STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: May 23, 2022

FROM: Joshua Brown
Wetlands Program Analyst

AT (OFFICE): Department of Transportation
Bureau of Environment

SUBJECT Shoreland Application
Tamworth, 41434

TO Karl Benedict, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NHDOT Bureau of Bridge Design for the subject major impact project. The NHDOT is proposing a bridge rehabilitation and superstructure replacement project of Bridge No. 061/091 that carries NH Route 113A over the Swift River in Tamworth, NH. The proposed project involves the complete, in-kind replacement of the existing superstructure including the girders and deck, rehabilitation of the existing abutments including replacing the existing beam seats, backwalls, and wingwalls, the placement of grouted rip rap around the existing bridge piers for the purpose of scour protection, installation of new approach guardrail and terminal units, and the rehabilitation of an existing drainage outfall under the bridge along the southern bank of the Swift River including construction of a new headwall and slope stone/outlet pad to prevent erosion.

This project was reviewed at the Natural Resource Agency Coordination Meeting on March 16, 2022. A copy of the minutes has been included with this application package. A copy of this application and plans can be accessed on the Departments website via the following link: http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetland-applications.htm.

NHDOT anticipates and request that this project be reviewed and permitted by the Army Corp of Engineers through the State Programmatic General Permit process. A copy of the application has been sent to the Army Corp of Engineers.

Mitigation was determined to not be required as the proposed work was determined to be self-mitigating.

The lead people to contact for this project are Jenifer Reczek Bureau of Bridge Design (271-3226 or jennifer.e.reczek@dot.nh.gov) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-3226 or Andrew.O'Sullivan@dot.nh.gov).

A payment voucher has been processed for this application (Voucher #683032) in the amount of $3,750.00.

If and when this application meets with the approval of the Bureau, please send the permit directly to Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment.

JRB;
cc:
BOE Original
Town of Tamworth (4 copies via certified mail)
David Trubey, NH Division of Historic Resources (Cultural Review Within)
John Magee, NH Fish & Game (via electronic notification)
Maria Tur, US Fish & Wildlife (via electronic notification)
Beth Alafat & Jeanie Brochi, US Environmental Protection Agency (via electronic notification)
Michael Hicks & Rick Kristoff, US Army Corp of Engineers (via electronic notification)
Kevin Nyhan, BOE (via electronic notification)

Tamworth 41434

Bridge No. 061/091 Superstructure Replacement

NHDES Shoreland Permit Application

Prepared By:

McFarland Johnson

Tamworth, New Hampshire
41434
X-A004(636)

APRIL 2022

NHDOT Tamworth, 41434
Bridge No. 061/091 Superstructure Replacement
NHDES Shoreland Permit Application
April 2022

Contents

NHDES Shoreland Permit Application Form

SHORELAND PERMIT APPLICATION

Water Division/ Land Resources Management
Shoreland Program

Check the Status of your Application

RSA/Rule: RSA 483-B, Env-Wq 1400

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

This is an application for a permit to excavate, fill, construct new structures, or remove structures within the protected shoreland as regulated under RSA 483-B.

SECTION 1 - PROJECT DESCRIPTION (Env-Wq 1406.07)

Provide a concise description of the proposed project: The proposed NHDOT project involves the in-kind replacement of the existing supersturcture of Bridge 061/091 carrying NH Route 113A over the Swift River in Tamworth. At the location of the existing bridge the Swift River is a 4th order stream and is included on the NHDES Consolidated List of Water Bodies Subject to RSA 483-B, the Shoreland Water Quality Protection Act. The proposed project also includes replacing the bearings, abutment backwalls, wingwalls, deck joints, the installation of partially grouted riprap around the existing bridge piers for scour protection, guardrail, and rehabilitation of an existing drainage outlet located on the southern bank.

SECTION 2 - PROJECT LOCATION (Env-Wq 1406.07)

ADDRESS: Bridge No. 061/091 NH Route 113A	TOWN/CITY: Tamworth	STATE: NH	ZIP CODE: 03886
WATERBODY NAME: Swift River	TAX MAP/ BLOCK/LOT NUMBER : N/A - ROW		

SECTION 3 - PROPERTY OWNER & DEED INFORMATION (Env-Wq 1406.07)

The legal name of each property owner must be as it appears on the deed of record. If the owner is a trust or a company, then the name of the trust or company should be written as the owner's name.

LAST NAME, FIRST NAME, M.I: New Hampshire Department of Transportation, Attn: Jennifer Reczek			
MAILING ADDRESS: 7 Hazen Drive	TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302
PHONE: (603) 271-3226	EMAIL (if available): jennifer.e.reczek@dot.nh.gov		
REGISTRY OF DEED COUNTY N/A , BOOK NUMBER N/A , PAGE NUMBER N/A			

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER), IF DIFFERENT THAN OWNER (Env-Wq 1406.07)

If the applicant is a trust or a company, then the name of the trust or company should be written as the applicant's name. If the applicant is the owner, leave blank and check the following box: ☐.

LAST NAME, FIRST NAME, M.I: New Hampshire Department of Transportation, Attn: Jennifer Reczek			
MAILING ADDRESS: 7 Hazen Drive	TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302

PHONE: (603) 271-3226	EMAIL (if available): jennifer.e.reczek@dot.nh.gov		

SECTION 5 - CONTRACTOR OR AGENT (OPTIONAL)

LAST NAME, FIRST NAME, M.I: Hoffmann, Stephen (McFarland-Johnson, Inc.)			
ADDRESS: 53 Regional Drive	TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03301
PHONE: (802) 862-9381	EMAIL (if available): shoffmann@mjinc.com		

SECTION 6 - CRITERIA (Env-Wq 1406.07)

Please check at least one of the following criteria:

☒ This shoreland permit application requires neither a proposal to make the property more nearly conforming nor a request for a waiver of a minimum standard.

☐ This shoreland permit application includes a proposal to make the structures and/or the property more nearly conforming in accordance with RSA 483-B:11.

☐ This shoreland permit application includes a request for a waiver of the following minimum standard(s): RSA 483-B:9, V .

SECTION 7 - RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT (Env-Wq 1406.14)

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

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:29	☐ YES ☒ NO		☐ APPROVED ☐ PENDING ☐ DENIED
Subdivision Approval per RSA 485-A:29	☐ YES ☒ NO		☐ APPROVED ☐ PENDING ☐ DENIED
Wetlands Permit per RSA 482-A	☒ YES ☐ NO	PENDING	☐ APPROVED ☒ PENDING ☐ DENIED

SECTION 8 - REFERENCE LINE ELEVATION (Env-Wq 1406.07)

Required for projects located on the protected shoreland of lakes or ponds. The reference line elevations for most lakes, ponds, and artificial impoundments greater than 10 acres in size are listed in the Consolidated List of Waterbodies Subject to the Shoreland Water Quality Protection Act. Please see RSA 483-B:4, XVII for the definition of reference line.

REFERENCE LINE ELEVATION: N/A feet above sea level.

SECTION 9 - APPLICATION FEE & SUBMITTAL (RSA 483-B:5-b, I(b); RSA 483-B:5-b, X)

A non-refundable permit application fee of $200 plus $0.20 per total square feet of impact for restoration of water quality improvement projects, or $400 plus $0.20 per total square feet of impact for all other projects is required at the time the application is submitted. **Applications for projects solely funded by municipal, county, state, or federal entities shall incur a permitting fee no greater than $3,750.**

Please mail or hand deliver this application and all required attachments to the NHDES Wetlands Bureau, PO Box 95, Concord, NH 03302-0095. Missing information will delay processing your application and may result in denial of a shoreland permit application. **Please make checks payable to the Treasurer, State of NH**.

SECTION 10 - CALCULATING TOTAL IMPACT AREA/ PERMIT APPLICATION FEE (RSA 483-B:5-b, I(b); RSA 483-B:5-b, X)

Total impact area is calculated by determining the sum of all areas disturbed by regrading, excavating, filling, construction, or structure removal. Impacts often include, but are not limited to: constructing new driveways, constructing new structures, areas disturbed when installing septic systems and foundations, creating temporary access roads to drill a new well, and regrading associated with landscaping activities.

TOTAL AREA IMPACTED WITHIN THE PROTECTED SHORELAND = 17,822 **(A) square feet**

- **For restoration of water quality improvement projects:**
  Multiply line (A) by $0.20 **and** add $200. **[(A) × $0.20 + $200]** = $ _____ **Permit fee[1]**
- **For all other projects:**
  Multiply line (A) by $0.20 **and** add $400. **[(A) × $0.20 + $400]** = $ 3750.00 **Permit fee[1]**

SECTION 11 - REQUIRED CERTIFICATIONS (Env-Wq 1406.08; Env-Wq 1406.10(a))

By initialing within the blank before each of the following statements, and signing below, you are certifying that:

Initials: JCR	The information provided is true, complete, and not misleading to the knowledge and belief of the signer.
Initials: JCR	I understand that: • Any permit or waiver granted based on false, incomplete, or misleading information shall be subject to revocation. • I am subject to the applicable penalties in RSA 641, Falsification in Official Matters. And • Obtaining a shoreland permit shall not exempt the work proposed from other state, local, or federal approvals.
Initials: JCR	I have notified the governing body of the municipality or municipalities in which the property is located by certified mail, in accordance with Env-Wq 1406.13.
Initials: N/A	I have notified all abutters[2] of the proposed impacts via certified mail, in accordance with Env-Wq 1406.13.
Initials: JCR	☐ This project is within ¼ mile of a designated river and I have notified the Local River Management Advisory Committee (LAC) by providing the LAC with a copy of the complete application, including all supporting materials, via certified mail, in accordance with Env-Wq 1406.13. ☒ This project is **not** within ¼ mile of a designated river.
Initials: JCR	For any project proposing that the impervious area be at least 15% but not more than 20% within the protected shoreland, I certify that the impervious area is not more than 20%. ☐ N/A

SECTION 12 - REQUIRED SIGNATURES (Env-Wq 1406.08)

Both the property owner and applicant must sign the application.

SIGNATURE (OWNER):	PRINT NAME LEGIBLY:	DATE:
Jennifer E. Reczek	JENNIFER RECZEK	5/16/2022
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:

[1] Applications for projects solely funded by municipal, county, state, or federal entities shall incur a permitting fee no greater than $3,750.

[2] "Abutter" means any person who owns property that is immediately contiguous to the property on which the proposed work will take place, or who owns flowage rights on such property. The term does not include those properties separated by a public road or more than ¼ mile from the limits of the proposed work. If contiguous properties are owned by the person who is proposing the work, then the term includes the person owning the next contiguous property, subject to the ¼ mile limitation.

SHORELAND APPLICATION WORKSHEET

This worksheet *must* be submitted to the NHDES Wetlands Bureau with every Shoreland Permit Application. **A separate shoreland application worksheet must be submitted for each individual lot of record where impacts are proposed.**

For the purposes of this worksheet, "**pre-construction**" impervious surface area[3] means all human made impervious surfaces[4] currently present within the protected shoreland of a lot, whether to be removed or to remain after the project is completed. "**Post-construction**" impervious area means all impervious surfaces that will exist within the protected shoreland of a lot upon completion of the project, including both new and any remaining pre-construction impervious surfaces. All answers shall be given in square feet.

Calculating the Impervious Area of a Lot

CALCULATING THE IMPERVIOUS AREA OF A LOT WITHIN 250 FEET OF THE REFERENCE LINE (Env-Wq 1406.12)			
	STRUCTURE DESCRIPTION	**PRE-CONSTRUCTION IMPERVIOUS AREAS**	**POST-CONSTRUCTION IMPERVIOUS AREAS**
PRIMARY STRUCTURE(S) House and all **attached** decks and porches.	NH Rt 113A Pavement	16,621 FT^2	16,621 FT^2
ACCESSORY STRUCTURES All other impervious surfaces excluding lawn furniture, well heads, and fences. Common accessory structures include, but are not limited to: driveways, walkways, patios, and sheds.		FT^2	FT^2
		FT^2	FT^2
		FT^2	FT^2
		FT^2	FT^2
		FT^2	FT^2
		FT^2	FT^2
	TOTAL:	**(A)** 16,621 FT^2	**(B)** 16,621 FT^2
Area of the lot located within 250 feet of reference line:			**(C)** 54,316 FT^2
Percentage of lot covered by pre-construction impervious area within 250 feet of the reference line: *[divide (A) by (C) x 100]*			**(D)** 30.6 **%**
Percentage of lot to be covered by post-construction impervious area within 250 feet of the reference line upon completion of the project: *[divide (B) by (C) x 100]*			**(E)** 30.6 **%**

[3] **"Impervious surface area"** as defined in Env-Wq 1402.13 means, for purposes of the impervious surface limitation specified in RSA 483-B:9, V(g), the sum total of the footprint of each impervious surface that is located within the protected shoreland.

[4] **"Impervious Surface"** as defined in RSA 483-B:4, VII-b means any modified surface that cannot effectively absorb or infiltrate water. Examples of impervious surfaces include, but are not limited to, roofs, and unless designed to effectively absorb or infiltrate water, decks, patios, and paved, gravel, or crushed stone driveways, parking areas, and walkways.

Stormwater Management Requirements

THE IMPERVIOUS AREA THRESHOLDS (RSA 483-B:9, V(g))
☒ A net decrease or no net increase in impervious area is proposed (If **line E** is less than or equal to **line D**).
☐ The percentage of post-construction impervious area **(line E)** is less than or equal to 20%. This project **does not** require a stormwater management plan and **does not** require a plan demonstrating that each waterfront buffer grid segment at least meets the minimum required tree and sapling point score.
☐ A net increase in impervious area is proposed and the percentage of post-construction impervious area **(line E)** is greater than 20%, but less than 30%. This project **requires** a stormwater management but, **does not** require a plan demonstrating that each waterfront buffer grid segment at least meets the minimum required tree and sapling point score. *See details on the Application Checklist*
☐ A net increase in impervious area is proposed and the percentage of post-construction impervious area **(line E)** is greater than 30%. This project **requires** a stormwater management plan designed and certified by a professional engineer **and requires** plans demonstrating that each waterfront buffer grid segment meets at least the minimum required tree and sapling point score. *See details on the Application Checklist*

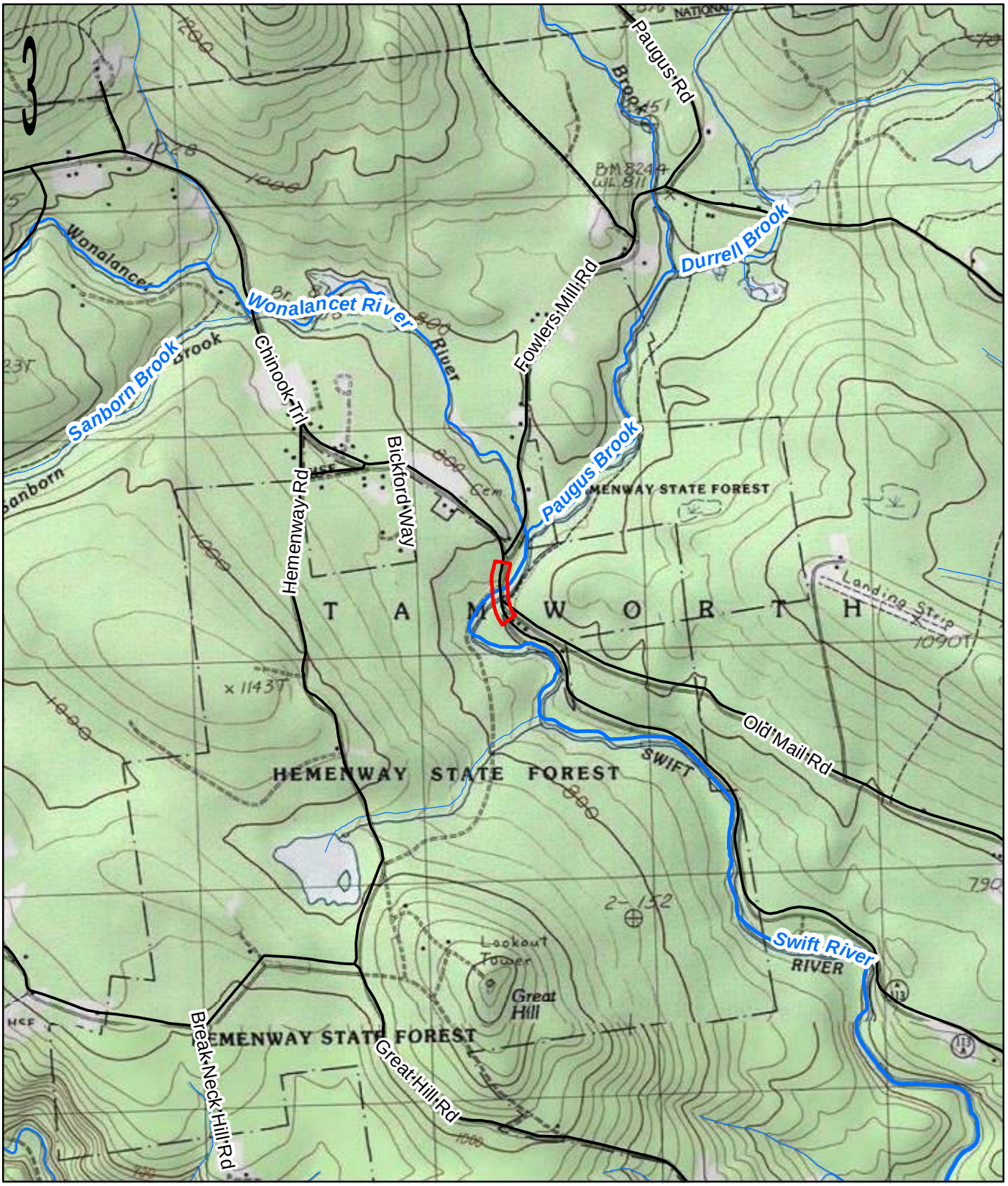
Natural Woodland Area Requirement

DETERMINING THE AREA TO REMAIN AS NATURAL WOODLAND	
Total area of the lot between 50 feet and 150 feet of the reference line within which the vegetation currently exists as natural woodland[5] **(see definition below)**.	**(F)** 1,424 FT^2
Total area of the lot between 50 feet and 150 feet from the reference line.	**(G)** 21,368 FT^2
At least 25% of area **(G)** must remain in as natural woodland. *[0.25 x G]*	**(H)** 5,342 FT^2
Place the lesser of area **(F)** and calculation **(H)** on this line. In order to remain compliant with the **natural woodland area requirement**, this is the minimum area that must remain as natural woodland between 50 feet and 150 feet from the reference line. This area **must** be represented on all plans and this area, exclusive of existing lawn, must remain in an unaltered state[6].	**(I)** 1,424 FT^2
Name of person who prepared this worksheet: Stephen Hoffmann	
Name and date of the plan this worksheet is based upon: Figure 3 - NWB AREA (April 2022)	

[5] **"Natural Woodland"** means a forested area consisting of various species of trees, saplings, shrubs, and ground covers in any combination and at any stage of growth (483-B:4, XI).

[6] **"Unaltered State"** means native vegetation allowed to grow without cutting, limbing, trimming, pruning, mowing, or other similar activities except as needed for renewal or to maintain or improve plant health (483-B:4, XXIV-b).

Figure 1 - USGS Location Map



Tamworth 41434 Project Area

0 2,000 4,000
Feet

NH DEPARTMENT OF TRANSPORTATION
TAMWORTH 41434 - TAMWORTH, NH

USGS LOCATION MAP

SCALE :	DATE :	FIGURE :
1 inch = 2,000 feet	FEBRUARY 2022	1

McFarland Johnson

M:\18844.01 Tamworth 41434-Final Dsg\Draw\GIS\Shoreland Permit Figures\Figure 1 - Tamworth 41434 - USGS Location Map (Shoreland).mxd

Supplemental Narrative

NHDES SHORELAND PERMIT APPLICATION
NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
TAMWORTH, 41434
BRIDGE NO. 061/091 SUPERSTRUCTURE REPLACEMENT
TAMWORTH, NEW HAMPSHIRE

SUPPLEMENTAL NARRATIVE

Introduction

The New Hampshire Department of Transportation (NHDOT) is proposing to replace the existing superstructure of Bridge No. 061/091 carrying NH Route 113A over the Swift River in Tamworth, New Hampshire. The proposed project also includes the installation of scour protection around the two existing bridge piers, as well as the rehabilitation of an existing drainage outfall on the southern bank of the Swift River, located between the existing bridge abutment and pier. A NHDES Standard Dredge and Fill application is being submitted concurrently for impacts to the channel and banks of the Swift River.

Bridge No. 061/091 is a 3-span steel beam bridge with a reinforced concrete deck that was originally constructed in 1956. The bridge has two 48' end spans and a 56' center span, totaling 152-feet, and a curb-to-curb width of 24'-6" and an out-to-out of 27'-6". The existing roadway is classified as a Tier 4 highway and consists of two 11'-0" travel lanes and roughly 1'-0" shoulders for a total roadway width of about 24'-0". NH Route 113A has an Average Annual Daily Traffic (AADT) of 448 vehicles with 10% trucks based on 2017 traffic counts. The existing deck is in serious condition (condition rated 3 out of 9) and the superstructure and substructure are in satisfactory condition (6 out of 9). The existing bridge piers have been identified as "scour critical" meaning that the estimated scour depths extend below the bottom of the existing pier footings. The existing bridge was added to the NHDOT Red List of Bridges in 2015.

Purpose & Need

Purpose

The purpose of the proposed project is to address the serious condition of the existing bridge deck and scour concerns at the two bridge piers, to maintain safe passage of vehicles and pedestrians along NH Route 113A over the Swift River.

Need

The need for this project is evidenced by the following:

- Holes extending through the deck have recently been discovered and have been temporarily covered with steel plates by the Bureau of Bridge Maintenance.
- The existing deck is in serious condition and the bridge is currently included on the NHDOT Red List of Bridges.
- The existing piers have been designated as "Scour Critical" based on a Plan of Action Report completed in 2009.

Project Description

The proposed project includes the replacement of the existing superstructure of Bridge No. 061/091. In addition to the superstructure replacement, the project also includes the removal and replacement of the existing abutment beam seats, backwalls, wingwalls, minor modifications to the pier caps, installation of new bridge bearings, installation of new bridge rail and approach rail, installation of scour countermeasures at the piers, and pavement reconstruction at the bridge approaches. Additional alternatives were evaluated including deck replacement and full bridge replacement. The superstructure replacement is preferred over deck replacement due to the risks associated with the existing steel framing with an accelerated construction schedule. The superstructure replacement also provides a greater service life than deck replacement. Impacts to the channel and banks of the Swift River are identical for the deck and superstructure replacement alternatives. Full bridge replacement resulted in impacts to the project schedule, increased costs, and increased impacts. Also, based on the satisfactory condition of the existing substructure, and adequate hydraulic capacity of the bridge, complete replacement was not warranted. For these reasons the superstructure replacement was determined to be the selected alternative.

In order to protect the existing bridge infrastructure, the proposed project includes the installation of embedded partially grouted riprap (PGR) around the existing bridge piers. The proposed PGR will be installed at a depth of approximately 2'-0" thick and will extend approximately 6'-0" from the face of the bridge piers on the channel sides and approximately 7'-6" from the face of the piers on the bank sides. The PGR will be embedded approximately two feet in order to match the approximate grade of the existing streambed. Multiple scour countermeasures were considered, including A-Jacks concrete armor units installed at existing grade, embedded A-Jacks, and embedded PGR. PGR was selected as the preferred scour protection method due to the existing site conditions, channel velocities, and the size of the substrate. The PGR is more durable and less prone to damage than the A-Jacks from large cobbles and boulders potentially mobilized during higher flows and increased channel velocities. The embedded material will approximately match the grade of the existing streambed and will not result in a constriction of the channel at the bridge location. For these reasons the embedded PGR was selected as the preferred scour countermeasure.

Access to the northern bridge pier is limited by right-of-way (ROW) constraints and steep grades along the northern side of the Swift River making it a challenge to access this area with equipment and machinery required to install the scour protection. Based on the existing ROW and grades, it is anticipated that the contractor will utilize the southeast bridge quadrant to access the bridge piers for the installation of the PGR. In order to access the northern bridge pier, wooden crane mats will be placed across the channel during low flow conditions in order to move machinery and materials across the channel to access the northern pier and install the PGR. The use of crane mats was discussed with NHDES at prior NHDOT Resource Agency Coordination Meetings and NHDES staff concurred with this approach.

Temporary water diversion structures will be installed around the proposed in-water work areas within the channel of the Swift River. All in-water work will be completed during low flow conditions and outside the October 1 – March 31 work window for documented cold water fishery [Env-Wt 307.10(g)(1)]. The temporary water diversion structure will likely consist of large sandbag cofferdams but will ultimately be determined by the means and methods of the selected contractor. Flow in the Swift River will be maintained throughout the duration of construction. Approximately 17'-6" of the middle of the channel or approximately 33 percent of the total width of the channel at the bridge location will remain open with the water diversion structures installed. This will allow for flow and fish/aquatic organism passage to be maintained throughout the duration of the project

There is an existing drainage outfall located under the bridge near the top of bank on the southern side of the river. The proposed project will replace the existing deteriorated pipe and construct a new headwall and install a stone outlet pad. The proposed improvements will repair and eliminate the erosion and scour that is currently occurring along the southern bank of the Swift River caused by the deteriorated drainage outlet.

Existing Resources

The Swift River is the most prominent surface water in the vicinity of the project. The ordinary high water and top of bank of the Swift River were delineated. At the location of Bridge No. 061/091, the Swift River is a fourth order, perennial stream, with a watershed area of approximately 25.3 square miles. The stream crossing is classified as a Tier 3 stream crossing based on the watershed size pursuant to the NHDES Stream Crossing Rules (Env-Wt 900) and is included on the NHDES Consolidated List of Waterbodies Subject to the Shoreland Water Quality Protection Act. The Swift River has a Cowardin Classification of R3UB1H.

Rare Species / Fish and Wildlife

The proposed project was submitted to and reviewed by the New Hampshire Natural Heritage Bureau (NHB) via the online NHB DataCheck Tool on October 13, 2021. The NHB DataCheck Results Letter (NHB21-3208) dated October 19, 2021, indicated that although there was a NHB record (e.g. rare wildlife, plant, and/or natural community) present in the vicinity of the proposed action, NHB does not anticipate any impacts from the proposed action.

Shoreland Water Quality Protection Act

Lot

For the purpose of this Shoreland Permit application, the "Lot" is defined as the total existing NHDOT state-owned right-of-way (ROW) located within 250 feet of the Reference Line. The total area of the Lot is 54,316 SF. The majority of the project is located within the existing ROW, with the exception of an area in the northwest bridge quadrant. A temporary construction easement is required in order to access the northern bridge pier. The land is part of Hemenway State Forest and is owned by the State of New Hampshire Department of Natural and Cultural Resources (DNCR). Coordination between NHDOT and DNCR is ongoing, and any necessary easements/approvals will be secured prior to the start of construction.

Impacts

The proposed project will result in temporary and minor permanent impacts located within the Waterfront Buffer and Natural Woodland Buffer. The total area of impacts is 17,822 SF.

The proposed project is not anticipated to require any tree clearing. The majority of the temporary impacts are located within the existing right-of-way that is currently mowed/maintained for safety purposes.

Waterfront Buffer

The proposed project will result in 25 SF of permanent impacts within the Waterfront Buffer associated with the installation of a stone outlet pad located at the existing drainage outlet that is being rehabilitated. The existing outlet is deteriorated and is contributing to bank scour and erosion. The proposed project will alleviate the erosion issue that is currently occurring and result in improved water quality.

Impacts to the Waterfront Buffer also include 7,523 SF of temporary impacts associated with construction access for the proposed project. The proposed project does not involve any changes to the existing grades. All disturbed areas will be restored to existing conditions following the completion of construction.

Pursuant to 483-B:9 V.(a)(2)(D)(vi), owners of lots and holders of easements on lots that were legally developed prior to July 1, 2008 may maintain but not enlarge cleared areas, including but not limited to existing lawns, gardens, landscaped areas, beaches, and rights-of-way for public utilities, public transportation, and public access, and may repair existing utility structures within the waterfront buffer. Therefore, grid scoring within the Waterfront Buffer of the Lot was not determined. However, plantings are proposed to ensure that the portion of the temporary easement located outside the ROW and within the Waterfront Buffer will remain in compliance with the shoreland minimum standards. Plantings will also be provided to restore temporary bank impacts (authorized under a separate NHDES Standard Dredge and Fill permit). The planting plan includes a total of 50 red-osier dogwood (*Cornus sericea*) shrubs. In addition, disturbed areas will be stabilized and seeded with a slope seed mix following the completion of construction.

Natural Woodland Buffer

The proposed project will result in 955 SF of permanent impacts within the Natural Woodland Buffer associated with guardrail extensions and end units required by NHDOT safety standards.

Impacts to the Natural Woodland Buffer also include 9,319 SF of temporary impacts associated with construction access and equipment and material stockpile and staging areas. All disturbed areas will be restored to existing conditions following the completion of construction.

The Natural Woodland Buffer located within the "Lot" consists of existing roadway pavement and cleared roadway shoulders located within the ROW. These areas are actively mowed and maintained for safety purposes. The portions of the Natural Woodland Buffer that will be impacted by the proposed project do not contain any existing natural woodland areas. Of the total 21,368 SF of Natural Woodland Buffer area located within the "Lot", only 1,424 SF consists of naturally forested area. The proposed project will not result in a net change in the area that currently exists as natural woodland. No tree clearing is anticipated as part of the proposed project.

Protected Shoreland

The proposed project does not involve any temporary or permanent impacts located with the Protected Shoreland (PS) located between 150 – 250 feet from the Reference Line.

Impervious Surface

The total area of the Lot located within 250 feet of the Reference Line is 54,316 SF. The existing impervious surface area of the Lot located with within the Protected Shoreland is 16,621 SF, or approximately 30.6 percent of the total area of the Lot. Existing impervious surfaces consist of the existing roadway pavement of NH Route 113A.

The proposed project will not result in a net change in the total area of impervious surfaces.

Water Quality / Stormwater Treatment

Appropriate Best Management Practices (BMPs) will be implemented throughout the duration of construction to avoid and minimize any potential water quality impacts. Perometer controls including but not limited to silt fence or silt socks will be installed prior to completing any roadway or bank work. In-water work including the installation of the PGR as well as placement of construction mats for crossing the channel will be completed during low flow conditions. Excavation around the existing piers and the installation of the PGR will be completed behind temporary cofferdams in order to minimize turbidity releases or other negative water quality impacts. Water quality monitoring will occur during the grouting process to ensure water quality impacts are minimized and avoided to the maximum extent practicable.

There is no existing stormwater treatment, and none is proposed as part of the proposed bridge rehabilitation project. The proposed project will not result in an increase in impervious surfaces.

Construction Sequence

The proposed project is anticipated to start in the spring of 2023, with the bridge closure and in-water work being completed in the summer months (June-August) during low flow conditions. The project will be constructed using Accelerated Bridge Construction (ABC) techniques and is anticipated to require an approximately one to two month full bridge closure. The following construction sequence is a preliminary and likely order of construction but the exact means and methods will ultimately be decided by the selected contractor.

1.) Mobilize equipment and materials to the project site.
2.) Submit SWPPP that includes details on temporary water diversion and water quality monitoring during grout installation.
3.) Using appropriate traffic control procedures to the satisfaction of the Engineer, close the road with the signed detour and install construction barrier.
4.) Install appropriate perimeter controls for soil erosion and sediment control.
5.) Remove the existing superstructure.
6.) Install temporary water diversion structures around the existing bridge piers during low flow to direct flow to the middle of the channel.
7.) Clean timber construction mats that are free of dirt and other debris will be installed across the channel during low flow conditions to access the northern bridge pier. Prior to the installation of mats, the mats and any heavy machinery used to install them shall be inspected for and cleaned of all vegetative matter by a method and in a location that prevents the spread of the vegetative matter to jurisdictional areas. Construction mats will be properly installed and not dragged into position. The mats will likely be stacked as necessary to provide a base on each side of the channel and mats will be installed across the channel in order to provide a temporary crossing structure to allow equipment and machinery to access the northern pier.
8.) Excavate areas around the existing bridge piers/footings for the installation of the scour countermeasures.
9.) Place riprap around existing piers.
10.) Grout the riprap following water quality monitoring procedures of the Special Provision for Partially Grouted Riprap.
11.) Replace existing drainage outfall pipe and construct new headwall and stone outlet pad.

12.) Remove temporary water diversion structures and remove construction mats immediately upon the completion of the work. Mats shall be disposed of properly in an upland location.

13.) Remove and replace the abutment beam seats, backwalls, and wingwalls with precast elements.

14.) Complete closure pours on precast elements and allow to cure

15.) Backfill abutments.

16.) Prepare pier beam seats.

17.) Erect new steel girders.

18.) Place and grout partial depth precast concrete deck panels.

19.) Place deck reinforcement and expansion joints.

20.) Place deck concrete and cure.

21.) Place brush curbs with rail post anchorages and cure.

22.) Install new bridge rail and approach rail.

23.) Pave approaches.

24.) Remove perimeter controls and reopen bridge and roadway to traffic.

Photo Log

NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION - TAMWORTH, 41434
BRIDGE NO. 061/091 SUPERSTRUCTURE REPLACEMENT
NHDES SHORELAND PERMIT APPLICATION
TAMWORTH, NEW HAMPSHIRE
APRIL 2022

PHOTO LOG

Photo 1: IMPACT AREA: G – Waterfront Buffer - Northern bridge pier facing downstream (05/06/2020) Photo Direction: W

Photo 2: IMPACT AREA: G – Waterfront Buffer - Bank behind northern bridge pier (05/06/2020) Photo Direction: W

Photo 3: IMPACT AREA: G & E – Waterfront Buffer – NE bridge quadrant (G) in foreground / SE Bridge quadrant (E) opposite side of Swift River (05/06/2020) Photo Direction: S

Photo 4: IMPACT AREA: G & E – Waterfront Buffer - Bank behind northern bridge pier (05/06/2020) Photo Direction: W

Photo 5: IMPACT AREA: G & E – Southern bridge pier facing upstream (05/06/2020) Photo Direction: NE

Photo 6: IMPACT AREA: E – Channel of the Swift River at the location of proposed scour protection along southern bridge pier facing downstream (05/06/2020) Photo Direction: SW

Photo 7: IMPACT AREA: E – Bank behind southern bridge pier (05/06/2020) Photo Direction: SW

Photo 8: IMPACT AREA: A/E/B – Bank behind southern bridge pier and existing drainage outfall (05/06/2020) Photo Direction: E

Photo 9: IMPACT AREA: E – Bank behind southern bridge pier showing erosion/scour from existing drainage outfall (05/06/2020) Photo Direction: SE

Photo 10: IMPACT AREA: E & G Bridge No. 061/091 carrying NH Route 113A over the Swift River (05/06/2020) Photo Direction: NE

Photo 11: IMPACT AREA: E - Swift River from northern pier/bank facing across the channel (05/06/2020) Photo Direction: S

Photo 12: IMPACT AREA G - Swift River from southern pier/bank facing across the channel (05/06/2020) Photo Direction: N

Photo 13:IMPACT AREAS – A / B / C

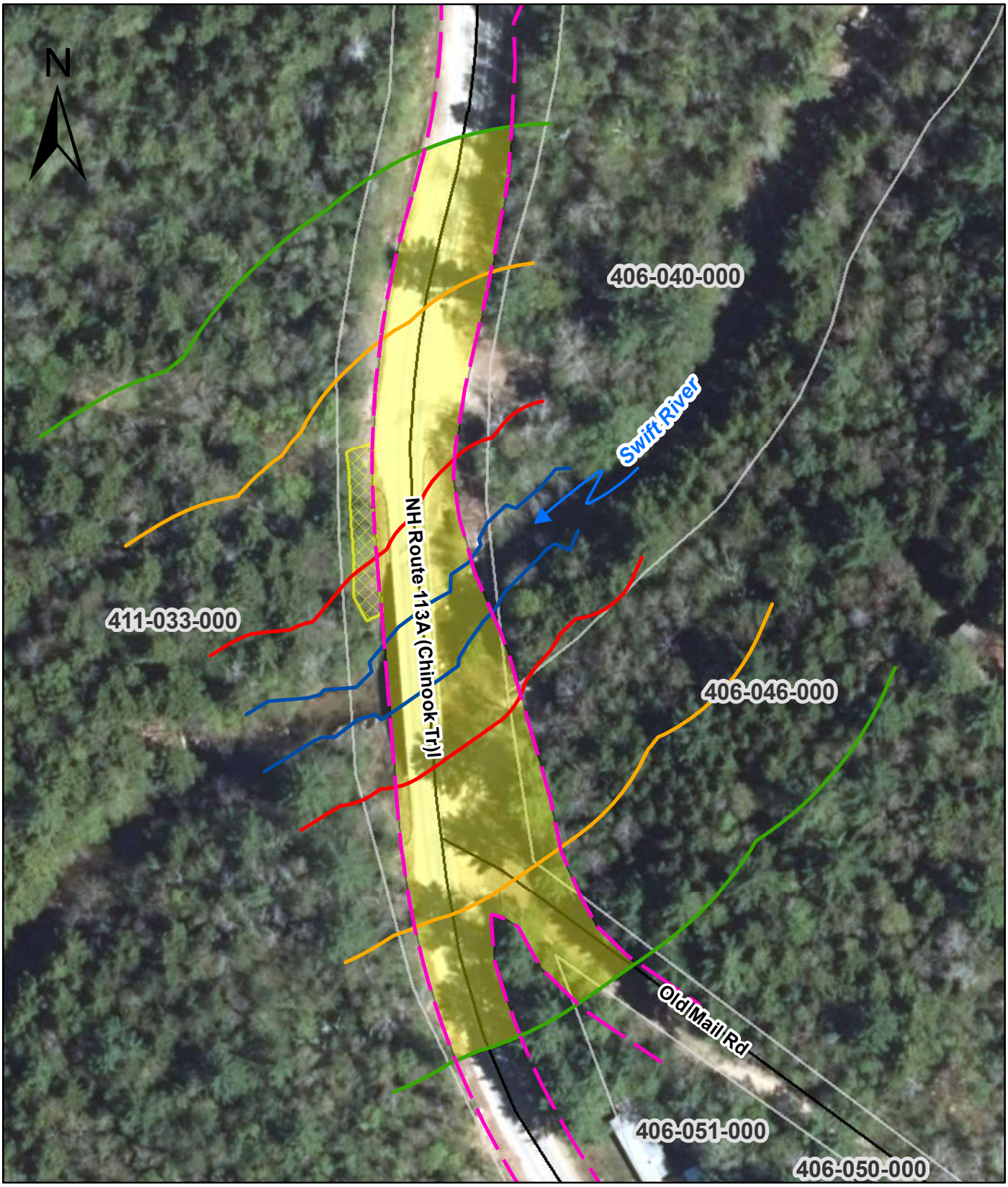
Photo 14: IMPACT AREAS – C & D

Photo 15: IMPACT AREAS A & B

Photo 16: IMPACT AREAS – H / I

Photo 17: IMPACT AREAS H / I

Figure 2 – Tax Map



Tamworth 41434 SWQPA "Lot"
Tamworth Temporary Easement Area
Existing ROW
Carroll County Tax Parcels
Swift River Reference Line
Waterfront Buffer: 0' - 50'
Natural Woodland Buffer: 50' - 150'
Protected Shoreland: 150' - 250'

0 100 200
Feet

NH DEPARTMENT OF TRANSPORTATION
TAMWORTH 41434 - TAMWORTH, NH

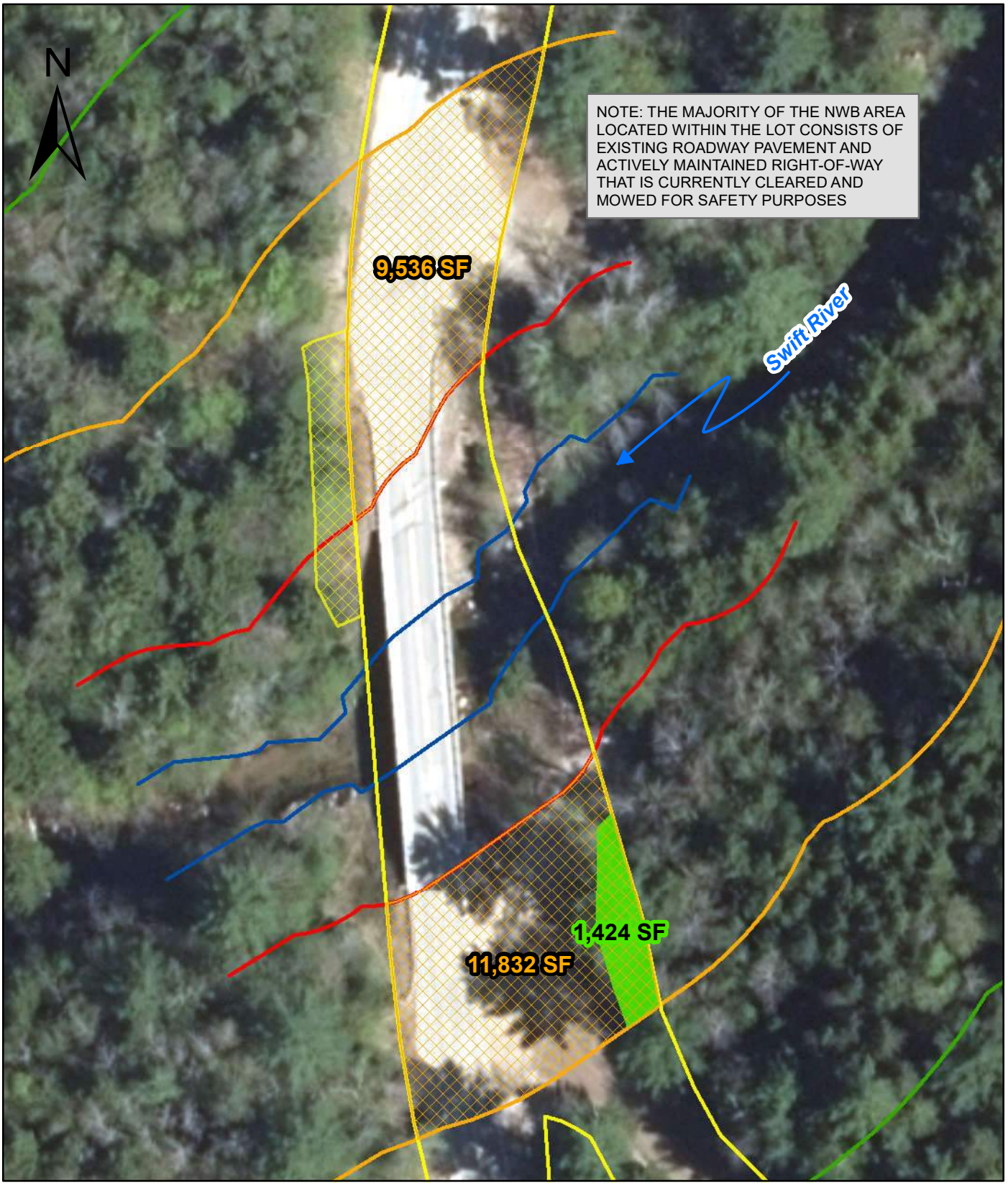
TAX MAP

SCALE :	DATE :	FIGURE :
1 inch = 100 feet	APRIL 2022	2

McFarland Johnson

M:\18844.01 Tamworth 41434-Final Dsg\Draw\GIS\Shoreland Permit Figures\Figure 2 - Tamworth 41434 - Tax Map (Shoreland).mxd

Figure 3 – NWB Area



Tamworth 41434 SWQPA "Lot"
Tamworth Temporary Easement Area
Total Natural Woodland Buffer Area
Existing Natural Woodland
Swift River Reference Line
Waterfront Buffer: 0' - 50'
Natural Woodland Buffer: 50' - 150'
Protected Shoreland: 150' - 250'

0 60 120
Feet

NH DEPARTMENT OF TRANSPORTATION
TAMWORTH 41434 - TAMWORTH, NH

NWB AREA

SCALE :	DATE :	FIGURE :
1 inch = 60 feet	APRIL 2022	3

McFarland Johnson

M:\18844.01 Tamworth 41434-Final Dsg\Draw\GIS\Shoreland Permit Figures\Figure 3 - Tamworth 41434 - NWB Area.mxd

NHB DataCheck Results Letter

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

To: Stephen Hoffmann
53 Regional Drive

Concord, NH 03301

From: NH Natural Heritage Bureau
Date: 10/19/2021 (valid until 10/19/2022)
Re: Review by NH Natural Heritage Bureau of request submitted 10/13/2021
Permits: NHDES - Shoreland Standard Permit, NHDES - Wetland Standard Dredge & Fill - Major, USACE - General Permit, USCEQ - Federal: NEPA Review, USEPA - Stormwater Pollution Prevention

NHB ID: **NHB21-3208** **Applicant:** Stephen Hoffmann

Location: Tamworth
NH Route 113A

Project Description: The proposed project involves the replacement of the superstructure of Bridge No. 061/091 carrying NH Route 113A over the Swift River in Tamworth. Impacts within the Swift River will be required to install scour countermeasures around the existing piers.

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

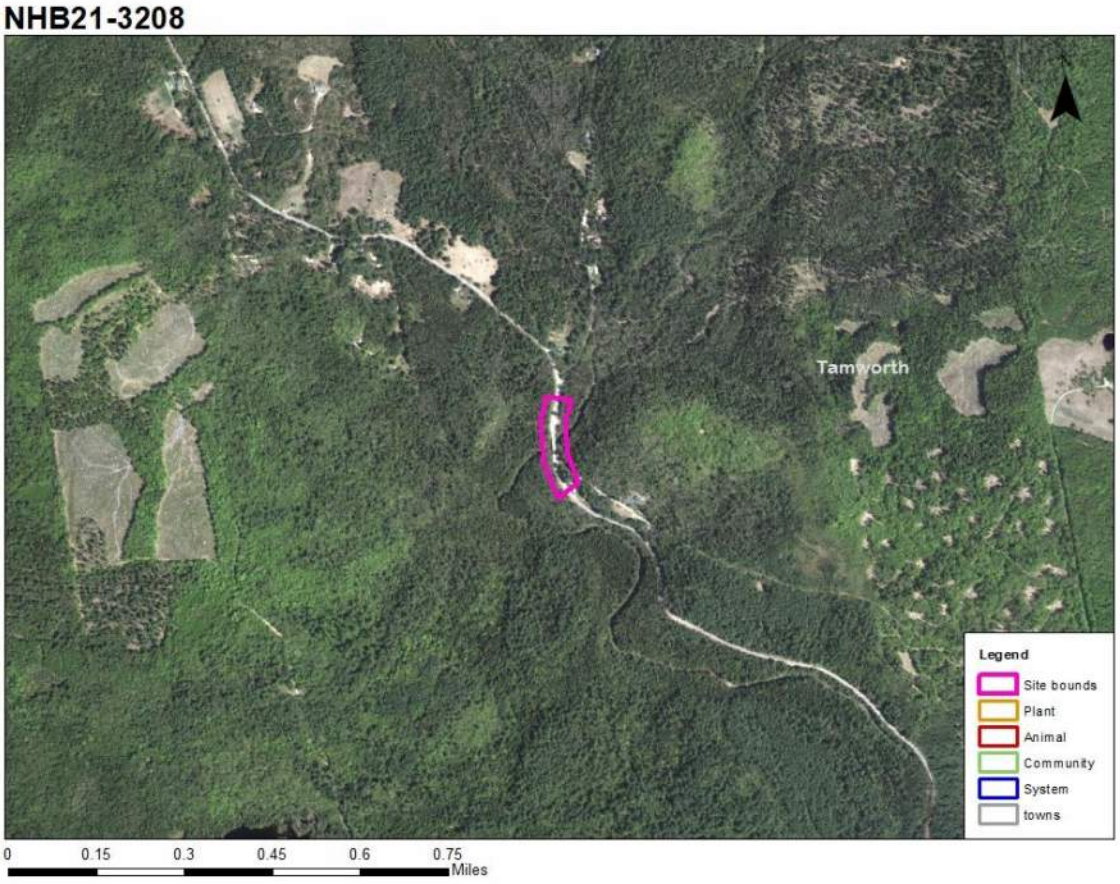
It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 10/13/2021 8:38:28 AM, and cannot be used for any other project.

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

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

MAP OF PROJECT BOUNDARIES FOR: **NHB21-3208**



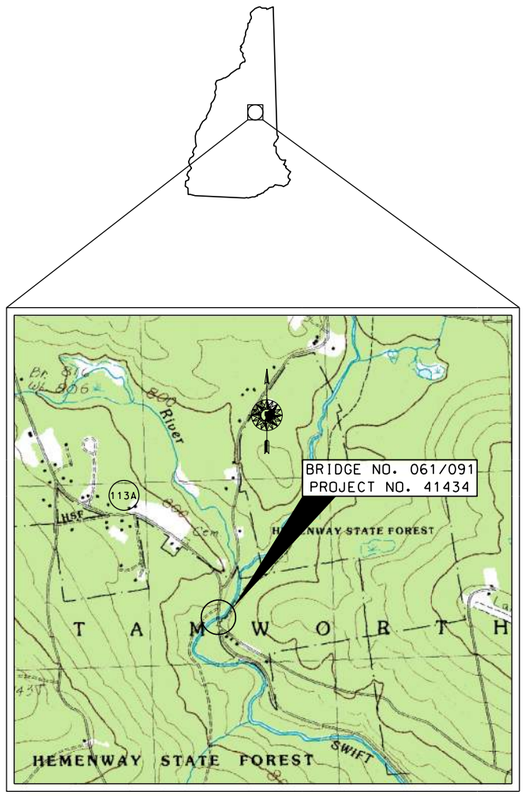
Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

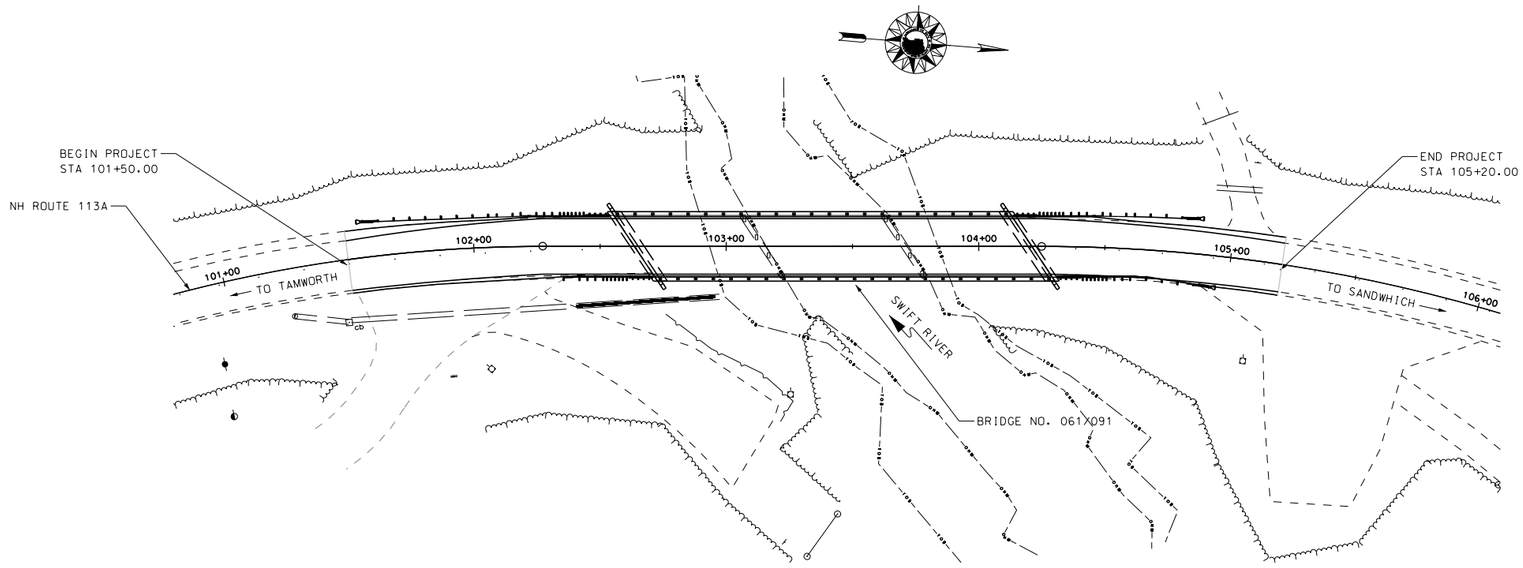
Shoreland Impact and Erosion Control Plan Set

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
SHORELAND PLANS
FEDERAL AID PROJECT
OF PROPOSED BRIDGE REHABILITATION
BRIDGE NO. 061 / 091
A004(636)
NH PROJECT NO. 41434

PROJECT DATA		
AVERAGE DAILY TRAFFIC	2017	546
AVERAGE DAILY TRAFFIC	2039	808
PERCENT OF TRUCKS		10%
POSTED SPEED		35 MPH
LENGTH OF PROJECT		0.07 MILES



LOCATION MAP



LAYOUT

30 0 30 60

SCALE IN FEET

DRAWN BY RSG DATE XXX
CHECKED BY SIW DATE XXX

	BRIDGE	HIGHWAY
PLANS PREPARED BY McFarland Johnson McFARLAND JOHNSON 53 REGIONAL DRIVE CONCORD, N.H. 03301 (603)225-2978		

TOWN OF TAMWORTH
COUNTY OF CARROLL

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT — DATE

APPROVED:

ASSISTANT COMMISSIONER AND CHIEF ENGINEER — DATE

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
41434 Cover_shore		1	9

GENERAL

EDGE OF PAVEMENT — PROPOSED ROADWAY
TRAVELED WAY — 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 W

WELL — W

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 — S

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 — DW
ORDINARY HIGH WATER — OHW
TOP OF BANK — TOB
TOP OF BANK & ORDINARY HIGH WATER — TOBOHW
NORMAL HIGH WATER — NHW
WIDTH AT BANK FULL — WBF
PRIME WETLAND — PWET
PRIME WETLAND 100' BUFFER — PWET100
NON-JURISDICTIONAL DRAINAGE AREA — NJDA
COWARDIN DISTINCTION LINE — CDL
TIDAL BUFFER ZONE — TBZ
DEVELOPED TIDAL BUFFER ZONE — DTBZ
HIGHEST OBSERVABLE TIDE LINE — HOTL
MEAN HIGH WATER — MHW
MEAN LOW WATER — MLW
VERNAL POOL — VP
SPECIAL AQUATIC SITE — SAS
REFERENCE LINE — REF
WATER FRONT BUFFER — WB50
NATURAL WOODLAND BUFFER — NWB150
PROTECTED SHORELAND — PS250
INVASIVE SPECIES LABEL — I.S. I — I.S. II
INVASIVE SPECIES — INV

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY — FP500
100 YEAR FLOODPLAIN BOUNDARY — FP100
FLOODWAY — FW

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)

CLEARING LINE — SLOPE LINE

SLOPE LINE

SLOPE LINE (FILL)

SLOPE LINE (CUT)

PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT) — 72.5
FINISHED GRADE ELEVATION (RIGHT) — 79.14

SHEET 1 OF 2

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	41434symb1		2	9

DRAINAGE

MANHOLE
CATCH BASIN (cb) — (existing) / (PROPOSED)
DROP INLET (di)
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)
TOWN LINE — BOW / CONCORD
COUNTY LINE — COOS / GRAFTON
STATE LINE — MAINE / NEW HAMPSHIRE
NATIONAL FOREST
CONSERVATION LAND (LC)
BENCH MARK / SURVEY DISK
BOUND — bnd — (PROPOSED)
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

existing / PROPOSED

TELEPHONE POLE
POWER POLE
JOINT OCCUPANCY
MISCELLANEOUS/UNKNOWN POLE
GUY POLE OR PUSH BRACE
(plot point at face not center of symbol)
LIGHT POLE
LIGHT ON POWER POLE
LIGHT ON JOINT POLE

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) — (label type)

UNDERGROUND UTILITIES

WATER (on existing lines label size, type and note if abandoned) (W) — (PW)
SEWER (S) — (PS)
TELEPHONE (T) — (PT)
ELECTRIC (E) — (PE)
GAS (G) — (PG)
LIGHTING (L) — (PL)
INTELLIGENT TRANSPORTATION SYSTEM (ITS)
FIBER OPTIC (FO) — (PFO)
WATER SHUT OFF
GAS SHUT OFF
HYDRANT

MANHOLES

SEWER — MHS
TELEPHONE — MHT
ELECTRICAL — MHE
GAS — MHG
UNKNOWN

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) — (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	41434symb2		3	9

N

SLOPE LINE
PER NHDOT PLAN
PROJECT # S-2740

SLOPE LINE
PER NHDOT PLAN
PROJECT # S-2740

EXISTING R.O.W.

EXISTING R.O.W.

101+00

102+00

103+00

104+00

105+00

106+00

TO TAMWORTH

TO SANDWICH

EXISTING R.O.W.

EXISTING R.O.W.

SLOPE LINE
PER NHDOT PLAN
PROJECT # S-2740

SLOPE LINE
PER NHDOT PLAN
PROJECT # S-2740

N/F
BERTON C. WILLARD &
SYLVIA R. WILLARD

N/F
STATE OF NH
(D.N.C.R)
DIVISION OF FORESTS
AND LANDS
HEMENWAY STATE FOREST

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED	DATE
NEW DESIGN	DATE
SHEET CHECKED	DATE
AS BUILT DETAILS	DATE

20 0 20 40

SCALE IN FEET

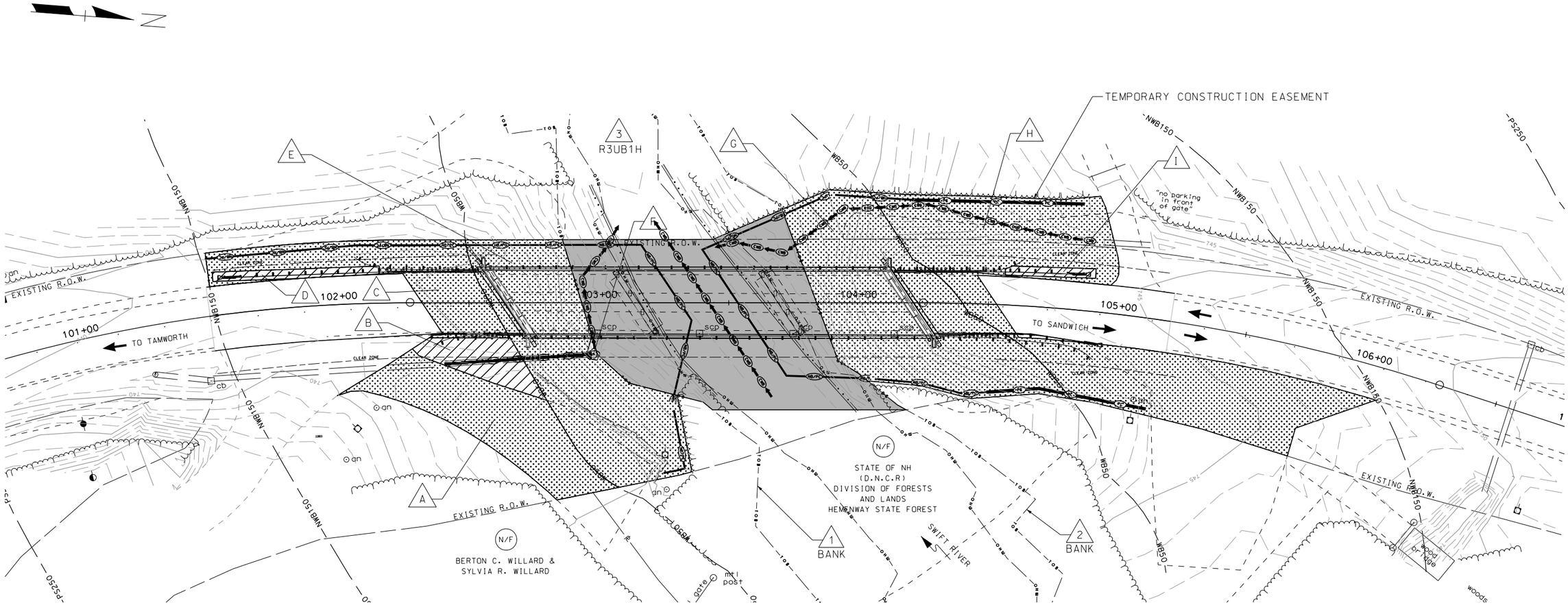
McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF BRIDGE DESIGN

EXISTING CONDITIONS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS



LEGEND

(X) SHORELAND IMPACT LOCATION

TYPE OF SHORELAND IMPACT	SHADING/ HATCHING
PREVIOUSLY PERMITTED JURISDICTIONAL WETLAND IMPACTS	
PERMANENT SHORELAND IMPACT REF TO WB50	
PERMANENT SHORELAND IMPACT REF TO WB150	
TEMORARY SHORELAND IMPACT REF TO WB50	
TEMORARY SHORELAND IMPACT REF TO WB150	

SHORELAND IMPACT SUMMARY

LOCATION	AREAS (SF)			
	REF TO WB50 PERMANENT	REF TO WB50 TEMPORARY	WB50 TO NWB150 PERMANENT	WB50 TO NWB150 TEMPORARY
A				2007
B			605	
C				1759
D			225	
E		3427		
F	25			
G		4096		
H				5553
I			125	
Total	25	7523	955	9319

PERMANENT IMPACTS REF TO WB50	=	25	SF
TEMPORARY IMPACTS REF TO WB50	=	7,523	SF
PERMANENT IMPACTS WB50 TO NWB150	=	955	SF
TEMPORARY IMPACTS WB50 TO NWB150	=	9,319	SF
TOTAL SHORELAND IMPACT	=	17,822	SF

20 0 20 40
SCALE IN FEET

McFarland Johnson

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

SHORELAND PLAN

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCCESSED DATE
NEW DESIGN DATE
SHEET CHECKED DATE
AS BUILT DETAILS DATE

N

SLOPE LINE
PER NHDOT PLAN
PROJECT # S-2740

3
R3UB1H

SLOPE LINE
PER NHDOT PLAN
PROJECT # S-2740

"no parking
in front
of gate"

EXISTING R.O.W.

CLEAR ZONE

101+00

102+00

TO TAMWORTH

103+00

104+00

TO SANDWICH

105+00

106+00

EXISTING R.O.W.

cb

an

SLOPE LINE
PER NHDOT PLAN
PROJECT # S-2740

EXISTING R.O.W.

N/F
BERTON C. WILLARD &
SYLVIA R. WILLARD

gate

mtl
post

N/F
STATE OF NH
(D.N.C.R)
DIVISION OF FORESTS
AND LANDS
HENNESSEY STATE FOREST

1
BANK

2
BANK

SWIFT RIVER

SLOPE LINE
PER NHDOT PLAN
PROJECT # S-2740

EXISTING R.O.W.

wood
bridge

woods

20 0 20 40
SCALE IN FEET

McFarland Johnson

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

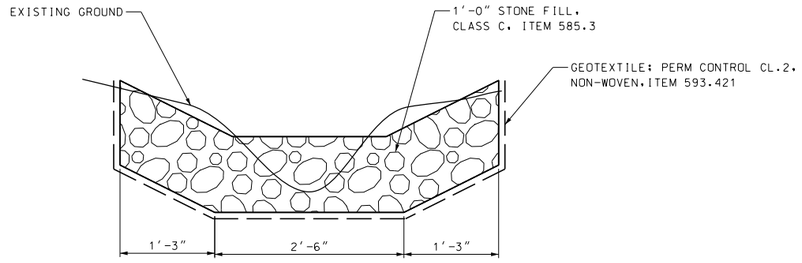
FINAL CONDITION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

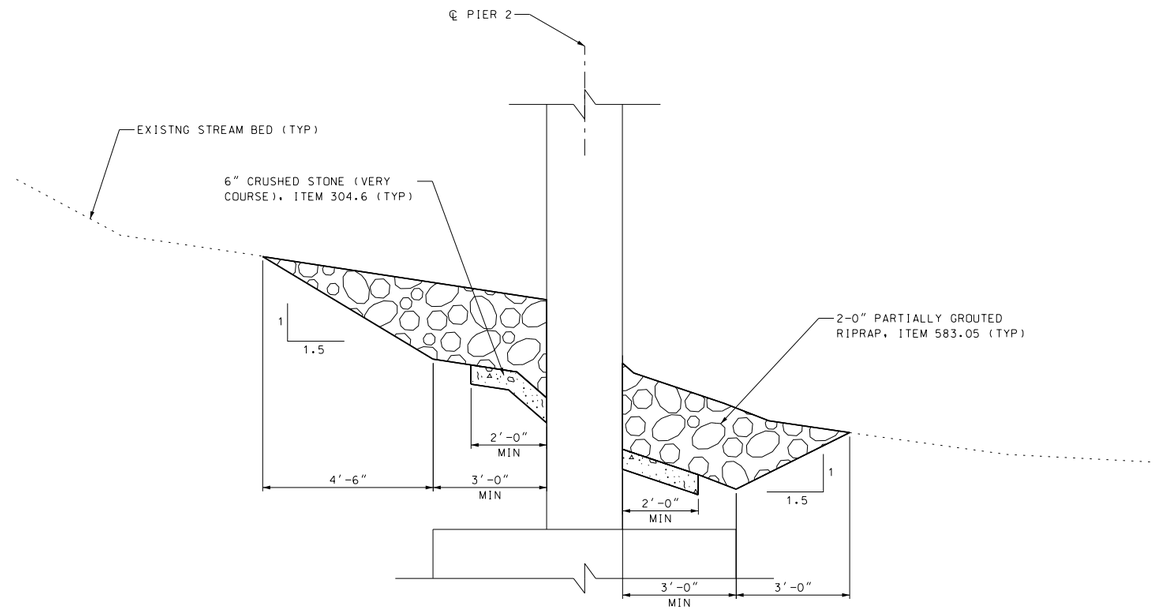
SDR PROCESSED	DATE
NEW DESIGN	DATE
SHEET CHECKED	DATE
AS BUILT DETAILS	DATE



STONE OUTLET PAD DETAIL

0 1/2 1 2

SCALE IN FEET

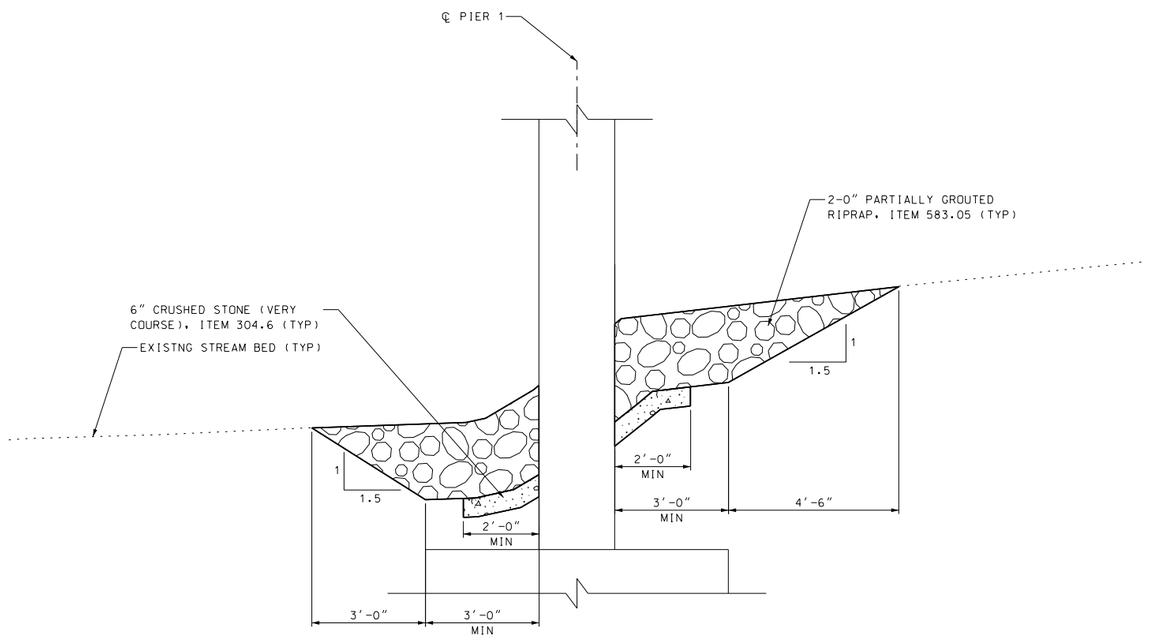


SECTION B-B

PIER 2

0 1 2 4

SCALE IN FEET



SECTION A-A

PIER 1

0 1 2 4

SCALE IN FEET

0 1 2 4

SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCCESSED	DATE	
NEW DESIGN	DATE	
SHEET CHECKED	DATE	
AS BUILT DETAILS	DATE	

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF BRIDGE DESIGN

SCOUR PROTECTION DETAILS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
41434 chnsec_01		7	9

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

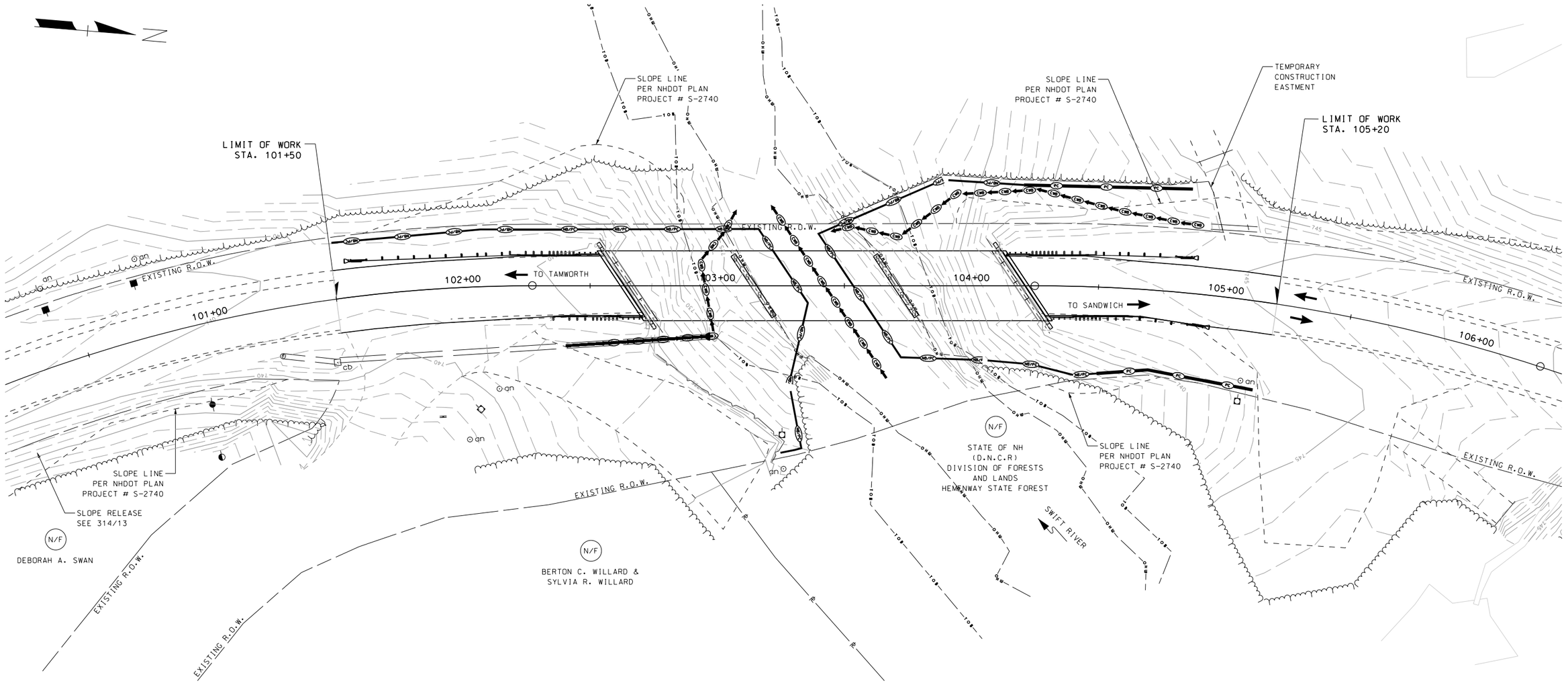
ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT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

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	41434 erostr		8	9



EROSION CONTROL PLAN LEGEND

- PERIMETER CONTROL
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- NATURAL BUFFER/PERIMETER CONTROL
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- CHANNEL PROTECTION
  - STONE CHECK DAMS
  - STRAW WATTLES
  - CHANNEL MATTING
  - CLASS D EROSION STONE
  - CLASS C STONE
- CLEAN WATER BYPASS
  - PUMP THROUGH PIPE
  - DRAIN THROUGH PIPE OR CHANNEL

NOTES

1. AREAS BEYOND THE ROW HAVE BEEN REVIEWED FOR JURISDICTIONAL WETLANDS. NO WETLANDS ARE LOCATED WITHIN 50' OF THE EXISTING ROW.

2. NO WORK SHALL BE CONDUCTED OUTSIDE OF THE EXISTING ROW UNTIL TEMPORARY CONSTRUCTION EASEMENTS HAVE BEEN OBTAINED.

3. ALL PROPOSED 2' CONTOURS MATCH EXISTING, THEREFORE ONLY THE EXISTING 2' CONTOURS ARE SHOWN FOR CLARITY.

4. THE CONCRETE WASHOUT AREA SHALL BE IN AN UPLAND & 20FT FROM ANY WETLANDS OR SURFACE WATERS IN ACCORDANCE WITH THE PROJECT PERMITS AND NHDES WETLAND RULES.

5. CONSTRUCTION MATS PLACED IN ACCORDANCE WITH NHDES WETLAND RULES.

6. THE NATURAL BUFFER/PERIMETER CONTROL SHALL BE PLACED IN A MANNER THAT ENSURES IT PASSES THE 2 YEAR STORM EVENT. THIS MAY REQUIRE STAGING OF THE PIER WORK TO INCREASE THE OPENING OF THE CLEAN WATER BYPASS. THE MEANS AND METHODS WILL BE DETERMINED BY THE CONTRACTOR.

20 0 20 40
SCALE IN FEET

McFarland Johnson

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

EROSION CONTROL PLAN

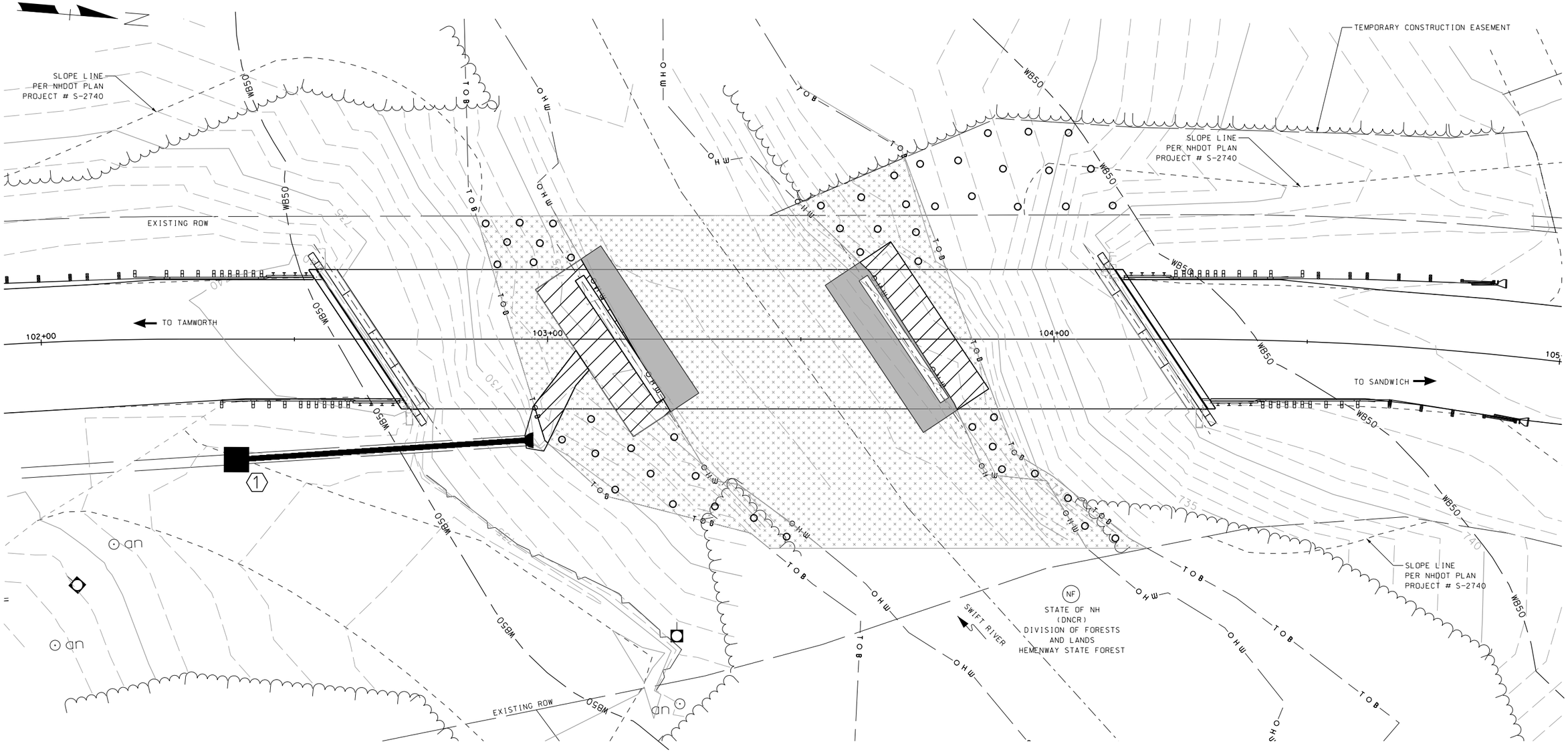
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
41434 eroplans		9	9

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCESSED DATE
NEW DESIGN DATE
SHEET CHECKED DATE
AS BUILT DETAILS DATE

Planting Plan



PLANTING PLAN

10 0 10 20

SCALE IN FEET

PLANT INVENTORY LIST
(INCLUDED IN ITEM 650.2 - LANDSCAPING)

SYMBOL	HEIGHT	QUANTITY	COMMON NAME	SCIENTIFIC NAME
O	3' - 4'	50	RED-OSIER DOGWOOD	CORNUS SERICEA

LEGEND

—— —OHW— —— DELINEATED ORDINARY HIGH WATER

—— —TOB— —— DELINEATED TOP OF BANK

PLANTING NOTES:

1. SEED DISTURBED SLOPES WITH SLOPE SEED (WF) TYPE 45, SUBSIDIARY TO ITEM 646.31.
2. STABILIZE DISTURBED SLOPES WITH WILDLIFE FRIENDLY ERROSION CONTROL MATTING (ITEM 645.44).
3. SEED ALL DISTURBED WETLAND AREAS WITH WET BASIN SEED, TYPE 62 SUBSIDIARY TO ITEM 646.31.
4. ALL PLANTINGS SHALL BE IN ACCORDANCE WITH SECTION 650 OF THE STANDARD SPECIFICATIONS.

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	STATION	DATE

SDR PROCCESSED DATE
NEW DESIGN DATE
SHEET CHECKED DATE
AS BUILT DETAILS DATE

McFarland Johnson

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF BRIDGE DESIGN

PLANTING PLAN

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
41434 Planting_Plan		1	1