NHDES-W-06-012

WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau
Land Resources Management

Check the status of your application: www.des.nh.gov/onestop

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

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

1. REVIEW TIME: Indicate your Review Time below. To determine review time, refer to Guidance Document A for instructions.

☒ Standard Review (Minimum, Minor or Major Impact) ☐ Expedited Review (Minimum Impact only)

2. MITIGATION REQUIREMENT:

If mitigation is required a Mitigation-Pre Application meeting must occur prior to submitting this Wetlands Permit Application. To determine if Mitigation is Required, please refer to the Determine if Mitigation is Required Frequently Asked Question.

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

☐ N/A - Mitigation is not required

3. PROJECT LOCATION:

Separate wetland permit applications must be submitted for each municipality that wetland impacts occur within.

ADDRESS: **NH Route 16**			TOWN/CITY: **Ossipee**
TAX MAP:	BLOCK:	LOT:	UNIT:

USGS TOPO MAP WATERBODY NAME: BEAR CAMP RIVER / Lovell River ☐ NA STREAM WATERSHED SIZE: 150 Mi² / 16.8 Mi² ☐ NA

LOCATION COORDINATES (If known): 43.79, -71.18 / 43.77, -71.16 ☑ Latitude/Longitude ☐ UTM ☐ State Plane

4. PROJECT DESCRIPTION:

Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

Pavement, drainage, and guardrail rehabilitation along 3.5 miles of NH Route 16 in Ossipee from the intersection with NH Route 16B north to the Chocorua River. Three bridges will be replaced within this corridor: over the Lovell River, over the Bearcamp River, and over the Bearcamp River relief.

5. SHORELINE FRONTAGE:

☐ NA This does not have shoreline frontage. SHORELINE FRONTAGE: **483'**

Shoreline frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line.

6. RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT:

Please indicate if any of the following permit applications are required and, if required, the status of the application.

To determine if other Land Resources Management Permits are required, refer to the Land Resources Management Web Page.

Permit Type	Permit Required	File Number	Permit Application Status
Alteration of Terrain Permit Per RSA 485-A:17	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Individual Sewerage Disposal per RSA 485-A:2	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Subdivision Approval Per RSA 485-A	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Shoreland Permit Per RSA 483-B	☒ YES ☐ NO	TBD ____	☐ APPROVED ☐ PENDING ☐ DENIED

7. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:

See the Instructions & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB 17 - 3864 .

b. ☐ Designated River the project is in ¼ miles of: _____ ; and
date a copy of the application was sent to the Local River Management Advisory Committee: Month: __ Day: __ Year: ____
☒ N/A

8. APPLICANT INFORMATION (Desired permit holder)

LAST NAME, FIRST NAME, M.I.: **Chase, Victoria**		
TRUST / COMPANY NAME: **NHDOT, Bridge Design**	MAILING ADDRESS: **7 Hazen Drive**	
TOWN/CITY: **Concord**	STATE: **NH**	ZIP CODE: **03301**
EMAIL or FAX: **Victoria.Chase@dot.nh.gov**	PHONE: **603-271-2171**	

ELECTRONIC COMMUNICATION: By initialing here: VHC, I hereby authorize NHDES to communicate all matters relative to this application electronically.

9. PROPERTY OWNER INFORMATION (If different than applicant)

LAST NAME, FIRST NAME, M.I.:		
TRUST / COMPANY NAME:	MAILING ADDRESS:	
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL or FAX:	PHONE:	

ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.

10. AUTHORIZED AGENT INFORMATION

LAST NAME, FIRST NAME, M.I.:	COMPANY NAME:	
MAILING ADDRESS:		
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL or FAX:	PHONE:	

ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.

11. PROPERTY OWNER SIGNATURE:

See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

1. I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
6. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47.
7. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to identify the presence of historical/ archeological resources while coordinating with the lead federal agency for NHPA 106 compliance.
8. I authorize NHDES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
10. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not forward returned mail.

Property Owner Signature	Print name legibly	Date
⇨ [signature]	Victoria H. Chase	02/23/2018

MUNICIPAL SIGNATURES

12. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.

⇨	Print name **legibly**	Date

DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.
2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.
3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will be reviewed in the standard review time frame.

13. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), 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	Print name legibly	Town/City	Date

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. 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.
4. 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; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the single, 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.

14. IMPACT AREA:

For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact

Permanent: impacts that will remain after the project is complete.

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

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.		TEMPORARY Sq. Ft. / Lin. Ft.	
Forested wetland		☐ ATF	29317	☐ ATF
Scrub-shrub wetland		☐ ATF	515	☐ ATF
Emergent wetland	3459	☐ ATF	14462	☐ ATF
Wet meadow		☐ ATF		☐ ATF
Intermittent stream		☐ ATF		☐ ATF
Perennial Stream / River	815 / 61	☐ ATF	35134 / 532	☐ ATF
Lake / Pond	/	☐ ATF	/	☐ ATF
Bank - Intermittent stream	/	☐ ATF	/	☐ ATF
Bank - Perennial stream / River	922 / 122	☐ ATF	7678 / 904	☐ ATF
Bank - Lake / Pond	/	☐ ATF	/	☐ ATF
Tidal water	/	☐ ATF	/	☐ ATF
Salt marsh		☐ ATF		☐ ATF
Sand dune		☐ ATF		☐ ATF
Prime wetland		☐ ATF		☐ ATF
Prime wetland buffer		☐ ATF		☐ ATF
Undeveloped Tidal Buffer Zone (TBZ)		☐ ATF		☐ ATF
Previously-developed upland in TBZ		☐ ATF		☐ ATF
Docking - Lake / Pond		☐ ATF		☐ ATF
Docking - River		☐ ATF		☐ ATF
Docking - Tidal Water		☐ ATF		☐ ATF
Vernal Pool		☐ ATF		☐ ATF
TOTAL	5196 / 183		87106 / 1436	

15. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

☐ Minimum Impact Fee: Flat fee of $ 200

☐ Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking) **92302** sq. ft. X $0.20 = $ **18460.40**

Temporary (seasonal) docking structure: _____ sq. ft. X $1.00 = $ _____

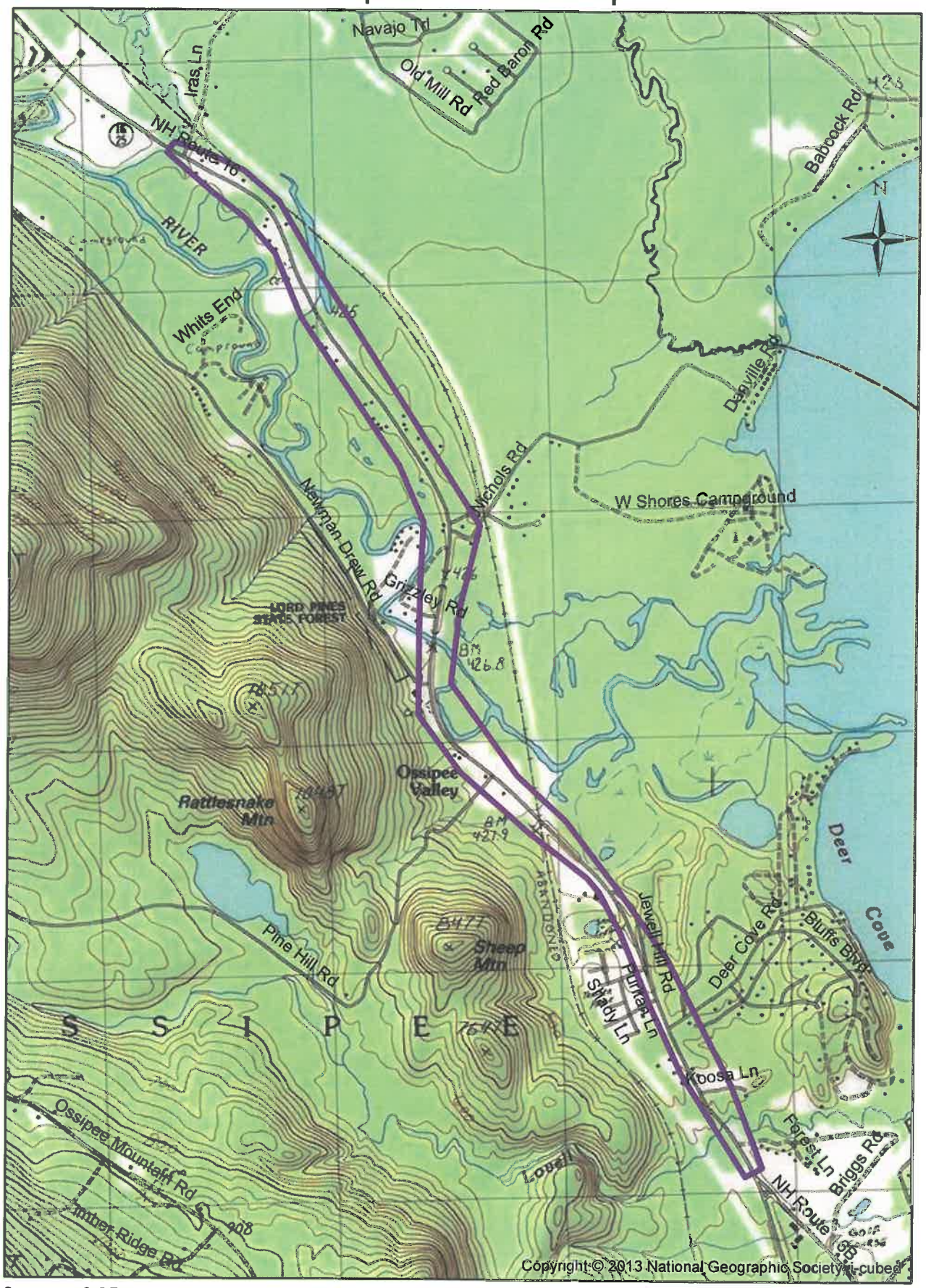
Permanent docking structure: _____ sq. ft. X $2.00 = $ _____

Projects proposing shoreline structures (including docks) add $200 = $ _____

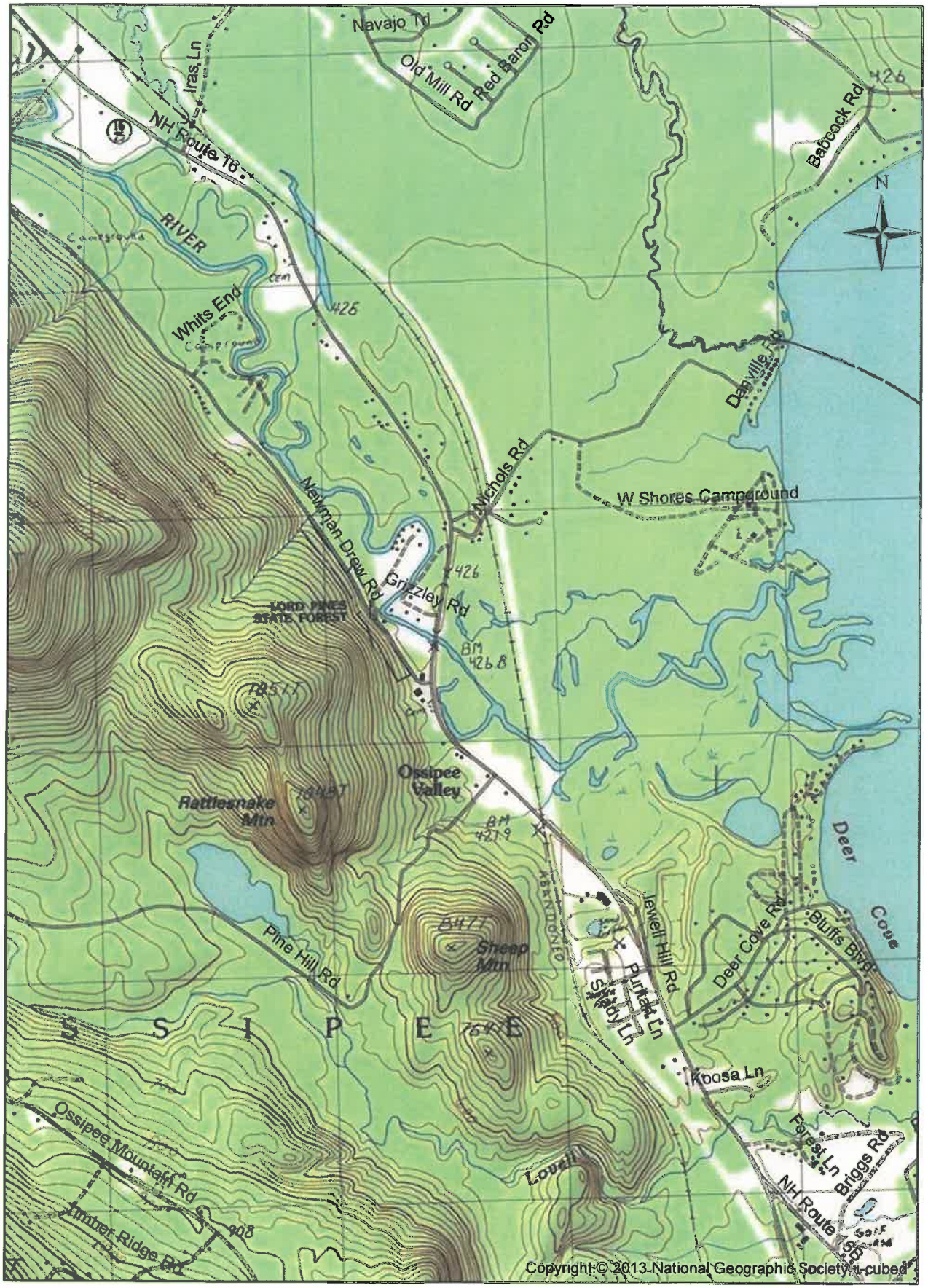
Total = $ **10000.00**

The Application Fee is the above calculated Total or $200, whichever is greater = $ **10000.00**

Ossipee 14749 Topo



Ossipee 14749 Topo



NEW HAMPSHIRE DEPARTMENT OF Environmental Services

WETLANDS PERMIT APPLICATION – ATTACHMENT A
MINOR AND MAJOR - 20 QUESTIONS

Land Resources Management
Wetlands Bureau

Check the Status of your application: www.des.nh.gov/onestop

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

Env-Wt 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project's design in assessing the impact of the proposed project to areas and environments under the department's jurisdiction. Respond with statements demonstrating:

1. The need for the proposed impact.

Paving, guardrail, and drainage preservation work along NH Route 16 in Ossipee will upgrade and extend the usable service life of the roadway. The roadway pavement is in poor shape, first built in 1955 with minimum base and pavement structure with numerous thin overlays since to address immediate cracking, rutting, and heaving. A more major rehab would allow a more maintainable road surface for the future. Metal culverts and older underdrain also need replacing due to age/condition. Additionally, a public request was made for widening at two side roads, Deer Cove and Newman Drew Rds., to allow left turn bypass movements. A concern was also raised about sight distance at Grizzley Road.

Bridge No. 152/268, built in 1950, carries NH Route 16 over the Lovell River and is on the Red List. It will be replaced on line with the existing bridge using a temporary detour and detour bridge on the west side of NH Route 16. The span will be increased from 62' to 97' to increase the hydraulic opening, and the roadway profile adjacent to the bridge will be adjusted to decrease overtopping of the roadway during flood events. Bridge No. 137/297, built in 1954, carries NH Route 16 over the Bearcamp River and is on the Red List. A replacement bridge will be constructed offline and slid into place using rapid bridge construction techniques. The span will be increased from 392' to 410' with slight adjustments to the approach profile. Bridge No. 137/299, built in 1955, carries NH Route 16 over the Bearcamp River Relief structure and is on the Red List. A replacement bridge will be constructed offline and slid into place using rapid bridge construction techniques. The span will be decreased from 172 to 170' with slight adjustments to the approach profile.

2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.

The proposed drainage work has been designed to achieve the necessary structure maintenance and upgrades to maintain roadway integrity and safety while minimizing impacts to the surrounding area. The roadway rehab will remove part of the reclaim in order to limit floodplain and floodway impacts, and in turn, reduces wetland impacts. Lack of cover over pipes and floodplain present require replacement of culverts in kind. The bypass shoulders being added are kept minimal, whereas a full left turn pocket would end up in additional length and width.

Since the span of the Lovell River bridge will increase, the abutments will be placed behind the existing abutments, and most of the existing stone riprap on the banks will be left intact, minimizing impacts to the river and reducing flooding over the road. The existing Bearcamp River bridge is a five span structure with pier bents in the main channel. The proposed three span configuration will remove the two existing piers from the river reducing impacts to the river.

3. The type and classification of the wetlands involved.

PEM/SS1E: Palustrine, Emergent/Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded/Saturated

R2UB2H: Riverine, Lower Perennial, Unconsolidated Bottom, Sand, Permanently Flooded

PSS/FO1E: Palustrine, Scrub-Shrub/Forested, Broad-Leaved Deciduous, Seasonally Flooded/Saturated

R3UB3H: Riverine, Upper Perennial, Unconsolidated Bottom, Mud, Permanently Flooded

PEM1E: Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated

PUBH: Palustrine, Unconsolidated Bottom, Permanently Flooded

PFO1E: Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded/Saturated

PSS1E: Palustrine Scrub/Shrub Broad-Leaved Deciduous Seasonally Flooded/Saturated **BANK: Bank**

4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters.

The Lovell River flows into Ossipee Lake.

The Bearcamp River flows into Ossipee Lake.

5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area.

The wetland types which will be impacted, as described above in #3, are very common to NH and are not considered rare in this area. There will be no impact to any large surface waters or special wetland types, including prime wetlands, sand dunes, or tidal areas.

6. The surface area of the wetlands that will be impacted.

(35,134 SF temporary, 815 SF permanent) Riverine

(44,294 SF temporary, 3,459 SF permanent) Palustrine

(7,678 SF temporary, 922 SF permanent) Bank

7. The impact on plants, fish and wildlife including, but not limited to:
   a. Rare, special concern species;
   b. State and federally listed threatened and endangered species;
   c. Species at the extremities of their ranges;
   d. Migratory fish and wildlife;
   e. Exemplary natural communities identified by the DRED-NHB; and
   f. Vernal pools.

There are no rare or special concern species identified within the proposed project area.

According to information provided by the New Hampshire Fish and Game Department, there are no documented Northern Long-Eared Bat roost trees or hibernacula in Ossipee. The 14749 project qualifies for review in accordance with the FHWA, FRA, FTA Programmatic Consultation for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat. As the project meets the requirements for review under the Programmatic Consultation, the project may rely on the concurrence provided in the FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat to satisfy consultation requirements under Section 7 of the Endangered Species Act. Project activities will adhere to applicable avoidance and minimization measures. The project has been determined to be likely to adversely affect (LAA) the threatened Northern Long-Eared Bat due to proposed active season tree clearing. A bridge assessment is planned to survey the bridges for evidence of bat utilization. If any indication of bat use of the bridges is discovered, the project construction will not be initiated until completion of consultation with USFWS. A copy of the project details, the bridge assessment results, and the determination of LAA IPaC decision key results will be submitted to the USFWS Regional Office.

There are no species known to be at the extremities of their ranges located in the project area.

There will be no impact on migratory fish and wildlife within the proposed project area.

There are no exemplary natural communities identified by the DRED-NHB within the proposed project area.

There are no vernal pools identified within the project area.

8. The impact of the proposed project on public commerce, navigation and recreation.

The proposed project will not adversely affect public commerce, navigation or recreation once completed. Navigation will improve at the Bearcamp River bridge due to moving the piers outside the waterway.

9. The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

The project will not interfere with the aesthetic interests of the general public. Public input has been received through the public meeting process and comments have been incorporated into the project.

10. The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.

The proposed project will not interfere with or obstruct public rights of passage or access. Once completed the work will maintain the same previous access.

11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

The project will not impact abutting owners.

12. The benefit of a project to the health, safety, and well being of the general public.

Paving improvements will reduce the cost of automobile repairs. Guardrail improvements will increase the safety of the roadway. Drainage improvements will prolong the life of the roadway and reduce the potential impact of flood events. Replacement of the three bridges will remove three bridges from the Red List, and reduce the impacts to NH Route 16 during flood events.

13. The impact of a proposed project on quantity or quality of surface and groundwater. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

There will be no significant changes to the quantity or quality of surface water or groundwater in the final condition. The Contractor will be required to submit a SWPPP, which will be strictly followed to maintain water quality during construction. There will be no increase to the total impervious area on the project.

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

Flooding: The project will decrease flooding on NH Route 16 during storm events. There are no net floodplain impacts.

Erosion: The proposed riprap will improve the current situation at all three bridges.

Sedimentation: Sedimentation may increase slightly at the three bridges due to improved waterway openings, but any increase would be negligible.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

The total number of bridge piers will be reduced from seven to three.

16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

There are no similar structures in the vicinity owned by other parties that would require repair.

17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.

Almost all the impacts are temporary and the temporarily impacted wetlands will be restored upon completion of the project. The value and function of the wetlands will remain essentially unchanged.

18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.

This project is located 2.5 miles from Heath Pond Bog, listed in the Natural Register of Natural Landmarks, but will have no impact on the bog.

19. The impact upon the value of areas named in acts of Congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.

There are no areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, or national lakeshores that will be impacted as a result of this project.

20. The degree to which a project redirects water from one watershed to another.

The project as proposed will not redirect water from one watershed to another.

Additional comments

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: October 19, 2016
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Sarah Large
Ron Crickard
Mark Hemmerlein
Marc Laurin
Kerry Ryan
Jon Evans
Anthony Weatherbee
Chris Carucci
Dave Smith
Victoria Chase
Gerald Bedard
Jon Hebert
Wendy Johnson
Ron Kleiner
Jessica D'Entremont
Charles Blackman
Maggie Baldwin
Keith Cota

Army Corps of Engineers
Michael Hicks

NHDES
Gino Infascelli
Lori Sommer
Mary Ann Tilton

NH Fish & Game
Carol Henderson

NH Natural Heritage Bureau
Amy Lamb

Consultants/Public Participants
Christine Perron
Vicki Chase
Mike Long
David Kull
Jed Merrow
Steve Hodgdon
Peter Walker
Chris Bean
Leo Tidd
Mark Hutchins
Michael Fowler
Janusz Czuzowski
Steve Hoffmann
Ben Martin

(When viewing these minutes online, click on an attendee to send an e-mail)

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

(When viewing these minutes online, click on a project to zoom to the minutes for that project

planned to be available in June 2017. Coordination regarding conservation land impacts should commence as soon as possible.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Ossipee #14749 (X-A000(490))

Christine Perron provided an overview of the project's status and proposed impacts. The project proposes to replace three bridges and rehabilitate 3.4 miles of NH Route 16/25. The bridges span the Lovell River, Bearcamp River, and Bearcamp River Relief. The bridge over the Lovell River will be replaced on the same alignment and a temporary bridge will be installed upstream to maintain traffic during construction. The bridges over the Bearcamp River and Bearcamp Relief will be replaced on the same alignment using slide-in bridge construction, which involves building the new bridge next to the existing bridge, closing the road for a 60-hour period per bridge, and sliding the new bridge into place.

This project was last discussed at the August 17, 2016 resource agency meeting. The only substantial change in the project's design since that meeting involves the proposed pavement treatment. The original treatment was going to result in raising the roadway approximately 12" in some locations, which would require slope widening. Pavement treatment that is now proposed will result in only a ½" raise in roadway, so widening slopes will not be necessary. The only exception to this is the slope widening that will be necessary at the Lovell River and Bearcamp River bridges to match the approach roadway into the new bridges that will be installed at a higher elevation.

The project schedule was reviewed. The project is near the end of the preliminary design phase, with a draft NEPA document to be completed in early November and a DOT Public Hearing expected in early December. Once the Hearing Commission makes a finding of necessity, the NEPA document will be finalized and final design of the project will begin. At this time, an advertising date in the summer of 2018 is anticipated. Based on the current schedule, permit applications will be prepared in mid-2017. The project will be reviewed with the resource agencies once more, prior to submittal of permit applications.

The Lovell River and Bearcamp River bridges are Tier 3 stream crossings. The Lovell River has a bankfull width of 45' based on field measurements. The span recommended by the Stream Crossing Guidelines (1.2x bankfull+2') is 56'long. The existing span is 58' long. The proposed span is 97'long, with the new abutments placed behind existing abutments and the existing abutments removed. The stream crossing general design criteria and Tier 3 design criteria were reviewed. The existing span meets these design criteria, including the opportunity for wildlife passage under the bridge (smaller animals) and accommodating the 100-year storm. The proposed span would also meet these design criteria. The new bridge would have abutments further back from the top of bank and could seek to improve wildlife passage by providing a more level shelf in the riprap.

The Bearcamp River has an estimated bankfull width of 145'. This is calculated from the regional geometry curves based on a drainage area of 150 square miles. At the time of the stream assessment, the river was too deep to obtain accurate field measurements of bankfull width. A laser distance finder was used in the field and resulted in bankfull measurements of approximately 120'. Measuring the distance from top of bank to top of bank off the plan shows a width of approximately 135'. Based on these numbers, the calculated bankfull width of 145' seems reasonable. The span recommended by the Stream Crossing Guidelines (1.2x bankfull+2') is 176'long. The existing 5-span bridge is 392' long. The proposed 3-span bridge will be 410' long with the new abutments placed behind existing abutments and existing abutments removed. In addition, the new bridge will have two piers instead of four. The two

existing piers currently in the river channel will be removed. The two new piers will be located near the top of bank, with riprap around each pier. Ample opportunity for wildlife passage exists at this bridge since it spans portions of the adjacent floodplain. The bridge will also accommodate the 100-year storm.

Gino Infascelli commented that, with the proposed piers on the bank of the Bearcamp River, the design does not technically span the river according to the NHDES definition of span. Therefore, the Bearcamp River bridge would need to be permitted as an alternative design under the Stream Crossing Rules.

Drainage work along the 3.4-mile project will consist of two culvert replacements. One of the culverts carries a perennial stream and has a drainage area of 0.2 square miles, making this a Tier 1 stream crossing. The culvert is a 36" corrugated metal pipe. Another 36" pipe is located immediately downstream under a railroad line. Therefore, the culvert under NH Route 16 will not be upsized and will be replaced in-kind.

Preliminary wetland impacts were reviewed. Impacts at the Lovell River will consist of the following:
Wetlands (wet ditch) – 3,532 sq ft permanent; 0 sq ft temporary
The wet ditch will be reconstructed at new toe of slope.
Bank – 2,669 sq ft permanent; 2,090 sq ft temporary; 200 linear feet permanent
Permanent bank impacts are due to riprap that will be placed in front of new abutments.
Channel – 0 sq ft permanent; 0 sq ft temporary

Impacts at the Bearcamp River will consist of the following:
Wetlands (forested wetland) – 0 sq ft permanent; 19,926 sq ft temporary
This area includes any wetland within the limits of a proposed construction easement. If forested wetlands will be temporarily impacted during construction, impacts will consist of clearing but not grubbing.
Bank – 606 sq ft permanent; 3,043 sq ft temporary; 100 linear feet permanent
Channel – 585 sq ft permanent; 1,344 sq ft temporary; 68 linear feet permanent
Permanent bank and channel impacts are due to riprap that will be placed around the new piers.

Impacts associated with drainage work, which consists of replacing a Tier 1 stream crossing and replacing a culvert located between two palustrine wetlands, total 1,050 sq ft of temporary wetland impact and 120 sq ft of channel impact.

A summary of preliminary impacts for the overall project was given:
- Total permanent impacts to wetlands: 3,532 sq ft (ditch to be reconstructed)
- Total permanent impacts to channels: 585 sq ft (68 linear feet)
- Total permanent impacts to banks: 3,275 sq ft (300 linear feet)
- Total overall permanent impacts: 7392 sq ft (368 linear feet of bank/channel)

C. Perron asked for input on the proposed impacts relative to the anticipated need for mitigation. Matt Urban commented that the linear feet of the two existing piers could be counted as mitigation credit since the piers will be removed from the river. Lori Sommer agreed and said that the remaining linear feet of permanent bank and channel impacts would require mitigation since the impacts are from new riprap. L. Sommer was agreeable to an in-lieu fee as mitigation; however, she asked that the Department first contact Jan McClure at The Nature Conservancy to determine if there may be appropriate projects in the area that could serve as mitigation instead of the in-lieu fee.

The Bearcamp River is subject to the Shoreland Water Quality Protection Act and the project will require a Shoreland Permit By Notification.

The Bearcamp River is Essential Fish Habitat (EFH) for Atlantic salmon. The EFH Assessment has been submitted to the National Marine Fisheries Service. A response has not yet been received; however, it is not anticipated that the project will be considered a substantial impact to EFH.

A sensitive State-listed plant species occurs to the west of the project area in a location that will not be impacted by the project. A number of exemplary natural communities are located near or adjacent to the project. The one community that is directly adjacent to the project is a kettle hole bog. There is one existing culvert that outlets directly into kettle hole bog and NHDOT is not proposing repairs or replacement of this culvert. The 36" culvert that will be replaced carries a perennial stream under NH Route 16. From the outlet of this culvert, the stream then flows into another 36" culvert located under the rail line and eventually drains into the kettle hole bog system. The NH Natural Heritage Bureau did not have concerns with the proposed culvert replacement since the pipe is not being upsized and drainage patterns will not be altered to direct more roadway runoff into the kettle hole bog. The only other work that is proposed in the vicinity of the bog is paving. Amy Lamb asked that consideration be given to improving stormwater treatment in this area and/or improving the buffer between the roadway and bog.

The federally-listed small whorled pogonia was listed as a potential concern in the USFWS IPaC report. C. Perron noted that she has completed a number of field reviews throughout the project area this summer and approximately 5 years ago. The habitat types that may be impacted by the project primarily consist of mowed roadside, floodplain forest, scrub-shrub and emergent wetlands, and dry oak-pine upland forest, none of which are habitat types where this species is typically found. There is one area at the Lovell River that consists of dense hemlock and red maple with little ground cover. This area has been reviewed on two occasions and small whorled pogonia was not found. An email has been sent to Maria Tur at USFWS to seek concurrence that there are no concerns with this species.

Regarding northern long-eared bat, the project will require some tree clearing; however it is anticipated that the clearing will meet the criteria for concurrence under the FHWS Programmatic Consultation.

The project will result in impacts to the Lovell River and Bearcamp River floodplains. No impacts to the regulatory floodway are anticipated at either river. Floodplain impacts will consist of 1,174 CY of fill. The Department met last week with Mike Hicks (Army Corps) and Jennifer Gilbert (Office of Energy and Planning) to review proposed impacts. The Department is now in the process of identifying proposed mitigation for the floodplain impacts. Some mitigation will be in the form of design elements, such as moving bridge abutments back. There may also be some opportunity to provide an area of flood storage near the Lovell River. The Department will summarize impacts and proposed mitigation in a letter to the Army Corps and Office of Energy and Planning and will continue to coordinate as necessary.

This project has been previously discussed at the 1/16/2016 amd 8/17/2016 Monthly Natural Resource Agency Coordination Meetings.

Sanbornton #16154 (X-A001(158))

Steve Hodgdon (VHB) provided an overview of this project, which involves repair of Sanbornton Bridges #127/099 and #124/096 which carry the northbound and southbound barrels of I-93 over Salmon Brook in the Town of Sanbornton.

Working from a set of slides (see attached), S. Hodgdon explained that northbound bridge is in generally good condition, but some minor repairs to the center joint of the roof slab and two wingwall joints on the downstream abutment, as well as some patching or crack-filling along the roof slab and walls. Short term lane closure and traffic shifts would be required during

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: December 20, 2017
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Sarah Large
Ron Crickard
Mark Hemmerlein
Victoria Chase
Rebecca Martin
Jason Tremblay
Kirk Mudgett
Keith Cota
Marc Laurin
Chris Carucci
Jennifer Reczek
Jon Hebert
Wendy Johnson
Jon Evans

ACOE
Mike Hicks

EPA
Mark Kern

Federal Highway
Jamie Sikora

NHDES
Gino Infascelli
Lori Sommer

NHF&G
Carol Henderson

NH Natural Heritage Bureau
Amy Lamb

Consultants/Public Participants
John Byatt
Jaime French
Henry Kunhardt
Christine Perron
Jed Merrow
Steve Hoffmann
Ben Martin
Kevin Thatcher

(When viewing these minutes online, click on an attendee to send an e-mail)

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

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

NOTES ON CONFERENCE:

Finalization of the October 18th and November 15th Natural Resource Agency Meeting Minutes.
Matt Urban ask the group if there were any other comments or edits for the October 18th and November 15th 2017 meeting minutes. We had received only a few comments for each. No one objected to finalizing both sets of minutes. The minutes were finalized and posted after the meeting.

Ossipee, #14749 (X-A000(490))
The Ossipee 14749 project proposes to replace three bridges and rehabilitate 3.4 miles of NH Route 16/25. The project is not anticipated to reach the 10,000 square feet of wetland impact threshold for mitigation, but does include stream and bank impacts to the Lovell and Bearcamp Rivers. The project will advertise on July 10, 2018. Construction will be completed in June of 2021.

The bridges over the Bearcamp River and Bearcamp flood relief area will be replaced on the same alignment using slide-in bridge construction, which involves building the new bridge next to the existing bridge, closing the road for a one weekend per bridge, and sliding the new bridge into place. The Lovell River Bridge replacement will be a standard bridge replacement with a temporary detour bridge constructed, the existing bridge demolished and replaced, and then the detour removed. There will be some road profile modifications at the bridges and in some sections of road rehabilitation of up to 6 inches. NH Route 16 will be widened at the intersections with Deer Cove Road and Newman Drew Road. There will be 3 culverts replaced.

Kirk Mudgett described the impacts of the project to the floodplain and showed areas of proposed flood plain fill and mitigation on project plans. He explained that the areas of fill and areas of fill removal will balance out to one for one. Mike Hicks agreed that the impacts and credits appear to balance and the project can move forward relative to flood plain impacts. Mike Hicks inquired about historical issues and the Northern Long Eared Bat. Rebecca Martin explained that the bridges are eligible and the project will have an adverse effect. Mitigation has been agreed upon for the bridge impacts. Rebecca Martin explained that due to active season tree clearing the project is anticipated to have an adverse impact on the Northern Long Eared Bat. The project is in accordance with the Range-wide Northern Long Eared Bat Programmatic Agreement between FHWA, FRA, FTA and USFWS and necessary avoidance and mitigation measures will be incorporated into the project to ensure that it meets the conditions of the Programmatic Agreement.

Matt Urban explained that a meeting was held (between NH DOT, Lori Sommer (NH DES) and Jamie Sikora (FHWA)) that day prior to the Natural Resources meeting to discuss mitigation for the stream and bank impacts. NH DOT has evaluated several different options for wetland mitigation. For this project, an ARM fund payment has been determined to be most prudent. Matt Urban led the group through a discussion of the areas where the project proposes impacts to wetlands, streams, and banks. Matt Urban explained that the intent is to mitigate for areas of new permanent bank impacts where stone will be placed where stone is not currently. Areas where there is already rip rap, mitigation would only be calculated for extensions. Lori Sommer agreed to this approach.

Matt Urban commented that based on this method and a reduction for the bridge piers, there would be around 183 linear feet of channel and bank impacts that would need to be mitigated. This would be an ARM fund payment of around $45,000. The wetland permit application is anticipated to be submitted in February of 2018.

Mark Kern raised the issue of temporary impacts to forested wetlands and the Army Corps New England District Compensatory Mitigation Guidance. Mark Kern indicated that the Guidance suggests that mitigation of as much as 20%* of temporary forested wetland impacts may be appropriate. The Bureau of Environment staff was not familiar with this guidance, as it has not been raised on other projects. Matt

Urban explained that the Department does not typically mitigate for temporary impacts. Lori Sommer commented that table 2 of the 2016 Corps guidance has been applied to utility projects, not DOT projects. Matt Urban commented that there are about 5,000 sq. ft. of permanent impacts and 87,000 sq. ft. of temporary impacts allowing the Contractor to determine the best course of action for constructing and sliding in the bridges. These impacts are shown to the full extent of the Temporary Construction Easement area to allow the contractor to possibly use any of the Temporary Construction Easement as an area to construct and then slide the constructed bridges into place. It is possible that the Contractor may choose to not use that location and construct the bridge and do the slide from one of the other quadrants around the bridge in which case the impacts would be reduced. The Department seeks not to dictate the Contractor's means and methods to complete this work. Therefore, the intention is to apply for a permit for the full extent of possible area the Contractor may require to complete the work. Lori Sommer suggested that it might be possible to mitigate for temporary forested wetland impacts after the Contractor has selected their method. Mike Hicks commented that this does not come up often and he will engage Ruth Ladd in the mitigation conversation.

The group discussed the temporary forested wetland impacts including impact area "N" (equals 21,191 square feet of temporary impact), area "W" (about 6,161 square feet of temporary impact), and area "X" (about 1,965 square feet of temporary impact).** Cumulatively, this means the project is showing 29,317 square feet of temporary impact to forested wetlands. Mark Kern commented that the 20%* is a guideline, Army Corps could determine that a lower percentage is appropriate.

The group also discussed that NHDES rules clearly indicate: 'Env-Wt 302.03(d) Mitigation shall not be required for impacts that are not intended to remain after the project is completed, provided the areas are restored in accordance with the provisions shown in the approved project plans.' The Department's plans would consist of clearing trees as necessary to facilitate the proposed constructions and slide-in of the constructed bridge. The stumps would be left in place and the once forested area would be left alone to naturally return to forest. Matt Urban commented that currently the Env-Wt 302.03 rule and the Army Corps guidance seem to contradict each other. Lori Sommer commented that the guidelines could apply because the Department will be seeking both a State and a Federal permit.

Gino Infascelli inquired if the project needs new rip rap where the abutments are being moved back, where it is not currently rip rapped and about the direct discharge shown to the Lovell River. Kirk Mudgett explained that the discharge will be in place for 1 to 1.5 years and is for the temporary diversion. Gino Infascelli requested that note be added to the plans. Gino Infascelli inquired about water quality treatment and Kirk Mudgett explained that under the preliminary design there was treatment needed due to added impervious surface, but that with the removal of a raised median and island and merge ramp at the intersection with NH Route 16 B, the project now reduces impervious area and will not need to treat stormwater. Jason Tremblay explained that the placement of rip rap is due to scour in the area, the piers need 20 feet or riprap around them. Carol Henderson inquired if the proposed rip rap would inhibit wildlife movement. Jason Tremblay said no and explained that there will be room for wildlife movement under the bridges.

**Subsequent to the meeting it was clarified that the Army Corp of Engineer's Guidance indicates that the percentage / multiplier for mitigating temporary impacts to forested wetlands is 15%.*

***Subsequent to the meeting impact areas "N", "W", and "X" were changed to" P", "Y", "Z". These impact are the same areas discussed at the meeting; the plans presented at the meeting were draft and revisions were made after the meeting.*

This project has been previously discussed at the 1/16/2013 and 8/17/2016 Monthly Natural Resource Agency Coordination Meetings.

February 26, 2018

Mitigation Summary Report

Ossipee 14749

The New Hampshire Department of Transportation (DOT) initially reached out to local stakeholders to determine if they had any mitigation opportunities to be considered for the Ossipee 14749 project. Two groups responded with interest, the Nature Conservancy and the Dan Hole Pond Watershed Trust (DHPWT). Several parcels were identified and evaluated for possible mitigation. However, the Nature Conservancy Parcels were not selected due to project timing constraints and the length of time that it would require to execute the conservation easement documentation. Additionally, the parcels identified only protected wetlands while our project needed to mitigate for stream impacts. The DHPWT purchased the Charles Norman Munroe Preserve prior to communication with the DOT; this parcel was ultimately not selected as appropriate mitigation because the DHPWT was specifically looking for funds to reimburse the costs of acquisition and for future stewardship. The DOT consulted with Federal Highway Administration (FHWA) and FHWA determined that federal funds could not be used for re-imbursement purposes. The DHPWT has also applied for and received LCHIP funds for stewardship of the property. Therefore, FHWA determined it was also not appropriate to fund the stewardship account for the property.

As such, the Department, in agreement with NHDES and the other resource agencies focused its mitigation attention towards a single and onetime in lieu fee payment into the Aquatic Resource Mitigation Fund (ARM-fund).

At the December 20th Natural Resource Agency meeting the DOT reviewed project impact areas on the plans and identified areas of impact that need to be mitigated and areas where possible mitigation credit/reductions could be made. At that meeting it was agreed that the proposed pier removals were self-mitigating and that areas of existing rip-rap would not require mitigation. With that said, this project remains under 10,000 SF of Permanent impacts to non-stream wetlands. So there is no mitigation proposed for permanent wetland impacts. However, this project does have permanent stream impacts so the appropriate ARM-Fund Payment has been calculated using the stream calculator. There are 30 LF of Bank Left impact, 92 LF of Bank Right Impact, and 61 LF of Channel Impact (The pier removal impacts were not included in the mitigation calculation as noted above). As such, the total stream impact mitigation equals $44,842.32

At the December 20th Natural Resource Agency meeting Mark Kern (EPA) also suggested that the DOT should mitigate for Temporary (Secondary) impacts based on the Army Corps of Engineers (ACOE) mitigation guidance for impact areas N, W, and X (Subsequently changed to impact areas P, Y, and Z as a result of plan revisions). The DOT followed up with ACOE after the resource meeting to discuss the requested temporary impact mitigation. In reviewing the ACOE mitigation guidance the DOT found that on a project by project basis an applicant could request a reduction in the temporary impact mitigation multiplier for projects that implement BMPs for erosion and sedimentation control. The DOT requested that the temporary impact multiplier be reduced from 15% to 5% based on our in-depth erosion control requirements and intensive monitoring for our projects. This request was denied and the ACOE indicated the multiplier would remain at 15% for this project. As such, Impact area P = 21,191 SF, Y=6,161 SF, and Z=1,965 SF require mitigation. The combined total of Temporary impact to forested wetlands is 29,317SF. When this number is entered into the ARM-Calculator using Ossipee's land value equalizer, it comes to a total of $112,006.86. Applying the temporary impact multiplier of15% of that value equals $16,801.03. When you combine this value with the total stream impact mitigation the overall project mitigation comes to a total of **$61,643.35** which will be paid into the ARM-Fund.

DES AQUATIC RESOURCE MITIGATION FUND
STREAM PAYMENT CALCULATION

Ossipee 14749

INSERT LINEAR FEET OF IMPACT on BOTH BANKS AND CHANNEL	Right Bank	92.00
	Left Bank	30.0000
	Channel	61.0000
	TOTAL IMPACT	183.0000
	Stream Impact Cost:	$37,368.60
	DES Administrative cost:	
		$7,473.72
********* TOTAL ARM FUND STREAM PAYMENT********		
		$44,842.32

* Mitigation for temporary impacts to impact areas P, Y, Z
Using ACOE Mitigation Guidance = $16,801.03

Total Project Mitigation: $61,643.35

Martin, Rebecca

From: Martin, Rebecca
Sent: Wednesday, December 20, 2017 8:42 AM
To: Chase, Victoria
Subject: FW: Ossipee 14749 Stream bank/channel mitigation- DHPWT

From: Sikora, Jamie (FHWA) [mailto:Jamie.Sikora@dot.gov]
Sent: Tuesday, December 12, 2017 12:12 PM
To: Martin, Rebecca
Cc: Hasselmann, Mark (FHWA); Nyhan, Kevin; Ruth, Mike (FHWA)
Subject: RE: Ossipee 14749 Stream bank/channel mitigation- DHPWT

Hi Rebecca,

We are aware that the DHPWT recently received their $110,000 LCHIP Grant and, based upon the copy of the LCHIP grant application you had provided the stewardship efforts are being funded as part of this grant award ($25,000 was the estimated amount included in the application/funding request). Therefore, it appears that even this aspect of the mitigation proposal is no longer applicable for the Ossipee, 14749 project and FHWA recommends that the mitigation for the project impacts be addressed through the ARM fund.

FHWA believes this should be the recommendation at the upcoming Natural Resource Agency meeting and although FHWA can note our support/consideration for this type of mitigation in the future, we will stress that it really needs to be evaluated, developed and agreed to (Corps, etc.) much earlier in the project development process (i.e. during NEPA) and not during the permitting phase. I'm still trying to follow up with Mike Ruth to address your previous questions related to funding of 3rd parties for such mitigation and possible sample agreements just so we can be better prepared to evaluate any future mitigation proposals.

We are available to discuss further if desired.

Monday, December 4, 2017 Gov. announced 2017 LCHIP awards:

https://www.lchip.org/index.php/projects/2017-grant-recipients

Ossipee Munroe Preserve Dan Hole Pond Watershed Trust $ 110,000

Jamie

Jamison S. Sikora
NH Division Environmental Program Manager
Federal Highway Administration
53 Pleasant Street, Suite 2200
Concord, NH 03301
Jamie.sikora@dot.gov
(603) 410-4870

From: Martin, Rebecca [mailto:Rebecca.Martin@dot.nh.gov]
Sent: Monday, December 11, 2017 8:22 AM

To: Sikora, Jamie (FHWA)
Cc: Hasselmann, Mark (FHWA) ; Nyhan, Kevin
Subject: FW: Ossipee 14749 Stream bank/channel mitigation- DHPWT

Hello Jamie,

I received confirmation that the Ossipee 14749 project will be on the Natural Resource Agency Coordination Meeting scheduled for December 20th. This will likely be our last opportunity to discuss the project with the Resource Agencies before submission of the wetland permit application early next year. During the meeting the project team is planning to describe the final totals of wetland and stream impacts and describe the proposed mitigation. The design team has inquired if the payment to Dan Hole Pond Watershed Trust and/or Lakes Region Conservation Trust for stewardship of the Monroe Preserve should be presented as mitigation for the impacts. Have you encountered any reasons why the payment for stewardship would not be an acceptable use of federal funds? Is there any additional information I could gather/request that you might need at this time? The Project Manager here at DOT also reminded me that she would like to see an example of an agreement with a third party for stewardship that we might be able to model our agreement after. Do you think the one between CALTRANS and USFWS that you had shared would be an acceptable starting place? It appears that the signatory for CALTRANS was the Chief of the Office of Environmental Analysis, do you have any thoughts about the appropriate signatories for an agreement between NH DOT and Dan Hole Pond Watershed Trust?

Thank you,

Rebecca Martin
Senior Environmental Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
Rebecca.Martin@dot.nh.gov

From: Martin, Rebecca
Sent: Wednesday, December 6, 2017 3:47 PM
To: 'Sikora, Jamie (FHWA'; 'Hasselmann, Mark (FHWA'
Cc: 'Ruth, Mike (FHWA)'; Nyhan, Kevin; Chase, Victoria
Subject: Ossipee 14749 Stream bank/channel mitigation- DHPWT

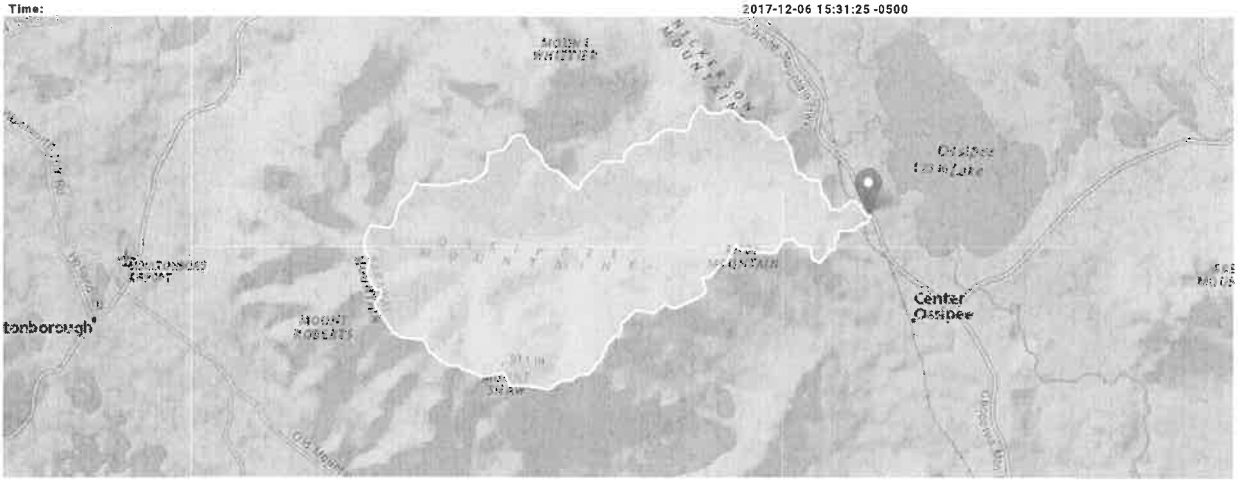
Good afternoon Jamie and Mark,

I spoke on the phone with Bob Pratt, the President of the Dan Hole Pond Watershed Trust (DHPWT) this afternoon. Bob explained that, although The Nature Conservancy's Jan McClure had hoped to do so, The Nature Conservancy determined that they would not take a conservation easement on the Monroe Preserve. DHPWT has been coordinating with Lakes Region Conservation Trust (LRCT) who owns and stewards other properties in the Lakes Region of NH (based in Center Harbor). The LRCT Lands Committee has reviewed the potential for a conservation easement on the Monroe Preserve and has recommended to the boards of the LRCT that they take the conservation easement. Bob informed me that the board of the LRCT typically follows the recommendations of their Lands Committee. A vote of the LRCT board to take the conservation easement on the Monroe Preserve is **anticipated in January of 2018.**

StreamStats Report

LOVELL RIVER WATERSHED

Region ID: NH
Workspace ID: NH20171206203106677000
Clicked Point (Latitude, Longitude): 43.77794, -71.16570
Time: 2017-12-06 15:31:25 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	16.82	square miles
APRAVPRE	Mean April Precipitation	4.361	inches
WETLAND	Percentage of Wetlands	1.7583	percent
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	129	feet per mi

Peak-Flow Statistics Parameters [Peak Flow Statewide SIR2008 5206]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.82	square miles	0.7	1290
APRAVPRE	Mean April Precipitation	4.361	inches	2.79	6.23
WETLAND	Percent Wetlands	1.7583	percent	0	21.8
CSL10_85	Stream Slope 10 and 85 Method	129	feet per mi	5.43	543

Peak-Flow Statistics Flow Report [Peak Flow Statewide SIR2008 5206]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SEp	Equiv. Yrs.
2 Year Peak Flood	868	ft^3/s	535	1410	30.1	3.2
5 Year Peak Flood	1430	ft^3/s	875	2350	31.1	4.7
10 Year Peak Flood	1900	ft^3/s	1140	3180	32.3	6.2
25 Year Peak Flood	2510	ft^3/s	1460	4330	34.3	8
50 Year Peak Flood	3000	ft^3/s	1690	5330	36.4	9
100 Year Peak Flood	3590	ft^3/s	1960	6590	38.6	9.8
500 Year Peak Flood	4960	ft^3/s	2500	9840	44.1	11

Peak-Flow Statistics Citations

Olson, S.A.,2009, Estimation of flood discharges at selected recurrence intervals for streams in New Hampshire: U.S.Geological Survey Scientific Investigations Report 2008-5206, 57 p. (http://pubs.usgs.gov/sir/2008/5206/)

A study area is needed before viewing the report

StreamStats Report

BEARCAMP RIVER WATERSHED

Region ID: NH
Workspace ID: NH20171207121534729000
Clicked Point (Latitude, Longitude): 43.79732, -71.16139
Time: 2017-12-07 07:16:23 -0500

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	150.87	square miles
APRAVPRE	Mean April Precipitation	4.152	inches
WETLAND	Percentage of Wetlands	4.6453	percent
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	56.9	feet per mi

General Disclaimers

Parameter values have been edited, computed flows may not apply.

Upstream regulation was checked for this watershed.

This watershed is percent regulated, computed flows may not apply.

This watershed has been edited, computed flows may not apply.

Peak-Flow Statistics Parameters [Peak Flow Statewide SIR2008 5206]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	150.87	square miles	0.7	1290
APRAVPRE	Mean April Precipitation	4.152	inches	2.79	6.23
WETLAND	Percent Wetlands	4.6453	percent	0	21.8
CSL10_85	Stream Slope 10 and 85 Method	56.9	feet per mi	5.43	543

Peak-Flow Statistics Disclaimers [Peak Flow Statewide SIR2008 5206]

Peak-Flow Statistics Flow Report [Peak Flow Statewide SIR2008 5206]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SEp	Equiv. Yrs.
2 Year Peak Flood	4740	ft^3/s	2920	7670	30.1	3.2
5 Year Peak Flood	7230	ft^3/s	4410	11900	31.1	4.7
10 Year Peak Flood	9180	ft^3/s	5500	15300	32.3	6.2
25 Year Peak Flood	11600	ft^3/s	6720	19900	34.3	8
50 Year Peak Flood	13500	ft^3/s	7590	23800	36.4	9
100 Year Peak Flood	15700	ft^3/s	8570	28700	38.6	9.8
500 Year Peak Flood	20600	ft^3/s	10400	40800	44.1	11

Peak-Flow Statistics Citations

Olson, S.A.,2009, Estimation of flood discharges at selected recurrence intervals for streams in New Hampshire: U.S.Geological Survey Scientific Investigations Report 2008-5206, 57 p. (http://pubs.usgs.gov/sir/2008/5206/)

NH Department of Transportation
Bureau of Bridge Design
Project, # 14749
Lovell River Bridge (Br. No. 153/268)

Env-Wt 904.05 Design Criteria for Tier 2 and Tier 3 Stream Crossings
New Tier 2 Crossings;
Replacement Tier 2 Crossings that have a history of flooding;
New & Replacement Tier 3 Crossings

Please describe how the project meets the following criteria:

(a) The crossing shall be designed in accordance with the NH Stream Crossing Guidelines.
The existing span is 58 feet. The stream crossing assessment recommended a span of 62 feet based on calculation or 56 feet based on bankfull width. The proposed bridge is 97 feet long to reduce overtopping of the roadway during flood events.

(b) The design shall include bed forms and stream bed characteristics necessary to cause water depths and velocities within the crossing at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the crossing.
Stream bed characteristics will not be significantly changed in this project.

(c) There shall be vegetated banks upstream and downstream of the crossing.
The banks upstream and downstream of the crossing will be riprapped to prevent scour. Any vegetation disturbed beyond the extent of riprap will be restored to its original condition. Riprap will receive humus and seed at all locations that are 2 feet above the ordinary high water line and above, except at locations underneath the bridge.

(d) The natural alignment and gradient of the stream channel shall be preserved so as to accommodate natural flow regimes and the functioning of the natural floodplain.
Neither the alignment nor gradient of the rivers will be altered.

(e) The 100-year flood frequency shall be accommodated to ensure that there is (1) no increase in flood stages on abutting properties and (2) flow and sediment transport characteristics will not be affected in a manner that could adversely affect channel stability.
The replacement bridge will only improve flood conditions due to a longer span. There is no net floodplain impact. No significant changes to flow or sediment transport are anticipated.

(f) A natural stream channel shall be simulated through the structure.
The natural stream channel will remain under the bridges.

(g) Sediment transport competence shall not be altered.
Sediment transport competence will not change significantly.

A Tier 2 stream crossing shall be a span structure, pipe arch embedded with stream simulation, open-bottom culvert with stream simulation, or closed-bottom culvert embedded with stream simulation.

A Tier 3 stream crossing shall be a span structure or an open-bottom culvert with stream simulation.

If any of the above criteria cannot be met, approval for an alternative design must be requested and a technical report (Env-Wt 904.09) must be included with the application package.

NH Department of Transportation
Bureau of Bridge Design
Project, # 14749
Bearcamp River Bridge (Br. No. 138/297)

Env-Wt 904.05 Design Criteria for Tier 2 and Tier 3 Stream Crossings
New Tier 2 Crossings;
Replacement Tier 2 Crossings that have a history of flooding;
New & Replacement Tier 3 Crossings

Please describe how the project meets the following criteria:

(a) The crossing shall be designed in accordance with the NH Stream Crossing Guidelines.
The existing span is 392 feet. The stream crossing assessment recommended a span of 176 feet based on calculation and bankfull width. The proposed bridge is 410 feet in length.

(b) The design shall include bed forms and stream bed characteristics necessary to cause water depths and velocities within the crossing at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the crossing.
Stream bed characteristics will not be significantly changed in this project. Some improvements will be achieved by reducing the number of bridge piers. The natural material will be regraded where bridge piers are removed.

(c) There shall be vegetated banks upstream and downstream of the crossing.
The banks upstream and downstream of the crossing will be riprapped to prevent scour. Any vegetation disturbed beyond the extent of riprap will be restored to its original condition. Riprap will receive humus and seed at all locations that are 2 feet above the ordinary high water line and above, except at locations underneath the bridge.

(d) The natural alignment and gradient of the stream channel shall be preserved so as to accommodate natural flow regimes and the functioning of the natural floodplain.
Neither the alignment nor gradient of the rivers will be altered.

(e) The 100-year flood frequency shall be accommodated to ensure that there is (1) no increase in flood stages on abutting properties and (2) flow and sediment transport characteristics will not be affected in a manner that could adversely affect channel stability.
The replacement bridge will only improve flood conditions due to a longer span and fewer piers. There is no net floodplain impact. No significant changes to flow or sediment transport are anticipated.

(f) A natural stream channel shall be simulated through the structure.
The natural stream channel will remain under the bridges. The natural material will be regraded where bridge piers are removed.

(g) Sediment transport competence shall not be altered.
Sediment transport competence will not change significantly.

A Tier 2 stream crossing shall be a span structure, pipe arch embedded with stream simulation, open-bottom culvert with stream simulation, or closed-bottom culvert embedded with stream simulation.

A Tier 3 stream crossing shall be a span structure or an open-bottom culvert with stream simulation.
If any of the above criteria cannot be met, approval for an alternative design must be requested and a technical report (Env-Wt 904.09) must be included with the application package.

Memo

NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Rebecca Martin, NH DOT
7 Hazen Drive
PO Box 483
Concord, NH 03302

From: Amy Lamb, NH Natural Heritage Bureau
Date: 1/3/2018 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB17-3864 Town: Ossipee Location: Route 16
Description: Ossipee 14749: NHB16-2793: This project will address three bridges that are listed on the NHDOT Red List of Bridges: Lovell River Bridge (Bridge No. 152/268); Bearcamp River Bridge (Bridge No. 137/297); and Bearcamp Relief Bridge (Bridge No. 137/299). In addition, the condition of a 3.4-mile section of NH Route 16 will be addressed, beginning approximately 1,000' south of the Lovell River Bridge and ending approximately one mile north of the Bearcamp Relief Bridge. There is a proposed temporary stockpile location for LRS approximately 1.7 miles south of the project area inside the ramps of the intersection of Route 16 with Route 25E.

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

Comments: Please define "LRS" and send NHB any pertinent information about the stockpile area. Please note: an additional area was added to the exemplary *temperate minor river floodplain system* at the north end of the project area. NHB would like to re-review any drainage/stormwater work in this location.

Natural Community	State[1]	Federal	Notes
Kettle hole bog system	--	--	These systems are extremely stagnant, and as such are characterized by low nutrient levels, relatively high acidity levels, and accumulations of peat. The primary threats to this system are changes to its hydrology (especially that which causes pooling), increased nutrient input from stormwater runoff, and sedimentation from nearby disturbance.
Medium level fen system	--	--	Level fens are stagnant, and as such are characterized by low nutrient levels, relatively high acidity levels, and accumulations of peat. The primary threats to this community are changes to its hydrology (especially that which causes pooling), increased nutrient input from stormwater runoff, and sedimentation from nearby disturbance.
Poor level fen/bog system	--	--	Level fens are stagnant, and as such are characterized by low nutrient levels, relatively high acidity levels, and accumulations of peat. The primary threats to this community are changes to its hydrology (especially that which causes pooling),

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

			increased nutrient input from stormwater runoff, and sedimentation from nearby disturbance.
Red maple floodplain forest	--	--	Threats are primarily changes to the hydrology of the river, land conversion and fragmentation, introduction of invasive species, and increased input of nutrients and pollutants.
Silver maple - false nettle - sensitive fern floodplain forest	--	--	Threats are primarily changes to the hydrology of the river, land conversion and fragmentation, introduction of invasive species, and increased input of nutrients and pollutants.
Temperate minor river floodplain system	--	--	Threats are primarily changes to the hydrology of the river, land conversion and fragmentation, introduction of invasive species, and increased input of nutrients and pollutants.

Plant species	**State**[1]	**Federal**	**Notes**
Sensitive species	T	T	Please contact NH Natural Heritage (271-2215 x 323) if project impacts could occur in the area shown on the map.

[1]Codes: "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.

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.

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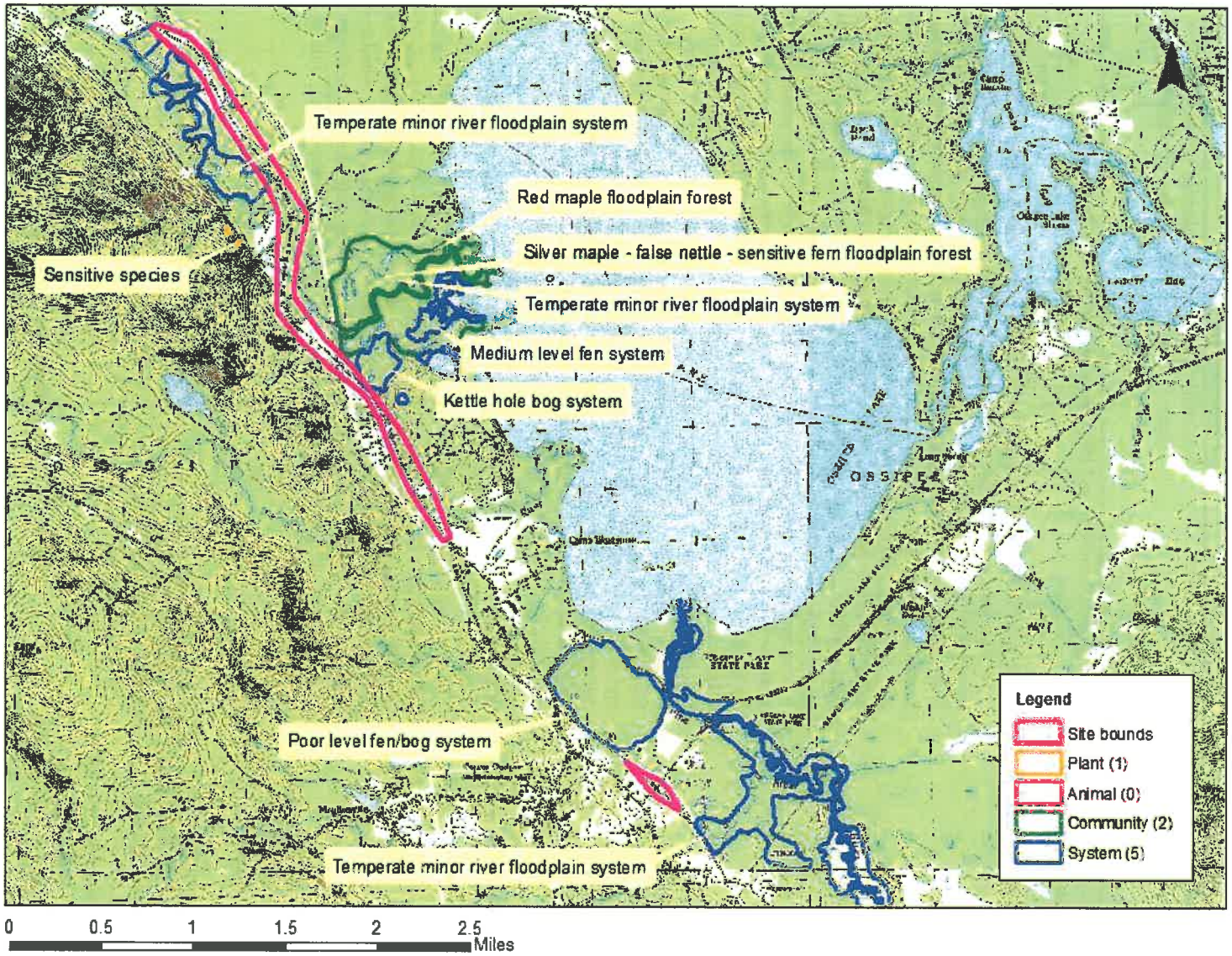
NHB17-3864


Temperate minor river floodplain system
Red maple floodplain forest
Silver maple - false nettle - sensitive fern floodplain forest
Sensitive species
Temperate minor river floodplain system
Medium level fen system
Kettle hole bog system
Poor level fen/bog system
Temperate minor river floodplain system
Legend
Site bounds
Plant (1)
Animal (0)
Community (2)
System (5)
0
0.5
1
1.5
2
2.5
Miles

New Hampshire Natural Heritage Bureau - System Record

Kettle hole bog system

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	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: 2010: Area 1: The large, western-most kettle is more minerotrophic than expected for this type of system. An ***aquatic bed*** occurs in the small pond. ***Large cranberry - short sedge moss lawn*** intermixes with aquatic bed along the immediate pond edge. Beyond the moss lawn lies a 15 meter-wide band of ***Sphagnum rubellum - small cranberry moss carpet***. Landward of the moss carpet occurs ***bog rosemary - sedge fen***, ***wire sedge - sweet gale fen***, and ***highbush blueberry - sweet gale - meadowsweet shrub thicket***. The north half of the kettle supports a ***buttonbush shrubland***, ***highbush blueberry - sweet gale - meadowsweet shrub thicket***, and ***sedge meadow marsh***. Area 3: The small, southeastern kettle supports a ***leatherleaf - sheep laurel shrub bog***. Area 2: The easterly-most of the three kettles was not visited during this survey. 998: Area 1: A diverse, moderate-sized peatland around a central kettle or kettle-like pond. The fen system ranges from very acidic at interior pond-border communities (pH 4.1) typical of kettle hole peatlands to weakly acidic border thickets and sedge fens along the upland border with higher pHs (5.1) that indicate more flow-through of runoff in the border region. The pond is bordered by ca. 6 acres of mud-bottom, moss lawn and robust sedge-moss lawn communities. These communities are surrounded by a ring of ***hairy-fruited sedge - sweet gale fen*** that may shunt upland runoff towards the marshy north end of the wetland where it drains at high water onto the floodplain forest below. The rare *Sphagnum angermanicum* was documented in this peatland by Dick Andrus in 1999, one of only 2 sites in the state for this globally rare peat moss. A culvert under the road drains into the kettle from the large (fertilized) grassy lawn area across the road, which may constitute a long-term threat to the peatland's ecological integrity.

General Area: 2010: Three kettles occurring in outwash sands associated with Ossipee Lake. Adjacent upland communities include ***mixed pine - red oak woodland*** and stands of white pine. 998: The Bearcamp River drains the south side of the White Mountains, emptying into the west side of Ossipee Lake at the base of the Ossipee Mtns. The river delta consists of a broad area of floodplain communities surrounded by post-glacial deltaic deposits. These sand plain deposits support a mosaic of pine forests and several peatlands, probably underlain by fine deltaic or lake-bottom sediments. Sand plain pond shore and ***hairy-fruited sedge - sweet gale fen*** communities occur along the lakeshore just south of the mouth of the river.

General Comments:
Management Comments:

Location

Survey Site Name: Bearcamp River Delta
Managed By: Bearcamp Memorial Forest

County: Carroll
Town(s): Ossipee
Size: 33.5 acres Elevation: 410 feet

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

Directions: 2010: Driving north on Rte. 16 in Ossipee, turn right (east) on Jewell Hill Road. Trailhead lies immediately to left (north side of Jewell Hill Road). Park on road edge by fire station parking lot.

New Hampshire Natural Heritage Bureau - System Record

Medium level fen system

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	State:	Rare or uncommon

Description at this Location

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

Detailed Description: 2010: This fen is dominated by ***wire sedge - sweet gale fen***. Dominants may be wire sedge (*Carex lasiocarpa*), bottle-shaped sedge (*Carex utriculata*), or a mixture of both. Other communities include ***large cranberry - short sedge moss lawn***, ***floating marshy peat mat***, ***meadowsweet - robust graminoid sand plain marsh***, and ***highbush blueberry - winterberry shrub thicket***. 1998: ***Hairy-fruited sedge - sweet gale fen***.

General Area: 2010: On sediments associated with the Bearcamp River delta and Ossipee Lake. Adjacent upland communities include ***mixed pine - red oak woodland*** and stands of white pine. 1998: The Bearcamp River drains the south side of the White Mountains, emptying into the west side of Ossipee Lake at the base of the Ossipee Mtns. The river delta consists of a broad area of floodplain communities surrounded by post-glacial deltaic deposits. These sand plain deposits support a mosaic of pine forests and several peatlands, probably underlain by fine deltaic or lake-bottom sediments. Sand plain pond shore community also occurs along the lakeshore just south of the mouth of the river.

General Comments:
Management Comments:

Location

Survey Site Name: Bearcamp River Delta
Managed By: Bearcamp Memorial Forest

County: Carroll
Town(s): Ossipee
Size: 27.7 acres Elevation: 410 feet

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

Directions: 2010: Driving north on Rte. 16 in Ossipee, turn right (east) on Jewell Hill Road. Trailhead lies immediately to left (north side of Jewell Hill Rd). Park on road edge by fire station parking lot. 1998: NE of Rte. 16, ca. 3.5 miles north of junction with Rte. 25 east. On the western shore of the cove just south of the mouth of the Bearcamp River, and up to ca. 0.3 miles inland.

Dates documented

First reported: 1998-07-07 Last reported: 2010-08-26

998: On NE side of Rte. 16 ca. 3.5 miles north of junction with Rte. 25 east.

Dates documented

First reported:	1998-07-07	Last reported:	2010-08-26

New Hampshire Natural Heritage Bureau - System Record

Poor level fen/bog system

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	State:	Rare or uncommon

Description at this Location

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

Detailed Description: 1998: Dominated by medium and tall shrubs with a sparse woodland to woodland tree canopy overstory. ***Highbush blueberry - mountain holly wooded fen*** is the dominant community. This example has a canopy and subcanopy dominated by *Picea mariana* (black spruce) and occasional *Pinus strobus* (white pine). There is a dense tall shrub layer (ca. 35%) with *Nemopanthus mucronatus* (mountain holly), *Vaccinium corymbosum* (highbush blueberry), *Viburnum nudum* var. *cassinoides* (witherod), *Lyonia ligustrina* (male-berry), *Aronia melanocarpa* (black chokeberry). The medium shrub layer is less well-developed (ca. 10%) with species such as *Ledum groenlandicum* (Labrador tea), *Gaylussacia baccata* (black huckleberry), *Rhododendron canadense* (rhodora), *Chamaedaphne calyculata* (leatherleaf), and *Kalmia angustifolia* (sheep laurel). Herbs include *Woodwardia virginica* (Virginia chain-fern), *Osmunda cinnamomea* (cinnamon fern), and occasionally *Symplocarpus foetidus* (skunk cabbage). The pH was 4.2. This community is transitional to weakly minerotrophic woodland shrub fen communities (pH here 4.4-4.7) to the NW and NE towards the road, which were classified as part of the surrounding seepage swamp complex based on vegetation and pH.

General Area: 1998: Occurs at the NW end of a large (183 acres) peatland complex located in a broad deltaic basin at the west side of the mouth of the Pine River. The basin is underlain at least in part by silt deposits of floodplain or lakebed deposit origin. The peatland basin contains an extensive seepage swamp complex that surrounds the fen and extends across the basin to the SE. Sandy upland forests occur to the west and south of the wetland basin (which transition into the steep till uplands of the Ossipee Mountains to the west). The Ossipee Lake shore occurs just to the north and extensive acidic fens occur to the east and NE across Pine River.

General Comments:
Management Comments:

Location

Survey Site Name: Pine River Delta, west of
Managed By:

County: Carroll
Town(s): Ossipee
Size: 151.6 acres Elevation:

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

Directions: Take Rte. 16 to Rte. 25 E junction, head SW to Old Rte. 16 that parallels Rte. 16. Go right through center Ossipee and park somewhere near the underpass crossing Rte. 16. From here the swamp extends to the north, east, and the SE.

Dates documented

First reported: 1998-07-30 Last reported: 1998-07-30

New Hampshire Natural Heritage Bureau - Community Record

Red maple floodplain forest

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	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: 2010: Red maple (*Acer rubrum*) dominates the canopy. All three variants of this community type occur at this site. White pine (*Pinus strobus*) and red oak (*Quercus rubra*) mix with red maple on the higher floodplain. Common shrubs and herbs are poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), sensitive fern (*Onoclea sensibilis*), inflated sedge (*Carex intumescens*), deertongue (*Dichanthelium clandestinum*), sessile-leaved bellwort (*Uvularia sessilifolia*), Canada mayflower (*Maianthemum canadense*), and several others. 1998: Both low/medium and medium/high variants of ***red maple floodplain forest*** occur at this site. Specific vegetation was documented at five observation points in an area south of the river. One is a floodplain thicket dominated by *Vaccinium corymbosum* (highbush blueberry), *Viburnum dentatum* var. *lucidum* (northern arrow-wood), *Alnus serrulata* (smooth alder), and occasional canopy species including *Acer saccharinum* (silver maple), and *Prunus serotina* (black cherry). *Onoclea sensibilis* (sensitive fern) is the dominant herb. It sits on an elevated levee/bank adjacent to the river. The second point observed is transitional between thicket and forest, with dominant species from both. The third and fourth points are closed canopy medium and low floodplain forests, with *Quercus rubra* (red oak) dominant in the third point and red maple and silver maple dominant in the fourth. *Osmunda regalis* var. *spectabilis* (royal fern) is dominant under the red oak canopy, while sensitive fern is dominant under the maple floodlplain. The fifth point observed is an upland/high terrace floodplain forest with a higher species richness, red oak, black cherry, red maple, and white pine in the overstory, and a mix of herbs and ferns in the herbaceous layer.

General Area: 2010: This community occupies the medium to high forested areas on the active floodplain and is one of several communities associated with the exemplary **temperate minor river floodplain system**. 1998: Mouth of the Bearcamp River along the western shore of Ossipee Lake. This site is primarily high terrace forest with lower terraces in the cradle of meanders, and closer to the river mouth. Vernal pools, sloughs and other saturated soil wetlands are common throughout. Along the southern banks of the river, the Bearcamp Memorial Forest offers substantial buffer to the floodplain areas, but it was uncertain how much forest management (i.e. logging) is occurring on the site. The north side of the river appears to have more floodplain acreage.

General Comments: .

Management Comments: 1998: Recommend alerting landowners to the important floodplain character; advise careful management to protect the area.

Location

Survey Site Name: Bearcamp River Delta
Managed By: Bearcamp Memorial Forest

County: Carroll
Town(s): Ossipee
Size: 205.0 acres Elevation: 410 feet

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

Directions: 2010: Driving north on Rte. 16 in Ossipee, turn right (east) on Jewell Hill Road. Trailhead lies

immediately to left (north side of Jewell Hill Road). Park on road edge by fire station parking lot.1998: From West Ossipee, take Rte. 16/25 south about 3 miles to Bearcamp Memorial Forest sign on left. Park at gated entrance to Memorial Forest Reserve. Hike on trail east to extensive high and low floodplain within meanders near the Bearcamp River's mouth at Ossipee Lake.

Dates documented

First reported:	1998-07-15	Last reported:	2010-08-26

New Hampshire Natural Heritage Bureau - Community Record

Silver maple - false nettle - sensitive fern floodplain forest

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	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: 2010: Silver maple (*Acer saccharinum*) dominates the canopy (canopy height 70 ft.; average dbh 11 in.; range 8-22). Scattered red maple also occurs in the canopy. Scattered shrubs in the understory are red osier dogwood (*Cornus sericea*), poison ivy (*Toxicodendron radicans*), meadowsweet (*Spiraea alba* var. *latifolia*), buttonbush (*Cephalanthus occidentalis*), and speckled alder (*Almus incana* ssp. *rugosa*). Sensitive fern (*Onoclea sensibilis*) is the most common herb. Less frequent are royal fern (*Osmunda regalis* var. *spectabilis*), hop sedge (*Carex lupulina*), hog-peanut (*Amphicarpaea bracteata*), tussock sedge (*Carex stricta*), bluejoint (*Calamagrostis canadensis*), and several other species.

General Area: 2010: This community occupies the lowest forested areas on the active floodplain and is one of several communities associated with the exemplary **temperate minor river floodplain system**.

General Comments:
Management Comments:

Location

Survey Site Name: Bearcamp River Delta
Managed By: Bearcamp Memorial Forest

County: Carroll
Town(s): Ossipee
Size: 205.0 acres Elevation:

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

Directions: 2010: Driving north on Rte. 16 in Ossipee, turn right (east) on Jewell Hill Road. Trailhead lies immediately to left (north side of Jewell Hill Road). Park on road edge by fire station parking lot.

Dates documented

First reported: 2010-08-26 Last reported: 2010-08-26

New Hampshire Natural Heritage Bureau - System Record

Temperate minor river floodplain system

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	State:	Rare or uncommon

Description at this Location

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

Comments on Rank: 1998: AB.

Detailed Description: 2010: An extensive and complex system along Pine River. Supports at least 12 natural communities. Within the system, the ***silver maple - false nettle - sensitive fern floodplain forest***, ***lake sedge seepage marsh***, and the ***tall graminoid meadow marsh*** are exemplary themselves (9/8). Sub-area 2: System observed and photographed (5/5).1998: Sub-area 1: At Observation Point (OP) 1 there is a broken *Acer rubrum* (red maple) and *Acer saccharinum* (silver maple) canopy with thick *Cornus sericea* (red osier dogwood), *Spiraea alba* var. *latifolia* (eastern meadow-sweet), six foot tall *Osmunda regalis* var. *spectabilis* (royal fern), and graminoids seven to ten feet tall. Tree canopies shade the ground completely, but tree dominance is patchy, within a thicket matrix. Ground level is swampy, with hummocks and wet hollows. Stumps and fallen logs create hummocks. At OP 2 red maple, *Betula populifolia* (gray birch), and royal fern are dominant species, with several *Fraxinus nigra* (black ash) in the canopy. This medium/low terrace has the character of a red maple-black ash swamp. Cut stumps, gray birch, and even age of smaller canopy trees hint at recent human disturbance. Microtopography is rolling, and higher and drier soils support oak, white pine, and ***hemlock forest***s. This appears to be a young, developing ***red maple floodplain forest***. Sub-area 2: OPs 3-6 include a broad swath of higher terrace red maple-oak-pine floodplain forest that hugs the eastern riverbank between the river and the extensive peatland to the east. This area has a meander scroll microtopography, with the lowest sloughs higher than the river level. OPs 3 and 6 were a series of low terrace ridges surrounded by a buttonbush swampy area, while OP 5 is a higher terrace floodplain forest with red maple, red oak, white pine in the canopy, *Osmunda cinnamomea* (cinnamon fern), and royal fern in the understory, with sparse cover of upland herbs such as *Maianthemum canadense* (Canada mayflower), and *Uvularia sessilifolia* (sessile-leaved bellwort). Overall, soils appear acidic, and the water table seems to be closely tied to Ossipee Lake level.

General Area: 2010: System extent: Much of floodplain's eastern border is adjacent to an exemplary **poor level fen/bog system** and an exemplary ***mixed pine - red oak woodland*** on an esker. There occurs along Pine River itself an exemplary **low-gradient silty-sandy riverbank system**. Sub-area 2: Bordered by an exemplary **medium level fen system** on both sides near the mouth of the river. 1998: Sub-areas 1 and 2: Several wells for the Ossipee water supply occur within medium and high terrace floodplains. Recent roads to service a pumping station and a boat access encroach on some of the floodplain area. Otherwise, the land is protected as a state park. Several rare plants and exemplary natural communities occur along the lakeshore at the mouth of the Pine River where it drains into Ossipee Lake.

General Comments: 1998: Preliminary description, may deserve more inventory upstream. This may be a unique floodplain due to its close association with nearby peatlands.

Management Comments: 1998: Land is mostly protected within Ossipee Lake State Park, but well activities, recent dirt roads and boat access may open the area for more human disturbance and edge. Monitor the encroachment of edge and/or invasive species over time.

Location

Survey Site Name: Pine River

Managed By: Heath Pond Bog Natural Area

County: Carroll

Town(s): Effingham

Size: 392.3 acres Elevation: 410 feet

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

Directions: 2010: Accessed through Green Mountain Shooting Preserve on Green Mountain Road (speak with owner Dave Bardzik; 539-2106), Rte. 25, Pine River Road (trail heads into Heath Pond Bog Natural Area at west end of Pine River Road by Rte. 16), and Elm Street.1998: From Rte. 16 in Ossipee, take Rte. 25 east about 0.5 miles. Park at boat access just west of bridge over Pine River. [Sub-area 1] is east of Rte. 25 and west of the river. [Sub-area 2] is west of Rte. 25 and (mostly) east of the river.

Dates documented

First reported: 1998-07-30 Last reported: 2010-09-08

New Hampshire Natural Heritage Bureau - System Record

Temperate minor river floodplain system

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	State:	Rare or uncommon

Description at this Location

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

Detailed Description: 2010: ***Red maple floodplain forest*** is the primary forested community in the system. Also present is ***silver maple - false nettle - sensitive fern floodplain forest***. Other communities in the system are ***alder - dogwood - arrowwood alluvial thicket*** in places along the river; ***buttonbush shrubland, highbush blueberry - winterberry shrub thicket,*** and ***short graminoid - forb meadow marsh/mudflat*** in oxbows; and ***aquatic bed***.

General Area: 2010: Broad floodplain forest associated with the Bearcamp River delta. Immediately adjacent to two other exemplary systems: **kettle hole bog system** and **medium level fen system.**

General Comments:
Management Comments:

Location

Survey Site Name: Bearcamp River Delta
Managed By: Bearcamp Memorial Forest

County: Carroll
Town(s): Ossipee
Size: 205.0 acres Elevation:

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

Directions: 2010: Driving north on Rte. 16 in Ossipee, turn right (east) on Jewell Hill Road. Trailhead lies immediately to left (north side of Jewell Hill Road). Park on road edge by fire station parking lot.

Dates documented

First reported: 1998-07-15 Last reported: 2010-08-26

Martin, Rebecca

From: Lamb, Amy
Sent: Friday, February 9, 2018 11:25 AM
To: Martin, Rebecca
Subject: RE: NHB review: NHB17-3864 Ossipee 14749

Hi Rebecca,

I believe I reviewed the one additional area where drainage work is located near the newly added exemplary natural community polygon. So, my only other concern is that the LRS storage area is appropriately constructed so that there's no run-off into adjacent wetlands (since it is within on/off-ramps, I wouldn't expect any issues). Unless there is anything else that comes to mind, I think we are all set.

Thanks!
Amy

Amy Lamb
Ecological Information Specialist
(603) 271-2834*
amy.lamb@dncr.nh.gov

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

***On 1/9/2018, my phone number changed to 271-2834; my old phone number [271-2215 x323] no longer works. The main number for the Division of Forests and Lands is 271-2214. Please update your records.**

From: Martin, Rebecca
Sent: Wednesday, February 07, 2018 1:55 PM
To: Lamb, Amy
Subject: RE: NHB review: NHB17-3864 Ossipee 14749

Hello Amy,

Yes I can send the project's SMP once it is developed. Do you have any other concerns about the slight change in the project (to add the LRS storage area) or with the species/communities highlighted in the NHB db?

Thank you,
Rebecca

From: Lamb, Amy
Sent: Wednesday, January 17, 2018 12:21 PM
To: Martin, Rebecca
Subject: RE: NHB review: NHB17-3864 Ossipee 14749

Hi Rebecca,

Thank you for linking me to the article, this is helpful. Would you mind sending along the soil management plan when it's available? I am unfamiliar with this and am just curious to see how soils will be handled onsite.

Thank you!
Amy

Amy Lamb
Ecological Information Specialist
(603) 271-2834*
amy.lamb@dncr.nh.gov

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

***My phone number changed to (603) 271-2834 on 1/9/2018, and my old phone number will no longer work. The main NHB office number is (603) 271-2215. Please update your records.**

From: Martin, Rebecca
Sent: Thursday, January 11, 2018 11:37 AM
To: Lamb, Amy
Subject: RE: NHB review: NHB17-3864 Ossipee 14749

Hi Amy,

Yes LRS has been very interesting and is evolving. NH DOT has submitted a waiver request to NH DES (response anticipated soon) that helps define our LRS responsibilities. For this project we will be developing a soil management plan that will include provisions to prevent erosion during stockpiling as well as other best management practices.

Here is an article about LRS from On the Move (see page 6): https://www.nh.gov/dot/media/documents/newsletter-spring2017.pdf

Please let me know if you have any additional questions.

Thank you,
Rebecca

From: Lamb, Amy
Sent: Thursday, January 11, 2018 11:31 AM
To: Martin, Rebecca
Subject: RE: NHB review: NHB17-3864

Hi Rebecca –

Thanks, I was not familiar with this term! What BMPs will be in place to prevent erosion and migration of any contaminants from these roadside soils into nearby waterbodies?

Best,
Amy

Amy Lamb
Ecological Information Specialist
(603) 271-2834*
amy.lamb@dncr.nh.gov

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

***My phone number changed to (603) 271-2834 on 1/9/2018, and my old phone number will no longer work. The main NHB office number is (603) 271-2215. Please update your records.**

From: Martin, Rebecca
Sent: Friday, January 05, 2018 3:33 PM
To: Lamb, Amy
Subject: RE: NHB review: NHB17-3864

Hello Amy,

LRS is Limited Reuse Soils- it is basically roadside soils that we are beginning to manage more carefully.

Thank you,
Rebecca

From: Lamb, Amy
Sent: Wednesday, January 3, 2018 2:12 PM
To: Martin, Rebecca
Subject: NHB review: NHB17-3864

Attached, please find the review we have completed. If your review memo includes potential impacts to plants or natural communities please contact me for further information. If your project had potential impacts to wildlife, please contact NH Fish and Game at the phone number listed on the review.

Best,
Amy

Amy Lamb
Ecological Information Specialist

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301
603-271-2215 ext. 323

Christine J. Perron

From: Martin, Rebecca [Rebecca.Martin@dot.nh.gov]
Sent: Tuesday, November 01, 2016 8:55 AM
To: Christine J. Perron
Subject: FW: Ossipee 14749 - Exemplary Natural community, NLEB

Hi Christine,

We received a response from Amy- sounds like she is content with the flow of the stormwater away from the bog.

As soon as I have the information about tree clearing I am planning to submit the project under the FHWA Programmatic Consultation as "may affect LAA" NLEB.

Thanks!

Rebecca

From: Lamb, Amy
Sent: Tuesday, November 01, 2016 8:34 AM
To: Martin, Rebecca
Subject: RE: Ossipee 14749 - Exemplary Natural community

Hi Rebecca –

Thank you for looking into this, I appreciate the efforts of DOT to address NHB concerns. Since the road will be configured in a way such that sheet flow will flow to the southwest and into existing swales prior to discharge into the bog, I have no further concerns at this time. If, in the future, work is planned for the culvert or stormwater swales at this location, I would be interested in discussing this further.

Thank you!
Amy

Amy Lamb
Ecological Information Specialist
(603) 271-2215 ext. 323

NH Natural Heritage Bureau
DRED - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

From: Martin, Rebecca
Sent: Tuesday, November 01, 2016 7:58 AM
To: Lamb, Amy
Cc: Christine Perron
Subject: FW: Ossipee 14749 - Exemplary Natural community

Hi Amy,

I understand that there was some discussion about improvements stormwater treatment in the kettle hole bog area and/or improving the buffer between the roadway and bog. Gerry Bedard looked into the area and it seems that due to the configuration of the roadway in this area, most of the stormwater will actually flow to the opposite side of the road. Do you have any other concerns about the bog?

Thank you,

Rebecca Martin
Environmental Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
rmartin@dot.state.nh.us

From: Bedard, Gerard
Sent: Wednesday, October 19, 2016 1:31 PM
To: Perron, Christine
Cc: Martin, Rebecca; Chase, Victoria; Mudgett, Kirk
Subject: Ossipee 14749 - Exemplary Natural community

Christine,

When you were discussing exemplary natural communities and showed this slide (below), Amy Lamb (Natural Heritage Bureau) expressed concern about the sheet flow runoff from the road into the wetland, and asked for mitigation measures to at least be considered.

NH 16 in this area has a slight horizontal curve that will be superelevated such that most of the runoff will not sheet flow into the wetland but flow across the road into existing swales and then through the existing culvert into the wetland.

- Gerry

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
http://www.fws.gov/newengland

In Reply Refer To:
Consultation Code: 05E1NE00-2018-SLI-0630
Event Code: 05E1NE00-2018-E-01463
Project Name: Ossipee 14749

January 09, 2018

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

To Whom It May Concern:

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 feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. 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. This verification can be completed formally or informally as desired. 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 through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

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. Under sections 7(a)(1) and 7(a)(2) 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 and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, 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 Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. 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:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

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

Consultation Code: 05E1NE00-2018-SLI-0630

Event Code: 05E1NE00-2018-E-01463

Project Name: Ossipee 14749

Project Type: TRANSPORTATION

Project Description: NH 16 road and bridge improvements beginning at NH 16B (next to Indian Mound Golf Course) and extending north 3.5 miles. The project includes 3 bridge replacements and road improvements along the length of the project. A second area south of the project within the ramps of an existing intersection is being proposed as a staging area.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.75676668886386N71.1413002564606W

Counties: Carroll, NH

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. 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.

Mammals

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

Flowering Plants

NAME	STATUS
Small Whorled Pogonia *Isotria medeoloides* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1890	Threatened

Critical habitats

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

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial St, Suite 300
Concord, NH 03301-5087
http://www.fws.gov/newengland

RE: Ossipee 14749, Bridge Replacement and Rehabilitation of NH Route 16/25 (05E1NE00-2016-F-0839)

December 2, 2016

Rebecca Martin
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03301

Dear Ms. Martin:

The U.S. Fish and Wildlife Service (Service) is responding to your request, dated November 3, 2016, to verify that the proposed Ossipee 14749 Bridge Replacement and Rehabilitation of NH Route 16/25 Project (Project) may rely on the May 20, 2016 Programmatic Biological Opinion (BO) for federally funded or approved transportation projects that may affect the northern long-eared bat (NLEB) (*Myotis septentrionalis*). We received your request and the associated Project Submittal Form on November 3, 2016. This letter provides the Service's response as to whether the Project 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; 16 U.S.C. 1531 et seq.) for its effects to the NLEB.

The New Hampshire Department of Transportation (NHDOT) proposes to replace three bridges and rehabilitate 3.4 miles of NH Route 16/25 in Ossipee, New Hampshire. NHDOT, as the non-Federal agency representative for the Federal Highway Administration, determined that the Project is *likely to adversely affect* the NLEB, because the proposed action may affect bridges and trees occupied by NLEB during the active season. 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, all work related to the bridge replacements and highway rehabilitation will occur within 300 feet of the existing road/rail surfaces, and all tree clearing related to the proposed bridgework will occur farther than 0.25 mile from documented roosts and farther than 0.5 mile from any hibernacula. The Service reviewed the Project Submittal Form 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 includes the NHDOT's commitment to implement the impact avoidance, minimization, and compensation measures as indicated on the Project Submittal Form. 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 NLEB 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

The NHDOT, the Federal Highway Administration, its State/local cooperators, and any contractors must take care when handling dead or injured NLEB 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.

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 Susi von Oettingen of this office at 603-223-2541, extension 6418.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

Christine J. Perron

From: Martin, Rebecca <Rebecca.Martin@dot.nh.gov>
Sent: Tuesday, November 15, 2016 7:12 AM
To: Christine J. Perron
Subject: RE: Ossipee 14749 - small whorled pogonia

Hi Christine,

That is great news. I am glad you were able to connect.

Thank you,

Rebecca

From: Christine J. Perron [mailto:CPerron@mjinc.com]
Sent: Wednesday, November 09, 2016 10:54 AM
To: Martin, Rebecca
Subject: Ossipee 14749 - small whorled pogonia

Hi Rebecca,

I just spoke with Maria Tur – she had tried to reach me a few times via my DOT email and phone number before realizing that I was no longer there.

I confirmed with Maria that FHWA is the lead federal agency for this project. I also confirmed with her that there is no suitable habitat in areas that will be impacted by the project. Maria said that if there is no suitable habitat, then FHWA can make a finding of No Effect and no concurrence from the FWS is needed.

Christine

Christine Perron, CWS • Senior Environmental Analyst
McFarland Johnson
53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 128
www.mjinc.com

Christine J. Perron

From: Martin, Rebecca [Rebecca.Martin@dot.nh.gov]
Sent: Thursday, November 03, 2016 12:27 PM
To: Magee, John
Cc: Christine J. Perron
Subject: RE: Ossipee 14749: NHB review: NHB15-1905
Attachments: Re: Ossipee 14749: NH DOT Essential Fish Habitat Consultation; RE: Ossipee 14749: NH DOT Essential Fish Habitat Consultation

Hi John,

We have received the results of the EFH assessment for the Bearcamp River. NOAA has concurred that the proposed project would have minimal adverse effect on EFH for Atlantic salmon in the Bearcamp River.

Thank you,

Rebecca Martin
Environmental Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
Rebecca.Martin@dot.nh.gov

From: Magee, John [mailto:john.magee@wildlife.nh.gov]
Sent: Monday, March 14, 2016 1:42 PM
To: Rebecca A. Martin
Cc: Christine Perron
Subject: RE: Ossipee 14749: NHB review: NHB15-1905

Thank you Rebecca. It sounds like the very short time needed to remove the existing bridge and put in place the new bridge will reduce any potential impacts to migrating fish.

John

John Magee
Fish Habitat Biologist
New Hampshire Fish and Game Department
11 Hazen Drive
Concord, NH 03301
P 603-271-2744
F 603-271-1438

From: Rebecca A. Martin [mailto:RMartin@dot.state.nh.us]
Sent: Monday, March 14, 2016 1:37 PM
To: Magee, John
Cc: Christine Perron
Subject: RE: Ossipee 14749: NHB review: NHB15-1905

Good afternoon John,

Thank you for the information. I doubt the major work would end up being during the summer due to traffic issues with tourists using the roadway and preventing summer closures. This is an interesting project because an Accelerated Bridge Construction method is being proposed, a bridge slide-in. Essentially the new bridge will be constructed next to the existing structure and once complete during a weekend closure the old bridge would be taken down and the new one would be slid into place. We will be working with McFarland Johnson for the environmental review of this project (Christine Perron is copied on this message). We have begun coordination with NOAA regarding EFH and we will copy you when we prepare the EFH assessment.

Thank you,

Rebecca Martin
Environmental Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
rmartin@dot.state.nh.us

From: Magee, John [mailto:john.magee@wildlife.nh.gov]
Sent: Thursday, March 03, 2016 10:28 AM
To: Rebecca A. Martin
Subject: RE: Ossipee 14749: NHB review: NHB15-1905

Hi Rebecca. Thanks for your patience; it took a few days to make sure our regional fisheries biologists could provide information on this. We recommend the work be completed before September 1. Is that possible? Our concern is that we would like to reduce impacts to migrating salmonids (brook trout and landlocked salmon in particular) that are known to travel through that area of the River in late September and October to spawn upstream.

Thank you,

John

John Magee
Fish Habitat Biologist
New Hampshire Fish and Game Department
11 Hazen Drive
Concord, NH 03301
P 603-271-2744
F 603-271-1438

From: Rebecca A. Martin [mailto:RMartin@dot.state.nh.us]
Sent: Friday, February 19, 2016 9:47 AM
To: Magee, John
Subject: RE: Ossipee 14749: NHB review: NHB15-1905

Good morning John,

I spoke with one of the bridge designers last week. The bridges are being replaced, so there will be new abutments behind the existing abutments.

The project includes replacement of 3 bridges and approximately 3.2 miles of road rehabilitation on NH Route 16. The majority of the road rehabilitation will likely be reclaim, leading to a 10 inch raise in the roadway, with areas of full box reconstruction at the bridges and in the area of the roadway near the Bearcamp River that is depicted on the Flood Insurance Rate Map (FIRM) as being within the floodway. The project limits are from south of the Lovell River bridge that will be replaced, to the bridge over the Chocorua, that will not be included in the project.

The Lovell River Bridge replacement will be a standard bridge replacement with a temporary bridge constructed west of Route 16. The west side of the roadway was selected because the state has right-of-way in this area and the golf course is located on the east side of the roadway. The Lovell bridge is adjacent to a portion of roadway that currently experiences frequent flooding (approximately at a 10 year storm). Therefore, the roadway is being elevated in this area by approximately 2 feet. The flooding will not be eliminated, but will be less frequent (approximately at a 50 to 100 year event). The span is now 58' and the new span will be approximately twice as long. The goal of the design was to find a balance between reducing the roadway flooding and avoiding creation of a situation that caused flooding in other areas in the floodplain.

The Bearcamp River bridge and the Bearcamp flood relief bridge are proposed to be completed with an accelerated bridge construction method, a bridge slide. The new bridges will be built in parallel to the existing bridge. Over the

course of two weekend closures for 60 hours each, the existing bridges will be demolished and the new bridges will be slid in place. This will be the first project for NH DOT with bridge slide-ins. The method was selected because it reduces impacts and costs less than a traditional approach. Rehabilitation of the bridges was considered, but due to their current state of disrepair, almost the entirety of the bridges would need to be replaced. The area east of Route 16 has several wetlands and utilities that would be heavily impacted if a temporary or permanent divergence in this direction was selected. The area west of Route 16 would have many right of way and business impacts. The bridge slide construction method reduces impacts and costs less than a traditional approach. The Bearcamp River bridge is a 5 span IBC bridge and is around 392' long and 28' wide, the proposed replacement will be similar in length, but 3 spans and 34' wide. This will mean no more piers in the river after the replacement. The Bearcamp River Relief bridge is a 4 span IBC bridge that is 168' long and 28' wide, the proposed replacement will be slightly longer, 185' and 34' wide and 3 spans.

Thank you,

Rebecca Martin
Environmental Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
rmartin@dot.state.nh.us

From: Magee, John [mailto:john.magee@wildlife.nh.gov]
Sent: Monday, February 01, 2016 12:04 PM
To: Rebecca A. Martin
Subject: RE: Ossipee 14749: NHB review: NHB15-1905

Hi Rebecca. Is any work to the abutments planned? Specifically, any work that could potentially affect the Rivers' substrate?

There are wild landlocked salmon and wild brook trout in the Lovell River, and the Bearcamp River has landlocked salmon, brown trout and wild brook trout.

Thank you,

John

John Magee
Fish Habitat Biologist
New Hampshire Fish and Game Department
11 Hazen Drive
Concord, NH 03301
P 603-271-2744
F 603-271-1438

From: Rebecca A. Martin [mailto:RMartin@dot.state.nh.us]
Sent: Thursday, January 28, 2016 1:09 PM
To: Magee, John
Cc: Tuttle, Kim
Subject: Ossipee 14749: NHB review: NHB15-1905

Good afternoon John,

I have taken over the environmental review of a proposed NH DOT project in Ossipee on NH Route 16. The purpose of the project is to replace three red listed bridges along NH 16/25. The bridges carry NH 16/25 over the Lovell River, over the Bearcamp River and over the Bearcamp flood relief area (see attached). The roadway will also be resurfaced beginning at the Lovell River Bridge and extending north 3.2 miles to the Chocorua River Bridge in West Ossipee. The major impact areas will be at the three bridge replacement sites (see attached). The treatment for the resurfacing of the 3.2 miles of roadway has not been determined at this time, but the treatment being considered with the greatest impact would be a reclaim and a raise in the roadway by 8 inches. The project team is also proposing to replace and/or rehabilitate some of the drainage.

The NHB search did not indicate records of rare wildlife in the project area. However, coldwater fisheries are located in the project area. The Bearcamp River has been identified as Essential Fish Habitat for Atlantic Salmon. The project team is considering a standard replacement for the Lovell River Bridge, but is thinking of an accelerated bridge construction method called bridge slide for the Bearcamp and Relief bridges. In this method of construction the new bridges would be constructed next to the existing and a very short (one weekend in the spring or fall when traffic is less) closure would be utilized to remove the old bridge and slide the new one in place. As they are still in the early stages of design, any guidance you might have to assist with developing a design that is sympathetic to the EFH would be appreciated.

Thank you,

Rebecca Martin
Environmental Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
rmartin@dot.state.nh.us

From: Lamb, Amy [mailto:Amy.Lamb@dred.nh.gov]
Sent: Friday, July 17, 2015 8:31 AM
To: Rebecca A. Martin
Subject: NHB review: NHB15-1905

Attached, please find the review we have completed. If your review memo includes potential impacts to plants or natural communities please contact me for further information. If your project had potential impacts to wildlife, please contact NH Fish and Game at the phone number listed on the review.

Best,
Amy

Note: Melissa Coppola is still working part-time on reviews, but I am now the reviewer at NH Natural Heritage. Please address future correspondence to me at: Amy.Lamb@dred.nh.gov

Amy Lamb
Ecological Information Specialist
NH Natural Heritage Bureau
DRED - Forest & Lands
172 Pembroke Rd
Concord, NH 03301
603-271-2215 ext. 323

New Hampshire DOT
Department of Transportation

Victoria F. Sheehan
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

William Cass, P.E.
Assistant Commissioner

OSSIPEE
X-A000(490)
14749
RPR 3262

Adverse Effect Memo

Pursuant to meetings and discussions in 2011/2012, and more recently on April 21, 2016, July 14, 2016, and August 11, 2016, and for the purpose of compliance with regulations of the National Historic Preservation Act and the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the NH Division of Historical Resources (NHDHR) and the NH Division of the Federal Highway Administration (FHWA) have coordinated the identification and evaluation of historical and archaeological resources with plans to replace three bridges and to rehabilitate a 3.4 mile section of NH Route 16 in Ossipee.

The three bridges are the Lovell River Bridge (152/268), Bearcamp River Bridge (137/297), and Bearcamp Relief Bridge (137/299). The Lovell River Bridge is a single-span (overall length 62 feet in length), steel I-Beam with concrete deck bridge constructed in 1950. The Bearcamp Bridges were both constructed in 1955 and consist of steel I-Beam bridges with concrete decks - that feature a combined simple under dead/continuous under live load beam design with double-batter H-pile bents, angled steel railing, and an open grid shoulder/steel curb/open grid sidewalk assembly. The Bearcamp River Bridge is comprised of five spans, with a total length of 396 feet. The Bearcamp Relief Bridge is four spans and 172 feet in length. The two bridges are approximately 1,000' feet apart and are considered sister bridges, both designed by Harold E. Langley and Robert J. Prowse, prominent engineers within the NH Highway Department (NHHD).

Roadway rehabilitation, outside of the limits of the full depth bridge approaches, will entail pavement reclamation or overlay, guardrail replacement, and drainage upgrades. In areas of pavement reclamation, the roadway elevation will increase by approximately one foot. The condition of all drainage structures and the limits of slope work still need to be assessed. Drainage structures consist of 50 to 60 year old metal or concrete pipes. It is anticipated that most roadway rehabilitation work will be located within existing State right-of-way and easements. However, reclamation may require slope easements and drive easements.

Based on a review pursuant to 36 CFR 800.4, we determined that the Bearcamp River Bridge and Bearcamp Relief Bridge are eligible for the National Register of Historic Places under Criterion C for their engineering significance and association with important New Hampshire bridge designers. This bridge design may have been the first of its type designed by the NHHD and may have played a role in the development of a specialized bridge type in NH. The design was practical and cost-effective, allowing the NHHD to minimize the size of the members and cost of materials (steel) while still being able to carry the required loading. Detailed descriptions of the bridges are on file at the NHDHR in Concord, New Hampshire (OSS0030 and OSS0031).

All necessary phases of archaeological survey have been completed and it was determined that sensitive areas do not exist within areas that will be impacted by the proposed project. The need for further archaeological survey is not anticipated.

Applying the criteria of effect at 36 CFR 800.5, we have determined that the proposed project will have an adverse effect on the Bearcamp River Bridge (137/297), and Bearcamp Relief Bridge (137/299) due to their removal. Alternative

analysis determined that the bridges could not be rehabilitated in place because of the deterioration that has occurred. The features that made the bridges unique, open grid, H-pile bents, etc., were not able to withstand years of salt and debris.

Appropriate mitigation for the removal of the eligible bridges will be recorded in a Memorandum of Agreement.
In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

Section 4(f) *(to be completed by FHWA)*	*There Will Be:*	☐ No 4(f);	☒ **Programmatic 4(f);**	☐ **Full 4 (f);** or
	☐ **A finding of *de minimis* 4(f) impact as stated:** In addition, with NHDHR concurrence of no adverse effect for the above undertaking, and in accordance with 23 CFR 774.3, FHWA intends to, and by signature below, does make a finding of *de minimis* impact. NHDHR's signature represents concurrence with both the no adverse effect determination and the *de minimis* findings. Parties to the Section 106 process have been consulted and their concerns have been taken into account. Therefore, the requirements of Section 4(f) have been satisfied.			

In accordance with the Advisory Council's regulations, consultation will continue, as appropriate, as this project proceeds.

for Patrick Bauer, Administrator — 9/8/16 Date
Federal Highway Administration

Jill Edelmann — 9/8/16 Date
Cultural Resources Manager

Concurred with by the NH State Historic Preservation Officer:

for Elizabeth H. Muzzey — 9-8-16 Date
State Historic Preservation Officer
NH Division of Historical Resources

c.c. Chris St. Louis, NHDHR; Jamie Sikora, FHWA; Rebecca Martin, DOT; Victoria Chase, DOT; Christine Perron, McFarland Johnson

US Army Corps of Engineers
New England District

U.S. Army Corps of Engineers
New Hampshire Programmatic General Permit (PGP)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps 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 PGP, GC 5 regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	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 SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org, specifically the book Natural Community Systems of New Hampshire.		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 size of the existing impervious surface area?	14.3 acres	
2.7 What is the size of the proposed impervious surface area?	14.3 acres	
2.8 What is the % of the impervious area (new and existing) to the overall project site?	70%	
3. Wildlife	Yes	No
3.1 Has the NHB 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 a NHB determination.)	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: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • 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 PGP, GC 21?	x	

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?	x	
5. Historic/Archaeological Resources		
If a minor or major impact project, has a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) been sent to the NH Division of Historical Resources as required on Page 5 of the PGP?**	x	

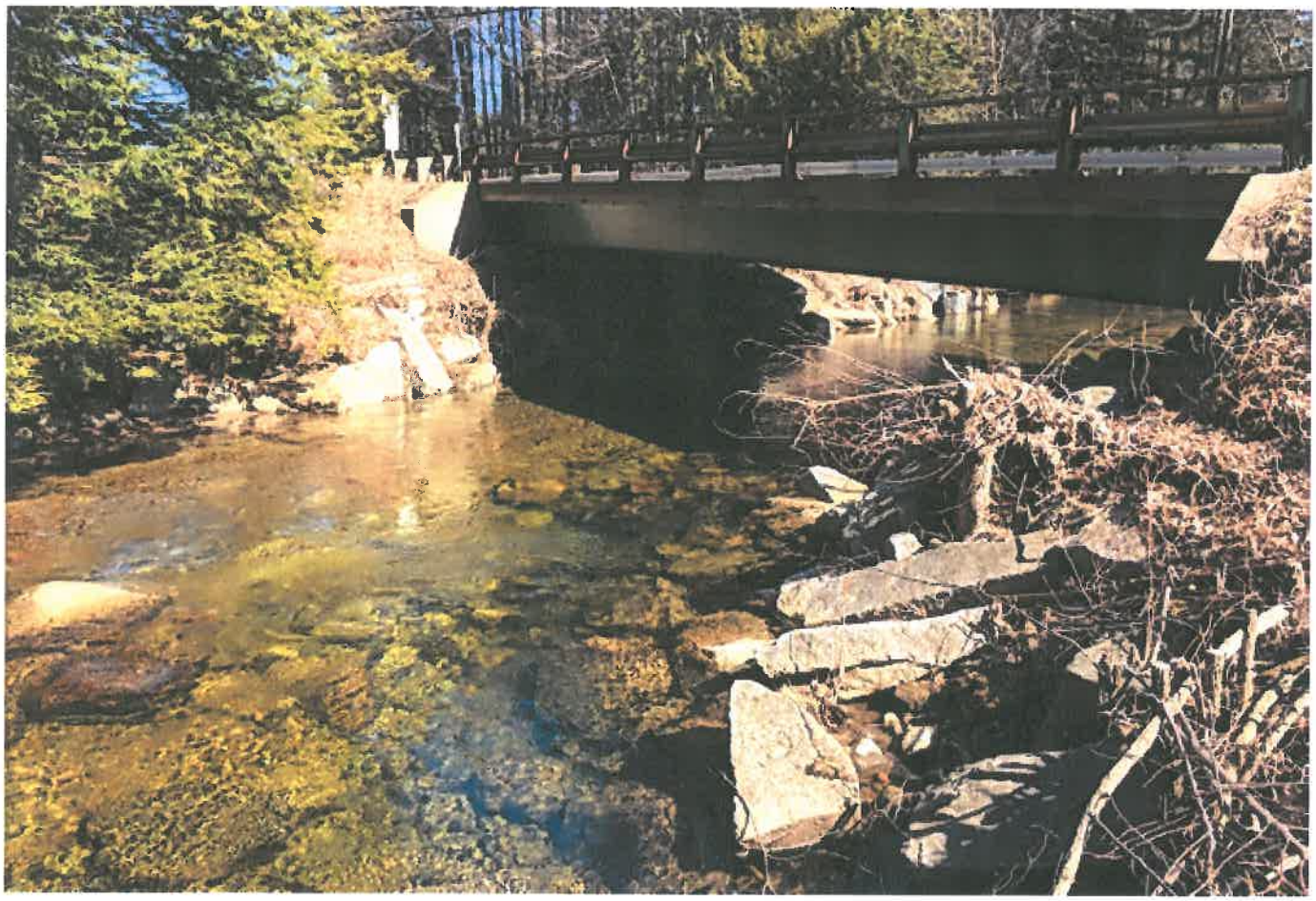
*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Location A: (temporary impacts at the corner of the gravel drive) (Bing Streetview 6/11/2015)

Location A (temporary impacts at the corner of the gravel drive) &B (permanent impacts in ditch): (McFarland Johnson Wetland Delineation August 2016)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Location B: (permanent impacts in the ditchline) (Bing Streetview 6/11/2015)

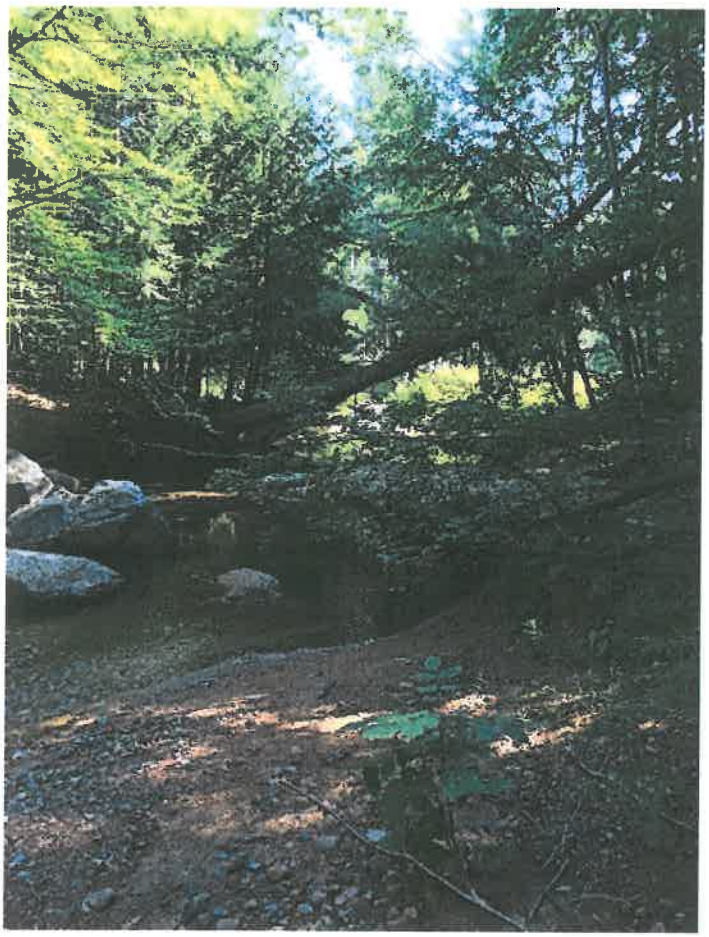
Location C permanent bank impacts (right side of photo), Location G permanent bank impacts (left side of photo), Location E temporary impacts to the River: (McFarland Johnson Wetland Delineation August 2016)



Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Location C: NH DOT Photo November 2012

Location H permanent bank impacts (foreground of photo), Location C permanent bank impacts (far abutment), & Location E temporary impacts to the River (McFarland Johnson Wetland Delineation August 2016)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Locations D temporary bank impacts (on right), E temporary River impacts, & F temporary bank impacts (on left) (from upstream facing towards bridge) (McFarland Johnson Wetland Delineation August 2016)



Facing upstream from bridge Locations D temporary bank impacts (on left), E temporary River impacts, & F temporary bank impacts (on right) NH DOT photo November 2012

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Wetlands L temporary & N temporary & temporary impacts Stream M (McFarland Johnson Wetland Delineation August 2016)

Wetlands L & N & Stream M (Bing Streetview 6/11/2015)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Wetlands I temporary, wetland K temporary & Stream J temporary (McFarland Johnson Wetland Delineation August 2016)

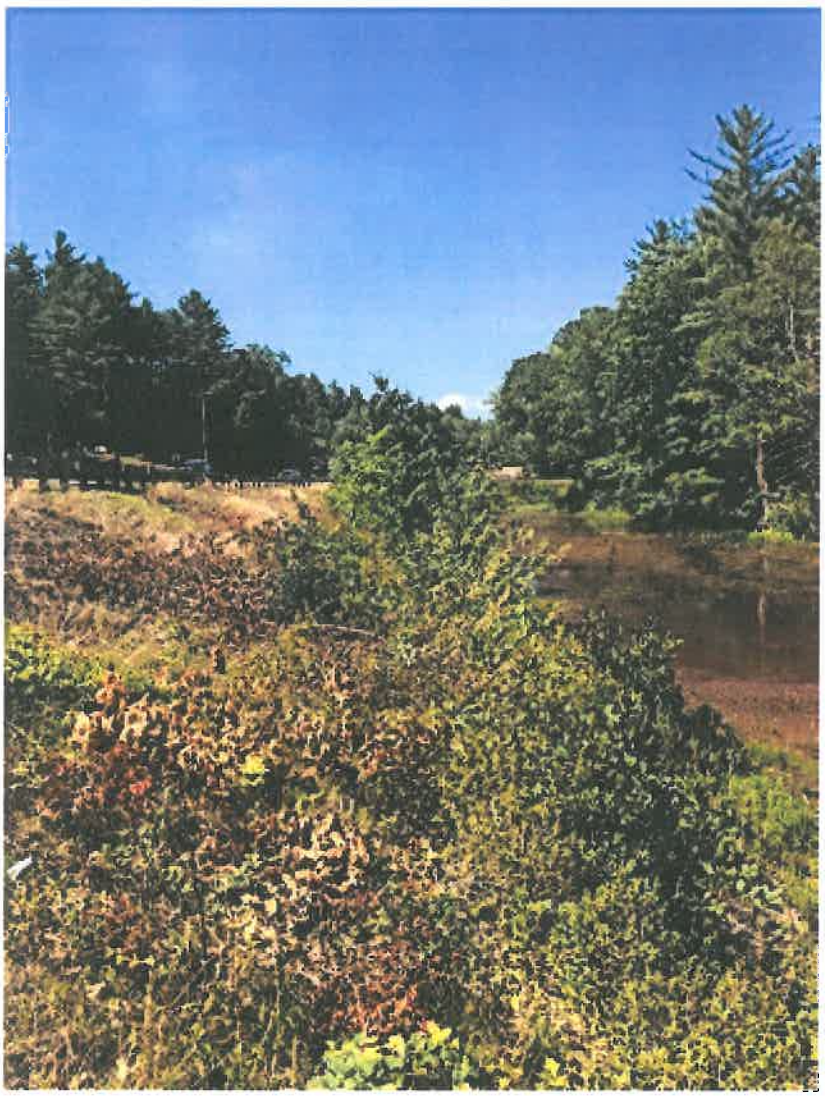
Wetland I temporary (McFarland Johnson Wetland Delineation August 2016)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Wetland K temporary (McFarland Johnson Wetland Delineation August 2016)

Stream J Culvert Inlet (McFarland Johnson Wetland Delineation August 2016)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Wetlands I & K & Stream J (Bing Streetview 6/11/2015)

Wetland O temporary (McFarland Johnson Wetland Delineation August 2016)

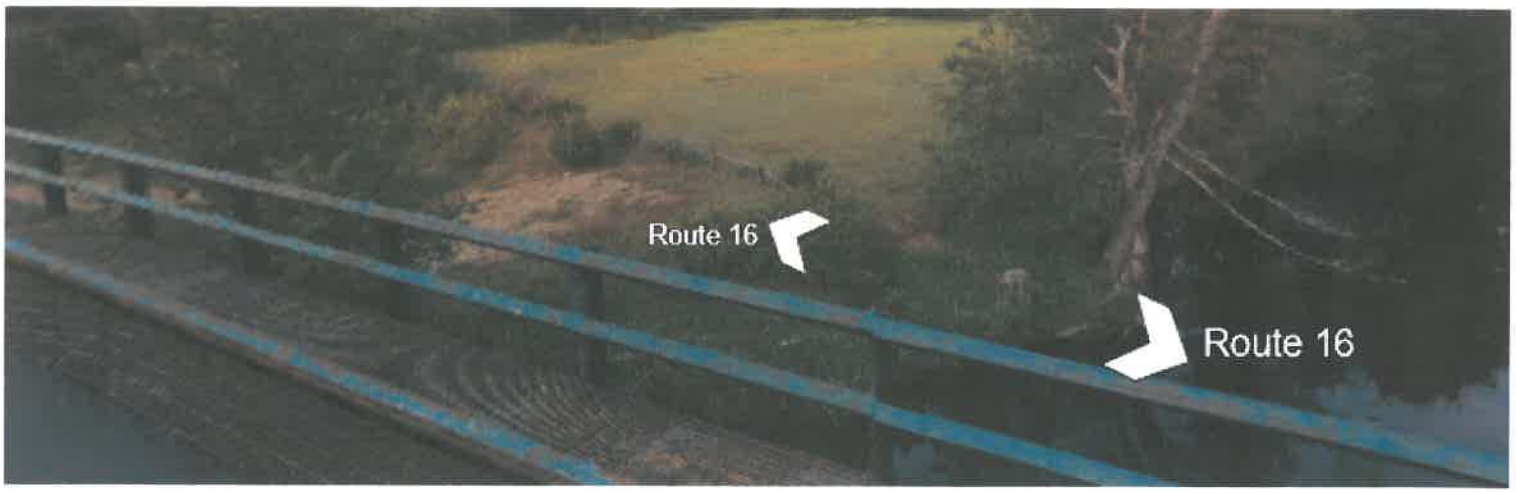


Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Wetland O temporary (Bing Streetview 6/11/2015)

Wetland P temporary (Bing Streetview 6/11/2015)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Bank Q (temporary)

Bank S (permanent) & Bank U (temporary) (Bing Streetview 6/11/2015)



Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
River T permanent (on left) Bank R permanent (on right) (McFarland Johnson Wetland Delineation August 2016)

River T permanent (on right) Bank S permanent (on left) (McFarland Johnson Wetland Delineation August 2016)

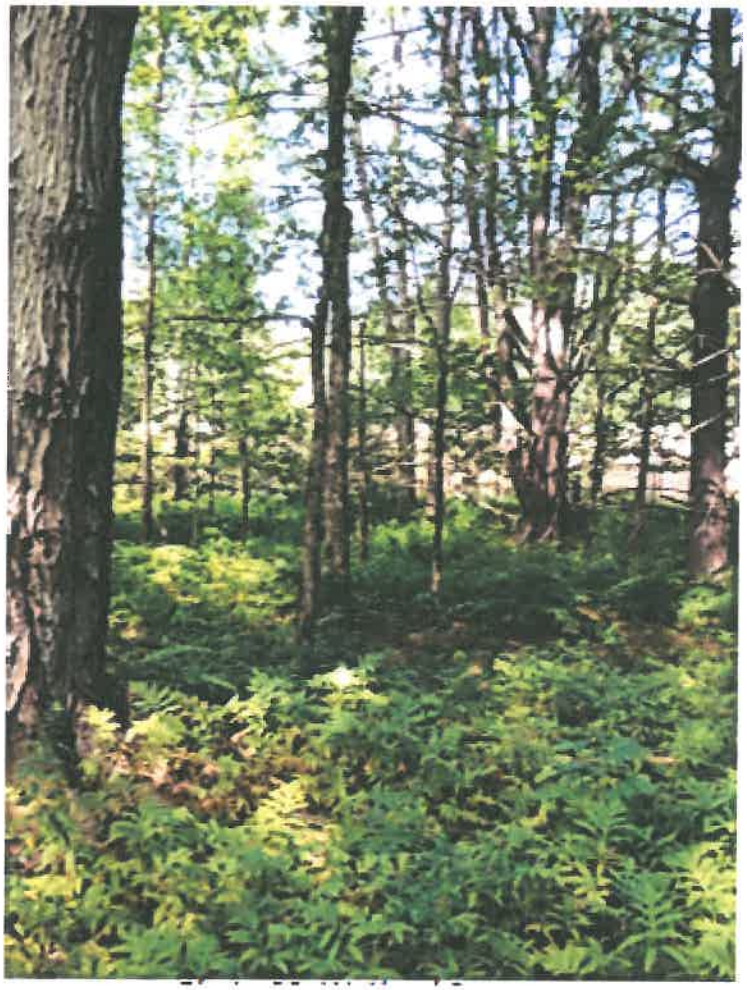
Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
River X (permanent) and Bank W (temporary) (McFarland Johnson Wetland Delineation August 2016)

River V temporary (NH DOT Photo September 2011)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
River R permanent, Bank S permanent, & River T permanent (Historic Documentation Co., Inc. December 2012)

Photo foreground River T permanent, on left of photo (further from photographer) River X permanent & Bank W temporary (Historic Documentation Co., Inc. December 2012)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Wetland Y temporary (McFarland Johnson Wetland Delineation August 2016)

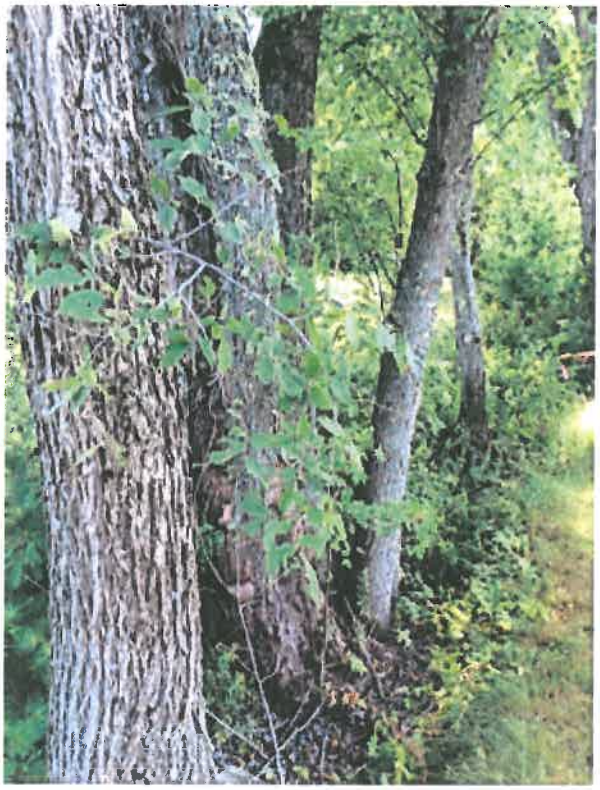


Wetland Y temporary (Google Streetview October 2016)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Wetland Z temporary (McFarland Johnson Wetland Delineation August 2016)

Wetland Z (Google Streetview Oct 2016)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Wetland AA temporary (McFarland Johnson Wetland Delineation August 2016)



Wetland AA Culvert (McFarland Johnson Wetland Delineation August 2016)

Ossipee 14749: Bridge Replacements & Route 16 Improvements
NH DOT
Wetland AB temporary (McFarland Johnson Wetland Delineation August 2016)

Wetland AB Culvert (McFarland Johnson Wetland Delineation August 2016)

OSSIPEE
14749

February 16, 2018

PART WT 404 CRITERIA FOR SHORELINE STABILIZATION

The 14749 project includes the replacement of bridge No. 152/268, NH Route 16 over the Lovell River; bridge No. 137/297, NH Route 16 over the Bearcamp River; and bridge No. 137/299, NH Route 16 over the Bearcamp River Relief.

Pursuant to PART Wt 404 Criteria for Shoreline Stabilization, the following addresses each codified section of the Administrative Rules:

Env-Wt 404.01 Least Intrusive Method.

As much existing riprap as possible is being retained at the Lovell River bridge abutments. There is no existing riprap at the Bearcamp River bridges, so it will be placed at the abutments and piers for scour protection. In all cases, riprap was kept to the minimum required as detailed in FHWA HEC-18 and HEC-23. Riprap at all piers will be constructed flush with the original ground elevation.

Env-Wt 404.02 Diversion of Water.

The area were the riprap is being placed will be behind either a cofferdam or water diversion structure so that the rivers can continue to flow in a clean water bypass through the area.

Env-Wt 404.03 Vegetative Stabilization.

Natural vegetation will be left undisturbed to the maximum extent possible. Natural vegetation outside the limits of riprap disturbed during construction of the project will be restored using native plants.

Env-Wt 404.04 Rip-rap.

(a) The requirements of both HEC-18 and HEC-23 for the protection of bridge substructures were followed to achieve acceptable protection with the least possible impact.

(b) (1-5) The enclosed specifications for Riprap (Items 583.3 and 583.32 at Lovell River, Items 583.5 and 583.52 at Bearcamp River) provide the description of the material size, gradation, and construction requirements. Cross sections of the stone fill showing proposed thickness and other details, including Geotextile, Permanent Control Class 1, Non-Woven (Item 593.411) have been provided on the attached plans. Bedding for the stone fill will consist of natural ground excavated to the proposed underside of the stone fill in conformance with Section 203 of the Specifications.

(b) (6) Enclosed are plan sheets to sufficiently indicate the relationship of the project to fixed points of reference, abutting properties, and features of the natural shoreline.

(b) (7) For reasons as explained in Section (a), riprap is recommended for the limits shown on the attached plans.

(c) N/A

(d) Riprap is proposed to extend down to and adequately key into the river channel to prevent possible undermining of the shore slope. This will involve extending the stone beyond the two-foot limit.

(e) Stamped engineering plans are attached.

SECTION 583 -- RIPRAP

Description

1.1 This work shall consist of furnishing and placing riprap as shown on the plans or ordered. Riprap is typically required for erosion protection of bridge structures in waterways, for active waterway channel slopes and bottoms, and for intermittent waterway channels where the Engineer determines riprap protection is required to resist expected high water flow velocities.

Materials

2.1 Riprap shall be quarry stone of approved quality, hard, durable, sub-angular to angular in shape, resistant to weathering and free from structural defects such as weak seams and cracks.

2.1.1 The suitable shape of the individual stones shall be angular, meeting the gradation in 2.1.1.2 to create interlocking riprap to provide stability of the slope or channel. Round, thin and platy, elongated or needle-like shapes shall not be used.

2.1.1.1 The suitable riprap stone shape is determined by the Length to Thickness ratio, where Length is the longest dimension and Thickness is the shortest dimension, measured in perpendicular axes to each other. The suitable riprap stone shape shall have a length to thickness ratio of no greater than 3.

2.1.1.2 The gradation requirements of the riprap classes in Table 583-1 are based on the stone size Width, the largest dimension perpendicular to the Length and Thickness, and the distribution of stone sizes by volume. The volume distribution requires that 15 percent of the stone in the mass shall be no larger than the volume shown in the table (< 15% column), and 15 percent of the stone in the mass shall be no smaller than the volume shown in the table (> 85% column). The remaining 70 percent of the stone in the mass shall have a volume between these requirements, averaging to the volume shown in the table (15% - 85% column). None of the stones in the mass shall exceed the maximum volume shown in the table (Maximum column).

Table 583-1

Riprap Classes and Sizes			Percentage Distribution of Particle Sizes by Volume (cubic feet)			
Class	Nominal Size (in)	Maximum Size (in)	< 15%	15% – 85%	> 85%	Maximum
I	6	12	0.05	0.14	0.31	1.0
III	12	24	0.4	1.0	2.5	6.5
V	18	36	1.3	3.5	8.5	22
VII	24	48	3	8	19	53
IX	36	72	10	27	65	179

Note: Nominal Size and Maximum Size are based on the Width dimension of the stone. The riprap classes conform to the standard classes described in the FHWA HEC-23 publication.

2.1.2 The sources from which the stone is obtained shall be selected well in advance of the time when the material will be required in the field. The acceptability of the riprap stone shape and grading will be determined by the Engineer.

2.1.3 Control of the gradation will be completed by visual inspection approval by the Engineer of a stockpile at the quarry or other agreed site. Mechanical equipment as needed to assist in checking the stockpile gradation shall be provided by the Contractor. Stockpile replenishment will require re-approval.

2.2 Gravel blanket material shall conform to 209.2.1.2.

2.3 Geotextile shall conform to 593.2.

Construction Requirements

3.1 Preparation of slopes. Slopes that will be covered by riprap shall be free of brush, trees, stumps, and other organic material and shall be graded to a smooth surface. All soft material shall be removed to the depth shown on the plans or as directed and replaced with approved material per 203.3.6. It is the Contractor's responsibility to protect embankments and excavated slopes from erosion during construction of the riprap covered slope.

3.2 Gravel blanket construction. When called for on the plans, the gravel blanket shall be placed on the prepared area to the specified thickness in one operation, using methods which will not cause segregation of particle sizes within the layer. The surface of the finished layer shall be even and free from mounds or windrows.

3.3 Geotextile placement. Geotextile shall be placed in accordance with 593.3.

3.4 Riprap placement. Riprap shall be constructed to the dimensions shown on the plans or as directed by the Engineer.

3.4.1 Placement of riprap shall be conducted as soon as possible after gravel blanket or geotextile placement.

3.4.2 Placement of the riprap shall be started at the toe (key trench) and progress up the slope. The key trench at the bottom of the riprap shall be constructed as shown on the plans. If bedrock is encountered at the key trench it shall be brought to the attention of the Engineer to determine if modification to the riprap installation is needed.

3.4.3 Riprap shall be placed over geotextile by methods that do no stretch, tear, puncture or reposition the fabric. Riprap smaller than 1.5 cu. ft. in volume shall be placed with drop heights of less than 3 ft. to the placement surface. Riprap greater than 1.5 cu. ft. in volume shall be placed with no free fall height.

3.4.4 Equipment such as a clamshell, orange-peel bucket, skip or hydraulic excavator shall be used to place the riprap so it is well distributed and there is no large accumulations of either the larger or smaller sizes of stone. Dump trucks or front-end loaders tracked or wheeled vehicles shall not be used since they can destroy the interlocking integrity of the stone when driven over previously placed riprap. Placing the riprap by end dumping on the slopes will cause segregation and will not be permitted.

3.4.5 The riprap shall be placed in a manner which produces a well-graded mass. The larger stones shall be well distributed and the entire mass of riprap shall conform approximately to the gradation specified. Hand placing or rearranging of individual stones by mechanical equipment may be required to the extent necessary to secure the uniformity of gradation and surface specified. Fill voids between larger stones with small stones to ensure interlocking between the riprap.

3.4.6 After the riprap is in place, it shall be compacted by impacting (ramming) the exposed surface to produce a tight, locked surface, not varying more than 6" from the elevations shown on the plans.

3.4.7 Riprap placed in water requires close observation and increased quality control to ensure the required thickness, gradation and coverage is achieved.

Method of Measurement

4.1 Riprap will be measured by the cubic yard.

4.1.1 If the Engineer determines that in-place measurement is impracticable, the quantity for payment will be determined by loose measure in the hauling vehicle on the basis that 1 cubic yard vehicle measure is equivalent to 0.7 cubic yard in place.

Basis of Payment

5.1 The accepted quantity of riprap will be paid for at the Contract unit price per cubic yard (cubic meter) complete in place.

5.1.1 Only when the stone is examined in accordance with 2.1 and examination proves the gradation to be acceptable will payment be made as provided in 109.04.

5.1.2 Gravel blanket material specified or ordered will be paid for under Section 209.

5.1.3 Geotextile specified or ordered will be paid for under Section 593.

5.1.4 The accepted quantity of excavation required for placing riprap and for placing any underlying gravel blanket will be paid for under the item of excavation being performed. Excavation above refers only to excavation of original ground or to material ordered removed not shown on the plans.

5.1.5 Free borrow will not be required to replace the accepted quantity of stone obtained from the excavation. However, when the plans do not call for borrow but the quantity of material removed from excavation for use under this item requires the Contractor to furnish borrow to complete the work, such borrow will be subsidiary.

5.1.6 Replacement slope material resulting from the requirements of 3.1 will be paid in accordance with 203.5.1.9.

Pay item and unit:

583.1	Riprap, Class I	Cubic Yard
583.3	Riprap, Class III	Cubic Yard
583.5	Riprap, Class V	Cubic Yard
583.7	Riprap, Class VII	Cubic Yard
583.9	Riprap, Class IX	Cubic Yard

SPECIAL PROVISION

AMENDMENT TO SECTION 583 -- RIPRAP

Item 583._2 - Riprap, Class __, Intermixed with Humus

Add to Materials:

2.4 Humus shall conform to Section 647.2.

Add to 3.4:

3.4.8 The riprap surface shall have all voids filled with humus to provide for a vegetative growth. Humus shall be spread over the surface and worked into the voids.

Add to 4.1:

4.1.2 The volume of humus used to work into the voids will not be measured.

Add to 5.1:

5.1.7 Humus used to work into the voids will be subsidiary.

5.1.8 Humus used to provide a vegetative bed will paid under the appropriate item.

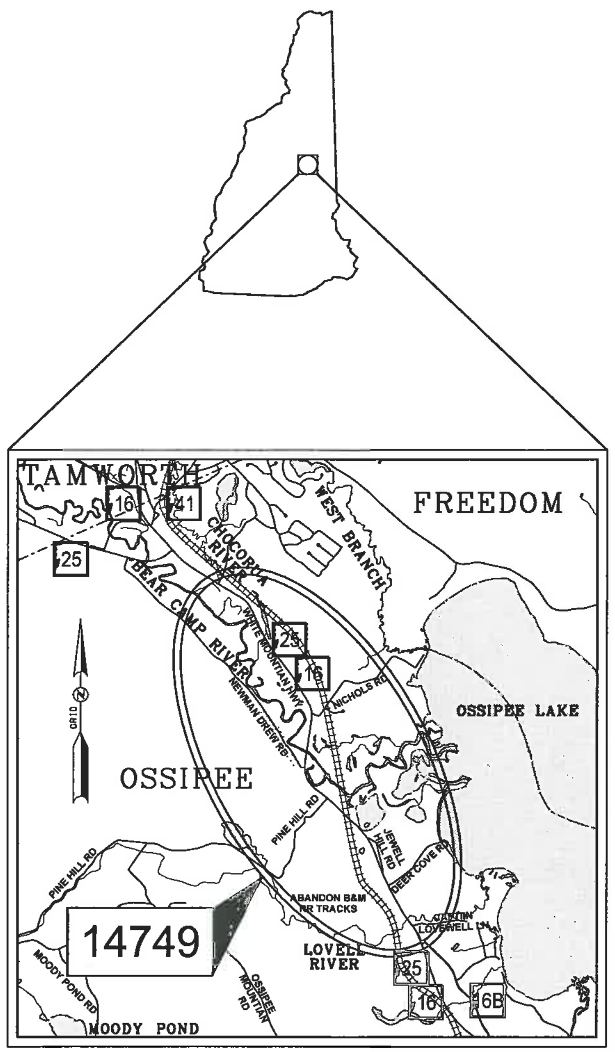
Add to Pay Items and Units:

583._2	Riprap, Class _, Intermixed with Humus	Cubic Yard

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

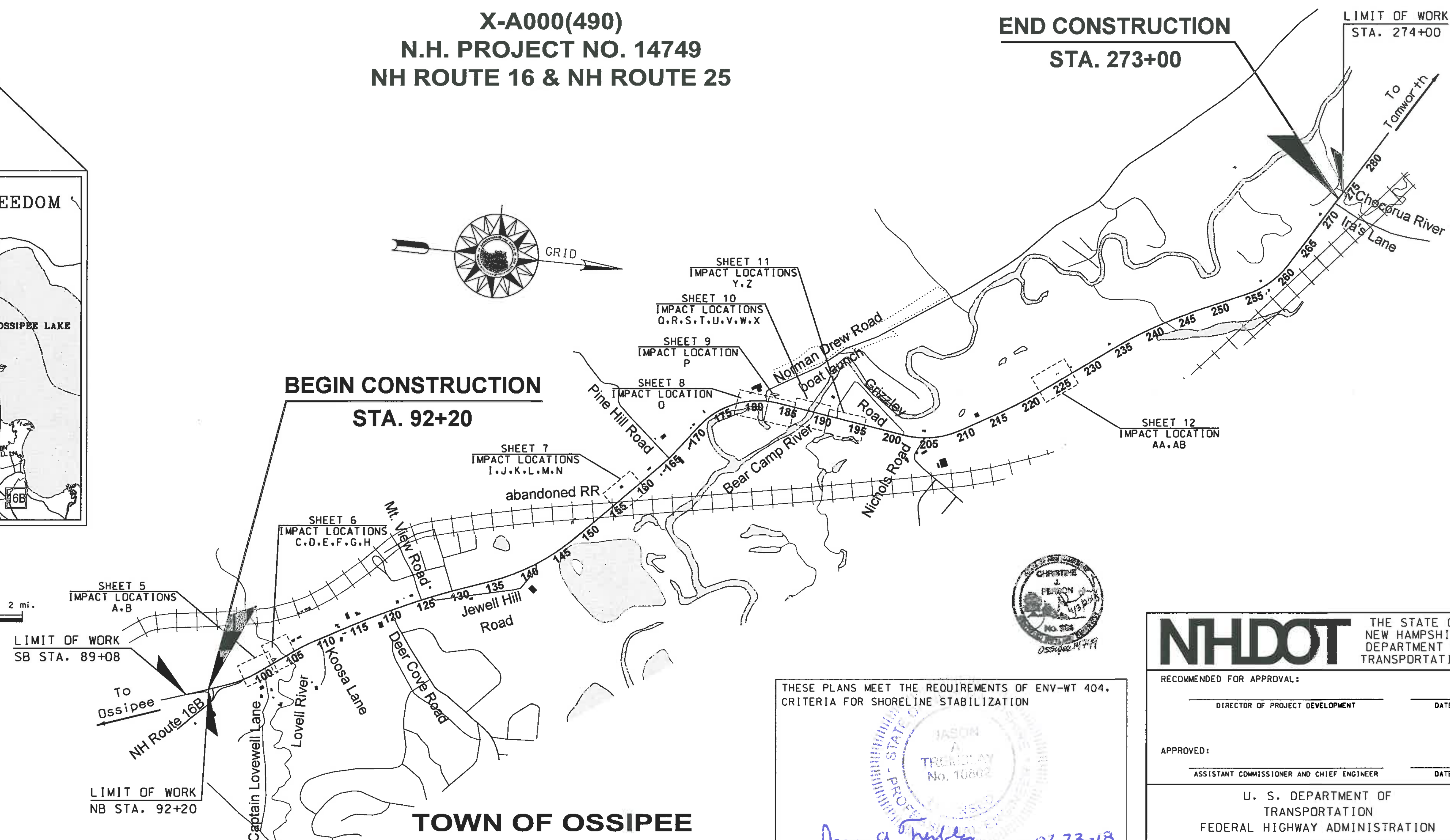
WETLANDS PLANS
FEDERAL AID PROJECT

X-A000(490)
N.H. PROJECT NO. 14749
NH ROUTE 16 & NH ROUTE 25



LOCATION MAP

GRAPHIC SCALE (1 ½ 0 1 2 mi.)



INDEX OF SHEETS

1	FRONT SHEET
2-3	STANDARD SYMBOLS SHEETS
4-12	WETLAND IMPACT PLANS
13-28	EROSION CONTROL PLANS

WETLANDS DELINEATED BY CHRISTINE PERRON AND STEVE HOFFMANN IN AUGUST 2016

DRAWN BY P. BROGAN DATE 2/18
CHECKED BY J. TREMBLAY DATE 2/18

CHRISTINE J. PERRON No. 264 (stamp)

THESE PLANS MEET THE REQUIREMENTS OF ENV-WT 404, CRITERIA FOR SHORELINE STABILIZATION

JASON A. TREMBLAY No. 10602 (stamp)

SIGN: Jason A. Tremblay DATE: 02-23-18

TOWN OF OSSIPEE

COUNTY OF MERRIMACK

SCALE: 1" = 800'

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT ____ DATE

APPROVED:

ASSISTANT COMMISSIONER AND CHIEF ENGINEER ____ DATE

U. S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR ____ DATE

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
X-A000(490)	14749	1	28

GENERAL

EDGE OF PAVEMENT
TRAVELED WAY

PROPOSED ROADWAY | existing roadway | (pavement removed outside slope lines)

DRIVEWAYS

(label surface type)

BUILDINGS

(building to be removed)

(label house or type of building)

FOUNDATION

(label type)

LEACH FIELD

leach field

BRIDGE CROSSINGS

STREAM | OVERPASS

STEPS AND WALK

(label type)

INTERMITTENT WATER COURSE

SHORE LINE

river/stream | pond (label name of water body)

POTENTIAL WET AREA SYMBOL

BRUSH OR WOODS LINE

TREES (PLANS)

(deciduous) (coniferous) (stump)

TREE OR STUMP (CROSS-SECTIONS)

(show station, circumference in feet & type)

HEDGE

(label type)

MONITORING WELL

mon

WELL

FLAG POLE

fp

ORIGINAL GROUND (TYPICALS)

ROCK OUTCROP

ROCK LINE (TYPICALS & SECTIONS ONLY)

GUARDRAIL (label type)

existing | PROPOSED

bgr
cgr

JERSEY BARRIER

CURB (LABEL TYPE)

STONE WALL

RETAINING WALL (LABEL TYPE)

(points toward retained ground)

FENCE (LABEL TYPE)

SIGNS

(single post)
(double post)

GAS PUMP

gp

FUEL TANK (ABOVE GROUND)

ft (label size & type)

STORAGE TANK FILLER CAP

fc

SEPTIC TANK

GRAVE

gr

MAILBOX

mb

VENT PIPE

vp

SATELLITE DISH ANTENNA

da

PHONE

ph

GROUND LIGHT/LAMP POST

gl lp

BORING LOCATION

B

TEST PIT

TP

INTERSTATE NUMBERED HIGHWAY

293

UNITED STATES NUMBERED HIGHWAY

3

STATE NUMBERED HIGHWAY

102

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE

2
PUB2E

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

I.S. I | I.S. II

INVASIVE SPECIES

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY
100 YEAR FLOODPLAIN BOUNDARY
FLOODWAY

ENGINEERING

CONSTRUCTION BASELINE

30 | 31 | 32

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)

SLOPE LINE | CLEARING LINE

CLEARING LINE
SLOPE LINE
SLOPE LINE (FILL)
SLOPE LINE (CUT)

PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT)
FINISHED GRADE ELEVATION (RIGHT)

72.5
79.14

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

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	14749stdsymb	14749	2	28

DRAINAGE

MANHOLE

CATCH BASIN — cb

DROP INLET — di

(existing) (PROPOSED)

DRAINAGE PIPE (existing) (label size & type)

DRAINAGE PIPE (PROPOSED)

UNDERDRAIN (existing) W/ FLUSHING BASIN — fb (label size & type)

UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN

show direction of flow

HEADER (existing & PROPOSED) (with stone outlet protection)

END SECTION (existing & PROPOSED) METAL or PLASTIC / RCP

OPEN DITCH (PROPOSED)

EROSION CONTROL/ STONE SLOPE PROTECTION

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE (label type)

RR RIGHT-OF-WAY LINE

PROPERTY LINE

PROPERTY LINE (COMMON OWNER) — Z — Z

TOWN LINE — BOW / CONCORD

COUNTY LINE — COOS / GRAFTON

STATE LINE — MAINE / NEW HAMPSHIRE

NATIONAL FOREST

CONSERVATION LAND — LC — LC

BENCH MARK / SURVEY DISK

BOUND — (PROPOSED) — bnd

STATE LINE/ TOWN LINE MONUMENT — S/L — T/L

NHDOT PROJECT MARKER

IRON PIPE OR PIN — ip

DRILL HOLE IN ROCK — dh

TAX MAP AND LOT NUMBER — 156 / 14 — 1642/341 — 6.80 Ac.±

PROPERTY PARCEL NUMBER — 12

HISTORIC PROPERTY — H

UTILITIES

TELEPHONE POLE

POWER POLE

JOINT OCCUPANCY

MISCELLANEOUS/UNKNOWN POLE

GUY POLE OR PUSH BRACE

LIGHT POLE

LIGHT ON POWER POLE

LIGHT ON JOINT POLE

existing PROPOSED

(plot point at face not center of symbol)

POLE STATUS:
REMOVE, LEAVE, PROPOSED, OR TEMPORARY AS APPLICABLE e.g.:

R L — P+04 25.0' — T+04 25.0'

RAILROAD (label ownership)

RAILROAD SIGN

RAILROAD SIGNAL

UTILITY JUNCTION BOX — jb — JB

OVERHEAD WIRE — OW — OW (label type)

UNDERGROUND UTILITIES

WATER (on existing lines label size, type and note if abandoned) — W — W — PW — PW

SEWER — S — S — PS — PS

TELEPHONE — T — T — PT — PT

ELECTRIC — E — E — PE — PE

GAS — G — G — PG — PG

LIGHTING — L — L — PL — PL

INTELLIGENT TRANSPORTATION SYSTEM — ITS — ITS — PITS — PITS

FIBER OPTIC — FO — FO — PFO — PFO

WATER SHUT OFF — SO — S

GAS SHUT OFF — SO — S

HYDRANT — HYD — HYD

MANHOLES

SEWER — S — MHS

TELEPHONE — T — MHT

ELECTRICAL — E — MHE

GAS — G — MHG

UNKNOWN — U

TRAFFIC SIGNALS / ITS

existing PROPOSED

MAST ARM (existing) — 30' MA (NOTE ANGLE FROM ℄)

OPTICOM RECEIVER

OPTICOM STROBE

TRAFFIC SIGNAL

PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT

SIGNAL CONDUIT — C — C — C — PC — PC — PC

CONTROLLER CABINET — cc — CC

METER PEDESTAL — mp — MP

PULL BOX — pb — PB

LOOP DETECTOR (QUADRUPOLE) — (label size)

LOOP DETECTOR (RECTANGULAR) — (label size)

CAMERA POLE (CCTV)

FIBER OPTIC DELINEATOR — fod — FOD

FIBER OPTIC SPLICE VAULT — SVF

ITS EQUIPMENT CABINET — its — ITS

VARIABLE SPEED LIMIT SIGN

DYNAMIC MESSAGE SIGN

ROAD AND WEATHER INFO SYSTEM

CONSTRUCTION NOTES

CURB MARK NUMBER – BITUMINOUS — B-1

CURB MARK NUMBER – GRANITE — G-1

CLEARING AND GRUBBING AREA — A

DRAINAGE NOTE — 1

EROSION CONTROL NOTE — A

FENCING NOTE — A

GUARDRAIL NOTE — 1

ITS NOTE — 1

LIGHTING NOTE — A

TRAFFIC SIGNAL NOTE — 1

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	14749stdsymb	14749	3	28

WETLAND CLASSIFICATION CODES	
PEM/SS1E	PALUSTRINE EMERGENT/SCRUB-SHRUB BROAD-LEAVED DECIDUOUS SEASONALLY FLOODED/SATURATED
BANK	BANK
R2UB2H	RIVERINE LOWER PERENNIAL UNCONSOLIDATED BOTTOM SAND PERMANENTLY FLOODED
PSS/FO1E	PALUSTRINE SCRUB-SHRUB/FORESTED BROAD-LEAVED DECIDUOUS SEASONALLY FLOODED/SATURATED
R3UB3H	RIVERINE UPPER PERENNIAL UNCONSOLIDATED BOTTOM MUD PERMANENTLY FLOODED
PEM1E	PALUSTRINE EMERGENT PERSISTENT SEASONALLY FLOODED/SATURATED
PUBH	PALUSTRINE UNCONSOLIDATED BOTTOM PERMANENTLY FLOODED
PFO1E	PALUSTRINE FORESTED BROAD-LEAVED DECIDUOUS SEASONALLY FLOODED/SATURATED
PSS1E	PALUSTRINE SCRUB/SHRUB BROAD-LEAVED DECIDUOUS SEASONALLY FLOODED/SATURATED

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASS-IFICATION	LOCATION	AREA IMPACTS						LINEAR STREAM IMPACTS FOR MITIGATION		
			PERMANENT				TEMPORARY		PERMANENT		
			N.H.W.B. (NON-WETLAND)		N.H.W.B. & A.C.O.E. (WETLAND)				BANK LEFT	BANK RIGHT	CHANNEL
			SF	LF	SF	LF	SF	LF	LF	LF	LF
1	PEM/SS1E	A	-	-	-	-	74	-	-	-	-
1	PEM/SS1E	B	-	-	3459	-	-	-	-	-	-
3/6	BANK	C	299	5	-	-	-	-	-	5	-
3/6	BANK	D	-	-	-	-	2718	-	-	-	-
2	R2UB2H	E	-	-	-	-	7197	-	-	-	-
4/5	BANK	F	-	-	-	-	2167	-	-	-	-
4/5	BANK	G	140	14	-	-	-	-	14	-	-
4	BANK	H	53	16	-	-	-	-	16	-	-
21	PSS/FO1E	I	-	-	-	-	304	-	-	-	-
20	R3UB3H	J	-	-	-	-	111	-	-	-	-
20A	PEM1E	K	-	-	-	-	480	-	-	-	-
19	PEM1E	L	-	-	-	-	120	-	-	-	-
18	R3UB3H	M	-	-	-	-	65	-	-	-	-
19	PEM1E	N	-	-	-	-	39	-	-	-	-
22	PUBH	O	-	-	-	-	13749	-	-	-	-
23	PFO1E	P	-	-	-	-	21191	-	-	-	-
24	BANK	Q	-	-	-	-	889	-	-	-	-
26	R2UB2H	R	-	-	525	61	-	-	-	-	61
24	BANK	S	430	87	-	-	-	-	-	87	-
26	R2UB2H	T	-	-	145	36	-	-	-	-	36*
24	BANK	U	-	-	-	-	837	-	-	-	-
26	R2UB2H	V	-	-	-	-	27761	-	-	-	-
25	BANK	W	-	-	-	-	1067	-	-	-	-
26	R2UB2H	X	-	-	145	36	-	-	-	-	36*
48	PFO1E	Y	-	-	-	-	6161	-	-	-	-
28	PFO1E	Z	-	-	-	-	1965	-	-	-	-
32	PSS/FO1E	AA	-	-	-	-	126	-	-	-	-
31	PSS1E	AB	-	-	-	-	85	-	-	-	-
		TOTAL	922	122	4274	61	87106	-	30	92	61

PERMANENT IMPACTS: 5196 SF
TEMPORARY IMPACTS: 87106 SF

TOTAL IMPACTS: 92302 SF

* NO MITIGATION REQUIRED (PIER REMOVAL)

20 0 20 40
SCALE IN FEET

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
Prj	14749wetplans	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN OSSIPEE BRIDGE NO. STATE PROJECT 14749

LOCATION NH ROUTE 16

WETLAND IMPACT SUMMARY

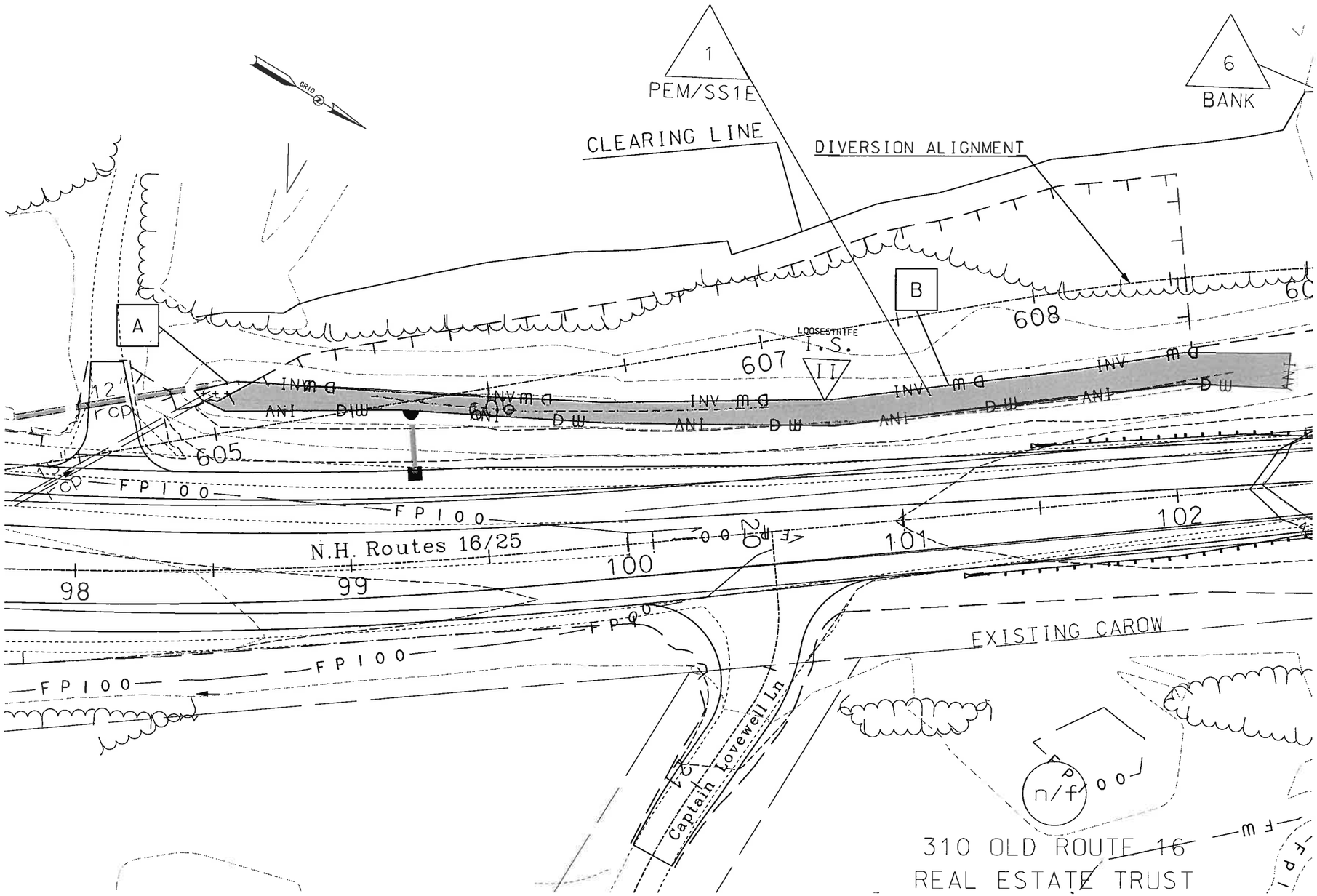
BRIDGE SHEET --- OF ---

REVISIONS AFTER PROPOSAL	BY	DATE

	BY	DATE		BY	DATE
DESIGNED	PAB	1/18	CHECKED	BOEnv	2/18
DRAWN	PAB	1/18	CHECKED	JAT	1/18
QUANTITIES	PAB	1/18	CHECKED	JAT	1/18

ISSUE DATE		FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE		X-A000(490)	4	28

FILE NUMBER



20 0 20 40
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN OSSIPEE | BRIDGE NO. | STATE PROJECT 14749
LOCATION NH ROUTE 16

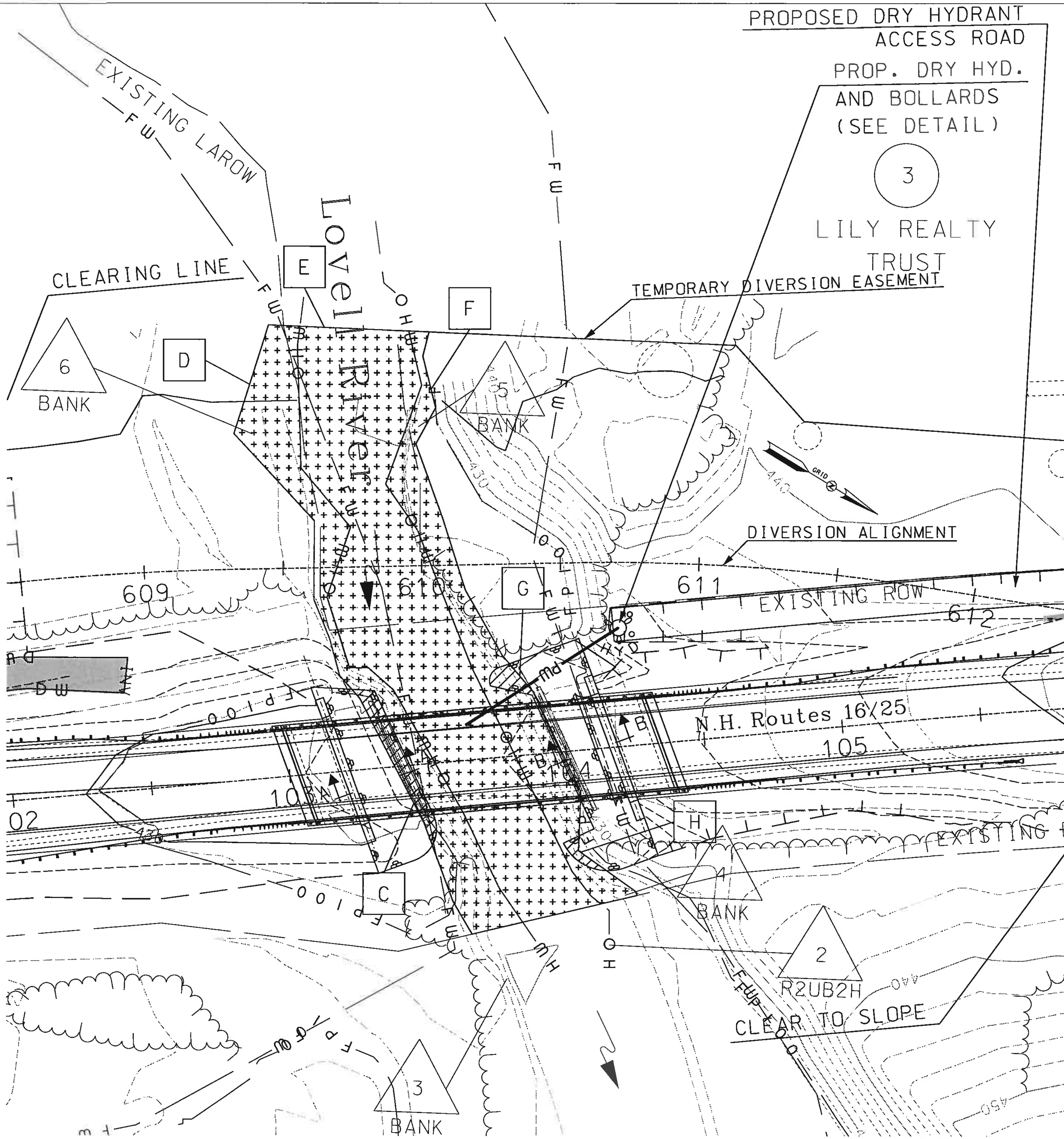
WETLAND IMPACT PLANS

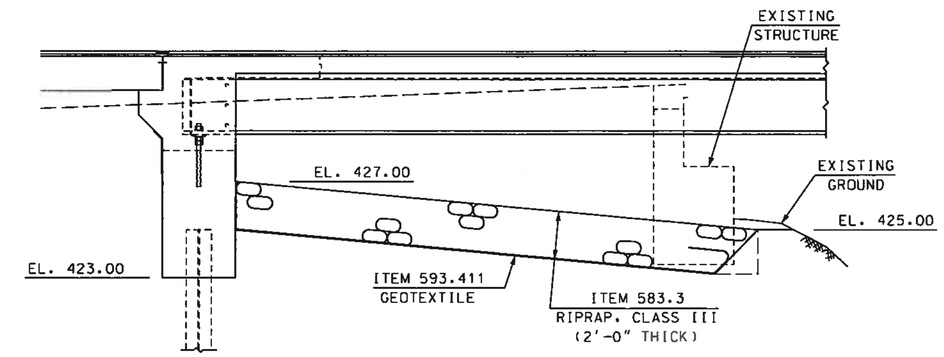
BRIDGE SHEET --- OF ---

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED PAB	1/18	CHECKED	BOEnv	2/18
	DRAWN PAB	1/18	CHECKED	JAT	1/18
	QUANTITIES PAB	1/18	CHECKED	JAT	1/18
	ISSUE DATE		FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
	REV. DATE		X-A000(490)	5	28

FILE NUMBER

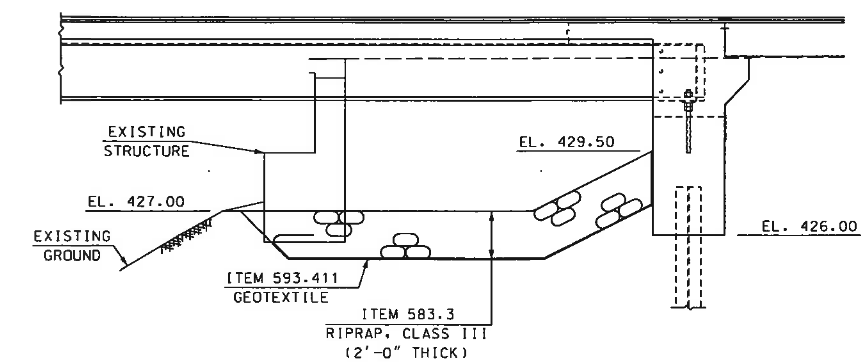
SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
Prj	14749wetplans	AS NOTED





SECTION A-A

SCALE: 1/4" = 1'-0"



SECTION B-B

SCALE: 1/4" = 1'-0"

SCALE IN FEET

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN OSSIPEE | BRIDGE NO. 153/268 | STATE PROJECT 14749

LOCATION NH ROUTE 16 OVER LOVELL RIVER

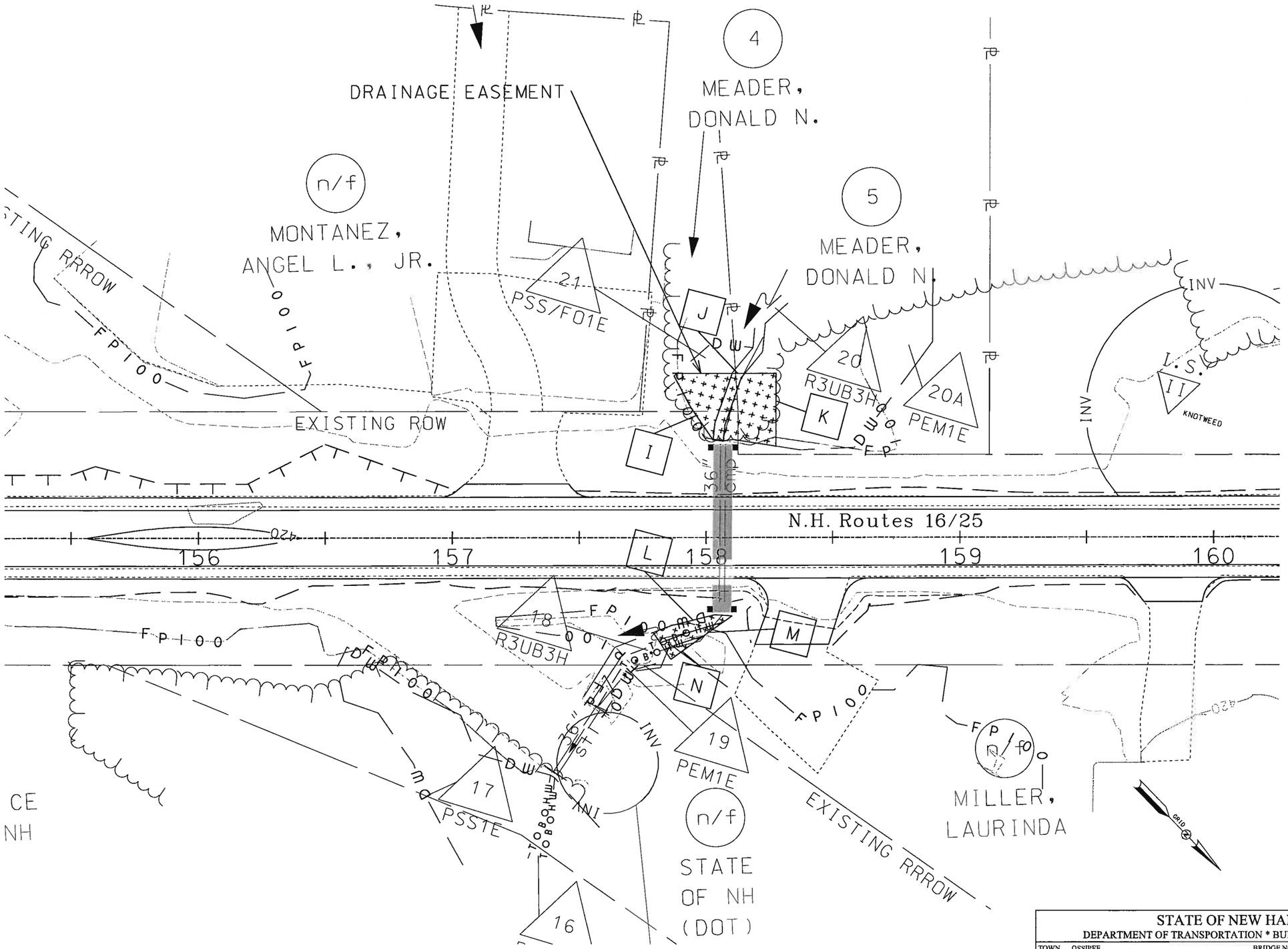
WETLAND IMPACT PLAN BR NO 153/268

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	PAB	1/18	CHECKED	BOEnv	2/18
	DRAWN	PAB	2/18	CHECKED	JAT	2/18
	QUANTITIES	PAB	1/18	CHECKED	JAT	1/18

BRIDGE SHEET	FILE NUMBER
--- OF ---	

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	X-A000(490)	6	28

SUBDIRECTORY	DGN LOCATOR	SHEET SCALE
Prj	14749wetplans	AS NOTED



SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
Prj	14749wetplans	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN OSSIPEE | BRIDGE NO. | STATE PROJECT 14749

LOCATION NH ROUTE 16

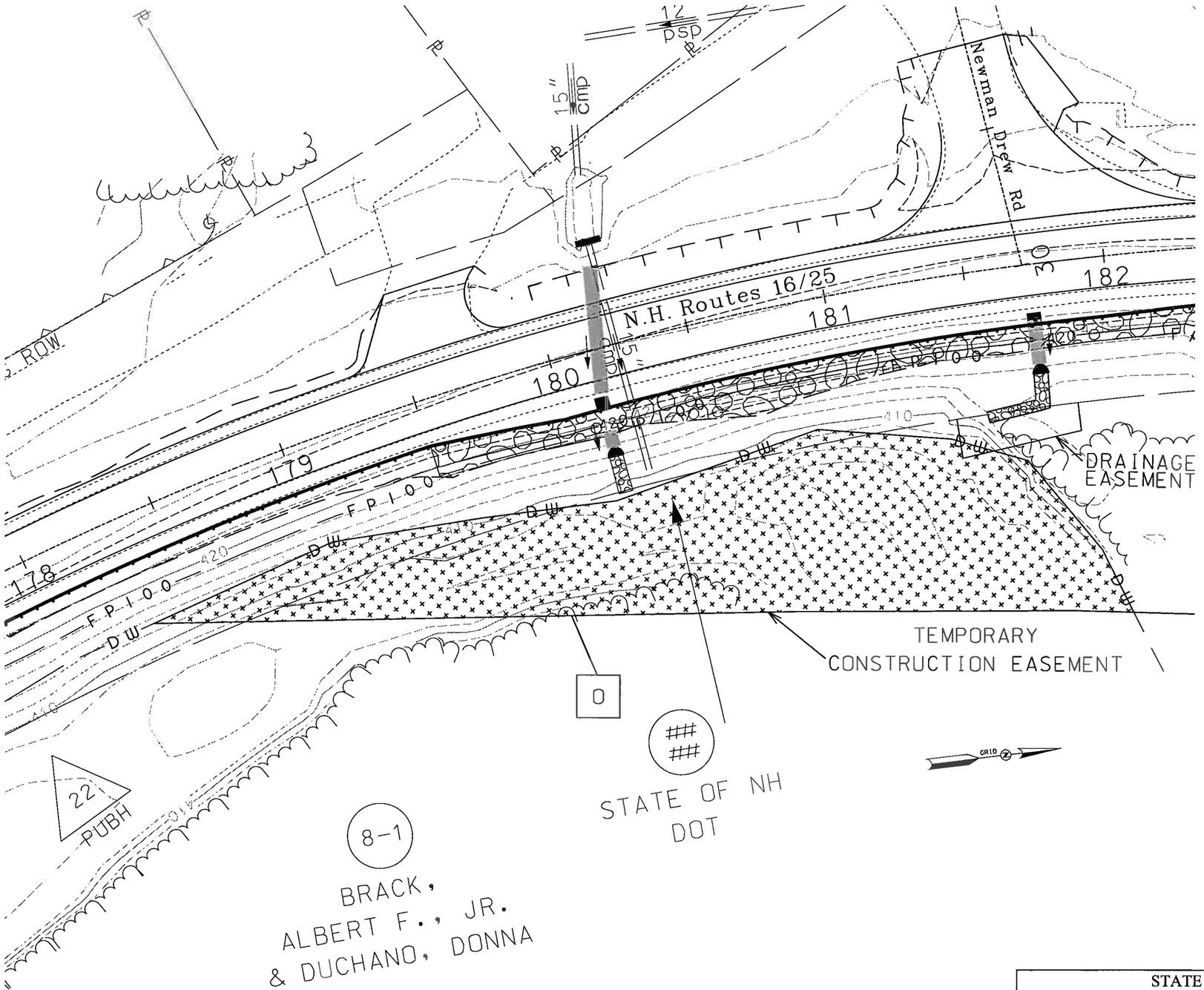
WETLAND IMPACT PLANS

BRIDGE SHEET --- OF ---

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED PAB	1/18	CHECKED	BOEnv	2/18
	DRAWN PAB	1/18	CHECKED	JAT	1/18
	QUANTITIES PAB	1/18	CHECKED	JAT	1/18

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	X-A000(490)	7	28

FILE NUMBER



20 0 20 40

SCALE IN FEET

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
Prj	14749wetplans	AS NOTED

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN OSSIPEE BRIDGE NO. STATE PROJECT 14749

LOCATION NH ROUTE 16

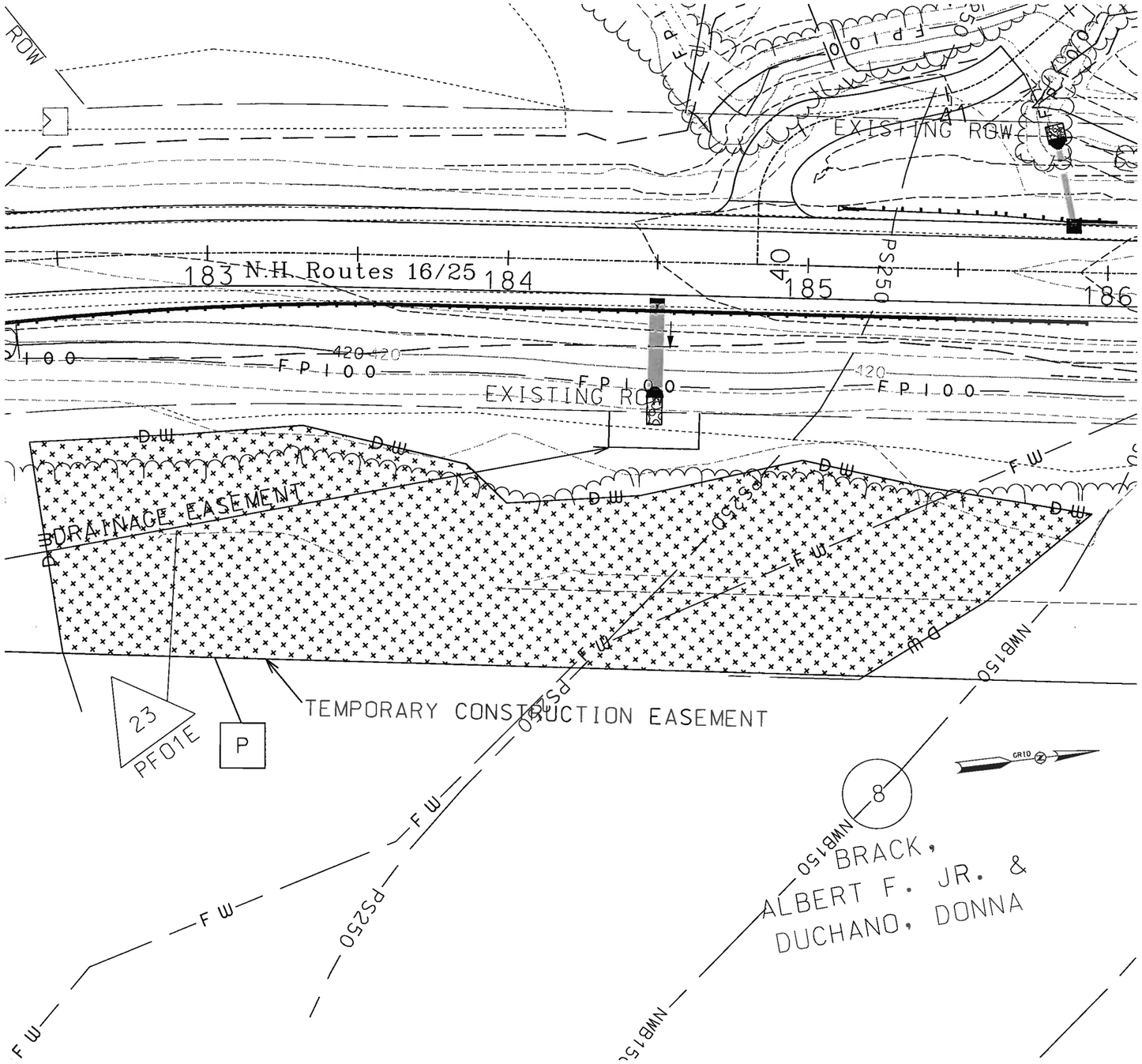
WETLAND IMPACT PLANS

BRIDGE SHEET --- OF ---

FILE NUMBER

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	PAB	1/18	CHECKED	BOEnv	2/18
	DRAWN	PAB	1/18	CHECKED	JAT	1/18
	QUANTITIES	PAB	1/18	CHECKED	JAT	1/18

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	X-A000(490)	8	28



20 0 20 40
SCALE IN FEET

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
Prj	14749wetplans	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN OSSIPEE BRIDGE NO. STATE PROJECT 14749

LOCATION NH ROUTE 16

WETLAND IMPACT PLANS

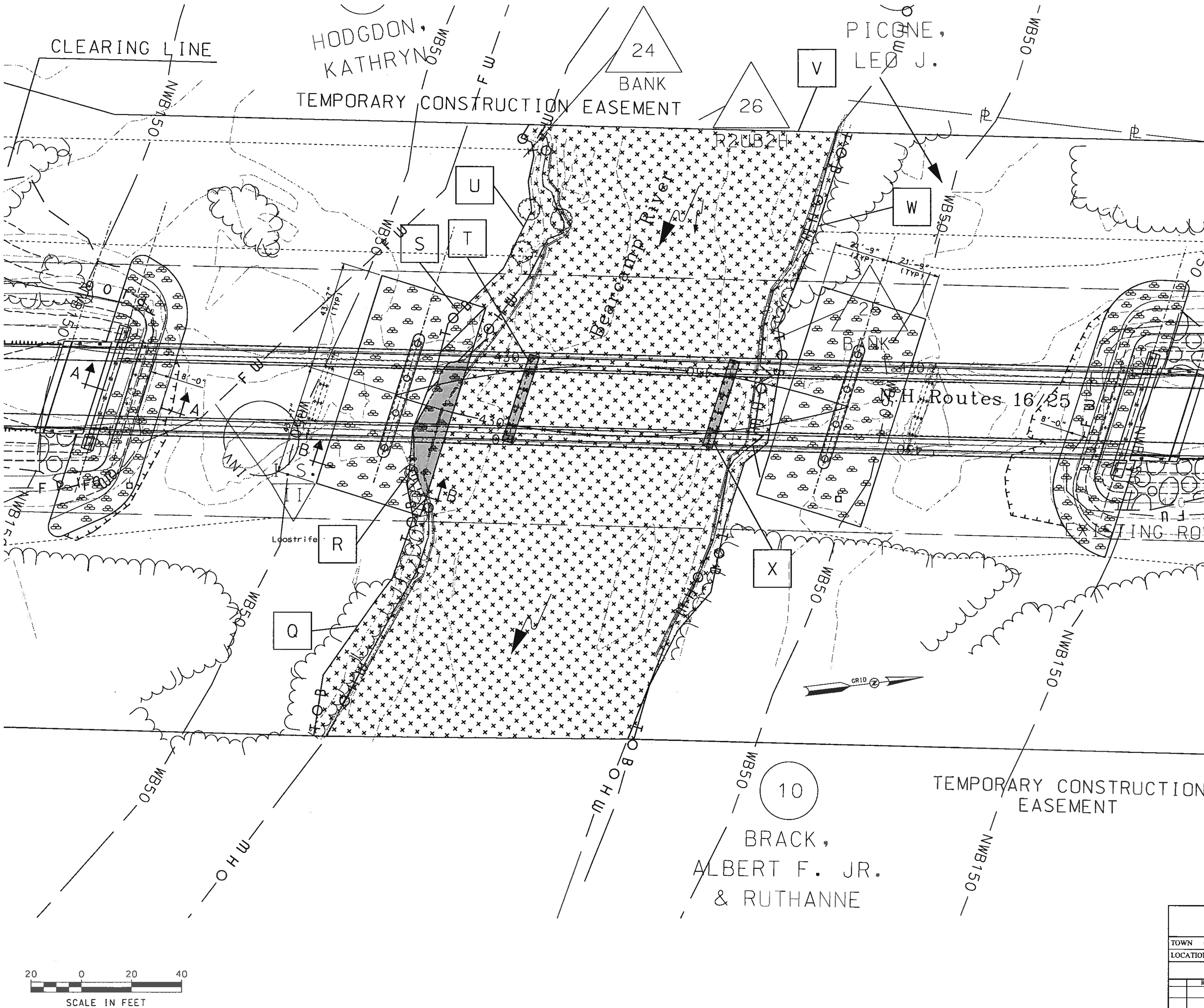
BRIDGE SHEET --- OF ---

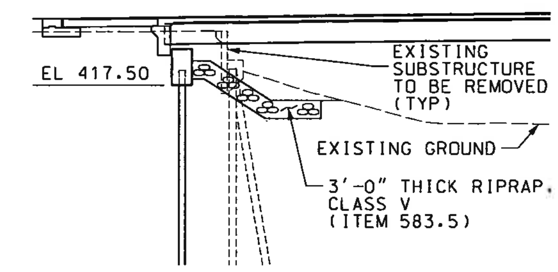
FILE NUMBER

REVISIONS AFTER PROPOSAL	BY	DATE

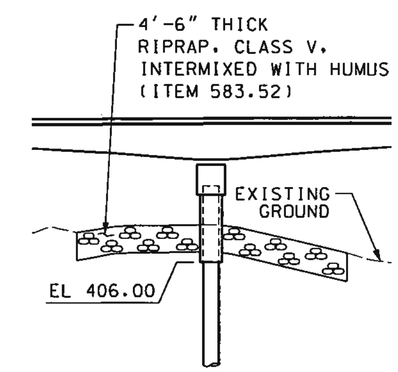
	BY	DATE		BY	DATE
DESIGNED	PAB	1/18	CHECKED	BOEnv	2/18
DRAWN	PAB	1/18	CHECKED	JAT	1/18
QUANTITIES	PAB	1/18	CHECKED	JAT	1/18

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	X-A000(490)	9	28





SECTION A-A
ABUT A SHOWN, ABUT B SIMILAR
SCALE: 1/8" = 1'-0"



SECTION B-B
PIER 1 SHOWN, PIER 2 SIMILAR
SCALE: 1/8" = 1'-0"

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN OSSIPEE BRIDGE NO. 138/297 STATE PROJECT 14749
LOCATION NH ROUTE 16 OVER BEARCAMP RIVER

WETLAND IMPACT PLAN BR NO 138/297

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	PAB	1/18	CHECKED	BOEnv	2/18
	DRAWN	PAB	2/18	CHECKED	JAT	2/18
	QUANTITIES	PAB	1/18	CHECKED	JAT	1/18

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
Prj	14749wetplans	AS NOTED

BRIDGE SHEET --- OF ---
FILE NUMBER

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	X-A000(490)	10	28

DRAINAGE EASEMENT

TEMPORARY CONSTRUCTION EASEMENT

EXISTING ROW

N.H. Routes 16/25

191 192 193 194 195 196

EXISTING ROW

DRAINAGE EASEMENT

TEMPORARY CONSTRUCTION EASEMENT

EASEMENT

Y

Z

28
PF01E

48
PF01E

10
BRACK
ALBERT F.
DUCHAND, [

20 0 20 40
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN OSSIPEE BRIDGE NO. STATE PROJECT 14749

LOCATION NH ROUTE 16

WETLAND IMPACT PLANS

BRIDGE SHEET --- OF ---

FILE NUMBER

REVISIONS AFTER PROPOSAL	BY	DATE

DESIGNED	PAB	1/18	CHECKED	BOEnv 2/18
DRAWN	PAB	1/18	CHECKED	JAT 1/18
QUANTITIES	PAB	1/18	CHECKED	JAT 1/18

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
Prj	14749wetplans	AS NOTED

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	X-A000(490)	11	28

16

HARBISON,
LAFAYETTE J.
& JANET A.

DRAINAGE EASEMENT

17

ELDRIDGE,
JOYCE

n/f

COMEAU,
GRIFFIN

32

PSS/FO1E

AA

AB

31

PSS1E

n/f

VENCIS,
DAVID B.

N.H. Routes 16/25

223 224 225 226 227

ROW

F W

D W

m d

420

20 0 20 40

SCALE IN FEET

SUBDIRECTORY	.DGN LOCATOR	SHEET SCALE
Prj	14749wetplans	AS NOTED

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE DESIGN

TOWN OSSIPEE BRIDGE NO. STATE PROJECT 14749

LOCATION NH ROUTE 16

WETLAND IMPACT PLANS

BRIDGE SHEET ___ OF ___

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED	PAB	1/18	CHECKED	BOEnv	2/18
	DRAWN	PAB	1/18	CHECKED	JAT	1/18
	QUANTITIES	PAB	1/18	CHECKED	JAT	1/18

ISSUE DATE	FEDERAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
REV. DATE	X-A000(490)	12	28

FILE NUMBER

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-WQ 1500 REQUIREMENTS (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 30" AND MAY 1" 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 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", 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 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
     - (C) AFTER NOVEMBER 30" 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 STABILIZATION PLAN HAS BEEN APPROVED BY NHDOT.
     - (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WQ 1505.05) NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30".

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 1" THROUGH NOVEMBER 30", 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 (SECTION 2.2) OF THE 2012 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 15, 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 (CGP-SECTION 2.1.3.2) OR SEDIMENT TRAPS (ENV-WQ 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-WQ 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-WQ 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-WQ 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-WQ 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	DNSCB	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	DNSCB	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

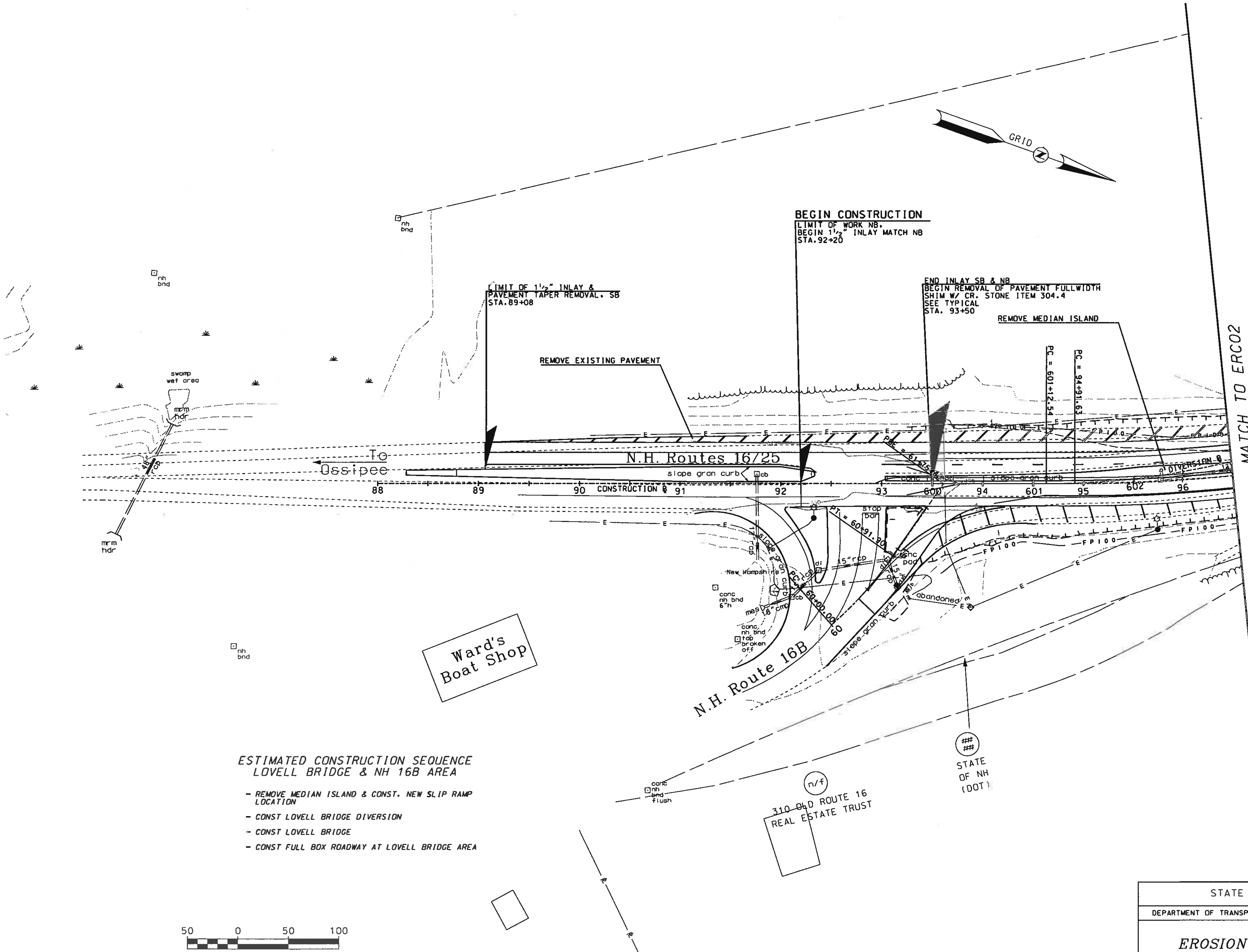
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL STRATEGIES

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
14749erc	14749	13	28

REVISIONS AFTER PROPOSAL		
NUMBER	DATE	DESCRIPTION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	NAME2	DATE DATE2
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE



ESTIMATED CONSTRUCTION SEQUENCE
LOVELL BRIDGE & NH 16B AREA

- *REMOVE MEDIAN ISLAND & CONST. NEW SLIP RAMP LOCATION*
- *CONST LOVELL BRIDGE DIVERSION*
- *CONST LOVELL BRIDGE*
- *CONST FULL BOX ROADWAY AT LOVELL BRIDGE AREA*

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE

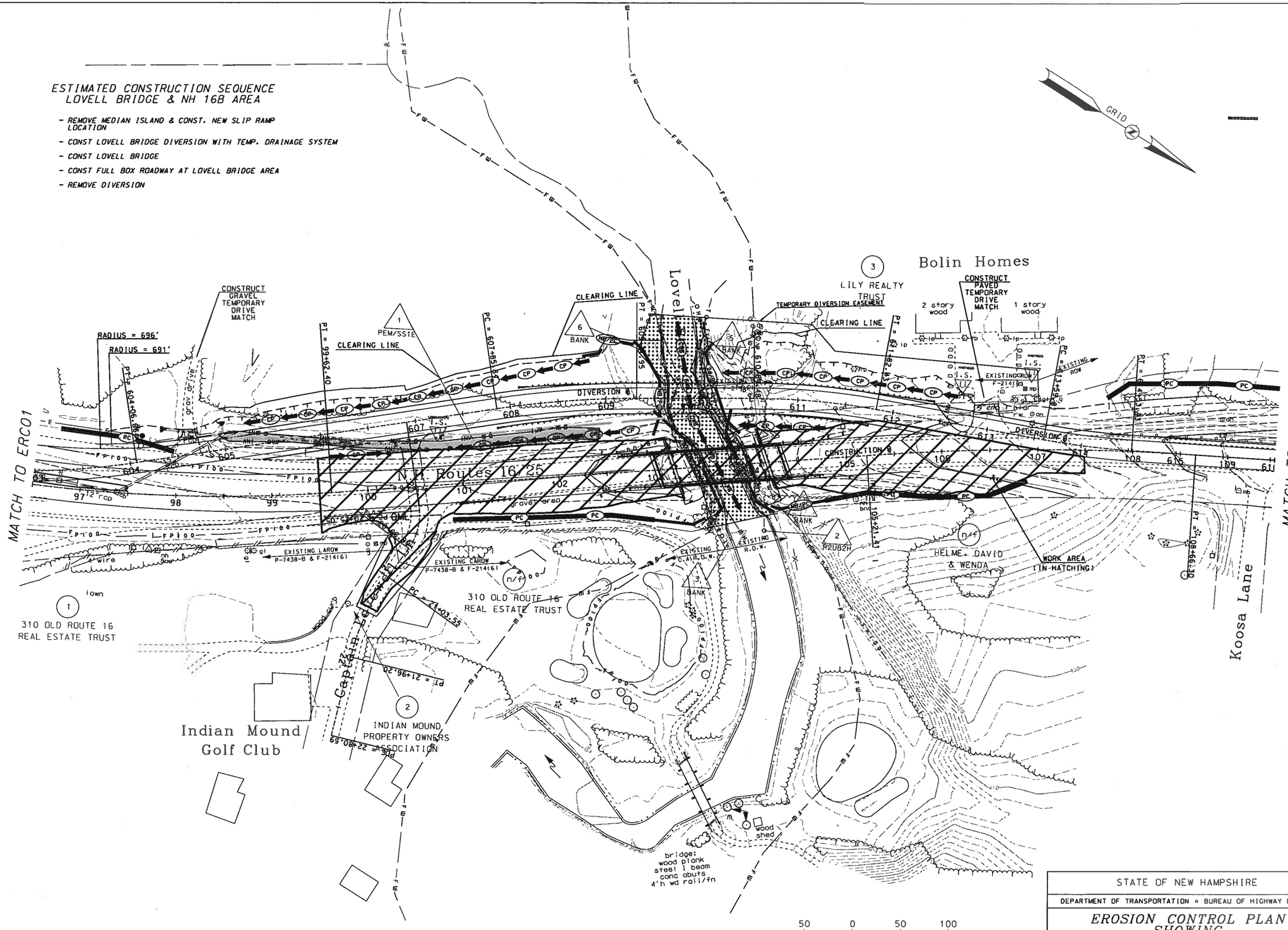
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC01	14749erc	14749	14	28

ESTIMATED CONSTRUCTION SEQUENCE
LOVELL BRIDGE & NH 16B AREA

- REMOVE MEDIAN ISLAND & CONST. NEW SLIP RAMP LOCATION
- CONST LOVELL BRIDGE DIVERSION WITH TEMP. DRAINAGE SYSTEM
- CONST LOVELL BRIDGE
- CONST FULL BOX ROADWAY AT LOVELL BRIDGE AREA
- REMOVE DIVERSION



REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SOR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

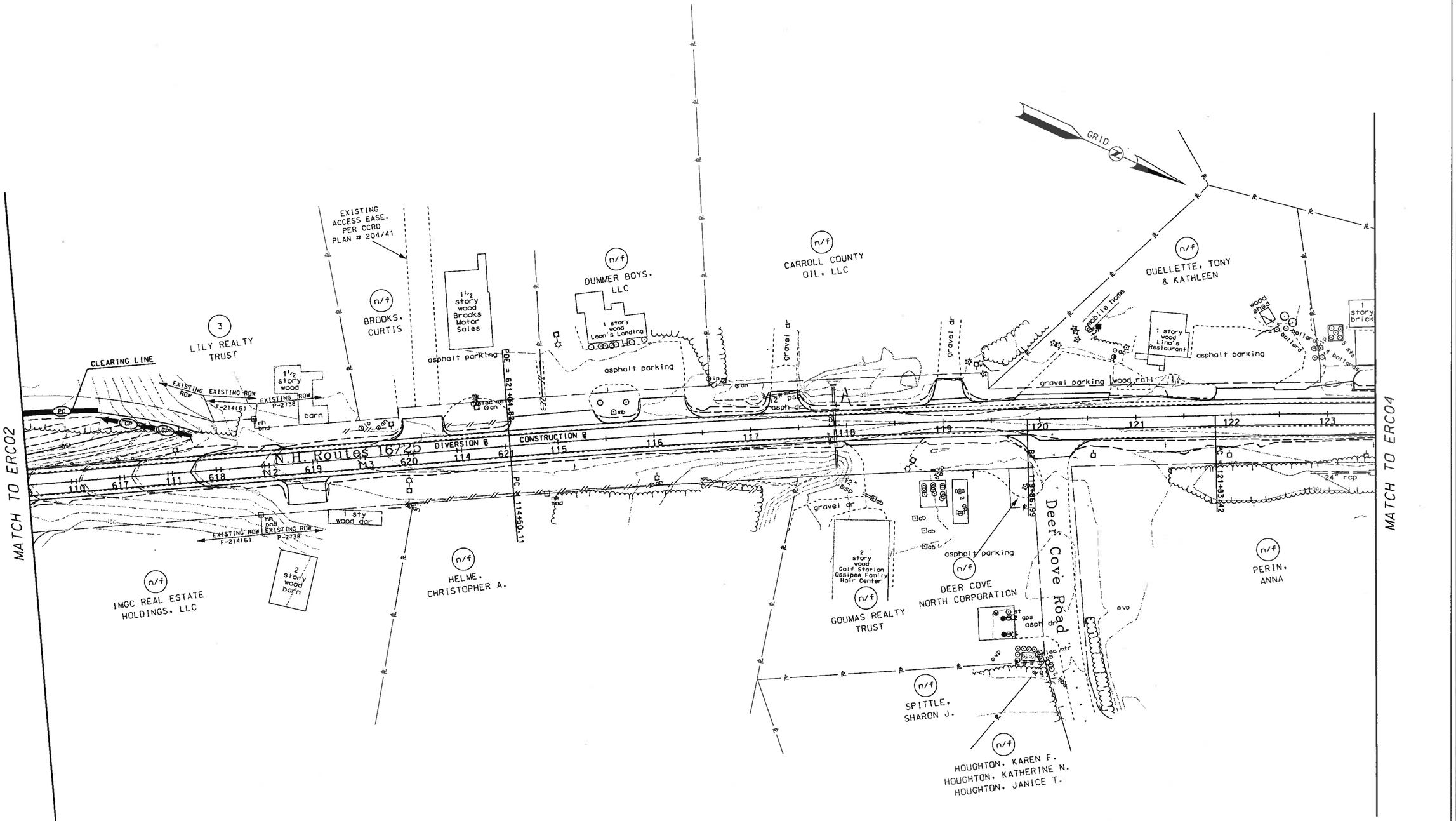
EROSION CONTROL PLAN SHOWING TEMPORARY BRIDGE DIVERSION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
14749erc	14749	15	28

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	



ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

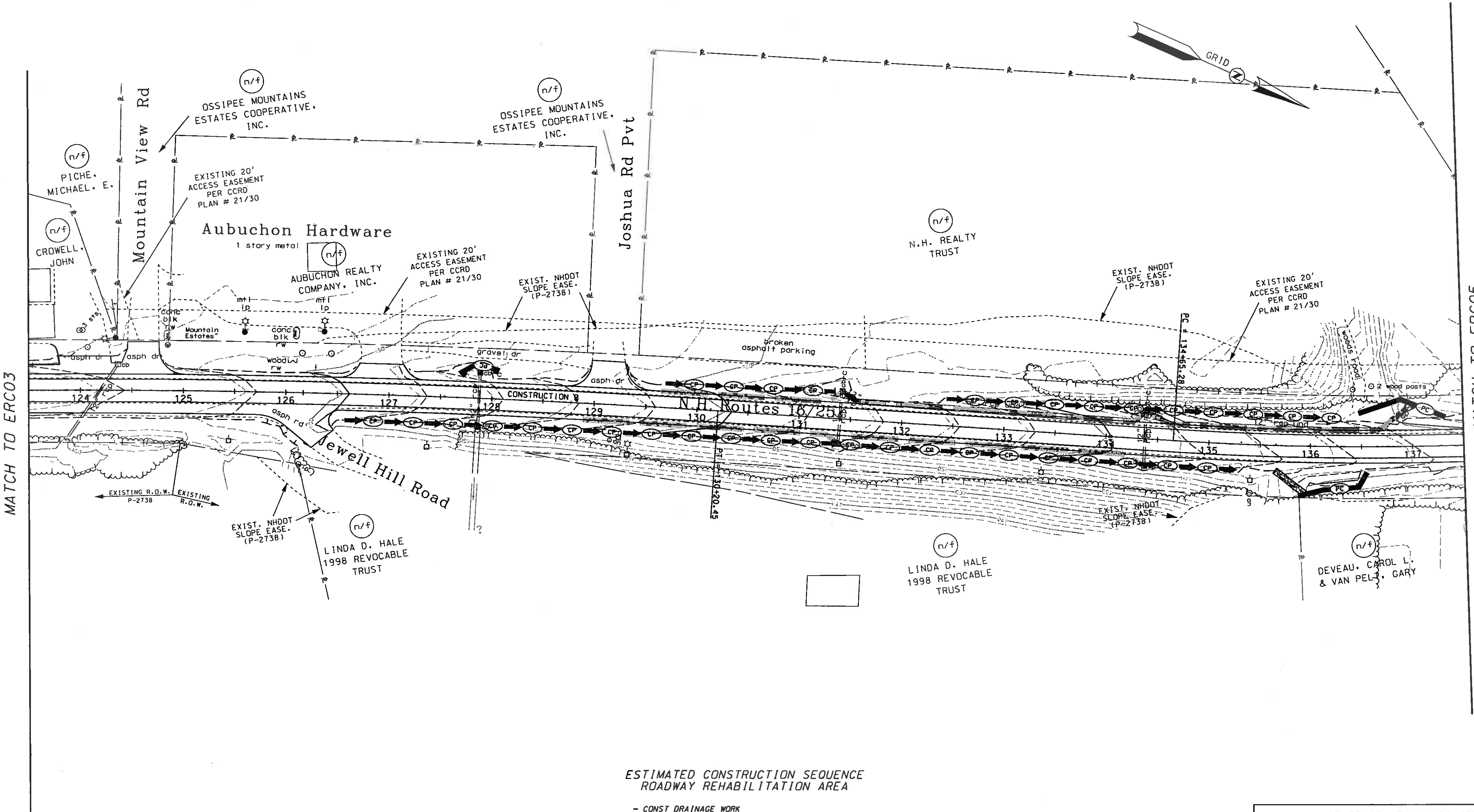
- *RECLAIM ROADWAY AND PAVE*
  - *RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMUMUM OF 12 CALENDAR DAYS*
  - *RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.*

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC03	14749erc	14749	16	28



ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

- *CONST DRAINAGE WORK*
- *RECLAIM ROADWAY AND PAVE*
  - *RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMIMUM OF 12 CALENDAR DAYS*
  - *RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.*

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE
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EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC04	14749erc	14749	17	28

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	NAME2	DATE DATE2
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	NAME2	DATE DATE2
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE

MATCH TO ERC04

MATCH TO ERC06

EXIST. NHDOT SLOPE EASE. (P-2738)

10 PFO1E

1 story wood motel

1 story wood motel

asphalt parking

MOUNT WHITTIER MOTEL, LLC

1½ story wood

DANIEL SMITH GOLF CENTER, LLC

DANIEL SMITH GOLF CENTER, LLC

asphalt parking

13 PSS1E

15 PSS1E

EXISTING UTIL. EASE. (PER PLAN 162/17)

(PER

wd bldg

N.H. Routes 16/25

CONSTRUCTION ℄

138 139 140 141 142 143 144 145 146 147 148 149 150 151 152

1½ story wood

EXIST. NHDOT SLOPE EASE. (P-2738)

Jewell Hill Road

EXISTING R.O.W.

EXISTING R.O.W. P-2738

EXIST. NHDOT SLOPE EASE. (P-2738)

14 PSS1E

NEW ENGLAND FORESTRY FOUNDATION, INC.

14 PSS1E EXEMPLARY NATURAL COMMUNITY

WEST OSSIPEE FIRE PRECINCT

NEW ENGLAND FORESTRY FOUNDATION, INC.

ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

- *RECLAIM ROADWAY AND PAVE*
  - *RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMUM OF 12 CALENDAR DAYS*
  - *RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.*

50 0 50 100

SCALE IN FEET

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC05	14749erc	14749	18	28

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

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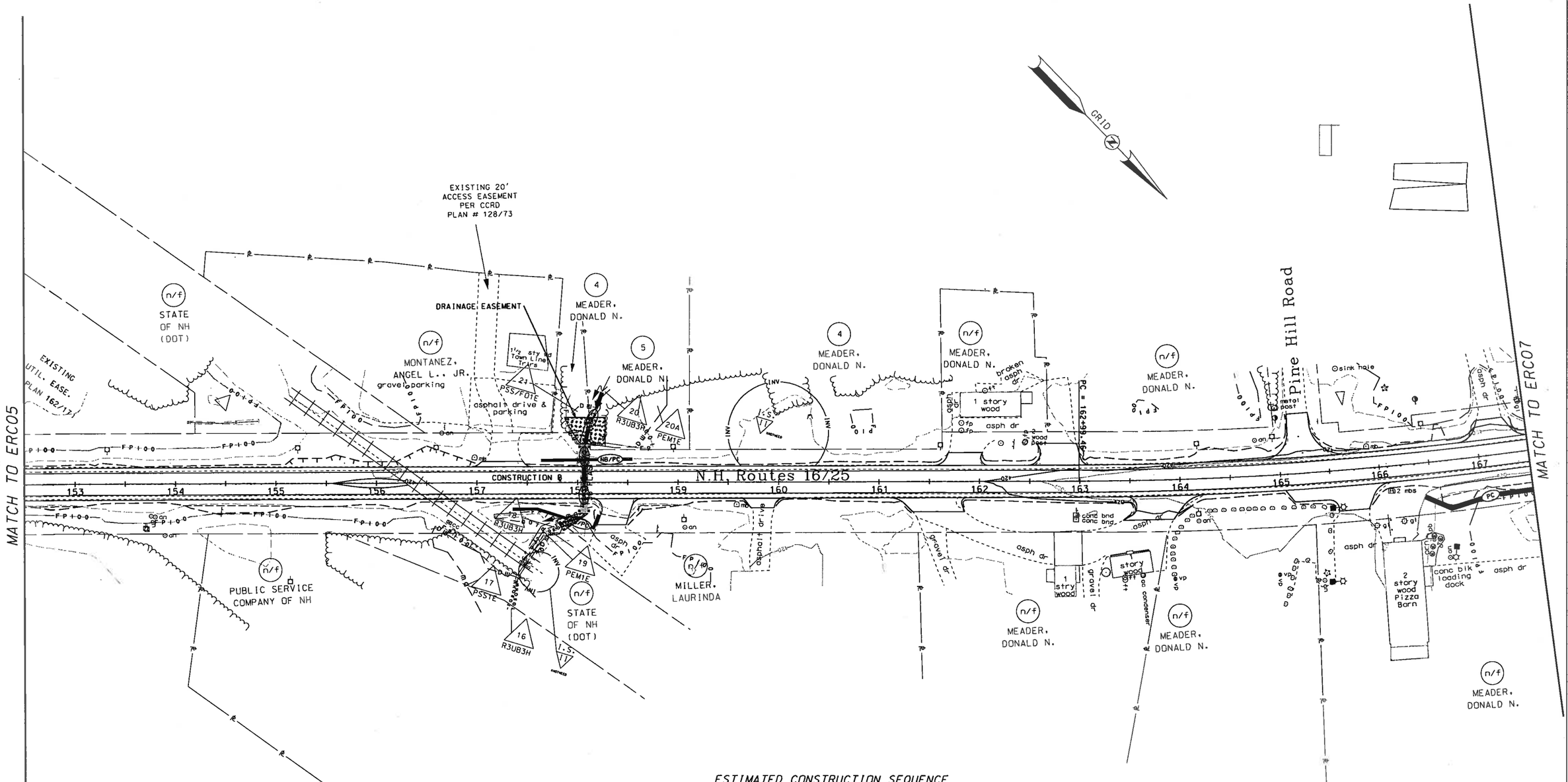
NEW DESIGN	NAME2	DATE DATE2
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE



ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

- *CONST DRAINAGE WORK*
  - *CONST COFFERDAMS AT BOTH PIPE ENDS*
  - *CONST SAME DIAMETER RCP AT APPROX. SAME INVERTS*
- *RECLAIM ROADWAY AND PAVE*
  - *RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMUM OF 12 CALENDAR DAYS*
  - *RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.*

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC06	14749erc	14749	19	28

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

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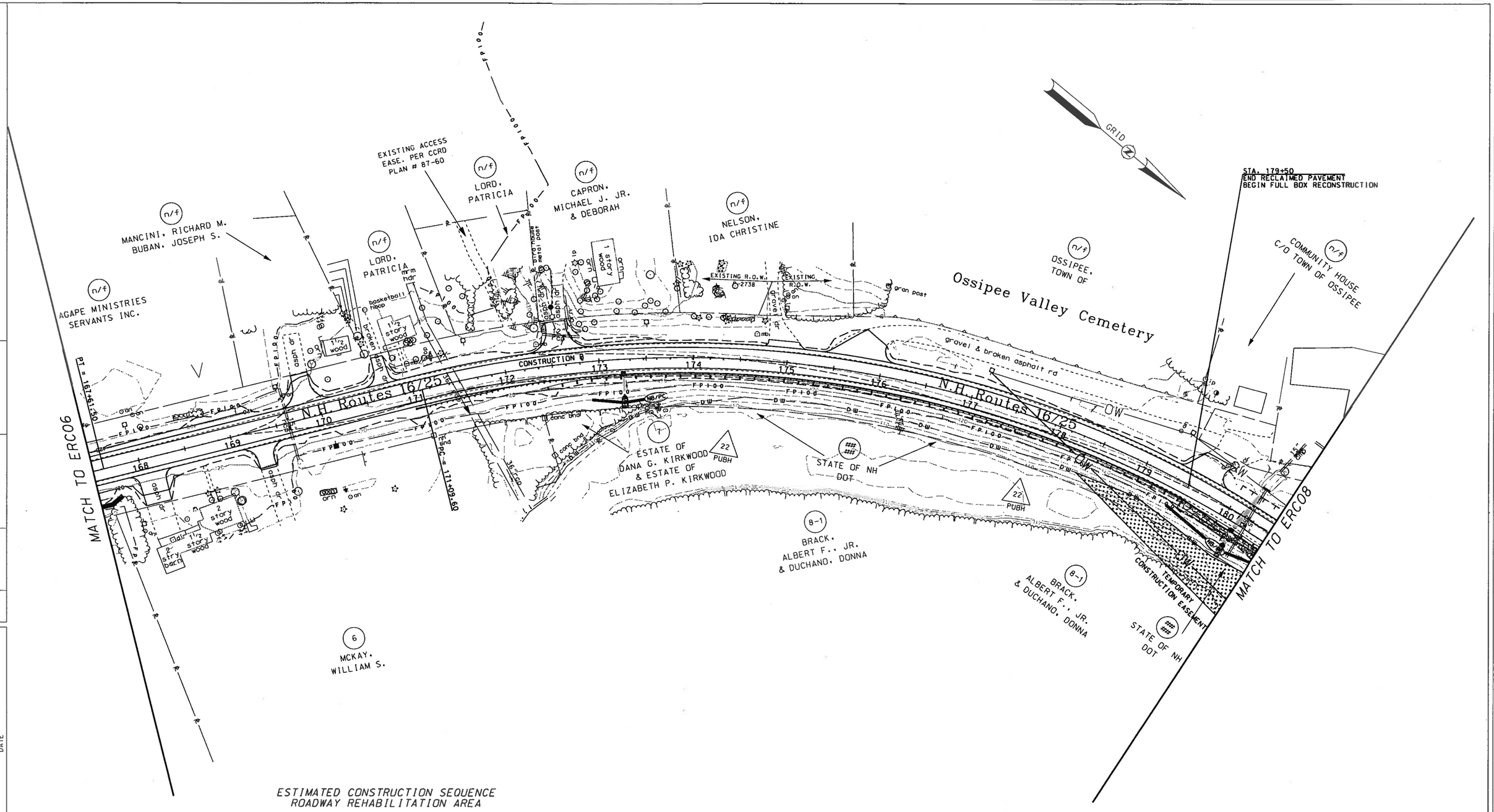
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	



ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

- CONST DRAINAGE WORK
- RECLAIM ROADWAY AND PAVE
  - RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMIMUM OF 12 CALENDAR DAYS
  - RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.

STATE OF NEW HAMPSHIRE

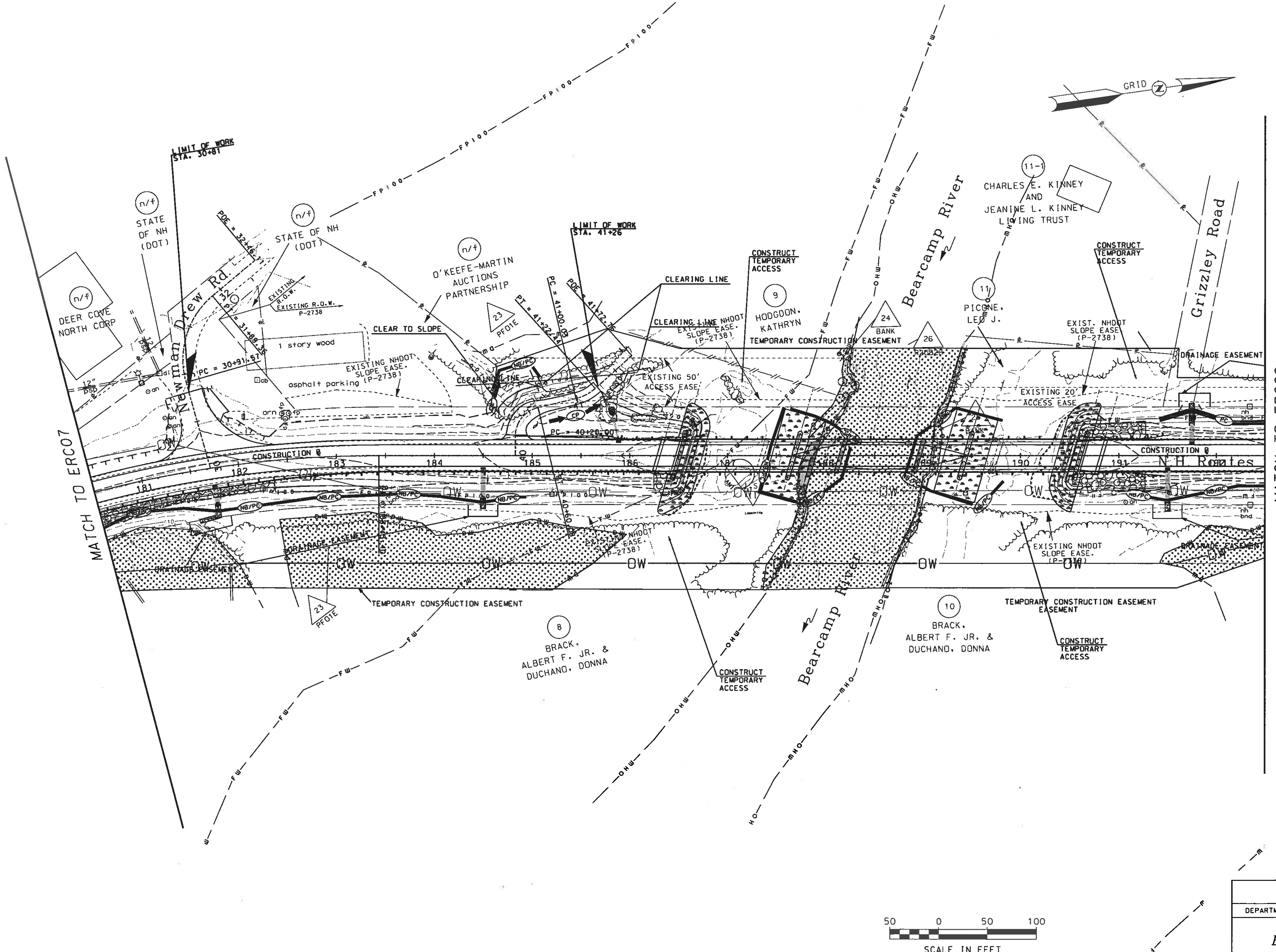
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC07	14749erc	14749	20	28

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED NAME1	DATE	DATE1
NEW DESIGN NAME2	DATE	DATE2
SHEET CHECKED NAME3	DATE	DATE3
AS BUILT DETAILS	DATE	



ESTIMATED CONSTRUCTION SEQUENCE BEARCAMP RIVER BRIDGE

PRIOR TO ROAD CLOSURE

- *SET UP PERIMETER CONTROL.*
- *CONSTRUCT STABLE TEMPORARY ACCESS ON EAST SIDE AND WEST SIDE OF BRIDGE FROM BOTH SIDES OF THE BRIDGE.*
- *RELOCATE UTILITIES ON EAST SIDE OF BRIDGES FURTHER TO THE EAST WITHIN TEMPORARY CONSTRUCTION EASEMENT.*
- *SET UP TRAFFIC CONTROL TO MAINTAIN ONE-LANE ALTERNATING TWO-WAY TRAFFIC.*
- *DRIVE H-PILES AND PIPE PILES FOR NEW ABUTMENTS AND PIERS.*
- *CONSTRUCT PORTIONS OF ABUTMENT AND PIER SUBSTRUCTURES ON PILES.*
- *PLACE TEMPORARY BENTS ON EAST SIDE.*
- *PLACE TEMPORARY BENTS ON WEST SIDE TO CONSTRUCT NEW SUPERSTRUCTURE AND DECK.*
- *SET UP WATER DIVERSION STRUCTURE (I.E. SANDBAGS) AROUND LOCATION OF NEW PIERS.*
- *DEWATER AREA AROUND NEW PIERS.*

DURING ROAD CLOSURE

- *DEMO EXISTING BRIDGE BY EITHER LATERALLY SLIDING BRIDGE TO TEMPORARY BENTS ON EAST SIDE OF BRIDGE OR USING MECHANICAL METHODS TO CUT AND LIFT OUT PORTIONS.*
- *INSTALL STONE FILL AROUND NEW PIERS AND ABUTMENTS.*
- *LATERALLY SLIDE PROPOSED SUPERSTRUCTURE FROM TEMPORARY BENTS ON WEST SIDE OF BRIDGE ONTO PROPOSED SUBSTRUCTURE.*
- *CONSTRUCT ROADWAY APPROACHES TO PROPOSED BRIDGE.*

AFTER ROAD CLOSURE

- *REMOVE WATER DIVERSION STRUCTURE.*
- *REMOVE TEMPORARY ACCESS.*
- *STABILIZE ACCESS AREA.*

ROADWAY WORK

- *CONST. DRAINAGE*
- *CONST. FULL BOX ROADWAY*

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC08	14749erc	14749	21	28

ESTIMATED CONSTRUCTION SEQUENCE
BEARCAMP RELIEF BRIDGE

PRIOR TO ROAD CLOSURE

- SET UP PERIMETER CONTROL.
- CONSTRUCT STABLE TEMPORARY ACCESS ON WEST SIDE OF BRIDGE FROM BOTH SIDES OF THE BRIDGE.
- RELOCATE UTILITIES ON EAST SIDE OF BRIDGES FURTHER TO THE EAST WITHIN TEMPORARY CONSTRUCTION EASEMENT.
- SET UP TRAFFIC CONTROL TO MAINTAIN ONE-LANE ALTERNATING TWO-WAY TRAFFIC.
- DRIVE H-PILES AND PIPE PILES FOR NEW ABUTMENTS AND PIERS.
- CONSTRUCT PORTIONS OF ABUTMENT AND PIER SUBSTRUCTURES ON PILES.
- PLACE TEMPORARY BENTS ON WEST SIDE TO CONSTRUCT NEW SUPERSTRUCTURE AND DECK.

DURING ROAD CLOSURE

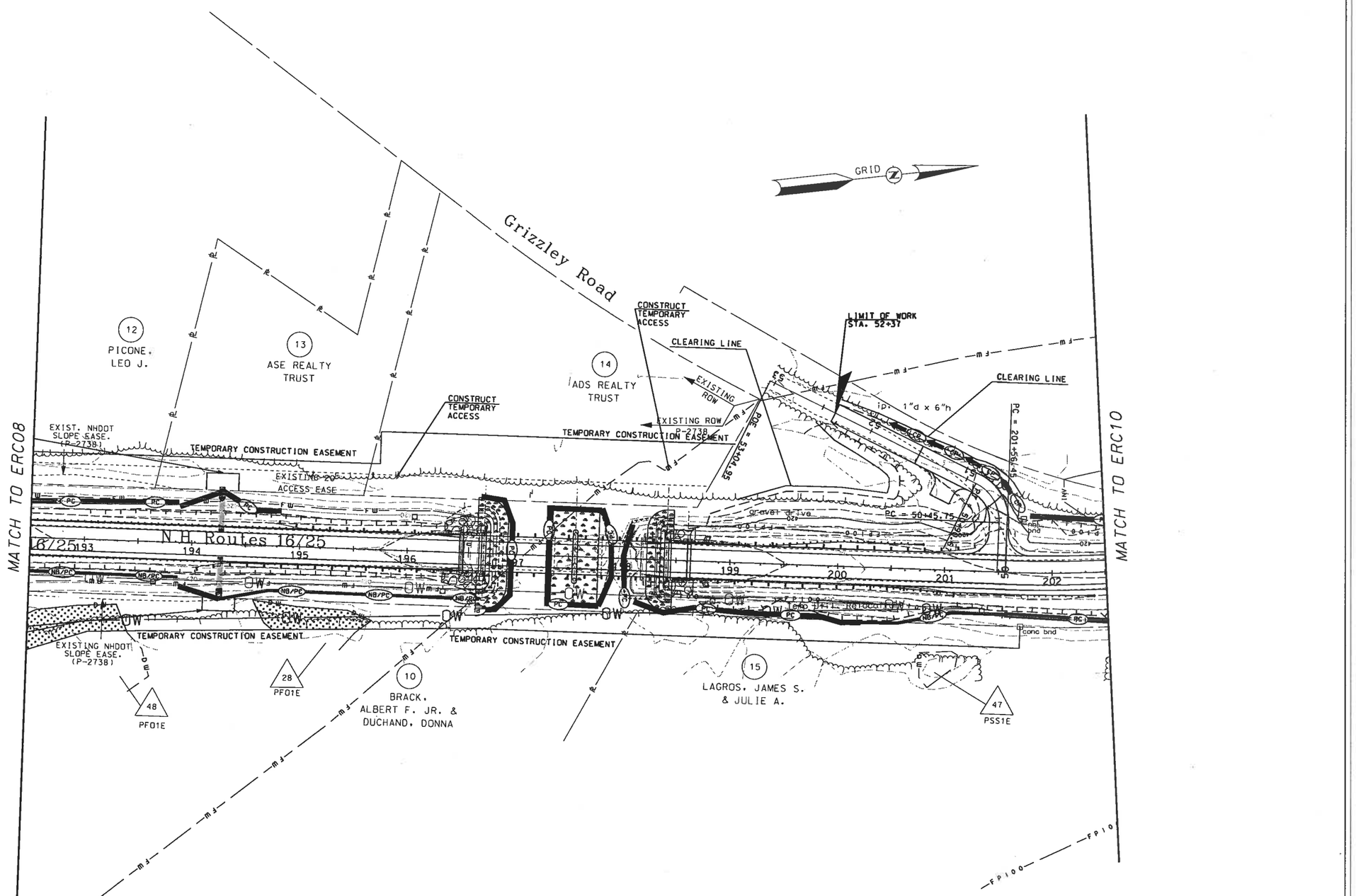
- DEMO EXISTING BRIDGE BY USING MECHANICAL METHODS TO CUT AND LIFT OUT PORTIONS.
- INSTALL STONE FILL AROUND NEW PIERS AND ABUTMENTS.
- LATERALLY SLIDE PROPOSED SUPERSTRUCTURE FROM TEMPORARY BENTS ON WEST SIDE OF BRIDGE ONTO PROPOSED SUBSTRUCTURE.
- CONSTRUCT ROADWAY APPROACHES TO PROPOSED BRIDGE.

AFTER ROAD CLOSURE

- REMOVE TEMPORARY ACCESS.
- STABILIZE ACCESS AREA.

ROADWAY WORK

- CONST. DRAINAGE
- CONST. FULL BOX ROADWAY



50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

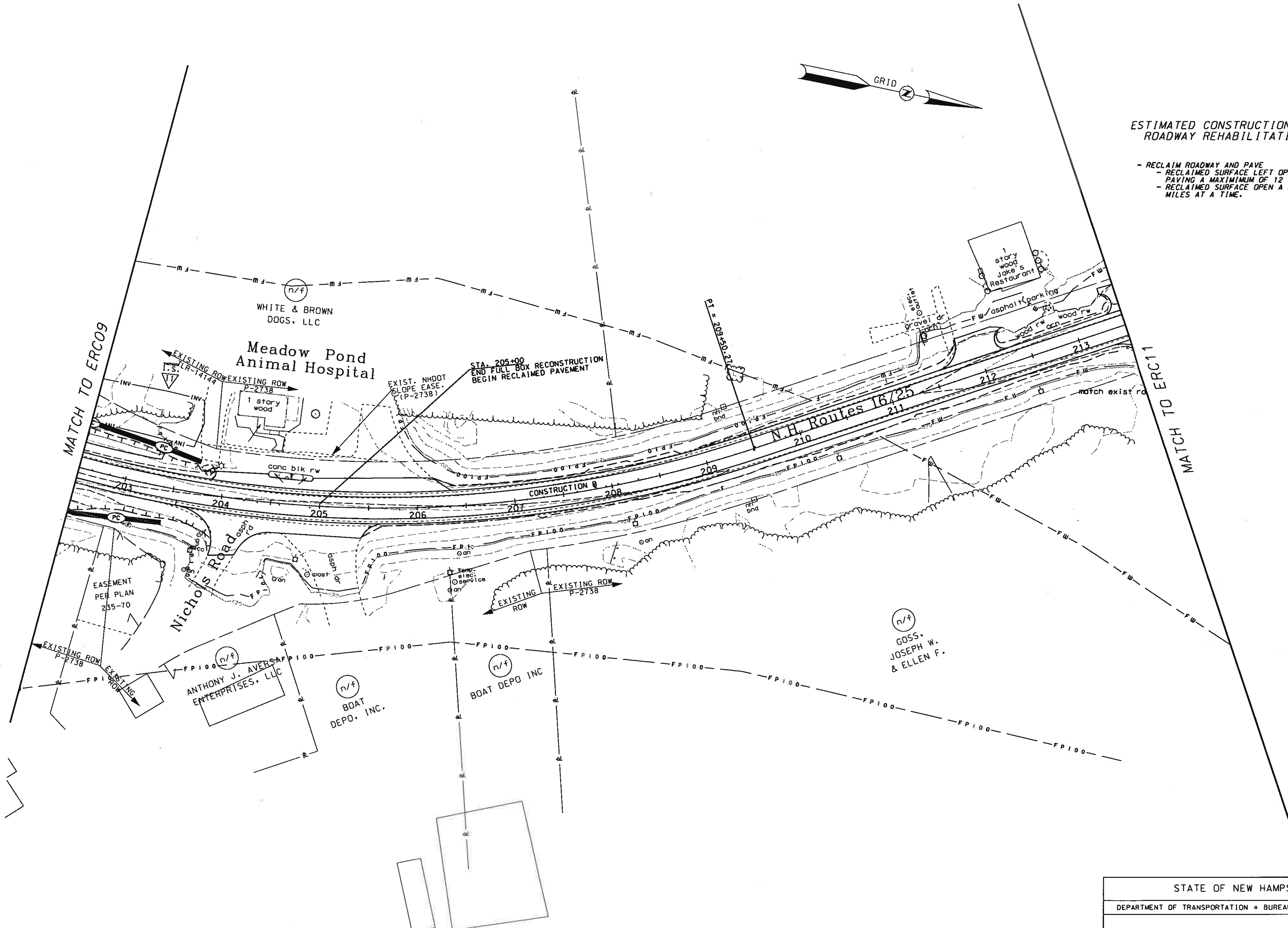
SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	NAME2	DATE DATE2
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC09	14749erc	14749	22	28



ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

- *RECLAIM ROADWAY AND PAVE*
  - *RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMIMUM OF 12 CALENDAR DAYS*
  - *RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.*

REVISIONS AFTER PROPOSAL				
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	NAME2	DATE DATE2
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE

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

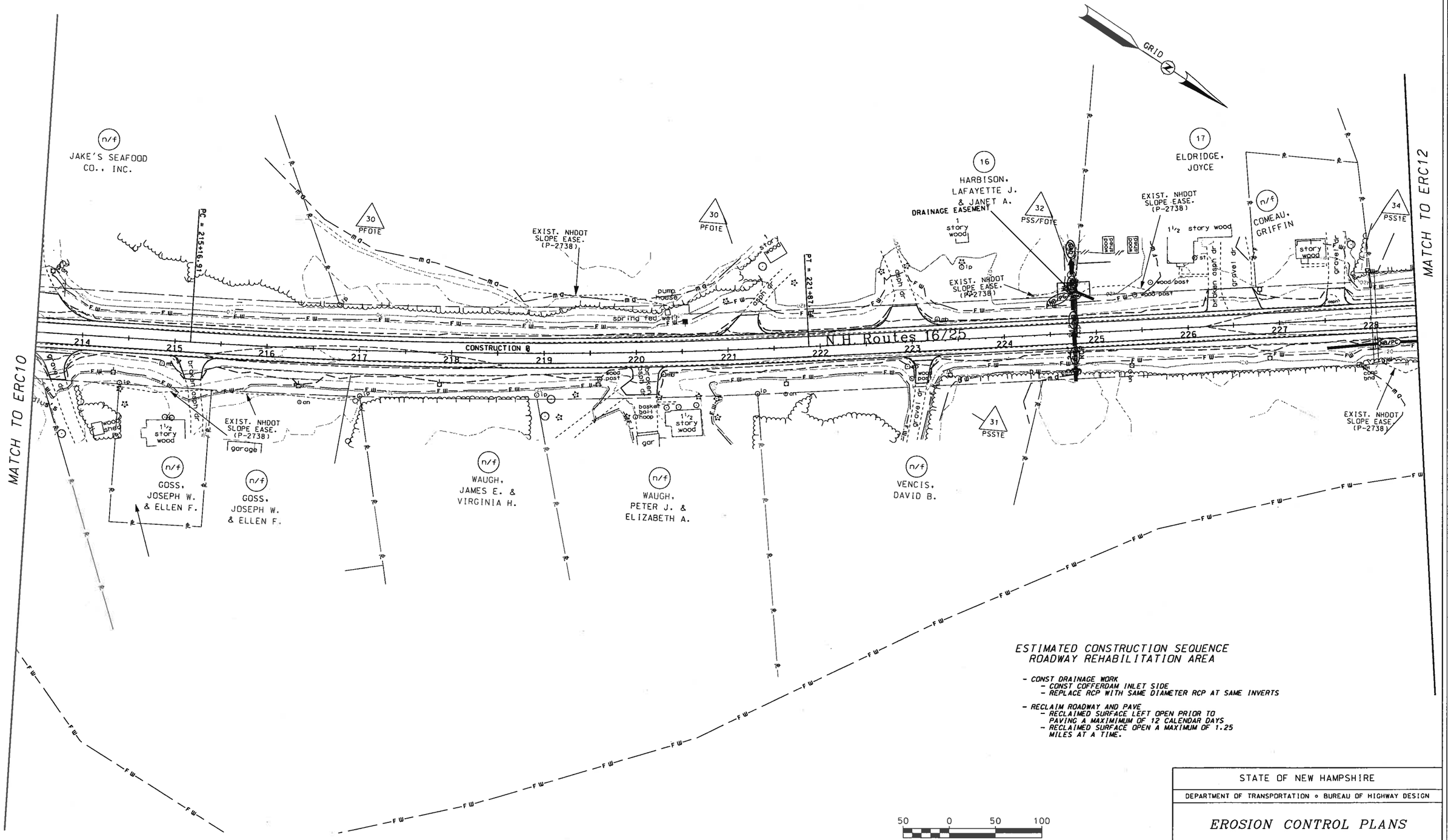
EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC10	14749erc	14749	23	28

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	



ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

- *CONST DRAINAGE WORK*
  - *CONST COFFERDAM INLET SIDE*
  - *REPLACE RCP WITH SAME DIAMETER RCP AT SAME INVERTS*
- *RECLAIM ROADWAY AND PAVE*
  - *RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMIMUM OF 12 CALENDAR DAYS*
  - *RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.*

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

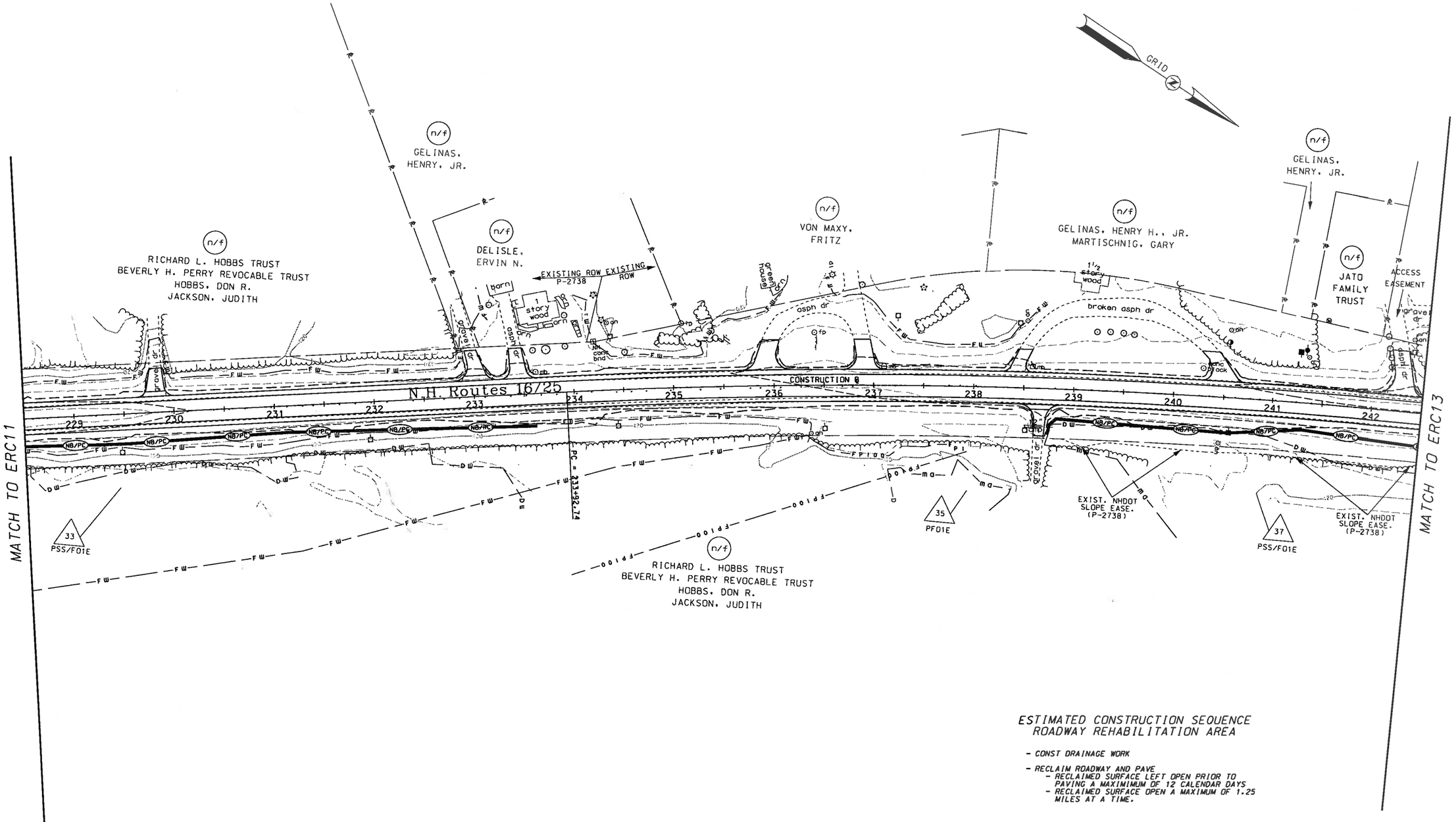
EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC11	14749erc	14749	24	28

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED	NAME1	DATE DATE1
NEW DESIGN	NAME2	DATE DATE2
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE



ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

- *CONST DRAINAGE WORK*
- *RECLAIM ROADWAY AND PAVE*
  - *RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMUM OF 12 CALENDAR DAYS*
  - *RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.*

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SCALE IN FEET

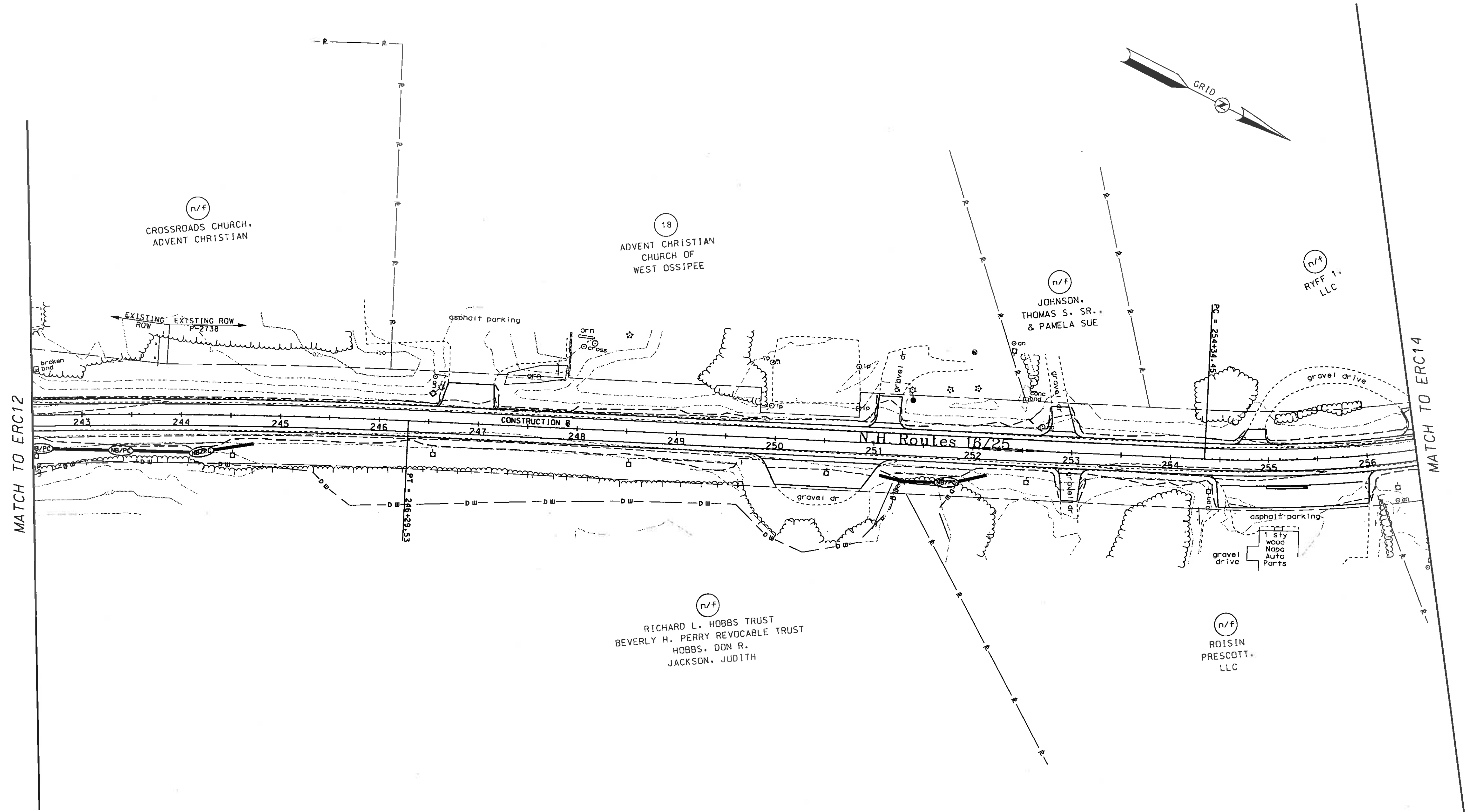
STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC12	14749erc	14749	25	28

REVISIONS AFTER PROPOSAL				
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	



ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

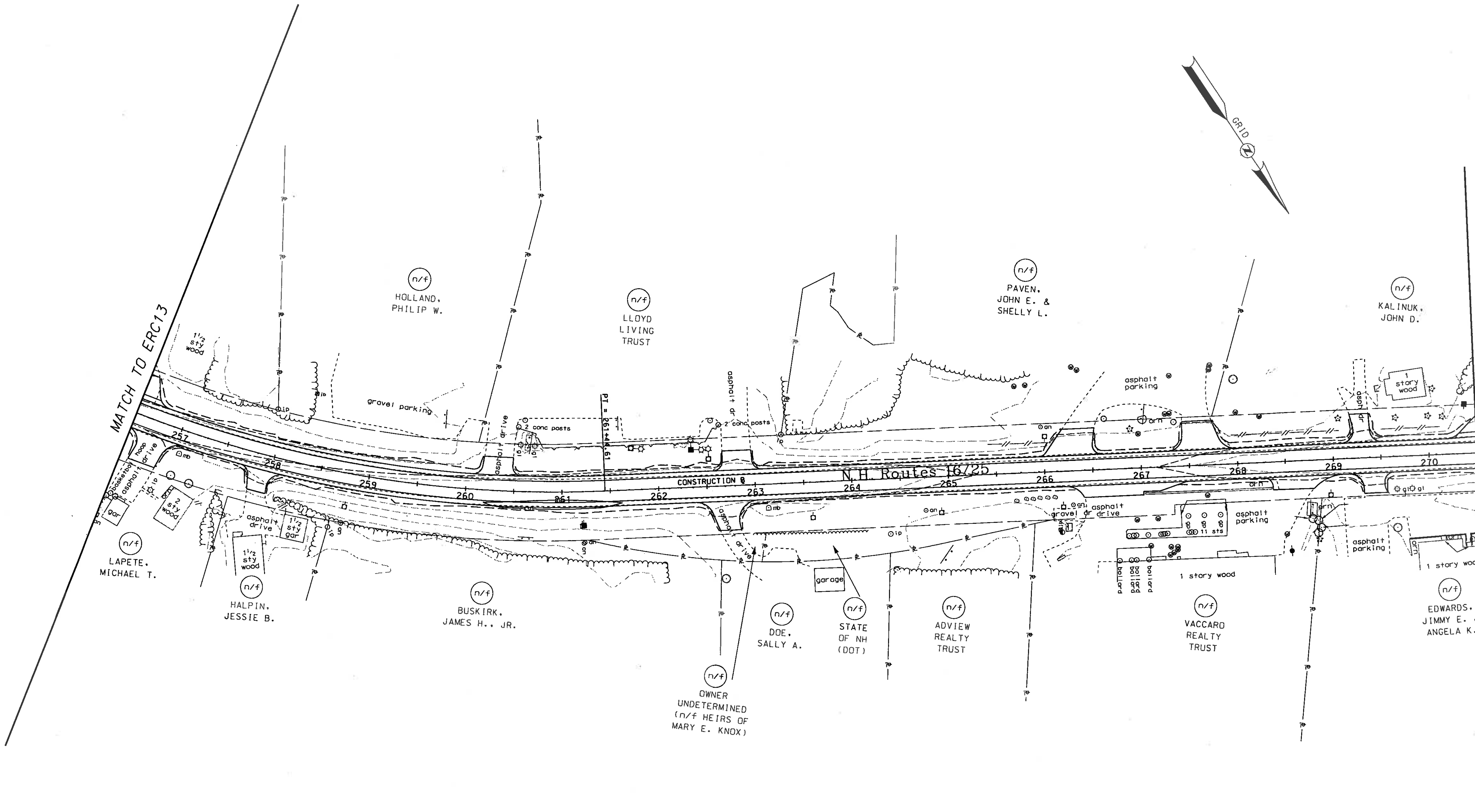
- *CONST DRAINAGE WORK*
- *RECLAIM ROADWAY AND PAVE*
  - *RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMIMUM OF 12 CALENDAR DAYS*
  - *RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.*

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC13	14749erc	14749	26	28



ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

- CONST DRAINAGE WORK
- RECLAIM ROADWAY AND PAVE
  - RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMUM OF 12 CALENDAR DAYS
  - RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL				
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS			DATE

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

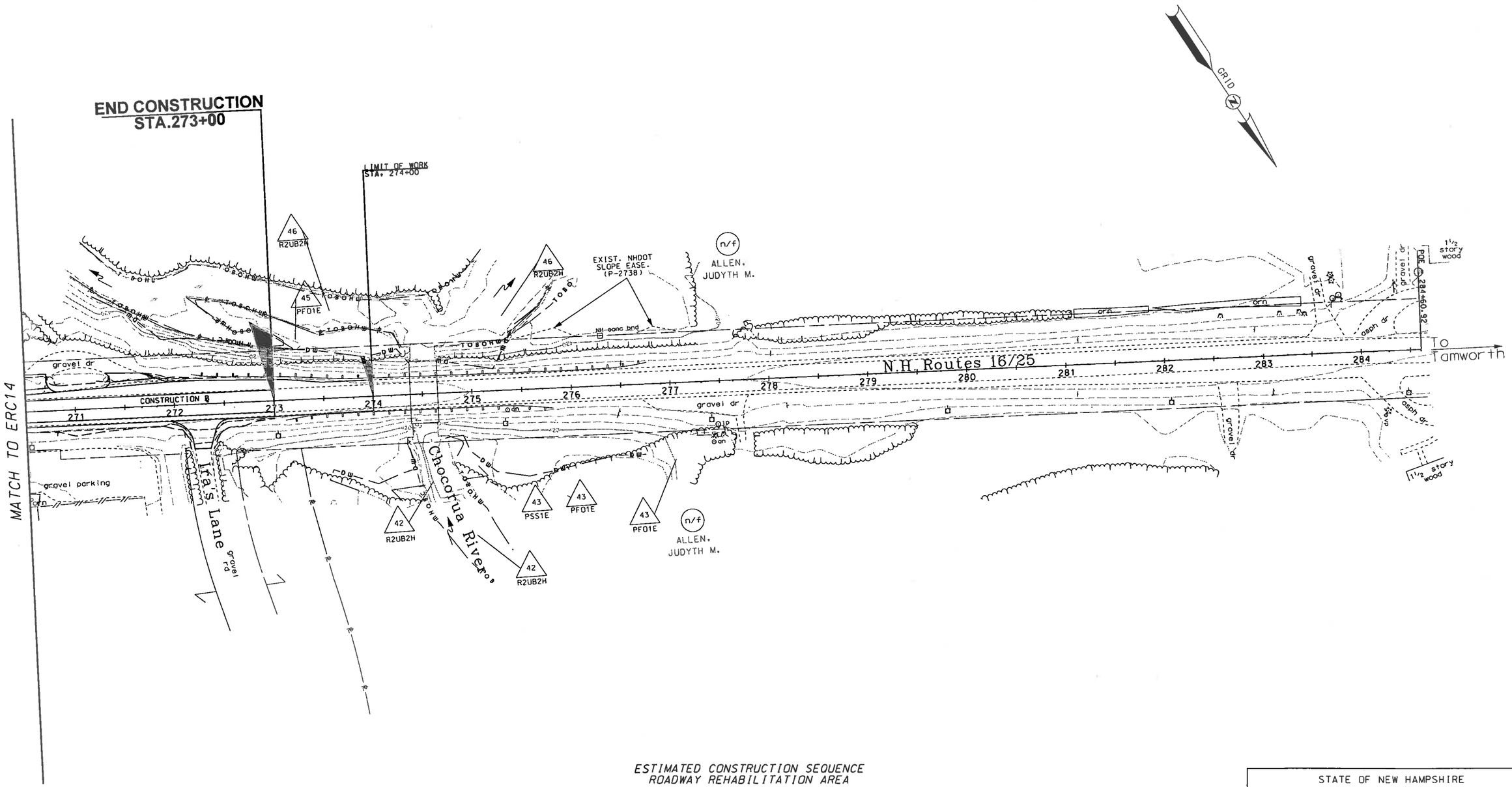
EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC14	14749erc	14749	27	28

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	NAME1	DATE	DATE1
NEW DESIGN	NAME2	DATE	DATE2
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	



ESTIMATED CONSTRUCTION SEQUENCE
ROADWAY REHABILITATION AREA

- *CONST DRAINAGE WORK*
- *RECLAIM ROADWAY AND PAVE*
  - *RECLAIMED SURFACE LEFT OPEN PRIOR TO PAVING A MAXIMIMUM OF 12 CALENDAR DAYS*
  - *RECLAIMED SURFACE OPEN A MAXIMUM OF 1.25 MILES AT A TIME.*

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ERC15	14749erc	14749	28	28