NH 109/28 and enter Lake Wentworth approx. 6.8 miles downstream. The 24' pipes are functioning as equalizer pipes and the wetland complex, at the inlet of the 24" pipes, is not connected to the wetland that inlets into the 15" pipe, a narrow rise of land is between the systems and an aerial image including topography was shown. The project is in a rural residential area with no conservation lands adjacent. Photos were shown of the project location.

Sam provided a project overview to include the replacement of two 24" CMPs with two 30" reinforced concrete pipes (RCPs) and one 15" CMP with one 15" RCP in the same location as existing. The pipes shall be nearly the same length as existing. The replacement could have been completed under the Culvert Maintainer program, had it not been for the temporary impacts to prime wetlands adjacent to the crossings. Sam showed wetland impact plans to include a total of 389 sf of temporary wetland impacts to PSS1/EM1H. Sam described the 24" pipe impacts were connected as the work is in very close proximity and will be done at the same time. Concrete pipes will be installed as the pipes are submerged in water, and at the time of previous emergency permit concrete was not available. Arin mentioned 366 sf of impacts are within prime wetland, as the inlet of the 15" CMP is outside prime wetland designation.

A brief construction sequence was described by Sam as installation of temporary erosion control measures of perimeter controls, sandbag cofferdams and sediment basins. Traffic along the roadway will be maintained using single lane alternating two-way traffic patterns while the culverts are removed and replaced, one side at a time. Once all three pipes have been replaced, permanent erosion control measures will be placed, the roadway will be re-built, temporary erosion control measures will be removed, and the site will be cleaned up.

Arin described the results of the environmental review to include the drainage area, as at initial review it was anticipated the project would include stream impacts. A field review determined no stream resources are present in the project area. A previous emergency permit (2009-00649) replaced previous failing metal pipes with new metal pipes. NWI map was shown, with delineation determining PSS1/EM1H within project area. Natural Heritage Bureau review NHB22-3079 determined no known occurrences of rare species. Predicted Priority Resource Areas (PRA) predicted bog, although no bog was determined present based on field survey. The project will be classified as Major due to temporary impacts to Prime wetlands. A functions and values assessment was completed and determined the following principal functions/values: Wildlife, Nutrient Removal, Sediment/Toxicant Retention and Uniqueness (Prime). No permanent impacts to the functions and values are anticipated as all impacts are temporary and in same footprint as the existing pipes, and the 24" pipes will be up sized to 30". The Aquatic

Restoration Mapper was shown with full aquatic organism passage and wetland geomorphic compatibility. Habitat ranking shows no priority habitat or wildlife corridor in project area. The crossing is adjacent to a 100-year FEMA floodplain. US Fish & Wildlife coordination predicted Northern long-eared bat and no impacts are predicted. Arin acknowledged the recent up-listing of the bat and said consultation would be completed, although 4(d) concurrence was reached currently. Section 106 for historic resources has no concerns.

Karl Benedict acknowledged no impacts to functions and values, replacement in-kind and agency coordination. He asked about coordination with local Conservation Commission (CC). Arin said a letter was sent to Wolfeboro's CC and no response has been received. She also mentioned following up with a phone call, where she left a message, and has yet to receive a return phone call from the CC.

Michael Dionne, Kevin Newton, Gary Croot, and Jamie Sikora had no comment.

Mike Hicks commented to ensure endangered species and Section 106 review is complete and included in the application.

Andover, 20650 (X-A002(084)):

Hans Weber presented the project, the replacements of the NH Route 11 bridge over the Northern Rail Trail (the former Boston & Maine Railroad's Northern Railroad), and the NH Route 11 concrete arch culvert that spans Sucker Brook. He briefly discussed the alternatives considered. A Northern Alternative that shifted NH Route 11 to the north would require replacement of both bridges, would require a temporary bridge over Sucker Brook, would have greater costs, construction time and wetland impacts, and was considered less desirable.

The Proposed Action (the Southern Alternative) would shift the NH Route 11 alignment to the southeast and would replace the NH 11 Rail Trail bridge and the Sucker Brook culvert by constructing one bridge that would span both the Rail Trail and Sucker Brook. A Public Hearing is anticipated to be held in July 2023.

Approximately 7,500 square feet of permanent impacts to wetlands would occur, mainly due to the shift of the roadway to the southeast. Due to the removal of the concrete arch culvert, temporary impacts to 150 linear feet of Sucker Brook is anticipated. The project would regrade the slopes to match the surrounding area and original topography, these restored banks may need to be armored. The natural streambed spanned by the culvert would remain and may need to be augmented with simulated streambed material along the re-graded slopes. The shift of the alignment would permanently impact about 100 feet of an intermittent stream located near a field drive west of the rail trail bridge would be culverted under the new NH 11 alignment.

The new NH 11 alignment would consist of 11 foot travel ways with 5 foot shoulders, resulting in about 3,000 square feet of additional pavement. A proposed grass treatment swale, to be located west of the bridge between the old roadway and the new alignment, would treat 6,000 square feet of roadway.

An acoustic survey was completed and did not identify the presence of the Federally Endangered Northern Long-eared Bat, as such, a determination of “Not Likely to Adversely Affect” has been made. The potential for the presence of Small Whorled Pogonia, as noted on the USFWS’s IPaC Species List, was reviewed with the NH Natural Heritage Bureau’s layer package for the species and was not identified as occurring within the project area. No State-listed species were identified in the NHB database search.

Karl Benedict asked that the stream restoration be separated from the roadway impacts. If the impacts would be greater than 5,000 square feet a planting plan may be required be developed. The plantings should match the upstream conditions. A restoration plan for the bed should match the existing bed. He asked about the intermittent stream impact. Hans replied that the design would address Tier 1 requirements.

Mike Hicks had no comments.

Jamie Sikora noted that this project was similar to the Danbury project, which is also replacing a rail trail bridge, and would require a full blown Section 4(f) evaluation and coordination on the trail and the historic impacts. Hans replied that DOT has been coordinating with the Friends of the Northern Rail Trail and the Bureau of Trails, and will continue coordination with NHDHR on the historic impacts and mitigation.

Gary Croot stated that a navigational determination by the USCG has not yet been made for Sucker Brook, but it would likely not be a concern.

Hampton – NH Route 1A (Ocean Boulevard), #40797 (X-A001(026)):

Provided below is a summary of the Hampton 40797 NH Route 1A, Ocean Boulevard Natural Resource Agency Coordination Meeting #1. The meeting was held virtually via NHDOT Zoom conferencing.

Ms. Beaulac opened the presentation of the project by presenting the slide deck to the meeting participants, touching on the project limits and corridor segments, purpose and need, and project goals and objectives. Ms. Beaulac then handed over the presentation to Mr. Slattery who reviewed resources found to be in the area and summarized the resource work on the project performed to date. Mr. Slattery indicated the research done to date is preliminary and field research is still to be performed. Ms. Beaulac continued by reviewing the conceptual alternatives for the roadway corridor segments and the intersections being evaluated, the project design schedule and next steps.

Karl Benedict, NHDES, deferred to the coastal professionals (Mr. Lewis and Mr. Williams) for their comments.

Eben Lewis, NHDES NH Coastal Program, informed the design team the coastal wetlands along the backside of NH Route 1A is town designated Prime Wetland which is associated with a 100’ buffer. Mr. Lewis also noted Shoreland Protection Act compliance will be required and to consider the need for a vulnerability assessment for sea level rise. He added by saying the project will likely be considered a Major Impact Project and will require a wetland and coastal

functional assessment. Mr. O'Sullivan asked if the shoreland buffer from the ocean and the salt marsh would overlap. Mr. Lewis indicated they would.

Chris Williams, NHDES NH Coastal Program, indicated he had no significant concerns at this time. He asked if there would be a climate change/resiliency/sea level rise portion to this project, and that would need to be part of the vulnerability assessment. Ms. Beaulac and Mr. Cota indicated the focus of the project is pedestrian, bicycle and traffic management and that sea level rise was not a major project component. They noted improvements will look to manage the impacts for sea level rise and profile adjustments would be made where feasible and practicable within the project limits. Mr. Slattery noted that the project's stormwater management evaluation would also consider the resiliency.

Mike Dionne, NHFG, noted any work within wetlands would require further future review.

Kevin Newton, NHFG, indicated he would be interested in more information about equipment staging areas and time of year for work, and a schedule as the project progresses.

Mike Hicks, USACE, asked if there was a schedule for the project yet. Ms. Beaulac indicated a draft schedule was recently sent to NHDOT. Mr. Hicks noted he would follow up with NHDOT for the schedule.

Jamie Sikora, FHWA, asked for confirmation that the seawall would not be impacted and noted if it was to be impacted to make sure there was coordination with FHWA. Mr. Cota indicated that the current project design objective is to hold the curb line along the easterly sidewalk adjacent to the seawall while maintaining the existing seawalls.

Gary Croot, USCG, indicated he had no issues as the Hampton Bridge at the southern project limits is not impacted by this project.

Ashley Litwienenko, NHB, asked for confirmation there were no impacts to the salt marsh system. Mr. Slattery noted there could be impacts due to the stormwater review and proposed BMPs that may require impacts to outfalls located within the salt marsh system. Mr. Cota added there may also be impacts to the salt marsh system along the Ocean Boulevard roadway segment adjacent to Boar's Head near the back salt marsh encroachment. Ms. Litwienenko asked the design team to provide information as to extent of impacts to NHB including project photos when available.

Mr. O'Sullivan asked if there were any further items for discussion and hearing none closed this project's portion of the Natural Resource Agency Coordination meeting.

Merrimack, 29174/41588 (Non-Fed): No Minutes Submitted



AVOIDANCE AND MINIMIZATION CHECKLIST

Water Division/Land Resources Management Wetlands Bureau



[Check the Status of your Application](#)

RSA/Rule: RSA 482-A/ Env-Wt 311.07(c)

This checklist can be used in lieu of the written narrative required by Env-Wt 311.07(a) to demonstrate compliance with requirements for Avoidance and Minimization (A/M), pursuant to RSA 482-A:1 and Env-Wt 311.07(c).

For the construction or modification of non-tidal shoreline structures over areas of surface waters without wetland vegetation, complete only Sections 1, 2, and 4 (or the applicable sections in [Attachment A: Minor and Major Projects \(NHDES-W-06-013\)](#)).

The following definitions and abbreviations apply to this worksheet:

- “A/M BMPs” stands for [Wetlands Best Management Practice Techniques for Avoidance and Minimization](#) dated 2019, published by the New England Interstate Water Pollution Control Commission (Env-Wt 102.18).
- “Practicable” means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes (Env-Wt 103.62).

SECTION 1 - CONTACT/LOCATION INFORMATION		
APPLICANT LAST NAME, FIRST NAME, M.I.: NH Dept. of Transportation		
PROJECT STREET ADDRESS: NH Route 106, in the vicinity of NH 129	PROJECT TOWN: Loudon	
TAX MAP/LOT NUMBER: N/A - NH Route 106 ROW		
SECTION 2 - PRIMARY PURPOSE OF THE PROJECT		
Env-Wt 311.07(b)(1)	Indicate whether the primary purpose of the project is to construct a water-access structure or requires access through wetlands to reach a buildable lot or the buildable portion thereof.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>If you answered “no” to this question, describe the purpose of the “non-access” project type you have proposed:</p> <p>To repalce or rehabilitate three culverts under NH Route 106. The existing culverts are all corrugated metal, constructed in 1977, with varying amounts of deterioration / deficiencies. The intent is to restore functionality of the crossings while meeting current hydraulic design standards and minimizing impacts to resources to the maximum extent practical.</p>		

irm@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

SECTION 3 - A/M PROJECT DESIGN TECHNIQUES		
Check the appropriate boxes below in order to demonstrate that these items have been considered in the planning of the project. Use N/A (not applicable) for each technique that is not applicable to your project.		
Env-Wt 311.07(b)(2)	For any project that proposes new permanent impacts of more than one acre or that proposes new permanent impacts to a Priority Resource Area (PRA), or both, whether any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 311.07(b)(3)	Whether alternative designs or techniques, such as different layouts, construction sequencing, or alternative technologies could be used to avoid impacts to jurisdictional areas or their functions and values.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(1) Env-Wt 311.10(c)(2)	The results of the functional assessment required by Env-Wt 311.03(b)(10) were used to select the location and design for the proposed project that has the least impact to wetland functions.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(3)	Where impacts to wetland functions are unavoidable, the proposed impacts are limited to the wetlands with the least valuable functions on the site while avoiding and minimizing impacts to the wetlands with the highest and most valuable functions.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.01(c)(1) Env-Wt 313.01(c)(2) Env-Wt 313.03(b)(1)	No practicable alternative would reduce adverse impact on the area and environments under the department's jurisdiction and the project will not cause random or unnecessary destruction of wetlands.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 313.01(c)(3)	The project would not cause or contribute to the significant degradation of waters of the state or the loss of any PRAs.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 313.03(b)(3) Env-Wt 904.07(c)(8)	The project maintains hydrologic connectivity between adjacent wetlands or stream systems.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 311.10 A/M BMPs	Buildings and/or access are positioned away from high function wetlands or surface waters to avoid impact.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 311.10 A/M BMPs	The project clusters structures to avoid wetland impacts.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 311.10 A/M BMPs	The placement of roads and utility corridors avoids wetlands and their associated streams.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
A/M BMPs	The width of access roads or driveways is reduced to avoid and minimize impacts. Pullouts are incorporated in the design as needed.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
A/M BMPs	The project proposes bridges or spans instead of roads/driveways/trails with culverts.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A

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A/M BMPs	The project is designed to minimize the number and size of crossings, and crossings cross wetlands and/or streams at the narrowest point.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 500 Env-Wt 600 Env-Wt 900	Wetland and stream crossings include features that accommodate aquatic organism and wildlife passage.	<input checked="" type="checkbox"/> Check <input type="checkbox"/> N/A
Env-Wt 900	Stream crossings are sized to address hydraulic capacity and geomorphic compatibility.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
A/M BMPs	Disturbed areas are used for crossings wherever practicable, including existing roadways, paths, or trails upgraded with new culverts or bridges.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
SECTION 4 - NON-TIDAL SHORELINE STRUCTURES		
Env-Wt 313.03(c)(1)	The non-tidal shoreline structure has been designed to use the minimum construction surface area over surfaces waters necessary to meet the stated purpose of the structure.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.03(c)(2)	The type of construction proposed for the non-tidal shoreline structure is the least intrusive upon the public trust that will ensure safe navigation and docking on the frontage.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.03(c)(3)	The non-tidal shoreline structure has been designed to avoid and minimize impacts on the ability of abutting owners to use and enjoy their properties.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.03(c)(4)	The non-tidal shoreline structure has been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.03(c)(5)	The non-tidal shoreline structure has been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A
Env-Wt 313.03(c)(6)	The non-tidal shoreline structure has been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.	<input type="checkbox"/> Check <input checked="" type="checkbox"/> N/A

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.

To: Dillan Schmidt, NHDOT
7 Hazen Drive
Concord, NH 03301

From: NHB Review, NH Natural Heritage Bureau

Date: 9/28/2022 (valid until 09/28/2023)

Re: Review by NH Natural Heritage Bureau

Permits: NHDES - Wetland Standard Dredge & Fill - Major, USCEQ - Federal: NEPA Review

NHB ID: NHB22-3104 Town: Loudon Location: State Right-of-Way
Description: The proposed project would consist of the rehabilitation or replacement of three (3) corrugated metal pipes (CMPs) along NH Route 106 (approximately 2,100’ south to 2,900’ north of NH 129). Incidental work may include guardrail repairs, terminal upgrades, or full guardrail replacements within the project limits.
Two of the three CMP’s to be replaced are anticipated to be slip lined (18” and 30” CMP’s). The third CMP is to be replaced (43x27” CMP). It is anticipated that all work would remain within the State’s ROW and there would be no anticipated changes to the roadway, pavement, or drainage patterns.

cc: NHFG Review

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments **NHB: No comments at this time.**
 F&G: Please refer to NHFG consultation requirements below.

Vertebrate species	State¹	Federal	Notes
Blanding's Turtle (<i>Emydoidea blandingii</i>)	E	--	Contact the NH Fish & Game Dept (see below).
Bridle Shiner (<i>Notropis bifrenatus</i>)	T	--	Contact the NH Fish & Game Dept (see below).
Wood Turtle (<i>Glyptemys insculpta</i>)	SC	--	Contact the NH Fish & Game Dept (see below).

¹Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

For all animal reviews, refer to 'IMPORTANT: NHFG Consultation' section below.

Memo

NH Natural Heritage Bureau NHB DataCheck Results Letter

Please note: portions of this document are confidential.

Maps and NHB record pages are confidential and should be redacted from public documents.

Disclaimer: A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

IMPORTANT: NHFG Consultation

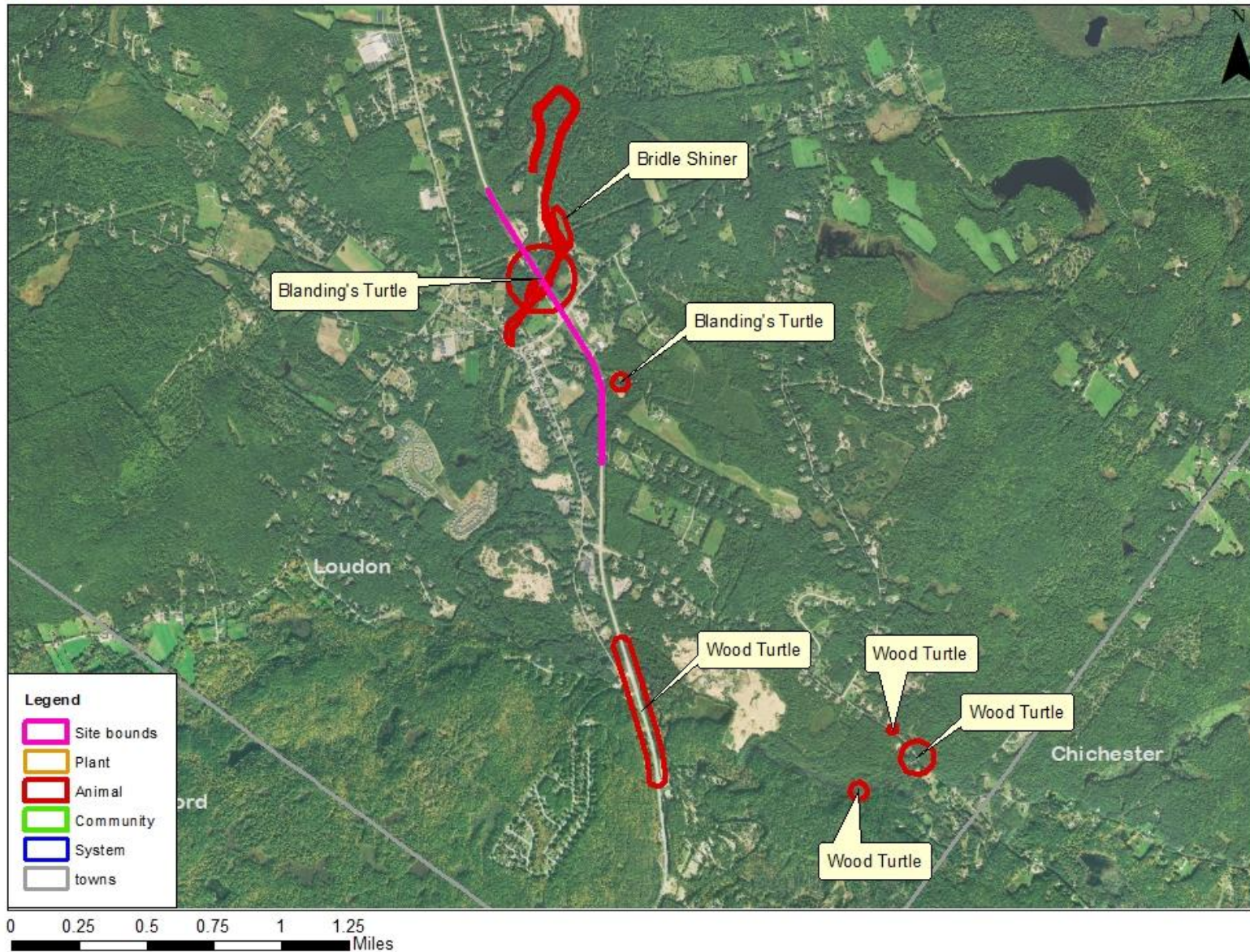
If this NHB Datacheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB Datacheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to <https://wildlife.state.nh.us/wildlife/environmental-review.html>. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB Datacheck results letter number and “Fis 1004 consultation request” in the subject line.**

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule*), coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email: Kim Tuttle kim.tuttle@wildlife.nh.gov with a copy to NHFGreview@wildlife.nh.gov, and include the NHB Datacheck results letter number and “review request” in the email subject line.

Contact NH Fish & Game at (603) 271-0467 with questions.

NHB22-3104



New Hampshire Natural Heritage Bureau - Animal Record

Bridle Shiner (*Notropis bifrenatus*)

Legal Status

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Rare or uncommon
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank: --

Detailed Description: 2009: Area 12427: Occupied habitat. No details. 2005: Area 12427: 80 observed, age and sex unknown. 2000: Area 849: 1 observed, age and sex unknown.

General Area: 2009: Area 12427: Occupied habitat throughout impounded reach. 2005: Area 12427: Freshwater stream or river. 2000: Area 849: Freshwater stream or river.

General Comments: 2009: Area 12427: Most of Soucook mainstem surveyed. Far less suitable habitat than previously thought. Only two confirmed occupied reaches. 2000: Area 568: One bridled shiner sampled by electrofishing by DES at index site 150 meters long.

Management Comments: --

Location

Survey Site Name: Shaker Brook
Managed By:

County: Merrimack

Town(s): Loudon

Size: 18.2 acres

Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2005: Area 12427: Soucook River bridge crossing near the intersection of Rte 129 and 106. 2000: Area 849: Shaker Brook at DES Station 00M-7.

Dates documented

First reported: 2000-07-11

Last reported: 2009

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

From: Newton, Kevin
Sent: Tuesday, November 29, 2022 2:03 PM
To: Schmidt, Dillan
Cc: FGC: NHFG review
Subject: NHB22-3104 NHDOT Loudon 44011, NH Route 106, Loudon, NHDES Wetland Standard Dredge and Fill NHFG signoff
Attachments: [Wood Turtle Flyer_2022.pdf](#); [Spotted_Blandings Flyer_2022.pdf](#)

Dillan,

New Hampshire Fish and Game has completed our review of materials submitted for consultation on November 18, 2022 for NHB22-3104, NHDOT Loudon 44011 project, prepared by New Hampshire Department of Transportation. The proposed project is the rehabilitation or replacement of three (3) corrugated metal pipes located along NH Route 106 in Loudon, NH.

Applications associated with this review:

- NHDES -Wetland Standard Dredge & Fill - Standard

The NHB data check letter NHB22-3104 identifies Bridle Shiner (State threatened) within the vicinity of the project area. Based on the information received, the New Hampshire Fish and Game Nongame and Endangered Wildlife program does not anticipate impacts to Bridle Shiner resulting from this project.

New Hampshire Fish and Game Permit Conditions in accordance with Env-Wq 1503.33 – Wildlife Protection Notes:

- Blanding's turtle (State endangered) occur within the vicinity of the project area. All operators and personnel working on or entering the site shall be made aware of the potential presence of these species and shall be provided flyers that help to identify these species, along with NHFG contact information. Rare species information (e.g. identification, observation and reporting of observations, when to contact NHFG immediately and NHFG contact information) shall be communicated during morning tailgate meetings.
- Turtles may be attracted to disturbed ground during nesting season (May 15th – June 30th). All turtle species nests are protected by NH laws. If a nest is observed or suspected, operators shall contact Melissa Winters (603-479-1129) or Josh Megyesy (978-578-0802) at NHFG immediately for further consultation.
- Site contractor(s) shall walk any areas before driving vehicles into areas with exposed soils that will experience truck traffic or equipment staging to look for signs of turtle activity during the turtle nesting season.
- All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multi-filament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches;
- All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation;

- Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible;
- In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG, if any, to assure the project does not appreciably jeopardize the continued existence of threatened and endangered species as defined in Fis 1002.04; and
- The NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

Additional Recommendations

- Wood turtles (State species of special concern) occur within the vicinity of the project area. Site operators should be informed of the potential presence of this species and should be provided flyers that help to identify this species along with NHFG contact information should they be encountered during project activities.

Thank you and please let me know if you have any questions.

Kevin Newton
Wildlife Biologist
NH Fish and Game Department
Wildlife Division
11 Hazen Drive, Concord NH 03301
Phone: 603-271- 5860

As of February 3, 2022, New Hampshire Fish and Game requirements for environmental review consultation have changed. To review the new rules, please go to [Proposed Rules | Legislative | New Hampshire Fish and Game Department \(state.nh.us\)](#). All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail. **The NHB datacheck results letter number needs to be included in the email subject line.**

The requirements for consultation (Fis 1004) shall not apply to the following: statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule. Review requests for these projects can be sent directly to kim.tuttle@wildlife.nh.gov.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087

<https://www.fws.gov/office/new-england-ecological-services>

November 22, 2022

Dillan Schmidt
Bureau of Environment
NH Department of Transportation
7 Hazen Drive, P.O. Box 483
Concord, New Hampshire 03302-0483

Re: Project 44011 – Rehabilitate and/or Replace Corrugated Pipe, Route 106, Loudon, NH
(Project code: 2023-0011990)

Dear Dillan Schmidt:

The U.S. Fish and Wildlife Service (Service) is responding to your request, dated November 4, 2022, to verify that the New Hampshire Department of Transportation (NHDOT) Project 44011, Rehabilitation and/or Replacement of Corrugated Pipe, Route 106, Loudon, New Hampshire (Project), may rely on the revised February 5, 2018, Programmatic Biological Opinion (BO) for federally funded or approved transportation projects that may affect the northern long-eared bat (*Myotis septentrionalis*) (NLEB). We received your request and the associated LAA Consistency Letter on November 4, 2022 via electronic transmission. This letter provides the Service's response as to whether the Federal Highway Administration may rely on the BO to comply with section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; U.S.C. 1531 *et seq.*) for the Project's effects to the NLEB.

NHDOT, as the non-Federal agency representative for the Federal Transportation Agency, has determined that the Project may affect, and is likely to adversely affect the NLEB. The work consists of the rehabilitation and/or replacement of corrugated pipe. The Project will include approximately 0.02 acre of tree clearing (within active and/or inactive seasons), all of which will be within 100 feet of the road surface.

NHDOT also determined the Project may rely on the programmatic BO to comply with section 7(a)(2) of the ESA, because the Project meets the conditions outlined in the BO and all tree clearing related to the proposed work will occur farther than 0.25 mile from documented roosts and farther than 0.5 mile from any known hibernacula. The Service reviewed the LAA Consistency Letter and concurs with NHDOT's determination. This concurrence concludes your ESA section 7 responsibilities relative to this species for this Project, subject to the Reinitiation Notice below.

Conclusion

The Service has reviewed the effects of the proposed Project, which include NHDOT's commitment to implement the impact avoidance, minimization, and compensation measures as indicated on the LAA Consistency Letter. We confirm that the proposed Project's effects are consistent with those analyzed in the BO. The Service has determined that the Project is consistent with the BO's conservation measures, and the scope of the program analyzed in the BO is not likely to jeopardize the continued existence of the NLEB. In coordination with your agency, the Federal Highway Administration, and the other sponsoring Federal Transportation Agencies, the Service will reevaluate this conclusion annually in light of any new pertinent information under the adaptive management provisions of the BO.

Incidental Take of the Northern Long-eared Bat

The Service anticipates that tree removal associated with the proposed Project will cause incidental take of the NLEB. However, the Project is consistent with the BO, and such projects will not cause take of NLEBs that is prohibited under the final 4(d) rule for this species (50 CFR §17.40(o)). Therefore, this taking does not require exemption from the Service.

Reporting Dead or Injured Bats

NHDOT, the Federal Highway Administration, its State/local cooperators, and any contractors must take care when handling dead or injured NLEBs that are found at the project site, in order to preserve biological material in the best possible condition and to protect the handler from exposure to diseases, such as rabies. Project personnel are responsible for ensuring that any evidence about determining the cause of death or injury is not unnecessarily disturbed. Reporting the discovery of dead or injured listed species is required in all cases to enable the Service to determine whether the level of incidental take exempted by this BO is exceeded, and to ensure that the terms and conditions are appropriate and effective. Parties finding a dead, injured, or sick specimen of any endangered or threatened species must promptly notify the Service's New England Field Office.

Reinitiation Notice

This letter concludes consultation for the proposed Project, which qualifies for inclusion in the BO issued to the Federal Transportation Agencies. To maintain this inclusion, a reinitiation of this project-level consultation is required where the Federal Highway Administration's discretionary involvement or control over the Project has been retained (or is authorized by law) and if:

1. new information reveals that the Project may affect listed species or critical habitat in a manner or to an extent not considered in the BO;
2. the Project is subsequently modified in a manner that causes an effect to listed species or designated critical habitat not considered in the BO; or
3. a new species is listed or critical habitat designated that the Project may affect.

Dillan Schmidt
November 22, 2022

3

In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease, pending reinitiation.

We appreciate your continued efforts to ensure that this Project is fully consistent with all applicable provisions of the BO. If you have any questions regarding our response, or if you need additional information, please contact Maria Tur of this office at 603-568-4871.

Sincerely yours,

Molly Sperduto
Acting Supervisor
New England Field Office

cc: Reading file
Dillan Schmidt via email dillan.c.schmidt@dot.nh.gov
ES: MTur:jd:11-22-22:603-568-4871



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To:
Project code: 2023-0011990
Project Name: NHDOT Loudon 44011; X-A005(284)

November 04, 2022

Subject: Consistency letter for the 'NHDOT Loudon 44011; X-A005(284)' project under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated November 04, 2022 to verify that the **NHDOT Loudon 44011; X-A005(284)** (Proposed Action) may rely on the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, and is likely to adversely affect the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*). Consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) is required.

This "may affect - likely to adversely affect" determination becomes effective when the lead Federal action agency or designated non-federal representative requests the Service rely on the PBO to satisfy the agency's consultation requirements for this project. Please provide this consistency letter to the lead Federal action agency or its designated non-federal representative for review, and as the agency deems appropriate, transmit to this Service Office for verification that the project is consistent with the PBO.

This Service Office will respond by letter to the requesting Federal action agency or designated non-federal representative within 30 calendar days after receiving request for verification to:

- verify that the Proposed Action is consistent with the scope of actions covered under the PBO;
- verify that all applicable avoidance, minimization, and compensation measures are included in the action proposal;
- identify any action-specific monitoring and reporting requirements, consistent with the monitoring and reporting requirements of the PBO, and
- identify anticipated incidental take.

ESA Section 7 compliance for this Proposed Action is not complete until the Federal action agency or its designated non-federal representative receives a verification letter from the Service.

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or Northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessments failed to detect Indiana bats, but you later detect bats prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action may affect any other federally-listed or proposed species and/or designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please advise the lead Federal action agency accordingly.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate
-

Project Description

The following project name and description was collected in IPaC as part of the endangered species review process.

Name

NHDOT Loudon 44011; X-A005(284)

Description

The proposed project would consist of the rehabilitation or replacement of three (3) corrugated metal pipes (CMPs) along NH Route 106 (approximately 2,100' south to 2,900' north of NH 129). Incidental work may include guardrail repairs, terminal upgrades, or full guardrail replacements within the project limits.

Two of the three CMP's to be replaced are anticipated to be slip lined (18" and 30" CMP's). The third CMP is to be replaced (43x27" CMP). There would be no anticipated changes to the roadway, pavement, or drainage patterns.

Determination Key Result

Based on your answers provided, this project is likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat. Therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the conclusion and Incidental Take Statement provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

Qualification Interview

1. Is the project within the range of the Indiana bat^[1]?

[1] See [Indiana bat species profile](#)

Automatically answered

No

2. Is the project within the range of the Northern long-eared bat^[1]?

[1] See [Northern long-eared bat species profile](#)

Automatically answered

Yes

3. Which Federal Agency is the lead for the action?

A) *Federal Highway Administration (FHWA)*

4. Are *all* project activities limited to non-construction^[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

[1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces^[1]?

[1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum^[1]?

[1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

No

7. Is the project located **within** a karst area?

No

8. Is there *any* suitable^[1] summer habitat for Indiana Bat or NLEB **within** the project action area^[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the [User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat](#).

Yes

9. Will the project remove *any* suitable summer habitat^[1] and/or remove/trim any existing trees **within** suitable summer habitat?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?

No

11. Have presence/probable absence (P/A) summer surveys^{[1][2]} been conducted^{[3][4]} **within** the suitable habitat located within your project action area?

[1] See the Service's [summer survey guidance](#) for our current definitions of suitable habitat.

[2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

[3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

[4] Negative presence/probable absence survey results obtained using the [summer survey guidance](#) are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

No

12. Does the project include activities **within documented NLEB habitat**^{[1][2]}?

[1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry triangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

[2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

No

13. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

Yes

14. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

C) During both the active and inactive seasons

15. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

Yes

16. Will **more than** 10 trees be removed **between** 0-100 feet of the road/rail surface *during* the active season^[1]?

[1] Areas containing more than 10 trees will be assessed by the local Service Field Office on a case-by-case basis with the project proponent.

No

17. Has a visual emergence survey^[1] been conducted?

[1] Refer to the [summer survey guidance](#)

No

18. Do you plan on conducting a visual emergence survey prior to removing trees^[1]?

[1] If bats are detected during a visual emergence survey conducted in suitable but **undocumented** Indiana and/or NLEB habitat, this consultation will no longer be valid and a new consultation will be conducted through IPaC with the habitat now considered as **documented** Indiana and/or NLEB habitat.

No

19. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

No

20. Are *all* trees that are being removed clearly demarcated?

Yes

21. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?
No
22. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?
No
23. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?
No
24. Does the project include slash pile burning?
No
25. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?
No
26. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)
No
27. Will the project involve the use of **temporary** lighting *during* the active season?
Yes
28. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting will be used?
Yes
29. Will the project install new or replace existing **permanent** lighting?
No
30. Does the project include percussives or other activities (**not including tree removal/trimming or bridge/structure work**) that will increase noise levels above existing traffic/background levels?
Yes
31. Will the activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

32. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season^[1]?

[1] Coordinate with the local Service Field Office for appropriate dates.

Yes

33. Are *all* project activities that are **not associated with** habitat removal, tree removal/trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

Examples: lining roadways, unlighted signage , rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

Yes

34. Will the project raise the road profile **above the tree canopy**?

No

35. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the active season within undocumented habitat.

36. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) and/or increase noise levels above existing traffic/background levels consistent with a No Effect determination in this key?

Automatically answered

Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the inactive season

37. Is the habitat removal portion of this project consistent with a Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because tree removal that occurs within the NLEB's active season occurs greater than 0.5 miles from the nearest hibernaculum, is less than 100 feet from the existing road/rail surface, and is not in documented NLEB roosting/foraging habitat or travel corridors, and a visual emergence survey has not been conducted

38. Is the habitat removal portion of this project consistent with a Not Likely to Adversely Affect determination in this key?

Automatically answered

Yes, because the tree removal/trimming that occurs outside of the NLEB's active season occurs greater than 0.5 miles from the nearest hibernaculum, is less than 100 feet from the existing road/rail surface, includes clear demarcation of the trees that are to be removed, and does not alter documented roosts and/or surrounding summer habitat within 0.25 miles of a documented roost.

39. **General AMM 1**

Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

Yes

40. **Tree Removal AMM 1**

Can *all* phases/aspects of the project (e.g., temporary work areas, alignments) be modified, to the extent practicable, to avoid tree removal^[1] in excess of what is required to implement the project safely?

Note: Tree Removal AMM 1 is a minimization measure, the full implementation of which may not always be practicable. Projects may still be NLAA as long as Tree Removal AMMs 2, 3, and 4 are implemented and LAA as long as Tree Removal AMMs 3, 5, 6, and 7 are implemented.

[1] The word "trees" as used in the AMMs refers to trees that are suitable habitat for each species within their range. See the USFWS' current summer survey guidance for our latest definitions of suitable habitat.

Yes

41. **Tree Removal AMM 3**

Can tree removal be limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits)?

Yes

42. **Lighting AMM 1**

Will *all* **temporary** lighting be directed away from suitable habitat during the active season?

Yes

43. For Indiana bat, if applicable, compensatory mitigation measures are required to offset adverse effects on the species (see Section 2.10 of the BA). Please select the mechanism in which compensatory mitigation will be implemented:

6. *Not Applicable*

Project Questionnaire

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

Yes

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

No

3. How many acres^[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

[1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

0.018

4. **Please verify:**

All tree removal will occur greater than 0.5 mile from any hibernaculum.

Yes, I verify that all tree removal will occur greater than 0.5 miles from any hibernaculum.

5. Is the project location 0-100 feet from the edge of existing road/rail surface?

Yes

6. Is the project location 100-300 feet from the edge of existing road/rail surface?

No

7. **Please verify:**

No documented NLEB roosts or surrounding summer habitat within 150 feet of documented roosts will be impacted between June 1 and July 31.

Yes, I verify that no documented NLEB roosts or surrounding summer habitat within 150 feet of documented roosts will be impacted during this period.

8. You have indicated that the following Avoidance and Minimization Measures (AMMs) will be implemented as part of the proposed project:

- *Tree Removal AMM 1*
- *Lighting AMM 1*
- *Tree Removal AMM 3*
- *General AMM 1*

Avoidance And Minimization Measures (AMMs)

This determination key result includes the commitment to implement the following Avoidance and Minimization Measures (AMMs):

TREE REMOVAL AMM 1

Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to avoid tree removal.

LIGHTING AMM 1

Direct temporary lighting away from suitable habitat during the active season.

TREE REMOVAL AMM 3

Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

Determination Key Description: FHWA, FRA, FTA Programmatic Consultation For Transportation Projects Affecting NLEB Or Indiana Bat

This key was last updated in IPaC on October 11, 2022. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's [February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects](#). The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPaC User Contact Information

Agency: New Hampshire Department of Transportation
Name: Dillan Schmidt
Address: 7 Hazen Drive
City: Concord
State: NH
Zip: 03302
Email: dillan.c.schmidt@dot.nh.gov
Phone: 6032716799

Lead Agency Contact Information

Lead Agency: Federal Highway Administration

From: Schmidt, Dillan
Sent: Friday, November 4, 2022 10:24 AM
To: newengland@fws.gov
Subject: NHDOT Loudon, FHWA #X-A005(284), DOT #44011
Attachments: [Species List_ New England Ecological Services Field Office_44011.pdf](#); [LAA Consistency Letter_ FHWA_ FRA_ FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat 2022-11-04.pdf](#); [Loudon 44011 loc map.pdf](#); [44011_Topo24k.pdf](#)

Subject: Loudon, FHWA #X-A005(284), DOT #44011
FHWA, FRA, FTA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat
Project Code: 2023-0011990

Audrey Mayer, New England Field Office
70 Commercial St, Suite 300
Concord, NH 03301-5087

Dear Ms. Mayer,

Please find enclosed the LAA Consistency Letter: FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat generated through the Information for Planning and Consultation (IPaC) website regulatory review. NH DOT Project Loudon 44011 is a project to rehabilitate and/or replace three (3) corrugated metal pipes (CMP's) along NH Route 106 in the Town of Loudon, New Hampshire. The proposed project adheres to the criteria and conditions of the FHWA, FRA, FTA USFWS Range-wide Programmatic Consultation, as outlined in the biological assessment (BA) and biological opinion (BO).

The project will include 0.018 acres of active and inactive season tree clearing in the Town of Loudon. The proposed clearing is necessary for access to drainage work locations.

The Official Species List for the project area includes the Northern Long-eared Bat and the Monarch Butterfly.

The NH DOT has coordinated with New Hampshire Natural Heritage Bureau and the New Hampshire Fish and Game Nongame and Endangered Wildlife Program to ascertain that there are no known NLEB maternity roost trees or hibernacula in the project area or in the vicinity of the project. All project tree clearing will be within 300 feet of the road surface.

The IPaC FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat Determination Key was utilized to review the project area(s) and activities. The NH DOT has determined that the project may affect, is likely to adversely affect (LAA) the NLEB, as the project includes tree clearing that will be conducted during the NLEB active season in Loudon, NH. The DOT will employ appropriate Avoidance and Mitigation Measures as indicated in the LAA Consistency Letter for the project. We respectfully request your concurrence that the project may rely on the December 15, 2016 Programmatic Biological Opinion (BO) for federally funded or approved FHWA, FRA, FTA transportation projects that may affect the NLEB and with our LAA determination.

Please feel free to contact me with any questions or concerns about the project.

Sincerely,

Dillan Schmidt
Environmental Manager
NH DOT - Bureau of Environment
7 Hazen Drive, Concord, NH 03302
Ph: (603) 271-3226



Enclosures
Location maps
Official species list
Concurrence letter



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To:
Project Code: 2023-0011990
Project Name: NHDOT Loudon 44011; X-A005(284)

November 03, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the “**New England Field Office Endangered Species Project Review and Consultation**” website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

<https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review>

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat Update - Additionally, please note that on March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the Endangered Species Act. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing determination for the NLEB by November 2022 (Case 1:15-cv-00477, March 1, 2021). The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species. Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective (anticipated to occur by December 30, 2022). If your project may result in incidental take of NLEB after the new listing goes into effect this will first need to be addressed in an updated consultation that includes an Incidental Take Statement. If your project may require re-initiation of consultation, please contact our office for additional guidance.

Additional Info About Section 7 of the Act

Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/service/section-7-consultations>

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the

ESA. The species' occurrence on an official species list does not convey a requirement to consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

<https://www.fws.gov/program/migratory-bird-permit>

<https://www.fws.gov/library/collections/bald-and-golden-eagle-management>

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

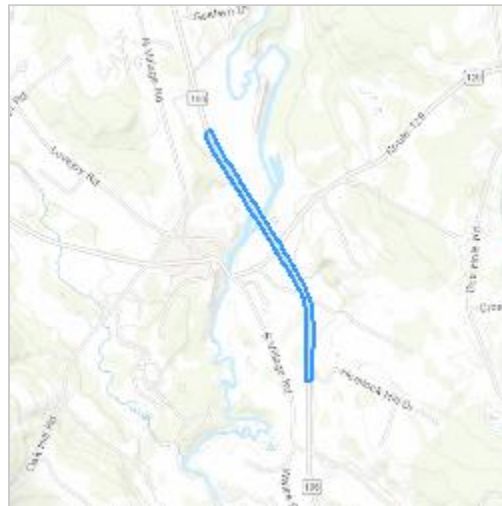
Project Summary

Project Code: 2023-0011990
Project Name: NHDOT Loudon 44011; X-A005(284)
Project Type: Culvert Repair/Replacement/Maintenance
Project Description: The proposed project would consist of the rehabilitation or replacement of three (3) corrugated metal pipes (CMPs) along NH Route 106 (approximately 2,100' south to 2,900' north of NH 129). Incidental work may include guardrail repairs, terminal upgrades, or full guardrail replacements within the project limits.

Two of the three CMP's to be replaced are anticipated to be slip lined (18" and 30" CMP's). The third CMP is to be replaced (43x27" CMP). There would be no anticipated changes to the roadway, pavement, or drainage patterns.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@43.28733215,-71.46380672220697,14z>



Counties: Merrimack County, New Hampshire

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPaC User Contact Information

Agency: New Hampshire Department of Transportation
Name: Dillan Schmidt
Address: 7 Hazen Drive
City: Concord
State: NH
Zip: 03302
Email: dillan.c.schmidt@dot.nh.gov
Phone: 6032716799

Lead Agency Contact Information

Lead Agency: Federal Highway Administration

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Date Reviewed: 7/27/2022
(Desktop or Field Review Date)

This Project uses only State funding; however project activities listed below comply with the PA.

Project Name: Loudon

State Number: 44011

FHWA Number: X-A005(284)

Environmental Contact: Dillan Schmidt

DOT

Email Address: Dillan.c.schmidt@dot.nh.gov

Project Manager: Kirk Mudgett

Project Description: The proposed project would consist of the rehabilitation or replacement of three (3) corrugated metal pipes (CMPs) along NH Route 106 (approximately 2,100’ south to 2,900’ north of NH Route 129). Incidental work may include guardrail repairs, terminal upgrades, or full guardrail replacements within the project limits. It is anticipated that all work would remain within the State’s ROW and there would be no anticipated changes to the roadway, pavement, or drainage patterns.

Please select the applicable activity/activities:

Highway and Roadway Improvements	
<input type="checkbox"/>	1. Modernization and general highway maintenance <u>that may require additional highway right-of-way or easement</u> , including:
<input checked="" type="checkbox"/>	2. Installation of rumble strips or rumble stripes
<input type="checkbox"/>	3. Installation or replacement of pole-mounted signs
<input checked="" type="checkbox"/>	4. Guardrail replacement, provided any extension does not connect to a bridge older than 50 years old (unless it does already), and there is no change in access associated with the extension
Bridge and Culvert Improvements	
<input checked="" type="checkbox"/>	5. Culvert replacement (excluding stone box culverts), when the culvert is less than 60" in diameter and excavation for replacement is limited to previously disturbed areas
<input type="checkbox"/>	6. Bridge deck preservation and replacement, as long as no character defining features are impacted
<input type="checkbox"/>	7. Non-historic bridge and culvert maintenance, renovation, or total replacement, <u>that may require minor additional right-of-way or easement</u> , including: Choose an item. Choose an item.
<input type="checkbox"/>	8. Historic bridge maintenance activities within the limits of existing right-of-way, including: Choose an item. Choose an item.
<input type="checkbox"/>	9. Stream and/or slope stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions)
Bicycle and Pedestrian Improvements	
<input type="checkbox"/>	10. Construction of pedestrian walkways, sidewalks, sidewalk tip-downs, small passenger shelters, and alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons
<input type="checkbox"/>	11. Installation of bicycle racks
<input type="checkbox"/>	12. Recreational trail construction
<input type="checkbox"/>	13. Recreational trail maintenance when done on existing alignment
<input type="checkbox"/>	14. Construction of bicycle lanes and shared use paths and facilities within the existing right-of-way
Railroad Improvements	

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

<input type="checkbox"/>	15. Modernization, maintenance, and safety improvements of railroad facilities within the existing railroad or highway right-of-way, provided no historic railroad features are impacted , including, but not limited to: Choose an item. Choose an item.
<input type="checkbox"/>	16. In-kind replacement of modern railroad features (i.e. those features that are less than 50 years old)
<input type="checkbox"/>	17. Modernization/modification of railroad/roadway crossings provided that all work is undertaken within the limits of the roadway structure (edge of roadway fill to edge of roadway fill) and no associated character defining features are impacted
Other Improvements	
<input type="checkbox"/>	18. Installation of Intelligent Transportation Systems
<input type="checkbox"/>	19. Acquisition or renewal of scenic, conservation, habitat, or other land preservation easements where no construction will occur
<input type="checkbox"/>	20. Rehabilitation or replacement of existing storm drains.
<input type="checkbox"/>	21. Maintenance of stormwater treatment features and related infrastructure

Please describe how this project is applicable under Appendix B of the Programmatic Agreement.

The proposed project was reviewed for impacts to historical, archaeological, and cultural resources by the NHDOT Bureau of Environment, Cultural Resource Program staff, Jillian Edelmann and Sheila Charles. The program identified potential concerns regarding the Soucook River Terraces and Tributaries archaeology site within the vicinity of the project area. After further review of the area of potential effect (APE) and areas to be disturbed, it was determined that the aforementioned archeology site would not be impacted by the proposed project. Additional proposed activities covered under Appendix A include pavement resurfacing, marking, and striping. The program does not have any additional concerns with the proposed action and therefore, it was determined that the proposed action would not have an adverse effect on historical, archaeological, or cultural resources within or adjacent to the proposed project area.

Please submit this Certification Form along with the Transportation RPR, including photographs, USGS maps, design plans and as-built plans, if available, for review. Note: The RPR can be waived for in-house projects, please consult Cultural Resources Program Staff.

Coordination Efforts:

Has an RPR been submitted to NHDOT for this project?	No	NHDHR R&C # assigned?	Click here to enter text.
Please identify public outreach effort contacts; method of outreach and date:	Contact letters were sent to the Loudon town officials on October 11, 2022.		

Finding: (To be filled out by NHDOT Cultural Resources Staff)

<input checked="" type="checkbox"/>	No Potential to Cause Effects	<input type="checkbox"/>	No Historic Properties Affected
This finding serves as the Section 106 Memorandum of Effect. No further coordination is necessary.			
<input type="checkbox"/>	This project does <i>not</i> comply with Appendix B. Review will continue under Stipulation VII of the Programmatic Agreement. Please contact NHDOT Cultural Resources Staff to determine next steps.		
NHDOT comments:			
<i>Sheila Charles</i>		1/3/2023	

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

NHDOT Cultural Resources Staff

Date

Coordination of the Section 106 process should begin as early as possible in the planning phase of the project (undertaking) so as not to cause a delay.

Project sponsors should not predetermine a Section 106 finding under the assumption a project is limited to the activities listed in Appendix B until this form is signed by the NHDOT Bureau of Environment Cultural Resources Program staff.

Every project shall be coordinated with, and reviewed by the NHDOT-BOE Cultural Resources Program in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the New Hampshire State Historic Preservation Office, the Army Corps of Engineers, New England District, the Advisory Council on Historic Preservation, and the New Hampshire Department of Transportation Regarding the Federal Aid Highway Program in New Hampshire*. In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

NHDOT and the State Historic Preservation Office may use provisions of the Programmatic Agreement to address the applicable requirements of NH RSA 227-C:9 in the location, identification, evaluation and management of historic resources, for projects funded by State funds.

If any portion of the project is not entirely limited to any one or a combination of the activities specified in Appendix B (with, or without the inclusion of any activities listed in Appendix A), please continue discussions with NHDOT Cultural Resources staff.

This No Potential to Cause Effect or No Historic Properties Affected project determination is your Section 106 finding, as defined in the Programmatic Agreement.

Should project plans change, please inform the NHDOT Cultural Resources staff in accordance with Stipulation VII of the Programmatic Agreement.



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**Appendix B
New Hampshire General Permits
Required Information and USACE Section 404 Checklist**

Required Information

In order for USACE to properly evaluate your application, applicants must submit the following information for all projects along with the NHDES Wetlands Bureau application or permit notification forms. Some projects may require more information. Check with USACE at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the NHDES Wetlands Bureau application and Permit by Notification forms.

- NHDES Wetlands Permit Application.
- Request for Project Review Form by the NH DHR: <https://www.nh.gov/nhdhr/review/rpr.htm>.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible plans no larger than 11"x17" with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show MLW and MHW elevations. Show the HTL elevations when fill is involved. In other waters, show the OHW elevation.
- On each plan, show the following for the project:
 - Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. In coastal waters this may be mean higher high water (MHHW), MHW, MLW, mean lower low water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983 - 2001.
 - Horizontal state plane coordinates in U.S. survey feet based on the Traverse Mercator Grid system for the State of New Hampshire (Zone 2800) NAD 83.
 - Project limits with existing and proposed conditions.
 - Limits of any FNP in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the FNP.
 - Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the OHW in inland waters and below the HTL in coastal waters.
 - Delineation of all waterways and wetlands on the project site.
- Use Federal delineation methods and include USACE wetland delineation data sheets (GC 2).
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact USACE for guidance.



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**Appendix B
New Hampshire General Permits
Required Information and USACE Section 404 Checklist**

USACE Section 404 Checklist

1. Attach any explanations to this checklist. Lack of information could delay a USACE permit determination.
2. All references to “work” include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See GC 3 for information on single and complete projects.
4. Contact USACE at (978) 318-8832 with any questions.
5. The information requested below is generally required in the NHDES Wetland Application. See page 61 for NHDES references and Admin Rules as they relate to the information below.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See the following to determine if there is an impaired water in the vicinity of your work area. * https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/ https://www.des.nh.gov/water/rivers-and-lakes/water-quality-assessment https://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx		X
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?		X
2.2 Are there proposed impacts to tidal SAS, prime wetlands, or priority resource areas? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www4.des.state.nh.us/NHB-DataCheck/ .		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	X	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		X
2.5 The overall project site is more than 40 acres?		X
2.6 What is the area of the previously filled wetlands?	Unknown	
2.7 What is the area of the proposed fill in wetlands?	None	
2.8 What % of the overall project site will be previously and proposed filled wetlands?	Unknown	
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www4.des.state.nh.us/NHB-DataCheck/ . USFWS IPAC website: https://ipac.ecosphere.fws.gov/	X	

3.2 Would work occur in any area identified as either “Highest Ranked Habitat in N.H.” or “Highest Ranked Habitat in Ecological Region”? (These areas are colored magenta and green, respectively, on NH Fish and Game’s map, “2010 Highest Ranked Wildlife Habitat by Ecological Condition.”) Map information can be found at: <ul style="list-style-type: none"> • PDF: https://wildlife.state.nh.us/wildlife/wap-high-rank.html. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html. 	X	
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 31?	N/A	
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		X
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the RPR Form (www.nh.gov/nhdhr/review) with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 37 GC 14(d) of the GP document**	X	
6. Minimal Impact Determination (for projects that exceed 1 acre of permanent impact)	Yes	No
Projects with greater than 1 acre of permanent impact must include the following: <ul style="list-style-type: none"> • Functional assessment for aquatic resources in the project area. • On and off-site alternative analysis. • Provide additional information and description for how the below criteria are met. 	N/A	
6.1 Will there be complete loss of aquatic resources on site?		
6.2 Have the impacts to the aquatic resources been avoided and minimized to the greatest extent practicable?		
6.3 Will all aquatic resource function be lost?		
6.4 Does the aquatic resource (s) have regional significance (watershed or ecoregion)?		
6.5 Is there an on-site alternative with less impact?		
6.6 Is there an off-site alternative with less impact?		
6.7 Will there be a loss to a resource dependent species?		
6.8 Are indirect impacts greater than 1 acre within and adjacent to the project area?		
6.9 Does the proposed mitigation replace aquatic resource function for direct, indirect, and cumulative impacts?		

*Although this checklist utilizes state information, its submittal to USACE is a federal requirement.

** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

Supplemental Information:

2.6 The amount of previously filled wetlands is unknown. The proposed work will occur within the existing ROW of NH Route 106, a roadway corridor last reconstructed in 1980.

2.8 The overall project site is the sum of three site locations along NH 106. The total site area is 5.2 acres including limits of traffic control. Total disturbed area for all three sites combined is estimated at 46,200 SF (1.06 acres).

3.5 The three culverts covered by this application were not delineated as stream crossings.



**US Army Corps
of Engineers**®
New England District

**Appendix B
New Hampshire General Permits
Required Information and USACE Section 404 Checklist**

NHDES Rule Citations

Appendix B Requirements	NHDES Citation	NHDES Resource, Form & BMP
1. Impaired Waters		
1.1	See Env-Wt 307.03 Protection of Water Quality Required & Env-Wt 306.05 a) 7	https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/ https://www.des.nh.gov/water/rivers-and-lakes/water-quality-assessment https://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx
2. Wetlands		
2.1	N/A	N/A
2.2	Env 307.06; Env- Wt 311.01(a)(b) (c)	NH Online Forms System - Coastal Resource Worksheet. Version 2.0 Wetlands Permitting: Protected Species and Habitat (nh.gov) Wetlands Permitting: Priority Resource Area (nh.gov) https://www4.des.state.nh.us/NHB-DataCheck/.
2.3	Env-Wt 313.03(b)(3); Env-Wt 313.03(b)(4)(7); Env-Wt 307.06	See Chapter 7, Stream & Wetland Crossings: Wetlands Best Management Practice Techniques for Avoidance and Minimiz Wetlands-BMP-Manual-2019.pdf (neiwpc.org) (& Env-Wt 900 for Stream Crossings)
2.4	Env-Wt 604.02 (Tidal buffer zone); Env-Wt 704 (prime buffers)	
2.5	N/A	N/A
2.6	N/A	N/A
2.7	Env-Wt 311.04(g)	Standard application Section 11- NH Online Forms System - Standard Dredge and Fill Wetlands Permit Application . Version 3.5
2.8	N/A	N/A
3. Wildlife		
3.1	Env-Wt 103.69 "Protected species or habitat"; Env-Wt 307.06, 311.01	NHB DataCheck Tool: https://www4.des.state.nh.us/NHB-DataCheck/. Wetlands Permitting: Protected Species and Habitat (nh.gov) Wetlands Permitting: Priority Resource Area (nh.gov)
3.2	Env-Wt 311.02; 313.03(b)(2), (4), (7)(16); Env-Wt 313.03(b)(6) & See Env-Wt 808.19(g), Env-Wt 808.20	Wetlands Permitting: Protected Species and Habitat (nh.gov) Wetlands Permitting: Priority Resource Area (nh.gov)
3.3	N/A	N/A
3.4	NA	N/A
3.5	(Env-Wt 900) Microsoft Word - Env-Wt 900 as of 10-2020.docx (nh.gov)	New Hampshire Stream Crossing Guidelines (nh.gov) (2009 UNH) NH Online Forms System - Wetland Permit Application Stream Crossing Worksheet. Version 1.8 Stream Crossing Design (nh.gov) : https://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/documents/RR_V.9_FINAL_3-14-19.pdf Best Management Practices for Routine Roadway Maintenance Activities in New Hampshire. 2019. New Hampshire Department of Transportation.
4. Flooding/Floodplain Values		
4.1	Env-Wt 311.05; Env-Wt 103.66 517.03(b); 517.06(a)(6);	Wetlands Permitting: Priority Resource Area (nh.gov) NH Online Forms System - Coastal Resource Worksheet. Version 2.0 New Hampshire Coastal Flood Risk Summary NH Department of

	527.02(e); 527.04(d); Env-Wt 600 Env-Wt 900	Environmental Services (cited in Env-Wt 603.05) NH Online Forms System - Wetland Permit Application Stream Crossing Worksheet. Version 1.8 hydraulic-vulnerability-handout.pdf (nh.gov)
4.2	Env-Wt 527.02 & 527.04 & 313.04 & Env-Wt 800; Wt 605.03 & 605.04	Yes, for permanent impacts to a PRA, impacts from public highway projects, & those projects where flood storage functions are lost when the mitigation threshold is reached. Wetlands Mitigation NH Department of Environmental Services
5. Historical/Archeological Resources		
5.0	Env-Wt 311.02(f)(6)	
6. Minimal Impact Determination		
6.0	F/V assessment: (Env-Wt 311.10); Env-Wt 603.04 (Coastal Functional Assessment) Alternatives: (Env-Wt 311.07(b)(2))	NH Online Forms System - Wetlands Functional Assessment Worksheet. Version 1.3 NH Online Forms System - Coastal Resource Worksheet. Version 2.0
6.1		Wetlands Permitting: Avoidance, Minimization, and Mitigation (nh.gov)
6.2	Env-Wt 102.12 ("Avoidance"), Env-Wt 102.13 ("Avoidance, minimization, mitigation"), Env-Wt 102.14 ("Avoid and minimize"), Env-Wt 311.01, Env-Wt 313.03 ("Avoidance & Minimization") Env-Wt 311.07	See Wetlands Best Management Practice Techniques for Avoidance and Minimization - Wetlands-BMP-Manual-2019.pdf (newpcc.org) referenced in Env-Wt 313.03(a); A/M written narrative (NH Online Forms System - Avoidance and Minimization Written Narrative. Version 2.0); Avoidance and Minimization Checklist: NH Online Forms System - Avoidance and Minimization Checklist. Version 3.1
6.3	Env-Wt 311.10, 603.04	See Functional Assessment worksheets above
6.4	Env-Wt 311.02, Env-Wt 312.04, Env-Wt 306.05, 307.06, 311.01	See Protected Species or Habitat (including exemplary natural communities)
6.5	Env-Wt 311.01, Env-Wt 311.07, Env-Wt 311.10 & 313.01 c1)	See Avoidance & Minimization cites above & BMPs
6.6	(Env-Wt 313.01c) (1) & Env-Wt 311.07(b)(2))	
6.7	Env-Wt 311.10, Env-Wt 103.69, Env-307.06, see Avoidance & minimization cites	NH Online Forms System - Wetlands Functional Assessment Worksheet. Version 1.3 ; Wetlands Permitting: Priority Resource Area (nh.gov) NH Online Forms System - Coastal Resource Worksheet. Version 2.0
6.8	Env-Wt 102.05 (Water quality BMPs)	Practices to minimize or prevent direct or indirect discharge of sediment or other pollutants into surface waters and wetlands, listed in Env-Wt 307
6.9	Env-Wt 800	



By NHDOT Bureau of Environment 10/20/2022

Location 1, 30" Culvert inlet
Wetland #1 (PEM1E) - Impact Area A (temporary)



By NHDOT Highway Design 11/19/2019

Location 1, 30" Culvert inlet area, looking upstream, inlet at metal stake
Wetland #1 (PEM1E) - Impact Area A (temporary)



By NHDOT Highway Design 11/19/2022

Location 1, 30" Culvert outlet area (from edge of NH 106, looking west)
Wetland #2 (PEM1E) - Impact Area B



By NHDOT Bureau of Environment 10/20/2022

Location 1, 30" Culvert outlet, area of proposed stone apron
Wetland #2 (PEM1E) - Impact Area B



By NHDOT Bureau of Environment 10/20/2022

Location 1, at 30" Culvert outlet, looking west
Wetland #2 (PEM1E) - Impact Area B (temporary for access & erosion controls)



30" cmp - outlet inside



Location 2, looking north towards NH 129

Inlet – Wetland #3 (PEM1/SS1E), Impact Area C
Outlet – Wetland #4 (PEM1E), Impact Area D



By NHDOT Highway Design 7/6/2022

Location 2, 18" Culvert inlet area (from edge of NH 106, looking east)
Wetland #3 (PEM1/SS1E) - Impact Area C



By NHDOT Bureau of Environment 10/20/2022

Location 2, 18" Culvert inlet area, looking east (culvert submerged)
Wetland #3 (PEM1/SS1E) - Impact Area C



By NHDOT Highway Design 7/6/2022

Location 2, 18" Culvert outlet area (from edge of NH 106, looking west)
Wetland #4 (PEM1E) - Impact Area D



By NHDOT Bureau of Environment 10/20/2022

Location 2, 18" Culvert outlet area, looking west (culvert submerged)
Wetland #4 (PEM1E) - Impact Area D



By NHDOT Highway Design 11/19/2022

Location 3, 43" x 27" Culvert inlet
Wetland #6 (PEM1E) - Impact Area F



By NHDOT Bureau of Environment 10/20/2022

Location 3, at 43" x 27" Culvert inlet, looking west
Wetland #6 (PEM1E) - Impact Area F



By NHDOT Highway Design 11/19/2022

Location 3, 43" x 27" Culvert outlet
Wetland #5 (PEM1E) - Impact Area E



By NHDOT Bureau of Environment 10/20/2022

Location 3, at 43" x 27" Culvert outlet, looking east
Wetland #5 (PEM1E) - Impact Area E



By NHDOT Highway Design 11/19/2022

Location 3, 43" x 27" Culvert inside, showing heavy rust and invert deterioration

LOUDON 44011

CONSTRUCTION SEQUENCE

Dewatering basins, water diversion structures, and other temporary measures referenced in this sequence or shown on the Erosion Control Plans are approximate. Type, size, and location will be as per the Contractor's approved SWPPP.

LOCATION 1 – SLIPLINE 30" CMP

1. Perform any necessary clearing operations for access and staging at inlet.
2. Remove existing guardrail and perform any necessary clearing operations at outlet. Guardrail to be replaced at end of each work day.
3. Install perimeter sediment controls and install necessary temporary erosion controls as specified on the strategies sheet.
4. Install sedimentation controls/BMP's as needed. A formal water diversion is not expected to be needed as this location does not typically have baseflow. The existing pipe does not need to be completely dry to accomplish the majority of required work operations.
5. Clean water bypass shall be through the existing pipe, unless otherwise approved as part of the Contractor's SWPPP.
6. Clean and inspect existing pipe.
7. Prepare existing pipe for lining, grout any voids around outside of pipe.
8. Insert pipe liner, grout annular space between liner and existing pipe.
9. Fill any sinkholes on inlet and outlet embankment slopes.
10. Construct stone apron at outlet.
11. Place seed, mulch, and erosion control matting (where steeper than 4:1) on newly graded areas.
12. Repair any rutting on embankment slopes.
13. Stabilize any remaining disturbed areas with seed, mulch, and temporary slope matting (where steeper than 4:1). Seed placed in jurisdictional wetland areas shall be a wetland seed mix.
14. Remove erosion and sediment controls once the site is stabilized.

LOCATION 2 – REPLACE 18” CMP

1. Perform any necessary clearing operations for access and staging at inlet and outlet.
2. Install perimeter sediment controls and install necessary temporary erosion controls as specified on the strategies sheet.
3. Install other sedimentation controls/BMP's as needed. A formal water diversion is not expected to be needed as proposed work can be scheduled for short periods of 2 -3 days with no significant rainfall in the forecast. The upstream storage area can hold the runoff from a 2-year storm (2.78” of rain in 24 hours) with no outlet and no significant risk of flooding NH 106 or adjacent developed areas. See the Supplemental Narrative for hydraulic calculations.
4. Isolate pipe ends using sandbags, water bags, or other approved method.
5. Dewater and plug pipe ends one side at a time. Dewatering discharge shall be pumped to dewatering bags at a sufficient distance away from delineated wetlands, or to another approved outlet location with appropriate sedimentation controls/BMP's.
6. Install grout fill ports and air release ports at both ends of the pipe.
7. Fill and abandon 18” cmp, cut off or remove fill and vent ports.
8. Installation of the new 24” plastic pipe is proposed to be done half at a time, on two consecutive nights, using one lane alternating two-way traffic under flagger control. No temporary widening or ground disturbance is anticipated for shifting traffic. Filling of the existing pipe and installation of the new pipe should be scheduled for three consecutive days and/or nights with no significant rainfall in the forecast.
9. Install 24” plastic pipe from outlet to NH Route 106 centerline. Place a temporary cap on pipe end, backfill excavation, restore pavement with temporary crushed gravel.
10. Complete installation of 24” plastic pipe from NH Route 106 centerline to inlet location. Backfill excavation, restore pavement with temporary crushed gravel.
11. Install inlet and outlet end sections. Match existing ground to the end sections such that there is a smooth transition and no perch.
12. Place seed, mulch, and erosion control matting (where steeper than 4:1) on newly graded areas. Seed placed in jurisdictional wetland areas shall be a wetland seed mix.
13. Permanent repair of the existing pavement is expected to be done as a separate operation, at night, using the same traffic control as for the pipe replacement.
14. Repair any rutting on embankment slopes.
15. Stabilize any remaining disturbed areas with seed, mulch, and temporary slope matting (where steeper than 4:1).
16. Remove erosion and sediment controls once the site is stabilized.

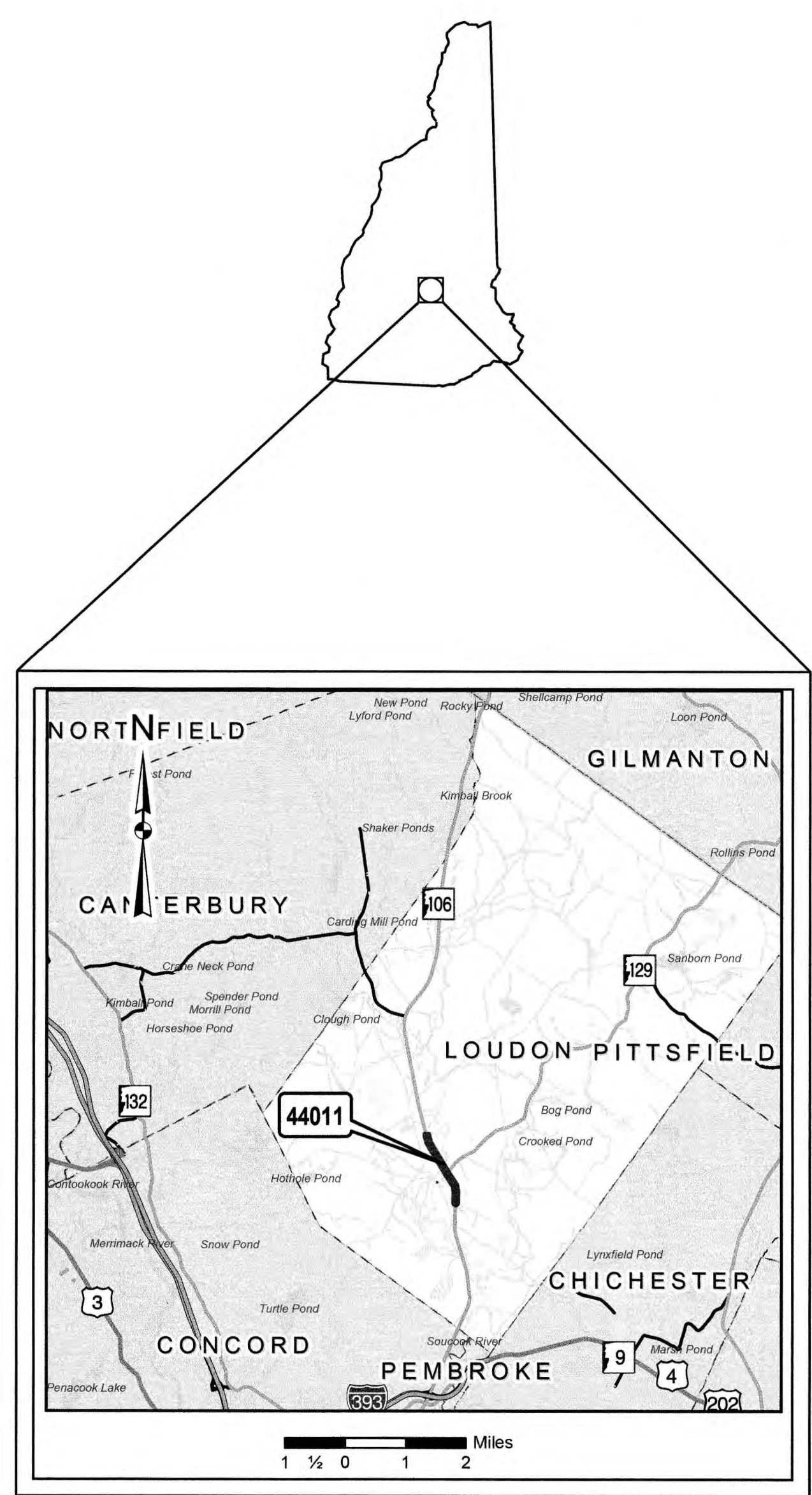
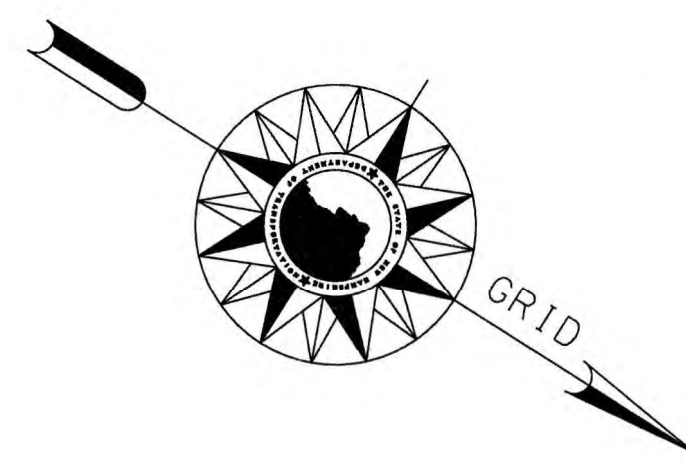
LOCATION 3 – REPLACE 43” WIDE X 27” HIGH CMP

1. Perform any necessary clearing operations for access and staging at inlet and outlet.
2. Install perimeter sediment controls and install necessary temporary erosion controls as specified on the strategies sheet.
3. Install other sedimentation controls/BMP's as needed. A formal water diversion is not expected to be needed as proposed work can be scheduled for short periods of 2 -3 days with no significant rainfall in the forecast. Clean water bypass shall be through the existing and/or new pipe, unless otherwise approved. If necessary, a temporary connection can be made between the partially installed new pipe and the existing pipe.
4. If dewatering is necessary, Isolate pipe ends using sandbags, water bags, or other approved method. Dewatering discharge shall be pumped to dewatering bags at a sufficient distance away from delineated wetlands, or to another approved outlet location with appropriate sedimentation controls/BMP's. If necessary (due to an unexpected rain event), remove sandbags at inlet and outlet and allow flow through the existing or new pipe.
5. Installation of the new 36” concrete pipe is proposed to be done half at a time, on two consecutive nights, using one lane alternating two-way traffic under flagger control. No temporary widening or ground disturbance is anticipated for shifting traffic.
6. Remove existing pipe and replace with 36” concrete pipe from outlet to NH Route 106 centerline. Place a temporary cap on new pipe end, backfill excavation, restore pavement with temporary crushed gravel.
7. Complete removal of existing pipe and installation of remaining sections of 36” concrete pipe from NH Route 106 centerline to inlet location. Backfill excavation, restore pavement with temporary crushed gravel.
8. Construct channel matches at both ends of the new pipe such that there is a smooth transition and no perch.
9. Place seed, mulch, and erosion control matting (where steeper than 4:1) on newly graded areas. Seed placed in jurisdictional wetland areas shall be a wetland seed mix.
10. Permanent repair of the existing pavement is expected to be done as a separate operation, at night, using the same traffic control as for the pipe replacement.
11. Repair any rutting on embankment slopes.
12. Stabilize any remaining disturbed areas with seed, mulch, and temporary slope matting (where steeper than 4:1).
13. Remove erosion and sediment controls once the site is stabilized.

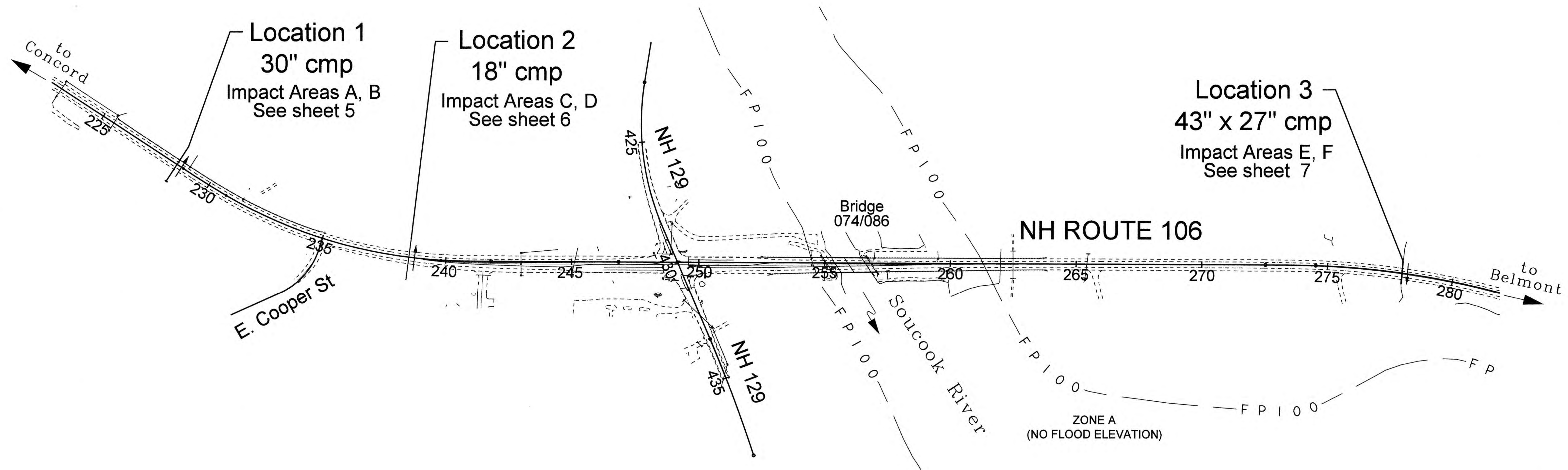
**STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
WETLANDS PLANS
FEDERAL AID PROJECT**

**X-A005(284)
N.H. PROJECT NO. 44011
NH Route 106
CULVERT REHABILITATION / REPLACEMENT**

DESIGN DATA	
AVERAGE DAILY TRAFFIC 20 ₂₂	13,000
AVERAGE DAILY TRAFFIC 20 ₄₈	16,900
PERCENT OF TRUCKS	5.2%
DESIGN SPEED	POSTED 55 MPH
LENGTH OF PROJECT	N/A



LOCATION MAP



DRAWN BY: CAC
 CHECKED BY: JUN
 DATE: 12/2022
 DATE: 1/13/23

INDEX OF SHEETS

1	FRONT SHEET
2-3	STANDARD SYMBOLS SHEETS
4	WETLAND IMPACT SUMMARY AND DETAILS
5 - 7	WETLAND IMPACT PLANS
8	PROFILES
9	EROSION CONTROL STRATEGIES
10 - 12	EROSION CONTROL PLANS

**TOWN OF LOUDON
COUNTY OF MERRIMACK**
SCALE: 1" = 250'

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

Per Wetland Plans Rule(s) Env-Wt 311.05 For Engineering		NH DOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION		
Wetland Delineation per ENV-Wt 406 by: NH Dept. of Transportation (Joshua Brown, Dillian Schmidt) on 10/20/2022				
PLANS PREPARED BY: Christopher Carucci, PE		2/15/2023 DATE		
DRAWING NAME	FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
44011 fsw	X-A005(284)	44011	1	12

GENERAL

EDGE OF PAVEMENT TRAVELED WAY			
DRIVEWAYS			
BUILDINGS			
LEACH FIELD			
BRIDGE CROSSINGS			
INTERMITTENT WATER COURSE			
SHORE LINE			
POTENTIAL WET AREA SYMBOL			
BRUSH OR WOODS LINE			
TREES (PLANS)			
TREE OR STUMP (CROSS-SECTIONS)			
HEDGE			
MONITORING WELL			
WELL			
FLAG POLE			

ORIGINAL GROUND (TYPICALS)	
ROCK OUTCROP	
ROCK LINE (TYPICALS & SECTIONS ONLY)	
GUARDRAIL (label type)	
JERSEY BARRIER	
CURB (LABEL TYPE)	
STONE WALL	
RETAINING WALL (LABEL TYPE)	
FENCE (LABEL TYPE)	
SIGNS	
GAS PUMP	
FUEL TANK (ABOVE GROUND)	
STORAGE TANK FILLER CAP	
SEPTIC TANK	
GRAVE	
MAILBOX	
VENT PIPE	
SATELLITE DISH ANTENNA	
PHONE	
GROUND LIGHT/LAMP POST	
BORING LOCATION	
TEST PIT	
INTERSTATE NUMBERED HIGHWAY	
UNITED STATES NUMBERED HIGHWAY	
STATE NUMBERED HIGHWAY	

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE	
DELINEATED WETLAND	
ORDINARY HIGH WATER	
TOP OF BANK	
TOP OF BANK & ORDINARY HIGH WATER	
NORMAL HIGH WATER	
WIDTH AT BANK FULL	
PRIME WETLAND	
PRIME WETLAND 100' BUFFER	
NON-JURISDICTIONAL DRAINAGE AREA	
COWARDIN DISTINCTION LINE	
TIDAL BUFFER ZONE	
DEVELOPED TIDAL BUFFER ZONE	
HIGHEST OBSERVABLE TIDE LINE	
MEAN HIGH WATER	
MEAN LOW WATER	
VERNAL POOL	
SPECIAL AQUATIC SITE	
REFERENCE LINE	
WATER FRONT BUFFER	
NATURAL WOODLAND BUFFER	
PROTECTED SHORELAND	
INVASIVE SPECIES LABEL	
INVASIVE SPECIES	

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY	
100 YEAR FLOODPLAIN BOUNDARY	
FLOODWAY	

ENGINEERING

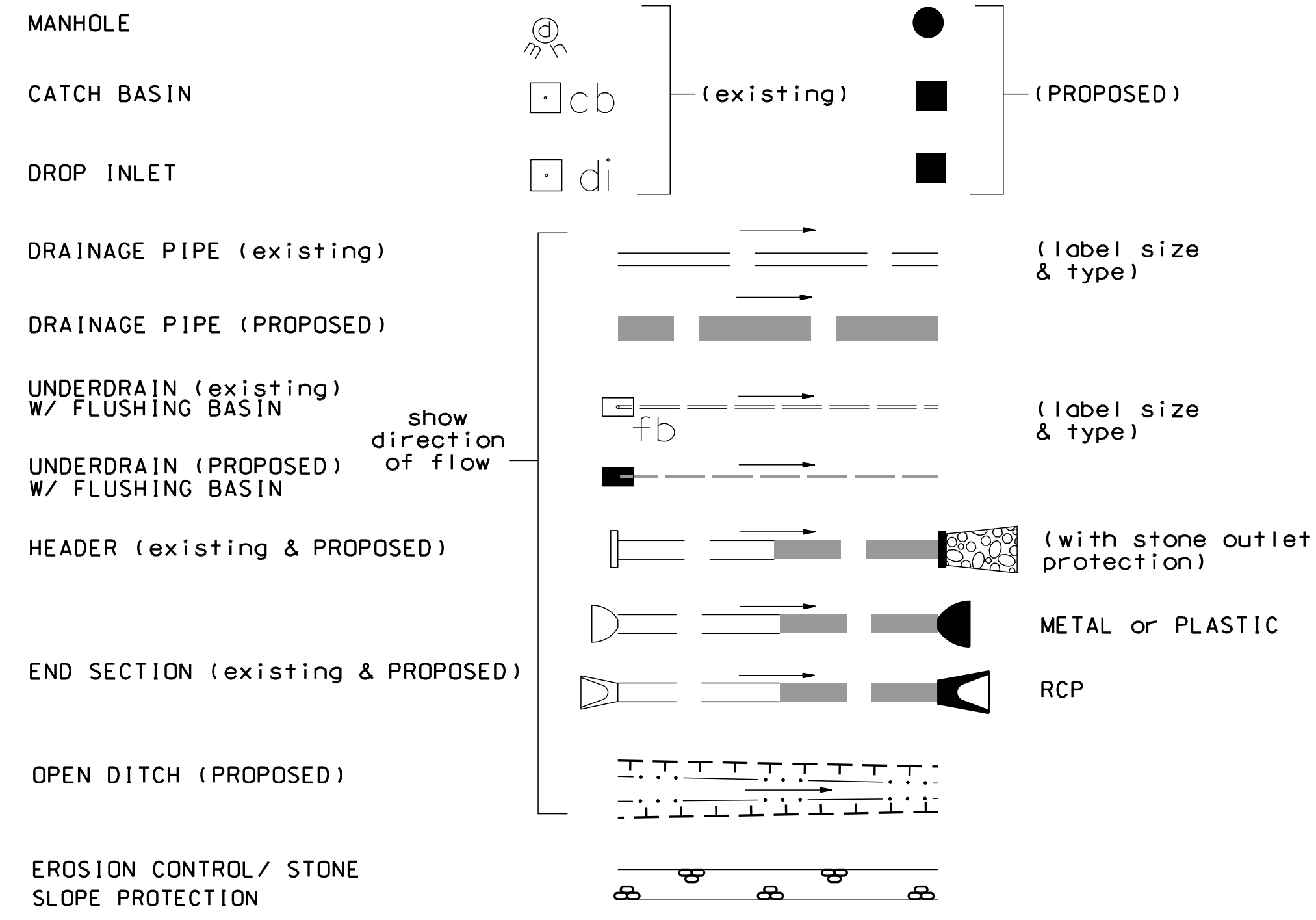
CONSTRUCTION BASELINE	
PC, PT, POT (ON CONST BASELINE)	
PI (IN CONSTRUCTION BASELINES)	
INTERSECTION OR EQUATION OF TWO LINES	
ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)	
PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)	
CLEARING LINE	
SLOPE LINE	
SLOPE LINE (FILL)	
SLOPE LINE (CUT)	
PROFILES AND CROSS SECTIONS:	
ORIGINAL GROUND ELEVATION (LEFT)	
FINISHED GRADE ELEVATION (RIGHT)	

STATE OF NEW HAMPSHIRE
 LOUDON
 DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

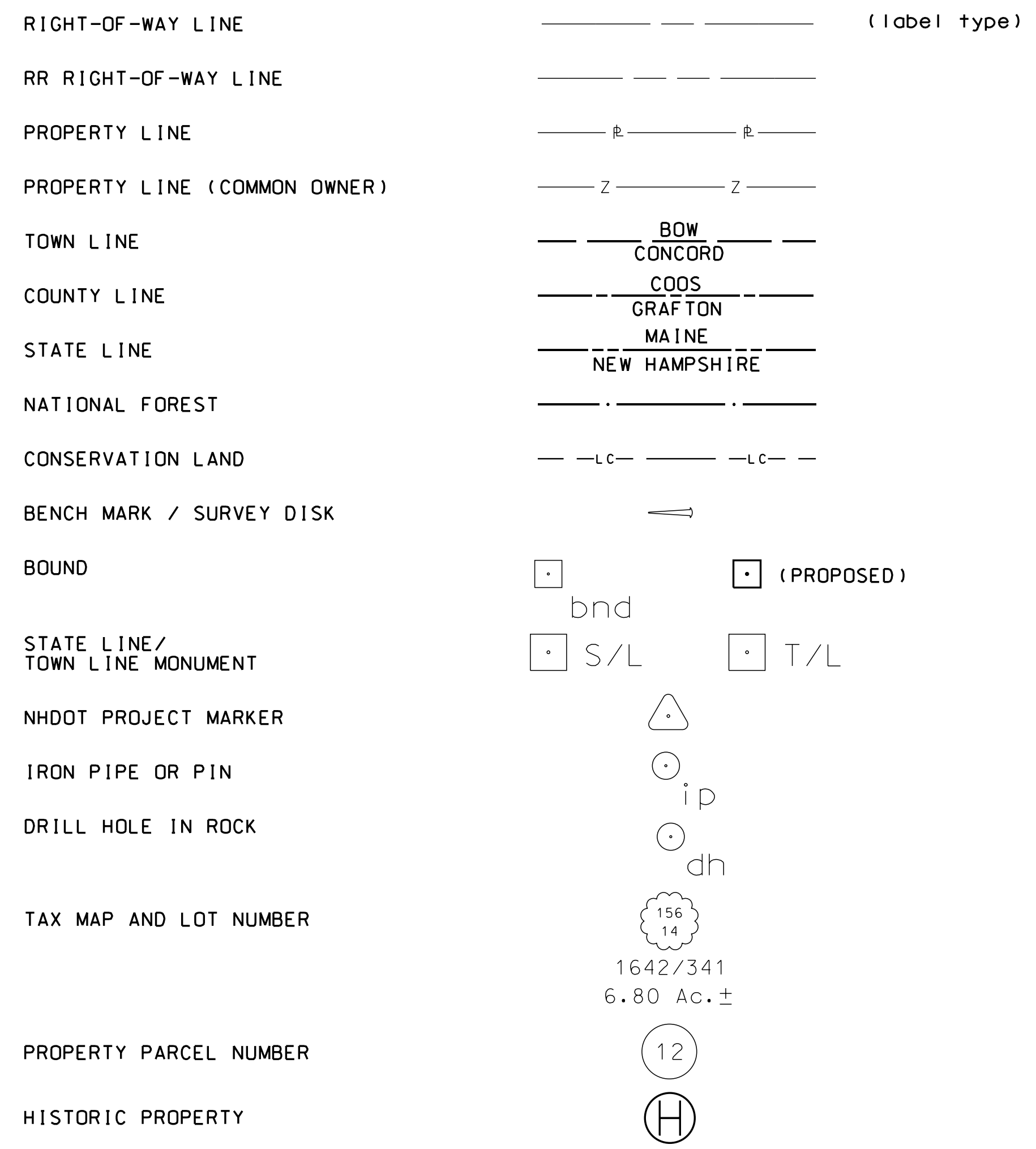
STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	43312 stdsyml-2	44011	2	12

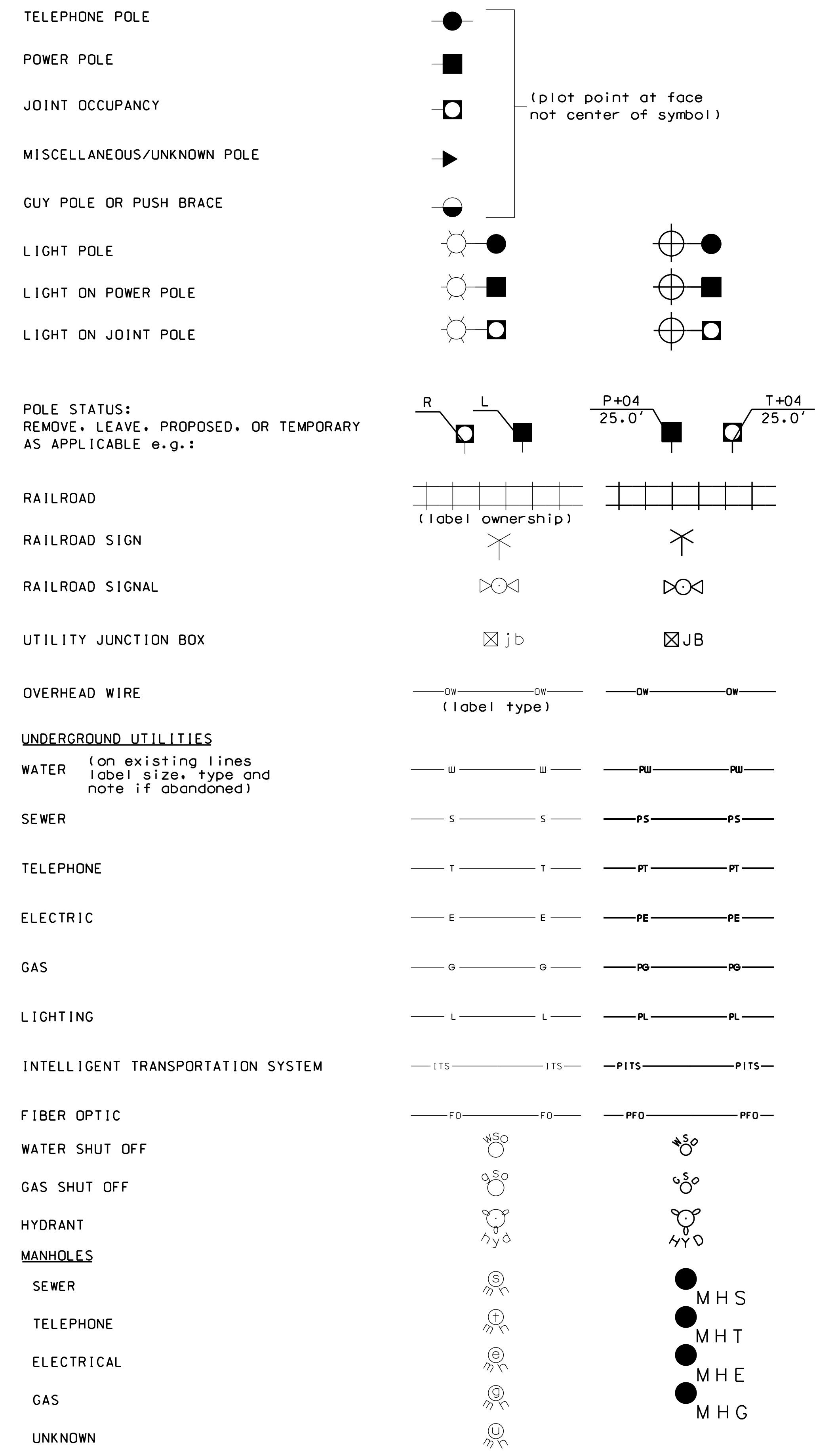
DRAINAGE



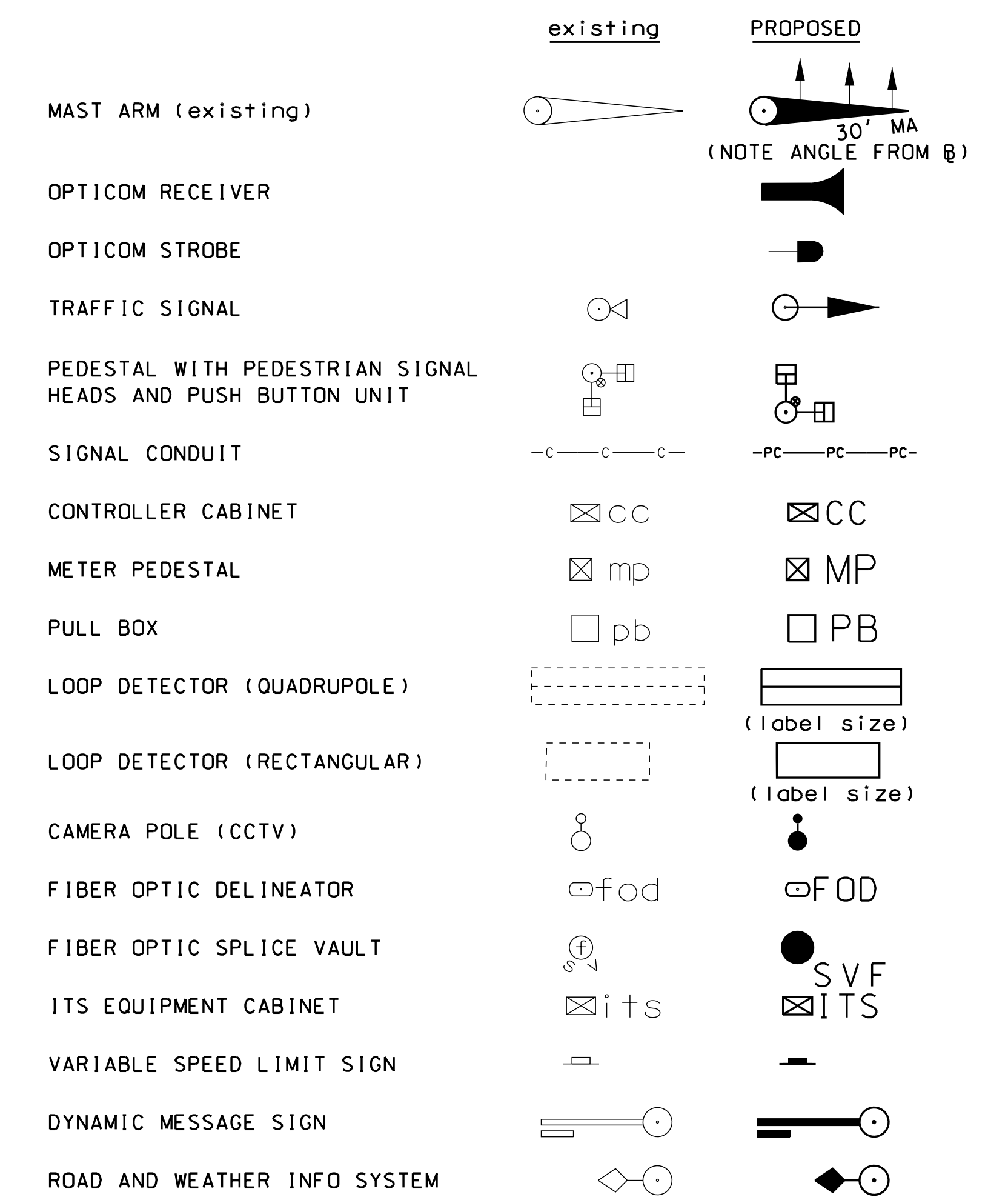
BOUNDARIES / RIGHT-OF-WAY



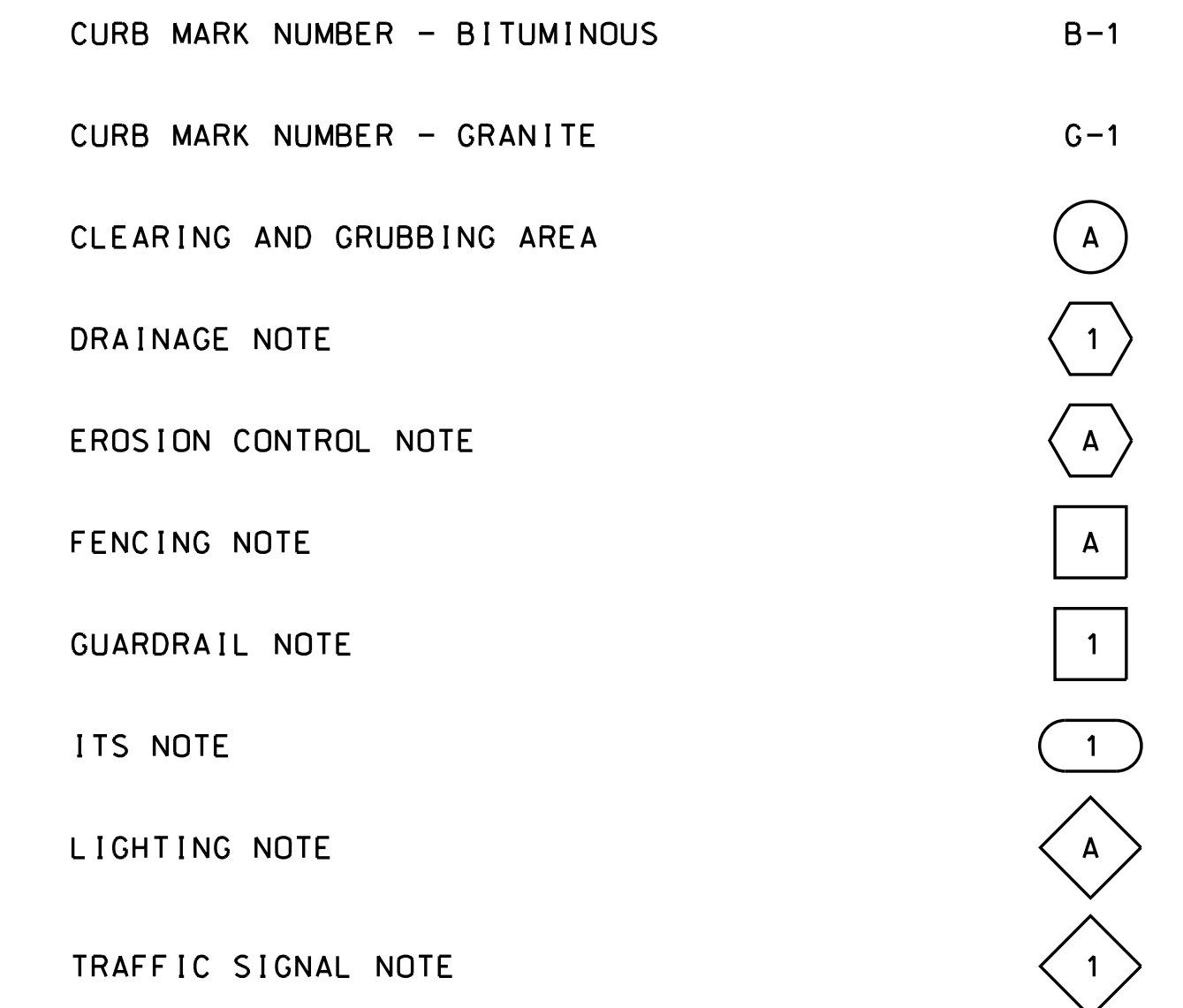
UTILITIES



TRAFFIC SIGNALS / ITS



CONSTRUCTION NOTES



SDR PROCESSED
 NEW DESIGN JUN DATE 12/2022
 SHEET CHECKED CAC DATE 2/15/2023
 AS BUILT DETAILS

REVISIONS AFTER PROPOSAL

STATION

DATE

NUMBER

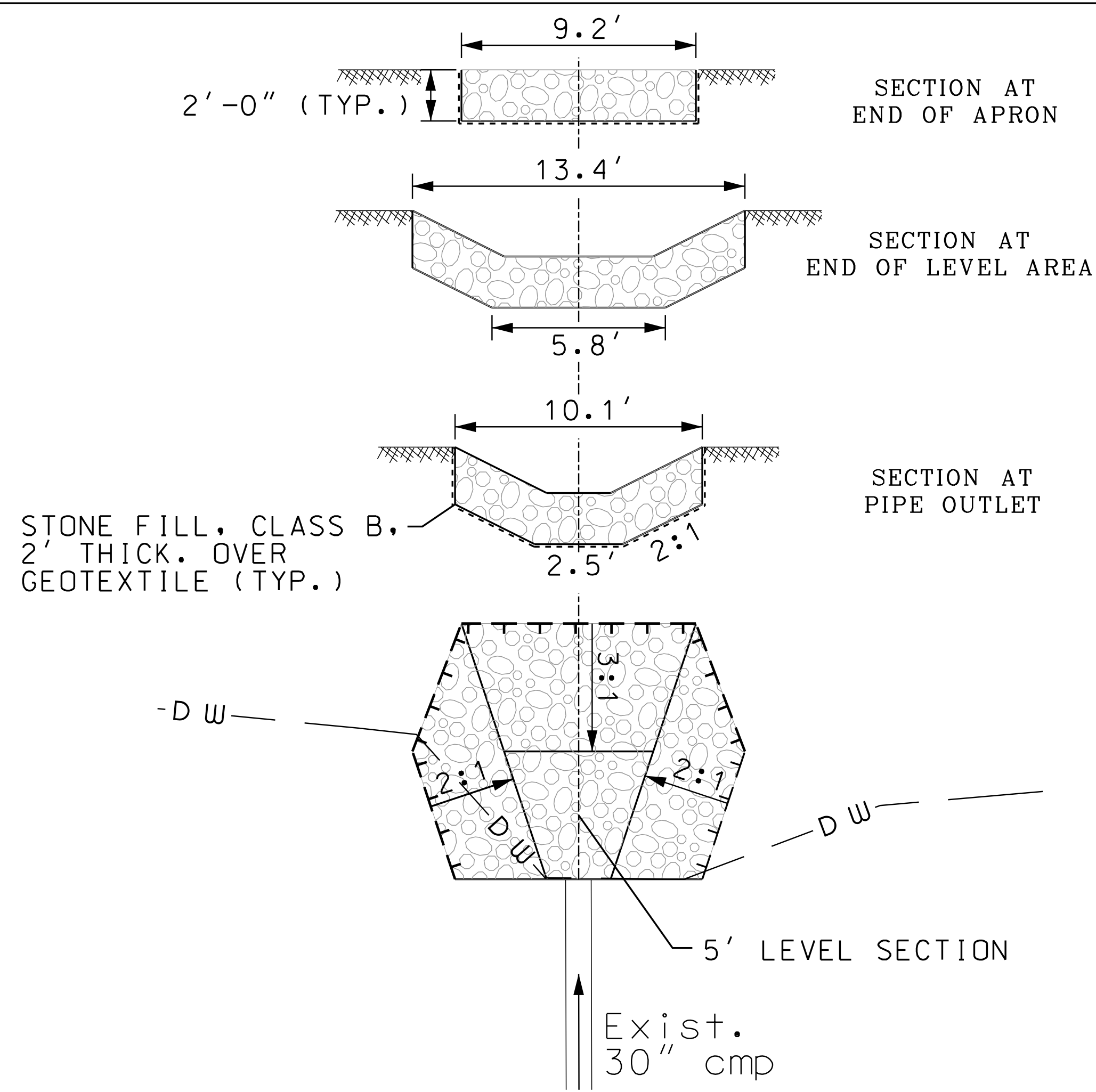
LEGEND

TYPE OF WETLAND IMPACT	SHADING/HATCHING	#	WETLAND DESIGNATION NUMBER
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)		#	WETLAND IMPACT LOCATION
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)		#	WETLAND MITIGATION AREA
TEMPORARY IMPACTS			MITIGATION

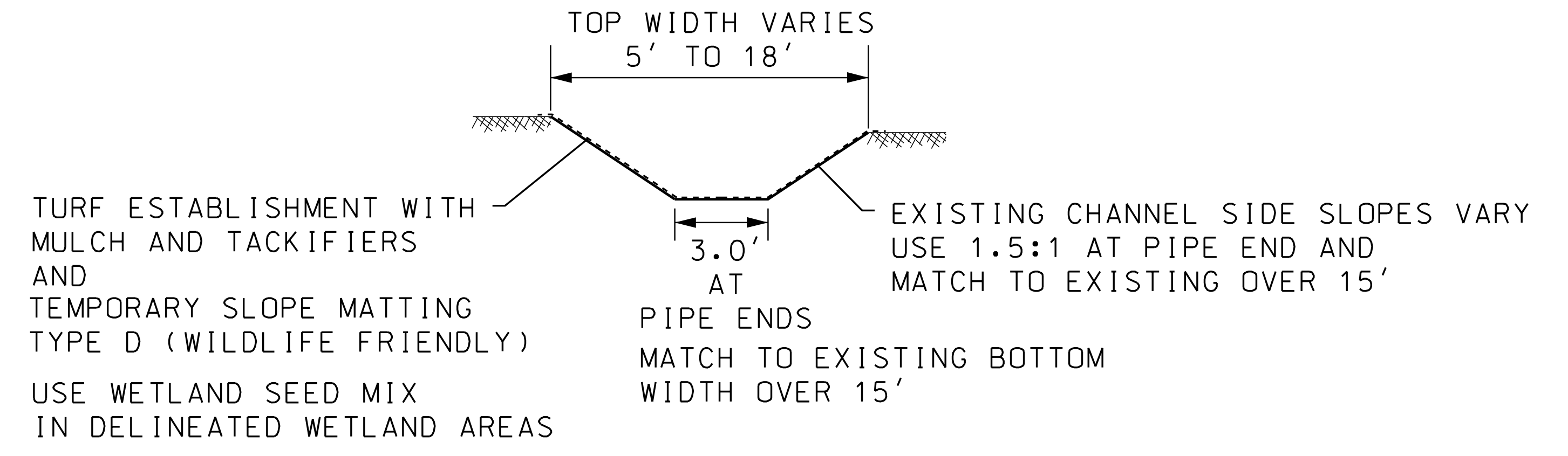
WETLAND CLASSIFICATION CODES	
PEM1E	PALUSTRINE, EMERGENT, PERSISTENT, SEASONALLY FLOODED / SATURATED
PEM1/SS1E	PALUSTRINE, EMERGENT, SCRUB-SHRUB, BROAD LEAVED DECIDUOUS, SEASONALLY FLOODED / SATURATED

WETLAND IMPACT SUMMARY								
WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS					
			PERMANENT		TEMPORARY		TOTAL	
			N.H.W.B. (NON-WETLAND)	N.H.W.B. & A.C.O.E. (WETLAND)	SF	LF		
1	PEM1E	A	--	--	--	--	248	--
2	PEM1E	B	--	--	104	--	568	--
3	PEM1/SS1E	C	--	--	37	--	995	--
4	PEM1E	D	--	--	32	--	1124	--
5	PEM1E	E	--	--	123	--	1433	--
6	PEM1E	F	--	--	147	--	525	--
TOTAL			--	--	443	--	4893	--

PERMANENT IMPACTS: 443 SF
 TEMPORARY IMPACTS: 4,893 SF
 TOTAL IMPACTS: 5,336 SF



LOCATION 1 - STONE APRON DETAIL
 NOT TO SCALE
 SEE PROFILE FOR ADDITIONAL INFORMATION

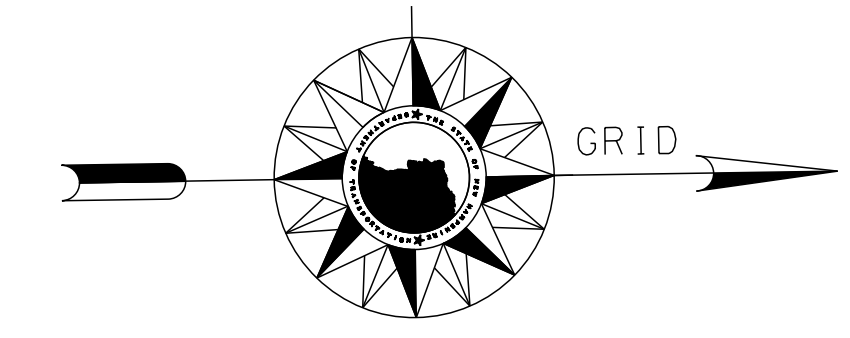


LOCATION 3 - CHANNEL MATCH
 NOT TO SCALE
 SEE PROFILE FOR ADDITIONAL INFORMATION

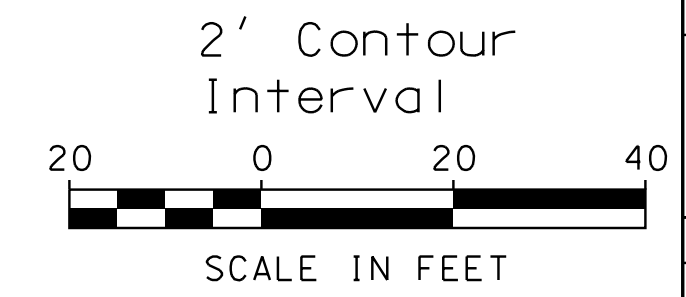
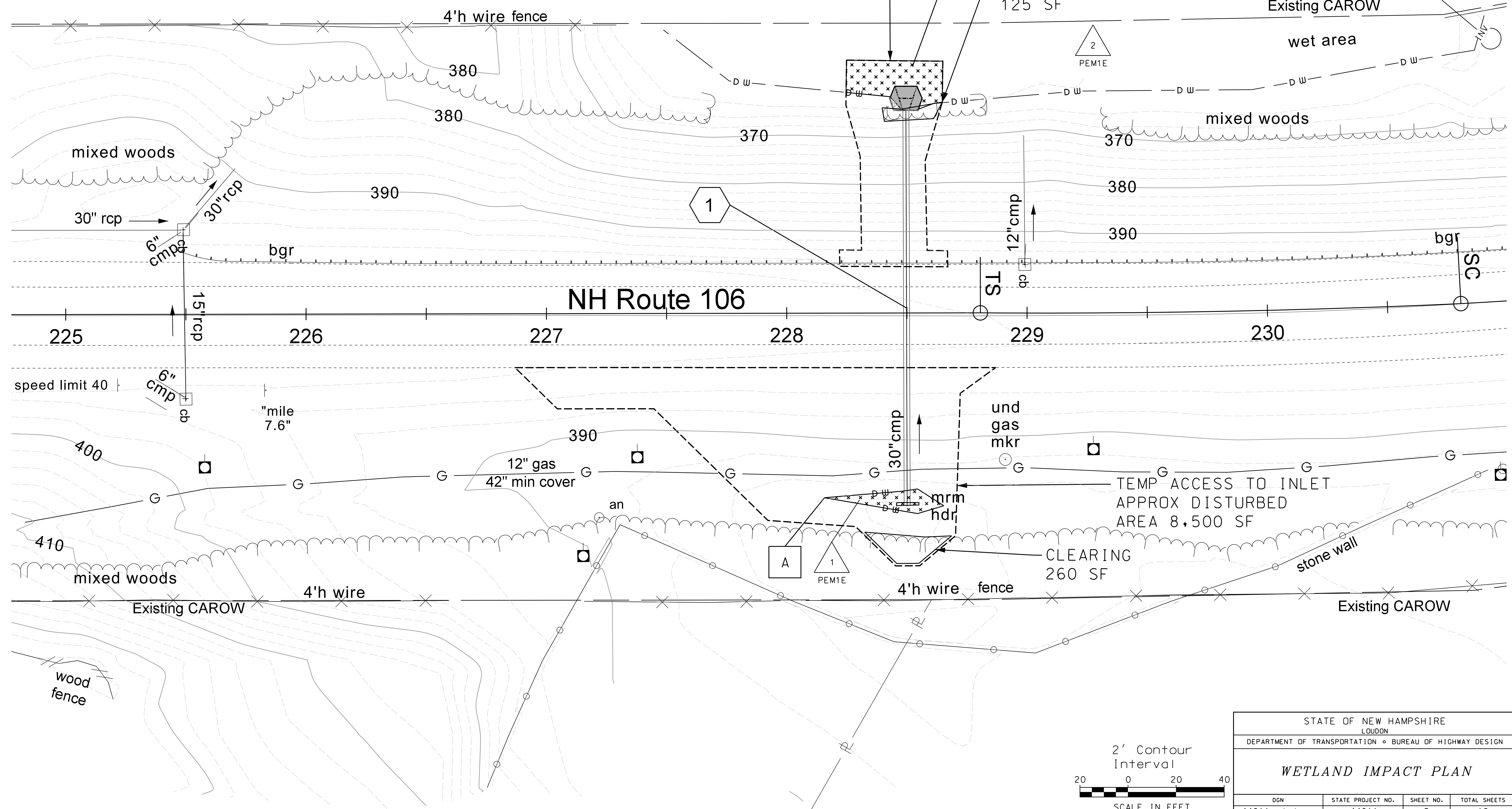
SDR PROCESSED	SEL	DATE	4/2022
NEW DESIGN	CAC	DATE	12/2022
SHEET CHECKED	JUN	DATE	1/12/2023
AS BUILT DETAILS		DATE	

1 STA 228+49.9
 SLIPLINE 165 LF x 30" cmp with
 24" CMP PIPE LINER
 CONST CLASS B STONE APRON AT OUTLET
 SEE PROFILE AND DETAILS FOR ADDITIONAL
 INFORMATION

TEMP ACCESS TO OUTLET
 THROUGH GUARDRAIL
 (2:1 SLOPE, 32' HIGH)
 APPROX DISTURBED
 AREA 2,825 SF



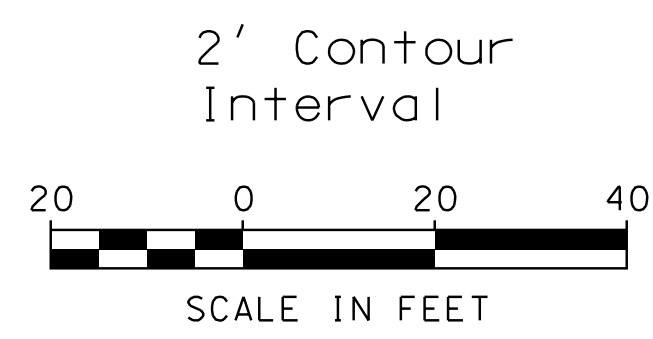
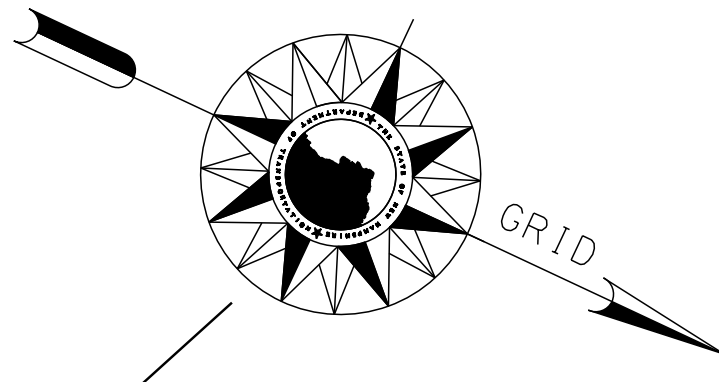
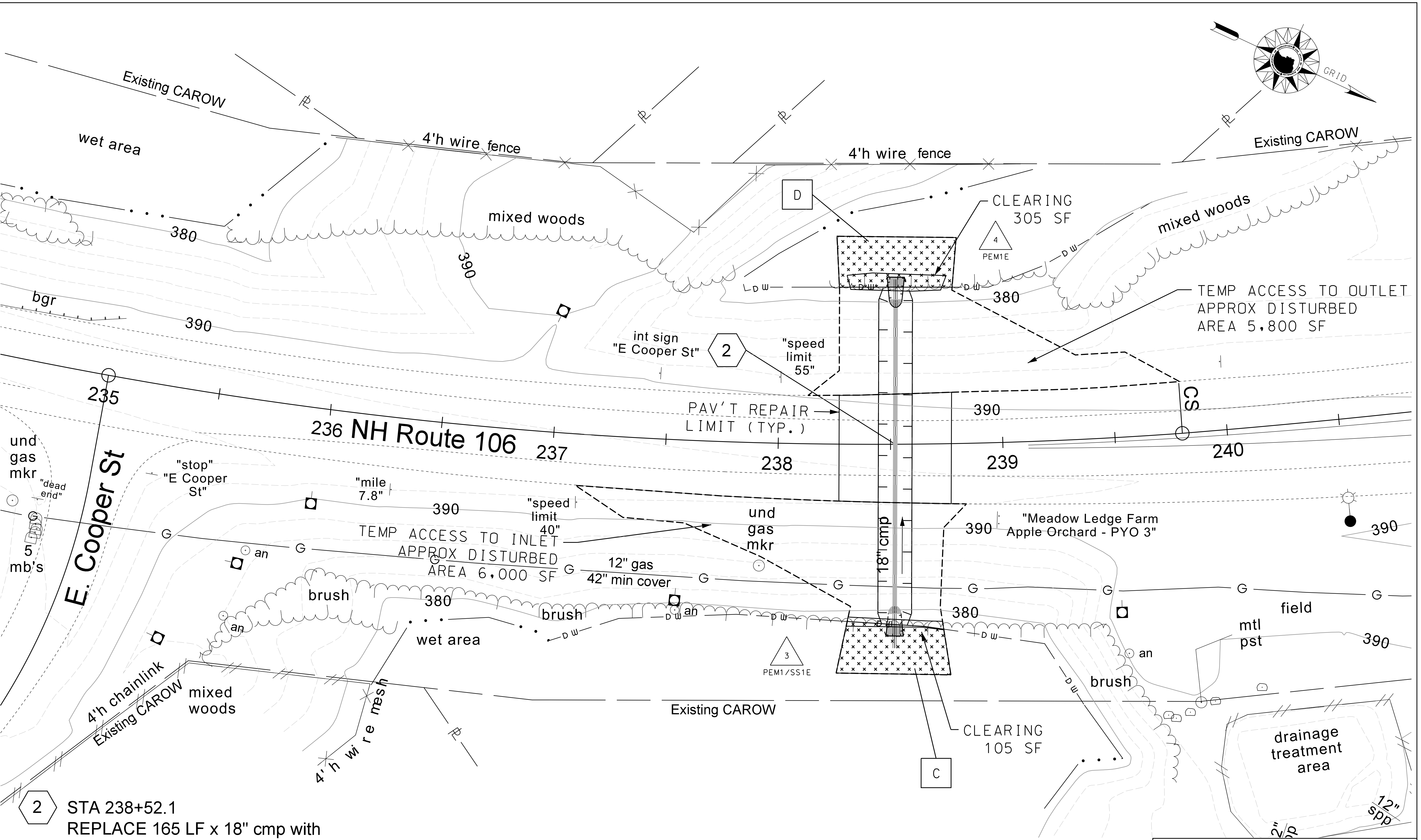
Oriental
 Bittersweet
 I.S.
 I



STATE OF NEW HAMPSHIRE LOUDDON			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
WETLAND IMPACT PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
44011wetplans	44011	5	12

SDR PROCESSED	SEL	DATE	4/2022
NEW DESIGN	CAC	DATE	12/2022
SHEET CHECKED	JUN	DATE	1/12/2023
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



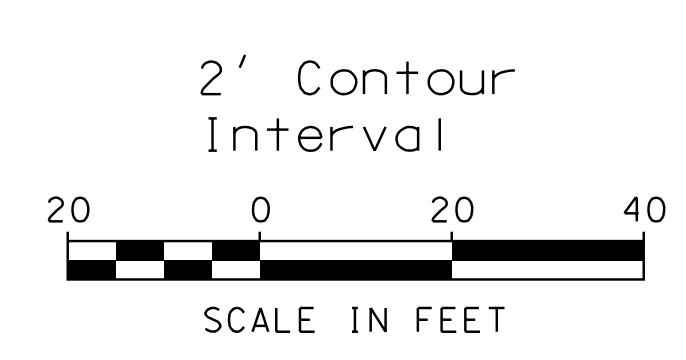
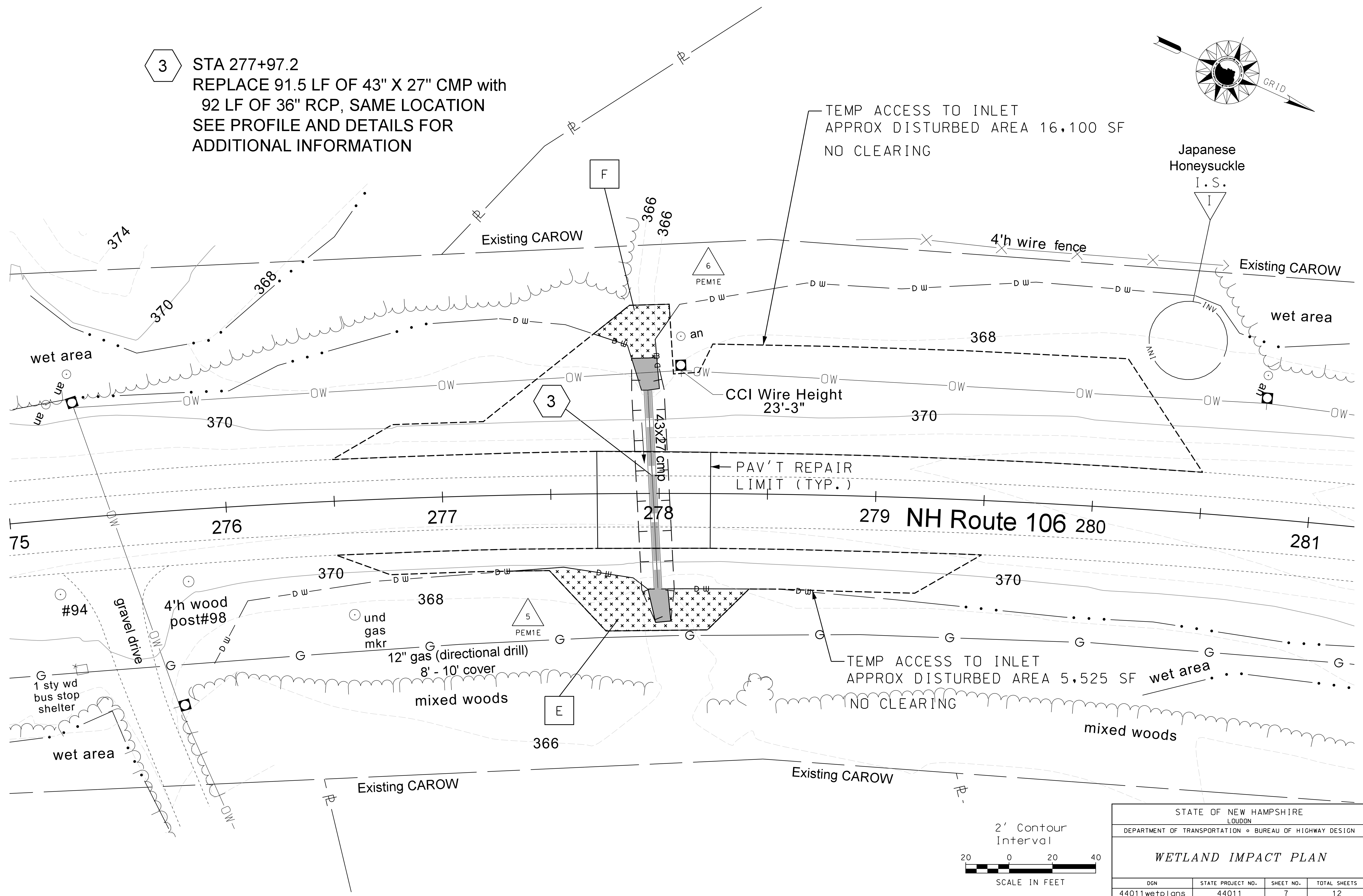
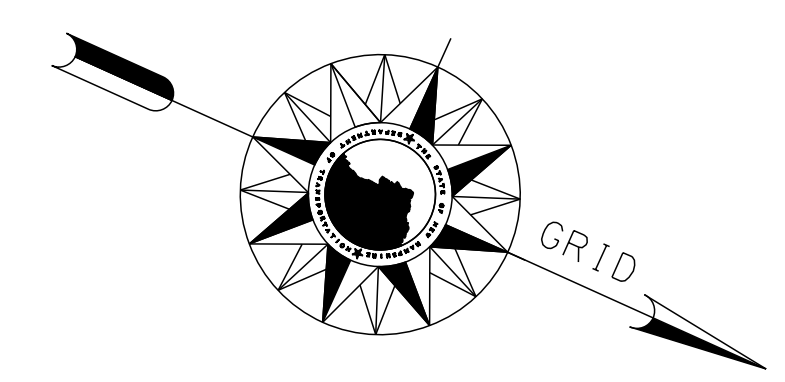
2 STA 238+52.1
 REPLACE 165 LF x 18" cmp with
 133 LF x 24" PLASTIC PIPE, SAME LOCATION,
 CONST END SECTIONS ON BOTH ENDS
 SEE PROFILE FOR ADDITIONAL INFORMATION
 FILL & ABANDON EXISTING 18" CMP

STATE OF NEW HAMPSHIRE LOUDDON			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
WETLAND IMPACT PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
44011wetplans	44011	6	12

SDR PROCESSED	SEL	DATE	4/2022
NEW DESIGN	CAC	DATE	12/2022
SHEET CHECKED	JUN	DATE	1/12/2023
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION

3 STA 277+97.2
 REPLACE 91.5 LF OF 43" X 27" CMP with
 92 LF OF 36" RCP, SAME LOCATION
 SEE PROFILE AND DETAILS FOR
 ADDITIONAL INFORMATION



STATE OF NEW HAMPSHIRE LOUDDON			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
WETLAND IMPACT PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
44011wetplans	44011	7	12

SDR PROCESSED	DATE	12/2022
NEW DESIGN	CAC	
SHEET CHECKED	JUN	
AS BUILT DETAILS	DATE	1/12/2023

REVISIONS AFTER PROPOSAL	DESCRIPTION

STATION	

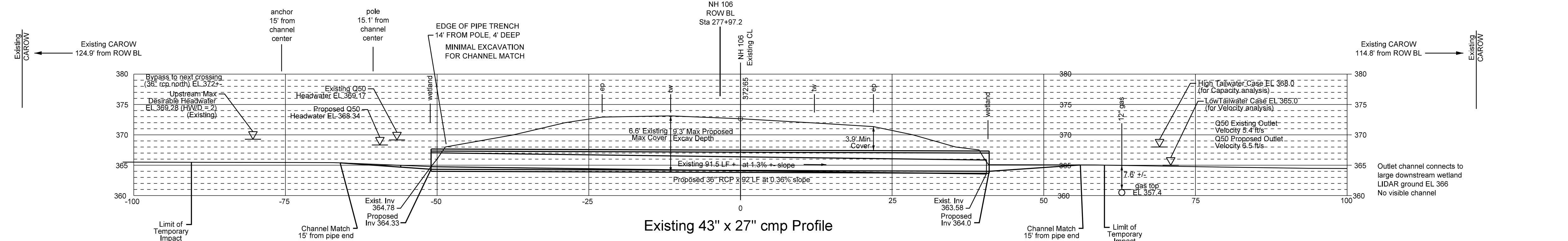
STATION	

DATE	

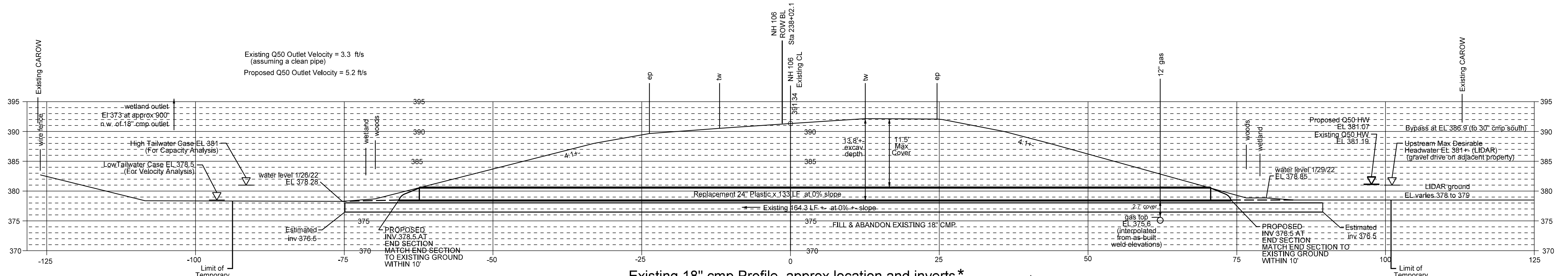
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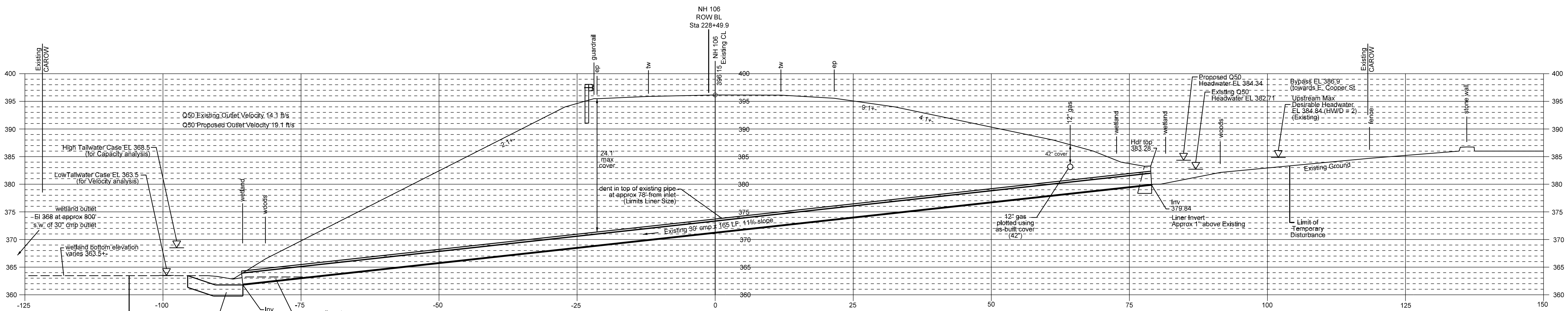


Existing 43" x 27" cmp Profile
PROPOSED DESIGN - REPLACE WITH 36" CONCRETE PIPE
 SAME LOCATION, LENGTH, SIMILAR INVERTS



Existing 18" cmp Profile, approx location and invert*
PROPOSED DESIGN - REPLACE AT HIGHER ELEVATION
 PROPOSED LENGTH OF CROSSING INCLUDING END SECTIONS 140 LF

* Existing Pipe location and length from As-Built Plans (P1443, Sheet 63) Not found by Survey or Field Check



Existing 30" cmp Profile
PROPOSED DESIGN - SLIPLINE
 WITH 24" POLY COATED CORRUG. METAL PIPE LINER



STATE OF NEW HAMPSHIRE LOUDDON			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<i>PROFILES</i>			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
44011wetprofiles	44011	8	12

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:
 - 1.1. THESE GUIDELINES DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
 - 1.2. THIS PROJECT WILL BE SUBJECT TO THE US EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER CONSTRUCTION GENERAL PERMIT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THIS PROJECT IS SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
 - 1.3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NHDES WETLAND PERMIT, THE US ARMY CORPS OF ENGINEERS PERMIT, WATER QUALITY CERTIFICATION AND THE SPECIAL ATTENTION ITEMS INCLUDED IN THE CONTRACT DOCUMENTS.
 - 1.4. ALL STORM WATER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION (DECEMBER 2008) (BMP MANUAL) AVAILABLE FROM THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES).
 - 1.5. THE CONTRACTOR SHALL COMPLY WITH RSA 485-A:17, AND ALL, PUBLISHED NHDES ALTERATION OF TERRAIN ENV-WO 1500 REQUIREMENTS ([HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM](http://des.nh.gov/organization/commissioner/legal/rules/index.htm))
 - 1.6. THE CONTRACTOR IS DIRECTED TO REVIEW AND COMPLY WITH SECTION 107.1 OF THE CONTRACT AS IT REFERS TO SPILLAGE, AND ALSO WITH REGARDS TO EROSION, POLLUTION, AND TURBIDITY PRECAUTIONS.
2. STANDARD EROSION CONTROL SEQUENCING APPLICABLE TO ALL CONSTRUCTION PROJECTS:
 - 2.1. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH DISTURBING ACTIVITIES. PERIMETER CONTROLS AND STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AS SHOWN IN THE BMP MANUAL AND AS DIRECTED BY THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARER.
 - 2.2. EROSION, SEDIMENTATION CONTROL MEASURES AND INFILTRATION BASINS SHALL BE CLEANED, REPLACED AND AUGMENTED AS NECESSARY TO PREVENT SEDIMENTATION BEYOND PROJECT LIMITS THROUGHOUT THE PROJECT DURATION.
 - 2.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT AND SECTION 645 OF THE NHDOT SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION.
 - 2.4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
 - (A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
 - (B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
 - (C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED;
 - (D) TEMPORARY SLOPE STABILIZATION CONFORMING TO TABLE 1 HAS BEEN PROPERLY INSTALLED
 - 2.5. ALL STOCKPILES SHALL BE CONTAINED WITH A PERIMETER CONTROL. IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS, MULCHING WILL BE REQUIRED.
 - 2.6. A WATER TRUCK SHALL BE AVAILABLE TO CONTROL EXCESSIVE DUST AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
 - 2.7. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL THE AREA HAS BEEN PERMANENTLY STABILIZED.
 - 2.8. CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 30th AND MAY 1st OF ANY YEAR SHALL BE CONSIDERED WINTER CONSTRUCTION AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.
 - (A) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED IN ACCORDANCE WITH TABLE 1.
 - (B) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
 - (C) AFTER NOVEMBER 30th INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE SEASON, SHALL BE PROTECTED IN ACCORDANCE WITH TABLE 1.
 - (D) WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE PROJECT IS WITHOUT STABILIZATION AT ONE TIME, UNLESS A WINTER CONSTRUCTION PLAN HAS BEEN APPROVED BY NHDOT THAT MEETS THE REQUIREMENTS OF ENV-WO 1505.02 AND ENV-WO 1505.05.
 - (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WO 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30th.

GENERAL CONSTRUCTION PLANNING AND SELECTION OF STRATEGIES TO CONTROL EROSION AND SEDIMENT ON HIGHWAY CONSTRUCTION PROJECTS

3. PLAN ACTIVITIES TO ACCOUNT FOR SENSITIVE SITE CONDITIONS:
 - 3.1. CLEARLY FLAG AREAS TO BE PROTECTED IN THE FIELD AND PROVIDE CONSTRUCTION BARRIERS TO PREVENT TRAFFICKING OUTSIDE OF WORK AREAS.
 - 3.2. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS.
 - 3.3. PROTECT AND MAXIMIZE EXISTING NATIVE VEGETATION AND NATURAL FOREST BUFFERS BETWEEN CONSTRUCTION ACTIVITY AND SENSITIVE AREAS.
 - 3.4. WHEN WORK IS PERFORMED IN AND NEAR WATER COURSES, STREAM FLOW DIVERSION METHODS SHALL BE IMPLEMENTED PRIOR TO ANY EXCAVATION OR FILLING.
 - 3.5. WHEN WORK IS PERFORMED WITHIN 50 FEET OF SURFACE WATERS (WETLAND, OPEN WATER OR FLOWING WATER), PERIMETER CONTROL SHALL BE ENHANCED CONSISTENT WITH SECTION 2.1.2.1. OF THE 2012 NPDES CONSTRUCTION GENERAL PERMIT.
4. MINIMIZE THE AMOUNT OF EXPOSED SOIL:
 - 4.1. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS. MINIMIZE THE AREA OF EXPOSED SOIL AT ANY ONE TIME. PHASING SHALL BE USED TO REDUCE THE AMOUNT AND DURATION OF SOIL EXPOSED TO THE ELEMENTS AND VEHICLE TRACKING.
 - 4.2. UTILIZE TEMPORARY MULCHING OR PROVIDE ALTERNATE TEMPORARY STABILIZATION ON EXPOSED SOILS IN ACCORDANCE WITH TABLE 1.
 - 4.3. THE MAXIMUM AMOUNT OF DISTURBED EARTH SHALL NOT EXCEED A TOTAL OF 5 ACRES FROM MAY 1st THROUGH NOVEMBER 30th, OR EXCEED ONE ACRE DURING WINTER MONTHS, UNLESS THE CONTRACTOR DEMONSTRATES TO THE DEPARTMENT THAT THE ADDITIONAL AREA OF DISTURBANCE IS NECESSARY TO MEET THE CONTRACTORS CRITICAL PATH METHOD SCHEDULE (CPM), AND THE CONTRACTOR HAS ADEQUATE RESOURCES AVAILABLE TO ENSURE THAT ENVIRONMENTAL COMMITMENTS WILL BE MET.
5. CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:
 - 5.1. DIVERT OFF SITE RUNOFF OR CLEAN WATER AWAY FROM THE CONSTRUCTION ACTIVITY TO REDUCE THE VOLUME THAT NEEDS TO BE TREATED ON SITE.
 - 5.2. DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM DISTURBED AREAS, SLOPES, AND AROUND ACTIVE WORK AREAS AND TO A STABILIZED OUTLET LOCATION.
 - 5.3. CONSTRUCT IMPERMEABLE BARRIERS AS NECESSARY TO COLLECT OR DIVERT CONCENTRATED FLOWS FROM WORK OR DISTURBED AREAS.
 - 5.4. STABILIZE, TO APPROPRIATE ANTICIPATED VELOCITIES, CONVEYANCE CHANNELS OR PUMPING SYSTEMS NEEDED TO CONVEY CONSTRUCTION STORMWATER TO BASINS AND DISCHARGE LOCATIONS PRIOR TO USE.
 - 5.5. DIVERT OFF-SITE WATER THROUGH THE PROJECT IN AN APPROPRIATE MANNER SO NOT TO DISTURB THE UPSTREAM OR DOWNSTREAM SOILS, VEGETATION OR HYDROLOGY BEYOND THE PERMITTED AREA.
6. PROTECT SLOPES:
 - 6.1. INTERCEPT AND DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM UNPROTECTED AND NEWLY ESTABLISHED AREAS AND SLOPES TO A STABILIZED OUTLET OR CONVEYANCE.
 - 6.2. CONSIDER HOW GROUNDWATER SEEPAGE ON CUT SLOPES MAY IMPACT SLOPE STABILITY AND INCORPORATE APPROPRIATE MEASURES TO MINIMIZE EROSION.
 - 6.3. CONVEY STORMWATER DOWN THE SLOPE IN A STABILIZED CHANNEL OR SLOPE DRAIN.
 - 6.4. THE OUTER FACE OF THE FILL SLOPE SHOULD BE IN A LOOSE RUFFLED CONDITION PRIOR TO TURF ESTABLISHMENT. TOPSOIL OR HUMUS LAYERS SHALL BE TRACKED UP AND DOWN THE SLOPE, DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO PRODUCE A RUFFLED SURFACE.
7. ESTABLISH STABILIZED CONSTRUCTION EXITS:
 - 7.1. INSTALL AND MAINTAIN CONSTRUCTION EXITS, ANYWHERE TRAFFIC LEAVES A CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY.
 - 7.2. SWEEP ALL CONSTRUCTION RELATED DEBRIS AND SOIL FROM THE ADJACENT PAVED ROADWAYS AS NECESSARY.
8. PROTECT STORM DRAIN INLETS:
 - 8.1. DIVERT SEDIMENT LADEN WATER AWAY FROM INLET STRUCTURES TO THE EXTENT POSSIBLE.
 - 8.2. INSTALL SEDIMENT BARRIERS AND SEDIMENT TRAPS AT INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
 - 8.3. CLEAN CATCH BASINS, DRAINAGE PIPES, AND CULVERTS IF SIGNIFICANT SEDIMENT IS DEPOSITED.
 - 8.4. DROP INLET SEDIMENT BARRIERS SHOULD NEVER BE USED AS THE PRIMARY MEANS OF SEDIMENT CONTROL AND SHOULD ONLY BE USED TO PROVIDE AN ADDITIONAL LEVEL OF PROTECTION TO STRUCTURES AND DOWN-GRADIENT SENSITIVE RECEPTORS.
9. SOIL STABILIZATION:
 - 9.1. WITHIN THREE DAYS OF THE LAST ACTIVITY IN AN AREA, ALL EXPOSED SOIL AREAS, WHERE CONSTRUCTION ACTIVITIES ARE COMPLETE, SHALL BE STABILIZED.
 - 9.2. IN ALL AREAS, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS IN THE CURRENT CGP. (SEE TABLE 1 FOR GUIDANCE ON THE SELECTION OF TEMPORARY SOIL STABILIZATION MEASURES.)
 - 9.3. EROSION CONTROL SEED MIX SHALL BE SOWN IN ALL INACTIVE CONSTRUCTION AREAS THAT WILL NOT BE PERMANENTLY SEEDED WITHIN TWO WEEKS OF DISTURBANCE AND PRIOR TO SEPTEMBER 15th OF ANY GIVEN YEAR, IN ORDER TO ACHIEVE VEGETATIVE STABILIZATION PRIOR TO THE END OF THE GROWING SEASON.
 - 9.4. SOIL TACKIFIERS MAY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND REAPPLIED AS NECESSARY TO MINIMIZE SOIL AND MULCH LOSS UNTIL PERMANENT VEGETATION IS ESTABLISHED.
10. RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:
 - 10.1. TEMPORARY SEDIMENT BASINS (SEE CURRENT CGP) OR SEDIMENT TRAPS (ENV-WO 1506.10) SHALL BE SIZED TO RETAIN, ON SITE, THE VOLUME OF A 2-YEAR 24-HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER. TEMPORARY SEDIMENT BASINS USED TO TREAT STORMWATER RUNOFF FROM AREAS GREATER THAN 5-ACRES OF DISTURBANCE SHALL BE SIZED TO ALSO CONTROL STORMWATER RUNOFF FROM A 10-YEAR 24 HOUR STORM EVENT. ON-SITE RETENTION OF THE 10-YEAR 24-HOUR EVENT IS NOT REQUIRED.
 - 10.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
 - 10.3. TEMPORARY SEDIMENT BASINS OR TRAPS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.

11. ADDITIONAL EROSION AND SEDIMENT CONTROL GENERAL PRACTICES:
 - 11.1. USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, AND PERMANENT VEGETATIVE COVER TO REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.
 - 11.2. ALL STOCKPILES SHALL BE CONTAINED WITH TEMPORARY PERIMETER CONTROLS. INACTIVE SOIL STOCKPILES SHOULD BE PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY EROSION CONTROL SEED MIX AND MULCH, SOIL BINDER) OR COVERED WITH ANCHORED TARPS.
 - 11.3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH SECTION 645 OF NHDOT SPECIFICATIONS, WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.25 IN. OF RAIN PER 24-HOUR PERIOD. EROSION AND SEDIMENT CONTROL MEASURES WILL ALSO BE INSPECTED IN ACCORDANCE WITH THE GUIDANCE MEMO FROM THE NHDES CONTAINED WITHIN THE CONTRACT PROPOSAL AND THE EPA CONSTRUCTION GENERAL PERMIT.
 - 11.4. THE CONTRACTOR SHOULD UTILIZE STORM DRAIN INLET PROTECTION TO PREVENT SEDIMENT FROM ENTERING A STORM DRAINAGE SYSTEM PRIOR TO THE PERMANENT STABILIZATION OF THE CONTRIBUTING DISTURBED AREA.
 - 11.5. PERMANENT STABILIZATION MEASURES WILL BE CONSTRUCTED AND MAINTAINED IN LOCATIONS AS SHOWN ON THE CONSTRUCTION PLANS TO STABILIZE AREAS. VEGETATIVE STABILIZATION SHALL NOT BE CONSIDERED PERMANENTLY STABILIZED UNTIL VEGETATIVE GROWTH COVERS AT LEAST 85% OF THE DISTURBED AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL FOR ONE YEAR AFTER PROJECT COMPLETION.
 - 11.6. CATCH BASINS: CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT ENTER ANY EXISTING CATCH BASINS DURING CONSTRUCTION. THE CONTRACTOR SHALL PLACE TEMPORARY STONE INLET PROTECTION OVER INLETS IN AREAS OF SOIL DISTURBANCE THAT ARE SUBJECT TO SEDIMENT CONTAMINATION.
 - 11.7. TEMPORARY AND PERMANENT DITCHES SHALL BE CONSTRUCTED, STABILIZED AND MAINTAINED IN A MANNER THAT WILL MINIMIZE SCOUR. TEMPORARY AND PERMANENT DITCHES SHALL BE DIRECTED TO DRAIN TO SEDIMENT BASINS OR STORM WATER COLLECTION AREAS.
 - 11.8. WINTER EXCAVATION AND EARTHWORK ACTIVITIES NEED TO BE LIMITED IN EXTENT AND DURATION, TO MINIMIZE POTENTIAL EROSION AND SEDIMENTATION IMPACTS. THE AREA OF EXPOSED SOIL SHALL BE LIMITED TO ONE ACRE, OR THAT WHICH CAN BE STABILIZED AT THE END OF EACH DAY UNLESS A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY THE DEPARTMENT.
 - 11.9. CHANNEL PROTECTION MEASURES SHALL BE SUPPLEMENTED WITH PERIMETER CONTROL MEASURES WHEN THE DITCH LINES OCCUR AT THE BOTTOM OF LONG FILL SLOPES. THE PERIMETER CONTROLS SHALL BE INSTALLED ON THE FILL SLOPE TO MINIMIZE THE POTENTIAL FOR FILL SLOPE SEDIMENT DEPOSITS IN THE DITCH LINE.

BEST MANAGEMENT PRACTICES (BMP) BASED ON AMOUNT OF OPEN CONSTRUCTION AREA

12. STRATEGIES SPECIFIC TO OPEN AREAS LESS THAN 5 ACRES:
 - 12.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500; ALTERATION OF TERRAIN FOR CONSTRUCTION AND USE ALL CONVENTIONAL BMP STRATEGIES.
 - 12.2. SLOPES STEEPER THAN 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING.
 - 12.3. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT ALONE.
 - 12.4. AREAS WHERE HAUL ROADS ARE CONSTRUCTED AND STORMWATER CANNOT BE TREATED THE DEPARTMENT WILL CONSIDER INFILTRATION.
 - 12.5. FOR HAUL ROADS ADJACENT TO SENSITIVE ENVIRONMENTAL AREAS OR STEEPER THAN 5%, THE DEPARTMENT WILL CONSIDER USING EROSION STONE, CRUSHED GRAVEL, OR CRUSHED STONE BASE TO HELP MINIMIZE EROSION ISSUES.
 - 12.6. ALL AREAS THAT CAN BE STABILIZED SHALL BE STABILIZED PRIOR TO OPENING UP NEW TERRITORY.
 - 12.7. DETENTION BASINS SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE A 2 YEAR STORM EVENT.
13. STRATEGIES SPECIFIC TO OPEN AREAS BETWEEN 5 AND 10 ACRES:
 - 13.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES WILL BE UTILIZED.
 - 13.2. DETENTION BASINS WILL BE CONSTRUCTED TO ACCOMMODATE THE 2-YEAR 24-HOUR STORM EVENT AND CONTROL A 10-YEAR 24-HOUR STORM EVENT.
 - 13.3. SLOPES STEEPER THAN A 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS. OTHER ALTERNATIVE MEASURES, SUCH AS BONDED FIBER MATRIXES (BFMS) OR FLEXIBLE GROWTH MEDIUMS (FGMS) MAY BE UTILIZED, IF MEETING THE NHDES APPROVALS AND REGULATIONS.
 - 13.4. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS.
14. STRATEGIES SPECIFIC TO OPEN AREAS OVER 10 ACRES:
 - 14.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WO 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES AND BETWEEN 5 AND 10 ACRES WILL BE UTILIZED.
 - 14.2. THE DEPARTMENT ANTICIPATES THAT SOIL BINDERS WILL BE NEEDED ON ALL SLOPES STEEPER THAN 3:1, IN ORDER TO MINIMIZE EROSION AND REDUCE THE AMOUNT OF SEDIMENT IN THE STORMWATER TREATMENT BASINS.
 - 14.3. THE CONTRACTOR WILL BE REQUIRED TO HAVE AN APPROVED DESIGN IN ACCORDANCE WITH ENV-WO 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE CONTRACTOR SHALL ALSO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT WHO HAS DEMONSTRATED EXPERIENCE IN THE DESIGN OF FLOCCULANT TREATMENT SYSTEMS. THE CONSULTANT WILL ALSO BE RESPONSIBLE FOR THE IMPLEMENTATION AND MONITORING OF THE SYSTEM.

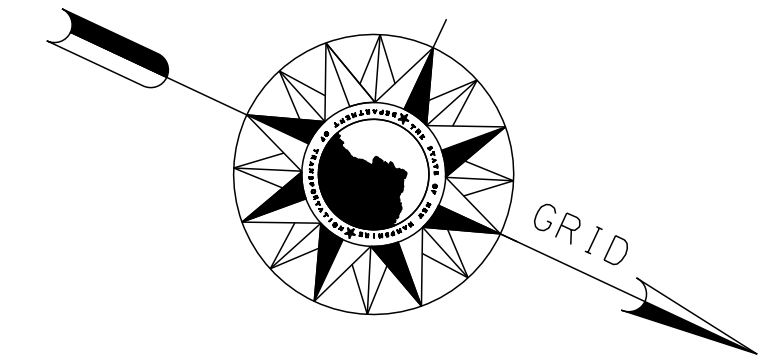
TABLE 1
GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES ²				ROLLED EROSION CONTROL BLANKETS ³			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNCSB	DNCB
SLOPES ¹												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES	YES	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

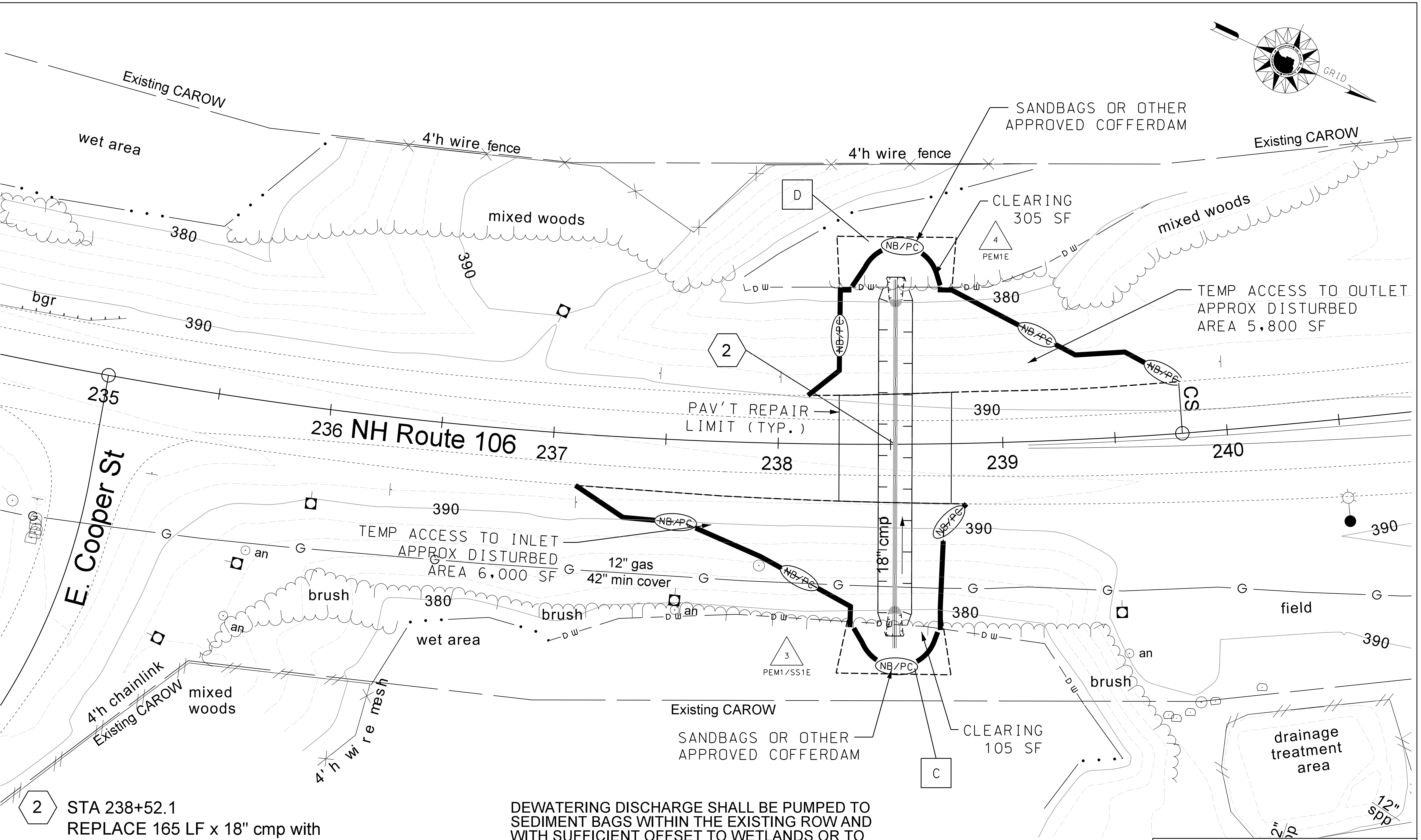
ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNCSB	2 NET STRAW-COCONUT BLANKET
CB	COMPOST BLANKET	FRM	FIBER REINFORCED MEDIUM	DNCB	2 NET COCONUT BLANKET

- NOTES:
1. ALL SLOPE STABILIZATION OPTIONS ASSUME A SLOPE LENGTH ≤ 10 TIMES THE HORIZONTAL DISTANCE COMPONENT OF THE SLOPE, IN FEET.
 2. PRODUCTS CONTAINING POLYACRYLAMIDE (PAM) SHALL NOT BE APPLIED DIRECTLY TO OR WITHIN 100 FEET OF ANY SURFACE WATER WITHOUT PRIOR WRITTEN APPROVAL FROM THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
 3. ALL EROSION CONTROL BLANKETS SHALL BE MADE WITH WILDLIFE FRIENDLY BIODEGRADABLE NETTING.

STATE OF NEW HAMPSHIRE LEDDON			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
<i>EROSION CONTROL STRATEGIES</i>			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
43312erosstrat	44011	9	12

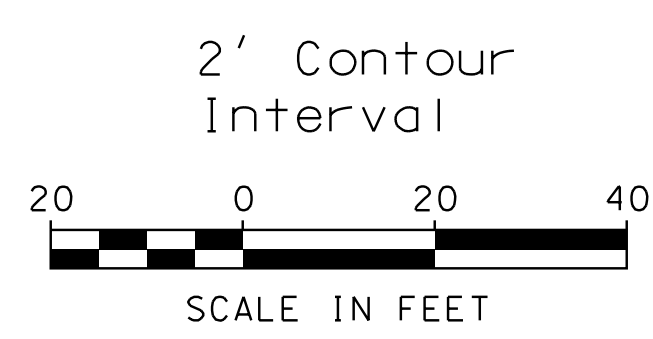


SDR PROCESSED	SEL	DATE	4/2022
NEW DESIGN	CAC	DATE	12/2022
SHEET CHECKED	JUN	DATE	1/12/2023
AS BUILT DETAILS		DATE	



2 STA 238+52.1
 REPLACE 165 LF x 18" cmp with
 133 LF x 24" PLASTIC PIPE, SAME LOCATION,
 CONST END SECTIONS ON BOTH ENDS
 SEE PROFILE FOR ADDITIONAL INFORMATION
 FILL & ABANDON EXISTING 18" CMP

DEWATERING DISCHARGE SHALL BE PUMPED TO
 SEDIMENT BAGS WITHIN THE EXISTING ROW AND
 WITH SUFFICIENT OFFSET TO WETLANDS OR TO
 ANOTHER APPROVED LOCATION WITH
 APPROPRIATE SEDIMENT CONTROLS/BMP'S

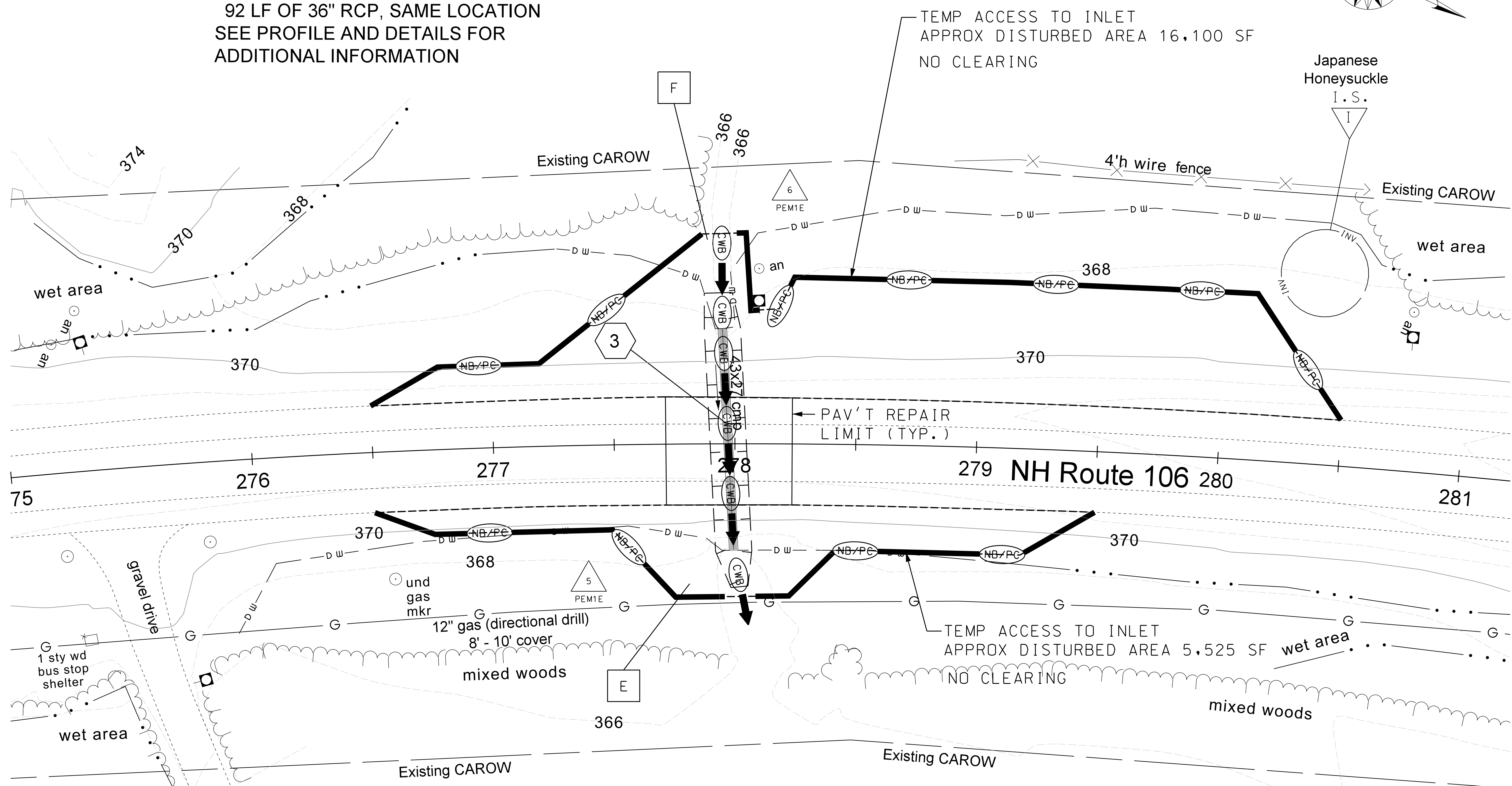
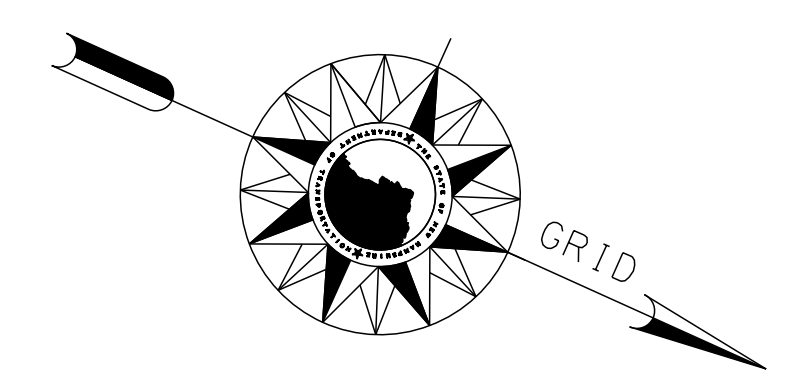


STATE OF NEW HAMPSHIRE LOUDDON			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
EROSION CONTROL PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
44011ercplans	44011	11	12

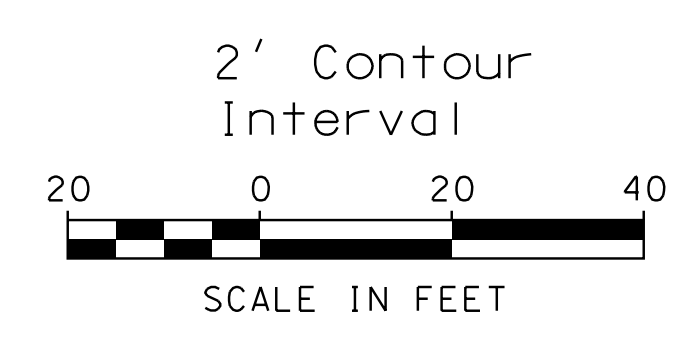
SDR PROCESSED	SEL	DATE	4/2022
NEW DESIGN	CAC	DATE	12/2022
SHEET CHECKED	JUN	DATE	1/12/2023
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	DESCRIPTION
STATION	
DATE	
NUMBER	

3 STA 277+97.2
 REPLACE 91.5 LF OF 43" X 27" CMP with
 92 LF OF 36" RCP, SAME LOCATION
 SEE PROFILE AND DETAILS FOR
 ADDITIONAL INFORMATION



IF DEWATERING IS NECESSARY, DISCHARGE SHALL BE PUMPED TO SEDIMENT BAGS WITHIN THE EXISTING ROW AND WITH SUFFICIENT OFFSET TO WETLANDS OR TO ANOTHER APPROVED LOCATION WITH APPROPRIATE SEDIMENT CONTROLS/BMP'S



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44011ercplans	44011	12	12