Contractor:

_____

_____
Signature of Corporate Officer

_____ _____
Title Date

Town of Madbury, New Hampshire

Nute Road Bellamy River Crossing Replacement

CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

Issued for Bids
Month 2020

Prepared for:

Town of Madbury
13 Town Hall Road
Madbury, New Hampshire 03823

Prepared by:

CMA Engineers, Inc.
Civil | Environmental | Structural
35 Bow Street
Portsmouth, New Hampshire 03801

Town of Madbury, New Hampshire

Nute Road

Bellamy River Crossing Replacement

CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

Month 2020

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A. BIDDING DOCUMENTS

Invitation to Bid
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Bid Proposal
Bid Bond

INVITATION TO BID
Town of Madbury, New Hampshire
Nute Road Bellamy River Crossing Replacement

Sealed proposals for the Bridge Replacement over the Bellamy River at Nute Road in Madbury, New Hampshire will be received at the Town Office, 13 Town Hall Road ("the OWNER"), Madbury, New Hampshire, 03823 until **2:00 pm, Month DD, 2020**. Bids received after the specified time will not be accepted.

The project is located 0.4 miles south of the Barrington town line on Nute Road in the Town of Madbury, New Hampshire. The project begins approximately 175 feet south of NHDOT Bridge No. 056/072 and continues north through the bridge approximately 400 feet. The project consists of removal and replacement of an existing corrugated metal pipe (CMP) arch spanning the Bellamy River with a precast concrete butted deck beam structure founded on concrete abutments with concrete footings. At the structure, the channel will have a natural stream bed with riprap channel protection along the banks. The project includes installation of the bridge structure, reconstruction of the paved roadway with profile and alignment adjustments, installation of guardrail, slope protection, and other ancillary approach work.

Plans and specifications may be viewed at the offices of:

(1) CMA Engineers, Inc., 35 Bow Street, Portsmouth, NH 03801
(2) CMA Engineers, Inc., 1 Sundial Avenue, Suite 510N, Manchester, NH 03103
(3) Infinite Imaging, 933 Islington Street, Portsmouth, NH 03801

Copies of the plans and specifications may be obtained through the online plan room at Infinite Imaging http://planroom.infiniteimaging.com/

Bidders will be required to furnish a bid bond in the amount of 5% of the total bid, and the successful bidder will be required to furnish a Performance Bond and a Payment Bond each in the amount of 100% of the Contract Price. Work is anticipated to commence by Month DD, 20YY. Substantial Contract completion date shall be Month DD, 20YY. Final Contract completion date shall be Month DD, 20YY.

An optional pre-bid conference will be held at the project site on **Month DD, 20YY at 10:00 am**. Representatives of the Owner will be present to discuss the Project. Addenda, as considered necessary by the Owner, will be transmitted in response to questions arising at the pre-bid conference. Oral statements made at the pre-bid conference may not be relied on and will not be binding or legally effective.

The Owner reserves the right to waive any informalities in any or all proposals, to reject any or all proposals, or accept any proposal submitted for the project, as deemed by the Owner to be in its best interests based upon qualifications, experience, demonstrated ability to perform, cost, and other factors deemed by the Owner to bear on the successful outcome of the Contract.

INSTRUCTIONS TO BIDDERS

1. Bids for this project are DUE and will be OPENED at 2:00 p.m., on Month DD, 20YY at the Madbury Town Office, 13 Town Hall Road, Madbury, NH 03823. The active construction is anticipated to run between Month and Month 20YY. Bidders should note that the prices contained in the proposal will be considered valid for the duration of the construction project.

2. ESTIMATES OF QUANTITIES: The quantities listed herein for unit price items shall be considered as approximate. The bidders are encouraged to make their own quantity estimates in bid preparation. The bid items are based on the Plans and Specifications as presented herein and are irrespective of quantities of work.

   Unit prices in the Bid Proposal shall not be unbalanced. Unbalanced bids may be cause for rejection.

3. CONTRACT DOCUMENTS AND SITE OF WORK: Before submitting a proposal, the bidder shall examine carefully the Contract Documents and the site of the proposed work. He shall satisfy himself as to the character, quality and quantities of work to be performed and materials to be furnished. The submission of a proposal by a bidder shall be conclusive evidence that he has complied with these requirements. Claims for additional compensation due to variation between conditions actually encountered in construction and as indicated by the plans will not be allowed.

4. PREPARATION OF PROPOSAL: The bidder must submit his proposal on the Bid Proposal form included herein. The blank spaces for each item in the proposal forms shall be correctly filled in, by writing in words and numerals, in ink. The bidder must submit a price for each item in the proposal. In case of conflict between words and numerals, **the words shall govern**. The proposal shall be executed with ink in the complete and correct name of the individual, firm or corporation making the proposal and signed by the person or persons authorized to bind the individual, firm or corporation.

   The bidder shall properly acknowledge all addenda in the spaces provided therefore on the proposal form and acknowledge submission of all required bid documents as shown on the proposal form.

5. ADDENDA: Bidders desiring further information, or interpretation of the plans, specifications or other Contract Documents, must make a request for such information in writing to the ENGINEER, no later than seventy-two (72) hours before the bid opening. Answers to such requests will be given in writing to all bidders, in addendum form, and all addenda will be bound with, and made a part of the Contract Documents. No other explanation or interpretation will be considered official or binding. The ENGINEER will not be responsible for any other interpretations of the plans, specifications or Contract Documents. Should a bidder find discrepancies in, or omissions from, the plans, specifications or other Contract Documents, or should he be in doubt as to their meaning, he should at once notify the ENGINEER in order that a written addendum may be sent to all bidders. Any addenda issued prior to forty-eight (48) hours of the opening of bids will

be mailed or delivered to each pre-qualified CONTRACTOR contemplating the submission of a proposal on this work. The proposal as submitted by the CONTRACTOR will be so constructed as to include any addenda, if such are issued by the ENGINEER prior to forty-eight (48) hours of the opening of bids.

The OWNER reserves the right to postpone the bid opening date or time, without prior notice, as it deems to be in its best interests.

6. REJECTION OF PROPOSALS: Proposals containing any omission, alteration of form, additions or conditions not called for, incomplete bids or proposals otherwise regular which are not accompanied by acceptable proposal guaranty will be considered irregular and may be rejected. In case of any ambiguity or lack of clarity in stating the prices in the proposal, the OWNER reserves the right to consider the most advantageous construction thereof, or to reject the proposal. Unreasonable or unbalanced bid prices may be cause to reject any proposal.

7. PROPOSAL GUARANTY: Each proposal must be accompanied by a Cashier's or Certified Check, payable to the OWNER or an acceptable bid bond in the amount of not less than five percent (5%) of the total bid, payable to the OWNER as a guaranty that bidder will enter into a contract and furnish bonds on the forms provided within seven (7) days after Notice of Award of Contract to him.

8. DELIVERY OF PROPOSAL: Each completed proposal shall be placed together with the proposal guaranty, in an envelope sealed and clearly identified on the outside as a proposal to the OWNER and including the project title and name and address of the bidder. When sent by mail, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. Proposals will not be considered unless received at the place and on or before the time designated in the Invitation to Bid.

9. WITHDRAWAL OF PROPOSALS: Any bidder, upon his written request, will be given permission to withdraw his proposal no later than the time set for the opening thereof.

10. QUALIFICATION OF BIDDER: Bidders for the project shall be on the NHDOT's prequalified contractors list for Bridge Construction. Qualifications are to be established no later than 3 days prior to the Bid opening for this project. Bidders shall complete the Bidder Qualification Questionnaire at the end of this section and include with the bid. The qualifications, experience, and demonstrated ability to complete the work on time and as specified are of importance to the OWNER and will be given significant consideration in the selection of a bidder. Before being awarded the contract the bidder may be required to submit such evidence as the OWNER may require to establish his financial responsibility, experience and possession of such equipment as may be needed to prosecute the work in an expeditious, safe and satisfactory manner.

11. DISQUALIFICATION OF BIDDERS: The following are some of the causes which may be considered as sufficient for the disqualification of a bidder and the rejection of his proposal:
    - More than one proposal for the same work from an individual, firm, partnership or corporation.

- Evidence of collusion among bidders.
- Poor performance in the execution of work under previous contracts.
- For being in arrears on existing contracts, or having defaulted on a previous contract.

12. CONSIDERATION OF PROPOSALS: For the purpose of award, after the proposals are opened and read, the summation of the products of the approximate quantities shown in the proposal by the lump sum or unit bid prices will be considered the amount of the bid.

13. SUBMISSION OF POST BID INFORMATION: Upon request by the ENGINEER, selected bidders shall within two (2) calendar days thereafter submit the following:

(1) A designation of the work to be performed by the bidder with his own forces.

(2) A list of the names of the subcontractors or other persons or organizations (including those who are to furnish materials or equipment fabricated to a special design) proposed for such portions of the work. The bidder will be required to establish to the satisfaction of the OWNER the reliability and responsibility of the proposed subcontractors to furnish and perform such portions of the work.

Prior to the award of Contract, the OWNER will notify the bidder in writing if the OWNER, after due investigation, has reasonable and substantial objection to any person or organization on such list. If the OWNER has a reasonable and substantial objection to any person or organization on such list, and refuses in writing to accept such person or organization, the bidder may, at his option, withdraw his bid without forfeiture of bid security, notwithstanding anything to the contrary contained herein. If the bidder submits an acceptable substitute with an increase in his bid price to cover the difference in cost occasioned by such substitution, the OWNER may, at its discretion, accept the increased bid price or may disqualify the bidder. Subcontractors and other persons and organizations proposed by the bidder and accepted by the OWNER must be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the ENGINEER.

(3) A proposed work schedule demonstrating the Bidder's plan to complete the work in the required time frame.

14. AWARD OF CONTRACT: Only one Contract will be awarded for the work called for in the plans and specifications. The OWNER may choose to add any combination of Add-Alternates to the Base Bid for the purpose of awarding a contract as may be in the best interest of the OWNER. The basis of the award will be the total of items as enumerated on the Bid Form.

15. RETURN OF PROPOSAL GUARANTY: The proposal guaranty accompanying the proposal, may be retained until the Contract is awarded and the successful bidder executes the Contract and furnishes the required bonds, after which all proposal guaranties will be returned to the bidders.

16. EXECUTION OF CONTRACT AND BONDS: The Contract will include all Contract Documents. Within seven (7) days after award of the Contract, the successful bidder shall execute three (3) copies of the Contract, and furnish the OWNER with Performance and Payment Bonds each in the full amount of the Contract price executed by a surety company acceptable to the OWNER. The Bonds are to be furnished as a guaranty of the faithful performance of the work and for protection of the claimants for labor and materials.

17. FAILURE TO EXECUTE CONTRACT AND BONDS: Should the bidder to whom the Contract is awarded refuse or neglect to execute the Contract and furnish the required bonds within seven (7) days after notice of award of the Contract, at the option of the OWNER, the bidder's proposal shall be treated as withdrawn; and at the option of the OWNER the proposal guaranty shall become the property of the OWNER, not as a penalty, but as liquidated damages, or the OWNER may pursue any other action allowed by law.

END OF SECTION

EXHIBIT A

BID PROPOSAL

BIDDER:_____

PROJECT: Nute Road Bellamy River Crossing Replacement

OWNER: Town of Madbury, New Hampshire

The undersigned, hereafter referred to as the BIDDER has examined the Contract Documents prepared in connection herewith by CMA Engineers, Inc., the ENGINEER. In addition, he has examined the site and is familiar with all the conditions surrounding the Work contemplated. He hereby submits the following:

BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sums:

BID PROPOSAL

ITEM NO.	EST QTY	UNIT	ITEM DESCRIPTION WITH UNIT PRICE WRITTEN IN WORDS	UNIT PRICE (FIGURES)	EXTENDED TOTAL (FIGURES)
201.1	0.5	A	Clearing & Grubbing (F) _____dollars and_____cents	$	$
202.7	244	LF	Removal of Guardrail _____dollars and_____cents	$	$
203.1	690	CY	Common Excavation _____dollars and_____cents	$	$
203.6	40	CY	Embankment-in-Place (F) _____dollars and_____cents	$	$
207.1	320	CY	Common Channel Excavation _____dollars and_____cents	$	$

ITEM NO.	EST QTY	UNIT	ITEM DESCRIPTION WITH UNIT PRICE WRITTEN IN WORDS	UNIT PRICE (FIGURES)	EXTENDED TOTAL (FIGURES)
209.201	210	CY	Granular Backfill (Bridge) (F) _____dollars and_____cents	$	$
214	1	U	Fine Grading _____dollars and_____cents	$	$
304.2	430	CY	Gravel (F) _____dollars and_____cents	$	$
304.3	240	CY	Crushed Gravel (F) _____dollars and_____cents	$	$
403.11	230	TON	Hot Bituminous Pavement, Machine Method _____dollars and_____cents	$	$
403.12	5	TON	Hot Bituminous Pavement, Hand Method _____dollars and_____cents	$	$
403.6	900	LF	Pavement Joint Adhesive _____dollars and_____cents	$	$
403.911	6	TON	Hot Bituminous Bridge Pavement, 1" Base Course _____dollars and_____cents	$	$
417	50	SY	Cold Planing Bituminous Surfaces _____dollars and_____cents	$	$

ITEM NO.	EST QTY	UNIT	ITEM DESCRIPTION WITH UNIT PRICE WRITTEN IN WORDS	UNIT PRICE (FIGURES)	EXTENDED TOTAL (FIGURES)
502	1	U	Removal of Existing Bridge Structure _____dollars and_____cents	$	$
503.1	1	U	Water Diversion Structures _____dollars and_____cents	$	$
504.1	550	CY	Common Bridge Excavation (F) _____dollars and_____cents	$	$
504.2	5	CY	Rock Bridge Excavation _____dollars and_____cents	$	$
508	40	CY	Structural Fill _____dollars and_____cents	$	$
520.02	10	CY	Concrete Class AA, Above Footings (F) _____dollars and_____cents	$	$
520.03	40	CY	Concrete Class AA, Approach Slabs (F) _____dollars and_____cents	$	$
520.12	85	CY	Concrete Class A, Above Footings (F) _____dollars and_____cents	$	$
520.213	60	CY	Concrete Class B, Footings (On Soil) (F) _____dollars and_____cents	$	$

ITEM NO.	EST QTY	UNIT	ITEM DESCRIPTION WITH UNIT PRICE WRITTEN IN WORDS	UNIT PRICE (FIGURES)	EXTENDED TOTAL (FIGURES)
520.7002	20	CY	Concrete Bridge Deck (QC/QA) (F) _____dollars and_____cents	$	$
528.3115	970	SF	Prestressed Concrete Bridge Deck, Butted Deck Beams (F) _____dollars and_____cents	$	$
534.3	15	GAL	Water Repellent (Silane-Siloxane) _____dollars and_____cents	$	$
538.2	10	SY	Barrier Membrane, Peel and Stick – Vertical Surfaces (F) _____dollars and_____cents	$	$
538.5	150	SY	Barrier Membrane, Heat Welded (F) _____dollars and_____cents	$	$
541.4	45	LF	PVC Waterstops, NH Type 4 (F) _____dollars and_____cents	$	$
544.3	11400	LB	Reinforcing Steel, (Contractor Detailed) _____dollars and_____cents	$	$
544.31	7850	LB	Reinforcing Steel, Epoxy Coated (Contractor Detailed) _____dollars and_____cents	$	$
544.7	280	LB	Synthetic Fiber Reinforcement (F) _____dollars and_____cents	$	$

ITEM NO.	EST QTY	UNIT	ITEM DESCRIPTION WITH UNIT PRICE WRITTEN IN WORDS	UNIT PRICE (FIGURES)	EXTENDED TOTAL (FIGURES)
548.11	14	EA	Elastomeric Bearing Pads (F) _____dollars and_____cents	$	$
559.41	55	LF	Asphaltic Plug for Crack Control (F) _____dollars and_____cents	$	$
562.1	60	LF	Silicone Joint Sealant (F) _____dollars and_____cents	$	$
563.3	120	LF	Bridge Rail T101 _____dollars and_____cents	$	$
585.2	210	CY	Stone Fill, Class B _____dollars and_____cents	$	$
593.411	430	SY	Geotextile; Perm Control, CL.1, Non-Woven _____dollars and_____cents	$	$
606.12551	4	U	Beam Guardrail (Terminal Unit Type EAGRT, TL 2, 25')(Steel Post) _____dollars and_____cents	$	$
606.1285	4	U	Beam Guardrail (Bridge Approach Unit) _____dollars and_____cents	$	$
606.18001	225	LF	31" W-Beam Guardrail With 8" Offset Block (Steel Post) _____dollars and_____cents	$	$

ITEM NO.	EST QTY	UNIT	ITEM DESCRIPTION WITH UNIT PRICE WRITTEN IN WORDS	UNIT PRICE (FIGURES)	EXTENDED TOTAL (FIGURES)
609.01	40	LF	Straight Granite Curb _____dollars and_____cents	$	$
619.1	1	U	Maintenance of Traffic _____dollars and_____cents	$	$
628.2	190	LF	Sawed Bituminous Pavement _____dollars and_____cents	$	$
645.531	500	LF	Silt Fence _____dollars and_____cents	$	$
645.7	1	U	Storm Water Pollution Prevention Plan _____dollars and_____cents	$	$
645.71	50	HR	Monitoring SWPPP and Erosion and Sediment Controls _____dollars and_____cents	$	$
646.51	240	SY	Turf Establishment with Mulch, Tackifiers and Loam _____dollars and_____cents	$	$
692	1	U	Mobilization _____dollars and_____cents	$	$
1008.9	5000	$	Alterations and Additions as Needed – Testing of Materials _____dollars and_____cents	$	$

Total Bid Price

(Figures) _____

(Written) _____

dollars and _____ cents

The Bidder agrees to **add** or **deduct** work required by the Owner or Engineer for the above mentioned Lump Sum prices (as applicable).

The undersigned, as Contractor herein referred to as singular and masculine declares as follows:

(1) The only parties interested in the BID as Principals are named herein;

(2) This BID is made without collusion with any other person, firm, or corporation;

(3) The Bidder has carefully examined the site of the proposed work and is fully informed and is satisfied as to the conditions there existing, the character and requirements of the proposed Work, and the difficulties attendant upon its execution. The Bidder has carefully read and examined the Drawings, the proposed AGREEMENT and the Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;

(4) The Bidder understands the information relative to subsurface and other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) has been furnished only for his information and convenience without any warranty or guarantee, expressed or implied, that the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface or subsurface) actually encountered will be the same as those shown on the Drawings or in any other Contract Documents and he agrees that he shall not use or be entitled to use such information made available to him through the Contract Documents or otherwise obtained by him in his own examination of the site, as a basis of or ground for any claim against the Owner or Engineer arising from or by reasons of any variance which may exist between the aforesaid information made available to, or otherwise obtained by, him and the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered during the construction work, and he has made due allowance therefore in the BID;

(5) He understands that all reports of investigations and tests of subsurface physical conditions at the site and other information affecting the

performance of the Work which have been relied upon by the Engineer in preparation of the Drawings and Specifications are not guaranteed as to accuracy or completeness and are not part of the Contract Documents.

(6) And he understands that the quantities of work tabulated in this Proposal and indicated on the Drawings and in the Specifications and other Contract Documents are approximate and are subject to increase or decrease as deemed necessary by the Engineer, and as allowed for under the Contract Documents.

The undersigned agrees that for extra work, if any, authorized in writing by the Engineer to be performed by him in accordance with the terms and provisions of the Agreement, he will accept compensation as stipulated in the Contract Documents in full payment for such extra work, and agrees that for reductions in work as directed by the Engineer, he will accept reduced compensation as stipulated in the Contract Documents.

If this Bid Proposal is accepted by the Owner, the undersigned agrees to substantially complete the work in accordance with the schedule for substantial completion of work per the Special Conditions, provided to be done under the Contract, and accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete any element of the work on time, except as otherwise expressly provided in the AGREEMENT.

The Bidder hereby agrees that, once opened, he will not withdraw this Bid within 90 days of Bid opening, and that if the Owner shall accept this Bid, the Bidder will duly execute the Contract and provide BONDS as provided in paragraph 14 of Instructions to Bidders.

Respectfully Submitted:

_____ Company Name

By: _____ _____
Name (Printed) Address

_____ _____
Title Address

_____ _____
Signature Date

(SEAL if Proposal is by a Corporation)

_____
Attest

ADDENDA

The BIDDER acknowledges receipt of the following Addenda*

No. _____Dated

No. _____Dated

No. _____Dated

No. _____Dated

No. _____Dated

No. _____Dated

** to be filled in as appropriate*

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, as Principal, and _____ as Surety, are Hereby held and firmly bound unto Town of Madbury, New Hampshire as OWNER in the penal sum of 5% of Bid for the Nute Road Bellamy River Crossing Replacement for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 2020.

The Condition of the above obligation is such that whereas the Principal has submitted to _____ a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (Properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise, the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____ (L.S.)

Principal

Surety

By:

IMPORTANT - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state of New Hampshire.

B. SPECIAL CONDITIONS

SPECIAL CONDITIONS

The following conditions modify, change, delete or add to the "Division 100 - General Provisions (NHDOT Standard Specifications)", where any part of the NHDOT General Provisions are modified or voided by these Sections, the NHDOT General Provisions shall be superseded by these project specific general provisions. Unaltered sections of the NHDOT General Provisions shall remain in effect.

I. CONSTRUCTION INTENT

The project is located 0.4 miles south of the Barrington town line on Nute Road in the Town of Madbury, New Hampshire. The project begins approximately 175 feet south of NHDOT Bridge No. 056/072 and continues north through the bridge approximately 400 feet. The project consists of removal and replacement of an existing corrugated metal pipe (CMP) arch spanning the Bellamy River with a precast concrete butted deck beam structure founded on concrete abutments with concrete footings. At the structure, the channel will have a natural stream bed with riprap channel protection along the banks. The project includes installation of the bridge structure, reconstruction of the paved roadway with profile and alignment adjustments, installation of guardrail, slope protection, and other ancillary approach work.

II. CONTRACT TIME

The substantial completion date for the project with the bridge re-opened to traffic shall be Month DD, YYYY. The final completion date for the project shall be Month DD, YYYY.

III. PROJECT TECHNICAL SPECIFICATIONS

NHDOT Standard Specifications for Road and Bridge Construction, 2016 as modified by the most recent Errata and Supplemental Specifications available from NHDOT (http://www.nh.gov/dot/org/projectdevelopment/highwaydesign/specifications/) at the bid due date, and the Special Provisions herein, shall be used for description, materials, construction requirements, method of measurement, and basis of payment. See Special Attentions in Part E for listings of Errata and Supplemental Specifications.

Substitute "CMA Engineers, Inc." for "Engineer", "Department", "State", "Bureau of Bridge Design", "Bureau of Materials and Research", "NHDOT Compliance Review Officer" or similar, throughout the specifications.

IV. SURVEY LAYOUT & CONTROL

Bench marks and horizontal control points for the CONTRACTOR to lay out the work have been established and are shown on the Plans.

The CONTRACTOR shall be responsible for the preservation of all bench marks and control points. If any of the control points are disturbed by the CONTRACTOR during the construction, the CONTRACTOR shall replace them at no expense to the OWNER. Damaged or destroyed points, bench marks or stakes, or any reference points damaged or made inaccessible by the progress of the construction shall be replaced or transferred by

the CONTRACTOR, subject to verification by the ENGINEER. Replacement of any layout points shall be performed by or under the direction of a NH Licensed Land Surveyor.

The CONTRACTOR shall perform all necessary layout work in order to construct all elements of the Project as shown on the Plans and specified in the Contract. This work shall include, but shall not be limited to, stakeout necessary to establish lines and grades as earthwork operations progress; stakeout, layout and elevations as required for installing culverts; and other items included in the work.

The CONTRACTOR shall perform all required layout work with competent, qualified personnel in a manner consistent with the current survey/layout practices and acceptable to the ENGINEER. Any error, apparent discrepancy, or absence of data in the initial layout shall be referred to the ENGINEER in writing for correction or interpretation. The CONTRACTOR is solely responsible for the accuracy of the Work.

The ENGINEER may check all or any portion of the layout and stake out made by the CONTRACTOR. Any necessary correction to the Work shall be made immediately by the CONTRACTOR. Such checking by the ENGINEER will not relieve the CONTRACTOR of any responsibilities for the accuracy or completeness of the work.

No claim will be considered because of alleged inaccuracies unless the CONTRACTOR notifies the ENGINEER thereof in writing immediately upon discovery of the alleged inaccuracies and affords the ENGINEER opportunity to check or verify the control in question.

V. STAGING/PROCESSING & MATERIAL STOCKPILE AREAS

The CONTRACTOR shall locate and secure one or more areas in the vicinity of the culvert crossing for staging, management of dewatering operations, material processing, and stockpiling, as needed. All areas to be secured by the CONTRACTOR must be approved in advance by the OWNER. Contractor shall provide a Hold Harmless Release to the OWNER prior to start of use of each area. The CONTRACTOR shall prepare each area as necessary and install all erosion control devices to meet NHDES standards. The CONTRACTOR shall stockpile, handle, and transport materials to preserve their quality and fitness for the Work. Materials shall also be stored to facilitate inspection and may be subject to inspection and retesting before incorporation in the Work. At the completion of work, the CONTRACTOR shall return all areas to pre-existing conditions to the satisfaction of the property owner(s), the OWNER, and the ENGINEER. The CONTRACTOR shall receive a release from the property owner(s) of the area(s) and a copy of each release shall be provided to the OWNER prior to final acceptance of the project.

VI. ACCESS & TRAFFIC CONTROL DURING CONSTRUCTION

CONTRACTOR is advised of the Detour Plan included in the drawings and in Part E, Technical Specifications herein. The CONTRACTOR shall exercise caution and comply with all applicable traffic laws and regulations in the prosecution of work. The CONTRACTOR shall coordinate activities with the Town Police and Fire Departments

notifying them of the road closures during construction at least fourteen (14) days in advance of closure.

The CONTRACTOR shall provide access to all driveways within the project areas throughout construction and ensure emergency equipment has access to all cisterns, dry hydrants, and residences during the construction period.

It is intended that the roads will be closed to traffic during construction necessitating the establishment of detour routes including an appropriate signing package. Minimum measures are included in the drawings. The CONTRACTOR is responsible for all signage relating to the detour and road closure.

CONTRACTOR is to coordinate the placement of any permanent construction signs prior to erecting any such signing or commencing with any work under this Contract.

VII. COORDINATION WITH UTILITIES

A. General

There are utilities in the project area belonging to, but not limited to, those indicated below.

Company: **Eversource** Address: 1700 Lafayette Road Portsmouth, NH 03801 Contact: _____ Phone: (___) ___-___ Email: _____@_____	Company: **Consolidated Communications** Address: 1575 Greenland Road Greenland, NH 03840 Contact: Melissa Auclair Email: Melissa.Auclair@consolidated.com
Company: **Comcast** Address: 334B Calef Highway Epping, NH 03842 Contact: _____ Phone: (___) ___-___ Email: _____@_____	

B. Coordination with Utilities

Utility facilities and appurtenances within the construction limits are shown on the Plans. Facilities which are required to be relocated shall be relocated or adjusted by the utility, unless otherwise specified. The locations of these utilities shown on the Plans may not be exact. The CONTRACTOR's work procedures are to account for the inaccuracy inherent in the representation of their location.

New Hampshire, RSA 374:48-56, requires that anyone who excavates in a public way or utility easement must notify the utility damage prevention system, DIG-SAFE, at least 72 hours prior to starting work.

The CONTRACTOR shall be responsible to notify the DIG-SAFE Call Center (tel. no. 1-800-225-4977) at least 72 hours in advance of starting any excavation or erecting

permanent construction signing. Saturdays, Sundays, and legal holidays are not to be included in the computation of the required 72 hour notice.

Notice of intent to excavate cannot be made more than 30 days prior to actual work. All utility facilities within the proposed Work, including advance construction sign locations, should be identified and marked prior to construction. Suspension of the Work for more than 30 days at any time will require re-notification of the DIG-SAFE Center to ensure validity of markings and to protect interim utility construction.

The CONTRACTOR shall additionally notify municipal and privately owned utilities to identify, locate, and mark their facilities separately from those to be located through the DIG-SAFE system.

Once located and marked, the CONTRACTOR shall maintain all utility markings and provide access to any and all installations to permit repairs and maintenance of service as needed.

The CONTRACTOR shall cooperate with utility OWNERs in the removal and rearrangement of underground or overhead utility facilities to minimize interruption to utility services and duplication of work by the utility OWNERs.

Facilities or appurtenances that are to remain in place during construction shall be accounted for and protected by the CONTRACTOR's work procedures. The fact that any underground facility is not shown upon the plans shall not relieve the CONTRACTOR of its responsibility under this Section.

In the event utility services are interrupted as a result of damage within the Limits of Construction, the CONTRACTOR shall notify the appropriate utility authorities and cooperate with them until service has been restored.

Repairs to damaged utilities caused by the CONTRACTOR shall be corrected at the CONTRACTOR's expense. The damaged facilities shall be restored to a condition similar or equal to that existing before the damage occurred.

C. Prosecution and Progress

Unless otherwise addressed in these Contract Documents, there will be no additional compensation or claims of delay granted by the OWNER for complications or conflicts that may arise between the CONTRACTOR and utility companies during construction. The CONTRACTOR shall plan and coordinate his work accordingly so as to avoid/minimize any potential scope or scheduling conflicts.

D. Utility Relocation(s)

Eversource (pole maintainer), Consolidated Communications, and Comcast have existing aerial facilities in the project area. There is work in close proximity to existing poles and overhead utilities which will require close coordination with all

involved utilities. All utility poles and overhead relocations will occur prior to start of construction.

As noted on the plans, overhead utilities will need to be relocated as a result of this project. This work will include the relocation of the connecting lines between pole PSNH/321/40 and pole PSNH/321/41.

VIII. PROTECTION OF PROPERTY

The CONTRACTOR shall take the necessary precautions to avoid any damage to existing trees, shrubs, lawns, plantings, mail boxes, utility poles, property boundaries, fences, and private property. Should any damage occur, the CONTRACTOR shall be responsible to repair/replace the damaged items to the satisfaction of the OWNER and the Property OWNER.

The CONTRACTOR shall not enter private property without first obtaining permission from the Property OWNER(s).

IX. ORDER OF WORK

A detailed construction schedule showing the sequence and duration of the components of work and expected payment schedule shall be submitted by the CONTRACTOR prior to start of work. The schedule shall identify the work items on the critical path and shall demonstrate how substantial completion will be reached within the specified contract time. The CONTRACTOR shall provide an updated schedule showing the progress of the work related to the original schedule with each monthly payment application.

The construction schedule will show submittal dates for required shop drawings, product data and samples, and product delivery dates. The Construction Schedule shall include reasonable time for the ENGINEER to review the required submittals, review survey information, confirm the final roadway elevations, and complete the quality assurance specified in the Contract. Once reviewed by the ENGINEER, the construction schedule shall be followed; permission for deviations from the schedule shall be requested in writing.

Review by the ENGINEER of this schedule shall have no effect on the CONTRACTOR's responsibility to perform the work within the contract time. No permission for deviation granted shall allow the delay of Substantial Completion, unless specifically addressed by Change Order.

X. SAMPLES AND TESTING

The CONTRACTOR shall identify all the sources and provide all required testing results for all materials, as required by the specifications, to the ENGINEER for review prior to incorporating the material in the work. The CONTRACTOR shall plan operations to allow adequate time for the ENGINEER to review test results. No materials will be placed without review by the ENGINEER. All field and laboratory tests shall be paid for by the CONTRACTOR as well as any costs of retesting required as a result of failure to meet

project requirements. All field and testing work shall be performed by a qualified firm approved by the ENGINEER.

XI. MATERIAL CERTIFICATIONS

The CONTRACTOR shall submit material test reports, product specifications, or shop drawings for all materials which are used on the project. The CONTRACTOR shall provide a Certificate of Compliance for all materials that are to be permanently incorporated into the Work for which there is no prescribed schedule of acceptance testing by the Engineer. The Certificate of Compliance shall be in a form acceptable to the Engineer, NHDOT form Section 106.04 – Certificate of Compliance, is acceptable. The CONTRACTOR shall include three (3) copies of each submittal, one (1) for the ENGINEER, one (1) for the OWNER, and one (1) for the CONTRACTOR for approval.

XII. CONTRACTOR'S EMERGENCY SERVICE

The CONTRACTOR must make satisfactory arrangements with the OWNER to service emergencies or complaints which may occur at night, over the weekend, or when the job is shut down. If the CONTRACTOR does not, the OWNER may make arrangements and the cost will be charged to the CONTRACTOR.

XIII. REGULAR PROJECT MEETINGS

The ENGINEER will conduct regular Project Meetings approximately bi-weekly with the CONTRACTOR throughout the construction period to enable orderly review of the progress of the Work and provide for a systematic discussion of issues or problems.

The persons designated by the CONTRACTOR to participate in these meetings shall have the authority required to commit the CONTRACTOR to solutions agreed upon at Project Meetings.

XIV. DEFINITIONS

New Hampshire Department of Transportation "Standard Specifications for Road and Bridge Construction" (latest edition) shall be referred to as NHDOT Specifications herein.

The OWNER of the project is the Town of Madbury, New Hampshire.

XV. USE OF EXPLOSIVES

Use of explosives is not permitted on this project.

XVI. CONSTRUCTION SEQUENCE

The work is proposed to be completed over one construction season and by the dates indicated. The following preliminary, anticipated schedule has been established in order to ensure that work will be completed in the allotted contract time. This schedule will be confirmed at the time of execution of the Contract and will be used as the basis for the CONTRACTOR's detailed construction schedule:

- Award of Contract: Month DD, 2020
- Execution of Contract: Month DD, 2020
- Start of Contract Time/Work: Month DD, 2020
- Substantial Completion: Month DD, 2020
- Final Completion: Month DD, 2020

The dates indicated are subject to change.

The following construction sequence is a typical guideline for the work to be completed:

1) Install road/lane closure signs and barriers, temporary water diversion device(s), and erosion control.
2) Verify horizontal and vertical datum.
3) Coordinate with Eversource, Consolidated Communications, and Comcast regarding utilities.
4) Sawcut pavement and remove existing guardrail within project limits.
5) Excavate and remove existing grade beams, slab on grade, and pipe arch.
6) Form, install reinforcing, and cast footings.
7) Form, install reinforcing, and cast abutments.
8) Form, install reinforcing, and cast wing walls.
9) Backfill using proper compaction techniques.
10) Perform channel work and install riprap.
11) Place precast prestressed deck beams and install grout and post-tensioning.
12) Form, install reinforcing, and cast deck overlay, brush curbs, and both closure pours.
13) Form, install reinforcing, and cast approach slabs.
14) Install bridge rail.
15) Install slope protection.
16) Remove temporary diversion devices.
17) Construct road as shown in plans, including guardrail.
18) Install loam and seed over all disturbed areas.
19) Remove all erosion control devices

XVII. DEWATERING

The CONTRACTOR will be responsible for all costs associated with dewatering the construction site. Possible methods of dewatering are a temporary bypass culvert or pumping. The CONTRACTOR is not limited to these methods. The CONTRACTOR is directed to the conditions of the enclosed NHDES Dredge / Fill permit for requirements of sediment basins for dewatering discharges.

XVIII. SUBSTANTIAL COMPLETION

At a minimum, the following items must be completed prior to the issuance of a Certificate of Substantial Completion:

- Installation of precast prestressed deck beams, deck overlay, bridge rail, and guardrail
- Placement of gravels and base course pavement
- Placement of loam and seed

XIX. PRE-CONSTRUCTION VIDEO

A pre-construction video of the entire construction site, including all areas within the scope of work and stockpile/staging areas, shall be recorded and provided to the ENGINEER by the CONTRACTOR prior to the start of work. The video shall be supplied in DVD format. Three (3) copies shall be provided, one each to the OWNER, ENGINEER, and CONTRACTOR.

XX. PERMITS

The Town of Madbury has received the wetland permit (# 2020-00825) to complete all work shown in the plans. The CONTRACTOR shall conduct the construction operations to be in conformance with the permit conditions and within the specified impact areas indicated in the proposal.

XXI. TEMPORARY EROSION CONTROL AND STREAM DIVERSIONS

The CONTRACTOR shall employ best management practices and proper erosion control measures to prevent sediment from entering the river. Prior to commencing with any construction activities, the CONTRACTOR shall submit to the ENGINEER: (1) a project-specific Erosion and Sediment Control Plan (ESCP) which also details the methods and timing of any river diversions, and (2) the CONTRACTOR'S construction sequence schedule. No construction work shall begin on this project until the ESCP/River Diversion plan has been approved by the ENGINEER. All steps of the ESCP must be followed and properly installed and maintained until the project has been completed, ground has been stabilized, and the Town or its representative has approved the final construction product.

XXI. INSURANCE

Insurance limits shall be provided by the CONTRACTOR and its subcontractors as defined in the Supplementary Conditions Section SC 5.16.

Workers' Compensation and Employers Liability: Statutory

The certificate holder (Town of Madbury, 13 Town Hall Road, Madbury, NH 03823) shall be named as a named insured. Should any of the policies described above be canceled before the expiration date of the policy, the issuing company shall give the certificate holder 30 days written notice via mail. The expiration date of the policy shall be after the completion of the project.

The CONTRACTOR shall provide Certificates of Insurance for all subcontractors to the Town prior to the subcontractor beginning work. The limits of liability insurance for

subcontractors shall be the same as for the CONTRACTOR.

XXII. DISPOSAL OF SURPLUS MATERIALS

Surplus excess material not required for use on the project shall be legally disposed of by the CONTRACTOR in conformance with all applicable State or local regulations outside of and away from the project site. There will be no additional compensation to load, transport, or dispose of surplus materials. If the CONTRACTOR chooses, he may utilize the Town disposal location at the Transfer Station (25 Pudding Hill Road) which is approximately a 4.5 mile haul south of the project site. The Town will accept rock, gravel, and fill from the project site. The town will not accept pavement or concrete.

Any existing usable cut granite shall be salvaged to the Town of Madbury. The Contractor shall contact Jay Moriarty, Madbury Road Agent (Tel. (603) 742-5131) 2 weeks prior to availability of materials. The Contractor shall deliver all materials to 25 Pudding Hill Road, as required.

The CONTRACTOR is responsible for disposal of all other materials.

END OF SECTION

C. CONTRACT DOCUMENTS

Notice of Award
Agreement
Construction Performance Bond
Construction Payment Bond
Notice to Proceed
Application for Payment
Waiver of Liens
Change Order
Certificate of Substantial Completion
Consent of Surety to Final Payment
Contractors Final Lien Waiver
Certificate of Final Completion
Contractor's Affidavit
Contractor's Release
Work Change Directive

NOTICE OF AWARD

Dated: _____

TO:	
ADDRESS:	
OWNER'S CONTRACT NO.:	
CONTRACT FOR:	Nute Road Bellamy River Crossing Replacement

You are notified that your Bid dated _____ for the above Contract has been considered. You are the apparent Successful Bidder and have been awarded a contract for Nute Road Bellamy River Crossing Replacement.

The Contract Price of your contract is: $_____.

Three (3) copies of each of the proposed Contract Documents and Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions within seven (7) days of the date of this Notice of Award, that is by (_____).

1. You must deliver to the OWNER three (3) fully executed counterparts of the Agreement including all the Contract Documents. This includes the three sets of Drawings. Each of the Contract Documents must bear your signature on the cover.

2. You must deliver with the executed Agreement, the Contract Security (Bonds) as specified in the Instructions to Bidders, General Conditions, and Supplementary Conditions.

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid in default, to annul this Notice of Award and to declare your Bid Security forfeited.

Within seven (7) days after you comply with the above conditions, OWNER will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

Town of Madbury, NH

(OWNER)

By:

(AUTHORIZED SIGNATURE)

(TITLE)

AGREEMENT
BETWEEN OWNER AND CONTRACTOR
ON THE BASIS OF A STIPULATED PRICE

THIS AGREEMENT is dated as of the _____ day of _____ in the year 20___ by and between Town of Madbury, New Hampshire (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Nute Road Bellamy River Crossing Replacement

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

The project is located 0.4 miles south of the Barrington town line on Nute Road in the Town of Madbury, New Hampshire. The project begins approximately 175 feet south of NHDOT Bridge No. 056/072 and continues north through the bridge approximately 400 feet. The project consists of removal and replacement of an existing corrugated metal pipe (CMP) arch spanning the Bellamy River with a precast concrete butted deck beam structure founded on concrete abutments with concrete footings. At the structure, the channel will have a natural stream bed with riprap channel protection along the banks. The project includes installation of the bridge structure, reconstruction of the paved roadway with profile and alignment adjustments, installation of guardrail, slope protection, and other ancillary approach work.

Article 2. ENGINEER

The Project has been designed by CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

who is hereinafter called ENGINEER and who is to act as OWNER'S representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIMES

3.1 The Work will be substantially completed by Month DD, 20YY and completed and ready for final completion in accordance with paragraph 14.13 of the General Conditions by Month DD, 20YY.

3.2 *Liquidated Damages.* OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER per the schedule in Section 108 of the Standard Specifications as amended by this project for each calendar day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment or any proper extension thereof granted by OWNER.

3.3 Liquidated damages includes the cost of engineering and resident project representative for each day that expires after the time specified for substantial completion or final completion.

Article 4. CONTRACT PRICE

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 4.1 below:

4.1 SEE ATTACHED BID PROPOSAL (Exhibit A)

TOTAL OF ALL LUMP SUM AND UNIT PRICES:

_____

(use words)

$_____ (dollars)

As provided in paragraph 11.9 of the General Conditions estimated quantities are not guaranteed, and determinations of actual quantities and classification are to be made by ENGINEER as provided in paragraph 9.10 of the General Conditions. Unit prices have been computed as provided in paragraph 11.9.2 of the General Conditions.

Article 5. PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.1 *Progress Payments.* OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, each month during construction less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions. All such payments will be measured by the schedule of values established in paragraph 2.9 of the General Conditions (and in the case of Unit Price Work based

on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

5.2 *Final Payment.* Upon acceptance of the Work in accordance with paragraph 14.13 of the General Conditions. Owner shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.13.

5.3 A one-year correction period shall begin on the date of Substantial Completion during which the OWNER may request repairs by the CONTRACTOR at no additional cost.

5.4 No retainage (0%) shall be held on progress payments.

Article 6. INTEREST

All moneys not paid when due, as provided in Article 14 of the Modified Standard General Conditions, shall accrue interest at the maximum rate allowed by law at the place of the project. Interest shall only accrue on uncontested portions of moneys not paid in accordance with Article 14 and shall not accrue on contested portions of moneys not paid.

Article 7. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1. CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data".

7.2 CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

7.3 CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

7.4 CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site identified in the Supplementary Conditions as provided in paragraph 4.2.1 of the General Conditions. CONTRACTOR accepts the determination set forth in paragraph SC-4.2 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which CONTRACTOR is entitled to rely as provided in paragraph 4.2 of the General Conditions. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR's purposes. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for have done so) all such additional supplementary examinations, investigations,

explorations, tests, studies and data concerning conditions at or contiguous to the site or otherwise which may affect, cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

7.5. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.

7.6. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

7.7 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

Article 8. CONTRACT DOCUMENTS

The Contract documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

8.1. This Agreement (pages 1 to 6, inclusive).

8.2. Bid Proposal as Exhibit A

8.3. Performance and Payment Bonds identified as Exhibits B and C.

8.4 Notice of Award

8.5. Notice to Proceed.

8.6. General Conditions (pages 1 to 46, inclusive).

8.7. Supplementary Conditions (pages 1 to 18, inclusive).

8.8. Drawings consisting of a cover sheet and sheets numbered 1 through 23, inclusive with each sheet bearing the following general title: Nute Road Bellamy River Crossing Replacement.

8.9. Addenda numbers ____ to ____, inclusive.

8.10. Documentation submitted by CONTRACTOR prior to Notice of Award.

8.11. Technical Specifications.

8.12. Special Conditions.

8.13. Standard Specifications for Road and Bridge Construction of the New Hampshire Department of Transportation, latest edition, with Errata Sheet and all applicable Supplementary Specifications.

8.14. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the contract Documents pursuant to paragraphs 3.5 and 3.6 of the General Conditions.

The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are not Contract Documents other than those listed above in this Article. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.5 and 3.6 of the General Conditions.

Article 9. MISCELLANEOUS

9.1. Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

9.2. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

9.4 Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

9.5 OTHER PROVISIONS

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed, initialed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

This Agreement will be effective on _____, 20___ (which is the Effective Date of the Agreement).

OWNER Town of Madbury, New Hampshire

By: _____

Attest _____

Address for giving notices:

_____

_____

_____

(If OWNER is a public body, attach evidence of authority to sign and resolution or other document authorizing execution of Agreement.

CONTRACTOR_____

By: _____

Attest _____

Address for giving notices:

_____

_____

_____

[CORPORATE SEAL]
(If CONTRACTOR is a corporation, attach evidence of authority to sign).

EXHIBIT B

Construction Performance Bond

Any singular reference to Contractor, surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

CONSTRUCTION CONTRACT
Date:
Amount:
Description (Name and Location):

BOND
Date (Not earlier than Construction Contract Date):
Amount:
Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)

Signature:
Name and Title:

SURETY
Company: (Corp. Seal)

Signature:
Name and Title:

CONTRACTOR AS PRINCIPAL
Company: (Corp. Seal)

SURETY
Company: (Corp. Seal)

EJCDC No. 1910-28A (1984 Edition)
Prepared through the joint efforts of The Surety Association of America, Engineers' Joint Contract Documents Committee. The Associated General Contractors of America, and the American Institute of Architects.

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs. executors. administrators, successors and assigns to the Owner for the performance of the Construction Contract. which is incorporated herein by reference. *

2. If the Contractor performs the Construction Contract. the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3. 1.

3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

3.1. The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below. that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner. the Contractor and the Surety agree. the Contractor shall be allowed a reasonable time to perform the Construction Contract. but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default: and

3.2. The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1: and

3.3. The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.

4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1. Arrange for the Contractor. with consent of the Owner, to perform and complete the Construction Contract, or

4.2. Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the owner resulting from the Contractor's default; or

4.4. Waive its right to perform and complete arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to the Owner and. as soon as practicable after the amount is determined, tender payment therefor to the Owner; or

2. Deny liability in whole or in part and notify the Owner citing reasons therefor.

5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

6. After the Owner has terminated the Contractor's right to complete Construction Contract, and if the Surety elects to act under Subparagraph 4.1., 4.2., or 4.3 above. then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract. and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract. the Surety is obligated without duplicate for:

6.1. The responsibilities of the Contractor for correction of defect work and completion of the Construction Contract;

6.2. Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions failure to act of the Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified, the Construction Contract, actual damages caused by delay performance or non-performance of the Contractor.

7. The Surety shall not be liable to the Owner or others for obligation the Contractor that are unrelated to the Construction Contract, and Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on Bond to any person or entity other than the Owner or its heirs, executed administrators, or successors, or assigns.

8. The Surety hereby waives notice of any challenge. including change time, to the Construction Contract or to related subcontracts purchase orders and other obligations.

9. Any proceeding, legal or equitable. under this Bond may be instituted in any court of competent jurisdiction in the location in which the or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform obligations under this Bond, whichever occurs first. If the provision this Paragraph are void or prohibited by law, the minimum period limitation available to sureties as a defense in the jurisdiction of the shall be applicable.

10. Notice to the Surety, the Owner or the Contractor shall be made delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory legal requirement shall be deemed deleted herefrom and provisions forming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed statutory bond and not as a common law bond.

12. Definitions.

12.1. Balance of the Contract Price: The total amount payable by Owner to the Contractor under the Construction Contract, all proper adjustments have been made, including allowance the Contractor of any amounts received or to be received, the Owner in settlement of insurance or other claims for ages to which the Contractor is entitled, reduced by all and proper payments made to or on behalf of the Contractor under the Construction Contract.

12-2. Construction Contract: The agreement between the Owner, the Contractor identified on the signature page, including Contract Documents and changes thereto.

12-3. Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

12.4. Owner Default: Failure of the Owner, which has neither remedied nor waived, to pay the Contractor as required by Construction Contract or to perform and complete or comply with the other terms thereof, in any material respect.

13. Any Contractor selected to perform the obligations of the Contractor under the construction contract must be approved, in advance, by the Owner, which approval shall not be unreasonably withheld.

*Including, without limitations, the one year correction period under Paragraph 13.12 of the Standard General Conditions.

(FOR INFORMATION ONLY-Name, Address and Telephone)

AGENT or BROKER: OWNER'S REPRESENTATIVE (Architect, Engineer or other party).

EJCDC No. 1910-28A (1984 Edition)

Prepared through the joint efforts of The Surety Association of America, Engineers' Joint Contract Documents Committee. The Associated General Contractors of America, and the American Institute of Architects.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

CONSTRUCTION CONTRACT

Date:
Amount:
Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):
Amount:
Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	(Corp. Seal)	Company:	(Corp. Seal)
Signature:		Signature:	
Name and Title:		Name and Title:	

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	(Corp. Seal)	Company:	(Corp. Seal)

EJCDC No. 1910-28B (1984 Edition)
Prepared through the joint efforts of the Surety Association of America, Engineers= Joint Contract Documents Committee. The Associated General Contractors of America, and the American Institute of Architects.

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.*

2. With respect to the Owner, this obligation shall be null and void if the Contractor:

2.1 Promptly makes payment directly or indirectly, for all sums due Claimants, and

2.2 Defends, indemnifies and holds harmless the Owner from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4. The Surety shall have no obligation to Claimants under this Bond until:

4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2 Claimants who do not have a direct contract with the Contractor:

Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

Have either received an injection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and

Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety=s expense take the following actions:

6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2 Pay or arrange for payment of any undisputed amounts.

7. The Surety=s total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner=s priority to use the funds for the completion of the work.

9. The Surety shall not be liable to the Owner, Claimants or others obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including change time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which work or part of the work is located or after the expiration of one year, from the date (1) on which the claimant gave the notice required Subparagraph 4.1 or Clause 4.2 (iii), or (2) on which the last labor service was performed by anyone of the last materials or equipment work furnished by anyone under the Construction Contract, whichever of or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a deft in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner or the Contractor shall be mailed, delivered to the address shown on the signature page. Actual receipt notice by Surety, the Owner or the Contractor, however accomplish shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory, other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed statutory bond and not as a common law bond.

14. Upon t by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to the made.

15. DEFINITIONS

15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms Alabor, materials or equipment@ that of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of work of the Contractor and the Contractor=s subcontractors, and all other items for which a mechanic=s lien may be asserted; the jurisdiction where the labor, materials or equipment furnished.

15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including Contract Documents and changes thereto.

15.3 Owner Default: Failure of the Owner, which has neither remedied nor waived, to pay the Contractor as required by Construction Contract or to perform and complete or comply with the other items thereof, in any material respect.

*including without limitations the one year correction period under Paragraph 13.12 of the Standard General Conditions.

(FOR INFORMATION ONLY-Name, Address and Telephone)	
AGENT or BROKER:	OWNER'S REPRESENTATIVE (Architect, Engineer or other party)

Notice to Proceed

Date: _____

Project:	
Owner:	Owner's Contract No.:
Contract:	Engineer's Project No.:
Contractor:	
Contractor's Address: *[send Certified Mail, Return Receipt Requested]*	

You are notified that the Contract Times under the above Contract will commence to run on_____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the date of Substantial Completion is_____, and the date of readiness for final payment is _____ [(or) the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____].

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

_____ *[add other requirements].*

_____ _____
Owner

Given by:

_____ _____
Authorized Signature

_____ _____
Title

_____ _____
Date

Copy to Engineer

APPLICATION FOR PAYMENT NO.

To: Town of Madbury, New Hampshire (OWNER)
Contract for: Nute Road Bellamy River Crossing Replacement

OWNER's Contract No. _____. ENGINEER's Project No. 1162.

For Work accomplished through the date of:

ITEM	CONTRACTOR's Schedule of Values			Work Completed	
	Unit Price	Quantity	Amount	Quantity	Amount
	$		$		$
Total (Orig. Contract) C.O. No. 1 C.O. No. 2			$		$

Accompanying Documentation:		
	GROSS AMOUNT DUE	$
	LESS ___ % RETAINAGE	$
	AMOUNT DUE TO DATE	$
	LESS PREVIOUS PAYMENTS	$
	AMOUNT DUE THIS APPLICATION	$

CONTRACTOR'S Certification:

The undersigned CONTRACTOR certifies that: (1) all previous progress payments received from OWNER on account of Work done under the Contract referred to above have been applied to discharge in full all obligations of CONTRACTOR incurred in connection with Work covered by prior Applications for Payment numbered I through inclusive; (2) title to all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER at time of payment free and clear of all liens, claims, security interest and encumbrances (except such as are covered by Bond acceptable to OWNER indemnifying OWNER against any such lien, claim, security interest or encumbrance); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and not *defective* as that term is defined in the Contract Documents.

Dated _____, 20____ _____
CONTRACTOR

By: _____
(Authorized Signature)

Payment of the above AMOUNT DUE THIS APPLICATION is recommended.

Dated _____, 20___ _____
ENGINEER

By: _____
(Authorized Signature)

EJCDC No. 1910-8-E (I 990 Edition)
Prepared by the Engineers Joint Contract Documents Committee and endorsed by The Associated General Contractors of America

WAIVER OF LIENS

The Contractor shall provide the attached Waiver of Liens form for all subcontractors or material suppliers associated with this project. The Waiver of Liens form shall be provided with each monthly payment application.

WAIVER OF LIENS

SUBCONTRACTORS AND ALL MATERIAL SUPPLIERS

To All Whom It May Concern:

Whereas the undersigned_____ has been engaged as a Subcontractor or as Material Supplier by _____, The General Contractor for _____, located at in _____, New Hampshire, to furnish work, labor or materials for said Project for _____Owner.

The undersigned has received payments in the amount of $_____ for deliveries of materials to and/or work performed in said construction of the project, as of the _____ day of _____, 20___.

Now, therefore, the undersigned, upon receipt of the balance due us of $_____waive and release any and all lien of claim of or right to lien under the Statutes of the State of New Hampshire relating to mechanic's liens, with respect to and on said above described premises, and the improvements thereon, and on the material, fixtures, apparatus or machinery furnished and on the money funds, or other considerations due or to become due, the Subcontractor or Supplier from the General Contractor and/or the Owner of said premises, on account of labor, services, material, fixtures, or machinery heretofore furnished, or which may be furnished at any time hereafter by the undersigned, to or on account of the said General Contractor and/or said Owner for the above described premises.

Given under the hand and seal of the undersigned, this _____day of _____, 20___.

BY_____

NOTARIZATION_____

CHANGE ORDER No._____

PROJECT: Nute Road Bellamy River Crossing Replacement	
DATE OF ISSUANCE:	
OWNER: Town of Madbury	**CONTRACTOR:**
	ENGINEER: CMA ENGINEERS, INC.
You are directed to make the following changes in the Contract Documents.	
DESCRIPTION:	
REASON FOR CHANGE ORDER:	
ATTACHMENTS:	

CHANGE IN CONTRACT PRICE	**CHANGE IN CONTRACT TIME:**
Original Contract Price: $	Original Contract Times: Substantial Completion: Final Completion:
Net Changes from Previous Change Orders No. _____ to No. _____ $	Net Change from previous Change Orders No. _____ to No. _____
Contract Price prior to this Change Order $	Contract Time Prior to this Change Order Substantial Completion: Final Completion:
Net Increase or Decrease of this Change Order $	Net Increase or Decrease of this Change Order *(days)*
Contract Price with all approved Change Orders $	Contract Times with all approved Change Orders Substantial Completion: Final Completion:

RECOMMENDED:	APPROVED:	APPROVED:
By:	By:	By:
Date:	Date:	Date:
Engineer: ***CMA Engineers, Inc.***	Owner: ***Town of Madbury***	Contractor:

CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER's Project No._____ ENGINEER's Project No. 1162

Project: Nute Road Bellamy River Crossing Replacement

CONTRACTOR_____
Contract For Nute Road Bellamy River Crossing Replacement
Contract Date_____

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

Installation of precast prestressed deck beams, deck overlay, bridge rail, and guardrail, placement of gravels and base course pavement, and placement of loam and seed.

To Town of Madbury
OWNER

And To _____
CONTRACTOR

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR and ENGINEER, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

_____
DATE OF SUBSTANTIAL COMPLETION

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within 15 calendar days of the above date of Substantial Completion.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as follows:

RESPONSIBILITIES:

OWNER: _____

_____

_____

CONTRACTOR: _____

_____

_____

The following documents are attached to and made a part of this Certificate:

Punch List (dated)

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

Executed by ENGINEER on _____, 20___

CMA Engineers, Inc.
ENGINEER

By_____CONTRACTOR accepts this

Certificate of Substantial Completion on _____, 20___

_____
CONTRACTOR

By_____OWNER accepts this

Certificate of Substantial Completion on _____, 20___

Town of Madbury
OWNER

By_____

CONSENT OF SURETY COMPANY
TO
FINAL PAYMENT

OWNER'S CONTRACT NO.: _____ ENGINEER' PROJECT NO.: 1162
AGREEMENT DATE: _____
BOND NUMBER: _____

CONTRACT TITLE: Nute Road Bellamy River Crossing Replacement

To: Town of Madbury (Owner)
13 Town Hall Road
Madbury, NH 03823

From: _____ (Contractor)
_____
_____

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the _____(Surety) on the bond of _____ (Contractor) hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety Company of any of its obligations to the _____ _____ (Owner) as set forth in the said Surety Company's Bond.

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand this _____ day of _____, 20___.

_____
Surety Company

_____
Signature of Authorized Representative

_____
Name & Title

Attest: (Seal)

Note: Power of Attorney should be attached in instances where same applies.

CONTRACTOR'S FINAL LIEN WAIVER

(page 1 of 2)

OWNER'S CONTRACT NO.: _____ ENGINEER' PROJECT NO.: 1162
AGREEMENT DATE: _____

CONTRACT TITLE: Nute Road Bellamy River Crossing Replacement

To: Town of Madbury (Owner)
13 Town Hall Road
Madbury, NH 03823

APPLICATION FOR FINAL PAYMENT

The undersigned hereby certifies that the amount owed set forth below constitutes the entire value of all work performed and services rendered by, through or under the undersigned with respect to the project not heretofore paid for up to and including the period covered by the above Application for Final Payment; that all work covered by such Application has been incorporated into the project and title thereto has passed to the Owner free and clear of all liens, claims, security, interests or encumbrances; and that no work covered by such Application has been acquired subject to an agreement under which any interest therein or an encumbrance thereon is retained by the seller or any other person. In consideration of payment of the requisition, the undersigned hereby releases the Owner from all claims of lien which the undersigned has regarding the Project.

The undersigned, in order to induce the Owner to pay the requisition, hereby represents that it has paid or will pay from the proceeds of the requisition all sums due to those parties who have performed work or provided materials to the undersigned in connection with the Project, and that it will on request of the Owner provide written evidence of the discharge by the undersigned of its obligations to such parties.

Executed under seal as of this _____ day of _____, 20___.

Amount Owed to Contractor by Owner as Final Payment:
$_____ (total value of project including change orders)

Amount Unpaid From Previous Application for Payment:
$_____

CONTRACTOR'S FINAL LIEN WAIVER

(page 2 of 2)

From: _____ (Contractor)

_____

_____

_____

Authorized Representative Signature

_____

Name and Title (printed)

NOTARY:

Then personally appeared the above named _____ and acknowledged the foregoing to be the free act and deed of the above-named Contractor, before me.

Subscribed and sworn to on the _____ day of _____, 20___.

Notary Public:_____

My Commission Expires:_____

CERTIFICATE OF FINAL COMPLETION OF WORK

(page 1 of 2)

OWNER'S CONTRACT NO.: _____ ENGINEER' PROJECT NO.: 1162
AGREEMENT DATE: _____

CONTRACT TITLE: Nute Road Bellamy River Crossing Replacement

FINAL COMPLETION DATE PER AGREEMENT AND CHANGE ORDERS: _____
ACTUAL DATE OF FINAL COMPLETION: _____

FINAL CERTIFICATION OF CONTRACTOR

I hereby certify that the Work as identified in the Final Payment Request dated _____ _____for the above-noted construction Contract represents full compensation for the actual value of work completed. Additionally, all work completed conforms to the terms of the Agreement and authorized changes.

_____ _____
CONTRACTOR Date

_____
Authorized Representative's Signature

_____
Name & Title

FINAL CERTIFICATION OF ENGINEER

I have reviewed the Contractor's Final Payment Request dated _____ and hereby certify that to the best of my knowledge, the cost of the work identified on the Final Payment Request represents full compensation for the actual value of work completed and that the work has been completed in accordance with the terms of the Agreement and authorized changes.

CMA Engineers, Inc. _____
ENGINEER Date

_____
Authorized Representative's Signature

_____
Name & Title

CERTIFICATE OF FINAL COMPLETION OF WORK

FINAL ACCEPTANCE OF OWNER

I, as representative of the Owner, accept the above Final Certifications and authorize Final Payment in the amount of $_____ and direct the Contractor's attention to the General Conditions. The guaranty for all Work completed subsequent to the date of Substantial Completion, expires _____year from the date of this Final Acceptance.

At a meeting of the_____(Town Council/Selectmen/Alderman), the Owner, _____(Name of the community) has accepted the constructed project.

Town of Madbury _____ _____
OWNER Date

_____
Authorized Representative's Signature

_____
Name & Title

END OF SECTION

CONTRACTOR'S AFFIDAVIT

STATE OF _____

COUNTY OF _____

Before me, the undersigned, a _____ in and for said County and
(Notary Public, Justice of Peace, Alderman)

State personally appeared, _____ who being duly
(Individual, Partner or duly authorized representative of corporate contractor)

sworn a according to law deposes and says that the cost of all the Work, and outstanding claims and indebtedness of whatever nature arising out of the performance of the contract between

Town of Madbury and _____
(Owner) (Contractor)

of _____ dated _____ for the construction of the _____ and necessary appurtenant installation have been paid in full.

_____
(Individual, Partner or duly authorized representative of corporate contractor)

_____
(Title)

Sworn to and subscribed before me this _____ day of _____, 20___.

_____
(Notary Public)

CONTRACTOR'S RELEASE

To Whom It May Concern:

Whereas, the undersigned has been employed by Town of Madbury to furnish labor and materials for Nute Road Bellamy River Crossing Replacement work, under a contract Nute Road Bellamy River Crossing Replacement for the improvement of the property described as Nute Road Bellamy River Crossing in the Town of Madbury County of Strafford, State of New Hampshire of which Town of Madbury is the OWNER.

NOW, THEREFORE, the said _____
(Contractor)

(for myself, my heirs, executors and administrators)(for itself, its successors and assigns) do/does by these presents remise, release, quit-claim and forever discharge the Town of Madbury, New Hampshire (OWNER), its successors and assigns of and from all claims and demands, arising from or in connection with the said Contract dated _____, and of and from all, and all manner of action and actions, cause and causes of action and actions, suits, debts, dues, duties, sum and sums of money, accounts, reckonings, bonds, bills, specialties, covenants, contracts, agreements, promises, variances, damages, judgments, extents, executions, claims and demand, whatsoever in law or equity, or otherwise, against the Town of Madbury, New Hampshire, its successors and assigns, which (I, my heirs, executors, or administrators)(its successors and assigns) hereafter can, shall or may have, for, upon or by reason of any matter, cause, or thing whatsoever; from the beginning of recorded time to the date of these presents.

IN WITNESS WHEREOF, _____
(Contractor)

has caused these presents to be duly executed this _____day

of _____, 20___.

Signed, sealed and delivered in the presence of:

_____ _____(Seal)
(Individual - Contractor)

_____(Seal)
(Partnership - Contractor)

_____ By: _____ (Seal)
(Partner)

Attested:

_____ (Seal)
(Corporation)

_____ By:_____ (Seal)
(Secretary) (President or Vice President)

(Corporate Seal)

Work Change Directive

No. _____

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

Contractor is directed to proceed promptly with the following change(s):

Item No.	Description

Attachments (list documents supporting change):

_____

_____

Purpose for Work Change Directive:

Authorization for Work described herein to proceed on the basis of Cost of the Work due to:

☐ Nonagreement on pricing of proposed change.

☐ Necessity to expedite Work described herein prior to agreeing to changes on Contract Price and Contract Time.

Estimated change in Contract Price and Contract Times:

Contract Price $_____ (increase/decrease) Contract Time _____ (increase/decrease)
days

Recommended for Approval by Engineer:	Date
Authorized for Owner by:	Date
Received for Contractor by:	Date
Received by Funding Agency (if applicable):	Date:

D. GENERAL CONDITIONS

Modified Standard General Conditions
Supplementary Conditions

This document has important legal consequences: consultation with an attorney is encouraged with respect to its completion or modification.

MODIFIED

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

Engineers Joint Contract Documents Committee

and

Issued and Published Jointly By

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

CONSTRUCTION SPECIFICATIONS INSTITUTE

This document has been approved and endorsed by

The Associated General Contractors of America

These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-A-1 or 1910-8-A-2) (1990 Editions). Their provisions are interrelated and a change in one may necessitate a change in the others. Comments concerning their usage are contained in the Commentary on Agreements for Engineering Services and Contract Documents (No. 1910-9) (1986 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17) (1990 Edition). When bidding is involved, the Standard Form of Instructions to Bidders (No. 1910-12) (1990 Edition) may be used

TABLE OF CONTENTS OF GENERAL CONDITIONS

INDEX TO GENERAL CONDITIONS

GENERAL CONDITIONS

ARTICLE 1—DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

1.1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Bidding Requirements or the Contract Documents.

1.2. *Agreement*—The written contract between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

1.3. *Application for Payment*—The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

1.4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

1.5. *Bid*—The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

1.6. *Bidding Documents*—The advertisement or invitation to Bid, instructions to bidders, the Bid form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

1.7. *Bidding Requirements*—The advertisement or invitation to Bid, instructions to bidders, and the Bid form.

1.8. *Bonds*—Performance and Payment bonds and other instruments of security.

1.9. *Change Order*—A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

1.10. *Contract Documents*—The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders and ENGINEER's written interpretations and clarifications issued pursuant to paragraphs 3.5, 3.6.1, and 3.6.3 on or after the Effective Date of the Agreement. Shop Drawing submittals approved pursuant to paragraphs 6.26 and 6.27 and the reports and drawings referred to in paragraphs 4.2.1.1 and 4.2.2.2 are not Contract Documents.

1.11. *Contract Price*—The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work). * See SC 1.11 in Supplementary Conditions

1.12. *Contract Times*—The numbers of days or the dates stated in the Agreement: (i) to achieve Substantial Completion, and (ii) to complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13. * See SC 1.12 in Supplementary Conditions

1.13. *CONTRACTOR*—The person, firm or corporation with whom OWNER has entered into the Agreement.

1.14. *defective*—An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, in that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10). * See SC 1.14 in Supplementary Conditions

1.15. *Drawings*—The drawings which show the scope, extent and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents. Shop drawings are not Drawings as so defined. *

1.16. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

1.17. *ENGINEER*—The person, firm or corporation named as such in the Agreement. * See SC 1.17 in Supplementary Conditions

1.18. *ENGINEER's Consultant*—A person, firm or corporation having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

1.19. *Field Order*—A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Times.

1.20. *General Requirements*—Sections of Division 1 of the Specifications.

1.21. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

1.22. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction. *

See SC 1.22 in Supplementary Conditions

1.23. *Liens*—Liens, charges, security interests or encumbrances upon real property or personal property.

1.24. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

1.25. *Notice of Award*—The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

1.26. *Notice to Proceed*—A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligations under the Contract Documents.

1.27. *OWNER*—The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

1.28. *Partial Utilization*—Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

1.29. *PCBs*—Polychlorinated biphenyls.

1.30. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

1.31. *Project*—The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.32. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

1.33. *Resident Project Representative*— The authorized representative of ENGINEER who may be assigned to the site or any part thereof.

1.34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

1.35. *Shop Drawings*—All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

1.36. *Specifications*—Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

1.37. *Subcontractor*—An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

1.38. *Substantial Completion*—The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if no such certificate is issued, when the Work is complete and ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

1.39. *Supplementary Conditions*—The part of the Contract Documents which amends or supplements these General Conditions.

1.40. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

1.41. *Underground Facilities*—All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

1.42. *Unit Price Work*—Work to be paid for on the basis of unit prices.

1.43. *Work*—The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

See SC 1.43 in Supplementary Conditions

1.44. *Work Change Directive*—A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.23. A Work Change Directive will not change the Contract Price or the Contract Times, but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times as provided in paragraph 10.2.

1.45. *Written Amendment*—A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

ARTICLE 2—PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ~~ten~~ (3) three copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

See SC 2.2 in Supplementary Conditions

Commencement of Contract Times; Notice to Proceed:

2.3. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Work:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run, but no Work shall be done at the site prior to the date on which the Contract Times commence to run.

Before Starting Construction:

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity or discrepancy in the Contract Documents, unless CONTRACTOR knew or reasonably should have known thereof.

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2.6.2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing and processing such submittal;

2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.7. Before any Work at the site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with paragraphs 5.4, 5.6 and 5.7.

Preconstruction Conference:

2.8. Within twenty days after the Contract Times start to run, but before any Work at the site is started, a conference

attended by CONTRACTOR, ENGINEER and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.6, procedures for handling Shop Drawings and other submittals, processing Applications for Payment and maintaining required records.

Initially Acceptable Schedules:

2.9. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.6. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until the schedules are submitted to and acceptable to ENGINEER as provided below. The progress schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within any specified Milestones and the Contract Times, but such acceptance will neither impose on ENGINEER responsibility for the sequencing, scheduling or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor. CONTRACTOR's schedule of Shop Drawing and Sample submissions will be acceptable to ENGINEER as providing a workable arrangement for reviewing and processing the required submittals. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance.

* See SC 2.10 in Supplementary Conditions

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project. * See SC 3.1 in Supplementary Conditions

3.2. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. ~~When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning.~~ Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.

* See SC 3.2 in Supplementary Conditions

3.3. *Reference to Standards and Specifications of Technical Societies; Reporting and Resolving Discrepancies:*

3.3.1. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

3.3.2. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the Work or of any such standard, specification, manual or code or of any instruction of any Supplier referred to in paragraph 6.5, CONTRACTOR shall report it to ENGINEER in writing at once, and, CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as authorized by paragraph 6.23) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.5 or 3.6; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

3.3.3. Except as otherwise specifically stated in the Contract Documents or as may be provided by amendment or supplement thereto issued by one of the methods indicated in paragraph 3.5 or 3.6, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and:

3.3.3.1. the provisions of any such standard, specification, manual, code or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

3.3.3.2. the provisions of any such Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

No provision of any such standard, specification, manual, code or instruction shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to OWNER, ENGINEER or any of ENGINEER's Consultants, agents or employees any duty or authority to supervise or direct the furnishing or

performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of paragraph 9.13 or any other provision of the Contract Documents. * See SC 3.3 in Supplementary Conditions

3.4. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as approved" or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.13 or any other provision of the Contract Documents.

Amending and Supplementing Contract Documents:

3.5. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.5.1. a formal Written Amendment,

3.5.2. a Change Order (pursuant to paragraph 10.4), or

3.5.3. a Work Change Directive (pursuant to paragraph 10.1).

3.6. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

3.6.1. a Field Order (pursuant to paragraph 9.5),

3.6.2. ENGINEER's approval of a Shop Drawing or Sample (pursuant to paragraphs 6.26 and 6.27), or

3.6.3. ENGINEER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.7. CONTRACTOR, and any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, and (ii) shall not reuse any of such Drawings, Specifications, other documents or copies on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaption by ENGINEER.

ARTICLE 4—AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. ~~Upon reasonable written request, OWNER shall furnish CONTRACTOR with a correct statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's lien against such lands in accordance with applicable Laws and Regulations. OWNER shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which CONTRACTOR will have to comply in performing the Work.~~ * Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR and OWNER are unable to agree on entitlement to or the amount or extent of any adjustments in the Contract Price or the Contract Times as a result of any delay in OWNER's furnishing these lands, rights-of-way or easements, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

* See SC 4.1 in Supplementary Conditions
* See SC 4.1.1. in Supplementary Conditions

4.2. ***Subsurface and Physical Conditions:***

4.2.1. *Reports and Drawings:* Reference is made to the Supplementary Conditions for identification of:

4.2.1.1. *Subsurface Conditions:* Those reports of explorations and tests of subsurface conditions at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents; and

4.2.1.2. *Physical Conditions:* Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) that have been utilized by ENGINEER in preparing the Contract Documents.

4.2.2. *Limited Reliance by CONTRACTOR Authorized; Technical Data:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

4.2.2.1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto, or

4.2.2.2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or

4.2.2.3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

* See SC 4.2.2 in Supplementary Conditions

4.2.3. *Notice of Differing Subsurface or Physical Conditions:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the site that is uncovered or revealed either:

4.2.3.1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is materially inaccurate, or

4.2.3.2. is of such a nature as to require a change in the Contract Documents, or

4.2.3.3. differs materially from that shown or indicated in the Contract Documents, or

4.2.3.4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then

CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.23), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such conditions or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

4.2.4. *ENGINEER's Review:* ENGINEER will promptly review the pertinent conditions, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5. *Possible Contract Documents Change:* If ENGINEER concludes that a change in the Contract Documents is required as a result of a condition that meets one or more of the categories in paragraph 4.2.3., a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.

4.2.6. *Possible Price and Times Adjustments:* An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of such uncovered or revealed condition causes an increase or decrease in CONTRACTOR's cost of, or time required for performance of, the Work; subject, however, to the following:

4.2.6.1. such condition must meet any one or more of the categories described in paragraphs 4.2.3.1 through 4.2.3.4, inclusive;

4.2.6.2. a change in the Contract Documents pursuant to paragraph 4.2.5 will not be an automatic authorization of nor a condition precedent to entitlement to any such adjustment;

4.2.6.3. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.10 and 11.9; and

4.2.6.4. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Times if;

4.2.6.4.1. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a bid or becoming bound under a negotiated contract; or

4.2.6.4.2. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

4.2.6.4.3. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.2.3.

If OWNER and CONTRACTOR are unable to agree on entitlement to or as to the amount or length of any such equitable adjustment in the Contract Price or Contract Times, a claim may be made therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.3. *Physical Conditions—Underground Facilities:*

4.3.1. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on

information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

4.3.1.2. The cost of all of the following will be included in the Contract Price and CONTRACTOR shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Facilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the owners of such Underground Facilities during construction, and (iv) the safety and protection of all such Underground Facilities as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work.

4.3.2. *Not Shown or Indicated:* If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.23), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the Underground Facility. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document such consequences. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or the amount or length of any such adjustment in Contract Price or Contract Times, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages incurred or sustained by CONTRACTOR on or in connection with any other project or anticipated project.

Reference Points:

4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

4.5. Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material:

4.5.1. OWNER shall be responsible for any Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. OWNER shall not be responsible for any such materials brought to the site by CONTRACTOR, Subcontractor, Suppliers or anyone else for whom CONTRACTOR is responsible.

~~4.5.2. CONTRACTOR shall immediately: (i) stop all~~ Work in connection with such hazardous condition and in any area affected thereby (except in an emergency as required by paragraph 6.23), and (ii) notify OWNER and ENGINEER (and thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such hazardous condition or take corrective action, if any. CONTRACTOR shall not be required to resume Work in connection with such hazardous condition or in any such affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR special written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of such Work stoppage or such special conditions under which Work is agreed by CONTRACTOR to be resumed, either party may make a claim ~~therefor as provided in Articles 11 and 12.~~

See SC 4.5.2 in Supplementary Conditions

~~4.5.3. If after receipt of such special written notice~~ CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order such portion of the Work that is in connection with such hazardous condition or in such affected area to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a claim therefor as provided in Articles 11 and 12. OWNER may have such deleted portion of the Work performed by OWNER's own ~~forces or others in accordance with Article 7.~~

See SC 4.5.3 in Supplementary Conditions

~~4.5.4. To the fullest extent permitted by Laws and Regulations,~~ OWNER shall ~~indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER~~'s

See SC 4.5.4 in Supplementary Condition

~~Consultants and the officers, directors, employees, agents,~~ other consultants and subcontractors of each and ~~any~~ of them from and against all claims, costs, losses and damages arising out of or resulting from such hazardous condition, provided that: (i) any such claim, cost, loss or damage is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) nothing in this subparagraph 4.5.4 shall obligate OWNER to indemnify any person or entity from and against the consequences of that person's or entity's own negligence.

4.5.5. The provisions of paragraphs 4.2 and 4.3 are not intended to apply to Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site.

ARTICLE 5—BONDS AND INSURANCE

Performance, Payment and Other Bonds:

5.1. CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

See SC 5.1 in Supplementary Conditions

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within ten days thereafter substitute another Bond and surety, both of which must be acceptable to OWNER.

5.3. *Licensed Sureties and Insurers; Certificates of Insurance:*

5.3.1. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.3.2. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain in accordance with paragraph 5.4. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7 hereof.

See SC 5.3.2 in Supplementary Conditions

CONTRACTOR's Liability Insurance:

See SC 5.4 in Supplementary Conditions

5.4. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work ~~being performed and furnished and as will provide protection~~ from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

5.4.1. claims under workers' compensation, disability benefits and other similar employee benefit acts;

5.4.2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.4.3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.4.4. claims for damages insured by customary personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;

5.4.5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

5.4.6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The policies of insurance so required by this paragraph 5.4 to be purchased and maintained shall:

5.4.7. with respect to insurance required by paragraphs 5.4.3 through 5.4.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers and employees of all such additional insureds;

5.4.8. include the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

5.4.9. include completed operations insurance;

5.4.10. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.12, 6.16 and 6.31 through 6.33;

5.4.11. contain a provision or endorsement that the coverage afforded will not be cancelled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.3.2 will so provide);

5.4.12. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing *defective* Work in accordance with paragraph 13.12; and

5.4.13. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

*See SC 5.4.14 in Supplementary Conditions

OWNER's Liability Insurance:

5.5. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.4, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents. * See SC 5.5 in Supplementary Conditions

Property Insurance:

5.6. Unless otherwise provided in the Supplementary Conditions, ~~OWNER~~* shall purchase and maintain property insurance upon the Work at the site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

5.6.1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

5.6.2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework and Work in transit and shall insure against at least the following perils fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils as may be specifically required by the Supplementary Conditions;

5.6.3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

5.6.4. ~~cover materials and equipment stored at the site or~~ at another location that was agreed to in ~~writing~~ by OWNER prior to being incorporated ~~in the Work~~, provided that such * materials and ~~equipment~~ have been included in an Application ~~for Payment recommended by ENGINEER; and~~

See SC 5.6.4 in Supplementary Conditions

5.6.5. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR and ENGINEER with thirty days written notice to each other additional insured to whom a certificate of insurance has been issued.

5.7. ~~OWNER~~* shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

5.8. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained by ~~OWNER~~* in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.11.

* CONTRACTOR

5.9. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount, will be borne by CONTRACTOR, Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.10. If ~~CONTRACTOR~~ requests in writing that other special insurance be included in the property insurance policies provided under paragraphs 5.6 or 5.7, ~~OWNER~~ shall, if possible, include such insurance, and the cost thereof will be charged to ~~CONTRACTOR~~ by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, ~~OWNER~~ shall in writing advise ~~CONTRACTOR~~ whether or not such other insurance has been procured by ~~OWNER~~.

5.11. *Waiver of Rights:*

5.11.1. ~~OWNER and CONTRACTOR intend that all~~ policies purchased in accordance with paragraphs 5.6 and 5.7 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any ~~policy so issued.~~

See SC 5.11.1 in Supplementary Conditions

5.11.2. ~~In addition, OWNER waives all rights against~~ CONTRACTOR, Subcontractors, ~~ENGINEER~~, ENGINEER's Consultants ~~and~~ the officers, directors, employees ~~and agents of any of them, for:~~

~~5.11.2.1. loss due to business interruption, loss of use~~ or other consequential loss extending beyond direct physical loss or damage to ~~OWNER~~'s property or the Work caused by, arising out of or resulting from fire or other ~~peril, whether or not insured by OWNER; and~~

~~5.11.2.2. loss or damage to the completed Project or~~ part thereof caused by, arising out of or resulting from fire or other insured peril covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.10, after substantial completion pursuant to paragraph 14.8 or after final payment pursuant to paragraph 14.13.

Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in this paragraph 5.11.2 shall contain provisions to the effect that in the event of payment of any such loss, damage or consequential loss the insurers will have no rights of recovery against any of CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees and agents of ~~any of them.~~

See SC 5.11.2 in Supplementary Conditions

Receipt and Application of Insurance Proceeds

5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

5.13. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. ~~If no such agreement among the~~ parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond ~~for the proper performance of such duties.~~

See SC 5.13 in Supplementary Conditions

Acceptance of Bonds and Insurance; Option to Replace:

5.14. If either party (OWNER or CONTRACTOR) has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within ten days after receipt of the certificates (or other evidence requested) required by paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was

required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

Partial Utilization—Property Insurance:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or permitted to lapse on account of any such partial use or occupancy.

* See SC 5.16 in Supplementary Conditions

ARTICLE 6—CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. ~~CONTRACTOR shall be solely responsible~~ for the means, methods, techniques, sequences and ~~procedures~~ of construction, but CONTRACTOR ~~shall not~~ be responsible for the negligence of others ~~in the~~ design or specification of a specific means, ~~method~~, technique, sequence or procedure of construction ~~which~~ is shown or indicated in and expressly ~~required by the Contract Documents~~. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

*

See SC 6.1 in Supplementary Conditions

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work. * See SC 6.4 in Supplementary Conditions

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

Progress Schedule:

6.6. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.9 as it may be adjusted from time to time as provided below:

6.6.1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) proposed adjustments in the progress schedule that will not change the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

6.6.2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of paragraph 12.1. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.7. *Substitutes and "Or-Equal" Items:*

6.7.1. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be accepted by ENGINEER under the following circumstances:

6.7.1.1. *"Or-Equal":* If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.

6.7.1.2. *Substitute Items:* If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under subparagraph 6.7.1.1, it will be considered a proposed substitute item. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The procedure for review by the ENGINEER will include the following as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall first make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute.

6.7.1.3. *CONTRACTOR's Expense:* All data to be provided by CONTRACTOR in support of any proposed "or-equal" or substitute item will be at CONTRACTOR's expense.

6.7.2. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.7.1.2.

6.7.3. *Engineer's Evaluation:* ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.7.1.2 and 6.7.2. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any "or-equal" or substitute. ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitutes proposed or submitted by CONTRACTOR pursuant to paragraphs 6.7.1.2 and 6.7.2 and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER accepts a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute item.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection. *

See SC 6.8.1 in Supplementary Conditions

6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials or equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be adjusted by the difference in the cost occasioned by such

substitution and an appropriate Change Order will be issued or Written Amendment signed. ~~No acceptance by OWNER~~ ENGINEER of any ~~such Subcontractor~~, Supplier or other person or ~~organization~~ shall constitute a waiver of any right ~~of OWNER or ENGINEER to reject defective Work~~.

* See SC 6.8.2 in Supplementary Conditions

6.9.1. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person or organization any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

6.9.2. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR. CONTRACTOR shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the ENGINEER through CONTRACTOR.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.6 or 5.7, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants and all other additional insureds for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same. * See SC 6.11 in Supplementary Conditions

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents. *

See SC 6.12 in Supplementary Conditions

Permits:

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees. * See SC 6.13 in Supplementary Conditions

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

6.14.2. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses and damages caused by, arising out of or resulting therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.3.2.

Taxes:

6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of

the Project which are applicable during the performance of the Work. * See SC 6.15 in Supplementary Conditions

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultant and anyone directly or indirectly employed by any of them from and against all claims, costs, losses and damages arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. CONTRACTOR shall leave the site clean and ready for occupancy by OWNER at Substantial Completion of the Work. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Record Documents:

6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all persons on the Work site or who may be affected by the Work;

6.20.2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction. * See SC 6.20.3 in Supplementary Conditions

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant or anyone employed by any of them or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier or other person or organization directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

Safety Representative:

6.21. CONTRACTOR shall designate a qualified and experienced safety representative at the site whose duties and

responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

Hazard Communication Programs:

6.22. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with Laws or Regulations.

Emergencies:

6.23. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from OWNER or ENGINEER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued to document the consequences of such action.

6.24. ***Shop Drawings and Samples:***

6.24.1. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawings and Sample submittals (see paragraph 2.9). All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show ENGINEER the materials and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.26.

6.24.2. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with said accepted schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.26. The numbers of each Sample to be submitted will be as specified in the Specifications.

6.25. ***Submittal Procedures:***

6.25.1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

6.25.1.1. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto,

6.25.1.2. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and

6.25.1.2. all information relative to CONTRACTOR's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

6.25.2. Each submittal will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contact Documents with respect to CONTRACTOR'S review and approval of that submittal.

6.25.3. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals accepted by ENGINEER as required by paragraph 2.9. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER's review and approval will not extend to means, methods, techniques, sequences or procedures of construction (except where a particular means, method, technique, sequence or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract

Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.25.1.

6.28. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submissions accepted by ENGINEER as required by paragraph 2.9, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.30. *CONTRACTOR's General Warranty and Guarantee:*

6.30.1. CONTRACTOR warrants and guarantees to OWNER, ENGINEER and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be *defective*. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

6.30.1.1. ~~abuse, modification or improper maintenance~~ or operation by persons ~~other than~~ CONTRACTOR, ~~Subcontractors or Suppliers; or~~

*

See SC 6.30.1.1 in Supplementary Conditions

6.30.1.2. normal wear and tear under normal usage.

6.30.2. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

6.30.2.1. observations by ENGINEER;

6.30.2.3. recommendation of any progress or final payment by ENGINEER;

6.30.2.3. the issuance of a certificate of Substantial Completion or any payment by OWNER to CONTRACTOR under the Contract Documents;

6.30.2.4. use or occupancy of the Work or any part thereof by OWNER;

6.30.2.5. any acceptance by OWNER or any failure to do so;

6.30.2.6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13;

6.30.2.7. any inspection, test or approval by others; or

6.30.2.8. any correction of *defective* Work by OWNER.

Indemnification:

6.31. ~~To the fullest extent permitted by Laws and Regulations,~~ CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss or damage: (i) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of a person or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regard~~less of the negligence of any such person or entity~~.

*

See SC 6.31 in Supplementary Conditions

6.32. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.31 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.

6.33. The indemnification obligations of CONTRACTOR under paragraph 6.31 shall not extend to the liability of ENGINEER and ENGINEER's Consultants, officers, directors, employees or agents caused by the professional negligence, errors or omissions of any of them.

Survival of Obligations:

6.34. All representations, indemnifications, warranties and guarantees made in, required by or given in accordance with

the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Agreement.

ARTICLE 7—OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, or let other direct contracts therefor which shall contain General Conditions similar to these, or have other work performed by utility owners. If the fact that such other work is to be performed was not noted in the Contract Documents, then: (i) written notice thereof will be given to CONTRACTOR prior to starting any such other work, and (ii) ~~CONTRACTOR~~ may make a claim therefor as provided in Articles 11 and 12 if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as ~~to the amount or extent thereof~~. See SC 7.1 in Supplementary Conditions

7.2. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure so to report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent or nonapparent defects and deficiencies in such other work.

Coordination:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the following will be set forth in Supplementary Conditions:

7.4.1. the person, firm or corporation who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified;

7.4.2. the specific matters to be covered by such authority and responsibility will be itemized; and

7.4.3. the extent of such authority and responsibilities will be provided.

Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility in respect of such coordination.

ARTICLE 8—OWNER'S RESPONSIBILITIES

8.1. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. ~~In case of termination of the employment of ENGINEER~~, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ~~ENGINEER~~. See SC 8.2 in Supplementary Conditions

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and drawings of physical conditions in existing structures at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents.

8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.10.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

8.9. The OWNER shall not supervise, direct or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences or procedures of construction or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents. *

See SC 8.9 in Supplementary Conditions

8.10. OWNER'S responsibility in respect of undisclosed Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Materials uncovered or revealed at the site is set forth in paragraph 4.5.

~~8.11. If and to the extent OWNER has agreed to furnish~~ CONTRACTOR reasonable evidence that ~~financial~~ arrangements have been made to ~~satisfy~~ OWNER's obligations under the Contract ~~Documents~~, OWNER's responsibility in respect ~~thereof will be as set forth in the Supplementary Conditions.~~

See SC 8.11 in Supplementary Conditions

ARTICLE 9—ENGINEER'S STATUS DURING CONSTRUCTION

OWNER's Representative:

9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER will endeavor for the benefit of OWNER to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and on-site observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against *defective* Work. ENGINEER's visits and on-site observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.13, and particularly, but without limitation, during or as a result of ENGINEER's on-site visits or observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. *

See SC 9.2 in Supplementary Conditions

Project Representative:

9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more continuous observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.13 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the site who is not ENGINEER's Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other person will be as provided in the Supplementary Conditions.

*SC 9.3.1 in Supplementary Conditions

Clarifications and Interpretations:

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER or CONTRACTOR believes that a written clarification or interpretation justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree to the amount or extent thereof, if any, OWNER or CONTRACTOR may make a written claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR who shall perform the Work involved promptly. If OWNER or CONTRACTOR believes that a Field Order justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree as to the amount or extent thereof, OWNER or CONTRACTOR may make a written claim therefor as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be *defective*, or

that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraphs 6.24 through 6.28 inclusive.

9.8. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.

9.9. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

Determinations for Unit Prices:

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other and to ENGINEER written notice of intention to appeal from ENGINEER's decision and: (i) an appeal from ENGINEER's decision is taken within the time limits and in accordance with the procedures set forth in Exhibit GC-A, "Dispute Resolution Agreement," entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to ENGINEER's decision, unless otherwise agreed in writing by OWNER and CONTRACTOR. Such appeal will not be subject to the procedures of paragraph 9.11.

Decisions on Disputes:

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and Claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph. Written notice of each such claim, dispute or other matter will be delivered by the claimant to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after the start of such occurrence or event unless ENGINEER allows an additional period of time for the submission of additional or more accurate data in support of such claim, dispute or other matter. The opposing party shall submit any response to ENGINEER and the claimant within thirty days after receipt of the claimant's last submittal (unless ENGINEER allows additional time). ENGINEER will render a formal decision in writing within thirty days after receipt of the opposing party's submittal, if any, in accordance with this paragraph. ENGINEER's written decision on such claim, dispute or other matter will be final and binding upon OWNER and CONTRACTOR unless: (i) an appeal from ENGINEER's decision is taken within the time limits and in accordance with the procedures set forth in EXHIBIT GC-A, "Dispute Resolution Agreement," entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within thirty days after the date of such decision and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable Laws and Regulations within sixty days of the date of such decision, unless otherwise agreed in writing by OWNER and CONTRACTOR.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 or 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter pursuant to Article 16.

9.13. *Limitations on ENGINEER's Authority and Responsibilities:*

9.13.1. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise or performance of any authority or responsibility by ENGINEER shall create, impose or give rise to any duty owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them.

9.13.2. ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.13.3. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

9.13.4. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection, tests and approvals and Other documentation required to be delivered by paragraph 14.12 will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests and approvals that the results certified indicate compliance with, the Contract Documents.

9.13.5. The limitations upon authority and responsibility set forth in this paragraph 9.13 shall also apply to ENGINEER's Consultants, Resident Project Representative and assistants.

ARTICLE 10—CHANGES IN THE WORK

10.1. ~~Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work~~. Such additions, deletions or revisions will be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided). See SC 10.1 of Supplementary Conditions

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an adjustment in the Contract Price or an adjustment of the Contract Times that should be allowed as a result of a Work Change Directive, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.5 and 3.6 except in the case of an emergency as provided in paragraph 6.23 or in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

10.4.1. changes in the Work which are (i) ordered by OWNER pursuant to paragraph 10.1, (ii) required because of acceptance of *defective* Work under paragraph 13.13 or correcting *defective* Work under paragraph 13.14, or (iii) agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Times which are agreed to by the parties; and

10.4.3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11—CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at CONTRACTOR's expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an adjustment in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after the start of such occurrence or event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the adjustment claimed covers all known amounts to which the claimant is entitled as a result of said occurrence or event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will

be valid if not submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an adjustment in the Contract Price will be determined as follows:

11.3.1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1 through 11.9.3, inclusive);

11.3.2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2);

11.3.3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 11.3.2, on the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 11.6).

* See SC 11.3.4 of Supplementary Conditions

Cost of the Work:

11.4. ~~The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work~~. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

See SC 11.4 of Supplementary Conditions

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen and other personnel employed full- time at the site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed or furnished by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids, if any, will be accepted. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in paragraphs 11.4, 11.5, 11.6 and 11.7. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof—all in accordance with the terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

11.4.5.5. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.4.5.6. ~~Losses and damages (and related expenses)~~ caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any ~~of them may be liable~~. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

See SC 11.4.5.6 of Supplementary Conditions

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4—all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of *defective* Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

11.6. The CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. a mutually acceptable fixed fee; or

11.6.2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1. ~~for costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR's fee shall be fifteen percent;~~ See SC 11.6.1.2 of Supplementary Conditions

11.6.2.2. for costs incurred under paragraph 11.4.3, the CONTRACTOR's fee shall be five percent;

11.6.2.3. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraphs 11.4.1, 11.4.2, 11.4.3 and 11.6.2 is that the Subcontractor who actually performs or furnishes the Work, at whatever tier, will be paid a fee of fifteen percent of the costs incurred by such Subcontractor under paragraphs 11.4.1 and 11.4.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

11.6.2.4. no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;

11.6.2.5. ~~the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and~~ See SC 11.6.2.5 of Supplementary Conditions

~~11.6.2.5.~~ when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.5, inclusive. See SC 11.6.2.6 of Supplementary Conditions

11.7. Whenever the cost of any Work is to be determined pursuant to paragraphs 11.4 and 11.5, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

11.8.1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2. CONTRACTOR's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances and no demand for additional payment on account of any of the foregoing will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.9. *Unit Price Work:*

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with paragraph 9.10.

11.9.2. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

~~11.9.3. OWNER or CONTRACTOR may make a claim~~ for an adjustment in the Contract Price in accordance with Article 11 if:

11.9.3.1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

11.9.3.2. there is no corresponding adjustment with respect to any other item of Work; and

11.9.3.3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

See SC 11.9.3 of Supplementary Conditions

ARTICLE 12—CHANGE OF CONTRACT TIMES

12.1. The Contract Times (or Milestones) may only be changed by a Change Order or a Written Amendment. Any claim for an adjustment of the Contract Times (or Milestones) shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Times (or Milestones) shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Times (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

See SC 12.1 of Supplementary Conditions

12.2. All time limits stated in the Contract Documents are of the essence of the Agreement.

12.3. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a claim is made therefor as provided in paragraph 12.1. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

See SC 12.3 of Supplementary Conditions

12.4. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay. In no event shall OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of CONTRACTOR, or (ii)

~~delays beyond the control of both parties including but not~~ limited to fires, floods, epidemics, ~~abnormal weather~~ conditions, acts of God or ~~acts or neglect~~ by utility owners or other ~~contractors~~ performing other work as contemplated by ~~Article 7.~~ See SC 12.4 of Supplementary Conditions

ARTICLE 13—TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF *DEFECTIVE* WORK

13.1. *Notice of Defects:* Prompt notice of all *defective* Work of which OWNER or ENGINEER have actual knowledge will be given to CONTRACTOR. All *defective* Work may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.4. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

13.4.1. for inspections, tests or approvals covered by paragraph 13.5 below;

13.4.2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.9 below shall be paid as provided in said paragraph 13.9; and

13.4.3. as otherwise specifically provided in the Contract Documents.

13.5. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection, or approval. CONTRACTOR shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work.

13.6. If any Work (or the work of others) that is to be inspected, tested or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.

13.7. Uncovering Work as provided in paragraph 13.6 shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is *defective*, CONTRACTOR shall pay all claims, costs, losses and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be *defective*, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

OWNER May Stop the Work:

13.10. If the Work is *defective*, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work

shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any surety or other party.

See SC 13.10 of Supplementary Conditions

Correction or Removal of Defective Work:

13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all *defective* Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with Work that is not *defective*. CONTRACTOR shall pay all claims, costs, losses and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.12. *Correction Period:*

13.12.1. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be *defective*, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) correct such *defective* Work, or, if it has been rejected by OWNER, remove it from the site and replace it with Work that is not *defective*, and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the *defective* Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

13.12.2. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

13.12.3. Where *defective* Work (and damage to other Work resulting therefrom) has been corrected, removed or replaced under this paragraph 13.12, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of *defective* Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all claims, costs, losses and damages attributable to OWNER's evaluation of and determination to accept such *defective* Work (such costs to be approved by ENGINEER as to reasonableness). If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. ~~If CONTRACTOR fails within a reasonable time~~ after written notice from ENGINEER to correct *defective* Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, ~~correct and remedy any such deficiency~~. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors and ENGINEER and ENGINEER's Consultants access to the site to enable OWNER to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by OWNER in exercising such rights and remedies will be charged against CONTRACTOR and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's *defective* Work. ~~CONTRACTOR shall not be allowed an extension of the~~ Contract Times (or Milestones) ~~because of any~~ delay in the performance ~~of the Work~~ attributable to the exercise by OWNER ~~of OWNER's rights and remedies hereunder.~~

See SC 13.14A and 13.14B of Supplementary Conditions

ARTICLE 14—PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and

will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

14.2. At least twenty days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment:

14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

14.5.1. ~~the Work has progressed to the point indicated,~~ * See SC 14.5.1 of Supplementary Conditions

14.5.2. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation), and

14.5.3. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

14.6. ENGINEER's recommendation of any payment, including final payment, shall not mean that ENGINEER is responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of Work, or for any failure of CONTRACTOR to perform or furnish Work in accordance with the Contract Documents.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.5. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. the Work is *defective*, or completed Work has been damaged requiring correction or replacement,

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order,

14.7.3. OWNER has been required to correct *defective* Work or complete Work in accordance with paragraph 13.14, or

14.7.4. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.4 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

14.7.5. claims have been made against OWNER on account of CONTRACTORs performance or furnishing of the Work,

14.7.6. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens.

14.7.7. there are other items entitling OWNER to a set-off against the amount recommended, or

14.7.8. ~~OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.7.1 through 14.7.3 or paragraphs 15.2.1 through 15.2.4 inclusive;~~ See SC 14.7.8 of Supplementary Conditions

but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

Substantial Completion:

14.8. ~~When CONTRACTOR considers the entire Work~~ ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees. Unless OWNER ~~and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER's issuing the~~ definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and ~~CONTRACTOR until final payment.~~ See SC 14.8 of Supplementary Conditions

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER at OWNER's option of any substantially completed part of the Work which: (i) has specifically been identified in the Contract Documents, or (ii) OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all

particulars in which this inspection reveals that the Work is incomplete or *defective*. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

Final Application for Payment:

14.12. After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance required by paragraph 5.4, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.4.13, (ii) consent of the surety, if any, to final payment, and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu of such releases or waivers of Liens and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and (ii) all payrolls, material and equipment bills and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.15. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after the presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to CONTRACTOR.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Waiver of Claims:

14.15. The making and acceptance of final payment will constitute:

14.15.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from *defective* Work appearing after final inspection pursuant to paragraph 14.11, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

14.15.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15—SUSPENSION OF WORK AND TERMINATION

OWNER May Suspend Work:

15.1. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

OWNER May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as adjusted from time to time pursuant to paragraph 6.6);

15.2.2. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.2. if CONTRACTOR disregards the authority of ENGINEER; or

15.2.4. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

* See SC 15.2.5 of Supplementary Conditions

OWNER may, after giving CONTRACTOR (and the surety, if any,) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by OWNER arising out of or resulting from completing the Work such excess will be paid to CONTRACTOR. If such claims, costs, losses and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and when so approved by ENGINEER incorporated in a Change Order, provided that when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

* 15.4. ~~Upon seven days' written notice to CONTRACTOR~~ and ENGINEER, OWNER ~~may, without~~ may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Agreement. In such case, CONTRACTOR shall ~~be paid (without duplication of any items):~~

See SC 15.4 of Supplemental Conditions

~~15.4.1. for completed and acceptable Work executed in~~ accordance with the Contract Documents ~~prior~~ to the effective date of termination, ~~including~~ fair and reasonable sums ~~for overhead and profit on such Work;~~

~~15.4.2. for expenses sustained prior to the effective date~~ of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

15.4.3. for all claims, costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and

15.4.4. for reasonable expenses directly attributable to ~~termination.~~

CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

*

CONTRACTOR May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Agreement and recover from OWNER payment on the same terms as provided in paragraph 15.4. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within thirty days after it is submitted, or OWNER has failed for thirty days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may upon seven day's written notice to OWNER and ENGINEER stop the Work until payment of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.5 are not intended to preclude CONTRACTOR from making claim under Articles 11 and 12 for an increase in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping Work as permitted by this paragraph.

ARTICLE 16—DISPUTE RESOLUTION

If and to the extent that OWNER and CONTRACTOR have agreed on the method and procedure for resolving disputes between them that may arise under this Agreement, such dispute resolution method and procedure, if any, shall be as set forth in Exhibit GC-A, "Dispute Resolution Agreement," to be attached hereto and made a part hereof. If no such agreement on the method and procedure for resolving such disputes has been reached, and subject to the provisions of paragraphs 9.10, 9.11, and 9.12, OWNER and CONTRACTOR may exercise

such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17—MISCELLANEOUS

Giving Notice:

17.1. ~~Whenever any provision of the Contract Documents~~ requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address ~~known to the giver of the notice~~.

See SC 17.1 of Supplemental Conditions

Computation of Times:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight will constitute a day.

Notice of Claim:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

Cumulative Remedies:

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.12, 6.16, 6.30, 6.31, 6.32, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

Professional Fees and Court Costs Included:

17.5. Whenever reference is made to "claims, costs, losses and damages," it shall include in each case, but not be limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs.

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EXHIBIT GC-A to General Conditions of the Agreement Between OWNER and CONTRACTOR Dated_____ For use with EJCDC No. 1910-8 (1990 ed.)

DISPUTE RESOLUTION AGREEMENT

OWNER and CONTRACTOR hereby agree that Article 16 of the General Conditions to the Agreement between OWNER and CONTRACTOR is amended to include the following agreement of the parties:

16.1. All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.15) will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining, subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

16.2. No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.11 will be made until the earlier of (a) the date on which ENGINEER has rendered a written decision or (b) the thirty-first day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.11; and the failure to demand arbitration within said thirty days' period will result in ENGINEER's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned. No demand for arbitration of any written decision of ENGINEER rendered in accordance with paragraph 9.10 will be made later than ten days after the party making such demand has delivered written notice of intention to appeal as provided in paragraph 9.10.

16.3. Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty-day or ten- day period specified in paragraph 16.2 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

16.4. Except as provided in paragraph 16.5 below, no arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder or in any other manner any other person or entity (including ENGINEER, ENGINEER's Consultant and the officers, directors, agents, employees or consultants of any of them) who is not a party to this contract unless:

16.4.1. the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration, and

16.4.2. such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

16.4.3. the written consent of the other person or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

16.5. Notwithstanding paragraph 16.4 if a claim, dispute or other matter in question between OWNER and CONTRACTOR involves the Work of a Subcontractor, either OWNER or CONTRACTOR may join such Subcontractor as a party to the arbitration between OWNER and CONTRACTOR hereunder. CONTRACTOR shall include in all subcontracts required by paragraph 6.11 a specific provision whereby the Subcontractor consents to being joined in an arbitration between OWNER and CONTRACTOR involving the Work of such Subcontractor. Nothing in this paragraph 16.5 nor in the provision of such subcontract consenting to joinder shall create any claim, right or cause of action in favor of Subcontractor and against OWNER, ENGINEER or ENGINEER's Consultants that does not otherwise exist.

16.6. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal.

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16.7. ~~OWNER and CONTRACTOR agree that they shall~~ first submit any and all unsettled claims, counterclaims, disputes and other matters in question between ~~them~~ arising out of or relating to the Contract Documents or the breach thereof ("disputes"), to mediation by ~~The~~ American Arbitration Association under the Construction Industry Mediation Rules of the American Arbitration Association prior to either of them initiating against the other a demand for arbitration pursuant to ~~paragraphs 16.1 through 16.6, unless delay in initiating arbitration would irrevocably prejudice one of the parties. The~~ respective thirty and ten day time limits within which to file a demand for arbitration as provided in paragraphs 16.2 and 16.3 above shall be suspended with respect to a dispute submitted to mediation within those same applicable time limits and shall remain suspended until ten days after the termination of the mediation. The mediator of any dispute submitted to mediation under this Agreement shall not serve as arbitrator of such ~~dispute unless otherwise agreed~~.

* See SC 16.7 of Supplemental Conditions

SUPPLEMENTARY CONDITIONS TO MODIFIED STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

The section reference numbers set forth below correspond to like numbered paragraphs of the Modified General Conditions. Except as otherwise provided herein, the below referenced numbered paragraphs of the Modified General Conditions shall be amended as set forth below.

SC 1.11 Paragraph 1.11 is amended by adding the following to the end of the paragraph:

"Except as provided in paragraph 11.9.1 (for Unit Price Work) the Contract Price shall be fixed at the amount specified in Article 4 of the Agreement, subject to change only pursuant to Change Orders."

SC 1.12 Paragraph 1.12 is amended by adding the following to the end of the paragraph:

"Contractor shall cause the Substantial Completion of the Project and the Work to occur on or before the dates specified in the Notice to Proceed."

SC 1.14 Paragraph 1.14 is amended by adding the following to the end of the paragraph:

"Without limiting the foregoing, Defective shall also mean Work that (i) does not conform to Laws or Regulations; (ii) is not free from defects in design materials or workmanship; (iii) does not comply with any warranty or installation requirements of any Suppliers or Subcontractors supplying, performing or providing any part of the Work; (iv) is of improper or inferior quality or workmanship; (v) does not permit the Project as completed, to be used and operated for its intended purposes as contemplated under the Contract Documents; or (vi) if not corrected could materially adversely affect the cost of operating or maintaining the Project or the useful life of the Project or any component."

SC 1.15 Paragraph 1.15 is amended by adding the following to the end of the paragraph:

"The term Plans, wherever used herein, shall have the same meaning as Drawings, as defined in the Modified General Conditions."

SC 1.17 Paragraph 1.17 is amended by adding the following to the end of the paragraph:

"The Engineer shall be CMA Engineers, Inc."

SC 1.22 Paragraph 1.22 is amended by adding the following to the end of the paragraph:

"Without limiting the foregoing, "Laws and Regulations" and "Laws or Regulations" include all permits, authorizations, consents or approvals pertaining to the Project or the Work."

SC 1.43 Paragraph 1.43 is amended by adding the following to the end of the paragraph:

"Consistent with paragraph 3.2 of the Modified General Conditions, the Work shall describe and produce a functionally and operationally complete Project."

SC 2.2 Paragraph 2.2 is amended by adding the following to the end of the paragraph:

"In addition to the Contract Documents furnished to Contractor by the Owner for the Contractor's use during performance of the Work there shall be at least three (3) original executed copies of the Contract Documents to be distributed by the Owner as follows:

1. One (1) copy each to the Owner, Engineer and Contractor."

SC 2.6 Paragraph 2.6 is amended by deleting the section in its entirety and substituting the following:

"Within seven (7) days after the effective date of the Owner-Contractor Agreement, Contractor shall submit to Engineer for review:"

SC 2.8 Paragraph 2.8 is amended by adding the following to the end of the paragraph the following:

"After award of the bid and prior to beginning construction, a conference will be held with representatives of the Contractor, Owner, and Engineer to discuss schedules in the Project. This conference is intended to establish lines of communication between the parties involved. Time and place of the preconstruction conference will be determined at time of bid award. The Engineer will administer the preconstruction conference at the Project site for clarification of Contractor responsibilities in use of the site and for review of administrative procedures."

SC 2.10 Article 2 is amended by adding the following new paragraph 2.10:

"2.10 Non-Resident Contractors. The successful bidder, if a corporation established under laws other than the State in which the proposed construction is located, shall file, at the time of the execution of the contract, with the Owner, notice of the time of the execution of the contract and notice of the name of its resident attorney, appointed as required by the laws of the State in which the proposed construction is located. The successful bidder, if a resident of another State other than that in which the proposed construction is located and not a corporation, shall file, at the time of execution of the contract, with the Owner, a

written appointment of a resident of the State in which the construction is located, having an office or place of business therein, to be his true and lawful attorney upon whom all lawful processes in any actions or proceedings against him may be served; and in such writing, which shall set forth said attorney's place of residence, shall agree that any same legal force and validity as if served on him, and that the authority shall continue in force so long as any liability remains outstanding against him in said State. The power of attorney shall be filed in the office of the Secretary of State if required, and copies certified by the Secretary shall be sufficient evidence thereof. Such appointment shall continue in force until revoked by an instrument in writing, designating in a like manner some other person upon whom such processes may be served, which instrument shall be filed in the manner provided herein for the original appointment.

A Non-Resident Contractor shall be deemed to be:

1. A person who is not a resident in the State where the proposed construction is to be located.
2. Any partnership that has no member thereof resident in the State where the proposed construction is to be located.
3. Any corporation established under laws other than those of the State in which the proposed construction is located."

SC 3.1 Paragraph 3.1 is amended by adding the following to the end of the paragraph:

"The above notwithstanding, any provisions in any of the Contract Documents which may be in conflict shall be subject to the following order of precedence for interpretation.

1. Technical Specifications will govern Plans.
2. Technical Specifications and Plans will govern Supplementary Conditions and Modified General Conditions.
3. Supplementary Conditions shall govern Modified General Conditions.
4. Special Conditions will govern Technical Specifications, Plans, Supplementary Conditions, and Modified General Conditions.
5. The Agreement supersedes all other Contract Documents.

The Agreement and the Contract Documents shall be governed by the laws of the State of New Hampshire."

SC 3.2 Paragraph 3.2 is amended by deleting the third sentence in its entirety and substituting the following:

"When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe the Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning, except to the extent such words or phrases are otherwise defined in the Contract Documents."

SC 3.3.3 Section 3.3.3 is amended by adding the following to the end of the paragraph:

"The above notwithstanding, Contractor's performance of the Work, in addition to being in conformance with all other standards set forth in the Contract Documents, shall in every way be in accordance with high professional standards, industry codes and insurance underwriting requirements and prudent engineering practice and shall fully comply with all applicable laws, ordinances, codes, regulations and orders of all federal, state and local governmental or regulatory authorities in effect from time to time. The Work shall also conform with Owner's insurance company requirements specific to recommendations on fire protection, property damage, general liability and business interruption insurability. Where any of the foregoing provides for less stringent standards than set out in the Contract Documents, the standards set forth in the Contract Documents shall govern. Contractor warrants to Owner that all materials and equipment furnished under the Contract Documents will be new. Contractor shall establish, to the reasonable satisfaction of Owner, quality control and quality assurance policies with respect to Contractor's performance of the Work."

SC 4.1 Paragraph 4.1 is amended by deleting the second and third sentences thereof in their entirety.

SC 4.2.2 Paragraph 4.2.2 is amended by adding the following new paragraph:

"Contractor acknowledges that it has not been provided any such reports or "technical data". The absence of such reports or data shall not relieve Contractor of any of its obligations hereunder or provide any basis for any claim against Owner or Engineer with respect to such reports or data which might have been provided."

SC 4.5.2 Paragraph 4.5.2 of the Modified General Conditions is deleted in its entirety.

SC 4.5.3 Paragraph 4.5.3 of the Modified General Conditions is deleted in its entirety.

SC 4.5.4 Paragraph 4.5.4 is amended by deleting the paragraph in its entirety and substituting the following:

"To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, Engineer, Engineer's Consultants and the officers, directors, employees, agents, other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from such hazardous condition, except any such condition for which Owner is not responsible pursuant to paragraph 4.5.1, provided that: (i) any such claim, cost, loss or damage is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) nothing in this subparagraph 4.5.4 shall obligate Owner to indemnify any person or entity from and against the consequences of that Person's or entity's own negligence."

SC 4.6 Add the following new paragraph 4.6 to the Modified General Conditions to read:

"4.6 Utilities. Any elevations and locations of utilities shown on the Drawings are approximate. It shall be the responsibility of the Contractor to make the final and exact determination of the locations and extent of all utilities. The Contractor shall be liable for any expense resulting from any damage to any public utility.

It shall be the responsibility of the Contractor to notify all utility companies and pipe line owners, whether public or private and other parties affected, of his intention to perform work in the area where such utilities are located and to endeavor to have all necessary adjustments of the public or private utility fixtures, pipe lines and other appurtenances within or adjacent to the limits of construction, made as soon as practicable and if at all possible, before work contemplated is started in the area.
In general, water lines, sewer lines, gas lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals and other utility appurtenances within the limits of the proposed construction shall be moved by the utility involved and the Owner shall bear the full expense, if any, of this work, unless otherwise specifically stated, or if otherwise noted on the plans."

SC 5.1 Paragraph 5.1 is amended by adding the following to the end of the paragraph:

"Notwithstanding anything in the foregoing to the contrary, Bonds may be in such other form as the Owner approves in writing. The Bonds shall name Owner as obligee as its interest may appear. The bonds shall be issued by a surety licensed to do business in the State of New Hampshire. Notwithstanding anything in the Modified General Conditions to the contrary, the surety shall be reputable and rated A or better and included in any of classes X through XV by Best's Insurance Guide. Contractor shall provide for and acquire any amendment to such Bonds or an additional bond to cover any increase in the Contract Price under the Contract Documents. The Bonds shall be executed on the Standard Forms provided in the Contract Documents. The surety shall be a company licensed to do business in the State of New Hampshire, and acceptable to the Owner and the Engineer. The Bonds shall be furnished prior to the execution of the Agreement."

SC 5.3.2 Paragraph 5.3.2 is amended by adding the following to the end of the paragraph:

"Contractor shall submit evidence of insurance to the Owner at the time of execution of the Agreement.

SC 5.4 The first sentence of paragraph 5.4 is amended by revising the third line thereof to read "being performed and furnished, including as a minimum such insurance as will provide protection."

SC 5.4.14 Paragraph 5.4 is further amended by adding the following new paragraph 5.4.14:

"5.4.14. be formulated to protect the Contractor and the Owner from all claims and liabilities for damages for bodily injury, including accidental death and for property damage, which may arise from operations under the Contract Documents, whether such operation be by the Contractor or by anyone directly or indirectly employed by him."

SC 5.5 Paragraph 5.5 is amended by adding the following to the end of the paragraph:

"Any insurance provided by Contractor shall be primary to any such insurance of Owner. The Owner will not be required to maintain insurance on behalf of the Contractor, or in addition to the Contractor, for any of the Contractor's actions associated with the Contract Documents."

SC 5.6.4 Paragraph 5.6.4 is amended by deleting the paragraph in its entirety and substituting the following in its entirety:

"Cover materials and equipment stored at the site, or another location that was agreed to by Owner in writing, prior to being incorporated in the Work; and"

SC 5.11.1 Paragraph 5.11.1 is amended by deleting the paragraph in its entirety and substituting the following:

"Owner and Contractor intend that all policies purchased in accordance with paragraphs 5.6 and 5.7 will protect Owner, Contractor, Subcontractors, Engineer, Engineer's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insured thereunder."

SC 5.11.2 Paragraph 5.11.2 and subparagraphs 5.11.2.1 and 5.11.2.2 are deleted in their entirety.

SC 5.13 Paragraph 5.13 is amended by deleting the last sentence thereof and substituting the following:

"If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with insurers.

SC 5.16 Article 5 is amended by adding the following new Paragraph 5.16.

Amount of Insurance.

Except with otherwise provided herein, the amount of insurance for each policy shall not be less than:

Workers' Compensation and Employers' Liability: As required by law.
Limits of Liability: $100,000 each accident; $500,000 disease-policy limit; $100,000 disease – each employee and
Commercial General Liability: Occurrence Form to include Contractual Liability, Explosion, Collapse and Underground coverages. Limits of Liability: $1,000,000 Each Occurrence Bodily Injury & Property Damage; $2,000,000 General Aggregate-Include Per Project Aggregate Endorsement; $2,000,000 Products/Completed Operations Aggregate.

or

Comprehensive General Liability Form: Form to include Premises/Operations, Independent Contractors, Products/Completed Operations, Personal Injury, Contractual Liability, Collapse and Underground, Medical Payment coverages (Broad Form Comprehensive GL Endorsement). Limits of Liability $1,000,000 Combined Single Limit of Liability for Bodily Injury & Property Damage.

> Note: If blasting or demolition or both is required by the Contract, the Contractor or Subcontractor shall obtain the respective coverage an shall furnish to the Engineer a Certificate of Insurance evidencing the required coverages prior to commencement of any operation involving blasting or demolition or both, and

Municipality's Protective Liability: Coverage for the benefit of the Municipality. Limits of Liability: $2,000,000 Each Occurrence; $3,000,000 Aggregate; or $2,000,000 Bodily Injury & Property Damage per Occurrence (1973 form), and

Comprehensive Automobile Liability: covering all motor vehicles including owned, hired, borrowed, and non-owned vehicles. Limits of Liability: $1,000,000 Combined Single Limit for Bodily Injury & Property Damage, and

Commercial Umbrella Liability: Limits of Liability: $1,000,000 Each Occurrence; $1,000,000 Aggregate.

SC 6.1 Paragraph 6.1 is amended by deleting the second sentence thereof and substituting the following:

"Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction and causing the performance and completion of the Work to comply with all applicable Laws and Regulations and all requirements of applicable Suppliers and Subcontractors applicable to the Work."

SC 6.4 Paragraph 6.4 is amended by adding the following to the end of the paragraph:

"All of the foregoing responsibilities of Contractor shall be at Contractor's expense without addition to the Contract Price."

SC 6.8.1 Paragraph 6.8.1 is amended by adding the following to the end of the paragraph:

"Contractor shall not employ or permit any Subcontractor to employ any unfit person or any person not suitably trained and skilled in the performance of the tasks assigned in connection with any performance of the Work."

SC 6.8.2 Paragraph 6.8.2 is amended by deleting the last sentence thereof and substituting the following:

"No acceptance or deemed acceptance by Owner or Engineer or any such Subcontractor, Supplier, or other person or organization shall constitute a waiver of any right of Owner or Engineer under the Contract, including without limitation, the right to reject defective Work or release Contractor of any obligation under the Contract."

SC 6.11 Paragraph 6.11 is amended by adding the following to the end of the paragraph:

"Any agreement with any Subcontractor shall be in writing and shall expressly provide for the assignment of such agreement to Owner and the collateral assignment by Owner to any entity providing financing for the Project or the Work."

SC 6.12 Paragraph 6.12 is amended by adding the following to the end of the paragraph:

"Contractor shall also defend all such indemnified parties in connection with any claims covered by such indemnity."

SC 6.13 Paragraph 6.13 is amended by adding the following to the end of the paragraph:

"Additionally, Contractor shall have exclusive responsibility for the transport, storage and disposal of any hazardous or solid waste, as defined under Laws or Regulations, delivered or
accepted at the Work site in connection with the Work, including the acquisition and compliance with any approvals, permits or licenses required in connection therewith. Contractor shall obtain, at its own expense, all approvals, permits or licenses as required for the ordinary conduct of its business as contemplated by the Work, including any permits required for hauling materials and disposing of waste to and from the Work site in connection with the Work."

SC 6.15 Paragraph 6.15 is amended by adding the following to the end of the paragraph:

"Contractor also shall pay all taxes, governmental fees, assessments, charges or levies assessed upon contractor in connection with the Work. Upon the failure of Contractor promptly to pay any tax or fee under this section or under Modified General Conditions 6.15 or license fee or royalty under Modified General Conditions 6.12, Owner may pay such tax, fees or royalty and immediately recover the amount paid and expenses associated therewith from the Contractor or set off such amounts and expenses against any sums owed to Contractor by Owner."

SC 6.19 Paragraph 6.19 is amended by adding the following sections:

6.19.1 Maintenance of Record Documents and Samples. All documents and samples are to be stored in the Contractor's field office apart from documents used for construction. Contractor is to provide files and racks for storage of the documents and a locked cabinet or secure storage space for the storage of samples.

6.19.1.1 Contractor is to maintain the record documents in clean, dry, legible condition in good order and in a form acceptable to the Owner and Engineer and shall not use the record documents for construction purposes.

6.19.1.2 The Contractor shall document all changes on the record drawings upon construction of that item of work. Record drawings and supporting documentation shall be kept current with work in progress and should reflect work completed on periodic payment applications.

6.19.1.3 Record drawings are to be marked with red erasable pencil and, where feasible, use other colors also.

6.19.1.4 Each document is to be labeled "PROJECT RECORD" in neat large printed letters.

6.19.1.5 Contractor is to record information concurrently with construction progress and shall not cover any work until the required information has been incorporated in the "RECORD DRAWINGS."

6.19.2 Contractor shall submit the marked up "RECORD DRAWINGS" to the Engineer for review and approval together with certification that all deviations from the Contract Documents have been recorded on it and that the record drawings reflect the Work that has been performed. Final payment on this Contract will not be made until the RECORD DRAWINGS have been reviewed and approved by the Engineer.

SC 6.20.3 Paragraph 6.20.3 is amended by adding the following to the end of the paragraph:

"Without limitation, the foregoing shall include all real and personal property, equipment, structures and appurtenances comprising the work"

SC 6.25.4 Article 6 is amended by adding the following new Paragraph 6.25.4.

“Shop Drawings/Submittals. The Contractor shall submit to the Owner six (6) copies of shop drawings for approval. At the time of submission, the Contractor shall call to the Owner’s and Engineer’s attention, in writing, any deviations that the shop drawings may have from the requirements of the Contract Documents. The Contractor shall submit the shop drawings marked as either “Submitted as Specified” or “Submitted as Equal to Specified”.

SC 6.30.1.1 Paragraph 6.30.1.1 is amended by deleting the paragraph in its entirety and substituting the following:

"Abuse or negligent operation or maintenance by persons other than Contractor, Subcontractors or Suppliers or any persons directly or indirectly (i) subject to the control of; (ii) acting pursuant to the directions of; or (iii) employed by Contractor, Subcontractors or Suppliers; or"

SC 6.31 Paragraph 6.31 is amended by deleting the paragraph in its entirety and substituting the following:

"To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify, hold harmless and defend Owner, Engineer, Engineer's Consultants and the officers, directors, employees, agents, or other consultants of each and any of them from and against all claims, costs, losses, damages, demands, suits, causes of action, proceedings, judgments, expenses and liabilities (including, without limitation, all fees and charges of engineers, architects, attorneys and other professionals and all court of arbitration or other dispute resolution costs) (collectively, a "Claim") caused by, arising out of or resulting from the performance of the Work (including any corrective action required with respect to any defective Work or Contractor's warranty obligations under the Contract Documents); provided that, any such Claim is either (i) attributable to bodily injury, sickness, disease, or death or to injury to or destruction of tangible property, including the loss of use thereof and cause in whole or in
part by any act or omission of Contractor or any Subcontractor or Supplier or any person or entity directly or indirectly controlled, employed or directed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of any indemnified party hereunder or any third party or whether liability is imposed on any such indemnified party by Laws or Regulations or (ii) attributable to any demands or liens by any Subcontractors, Suppliers, or other person or entity performing any part of the Work arising out of any non-payment of such parties for goods or services provided to Contractor."

SC 7.1 Paragraph 7.1 of the Modified General Conditions is amended by deleting clause (ii) in its entirety and substituting the following:

"(ii) Contractor may make a claim therefor as provided in Articles 11 and 12, but only to the extent such performance will, in fact, involve additional expense to Contractor or

requires additional time for Contractor's performance and the parties are unable to agree as to the amount or extent thereof."

SC 8.2 Paragraph 8.2 is amended by deleting the paragraph in its entirety and substituting the following:

"In case of termination of the employment of the Engineer, Owner shall appoint a new Engineer, whose status shall be that of the former Engineer effective as of such appointments under the Contract Documents."

SC 8.9 Paragraph 8.9 is amended by adding the following to the end of the paragraph:

"The foregoing shall not be construed to limit the right of Owner or Engineer under the Contract Documents to require Contractor to correct defective Work; provided, however, no exercise or failure to exercise such rights shall relieve Contractor from any of its liability or obligations under the Contract Documents."

SC 8.11 Paragraph 8.11 of the Modified General Conditions is deleted in its entirety.

SC 9.2 Paragraph 9.2 is amended by adding the following to the end of the paragraph:

"The foregoing shall not be construed to limit the right of Owner or Engineer under the Contract Documents to require Contractor to correct defective Work; provided, however, no exercise or failure to exercise such rights shall relieve Contractor from any of its liability or obligations under the Contract Documents."

SC 9.3.1 Paragraph 9.3 is amended by adding the following new paragraph 9.3.1:

"9.3.1 <u>Duties, Responsibilities and Limitation of the Authority of Resident Project Representative:</u>

9.3.1.1 The Resident Project Representative is an agent of the Owner and shall act as directed by and under the supervision of the Owner, in coordination with the Engineer. He shall confer with Engineer regarding his actions. His dealings in matters pertaining to the on-site Work, will, in general, be only with the Engineer and the Contractor. His dealings with Subcontractors will only be through or with the full knowledge of the Contractor or his superintendent. He shall generally communicate with the Owner only with the full coordination of the Engineer regarding project issues.

9.3.1.2 The Resident Project Representative shall:

a. review the Progress Schedule, schedule of Shop Drawing submissions, schedule of values and other schedules prepared by the contractor and consult with the Engineer concerning their acceptability.

b. attend the preconstruction conference.

c. arrange a schedule or progress meetings and other job conferences as required in consultations with the Engineer and notify in advance those expected to attend.

9.3.1.3 The Owner may, at his discretion, provide additional on-site agents, who will coordinate fully with the Engineer for matters pertaining to on-site activities."

SC 10.1 The first sentence of paragraph 10.1 is amended by deleting the sentence in its entirety and substituting the following:

"Without invalidating the Agreement and without notice to any surety, Owner or Engineer may, at any time or from time to time, order additions, deletions or revisions in the Work."

SC 11.3.4 Paragraph 11.3.4 is amended by adding the following to the end of the paragraph:

"11.3.4 Notwithstanding any other provision of the Contract Documents, the Contractor shall not be entitled to any increase in the Contract Price (i) to the extent not attributable to an increase in the Contractor's actual cost of the Work resulting from an event for which Contractor is expressly authorized to make a claim for adjustment pursuant to this Agreement, (ii) to the extent attributable to the fault or negligence of Contractor, any Subcontractor or any one directly or indirectly employed by any of them or for whose acts any of them may be liable, or (iii) to the extent of the failure of Contractor or Subcontractor to comply with its obligations under the Contract Documents."

SC 11.4 The first sentence of paragraph 11.4 is amended by deleting the sentence in its entirety and substituting the following:

"The term Cost of Work means the sum of all reasonable costs necessarily incurred and paid and properly documented by Contractor in the proper performance of the Work, all as determined by the Engineer."

SC 11.4.5.6 The first sentence of paragraph 11.4.5.6 is amended by deleting the sentence in its entirety and substituting the following:

"Losses and damages (and related expenses) caused by damage to the Work not compensated by insurance or otherwise, sustained by Contractor in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by Owner in accordance with paragraph 5.9), provided they have resulted from causes other than the fault or negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable."

SC 11.6.2.1 Paragraph 11.6.2.1 is amended by deleting the paragraph in its entirety and substituting the following:

"for the cost incurred under paragraphs 11.4.1 and 11.4.2, the Contractor's fee shall be ten percent;".

SC 11.6.2.3 Paragraph 11.6.2.3 is amended by deleting the paragraph in its entirety and substituting the following:

"where one or more tiers of subcontractors are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of the paragraphs 11.4.1, 11.4.2, 11.4.3, and 11.6.2 is that the Subcontractor who actually performs or furnishes the Work, at whatever tier, will be paid a fee of ten percent the costs incurred by such Subcontractor under paragraphs 11.4.1 and 11.4.2 and that any higher tier Subcontractor and CONTRACTOR shall be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;"

SC 11.6.2.5 Paragraph 11.6.2.5 is amended by deleting the paragraph in its entirety and substituting the following:

"the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to ten percent of such net decrease; and"

SC 11.6.2.6 The second numbered paragraph 11.6.2.5 of the Modified General Conditions is hereby renumbered as paragraph 11.6.2.6.

SC 11.9.3 Paragraph 11.9.3 and subparagraph 11.9.3.1, 11.9.3.2, 11.9.3.3 of the Modified General Conditions are deleted in their entirety.

SC 12.1 Paragraph 12.1 is amended by deleting the paragraph in its entirety and substituting the following:

"The Contract Times (or Milestones) may only be changed by a Change Order or a Written Amendment. Any claim for an adjustment of the Contract Times (or Milestones) shall be based on written notice delivered by the party making the claim to the other party and to Engineer promptly (but in no event later than ten days) after the occurrence of the event giving rise to the claim. The notice shall indicate the nature of the event, its anticipated length, and its probable effect upon the progress of the Work. If the event causing the delay, hindrance, interference, or obstruction is continuing, the Contractor must give written notice every month at the same time it submits its request for payment to the Owner. Notice of the extent of the claim with supporting data shall be delivered within thirty days after such occurrence (unless Engineer allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. Such notice

of claim shall include further documentation of the event and a formal Change Order request for an extension of time for any delay, hindrance, interference, or obstruction caused thereby. The written request for time extension shall state the cause of the delay, hindrance, interference or obstruction and documentation of the schedule of the Project and other documentation to demonstrate a delay in the critical path of the Work or overall Project completion. All claims for adjustment in the Contract Times (or Milestones) shall be determined by Engineer in accordance with paragraph 9.11 if Owner and Contractor cannot otherwise agree. No claim for an adjustment in the Contract Times (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph 12.1."

SC 12.3 Paragraph 12.3 is amended by deleting the paragraph in its entirety and substituting the following:

"To the extent Contractor is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of Contractor and which Contractor is unable to prevent to avoid through the exercise of due diligence by Contractor, Subcontractor, or Supplier or for whose acts any of them may be liable, the Contract Times (or Milestones) will be extended in an amount equal to such reasonable time as the Owner may determine that such act, omission, or neglect has delayed the critical path of the Work or overall completion of the Work after considering the advice of the Engineer, but only if a claim is made therefore as provided in paragraph 12.1. Delays beyond the control of Contractor shall include, but not be limited to Owner's failure to comply with its material obligations under this contract, to the extent the direct cause of such delay, acts or neglect of utility owners or other contractors performing other Work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier or anyone directly or indirectly employed by shall be deemed to be delays within the control of Contractor."

SC 12.4 Paragraph 12.4 is amended in its entirety to read:

"Where Contractor is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of Contractor including, without limitation any act, omission or neglect of Owner, Engineer or any of their officers, employees, agents, consultants or any party for which Owner and Engineer are responsible, an extension of the Contract Times (or Milestones) in an amount allowable and determined in accordance with paragraphs 12.1 and 12.3 shall be the Contractor's sole and exclusive remedy for any and all damages resulting from such delay, hindrance, interference, or obstruction to breach of contract, breach of implied warranty, or tort, and including, but not limited to, loss of profits, loss of use, material and/or labor escalation, home and project office overhead expenses, and equipment rental. No payment or compensation of any kind shall be made to the Contractor for damages because of such delay, hindrance, interference, or obstruction attributable to breach of contract, breach of implied warranty, or tort, and including, but not limited to, loss of profits, loss of use, material and/or labor escalation, home and project office overhead expenses, and equipment rental. No payment or compensation of any kind shall be made to the Contractor for damages because of such delay, hindrance, interference, or obstruction of whatever duration in the orderly progress

of the work, whether such delay, hindrance, interference, or obstruction be reasonable or unreasonable, avoidable or unavoidable.

Contractor expressly agrees not to make delay claims, and hereby waives any claim for damages against the Owner, the Engineer, the officers, directors, agents, employees, consultants, and representatives on account of any such delay, hindrance, interference, or obstruction from any cause of event whatsoever, including but not limited to the aforesaid causes and events and agrees that Contractor's sole and exclusive right, and remedy in the cause of any such delay, hindrance, interference or obstruction shall be an extension of the Contract Time in accordance with paragraphs 12.1 and 12.3. Without limitation, the Owner's exercise of its rights under the changes in the Work clause, regardless of the extent or number of such changes, shall not under any circumstances be constructed as a compensable delay, it being acknowledged that the Contract Price includes and anticipates any and all such delay, hindrance, interference, and obstruction whether it be reasonable or unreasonable, avoidable or unavoidable."

SC 13.10 Paragraph 13.10 is amended by adding the following to the end of the paragraph:

"Contractor shall not be allowed an increase in the Contract Price or extension of the Contract Time (or Milestones) to the extent attributable to any exercise by Owner of its rights under this paragraph."

SC 13.14A The first sentence of Paragraph 13.14 is amended by deleting the sentence in its entirety and substituting the following:

"If Contractor fails within a reasonable time after written notice from Engineer to initiate, make continuous reasonable progress toward completing and complete the correction of defective Work or to remove and replace rejected Work as required by Engineer in accordance with paragraph 13.11 or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days' written notice to Contractor, correct and remedy any such deficiency."

SC 13.14B The last sentence of Paragraph 13.14 is amended by deleting the sentence in its entirety and substituting the following:

"Contractor shall not be allowed an extension of the Contract Times (or Milestones) or an increase in the Contract Price to the extent attributable to any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies hereunder."

SC 14.5.1 Paragraph 14.5.1 is amended by deleting the paragraph in its entirety and substituting the following:

"The Work has progressed to the point indicated on the Application for Payment and the portion of the Work completed as of such time constitutes satisfactory progress toward final completion of the Work in accordance with the Contract Documents,".

SC 14.7.4 Paragraph 14.7.4 is amended by deleting the paragraph in its entirety and substituting the following:

"Engineer has actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.16 inclusive."

SC 14.7.8 Paragraph 14.7.8 is amended by deleting the paragraph in its entirety and substituting the following:

"Owner has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.7.1 through 14.7.3 or paragraphs 15.2.1 through 15.2.16 inclusive or that Contractor has failed to satisfy any of the requirements set forth in paragraphs 14.2 or that Engineer's determination under any of paragraphs 14.5.1 through 14.5.3 was in error."

SC 14.8 Paragraph 14.8 is amended by deleting the paragraph in its entirety and substituting the following:

"When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work meets the requirements for Substantial Completion (and indicate any items which are regarded by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion. Within a reasonable time thereafter, Owner, Contractor and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work to meet the requirements for Substantial Completion, Engineer will notify Contractor in writing giving the reasons therefore. If Engineer considered the Work substantially complete, Engineer will prepare and deliver to Owner a tentative certificate of Substantial Completion
which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work does not meet the requirements for Substantial Completion, Engineer will within said fourteen days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

At the time of delivery of the tentative certificate of Substantial Completion Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment."

SC 15.2.5 Add the following new paragraphs 15.2.5 through 15.2.16 after paragraph 15.2.4 of the Modified General Conditions to read:

"15.2.5 or, if the Contractor is adjudged bankrupt or insolvent;

15.2.6 if the Contractor makes a general assignment for the benefit of creditors;

15.2.7 if a trustee or receiver is appointed for the Contractor or for any of the Contractor's property;

15.2.8 if the Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws;

15.2.9 if the Contractor repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment;

15.2.10 if the Contractor fails to make payments to Subcontractors or for labor, materials, or equipment;

15.2.11 if the Contractor disregards laws, ordinances, rules, regulations, or orders of any public body having jurisdiction;

15.2.12 if the Contractor disregards the authority of the Engineer;

15.2.13 if the Contractor otherwise violates in any substantial way any provisions of the Contract Documents;

15.2.14 if the Contractor fails to begin the work within the time stated in the Notice to Commence Work and completion of phases of Work in accordance with schedules approved by the Owner;

15.2.15 if the Contractor discontinues the Work or fails to resume the work when directed by the Owner; or

15.2.16 if the Contractor does not perform the Work in a manner acceptable to the Owner."

SC 15.4 Paragraph 15.4 of the Modified General Conditions is amended in its entirety to read:

"Upon seven days written notice to Contractor and Engineer, Owner may, without cause, and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, Contractor shall be paid for all Work executed and termination expenses which shall be limited to the unavoidable costs to the Contractor of materials ordered but not installed as of the date of termination, as approved by the Engineer. Contractor shall also not be entitled to any expenses, claims, costs, losses

or damages to the extent attributable to Contractor's failure to use all reasonable efforts to minimize or mitigate any such expenses, claims, costs, losses or damages."

SC 16.7 Paragraph 16.7 is deleted in its entirety.

SC 17.1 Paragraph 17.11 is amended by deleting the paragraph in its entirety and substituting the following:

"Notices. All notices, consents and other communications required or permitted by this Agreement shall be in writing and shall be deemed to have been given when delivered by hand to an authorized representative or officer of any party or two (2) days after having been deposited in the United States mail, in registered or certified form, return receipt requested, postage prepaid, and addressed as follows:

If to Owner: Address as shown in the Agreement

If to Contractor: Address as shown in the Agreement

If to the Engineer: CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

Changes in the respective addresses, or addresses to which such notices shall be directed may be made from time to time by any such person by notice to the others."

E. TECHNICAL SPECIFICATIONS

Special Attentions
Special Provisions

S P E C I A L A T T E N T I O N

ERRATA SHEET

The following table is a list of corrections to the 2016 *Standard Specifications for Road and Bridge Construction*, as of the date of this Proposal.

Section	Description	Correction	Date
DIVISION 100			
104.03	Maintenance of Traffic	Amend 'winter work suspensions' in 104.03 to read 'Winter Suspension'.	06/07/07
DIVISION 200			
DIVISION 300			
DIVISION 400			
DIVISION 500			
520	Classes of Concrete	Insert the following footnotes under Table 520-1A: [1] See 3.1.6 TESTING [2] For mixes containing fly-ash, silica fume, slag, or any other pozzolanic or cementitious material, the water/cement ratio of the concrete mix shall be based on the water cementitious (cement + pozzolanic or cementitious material) ratio of the mix. This water to cementitious ratio shall not exceed those listed in Table 1A. The maximum water/cement ratios listed for Concrete Class B and T are for design purposes only. [3] Deck Overlays. [4] <u>Maximum</u> 84 day Compressive Strength for Flowable Fill, Excavatable shall not exceed 200 psi. [5] These are recommended values that may be used as a starting point for a mix design that has shown ability to meet the requirements. The amount of cement shall be adjusted and fly-ash or ground granulated blast furnace slag shall be used provided the mix design meets the minimum and does not exceed the maximum compressive strength in accordance with 2.11.1. [6] Target values shown are for mix design approval only and are not intended for use as quality control or quality assurance requirements.	06/11/16

Section	Description	Correction	Date
520	Classes of Concrete – Performance Requirements (QC/QA)	Amend the title of *Table 420-1B - Class of Concrete – Performance Requirements (QC/QA)* to *Table **5**20-1B - Class of Concrete – Performance Requirements (QC/QA)*	11/28/16
528	Shear Key Grout for Butted Beams	Amend 528.2.9.1 to read: *Grout for shear keys shall be an approved grout as listed in Section 528A of the Qualified Products List.* Amend 528.2.9.2 to read: *For testing, 3 neat 2" cubes shall be molded and cured in accordance with AASHTO T 106 (ASTM C 109). The average compressive strength of the 3 cubes at 7 days shall be a minimum of 6000 psi.*	06/10/16
528	Installation of Deck Panels	Replace last sentence of 528.3.22.6.4 to read: *If leveling screws are used, they shall be completely removed and the holes filled with grout listed in Section 528A of the Qualified Products List prior to placement of deck concrete.*	06/10/16
550	PTFE Surfaces for Bearings	Amend the first sentence of 550.2.10 to read: *PTFE for use in expansion bearing assemblies shall be 100 percent virgin (unfilled) **polytetrafluoroethylene** polymer...*	08/03/16
550	Anchor Rods	Amend 550.3.15.4.1 to read: *Anchor rods shall be set in one of the following materials:* *(a) Non-shrinking, non-ferrous, cement-base grout listed in Section 550A of the Qualified Products List. This grout shall be used only when both the temperature of the masonry and the ambient temperature are kept at 40 °F or above until the grout has cured.* *(b) Sulfur.* Amend the first sentence of 550.3.15.4.2 to read: *Non-shrinking, non-ferrous, cement base grout shall be a product as included in Section 550A of the Qualified Products List.*	06/10/16
563	Bridge Rail	Amend 4.1 to read: *Bridge rail, of the type specified, will be measured by the linear foot to the nearest tenth of a foot.*	06/27/16
DIVISION 600			
606	Handrail	Amend 606.2.8.2 to read: *Grout for anchoring the pipe posts shall be High Strength, Impact Resistant, Non-shrink Grout as included in Section 528A of the Qualified Products List.*	06/10/16

Section	Description	Correction	Date
606	Temporary Impact Attenuators	Amend in 606.2.10.2 the reference to *2.12.4* to *2.**10**.4*.	11/28/16
	Repair of Hardened Concrete	Amend in 606.3.7.12.A the reference to *Fast Set Non-shrink Patching Mortar* to ***Rapid-Hardening Patching Material***.	03/21/18
609	Curbing	Amend the 2nd sentence of 609.2.5 to read: *The non-shrink, non-metallic grout shall be a product as included in Section 550A of the Qualified Products List.*	06/10/16
609	Curb anchors	Amend 609.3.1.5.1 to read: *Curb anchors shall be set and grouted using non-shrink, non-metallic grout as shown on the plans.*	06/10/16
621	Delineators	Add the following to the end of 621.3.1.3: *Grout shall be as listed in Section 550A of the Qualified Products List or as directed by the Engineer.*	06/10/16
632	Pavement Markings	Amend the AASHTO reference in 3.2.3.1 to read: *AASHTO M248 **Type** F*	
DIVISION 700			
707	Cement Mortar	Amend 2.3 to read: *Testing for impurities shall comply with AASHTO T 21. Results that are darker than the standard shall be cause for rejection, except as provided in 2.3.1.* Amend 2.3.1 to read: *Sand for mortar not conforming to 2.3 shall be tested in accordance with AASHTO T 71 and shall meet the requirements of 5.2.3 of AASHTO M 45.*	10/31/16

SPECIAL ATTENTION

THIS PROJECT IS TO BE BID AND CONSTRUCTED UNDER THE 2016 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION

NOTICE OF SUPPLEMENTAL SPECIFICATIONS

The following table is a list of all of the Supplemental Specifications that have been adopted as additions or revisions to the *Standard Specifications for Road and Bridge Construction*, **March 2016** Edition as of the date of this Proposal. The Bidder is responsible to examine each item to determine its effect, if any, upon the Contract.

Note: Due to the limited scope of some projects, not all Supplemental Specifications will be included in all Proposals. All Supplemental Specifications are available on-line: www.nh.gov/dot/org/projectdevelopment/highwaydesign/specifications/.

Section	Description	Revision	Previous Revision Date	Current Revision Date
DIVISION 100				
101	Definitions and Terms	101.79 – Revises Frequency of QPL Updates (06/06/17) 101.116-119 – Revises Definitions of Weather Days and Working Days (04/02/18)	06/06/17	04/02/18
106.04	Qualified Products List	Revises Frequency of Updates		06/06/17
107.01	Legal Relations and Responsibility to Public	107.01 – Revises References to DES Rules and Regulations		07/06/18
108.09	Prosecution and Progress	108.09 – Amends the Requirements for Liquidated Damages		07/06/18
109.04	Differing Site Conditions, Changes and Extra Work	Revises Rental Rate Blue Book Online Requirements (04/02/18)	01/06/12	04/02/18
DIVISION 200				
211.3.4	Vibration Monitoring	Adds reference to pre- and post-construction survey requirements		04/05/17
DIVISION 300				
DIVISION 400				
401	Plant Mix Pavements - General	2.5.1 - Adds winter binder to the design control points (04/05/17) 2.10 – No greater than 1% TRB (06/06/17) 3.4.1 – Revises Cold Feeder Requirements (07/06/18)	07/06/18	11/07/18

		3.4.7.1 – Revises Recycled Materials Weighing Procedures (07/06/18) 3.4.11 - 3.4.15 – Describes Introduction of Recycled Materials at a Batch Plant and Controls Minimum Dry Time for Recycled Aggregates (07/06/18) 3.5.2 & 3.5.2.1 – Revises Recycled Materials Requirements (07/06/18) 3.10.10.1 – Removes penalty for failing tack (06/06/17) 3.12 – Allows a reduction in use of pneumatic-tired rollers (06/06/17) 3.17.1.3 - Revise NETTCP QA Technologist requirements (11/07/18) 3.17.3.1.1 – Revises HMA gradation specification limits, completes addition of winter binder, removes allowance for Aim change after two sub-lots (06/06/17) 4.1.1 – Removes reference to Night Items (06/06/17)		
403.1.3	Night Item Removal	Removes all references to Night Items in Section 403		06/06/17
410	Bituminous Surface Treatment	2.1- Adopts new AASHTO Specifications for Emulsions (04/13/16) 3.4.1.1 – Revises pavement conditions, application rate for tack (01/04/17) 2.1.1, 2.1.2, 3.2, 3.3, 3.4 – Identifies tack sampling and penalties for non-conformance (06/06/17) 3.2 & 3.5.2 – Amends Distribution Equipment and Initiates an Annual Tack Truck Inspection Program (07/06/18)	06/06/17	07/06/18
411.3.5.5	Pneumatic Tired Roller	3.5.5 – Requires the use of pneumatic tired rollers on all Section 411 paving (06/06/17). 5.1.1 – Ensures Tack Used for PMST and Leveling Course is a Pay Item (07/06/18) Removes Pay Items (04/02/18)	04/02/18	07/06/18

417	Rumble Strip Inlay	2.1 & 3.7 – Specifies PMST as the asphalt inlay to fill in rumble strips		04/02/18
DIVISION 500				
520	Portland Cement Concrete	3.8.1.1 – Revises the acceptable concrete delivery temp to 90° F (04/02/18) 3.1.6.2.1.2 A - Revise NETTCP QA Technologist requirements (11/07/18)	04/02/18	11/07/18
530	Waterproofing Concrete Surfaces	Deletes Section 530		05/21/18
538	Barrier Membrane	3.3.5 – Updates the laydown temperature range.		09/15/16
563	Bridge Fence	2.8 – Allows aluminum ties for attaching bridge fence		09/15/16
568	Structural Timber	2.2, 3.4.4 & 3.4.5 – Adds specific references to AWPA Standards & wooden piles		04/02/18
582	Preformed Joint Filler	2.4 – Revises Preformed Joint Filler Requirements		04/02/18
DIVISION 600				
603	Plastic Pipe	2.3, 2.6 & 2.7 – Updated to include Polypropylene Pipe as well as associated UV Requirements (04/13/16) 2.13 – Adds Contractor's Option (06/02/16)	04/13/16	06/02/16
605	Plastic Pipe	2.1 & 2.2 – Updated to include Polypropylene Pipe		04/13/16
606	Guardrail	2.2 – Adds specific references to AWPA Standards & wooden piles		04/02/18
608	Detectable Warning Devices	2.6 – Updates Detectable Warning Device Requirements		04/02/18
609	Curbs	2.4.1.1 – Allows the substitution of PG 76-28 binder in lieu of fibers		04/02/18
615	Cofferdam for Sign Installation	5.1.5 – Revises payment for sheeting and shoring for sign structures		04/02/18

645	Erosion Control	1.1 – Matting Section Revised and Pay Items Revised (04/02/18) 1.1 – 'Stabilization' changed to 'matting' (02/01/17) Incorporates BFM, FRM and SMM into the Standard Specs (07/06/18) 1.2.1 – Add Erosion Control Plans to furnish for SWPPP (11/07/18) 3.1.5 – Update construction dates for allowable area of exposed, unstabilized soil (11/07/18)	07/06/18	11/07/18
DIVISION 700				
702	Bituminous Materials	Amends Table 702-1 & 702-2 (04/13/16) Amends Tables, and Adds test method (05/11/16)	04/13/16	05/11/16

MADBURY
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May 6th, 2015

S P E C I A L P R O V I S I O N

AMENDMENT TO SECTION 201 – CLEARING & GRUBBING

This special provision allows for clearing, grubbing and tree cutting within the project limits. All applicable provisions of 201 shall apply to clearing and grubbing except as amended or modified below.

Replace 201.4.2 to read:

4.2 Trees will not be measured for payment. Tree cutting is subsidiary to the clearing and grubbing item.

Replace 201.4.3 to read:

4.3 Stumps will not be measured for payment. Stump removal and disposal (or grinding) is subsidiary to the clearing and grubbing item.

Replace 201.4.4 to read:

4.4 Roadside cleanup will not be measured for payment. Roadside cleanup is subsidiary to the clearing and grubbing item.

Replace 201.5.2 to read:

5.2 Cutting and removing trees and stumps shall be subsidiary to this item's lump sum price.

Replace 201.5.2.3 to read:

5.2.3 Cutting and removing small trees and stumps shall be subsidiary to this item's lump sum price.

Replace 201.5.2.4 to read:

5.2.4 Cutting and removing large trees and stumps shall be subsidiary to this item's lump sum price.

Replace 201.5.4.1 to read:

5.4.1 Roadside cleanup shall be subsidiary to this item's lump sum price.

<u>Amend</u> Pay items and unit:

201.1	Clearing and Grubbing (F)	LS

MADBURY
1162

May 6th, 2020

SPECIAL PROVISION

AMENDMENT TO SECTION 520- PORTLAND CEMENT CONCRETE
Item 520.03 - Concrete Class AA, Approach Slabs (F)

This special provision is for the purpose of the approach slab concrete only. All applicable standard provisions of 520 shall apply to all cast-in-place concrete except as amended or modified below. The QC/QA provisions of this section shall not apply to the approach slab concrete.

Add to 520.1.1 the following:

520.1.1.2 The QC/QA requirements of this section shall not apply to the approach slab concrete.

Add to Pay items and units:

520.03	Concrete Class AA, Approach Slabs	Cubic Yard

MADBURY
1162

May 6th, 2020

S P E C I A L P R O V I S I O N

AMENDMENT TO SECTION 544 -- REINFORCING STEEL

544.3 – Reinforcing Steel (Contractor Detailed)
544.31 – Reinforcing Steel, Epoxy Coated (Contractor Detailed)

This special provision requires that the Contractor prepare the shop plans for the fabrication and field layout of the reinforcing steel. The plans shall include quantities and the bending schedule. The cost of preparing reinforcing steel shop plans and bar schedules shall be included.

Add 2.1.3 to read:

2.1.3 All abutment and wingwall reinforcement that does not project into a transition curb shall be uncoated black bar.

Add 2.4.5 to read:

2.4.5 All reinforcement for the brush curb and bridge deck overlay shall be epoxy coated.

Add 2.5.1 to read:

2.5.1 Synthetic fiber reinforcement shall be used in the concrete approach slabs as indicated on the plans.

Amend 3.1 Bar list to read:

3.1 Shop Plans and Bar Schedule.

3.1.1 The Contractor shall prepare the reinforcing steel shop plans from the typical design details shown on the Contract Plans. For the fabrication and field layout of the reinforcing steel, the shop plans shall be complete in detail including bar marks, bar location and spacing, lengths, splice length, and splice locations. The shop plans shall have a bar list, bending diagrams, bar weight by size, and bar quantity grand total.

3.1.2 The shop plans shall be prepared on Department-standard full-size sheets (22 inches by 34 inches). ~~The sheets may be vellum or archival-quality mylar material~~. The shop plans

shall be properly titled as to project location and bridge components (as Abutment A, Deck, etc.) similar to the Contract Drawing title box.

3.1.3 The shop plans and bar schedule shall be submitted to the Engineer in accordance with 105.02. The Contractor shall allow sufficient time for review. No payment shall be made for any delay caused by the shop plan review process due to ordering, preparation, review, revisions or shop plan errors.

3.1.4 The Contractor shall attempt to maximize reinforcing bar lengths by minimizing the number of splices.

3.1.5 Original tracings of corrected shop drawings shall be delivered to the Department before final payment will be made.

3.1.6 The reinforcing steel quantities as shown on the Contract Plans may vary approximately 10% plus or minus from the required quantity.

Add to Method of Measurement:

4.1.1 Reinforcing Steel (Contractor Detailed); Reinforcing Steel, Epoxy Coated (Contractor Detailed); and Reinforcing Steel, will be measured by the pound of reinforcing steel placed as shown on the plans or ordered.

Add to Basis of Payment:

5.1.2 The accepted quantity of Reinforcing Steel (Contractor Detailed); Reinforcing Steel, Epoxy Coated (Contractor Detailed); will be paid for at the Contract unit price per pound complete in place.

Add to pay items and units:

544.3	Reinforcing Steel (Contractor Detailed)	Pound
544.31	Reinforcing Steel, Epoxy Coated (Contractor Detailed)	Pound

MADBURY
1162

May 6th, 2020

S P E C I A L P R O V I S I O N

AMENDMENT TO SECTION 619 – MAINTENANCE OF TRAFFIC

619.1 – Maintenance of Traffic

This special provision amends the required equipment and services that the Contractor must provide.

Amend 1.1 to read:

1.1 This work shall consist of providing and maintaining safe and passable traffic accommodations for public travel; preventing dust nuisance; providing traffic control flaggers; and furnishing, erecting and maintaining necessary traffic signs, barricades, lights, signals, delineators, concrete barriers, pavement markings, and other traffic control warning devices and shall include pilot car operations and other means of guidance of traffic through the work zone. The Contractor shall be responsible for this work and shall perform it in accordance with the current MUTCD, Work Zone Traffic Control Plans, the approved Traffic Control Plan (TCP) and these specifications.

Add to Description:

1.3 The traffic control plan shall include the Contractor's detailed plan for controlling traffic at the project site and along the detour route and shall be in conformance with the MUTCD and other applicable standards. This plan shall include specific design details on lane closures, detours, and temporary bridges. The plan shall also include the layout of signing, barricades, and other warning devices, as well as the placement of flaggers and uniformed officers. If the Contractor does not submit a traffic control plan for approval, it will be presumed that the Contractor plans to adhere to the Traffic Control Plan contained in the Contract. Changes to the approved traffic control plan shall be submitted to the Engineer for review and approval at least fifteen working days in advance of implementation of the change.

Add to Construction Requirements:

3.4 Flaggers shall meet the requirements of section 618.

Add to Basis of Payment:

5.1.10 The cost of flagger services shall be included as part of item 619.1.

S P E C I A L P R O V I S I O N

SECTION 1008 – ALTERATIONS AND ADDITIONS AS NEEDED

Item 1008.9 – Testing of Materials

Description

1.1 The Contractor shall employ an independent, qualified testing laboratory approved by the Engineer for conducting all required initial tests of concrete, structural steel inspection and weld testing, trench backfill and embankment compaction and other like materials as specified and directed by the Engineer. Test results and laboratory recommendations shall immediately be made available to the Engineer. Three (3) certified copies of the test results bearing the name of the testing company, type of test, test number, date and location test was conducted, are to be presented to the Engineer promptly enabling the Engineer to make his determination of the acceptability or unacceptability of the material to meet these specifications.

1.2 All additional tests necessitated by the failure of initial tests as determined by the Engineer shall be conducted as directed by the Engineer. The Contractor shall take immediate corrective measures as suggested by the testing laboratory and/or directed by the Engineer to make the materials meet or exceed these specifications.

Construction Requirements

3.1 Concrete Testing

3.1.1 All concrete to be used in the work shall be subject to testing to determine whether it conforms to the requirements of the specifications. The methods of testing shall conform to Section 520 of the Standard Specifications. The place, time, frequency and method of sampling will be determined by the Engineer in accordance with the particular conditions of this project.

3.1.1.1 Field tests of concrete for compressive strength shall be taken, cured and tested by the approved testing laboratory as directed by the Engineer. A minimum of four (4) test specimens shall be made for each test. One specimen shall be broken at 7 days, one at 14 days, the other at 28 days. Specimens shall be made and tested in accordance with AASHTO T 22, AASHTO T 23 and AASHTO T 141 as specified in Section 520. Where there is any question as to the quality of the concrete in the structures, the Engineer will require the Contractor at his expense, to have tests made by an approved

independent testing and inspection laboratory. Such tests shall be in accordance with the "Standard Methods of Securing, Preparing and Testing Specimens of Hardened Concrete for Compressive and Flexural Strengths" (ASTM Designation C42) or Sections 202 and 203 of the current A.C.I. Building Code for Reinforced Concrete (A.C.I.318) as may be required. The criteria for acceptability of the concrete under the latter shall be that given therein. Concrete failing to meet the specification requirements shall be removed and replaced at the Contractor's expense.

3.2 Structural Steel Inspection and Weld Testing

3.2.1 All fabricated structural steel and field welding to be used in the work shall be subject to testing to determine whether it conforms to the requirements of the specifications. The methods of testing shall conform to Section 550 of the Standard Specifications. The place, time, frequency and method of sampling will be determined by the Engineer in accordance with the particular conditions of this project and as defined in Section 550.

3.3 Trench Backfill, Roadway Bases & Embankment Compaction Testing

3.3.1 The Contractor shall provide samples of each backfill material from the proposed sources of supply. The Contractor shall allow sufficient time for testing and evaluation of results before material is needed. Samples from alternate sources shall be submitted if required. The Engineer will be the sole and final judge of the suitability of all materials. The requirements of Section 203.3.8 apply to this section. When dual specifications are present or conflict, the more stringent shall govern.

3.3.2 Materials in question pending tests results shall not be used. Any materials rejected shall be removed and replaced with new acceptable materials whether in stockpiles or in place.

3.3.3 Compaction shall continue until the unit dry weight of the fill reaches a value of not less than the specified maximum unit dry weight attained in a laboratory compaction test performed under the specifications of ASTM D1557-64T, Method "A" (Backfill material of a stony nature shall be tested under Method "C" or "D" of the same ASTM Designation) or other approved ASTM or AASHTO Specifications. Such tests shall also be used for establishing the optimum moisture content of the material. The in-place dry unit weight of the compacted material shall be determined by methods specified under ASTM "D" 1556-58T or other approved ASTM of AASHTO Specifications. The in-place compaction test to be consistent with the approved laboratory compaction test.

3.3.4 At least one laboratory compaction test shall be performed for each distinctive type of material to be incorporated. These laboratory tests to be taken at the suggestion of the testing laboratory and/or as directed by the Engineer. A minimum of two (2) in-place moisture-density determinations shall be made for each 100 linear feet of trench backfilled, roadway base constructed per 2 lifts of granular backfill installed. The actual number of compaction tests, their locations and depth shall be determined by the Engineer. The

percentage compaction of the fill at the point of the in-place moisture-density test shall be computed as follows:

Percentage compaction = DF x 100 / DL in which:

DF= Unit dry weight in pound/cubic feet of sample in field moisture density determinations.

DL= Maximum unit dry weight in pound/cubic feet obtained in the specified laboratory compaction test on a sample of the same type of material.

3.3.5 If the percentage compaction at any point is found to be unacceptable, additional compaction with or without modification of the field moisture content as directed shall be performed and additional moisture-density determinations made. This procedure shall be repeated until satisfactory compaction is obtained.

3.3.6 The Contractor will cooperate with the testing laboratory in obtaining field samples of in-place materials after compaction. Also incidental field labor and equipment necessary to dig and backfill test holes shall be furnished by the Contractor.

Basis of Payment

5.1 All payment for initial testing of concrete, granular bridge backfill, trench backfill, roadway bases and embankment compaction and other like materials as specified and directed by the Engineer will be made by the Owner to the Contractor based on and in the amount of submitted invoices from the testing firm. The Contractor shall not be entitled to any mark-up on the submitted invoices.

5.2 All additional tests necessitated by the failure of initial tests as determined by the Engineer shall be conducted as directed by the Engineer and all costs incurred from these additional tests shall be borne by the Contractor.

5.3 All work performed by the Contractor in connection with this Section shall be considered incidental to other contract items bid.

Pay Items and Units:

1008.9	Alternations and Additions as Needed – Testing of Materials	Dollar

The allowance for Item 1008.9 on this project has been set at $5,000.00.

APPENDIX A

GEOTECHNICAL RECOMMENDATIONS

JOHN TURNER
CONSULTING

GEOTECHNICAL INVESTIGATION REPORT

MADBURY NUTE ROAD BRIDGE
Nute Road
Madbury, New Hampshire 03823

Prepared for:

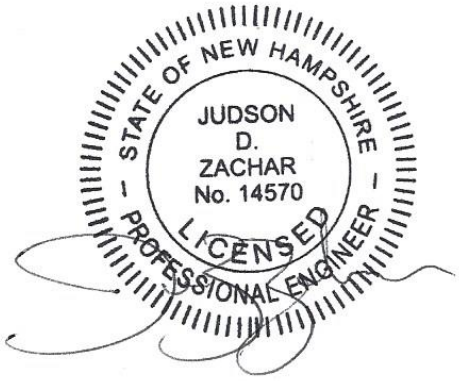
CMA Engineers, Inc.
35 Bow Street
Portsmouth, New Hampshire 03801

Prepared by:

John Turner Consulting, Inc.
19 Dover Street
Dover, New Hampshire 03820

JTC Project No. 18-15-086

September 11, 2018



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JOHN TURNER
CONSULTING

September 11, 2018
CMA Engineers, Inc.
35 Bow Street
Portsmouth, New Hampshire 03801
Attn: David Bacon

RE: Geotechnical Investigation Report
Madbury Nute Road Bridge
Nute Road
Madbury, New Hampshire 03823

Dear Mr. Bacon:

In accordance with our proposal and authorization to proceed, John Turner Consulting, Inc. (JTC) has performed a geotechnical investigation for the Madbury Nute Road Bridge to be located over the Bellamy River on Nute Road in Madbury, New Hampshire. Presented herein and attached are the results of the site subsurface investigation, and our recommendations regarding the design and construction of the proposed wall repair/reconstruction, and other geotechnical related concerns or issues.

We appreciate the opportunity to assist you on this venture and we look forward to working with you on this project through its completion. Please do not hesitate to contact us if you have any questions or require additional information.

Sincerely,
JOHN TURNER CONSULTING, INC.

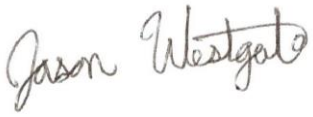

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Table of Contents

1.0 INTRODUCTION

John Turner Consulting, Inc. (JTC) is pleased to present this *Geotechnical Investigation Report* for the proposed Madbury Nute Road Bridge to be located over the Bellamy River on Nute Road in Madbury, New Hampshire. JTC conducted geotechnical explorations, laboratory testing, and engineering evaluations in general accordance with our proposed scope of services submitted to CMA Engineers, Inc. on August 3, 2018. Our work was authorized on August 7, 2018.

The purpose of the geotechnical investigation was to obtain information on the subsurface conditions at the site and to provide geotechnical engineering recommendations to support the planning, design, and construction of the proposed development. Geotechnical explorations and laboratory testing services were performed in August of 2018.

This report summarizes available project information, presents the geotechnical exploration and laboratory testing programs, describes the subsurface conditions encountered, and provides geotechnical engineering recommendations to support the planning, design, and construction of the proposed bridge structure. The contents of this report are subject to the attached *Limitations*.

2.0 PROJECT INFORMATION

The following subsections provide general descriptions of the site, the regional geologic setting, and the proposed development.

2.1 Site Description

The project involves an existing bridge in Madbury, New Hampshire on Nute Road. The bridge crosses over the Bellamy River, which flows approximately west to east. The site is bordered by residential properties and woods on both sides and lies north of the intersection of Nute Road and the Oyster River. The elevations gradually slope from the north side of the bridge to the south side, from approximately elevation 153 feet to approximately elevation 151 feet, respectively.

The existing bridge consists of a bitumen coated galvanized steel structural plate pipe arch having a 9.25-foot rise and a 15.33-foot span. Based on 1958 design drawings, the pipe is bedded on and backfilled with gravel and has partial upstream and full downstream dry rubble headwalls. It appears that the pipe was installed between the dry rubble abutments of a pre-existing bridge. The pipe extends approximately 34 feet downstream from the heel of the westerly wing walls of the dry rubble abutments. The pre-existing and existing structures appear to be simple structures that have been supported on shallow foundations without issues.

2.2 Regional Geologic Setting

JTC's review of the surficial soils mapped in the vicinity of the bridge consist predominantly of glacial till (Surficial Geologic Map of the Dover West Quadrangle Strafford County, New

Hampshire; New Hampshire Department of Environmental Services Open File Report; Koteff, Carl; Goldsmith, Richmard; and Gephart Gregory; 1991). Freshwater swamp and marsh deposits are mapped upstream of the bridge. Marine sands are mapped to the southwest of the bridge.

Further review of bedrock mapped in the vicinity of the bridge indicated the presence of medium bedded granofels and schist of the Berwick Formation (Bedrock Quadrangle Maine and New Hampshire Geology of the Kittery 1:100,000 Quadrangle, Maine and New Hampshire; Maine Geological Survey Open File No. 08-78-2008).

2.3 Proposed Development

JTC understands that the proposed development involves the reconstruction/repair of the existing bridge. JTC understands that the design details are still being developed, however, a site plan, "General Plan & Section" prepared by CMA Engineers, dated December 2013, was given for reference. The provided plans indicate that the existing roadway elevation over the existing bridge is at EL. 152+ feet and the current culvert invert is at EL. +140.3 feet. Further, we understand that design details are still being developed and site-specific structural loading was not available at the time of this report, but that the intent is to support the bridge on a conventional shallow spread footing foundation.

3.0 GEOTECHNICAL EXPLORATIONS

3.1 Soil Borings

JTC subcontracted Soil Exploration Corp (SoilEx) to perform two (2) geotechnical test borings (designated as B-1 and B-2) via a Mobile B-57 truck-mounted drill rig. JTC directed the drilling, testing, and sampling activities and logged the subsurface conditions encountered at each boring location.

The test boring locations were selected in relation to the existing site features and proposed development, and under the constraints of drill rig access and utility conflicts. Subsequently, the relative location of each boring was established via measurements from existing site features, no plan(s) were provided prior to drilling. The attached *Boring Location Plan* depicts the approximate exploration locations.

The test borings were advanced to depths ranging from 17 feet to 29 feet below the ground surface (bgs) utilizing 3¼-inch inner-diameter hollow stem augers (HSAs). As the borings were advanced, standard penetration tests (SPTs) were conducted at regular intervals and soil samples were obtained via 2-inch outside-diameter split-spoon samplers driven by a 140-pound automatic hammer. SPTs were performed in general accordance with ASTM D1586, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils. Soil samples were sealed in moisture-tight containers and returned to JTC's office for further review, classification, and/or geotechnical laboratory testing.

Rock coring was performed in general accordance with ASTM D2113, Standard Practice for Diamond Core Drilling for Site Investigations, using an NX-sized diamond drilling bit and a double-tube core barrel. The rock core was completed at B-1 and was advanced to a depth of 29 feet, 5 feet of which is the actual rock core. The Rock Quality Designation (RQD) is a core recovery percentage in which all the pieces of sound core over 100 mm (4 in.) long are summed and divided by the total length of the core run (Deere 1989). The rock quality designation (RQD) of the rock core sample recovered from boring B-1 was evaluated and is presented on the exploration logs. A photo of the rock core is presented in Appendix G – Site Photos.

The test borings were backfilled with soil cuttings upon completion of drilling. Detailed records of the drilling, testing, and sampling performed, and the soil, bedrock, and groundwater conditions observed at each test boring location are provided on the attached *Test Boring Logs*.

4.0 GEOTECHNICAL LABORATORY TESTING

JTC selected representative soil samples for geotechnical laboratory testing at our in-house laboratory. The following tests were performed:

- 4 Moisture contents; and
- 4 Particle-size analyses.

Geotechnical laboratory testing was performed in general accordance with ASTM procedures. Test results are provided on the attached *Geotechnical Laboratory Testing Reports*.

5.0 SUBSURFACE CONDITIONS

The following subsections describe the site soil, bedrock, and groundwater conditions encountered, based on results of the geotechnical explorations and laboratory testing. Detailed descriptions of the conditions observed at each test boring are provided on the attached *Test Boring Logs*.

5.1 Soils

The overburden soils encountered at the test boring locations appear to be consistent with those described by the published geologic data. The primary soil strata are briefly described in the paragraphs below.

5.1.1 Asphalt

Each boring was drilled into asphalt pavement at the ground surface. The asphalt pavement averaged 4 inches thick. Asphalt was underlain by;

5.1.2 Existing Fill

Soils interpreted to be Fill materials were encountered below the asphalt pavement to a depth of approximately 7.5 feet bgs at boring B-1 and 8.5 feet bgs at boring B-2. The fill was typically described as brown, sand with silt (SP-SM) or brown, sand with silt with gravel (SP-SM). The Fill layers were typically described as loose to very dense based on SPT N-values and observations of drilling.

5.1.3 Marsh Deposits

Marsh Deposits were encountered at both boring locations and consisted primarily of olive brown, silty gravel with sand (GM) or brown, silty sand with gravel (SM). It was encountered at depths of 7.5 feet to 20.3 feet bgs at boring B-1 and ranged from 8.5 feet to 17 feet bgs (full depth of boring) at boring B-2. The soil was considered to be dense to very dense based on SPT N-Values.

5.1.4 Glacial Till

Glacial Till was encountered at boring location B-1 and consisted primarily of gray, silty sand with gravel (SM). It was encountered at a depth of 20.3 feet bgs to the top of bedrock surface at 21.9 feet bgs. These soils were considered to be very dense based on SPT N-Values.

5.2 Bedrock

Practical refusal to further penetration with augers and split-spoon samplers was encountered at boring B-1 and B-2. The depth to refusal was approximately 17 feet bgs at boring B-2 and approximately 22 feet bgs at boring B-1. The refusal in each exploration is interpreted to be refusal on the probable top of bedrock. Bedrock may impact construction and excavation for the proposed bridge project. In case of excavation to those depths, bedrock removal should be expected, and a variety of removal methods should be anticipated (mechanical excavation, ripping, hoe-ram, and possibly blasting).

5.3 Groundwater

Groundwater was encountered at depths of approximately 9 feet bgs at the time of drilling. However, short-term (i.e., during drilling, upon completion of drilling, and/or a few hours after drilling) water levels observed in test borings performed in silty soils should be considered approximate.

JTC estimates that this investigation occurred during a period of seasonally normal ground water. Site groundwater levels should be expected to fluctuate seasonally and in response to precipitation events, construction activity, site use, and adjacent site use.

6.0 GEOTECHNICAL ANALYSIS & RECOMMENDATIONS

The evaluation of the site and the proposed development was based on the subsurface conditions encountered at the exploration locations, results of geotechnical laboratory testing, provided site plans/grading, and provided structural loading conditions, as described herein.

The Existing Fill materials are not suitable for direct support of foundations. The proposed bridge structure can be supported upon shallow foundations bearing on undisturbed native Marsh Deposits, Bedrock, and/or on *Structural Fill* or Crushed Stone built-up from properly prepared native soil or bedrock subgrades, provided that the design and construction recommendations presented herein are satisfied.

6.1 Site Preparation and Grading

Site preparation and grading should be performed in accordance with the following procedures:

- A geotechnical engineer should directly observe site preparation and grading activities;
- The site soils contain substantial proportions of fine sand, silt, and clay, and may degrade and/or become unworkable when subjected to construction traffic or other disturbance during wet conditions. As such, site preparations, grading, and earthworks should be performed during a dry season if possible. The Contractor shall be aware of these conditions and must take precautions to minimize subgrade disturbance. Such precautions may include diverting storm run-off away from construction areas, reducing traffic in sensitive areas, minimizing the extent of exposed subgrade if inclement weather is forecast, backfilling excavations and footings as soon as practicable, grading (and compacting) exposed subgrades to promote surface water run-off, and maintaining an effective dewatering program, as necessary. Over-excavation to remove degraded or unworkable subgrade soils should be anticipated and budgeted (cost and schedule);
- Any existing buildings, structures, and/or associated foundations (including footings, foundation walls, slabs-on-grade, etc.) should be completely removed from proposed bridge and pavement areas and replaced/backfilled with properly placed and compacted *Structural Fill;*
- Any existing subsurface utilities and underground structures should be completely removed from the footprint of the proposed bridge and replaced/backfilled with properly placed and compacted *Structural Fill.* Any existing subsurface utilities in proposed pavement areas should be removed and/or appropriately abandoned in place (e.g., pressure grouting), as approved by the on-site geotechnical engineer;
- The site should be cleared and stripped of any existing asphalt-concrete pavement not designated to remain; existing trees/vegetation not designated to remain; Topsoil, rootmat, forest mat; loamy/organic-laden Subsoil; and any otherwise unsuitable materials;

- Any Existing/Undocumented Fill and any otherwise unsuitable materials should be completely removed from the proposed bridge foundation area (i.e., the proposed bridge footprint plus at least 5 feet laterally);
- In cut areas, the final foot of excavation should be performed using a smooth-edged cutting bucket (no teeth) to minimize subgrade disturbance;
- Following clearing, stripping, and/or cutting, the exposed subgrade soils should be proof-rolled using a large (10-ton) smooth-drum roller with successive passes aligned perpendicularly. However, proof-rolling should not be performed if/when the exposed subgrade soils are wet (i.e., due to presence of groundwater, stormwater, perched water, etc.) because this may result in soil pumping and instability. Therefore, the proof-rolling efforts, including the number of passes and whether to employ static or vibratory methods, should be directed by the on-site geotechnical engineer;
    - Any loose, soft, wet, and/or otherwise unsuitable soils (typically evidenced by rutting, pumping, and/or deflection of the subgrade) should be over-excavated to expose suitable soils, or other remedial measures should be taken, as approved by the on-site geotechnical engineer; and
    - The over-excavation should then be backfilled with properly placed and compacted *Structural Fill*.
- *Structural Fill* should be used for subgrade fill within the bridge foundation area. The placement of *Structural Fill* materials to achieve design subgrades in the bridge foundation area should not begin until the exposed subgrade soils have been directly observed and approved by the on-site geotechnical engineer;
- *Clean Granular Fill* shall be used for backfill behind unbalanced foundation walls/structures as indicated in *Appendix C*.
- *Common Fill* is acceptable for subgrade fill in parking and driveway areas. The placement of *Common Fill* materials to achieve design subgrades in pavement areas should not begin until the exposed subgrade soils have been directly observed and approved by the on-site geotechnical engineer; and
- *Structural Fill*, *Clean Granular Fill*, and *Common Fill* gradation, placement, and compaction requirements are provided in the attached *Specifications*.

6.2 Shallow foundations and Walls

Based on the subsurface conditions encountered at the exploration locations and our current understanding and assumptions relative to the proposed bridge, the following foundation design recommendations are provided:

- The Existing Fill materials are <u>not</u> suitable for direct support of shallow foundations. These materials should be completely removed from the footprint of the proposed bridge, plus at least 5 feet laterally, as described in Section 4.1;

- The bridge can be supported upon shallow foundations bearing on undisturbed native Marsh Deposit Sand (SM), Glacial Till, sound Bedrock, and/or on *Structural Fill* or Crushed Stone built-up from properly prepared native soil and/or bedrock subgrades;
- The State of New Hampshire utilizes the *International Building Code* (IBC). Based on table 1806.2 of the IBC shallow foundations may be designed using an allowable bearing pressure of 4,000 psf for foundations bearing on sedimentary bedrock or 2,000 psf for footings bearing on the native Marsh Deposit Sands or Glacial Till. Design bearing pressures may be increased by one-third (⅓) when considering seismic and or transient wind loading conditions;
- Continuous wall footings should have a minimum width of 2 feet. Isolated column footings should have a minimum width of 3 feet;
- Exterior footings should be founded at least 4 feet below the lowest adjacent grade to provide adequate frost protection; and
    - If competent Bedrock is encountered during excavations for exterior footings, the footings can be founded at a minimum depth of 2 feet below the adjacent grade, atop at least 9 inches of Crushed Stone (cushion layer) placed on clean competent Bedrock, provided that the condition of the Bedrock is inspected by the on-site geotechnical engineer; and
    - If weathered Bedrock is encountered during excavations for exterior footings, the footings should be founded at least 4 feet below final grade, as described herein.
- For footings founded on clean competent Bedrock (and the recommended Crushed Stone cushion layer), total post-construction settlements should be minimal. For footings founded on undisturbed native Marsh Deposits or Glacial Till post-construction settlements should be estimated based on the actual loading conditions.
- Recommended lateral earth pressures and friction factors for unbalanced walls/abutments are provided in Appendix C (attached).

Recommendations for shallow foundation subgrade preparation and construction are provided as follows:

- A geotechnical engineer or his/her representative should directly observe foundation subgrade preparation activities;
- If shallow and/or perched groundwater is encountered, it must be continuously maintained at least 2 feet below the bottom of excavation and subsequent construction grade until the backfilling is complete;
- Excavations for shallow foundations must extend into undisturbed native Marsh Deposits, Glacial Till, Bedrock, and/or *Structural Fill* built-up from properly prepared native soils, as described herein;

- The native foundation subgrade soils will be sensitive to moisture and will readily disturb or soften if exposed to wet conditions during construction activities. Therefore, the final foot, at a minimum, of excavation for foundations should be performed using a smooth-edged cutting bucket (no teeth) to minimize subgrade disturbance. Furthermore, if wet conditions are present or anticipated due to groundwater seepage, perched groundwater, and/or precipitation/stormwater, the foundation subgrade should be protected with a 6-inch (minimum) thick layer of ¾-inch minus Crushed Stone encased in a geotextile fabric (e.g., Mirafi 140N or equal). In this case, the Crushed Stone shall be placed immediately upon exposure of the native foundation subgrade soils and densified with a plate compactor until exhibiting stable conditions. The purpose of the Crushed Stone is to protect the fine-grained subgrade soils from disturbance, facilitate construction dewatering (if necessary), and provide a dry/stable subgrade upon which to progress construction;
- If Bedrock subgrade is encountered in some areas of the proposed bridge;
    - The exposed Bedrock must be scraped clean of soil and any loose/weathered rock or severely fractured rock should be removed;
    - The footing subgrade should be approximately level. Bedrock surfaces that exceed 6H:1V in slope should be step-serrated or suitably benched;
    - Smooth surfaces should be roughened or serrated; and
    - Furthermore, a minimum 9-inch thick lift of ¾-inch minus crushed stone should be placed between the footing and the bedrock surface to provide a more uniform and elastic bearing subgrade. The purpose of the crushed stone (i.e., cushion base) is to minimize differential settlements.
- Prior to setting forms and placing reinforcing steel, a geotechnical engineer should directly observe footing subgrades;
    - Footing subgrades should be level or suitably benched and free of standing water and/or debris;
    - Loose, soft, wet, frozen, or otherwise unsuitable soils should either be re-compacted or over-excavated to a suitable subgrade, as approved by the on-site geotechnical engineer; and
    - Over-excavations should be backfilled with properly placed and compacted *Structural Fill* as approved by the on-site geotechnical engineer.
- Foundation subgrade soils should be protected against physical disturbance, precipitation, and/or frost throughout construction. Surface water run-on/run-off should be diverted away from open foundation excavations. The Contractor shall ultimately be responsible for the means and methods to protect the foundation subgrade during construction;
- Exterior footings and exterior side of perimeter foundation walls should be backfilled with

non-frost-susceptible fill in order to mitigate potential adverse effects of frost. Exterior footing and foundation wall backfill should consist of well-graded, free-draining, granular soil conforming to the requirements of *Clean Granular Fill*, as described in the attached *Specifications*.

- Backfill for footings and foundation walls should be placed in uniform horizontal lifts having a maximum loose lift thickness of 8 inches and compacted to 95 percent of its modified proctor maximum dry density (MPMDD; per ASTM D1557). Thinner lifts may be required in order to achieve the required compaction criteria;
- To minimize the potential for foundation wall damage during the backfill and compaction activities, it is recommended that foundation wall backfill be placed in a manner that maintains a balanced fill height on both sides of the wall (up to the final exterior grade); and
- Backfill requirements for unbalanced walls/structures are provided in Appendix C (attached).

6.3 Seismic Considerations

A site class "C" is recommended based on site class definitions of the American Society of Civil Engineers (ASCE) Standard 7-10, Minimum Design Loads for Buildings and Other Structures. The site is not considered to be susceptible to liquefaction, based on the conditions encountered at the test boring locations.

6.4 Re-Use of Site Soils

The Existing Fill encountered at the exploration locations may be suitable for re-use as *Structural Fill, Clean Granular Fill,* or *Common Fill* subject to laboratory testing to demonstrate conformance with the project specifications.

The existing Marsh Deposit soil may be suitable for use as *Common Fill*, subject to laboratory testing to demonstrate conformance with the project specifications. Otherwise, these soils may be re-used in areas to be landscaped, subject to conformance with the project specifications.

6.5 Construction Monitoring and Quality Control Testing

A qualified geotechnical engineer or representative should be retained to review the site preparation and grading activities and foundation subgrade preparations, at a minimum. Similarly, quality control testing, including in-place field density and moisture tests, should be performed to confirm that the specified compaction is achieved. It is recommended that JTC be retained to provide earthwork construction monitoring and quality control testing services.

Quality control testing recommendations are provided as follows:

- During site grading and foundation subgrade preparation, 3 field density tests should be

performed for every 5,000 square feet (per lift) of *Structural Fill* placement, at a minimum. At least 3 tests should be performed on each lift of material even if the lift is less than 5,000 square feet;

- During foundation wall backfilling, 3 field density tests should be performed for every 100 linear feet (per lift) of fill placement, at a minimum. At least 3 tests should be performed on each lift of material even if the lift is less than 100 linear feet;
- During backfilling of utility trenches, at least 1 test should be conducted on *Structural Fill* per 50 linear feet (per lift) of trench; and
- During site grading and pavement subgrade preparation, 3 field density tests should be performed for every 5,000 square feet (per lift) of *Common Fill*, at a minimum. At least 3 tests should be performed on each lift even if the lift is less than 5,000 square feet.

6.6 Additional Considerations

Additional design recommendations are provided as follows:

- Permanent fill or cut slopes should have a maximum slope of 2.5H:1V (horizontal to vertical) or flatter for dry conditions. Permanent fill or cut slopes should be no steeper than 3H:1V for wet/submerged conditions (e.g., stormwater basin) unless a properly designed surface slope stabilization system (e.g. rip rap, geosynthetics) is provided.

Additional construction considerations/recommendations are provided as follows:

- Safe temporary excavation and/or fill slopes are the responsibility of the Contractor. Excavations should be conducted in accordance with local, state, and federal (OSHA) requirements, at a minimum. If an excavation cannot be properly sloped or benched due to space limitations, adjacent structures, and/or seepage, the Contractor should install an engineered shoring system to support the temporary excavation;
- Subgrade conditions will be influenced by excavation methods, precipitation, stormwater management, groundwater control(s), and/or construction activities. Most of the site soils are poorly-drained, moisture-sensitive, and considered susceptible to disturbance when exposed to wet conditions and construction activities. As such, the Contractor shall be aware of these conditions and must take precautions to minimize subgrade disturbance. Such precautions may include diverting storm run-off away from construction areas, reducing traffic in sensitive areas, minimizing the extent of exposed subgrade if inclement weather is forecast, backfilling excavations and footings as soon as practicable, and maintaining an effective dewatering program, as necessary;
- Proper groundwater control and stormwater management are necessary to maintain site stability. Groundwater should be removed in advance and continuously maintained at least 2 feet below the working construction grade until earthworks and/or backfilling are complete;
- If groundwater seepage and/or wet soils due to shallow groundwater are observed, a ¾-

inch minus crushed stone base should be placed atop the exposed subgrade soils. The stone should be immediately placed atop the undisturbed subgrade and then tamped with a plate compactor until exhibiting stable conditions. The stone shall be protected, as required, with a geotextile filter fabric such as Mirafi 140N or equal. The purpose of the stone base is to protect the wet subgrade, facilitate dewatering, and provide a dry/stable base upon which to progress construction; and

- All slopes should be protected from erosion during (and after) construction.

7.0 CLOSING

We trust the contents of this report are responsive to your needs at this time. Should you have any questions or require additional assistance, please do not hesitate to contact our office.

APPENDIX A: LIMITATIONS

Explorations

1. The analyses and recommendations presented in this report are based in part upon the data obtained from widely-spaced subsurface explorations. Subsurface conditions between exploration locations may vary from those encountered at the exploration locations. The nature and extent of variations between explorations may not become evident until construction. If variations appear, it will be necessary to re-evaluate the recommendations of this report.
2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretation of widely-spaced explorations and samples; actual strata transitions are probably more gradual. For specific information, refer to the individual test pit and/or boring logs.
3. Water level readings have been made in the test pits and/or test borings under conditions stated on the logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors differing from the time the measurements were made.

Review

4. It is recommended that John Turner Consulting, Inc. be given the opportunity to review final design drawings and specifications to evaluate the appropriate implementation of the geotechnical engineering recommendations provided herein.
5. In the event that any changes in the nature, design, or location of the proposed areas are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed, and conclusions of the report modified or verified in writing by John Turner Consulting, Inc.

Construction

6. It is recommended that John Turner Consulting, Inc. be retained to provide geotechnical engineering services during the installation phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

Use of Report

7. This report has been prepared for the exclusive use of CMA Engineers, Inc. for the project located over the Bellamy River on Nute Road in Madbury, New Hampshire. All considerations are based on the available information and is in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.
8. This report has been prepared for this project by John Turner Consulting, Inc. This report was completed for preliminary design purposes and may be limited in its scope to complete an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to preliminary geotechnical design considerations.

APPENDIX B: RECOMMENDED SOIL GRADATION & COMPACTION SPECIFICATIONS

TABLE 1: NHDOT Section 508 – 2.1.1 Crushed Gravel for Structural Fill

SIEVE SIZE	PERCENT PASSING BY WEIGHT
3-inch	100
2-inch	95 - 100
1-inch	55 - 85
No. 4	27 - 52
No. 200 (Based on the fraction passing the No. 4 Sieve)	0 - 12

NOTES:

1. For use as structural load support below foundations and within the building pad. Structural Fill placed beneath building foundations should include the Footing Zone of Influence which is defined as that area extending laterally one foot from the edge of the footing then outward and downward at a 1:1.5 (H:V) splay.
2. Structural Fill should be free of construction and demolition debris, frozen soil, organic soil, peat, stumps, brush, trash, and refuse;
3. Structural Fill should not be placed on soft, saturated, or frozen subgrade soils;
4. Structural Fill should be placed in lifts not exceeding 12 inches for heavy vibratory rollers and 8 inches for vibratory plate compactors.
5. Place and compact within ± 3% of optimum moisture content.
6. Compact to at least 95% relative compaction per ASTM D1557.
7. The adequacy of the compaction efforts should be verified by field density testing.

TABLE 2: Clean Granular Fill

SIEVE SIZE	PERCENT PASSING BY WEIGHT
3-inch	100
¾-inch	60 - 90
No. 4	25 - 70
No. 200	2 - 8

NOTES:

1. For minimum 18-inch base at ramps and aprons.
2. For use as footing and foundation wall backfill.
3. For use as backfill behind unbalanced foundation/retaining/wing walls.
4. Place in lifts not exceeding 12 inches for heavy vibratory rollers and 8 inches for vibratory plate compactors.
5. Place and compact within ± 3% of optimum moisture content.
6. Compact to at least 95% relative compaction per ASTM D1557.
7. Compact to at least 95% relative compaction per ASTM D1557 when placed as foundation wall backfill in conjunction with a bond break.
8. The adequacy of the compaction efforts should be verified by field density testing.

TABLE 3: Common Fill

SIEVE SIZE	PERCENT PASSING BY WEIGHT
6-inch	100
¾-inch	60 – 100
No. 4	20 – 85
No. 200	0 – 25

NOTES:

1. For use as common/subgrade fill in parking areas and roadway embankments.
2. Place in lifts not exceeding 12 inches.
3. Maximum stone size should not exceed ½ the actual lift thickness.
4. Compact to at least 92% relative compaction per ASTM D1557 when placed as subgrade fill in parking areas or roadway embankments.
5. The adequacy of the compaction efforts should be verified by field density testing.

APPENDIX C: RECOMMENDED LATERAL EARTH PRESSURES, DRAINAGE REQUIREMENTS, & FRICTION FACTOR FOR UNBALANCED WALLS/STRUCTURES

Lateral earth pressures for the structural design and stability analysis of unbalanced foundation walls/structures are provided herein. The following table outlines the recommended lateral earth pressure coefficients for unbalanced walls/structures:

WALL CONDITION	LATERAL TRANSLATION (Δ/H)	EARTH PRESSURE COEFFICIENT (K)
restrained	0	K_o = 0.44
no restraint	0.002	K_a = 0.28
no restraint	0.02	K_p = 3.57
seismic	n/a	K_{eq}

where: Δ = movement at top of wall by rotation or lateral translation

H = height of wall

The recommended lateral earth pressure are based upon and/or assume:

1. Rankine earth pressure theory;
2. Retaining wall backfilled with *Clean Granular Fill* (Table 2);
3. Unit weight of backfill less than 135 pcf;
4. No hydrostatic pressures;
5. Surcharge loading shall be in accordance with the most current edition of *AASHTO Standard Specification for Highway Bridges;*
6. A level backfill in front and behind of wall/structure;
7. Dynamic/compaction stresses limited to 200 psf/foot;
8. The top 2 feet of soil should not be considered for passive resistance;
9. Seismic loading shall be applied as required by the *IBC.* Seismic loads shall be a 15% increase from those values outlined in Table 2; and
10. Use of only small plate compactors within 3 feet of unbalanced walls.

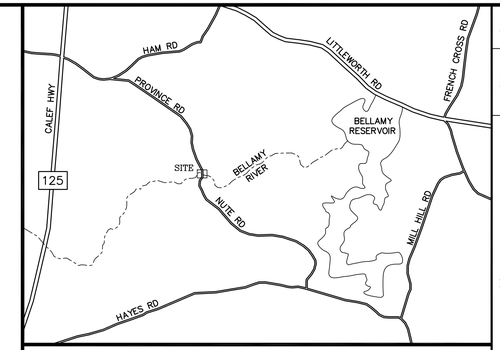
The lateral resistance of unbalanced walls/structures should also accommodate surcharge loads. Uniformly distributed loads should be superimposed along the face of the wall at a magnitude equal to the surcharge pressure multiplied by the appropriate earth pressure coefficient. Surcharge loads should be considered where they are located within a horizontal distance equivalent to 1 times the height of the wall. Any anticipated point or line loads situated behind the wall/structure should be evaluated in accordance with linear elastic theory.

For frost protection and proper drainage, it is recommended that *Clean Granular Fill* be placed directly behind unbalanced walls. The ground surface immediately adjacent to the unbalanced wall should be sloped away from the wall to allow for positive drainage. It is also recommended that the surficial materials adjacent to the building be relatively impermeable to reduce the volume of precipitation infiltrating into the subgrade. Such impermeable materials include cement concrete, bituminous concrete, and/or vegetated silty/clayey topsoil.

The following interface friction angle(s), ϕ, and associated friction factors (=tan ϕ) are recommended for sliding resistance/overturning:

Condition	Interface Friction Angle	Friction Factor
Mass concrete (base of wall) on crushed gravel/stone	30	0.57
Mass concrete (base of wall) on Glacial Till	26.5	0.50
Mass concrete (base of wall) on Marine Clay	22	0.40
Formed concrete (wall) against Clean Granular Fill	22	0.40

APPENDIX D: SITE PLAN & BORING LOCATION PLAN



Location Map (n.t.s.)

NOTES:

1. FIELD SURVEY PERFORMED BY P.J.S. & J.P.E. DURING 09/12 USING A TRIMBLE 5603 DR 200 PLUS TOTAL STATION WITH A TDS RANGER DATA COLLECTOR AND A SOKKIA B21 AUTO LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.

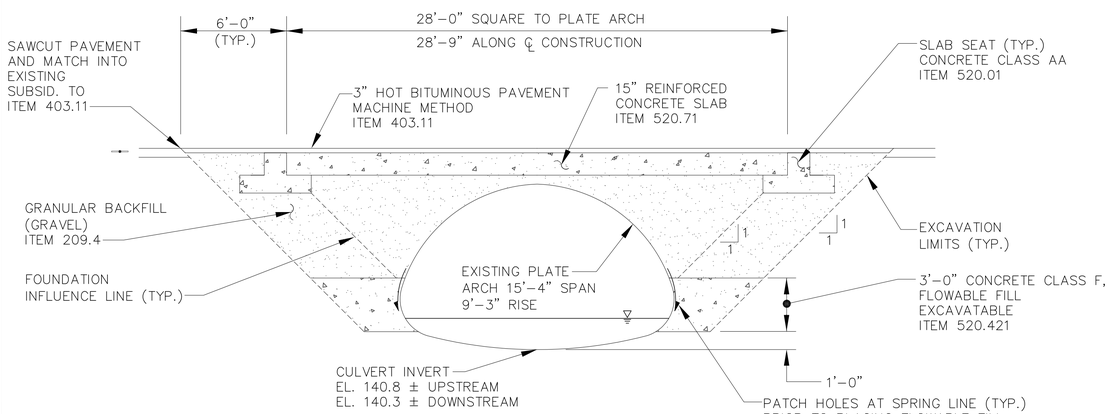
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM STATIC GPS OBSERVATIONS PROCESSED BY THE NATIONAL GEODETIC SURVEY ON-LINE POSITIONING USER SERVICE (OPUS).

3. VERTICAL DATUM BASED ON NAVD88(GEOID09) DERIVED FROM STATIC GPS OBSERVATIONS PROCESSED BY THE NATIONAL GEODETIC SURVEY ON-LINE POSITIONING USER SERVICE (OPUS).

4. TREES/BRUSH WERE ACTIVELY BEING REMOVED DURING THE FIELD SURVEY. NOT ALL OF THE TREES SHOWN HEREON MAY STILL EXIST.

SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	UNIT	TOTAL
201.01	CLEARING (F)	AC	0.03
201.21	REMOVING SMALL TREES	EA	5
201.22	REMOVING LARGE TREES	EA	1
202.71	REMOVING OF GUARDRAIL	LF	80
206.1	COMMON STRUCTURE EXCAVATION	CY	172
209.4	GRANULAR BACKFILL (GRAV)	CY	111
403.11	HOT BITUMINOUS PAVEMENT, MACHINE METHOD	T	19
520.01	CONCRETE CLASS AA	CY	10
520.421	CONCRETE CLASS F, FLOWABLE FILL, EXCAVATABLE	CY	20
520.71	15" REINFORCHED CONCRETE DECK SLAB	CY	32
544.2	REINFORCING STEEL, EPOXY COATED (F)	LB	3750
572.2	RECONSTRUCTIONG STONE WALL MULTIPLES STONE WIDE	LF	20
606.14	BEAM GUARDRAIL (STANDARD SECTION-WOOD POSTS)	LF	80
646.3	TURF ESTABLISHMENT WITH MULCH AND TACKIFIERS	AC	0.05
1002.1	REPAIRS OR REPLACEMENTS AS NEEDED - BRIDGE STRUCTURES	$	1



TYPICAL SECTION - INTERIM REPAIRS

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

NUTE ROAD STRUCTURE NOTES:

1. SPECIFICATIONS: NHDOT 2010 STANDARD PLANS AND SPECIFICATIONS AS NOTED.

2. ALL EXISTING BRONZE DISCS REPRESENTING STATE BENCHMARKS OR SURVEY TRIANGULATION POINTS MUST NOT BE DISTURBED. WHEN THE WORK CALLED FOR INVOLVES DISTURBING A BRONZE DISC THE CONTRACTOR SHALL NOTIFY THE ENGINEER SUFFICIENTLY IN ADVANCE OF THE WORK TO PERMIT THE STATE TO TEMPORARILY RELOCATE THE AFFECTED MARKER.

3. EXTREME CAUTION SHALL BE TAKEN NOT TO DAMAGE PORTIONS OF THE EXISTING STRUCTURE THAT ARE TO REMAIN. ANY DAMAGE SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER AND REPAIRED AT THE CONTRACTORS EXPENSE.

4. THE ROADWAY BASE SHALL BE EXCAVATED DOWN TO THE SPRINGLINE OF METAL PLATE ARCH BY REMOVING MATERIAL EQUALLY FROM BOTH SIDES. THE EXPOSED CULVERT SHALL BE INSPECTED JOINTLY BY THE CONTRACTOR AND ENGINEER TO DETERMINE THE EXTENT AND LOCATION OF VOIDS. ANY VOIDS IN THE BACKFILL MATERIAL TO REMAIN SHALL BE FILLED WITH ITEM 520.421, CONCRETE CLASS F, FLOWABLE FILL, EXCAVATABLE.

5. MATERIAL PLACED ABOVE THE CULVERT STRUCTURE SHALL BE COMPACTED WITH A 600 LB MAXIMUM WEIGHT CLASS PLATE COMPACTOR OR WALK BEHIND ROLLER COMPACTOR. RIDE-ON VIBRATORY ROLLER COMPACTORS WILL NOT BE PERMITTED.

LEGEND

- UTILITY POLE & GUY WIRE
- SIGN
- IRON PIPE/ROD FOUND
- TREE STUMP
- CONIFEROUS TREE
- DECIDUOUS TREE
- CONCRETE
- OHW — OVERHEAD WIRES
- TREE LINE
- STONE WALL
- GUARDRAIL
- 100 — CONTOUR LINE
- EDGE OF RIVER

no.	revision	date	by
1	As-Built	12/13	JLG

CMA ENGINEERS
CIVIL/ENVIRONMENTAL ENGINEERS
35 Bow Street, Portsmouth, NH, 603/431-6196
55 So. Commercial Street, Manchester, NH, 603/627-0708
Lafayette Center, Street Street Building, Suite 208, Kennebunk, ME, 207/985-8717
info@cmaengineers.com
www.cmaengineers.com

JASON L GALLANT No. 10551 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE - CMA

designed by: JLG
drawn by: CPD
approved by: JLG
scale: 0 5 10 (in feet) 1" = 10'-0"
date: October 2012
project no: 843
file name:

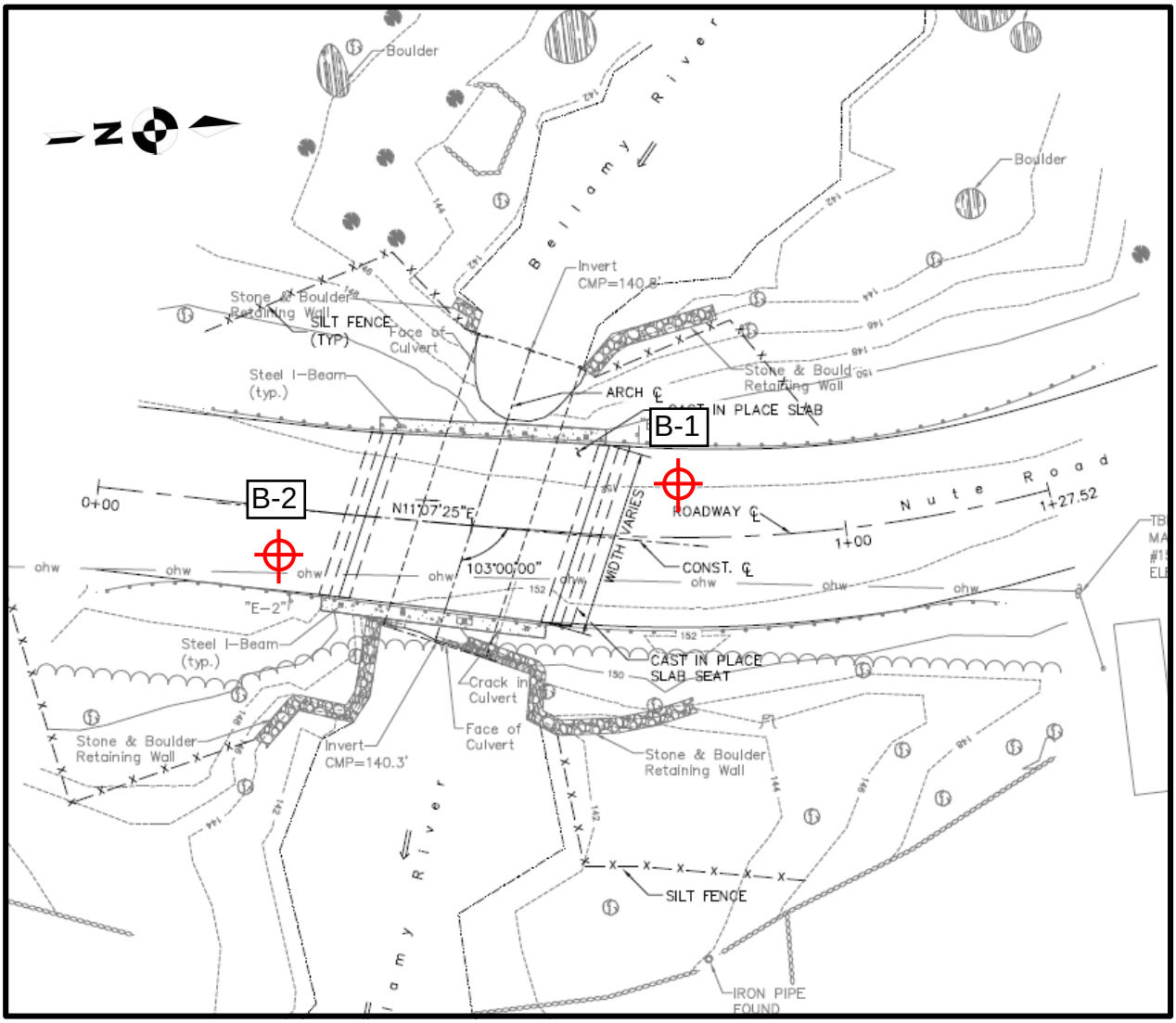
Town of Madbury, NH

Nute Road Over Bellamy River
Br. No. 056/072

General Plan & Section

drawing no. 2

sheet: of



Notes:

1. Test borings were performed on August 14, 2018 under the direction of JTC.
2. Test boring locations should be considered approximate.
3. Refer to the Test Boring Logs for the subsurface conditions encountered at each boring location.
4. Basemap source: December 2013 “General Plan & Section” prepared by CMA Engineers
5. Not to scale.

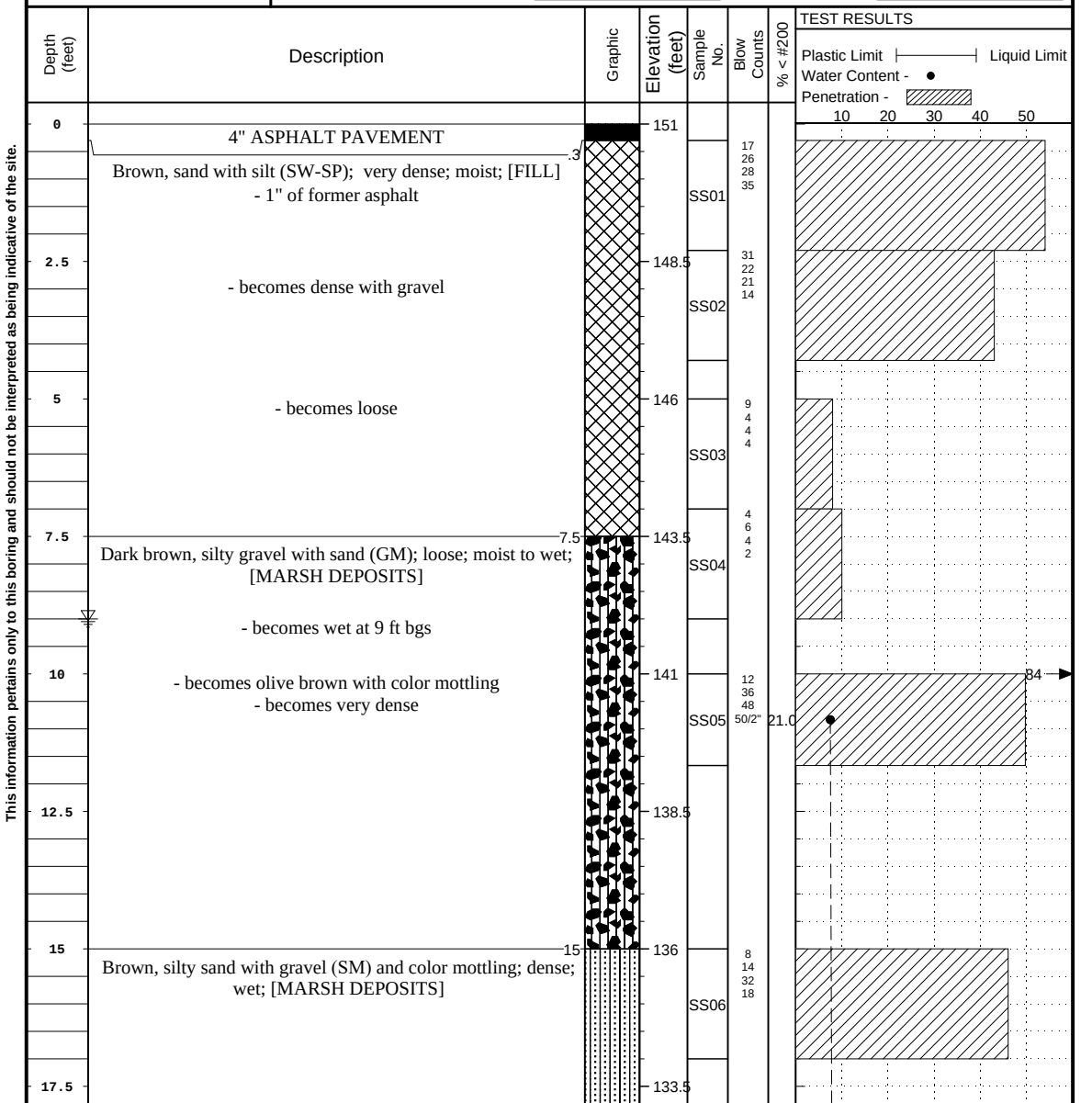
CMA Engineers, Inc. **35 Bow Street** **Portsmouth, New Hampshire**	**Proposed Madbury Nute Road Bridge** **Nute Road** **Madbury, New Hampshire**
JOHN TURNER CONSULTING	**TEST BORING LOCATION PLAN**

APPENDIX E: TEST BORING LOGS & KEY TO SYMBOLS AND DESCRIPTIONS

JOHN TURNER CONSULTING

LOG OF BORING No. B-1

PROJECT: Madbury Nute Road Bridge **PROJECT NO.:** 18-15-086
CLIENT: CMA Engineers, Inc.
PROJECT LOCATION: Nute Road, Madbury, New Hampshire
LOCATION: See Boring Location Plan **ELEVATION:** 151
DRILLER: Soil Exploration, Corp **LOGGED BY:** JW
DRILLING METHOD: 3.25" ID HSA **DATE:** 8/14/18
DEPTH TO - WATER> INITIAL: ▽ 9 **AFTER 24 HOURS:** ▽



This information pertains only to this boring and should not be interpreted as being indicative of the site.

Test boring backfilled with soil cuttings upon completion

Figure

JOHN TURNER CONSULTING

LOG OF BORING No. B-1

PROJECT: Madbury Nute Road Bridge **PROJECT NO.:** 18-15-086
CLIENT: CMA Engineers, Inc.
PROJECT LOCATION: Nute Road, Madbury, New Hampshire
LOCATION: See Boring Location Plan **ELEVATION:** 151
DRILLER: Soil Exploration, Corp **LOGGED BY:** JW
DRILLING METHOD: 3.25" ID HSA **DATE:** 8/14/18
DEPTH TO - WATER> INITIAL: ▽ 9 **AFTER 24 HOURS:** ▽

Depth (feet)	Description	Graphic	Elevation (feet)	Sample No.	Blow Counts	% < #200	TEST RESULTS: Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨ (10 20 30 40 50)
20			131		50 39 50 50/5"	23.0	89 →
	20.3 Gray, silty sand with gravel (SM); very dense; wet; [GLACIAL TILL]			SS07			
	21.9 - Spoon refusal [WEATHERED ROCK]		128.5				
22.5							
	24 Begin 5 ft rock core						
25	Gray, fine-grained, sedimentary, moderate weathering, metamorphic intrusive rock; [BEDROCK]		126				
	RQD = 59% (Moderately Weathered)						
27.5			123.5				
	Boring terminated at 29 ft.						
30			121				
32.5			118.5				
35			116				

Depth (ft)	Time (min)
0-1	6:30
1-2	8:30
2-3	9:00
3-4	10:30
4-5	4:30

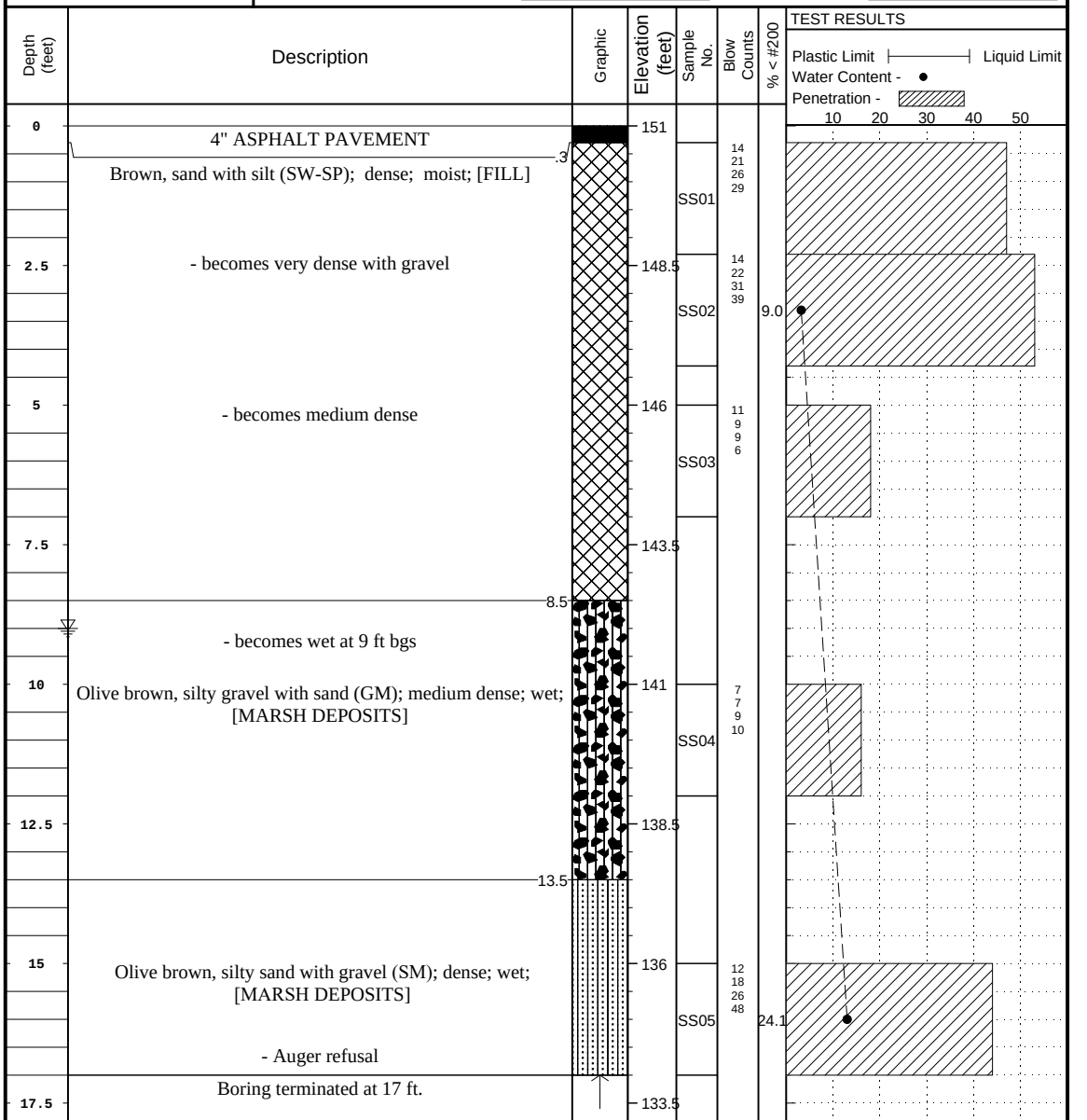
Test boring backfilled with soil cuttings upon completion

This information pertains only to this boring and should not be interpreted as being indicative of the site.

JOHN TURNER CONSULTING

LOG OF BORING No. B-2

PROJECT: Madbury Nute Road Bridge **PROJECT NO.:** 18-15-086
CLIENT: CMA Engineers, Inc.
PROJECT LOCATION: Nute Road, Madbury, New Hampshire
LOCATION: See Boring Location Plan **ELEVATION:** 151
DRILLER: Soil Exploration, Corp **LOGGED BY:** JW
DRILLING METHOD: 3.25" ID HSA **DATE:** 8/14/18
DEPTH TO - WATER> INITIAL: ▽ 9 **AFTER 24 HOURS:** ▽



Test boring backfilled with soil cuttings upon completion

This information pertains only to this boring and should not be interpreted as being indicative of the site.

MAJOR DIVISIONS			SYMBOLS		TYPICAL NAMES
COARSE-GRAINED SOILS OVER 50% > No.200 SIEVE SIZE	GRAVELS	CLEAN GRAVELS WITH LESS THAN 5% FINES	GW		Well-graded gravels or gravel-sand mixtures, little or no fines
			GP		Poorly graded gravels or gravel-sand mixtures, little or no fines
	MORE THAN 1/2 OF COARSE FRACTION > No.4 SIEVE SIZE	GRAVELS WITH OVER 15% FINES	GM		Silty gravels, gravel-sand mixtures
			GC		Clayey gravels, gravel-sand-clay mixtures
	SANDS	CLEAN SANDS WITH LESS THAN 5% FINES	SW		Well-graded sand or gravelly sands, little or no fines
			SP		Poorly graded sands or gravelly sands, little or no fines
	MORE THAN 1/2 OF COARSE FRACTION < No.4 SIEVE SIZE	SANDS WITH OVER 15% FINES	SM		Silty sand, sand-silt mixtures
			SC		Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS OVER 50% < No.200 SIEVE SIZE	SILTS & CLAYS LIQUID LIMIT 50% OR LESS		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LIQUID LIMIT GREATER THAN 50%		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS			PT		Peat and other highly organic soils

JOHN TURNER CONSULTING

KEY TO SYMBOLS AND DESCRIPTIONS

TYPICAL SYMBOLS

- Shelby Tube
- Auger Cuttings
- Standard Split Spoon Sample
- 3" Split Spoon Sample
- Rock Core
- Dynamic Cone Penetrometer
- Vane Shear
- Bulk/Grab Sample
- Geoprobe Sample
- Sonic or Vibro-Core Sample
- Water Table (at time of drilling)
- Water Table (after 24 hours)

SOIL MOISTURE MODIFIERS

Term	Description
Dry	Absence of moisture; dusty, dry to touch
Moist	Damp but no visible water
Wet	Visible free water

The descriptor "damp" should not be used (use "moist").
The descriptor "saturated" should not be used (use "wet").

WELL SYMBOLS

- Recessed Cover Set in Concrete Top of Well, Recessed Pipe
- Covered Riser
- Capped Riser w/ Locking Cover
- Pipe Riser
- Concrete Seal
- Gravel Backfill
- Assorted Cuttings
- Bentonite Slurry
- Bentonite Pellets
- Silica Sand, blank PVC
- Slotted Pipe w/ Sand
- Endcap on Pipe Packed in Sand
- Silica Sand, No Pipe (End Plug)

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL	3" to No. 4	76.2 to 4.75
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No. 4	19.1 to 4.75
SAND	No. 4 to No. 200	4.75 to 0.075
coarse	No. 4 to No. 10	4.75 to 2.00
medium	No. 10 to No. 40	2.00 to 0.425
fine	No. 40 to No. 200	0.425 to 0.075
SILT & CLAY	Below No. 200	Below 0.075

RELATIVE DENSITY/CONSISTENCY

Gravel, Sand, and Silt (nonplastic)		Silt (plastic) and Clay		
N-Value	Relative Density	N-Value	Su	Consistency
0 - 4	Very Loose	0 - 2	0 - 250	Very Soft
5 - 10	Loose	3 - 4	251 - 500	Soft
11-30	Medium Dense	5 - 8	501 - 1000	Medium Stiff
31 - 50	Dense	9 - 15	1001 - 2000	Stiff
51 +	Very Dense	16 - 30	2001 - 4000	Very Stiff
		31 +	4001+	Hard

Standard Penetration Testing (SPT) N_{60} based on blows per 12 inches.
WR = Weight of Rods; WH = Weight of Hammer

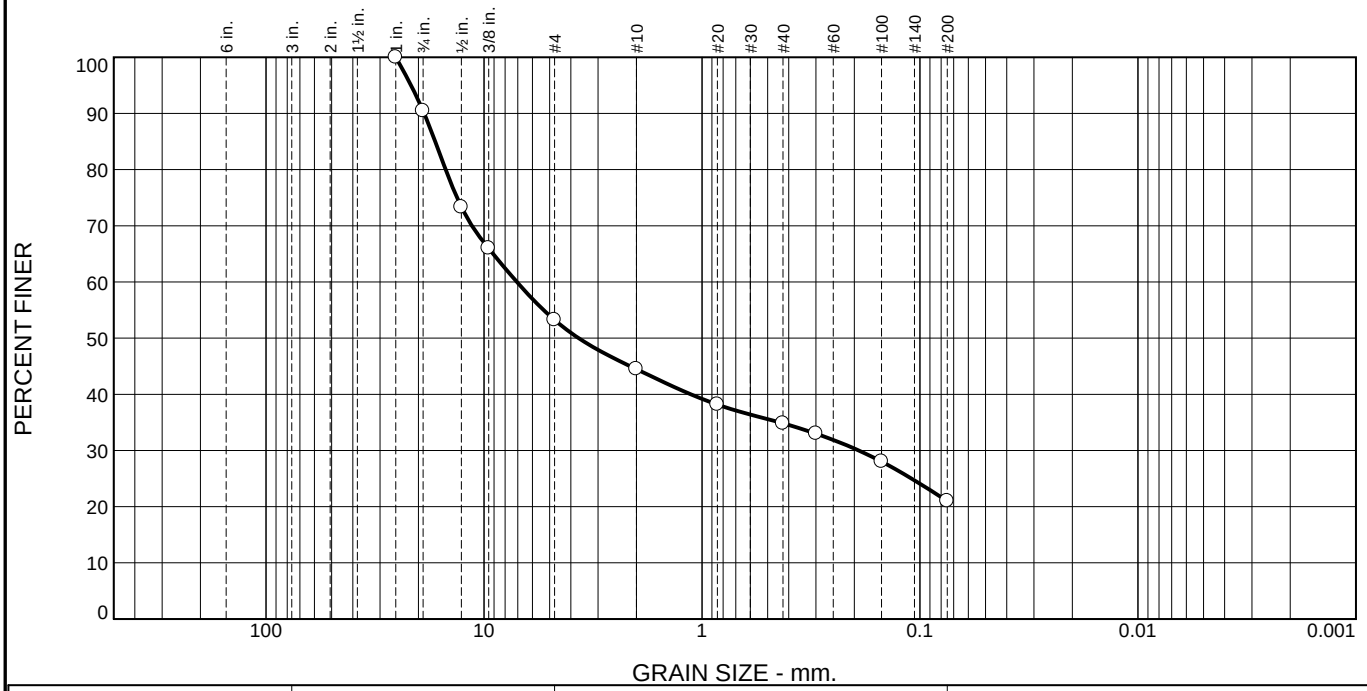
PERCENT OR PORTIONS OF SOIL

Term	Description
Parting:	> 1/16 in.
Seam:	0.5 in. to 1/16 in.
Layer:	12 in. to 0.5 in.
Stratum:	> 12 in.
Pocket:	Small erratic deposit
Lens:	Lenticular deposit
Occasional:	One or less per foot of thickness
Frequent	More than one per foot of thickness
Varved	Alternating seams or layers of silt and/or clay and sometimes f. sand

REFERENCE: UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D2488-93

APPENDIX F: GEOTECHNICAL LABORATORY TESTING REPORTS

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.5	37.3	8.7	9.7	13.8	21.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1	100.0		
3/4	90.5		
1/2	73.3		
3/8	66.0		
#4	53.2		
#10	44.5		
#20	38.2		
#40	34.8		
#50	33.0		
#100	28.0		
#200	21.0		

* (no specification provided)

Material Description

Silty gravel with sand

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= GM **AASHTO (M 145)=**

Coefficients

D_{90}= 18.8276 D_{85}= 16.7596 D_{60}= 7.0695
D_{50}= 3.6810 D_{30}= 0.1909 D_{15}=
D_{10}= C_u= C_c=

Remarks

In-Situ Moisture: 7.5%

Date Received: 5-15-18 **Date Tested:** 8-16-18

Tested By: Ted Moody

Checked By: Jeff Young

Title: Lab Manager

Location: B-1(S-5)
Sample Number: G18-098 **Depth:** 10'-12'

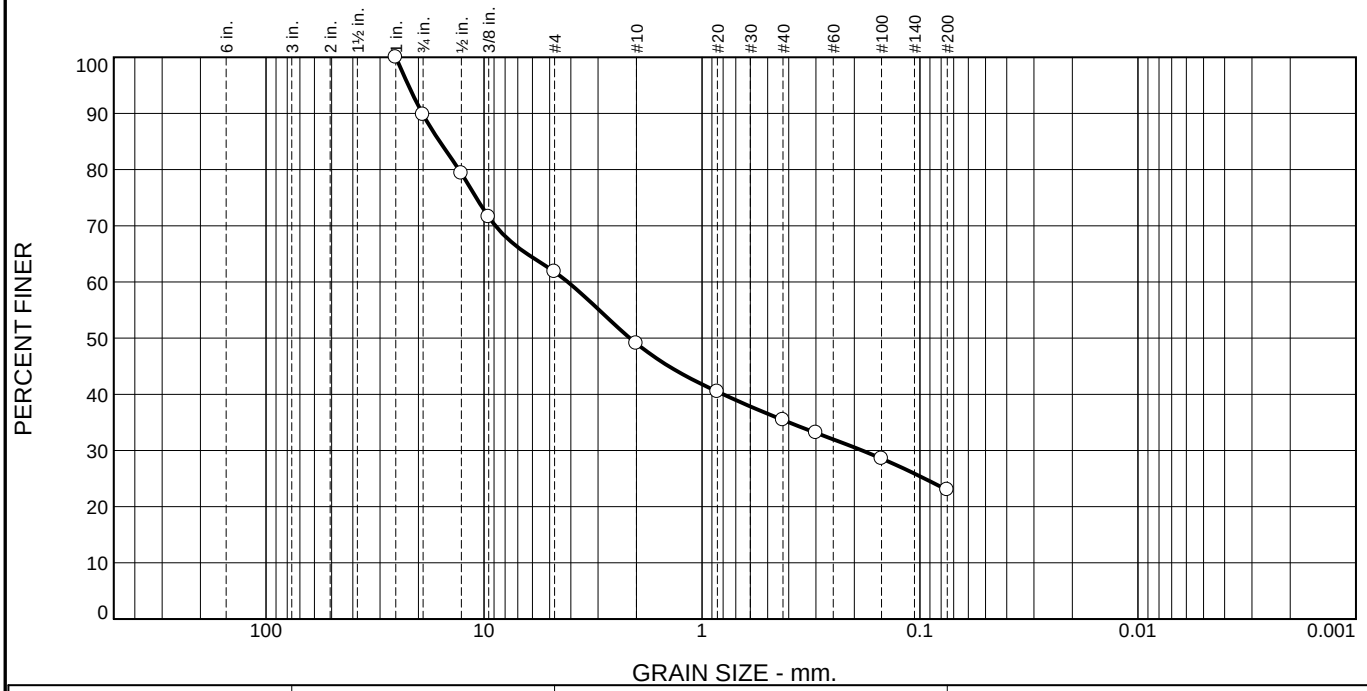
Date Sampled: 8-14-18

JOHN TURNER CONSULTING

Client: CMA Engineers
Project: Bellamy River - Madbury, NH

Project No: 18-15-086 **Figure** 001

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.2	28.0	12.8	13.6	12.4	23.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1	100.0		
3/4	89.8		
1/2	79.3		
3/8	71.6		
#4	61.8		
#10	49.0		
#20	40.5		
#40	35.4		
#50	33.1		
#100	28.6		
#200	23.0		

* (no specification provided)

Material Description

Silty sand with gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=**

Coefficients

D_{90}= 19.1871 D_{85}= 15.9767 D_{60}= 4.1294
D_{50}= 2.1412 D_{30}= 0.1843 D_{15}=
D_{10}= C_u= C_c=

Remarks

In-Situ Moisture: 7.9%

Date Received: 8-15-18 **Date Tested:** 8-16-18

Tested By: Ted Moody

Checked By: Jeff Young

Title: Lab Manager

Location: B-1(S-7)
Sample Number: G18-099 **Depth:** 20'-22'

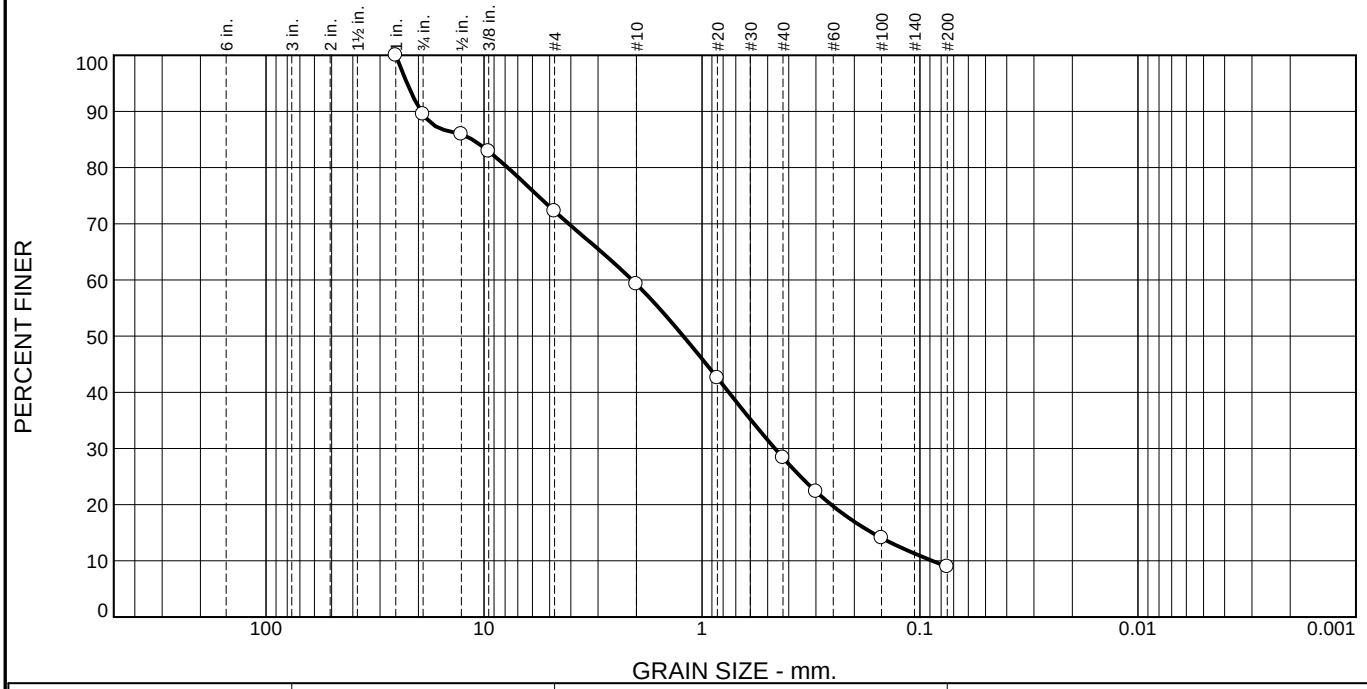
Date Sampled: 8-14-18

JOHN TURNER CONSULTING

Client: CMA Engineers
Project: Bellamy River - Madbury, NH

Project No: 18-15-086 **Figure** 002

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.5	17.3	12.9	31.0	19.3	9.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1	100.0		
3/4	89.5		
1/2	85.9		
3/8	82.9		
#4	72.2		
#10	59.3		
#20	42.5		
#40	28.3		
#50	22.3		
#100	14.1		
#200	9.0		

* (no specification provided)

Material Description

sand with silt and gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SW-SP **AASHTO (M 145)=**

Coefficients

D_{90}= 19.4265 D_{85}= 11.3155 D_{60}= 2.0914
D_{50}= 1.2178 D_{30}= 0.4634 D_{15}= 0.1658
D_{10}= 0.0878 C_u= 23.83 C_c= 1.17

Remarks

In-Situ Moisture: 3.2%

Date Received: 8-15-18 **Date Tested:** 8-16-18

Tested By: Ted Moody

Checked By: Jeff Young

Title: Lab Manager

Location: B-2(S-2) **Date Sampled:** 8-14-18

Sample Number: G18-100 **Depth:** 2'-4'

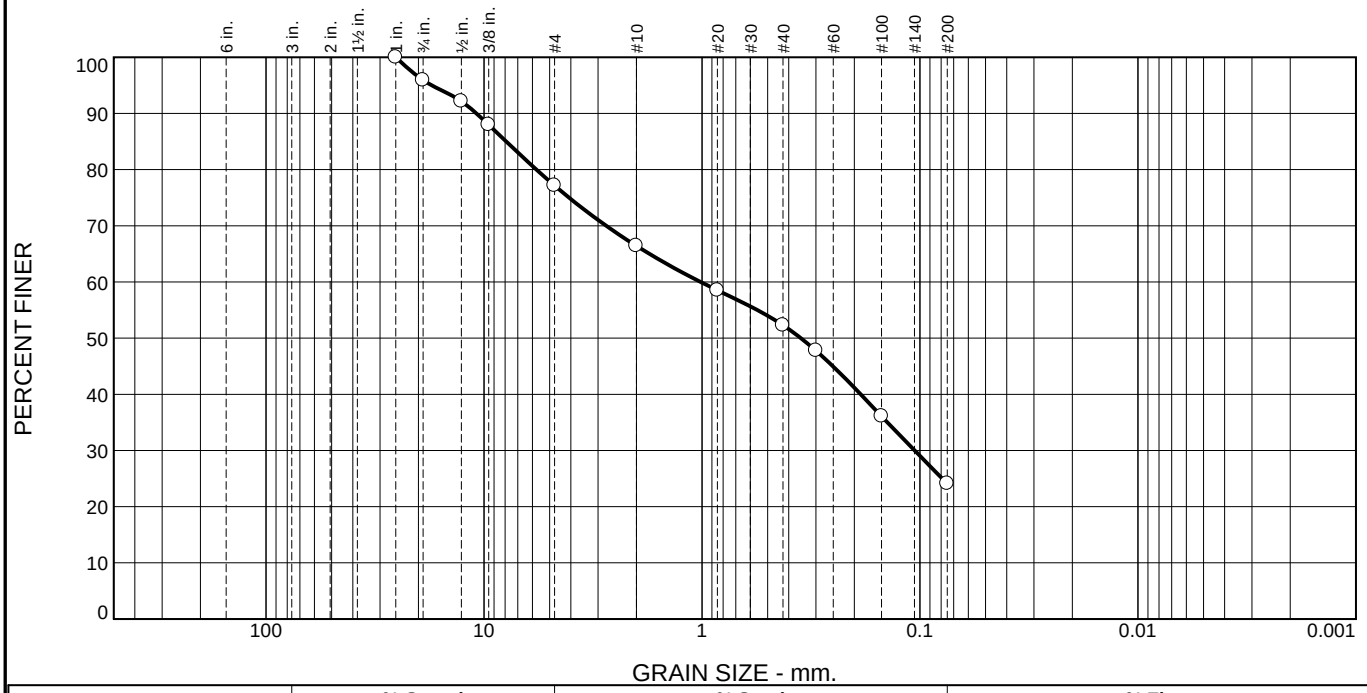
JOHN TURNER CONSULTING

Client: CMA Engineers

Project: Bellamy River - Madbury, NH

Project No: 18-15-086 **Figure** 003

Particle Size Distribution Report



% Cobbles	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.1	18.7	10.8	14.1	28.2	24.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1	100.0		
3/4	95.9		
1/2	92.2		
3/8	88.0		
#4	77.2		
#10	66.4		
#20	58.5		
#40	52.3		
#50	47.8		
#100	36.1		
#200	24.1		

* (no specification provided)

Material Description

Silty sand with gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SM **AASHTO (M 145)=**

Coefficients

D_{90}= 10.8232 D_{85}= 7.9110 D_{60}= 1.0146
D_{50}= 0.3519 D_{30}= 0.1058 D_{15}=
D_{10}= C_u= C_c=

Remarks

In-Situ Moisture: 13.0%

Date Received: 8-15-18 **Date Tested:** 8-16-18

Tested By: Ted Moody

Checked By: Jeff Young

Title: Lab Manager

Location: B-2(S-5) **Date Sampled:** 8-14-18

Sample Number: G18-101 **Depth:** 15'-17'

JOHN TURNER CONSULTING

Client: CMA Engineers

Project: Bellamy River - Madbury, NH

Project No: 18-15-086 **Figure** 004

APPENDIX G: SITE PHOTOGRAPH

JOHN TURNER
CONSULTING

MADBURY NUTE ROAD BRIDGE
Nute Road
Madbury, New Hampshire

SITE PHOTOGRAPHS

Site, facing west

Site, facing south (near B-2)

Drilling, Typical

Rock Core sample

Sample of Silty Sand

Sample of Glacial Till

APPENDIX B

NHDES WETLANDS PERMIT

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

June 10, 2020

TOWN OF MADBURY
C/O ERIC FIEGENBAUM
13 TOWN HALL RD
MADBURY NH 03820

Re: Wetlands Permit Approval (RSA 482-A)
NHDES File Number: 2020-00825
Subject Property: Nute Rd, Madbury, Tax Map #4, Lot #15A

Dear Mr. Fiegenbaum:

Attached please find Wetlands Permit # 2020-00825 to dredge and fill 830 square feet within the bed and bank of the Bellamy River (impacting 138 linear feet), 74 square feet of palustrine scrub-shrub wetland and 36 square feet of palustrine emergent wetland in order to replace an existing 15-foot elliptical culvert with a 30-foot single span bridge. In addition, temporarily impact 624 square feet within the bed and bank of the Bellamy River (temporarily impacting 39 linear feet), 35 square feet of palustrine scrub-shrub wetland and 132 square feet of palustrine emergent wetland for construction access and installation.

The decision to approve this project was based on the following findings:

1. This is classified as a major impact project per Rule Env-Wt 903.01(g)(3)(b), for a project to replace a tier 3 stream crossing.
2. Per Rule Env-Wt 313.01(a)(5), and as required by RSA 482-A:11, II, this permit for work to dredge or fill will not 'infringe on the property rights or unreasonably affect the value or enjoyment of property of abutting owners' based on documentation that the proposed dredge and fill activity will be located entirely within the boundary of the applicant's property interest and will not result in any observable change in off-site surface water levels or flows.
3. Per Rule Env-Wt 306.05, the applicant has addressed all of the required planning items that are used to determine the appropriate impact classification of a project and the type of approval required.
4. Per Rule Env-Wt 313.01(a)(1)(a), the applicant has met the requirements of Env-Wt 311.10 regarding functional assessments.
5. Per Rule Env-Wt 313.01(a)(2), all applicable conditions specified in Env-Wt 307 have been met.
6. Per Rule Env-Wt 313.03(a), the applicant has demonstrated that potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized.
7. The applicant has demonstrated specifically that each factor listed in Env-Wt 313.03(b) has been considered in the design of the proposed major project.
8. Per Rule Env-Wt 202.01(b) and as required by RSA 482-A:8, NHDES finds that the requirements for a public hearing do not apply as the project will not have a significant environmental impact, as defined in Env-Wt 104.19, on the resources protected by RSA 482-A, or, is not of substantial public interest, as defined in Env-Wt 104.32.
9. Per Rule Env-Wt 311.06(h), the municipal conservation commission provided comments on the proposed project on April 03, 2020, and the applicant has addressed the comments.

10. Per Rule Env-Wt 904.05(f)(1)b., compensatory mitigation shall not be required for any new tier 3 stream crossing that is self-mitigating.
11. This stream crossing is a tier 3 per Env-Wt 904.05(a), as the contributing watershed is 640 acres or greater, or meets one of the criteria listed in Env-Wt 904.05(a)(2) through (5).
12. Per Rule Env-Wt 904.07(a), the replacement tier 3 stream crossing project meets the design criteria specified in Rule Env-Wt 904.07(b) and (c).
13. Per Rule Env-Wt 904.07(c)(2), the replacement tier 3 stream crossing project has been designed to be of sufficient size to accommodate the greater of the 100-year 24-hour design storm; or has flows sufficient to prevent an increase in flooding on upstream and downstream properties and to not affect flows and sediment transport characteristics in a way that could adversely affect channel stability; or, applicable federal, state, or local requirements.
14. The project to replace the tier 3 stream crossing meets the criteria specified in Rule Env-Wt 904.09(a) through (c).

Any person aggrieved by this decision may appeal to the NH Wetlands Council (the Council) by filing an appeal that meets the requirements specified in RSA 482-A:10, RSA 21-O:14, and the rules adopted by the Council, Env-WtC 100-200. The appeal must be filed **directly with the Council within 30 days** of the date of this decision and must set forth fully **every ground** upon which it is claimed that the decision complained of is unlawful or unreasonable. Only those grounds set forth in the notice of appeal can be considered by the Council.

Information about the Council, including a link to the Council's rules, is available at <http://nhec.nh.gov/> (or more directly at <http://nhec.nh.gov/wetlands/index.htm>.) Copies of the rules also are available from the NHDES Public Information Center at (603) 271-2975.

If you have any questions, please contact the NHDES Wetlands Bureau at (603) 271-2147.

Sincerely,

Stefanie M. Giallongo

Stefanie M. Giallongo
Wetlands Specialist
Land Resources Management, Water Division

cc: Madbury Municipal Clerk/Conservation Commission
Liam Kalloch, CMA Engineers

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

==========

WETLANDS AND NON-SITE SPECIFIC PERMIT 2020-00825

NOTE CONDITIONS

PERMITTEE: **TOWN OF MADBURY**
C/O ERIC FIEGENBAUM
13 TOWN HALL RD
MADBURY NH 03820

PROJECT LOCATION: **NUTE RD, MADBURY**
TAX MAP #4, LOT #15A

WATERBODY: **BELLAMY RIVER**

APPROVAL DATE: **JUNE 10, 2020** **EXPIRATION DATE:** **JUNE 10, 2025**

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Based upon review of the above referenced application, in accordance with RSA 482-A and RSA 485-A:17, a Wetlands Permit and Non-Site Specific Permit was issued by the New Hampshire Department of Environmental Services (NHDES). This permit shall not be considered valid unless signed as specified below.

PERMIT DESCRIPTION: Dredge and fill 830 square feet within the bed and bank of the Bellamy River (impacting 138 linear feet), 74 square feet of palustrine scrub-shrub wetland and 36 square feet of palustrine emergent wetland in order to replace an existing 15-foot elliptical culvert with a 30-foot single span bridge. In addition, temporarily impact 624 square feet within the bed and bank of the Bellamy River (temporarily impacting 39 linear feet), 35 square feet of palustrine scrub-shrub wetland and 132 square feet of palustrine emergent wetland for construction access and installation.

THIS APPROVAL IS SUBJECT TO THE FOLLOWING PROJECT SPECIFIC CONDITIONS:

1. All work shall be done in accordance with the approved plans dated April 2020 by CMA Engineer, as received by the NH Department of Environmental Services (NHDES) on April 22, 2020, in accordance with Env-Wt 307.16.
2. Water quality control measures shall be comprised of wildlife-friendly erosion control materials if erosion control blankets are utilized; a protected species or habitat has been documented; the proposed work is in or adjacent to a priority resource area (PRA); if specifically requested by Natural Heritage Bureau of the NH DNCR (NHB) or NH Fish and Game Department (NHF&G); or any if combination of the above conditions apply, in accordance with Env-Wt 307.03(c)(2).
3. In-stream work shall be done only during low flow or dry conditions, in accordance with Env-Wt 904.02(a)(1).
4. Any trees cut in an area of authorized temporary impacts shall be cut at ground level with the shrub and tree roots left intact, to prevent disruption to the wetland soil structure and to allow stump sprouts to revegetate the work area, in accordance with Env-Wt 307.12(h).
5. Work on stream crossings that requires any work in areas that are subject to flowing water shall maintain normal flows and prevent water quality degradation during the work by using best management practices, such as temporary by-pass pipes, culverts, or cofferdams, in accordance with Env-Wt 904.02(b).

6. Turbidity controls shall be installed prior to construction and maintained during construction such that no turbidity escapes the immediate dredge area; and remain in place until suspended particles have settled and water at the work site has returned to normal clarity, in accordance with Env-Wt 307.10(c).
7. A coffer dam or other turbidity control shall be removed after work within the coffer dam or other turbidity control is completed, the contained water has returned to background clarity, and when removing the structure will not cause or contribute to a violation of Env-Wt 307.03(c)(6), in accordance with Env-Wt 307.03(f)(2).
8. Dredged materials to be stockpiled in uplands shall be dewatered in sedimentation basins that are contained within turbidity controls that prevent turbid water from leaving the basins; and located outside of any jurisdictional area, in accordance with Env-Wt 307.10(f).
9. Dredged materials shall be disposed of out of jurisdictional areas, unless other disposition is specifically permitted pursuant to Env-Wt 307.10(e), in accordance with Env-Wt 307.10(d).
10. Fill shall be clean sand, gravel, rock, or other material that meets the project's specifications for its use; and does not contain any material that could contaminate surface or groundwater or otherwise adversely affect the ecosystem in which it is used, in accordance with Env-Wt 307.11(a).
11. No fill shall take place in a priority resource area (PRA) unless specifically authorized by the department in an issued permit; or authorized under applicable project-specific provisions, in accordance with Env-Wt 307.11(l).
12. Equipment to be used in surface waters shall be completely free of all aquatic and terrestrial invasive plants and all exotic aquatic species of wildlife as defined in RSA 487:16, I-a, in accordance with Env-Wt 307.05(b).
13. To prevent the use of soil or seed stock containing nuisance or invasive species, the contractor responsible for work shall follow Best Management Practices for the Control of Invasive and Noxious Plant Species (Invasive Plant BMPs), in accordance with Env-Wt 307.05(e).
14. Mulch used within an area being restored shall be natural straw or equivalent non-toxic, non-seed-bearing organic material, in accordance with Env-Wt 307.12(d).
15. All work, including management of soil stockpiles, shall be conducted so as to minimize erosion, minimize sediment transfer to surface waters or wetlands, and minimize turbidity in surface waters and wetlands using the techniques described in Env-Wq 1505.02, Env-Wq 1505.04, Env-Wq 1506, and Env-Wq 1508; the applicable BMP manual; or a combination thereof, if the BMP manual provides less protection to jurisdictional areas than the provisions of Env-Wq 1500.
16. The person in charge of construction equipment shall inspect such equipment for leaking fuel, oil, and hydraulic fluid each day prior to entering surface waters or wetlands or operating in an area where such fluids could reach groundwater, surface waters, or wetlands, in accordance with Env-Wt 307.03(g)(1).
17. Equipment shall be staged and refueled outside of jurisdictional areas (unless allowed) and in accordance with Env-Wt 307.15, in accordance with Env-Wt 307.03(h).

GENERAL CONDITIONS THAT APPLY TO ALL NHDES WETLANDS PERMITS:

1. Pursuant to RSA 482-A:12, a copy of the permit shall be posted in a secure manner in a prominent place at the site of the approved project.
2. In accordance with Env-Wt 313.01(a)(5), and as required by RSA 482-A:11, II, work shall not infringe on the property rights or unreasonably affect the value or enjoyment of property of abutting owners.
3. In accordance with Env-Wt 314.01, a standard permit shall be signed by the permittee and the principal contractor who will build or install the project prior to start of construction; and will not be valid until signed.
4. In accordance with Env-Wt 314.03(a), the permittee shall notify the department in writing at least one week prior to commencing any work under the permit.
5. In accordance with Env-Wt 314.08(a), the permittee shall file a completed notice of completion of work and certificate of compliance with the department within 10 working days of completing the work authorized by the permit.
6. In accordance with Env-Wt 314.06, transfer of this permit to a new owner shall require notification to and approval by NHDES.
7. In accordance with Env-Wt 307.02, in order to be in compliance with federal requirements, all work in areas under the jurisdiction of the U.S. Army Corps of Engineers (US ACE) shall comply with all conditions of the applicable state

general permit (see attached notice).

8. In accordance with Env-Wt 307.06(a) through (c), no activity shall jeopardize the continued existence of a threatened or endangered species, a species proposed for listing as threatened or endangered, or designated or proposed critical habitat under the Federal Endangered Species Act, 16 U.S.C. §1531 et seq.; State Endangered Species Conservation Act, RSA 212-A; or New Hampshire Native Plant Protection Act, RSA 217-A.A copy of this permit shall be posted on site during construction in a prominent location visible to inspecting personnel.

APPROVED:

Stefanie M. Giallongo

Stefanie M. Giallongo
Land Resources Management, Water Division

==========

BY SIGNING BELOW, I HEREBY CERTIFY THAT I HAVE FULLY READ THIS PERMIT AND AGREE TO ABIDE BY ALL PERMIT CONDITIONS.

_____ _____

OWNER'S SIGNATURE (required) CONTRACTOR'S SIGNATURE (required)

Town of Madbury, NH
Nute Road Crossing
Bridge Replacement

NEW HAMPSHIRE WETLANDS BUREAU
STANDARD DREDGE AND FILL
PERMIT APPLICATION

April 2020

Prepared for:

Town of Madbury
13 Town Hall Road
Madbury, NH 03823

Prepared by:

CMA ENGINEERS

35 Bow Street
Portsmouth, NH 03801
(603) 431-6196 · Fax (603) 431-5376

Nute Road Crossing Bridge Replacement

CMA ENGINEERS, INC.
CIVIL | ENVIRONMENTAL | STRUCTURAL

35 Bow Street
Portsmouth
New Hampshire
03801-3819

P: 603|431|6196
www.cmaengineers.com

April 14, 2020

Wetlands Program
NHDES Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Re: Nute Road Bridge Replacement NHDOT Bridge #056/072 (Madbury 24226, SAB Program)
Wetland Permit
CMA Engineers #1162

To Whom it May Concern:

Enclosed please find the Wetland Permit application for the Nute Road Bridge Replacement project in Madbury, New Hampshire.

The Town is hoping to construct the project starting in early summer, so construction can be completed during the school break. Due to the remote location of the Nute Road Bridge, bus route impacts for students beyond the culvert are significant, and delays to the start of the project will push project completion into the fall, interfering with bus routes. The Town intends to request an expedited review of the permit application and that request is forthcoming.

If you have any questions or need additional information, please do not hesitate to contact me.

Yours truly,

Liam Kalloch, PE
Project Engineer

LBK/WAC/kao

Enclosure: Wetland Permit

Nute Road Crossing Bridge Replacement

NEW HAMPSHIRE WETLANDS BUREAU

STANDARD DREDGE AND FILL PERMIT APPLICATION

TABLE OF CONTENTS

A. Application

1. Application Form and Checklist
2. Application Fee (*attached*)
3. Section 8 of the Application
4. Section 15 of the Application

STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT'S NAME: Eric Fiegenbaum, Town Administrator

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

A person may request a waiver to requirements in Rules Env-Wt 100-900 to accommodate situations where strict adherence to the requirements would not be in the best interests of the public or the environment. A person may also request a waiver of standard for existing dwellings over water pursuant to RSA 482-A:26, III (b). For more information, please consult the request form.

SECTION 1 - CONCURRENT PROCESSING OF RELATED SHORELAND/WETLANDS PERMIT APPLICATIONS (Env-Wt 313.05)

If the applicant is not requesting concurrent processing, please proceed to Section 2.

Is the proposed project eligible for the optional concurrent processing of related shoreland/wetlands permit applications (Env-Wt 313.05(d))? If the project is not eligible, proceed to Section 2 (the files will not be processed concurrently). ☐ Yes ☒ No

By signing this form and initialing this section, the applicant is requesting concurrent processing of related shoreland/wetlands permit applications and understands that concurrently filing the applications with a request to process the applications together constitutes:

- A waiver by the applicant of the shorter time frame, if application processing timelines are different for each permit program under the 2 statutes and their implementing rules; and — Initials:
- An agreement by the applicant that any request for additional information by the department under either or both statutes shall affect the review timeframe of both applications being processed together. — Initials:

SECTION 2 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05)

Please use the Wetland Permit Planning Tool (WPPT) or any other database or source to assist in identifying key features such as: priority resource areas (PRA), protected species or habitat, coastal area, or designated river, or designated prime wetlands.

Step 1: A certified wetland scientist must delineate and classify all wetlands and identify the predominant resource functions of each wetland, unless the exceptions listed in Env-Wt 306.05(a)(1) are met (Env-Wt 306.05(a)(1)).

Step 2: Determine whether the subject property is or contains a PRA by answering the following questions (Env-Wt 306.05(a)(2)):

1. Does the property contain any documented occurrences of protected species or habitat for such species? Please use the Natural Heritage Bureau (NHB) DataCheck Tool to make this determination. ☐ Yes ☒ No
2. Is the property a bog? Please use the WPPT "Peatland" layer (under the PRA module) for general location of bogs or any other database or source**.** ☐ Yes ☒ No
3. Is the property a floodplain wetland contiguous to a tier 3 or higher watercourse? Please use the WPPT "Floodplain Wetlands Adjacent to Tier 3 Streams" layer (under PRA module) or any other database or source**.** ☒ Yes ☐ No
4. Is the property a designated prime wetland or a duly-established 100-foot buffer? Please use the WPPT "Prime Wetlands" layers (under PRA module) or any other database or source**.** ☐ Yes ☒ No
5. Is the property a sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone? Please use the WPPT "Coastal" layers module and PRA module or any other database or source. ☐ Yes ☒ No

Step 3: For projects that are subject to Env-Wt 600, please attach the Coastal Functional Assessment (Env-Wt 603.04) and Vulnerability Assessment (Env-Wt 603.05) and conduct the data screening required by Env-Wt 603.03.

Step 4: Determine whether the following apply to the subject property (Env-Wt 306.05(a)(4); RSA 482-A:3, I(d)(2)):

1. Is the property within a Local River Management Advisory Committee (LAC) jurisdiction?

   If yes, please provide the following information: ☐ Yes ☒ No
   - The project is within ¼ mile of:
   - A copy of the application was sent to the LAC on Month: Day: Year: **.**
     ☐ N/A (Env-Wt 311.01(e))
2. Is the property within or contains any areas that are subject to time of year restrictions under Env-Wt 307? ☐ Yes ☒ No

Step 5: For stream crossing projects: what is the size of the watershed (Env-Wt 306.05(a)(5))? ~9 sq. miles
☐ N/A

Step 6: For dredge projects: is the subject property contaminated (Env-Wt 306.05(a)(6))? ☐ Yes ☐ No
☒ N/A

Step 7: Does the project have the potential to impact any of the following (Env-Wt 306.05(a)(7)):
☐ N/A

1. Impaired waters? ☐ Yes ☒ No
2. Class A waters? ☐ Yes ☒ No
3. Outstanding resource waters? ☐ Yes ☒ No

SECTION 3 - PROJECT DESCRIPTION (Env-Wt 311.04(i))

Provide a brief description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached" in the space provided below.

The Town of Madbury is proposing to replace the Bellamy River crossing structure at Nute Road. The site is located off NH Route 125 approximately 5 miles southeast of Barrington. The existing structure was constructed in the 1960s and the interim repairs were completed in 2012. Replacement of the exsiting plate arch is necessary because the bridge is currently E-2 posted and is in poor condition per the NHDOT bridge inspection report dated 12/5/2017. The proposed structure is a single span consisting of either a 3-sided frame or precast concrete beam superstructure. Slope protection will be placed around the abutments and wingwalls to prevent erosion and transportation of sediment downstream. The proposed structure will allow for greater hydraulic capacity and

alleviate the constriction caused by the existing steel plate culvert. There will be both temporary and permanent impacts to the wetlands as shown in the attached plans.

SECTION 4 - PROJECT LOCATION

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

ADDRESS: Nute Road Bridge (~50 Nute Road)	TOWN/CITY: Madbury

TAX MAP/BLOCK/LOT/UNIT: Map 2 Lots 17, 18, 19; Map 4 Lot 15A (Abutters)

UNITED STATES GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: Bellamy River
☐ N/A

LATITUDE (D.ddddd): 43.18870° North (Optional)	LONGITUDE (D.ddddd): 70.97750° West (Optional)

SECTION 5 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a))

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.

NAME: Eric Fiegenbaum, Town Administrator

MAILING ADDRESS: 13 Town Hall Road

TOWN/CITY: Madbury	STATE: NH	ZIP CODE: 03823
EMAIL ADDRESS: adminmadbury@comcast.net	FAX: 603-742-2505	PHONE: 603-742-5131

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

SECTION 6 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c))

☐ N/A

LAST NAME, FIRST NAME, M.I.: Kalloch, Liam, B.

COMPANY NAME: CMA Engineers, Inc.	MAILING ADDRESS: 10 Free Street	
TOWN/CITY: Portland	STATE: ME	ZIP CODE: 04101
EMAIL ADDRESS: lkalloch@cmaengineers.com	FAX: 207-541-4225	PHONE: 207-541-4223

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

SECTION 7 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b))

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.

☒ Same as applicant

NAME:		
MAILING ADDRESS:		
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL ADDRESS:	FAX:	PHONE:

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

SECTION 8 - RESOURCE-SPECIFIC CRITERIA ESTABLISHED IN Env-Wt 400, Env-Wt 500, Env-Wt 600, Env-Wt 700, OR Env-Wt 900 HAVE BEEN MET (Env-Wt 313.01(a)(3)).

Describe how the resource-specific criteria have been met (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters).
See responses in Appendix A-3.

SECTION 9 - AVOIDANCE AND MINIMIZATION

Impacts within wetland jurisdiction must be avoided to the maximum extent practicable (Env-Wt 313.03(a)). If all impacts cannot be avoided, a functional assessment is required for minor and major projects (Env-Wt 311.03(b)(10)). Any project with unavoidable jurisdictional impacts must then be minimized as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization. Please refer to the application checklist to ensure that you have attached all documents related to avoidance and minimization, as well as functional assessment (where applicable).

SECTION 10 - MITIGATION REQUIREMENT (Env-Wt 311.02)

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

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

(☒ N/A - Mitigation is not required)

SECTION 11 - THE PROJECT MEETS COMPENSATORY MITIGATION REQUIREMENTS (Env-Wt 313.01(a)(1)c).

Have you submitted a compensatory mitigation proposal that meets the requirements of Env-Wt 800 for all permanent impacts that will remain after avoidance and minimization demonstration?

☐ Yes ☐ No

(☒ N/A - Mitigation is not required)

SECTION 12 - IMPACT AREA (Env-Wt 311.04(g))

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

For intermittent streams, the linear footage of impact is measured along the thread of the channel.

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

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

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

JURISDICTIONAL AREA	PERMANENT SF / LF		TEMPORARY SF / LF	
Forested Wetland	0	☐ ATF	0	☐ ATF
Scrub-shrub Wetland	75	☐ ATF	35	☐ ATF
Emergent Wetland	36	☐ ATF	132	☐ ATF
Wet Meadow	0	☐ ATF	0	☐ ATF
Intermittent Stream	0 / 0	☐ ATF	0 / 0	☐ ATF
Perennial Stream or River	830 / 138	☐ ATF	624 / 39	☐ ATF
Lake / Pond	0 / 0	☐ ATF	0 / 0	☐ ATF
Bank - Intermittent Stream	0 / 0	☐ ATF	0 / 0	☐ ATF
Bank - Perennial Stream / River	0 / 0	☐ ATF	0 / 0	☐ ATF
Bank/shoreline - Lake / Pond	0 / 0	☐ ATF	0 / 0	☐ ATF
Tidal Waters	0 / 0	☐ ATF	0 / 0	☐ ATF
Tidal Marsh	0	☐ ATF	0	☐ ATF
Sand Dune	0	☐ ATF	0	☐ ATF
Designated Prime Wetland	0	☐ ATF	0	☐ ATF
Duly-established 100-foot Prime Wetland Buffer	0	☐ ATF	0	☐ ATF
Undeveloped Tidal Buffer Zone (TBZ)	0	☐ ATF	0	☐ ATF
Previously-developed TBZ	0	☐ ATF	0	☐ ATF
Docking - Lake / Pond	0	☐ ATF	0	☐ ATF
Docking – River	0	☐ ATF	0	☐ ATF
Docking - Tidal Water	0	☐ ATF	0	☐ ATF
Vernal Pool	0	☐ ATF	0	☐ ATF
TOTAL	941 / 138		791 / 39	

SECTION 13 - APPLICATION FEE (RSA 482-A:3, I)

☐ **MINIMUM IMPACT FEE**: Flat fee of $400

☐ **NON-ENFORCEMENT RELATED, PUBLICLY-FUNDED AND SUPERVISED RESTORATION PROJECTS, REGARDLESS OF IMPACT CLASSIFICATION:** Flat fee of $400 (refer to RSA 482-A:3, 1(c) for restrictions)			
☒ **MINOR OR MAJOR IMPACT FEE:** Calculate using the table below:			
Permanent and temporary (non-docking):	1,732 SF	× $0.40 =	$ 692.80
Seasonal docking structure:	0 SF	× $2.00 =	$ 0
Permanent docking structure:	0 SF	× $4.00 =	$ 0
Projects proposing shoreline structures (including docks) add $400 =			$ 0
		Total =	$ 692.80
The application fee for minor or major impact is the above calculated total or $400, whichever is greater =			$ 692.80

SECTION 14 - PROJECT CLASSIFICATION (Env-Wt 306.05)

Indicate the project classification.

☐ Minimum Impact Project	☐ Minor Project	☒ Major Project

SECTION 15 - ALL APPLICABLE CONDITIONS IN Env-Wt 307 HAVE BEEN MET (Env-Wt 311.04(j); Env-Wt 313.01(a)(2)).

Check all conditions applicable to your project below. Please ensure that your plan design and access, construction sequence, and timing appropriately meet applicable conditions below:

☒ Env-Wt 307.02	US Army Corps of Engineers (USACE) Conditions	☒ Env-Wt 307.11	Filling Activity Conditions
☒ Env-Wt 307.03	Protection of Water Quality Required	☒ Env-Wt 307.12	Restoring Temporary Impacts: Site Stabilization
☐ Env-Wt 307.04	Protection of Fisheries and Breeding Areas Required	☒ Env-Wt 307.13	Property Line Setbacks
☒ Env-Wt 307.05	Protection Against Invasive Species Required	☐ Env-Wt 307.14	Rock Removal
☒ Env-Wt 307.06	Protection of Rare, Threatened or Endangered Species and Critical Habitat	☒ Env-Wt 307.15	Use of Heavy Equipment in Wetlands
☐ Env-Wt 307.07	Consistency Required with Shoreland Water Quality Protection Act	☒ Env-Wt 307.16	Adherence to Approved Plans Required
☐ Env-Wt 307.08	Protection of Designated Prime Wetlands and Duly-Established 100-Foot Buffers	☐ Env-Wt 307.17	Unpermitted Activities
☒ Env-Wt 307.09	Shoreline Structures	☐ Env-Wt 307.18	Reports
☒ Env-Wt 307.10	Dredging Activity Conditions		

Provide an explanation as to methods, timing, and manner as to how your project will meet standard permit conditions required in Env-Wt 307 (Env-Wt 311.03(b)(7)):
See responses in Appendix A-4.

SECTION 16 - REQUIRED CERTIFICATIONS (Env-Wt 311.11)

Initial each box below to certify:

Initials: EF	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials: EF	The information submitted on or with the application is true, complete, and not misleading to the best of the signer's knowledge and belief.
Initials: EF	The signer understands that: • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: 1. Deny the application. 2. Revoke any approval that is granted based on the information. And 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. • The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. • The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact trail projects, where the signature shall authorize only the Department to inspect the site pursuant to RSA 482-A:6, II.
Initials: EF	If the applicant is not the owner of the property, each property owner signature shall constitute certification by the signer that he or she is aware of the application being filed and does not object to the filing.

SECTION 17 - REQUIRED SIGNATURE (Env-Wt 311.04(d); Env-Wt 311.11)

SIGNATURE (OWNER): Eric Fiegenbaum	PRINT NAME LEGIBLY: Eric Fiegenbaum	DATE: 4-16-2020
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE): Liam Kalloch	PRINT NAME LEGIBLY: Liam Kalloch	DATE: 4/14/2020

SECTION 18 - TOWN / CITY CLERK SIGNATURE (Env-Wt 311.04(f))	
As required by RSA 482-A:3, I(a),(1), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.	
TOWN/CITY CLERK SIGNATURE: Lisa Amarosa	PRINT NAME LEGIBLY: Lisa Amarosa
TOWN/CITY: Madbury	DATE: 4/16/2020

DIRECTIONS FOR TOWN/CITY CLERK:
Per RSA 482-A:3, I(a)(1)

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

DIRECTIONS FOR APPLICANT:
Submit the 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 at the address at the bottom of this page.

APPLICATION CHECKLIST
(Items identified with an asterisk (*) are required only for Minor and Major Projects)

- ☒ The completed, dated, signed and certified application (Env-Wt 311.03(b)(1)).
- ☒ Correct fee as determined in RSA 482-A:3, I(b) or (c), subject to any cap established by RSA 482-A:3, X (Env-Wt 311.03(b)(2)).
- ☒ USACE "Appendix B, New Hampshire General Permits (GPs), Required Information and Corps Secondary Impacts Checklist" and its required attachments (Env-Wt 307.02).
- ☒ The results of actions required by Env-Wt 311.01 as part of an application preparation for a standard permit (Env-Wt 311.03(b)(3)).
- ☒ Project plans described in Env-Wt 311.05 (Env-Wt 311.03(b)(4)).
- ☒ Maps, or electronic shape files and meta data, and other attachments specified in Env-Wt 311.06 (Env-Wt 311.03(b)(5)).
- ☒ Explanation as to methods, timing, and manner as to how the project will meet standard permit conditions required in Env-Wt 307 (Env-Wt 311.03(b)(7)).
- ☐ If applicable, the information regarding proposed compensatory mitigation specified in Env-Wt 311.08 and Chapter Env-Wt 800 – Mitigation Worksheet, unless not required under Env-Wt 313.04 (Env-Wt 311.03(b)(8); Env-Wt 311.08; Env-Wt 313.04).
- ☒ Any additional information specific to the type of resource as specified in Env-Wt 311.09 (Env-Wt 311.03(b)(9); Env-Wt 311.04(j)).
- ☒ Project specific information required by Env-Wt 500, Env-Wt 600, and Env-Wt 900 (Env-Wt 311.03(b)(11)).
- ☒ A list containing the name, mailing address and tax map/lot number of each abutter to the subject property (Env-Wt 311.03(b)(12)).
- ☒ Copies of certified postal receipts or other proof of receipt of the notices that are required by RSA 482-A:3, I(d) (Env-Wt 311.03(b)(13)).
- ☒ Project design considerations required by Env-Wt 313 (Env-Wt 311.04(j)).

- ☒ Town tax map showing the subject property, the location of the project on the property, and the location of properties of abutters with each lot labeled with the name and mailing address of the abutter (Env-Wt 311.06(a)).
- ☒ Dated and labeled color photographs that:
  - (1) Clearly depict:
    - a. All jurisdictional areas, including but not limited to portions of wetland, shoreline, or surface water where impacts have or are proposed to occur. And
    - b. All existing shoreline structures. And
  - (2) Are mounted or printed no more than 2 per sheet on 8.5 x 11 inch sheets (Env-Wt 311.06(b)).
- ☒ A copy of the appropriate USGS map or updated data based on LiDAR at a scale of one inch equals 24,000 feet showing the location of the subject property and proposed project (Env-Wt 311.06(c)).
- ☒ A narrative that describes the work sequence, including pre-construction through post-construction, and the relative timing and progression of all work (Env-Wt 311.06(d)).
- ☐ For all coastal projects, include a copy of the recorded deed with book and page numbers for the property (Env-Wt 311.06(e)).

- ☒ If the applicant is not the owner in fee of the subject property, documentation of the applicant's legal interest in the subject property, provided that for utility projects in a utility corridor, such documentation may comprise a list that:
  - (1) Identifies the county registry of deeds and book and page numbers of all of the easements or other recorded instruments that provide the necessary legal interest. And
  - (2) Has been certified as complete and accurate by a knowledgeable representative of the applicant (Env-Wt 311.06(f)).
- ☒ The NHB memo containing the NHB identification number and results and recommendations from NHB as well as any written follow-up communications such as additional memos or email communications with either NHB or New Hampshire Fish and Game Department (NHF&G) (Env-Wt 311.06(g)).
- ☒ A statement of whether the applicant has received comments from the local conservation commission and, if so, how the applicant has addressed the comments (Env-Wt 311.06(h)).
- ☐ For projects in LAC jurisdiction, a statement of whether the applicant has received comments from the LAC and, if so, how the applicant has addressed the comments (Env-Wt 311.06(i)).
- ☒ If the applicant is also seeking to be covered by the state general permits, a statement of whether comments have been received from any federal agency and, if so, how the applicant has addressed the comments (Env-Wt 311.06(j)).
- ☐ For after-the-fact applications: information required by Env-Wt 311.12 (Env-Wt 311.12).
- ☐ Coastal Resource Worksheet for coastal projects as required under Env-Wt 600.
- ☐ Prime Wetlands information required under Env-Wt 700.
- ☒ Stream Crossing Worksheet required by Env-Wt 900.
- ☒ Avoidance and Minimization Written Narrative, Avoidance and Minimization Checklist, or your own avoidance and minimization narrative (Env-Wt 311.07).
- ☒ * Attachment A: Minor and Major Projects (Env-Wt 311.10).
- ☒ * Functional Assessment (Env-Wt 311.10).

A-3 Section 8 of the Application

The proposed crossing meets the Resource-Specific Criteria in Env-Wt 900 as follows:

Env-Wt 904.01 General Design Considerations

a. *Not be a barrier to sediment transport.*
   Replacing the existing culvert with a full span structure will not add barriers to sediment transport. Following removal of the existing culvert, the channel bottom will be regraded to match into the existing upstream and downstream bottom elevations.
b. *Not restrict high flows and maintain existing low flows.*
   The proposed structure will provide an increase in hydraulic capacity over the existing crossing and therefore not impose a flow restriction.
c. *Not obstruct or otherwise substantially disrupt the movement of aquatic organisms indigenous to the waterbody beyond the actual duration of construction.*
   The proposed crossing will not obstruct the movement of aquatic organisms. The proposed crossing will provide a full width crossing, improving conditions for the passage of aquatic organisms.
d. *Not cause an increase in the frequency of flooding or overtopping of banks.*
   The proposed structure will increase hydraulic capacity at the crossing and will not increase the frequency of flooding.
e. *Maintain or enhance geomorphic compatibility by:*
   1. *Minimizing the potential for inlet obstruction by sediment, wood, or debris; and*
      The culvert is being replaced by a span type structure that will minimize the potential for inlet obstruction.
   2. *Preserving the natural alignment of the stream channel;*
      The proposed crossing is in line with the natural direction of the stream channel.
f. *Preserve watercourse connectivity where it currently exists*.
   The proposed crossing will preserve existing watercourse connectivity. A change to existing connectivity is not proposed.
g. *Restore watercourse connectivity where:*
   1. *Connectivity previously was disrupted as a result of human activity(ies); and*
   2. *Restoration of connectivity will benefit aquatic organisms upstream or downstream of the crossing, or both;*

   The proposed crossing will improve watercourse connectivity by providing a full width crossing, thereby removing existing barriers to upstream and downstream connectivity.
h. *Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and*
   The proposed project includes installation of rip rap along the proposed bridge abutments that will serve as scour protection and prevent erosion of the proposed riverbank.
i. *Not cause water quality degradation;*
   The proposed project involves replacing an existing deteriorated culvert with a full bank width crossing. A full bank width crossing will provide an improved crossing configuration over the existing culvert. The new crossing will be constructed with erosion and sediment controls that will prevent water quality degradation during construction.

The watershed supplying the culvert crossing is approximately 9 sq. miles, and according to NHDES regulations and the NHDES Wetland Permit Planning Tool, the culvert crossing is classified as a Tier 3 crossing. As proposed, the new crossing will be a full-width culvert that is a significant improvement over the existing culvert. The proposed culvert meets the intent of Env-Wt 904.05 and Env-Wt 904.07 as follows:

Env-Wt 904.05 Tier 3 Stream Crossings

a. *A tier 3 stream crossing shall be a span structure or an open-bottomed culvert with stream simulation, not a closed-bottom culvert or pipe arch.*
   The proposed crossing is a span structure.
b. *Compensatory mitigation shall not be required for:*
   1. *Any new tier 3 stream crossing that:*
      i. *Meets the general design criteria in Env-Wt 904.01 and the tier-specific criteria of Env-Wt 904.07;*
      ii. *Is self-mitigating; and*
      iii. *Improves aquatic organism passage, connectivity, and hydraulics; or*

      The tier 3 stream crossing does not require compensatory mitigation because it meets criteria i-iii above.
   2. *Any replacement of a crossing that met all applicable requirements when originally installed but is in a location that results in the crossing being classified as tier 3 under these rules, provided the proposed stream crossing meets the requirements of Env-Wt 904.09.*
      This is not applicable to this project.
c. *Plans for a tier 3 stream crossing shall be dated and bear the signature and seal of the professional engineer who prepared or had responsibility for and approved them, as required by RSA 310-A:18.*
   The plans adhere to the requirements above.

Env-Wt 904.07 Design Criteria for Tier 2, Tier 3, and Tier 4 Stream Crossings

a. *In accordance with the NH Stream Crossing Guidelines, University of New Hampshire, May 2009...;*
   The proposed culvert is sized to meet the stream crossing guideline requirement of 1.2 times the bank full width plus 2 feet. The hydraulic analysis of the proposed culvert determined the proposed culvert is adequately sized to pass the 100-yr storm.
b. *With the bed forms and streambed characteristics necessary to cause water depths and velocities within the crossing structure at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the stream crossing;*
   Construction of the proposed crossing will include removing the existing culvert and reshaping and armoring the embankment. The stream bottom will be comprised of natural material that is regraded to match into existing stream bottom elevations upstream and downstream of the culvert.
c. *To provide a vegetated bank on both sides of the watercourse to allow for wildlife passage;*
   The stream bank immediately around the culvert will have stone slope protection to protect the culvert and wing walls from scour. All other bank impacts will be loamed and seeded.

d. *To preserve the natural alignment and gradient of the stream channel, so as to accommodate natural flow regimes and the functioning of the natural floodplain;*
The proposed crossing is in line with the natural direction of the stream channel. The proposed streambed grading will match into the existing elevations upstream and downstream of the crossing.

e. *To accommodate the 100-year frequency flood, to ensure that:*
    1. *There is no increase in flood stages on abutting properties; and*
    The hydraulic capacity of the proposed crossing is greater than that of the existing culvert. Accordingly, the hydraulic analysis indicates that flood elevations will be lower following installation of the proposed crossing.
    2. *Flow and sediment transport characteristics will not be affected in a manner which could adversely affect channel stability;*
    The opening of the proposed crossing is wider than that of the existing culvert. The increase in hydraulic capacity will not impact flow and sediment transport characteristic that could affect channel stability.

f. *To simulate a natural stream channel;*
The stream bottom will be comprised of natural material that is regraded to match into existing stream bottom elevations upstream and downstream of the culvert, and the proposed crossing will provide a full width crossing, improving conditions for the passage of aquatic organisms.

g. *So as not to alter sediment transport competence; and*
The opening of the proposed crossing is wider than that of the existing culvert. The proposed crossing will match the existing streambed inlet and outlet elevations, improving sediment transport.

h. *To avoid and minimize impacts to the stream in accordance with Env-Wt 313.03.*
See Appendix C-18 for avoidance and minimization narrative.

A-4 Section 15 of the Application

The proposed crossing meets the Project-Specific Criteria in Env-Wt 307 as follows:

Env-Wt 307.02 Requirements for Coverage Under State General Permits

In order to be in compliance with federal requirements, all work in areas under the jurisdiction of the U.S. Army Corps of Engineers (US ACE) shall comply with all conditions of the applicable state general permit, available at http://www.nae.usace.army.mil/portals/74/docs/regulatory/StateGeneralPermits/NH/NH%20General%20Permit%2018August2017.pdf.

a. *General Criteria:*
    1. Written approval is being requested from the Corps and the State.
    2. This project is eligible under the New Hampshire General Permits for:
        i. Wetland, Stream, River and Brook crossings.
b. *Corps Jurisdiction/Authorities to Issue Permits:*
    1. The project does not require authorization under the Corps Regulatory Program because it is not located in or affecting navigable waters of the United States, discharging dredged material into waters of the U.S., or transporting dredged material for the purpose of disposal in the ocean.
    2. The project adheres to the following laws:
        i. *Section 401 of the CWA*
        Section 401 of the CWA is being met because a Wetlands Permit is being submitted to the NHDES for approval.
        ii. *The National Historic Preservation Act of 1966*
        See Appendix B-7 for the RPR.
        iii. *The Endangered Species Act, Section 7(a)*
        See responses to Env-Wt 307.06, below.
        iv. *The Coastal Zone Management Act of 1972*
        Although Madbury falls within the Coastal Zone of New Hampshire, the project is in a non-tidal zone and therefore CZMA does not apply.
    3. The following law is not applicable to the project:
        i. The Wild and Scenic Rivers Act
c. *Procedures:*
    1. It is understood that state Water Quality Certification requirements will be met through the approval of this wetlands permit. The NH Shoreland Water Quality Protection Act does not apply to this project. The NH Coastal Program determined that a CZMA Federal consistency review is not necessary for a PCN (Minor/Major) General Permit.
    2. This project is eligible for the PCN Major permit.
d. *Application Procedures Pre-Construction Notification (PCN) (Minor and Major):*
    The original State application package will be sent to the NHDES Wetlands Bureau. An RPR has been sent to the NHDHR to be reviewed for the presence of historical/archaeological resources within the proposed project area. The RPR, with responses from NHDHR, is

included in Appendix B-7 of this Wetlands Permit. Appendix B requirements of the NH PGP is included in Appendix B-1 of this Wetlands Permit.

e. *Federal/State Review Procedures Pre-Construction Notification (PCN) (Minor and Major):*
Written authorization must be obtained from the Corps. It is understood that proceeding with a PCN (Minor/Major) without a Corps written authorization is a violation of the General Permit. The project impacts are less than 1 acre, and therefore should not require an Individual Permit review.

f. *Emergency Procedures 33 CFR 325.2(e)(4): Pre-Construction Notification (PCN) (Minor/Major):*
This section is not applicable to the project.

g. *Construction of Solid Fill Structures and Fills Along the Coastline or Baseline From Which the Territorial Sea is Measured. all are considered Pre-Construction Notification (PCN) (Major):*
The project does not involve the construction of solid fill structures or the discharge of fill that may extend beyond the coastline or the baseline from which the territorial sea is measured. Therefore, this section does not apply.

h. *Individual Permit:*
The project meets the terms and conditions of the General Permit and does not fall under the Individual Permit category.

i. *General Permit Conditions:*
    1. Other Permits:
        i. It is understood that the applicant is responsible for obtaining all required State or local approvals.
    2. Federal Jurisdictional Boundaries:
        i. The project is not a “water of the U.S.” or a “navigable water of the U.S.”.
        ii. Wetlands were delineated in accordance with the Corps of Engineers Wetlands Delineation Manual and the most recent Northeast Regional Supplement.
    3. Mitigation:
        i. Avoidance and minimization of impacts can be found in Appendix C-18.
        ii. Compensatory mitigation is not required. See Appendix A-3, Env-Wt 904.05b(1).
    4. Discretionary Authority:
       This condition is understood.
    5. Single and Complete Project:
       This condition is understood.
    6. Projects requiring the use of multiple GPs:
       This condition is understood.
    7. Permit/Authorization Letter On-Site:
       This condition is understood.
    8. Historic Properties:
       This condition is understood.
    9. National Lands:
       Not applicable for this project.
    10. Corps Property and Federal Projects:

Not applicable for this project.

11. Essential Fish Habitat (EFH):
    Not applicable for this project.
12. Pile Driving and Removal (for all applicable GPs):
    This condition is understood.
13. Federal Threatened and Endangered Species:
    This condition is understood. Based on this guidance, the project qualifies for a Pre-Construction Notification (PCN) permit.
14. Wild and Scenic Rivers:
    Not applicable for this project.
15. Navigation:
    This condition is understood.
16. Federal Liability:
    This condition is understood.
17. Heavy Equipment in Wetlands:
    Not applicable for this project.
18. Temporary Fill:
    This condition is understood. See Env-Wt 307.11 response below.
19. Restoration of Inland Wetland Areas:
    This condition is understood. See Env-Wt 307.12 response below.
20. Soil Erosion and Sediment Controls:
    This condition is understood. See Env-Wt 307.03 response below.
21. Bank Stabilization:
    Not applicable for this project.
22. Waterway/Wetland Work and Crossings:
    Not applicable for this project.
23. Discharge of Pollutants:
    Not applicable for this project.
24. Spawning, Breeding, and Migratory Areas:
    Not applicable for this project.
25. Storage of Seasonal Structures:
    Not applicable for this project.
26. Environmental Functions and Values:
    See discussion in Appendix C-18, Section 5.
27. Invasive Species:
    Invasive species are not known to be on site; therefore, an Invasive Species Control Plan is not needed. If encountered, they will be dealt with per NHDOT's BMPs for Roadside Invasive Plants manual.
28. Protection of Special Resources (Special Aquatic Sites, Areas Containing Shellfish, and Special Wetlands):
    All wetlands were delineated using Federal delineation methods. The project area does not contain shellfish or special aquatic sites.
29. Vernal Pools:
    There are no vernal pools in the project area.

30. Inspections:
    This condition is understood.
31. Maintenance:
    This condition is understood.
32. Property Rights:
    This condition is understood.
33. Transfer of GP Verifications:
    This condition is understood.
34. Modification, Suspension, and Revocation:
    This condition is understood.
35. Special Conditions:
    This condition is understood.
36. False or Incomplete Information:
    This condition is understood.
37. Abandonment:
    This condition is understood.
38. Enforcement Cases:
    This condition is understood.
39. Duration of Authorization:
    It is understood that the General Permit expires 5 years from the date issued. Activities completed under the PCN (Minor/Major) authorization of this General Permit will continue to be authorized after their expiration date.
40. Previously Authorized Activities:
    Not applicable for this project.

<u>Env-Wt 307.03 Protection of Water Quality Required</u>

a. No activity shall be conducted in such a way as to cause or contribute to any violation of:

1. *The surface water quality standards specified in RSA 485-A:8 or Env-Wq 1700;*
   There will be no discharges of sewer or wastes into Class A waters, because this project does not involve sewer work and there aren't any existing sewer mains or septic tanks in the vicinity of the culvert. There will be no changes in the stream due to benthic deposits; oil & grease; color; turbidity; slicks, odors & surface floating solids; temperature; nutrients; radioactivity; or pH, because proper erosion and sediment control will be used and all equipment will be refueled, maintained, and stored outside the wetland area.
2. *The ambient groundwater quality standards established under RSA 485-C;*
   All equipment will be refueled, maintained, and stored outside the wetland area.
3. *The limitations on activities in a sanitary protective area established under Env-Dw 302.10 or Env-Dw 305.10; or*
   There aren't any sanitary protective radii in the project area.
4. *Any provision of RSA 485-A, Env-Wq 1000, RSA 483-B, or Env-Wq 1400 that protects water quality.*
   There will not be any pollution entering surface or groundwater, and the integrity of public waters will be maintained by adhering to #1 & 2 above.

b. *All work, including management of soil stockpiles, shall be conducted so as to minimize erosion, minimize sediment transfer to surface waters or wetlands, and minimize turbidity in surface waters and wetlands using the techniques described in:*
    1. *Env-Wq 1505.02, Env-Wq 1505.04, Env-Wq 1506, and Env-Wq 1508;*
    Contractor shall install perimeter controls prior to beginning any earth moving operations, direct runoff to temporary controls until stormwater BMPs are stabilized, stabilize ditches and swales prior to directing runoff to them, and inspect erosion controls at least weekly and after every rain event of 0.5 inches or more. In paved areas, it will be mandatory for the base course gravels to meet the gradation requirements of NHDOT standard specifications for road and bridge construction, 2016, table 304-1, item no. 304.1, 304.2, or 304.3. In areas that will not be paved, the contractor shall follow proper erosion control measures. The contractor shall comply with sediment and erosion control methods and stormwater treatment practices per manufacturer's recommendations or, if none, the applicable requirements of Env-Wq 1506 or Env-Wq 1508.
    2. *The applicable BMP manual, available as noted in Appendix B:*
        i. *For forestry projects, the Forestry BMPs;*
        Not applicable to this project.
        ii. *For SPN utility projects, the Utility BMPs;*
        Not applicable to this project.
        iii. *For trail projects, whether under an SPN or other approval, the Trail BMPs; or*
        Not applicable to this project.
        iv. *For roadway maintenance projects, whether under an SPN, registration, or other approval, the Routine Roadway BMPs; or*
        The Contractor shall follow the Best Management Practices in the 2018 Routine Roadway Maintenance Activities in New Hampshire.
    3. *The applicable BMP manual supplemented by the portions of Env-Wq 1500 listed in (1), above, if the applicable BMP manual provides less protection to jurisdictional areas than the provisions of Env-Wq 1500 listed in (1), above.*
    As stated in #1 above, the Contractor shall comply with sediment and erosion control methods and stormwater treatment practices per manufacturer's recommendations or, if none, the applicable requirements of Env-Wq 1506 or Env-Wq 1508.
c. *Water quality control measures shall:*
    1. *Be selected and implemented based on the size and nature of the project and the physical characteristics of the site, including slope, soil type, vegetative cover, and proximity to jurisdictional areas;*
    Contractor shall select water quality control measures according to the contract plans, permits, and what is appropriate for the site conditions.
    2. *Be comprised of wildlife-friendly erosion control materials when:*
        i. *Erosion control blankets are used;*
        If erosion control blankets are used, it is mandatory for them to be wildlife friendly.
        ii. *A protected species or habitat is documented;*

Two threatened species were documented as potentially present in the area of proposed action.

iii. *The proposed work is in or adjacent to a PRA;*
The project is a floodplain wetland contiguous to a Tier 3 watercourse, so it is in a PRA.

iv. *Specifically requested by NHB or NHF&G; or*
Per NHB's request, the Contractor is prohibited from installing baffles or bed stabilization in the river. The Contractor is also prohibited from installing erosion control mating products containing welded plastic or "biodegradable plastic" netting or thread.

v. *Any combination of i. through v., above, applies;*
It is mandatory for all erosion control materials used on this project to be wildlife friendly and adhere to i. through iv. above.

3. *Be installed prior to start of work and in accordance with the manufacturer's recommended specifications or, if none, the applicable requirements of Env-Wq 1506 or Env-Wq 1508;*
It is mandatory for the Contractor to install water quality control measures prior to the start of work and in accordance with manufacturer's recommendations or, if none, the applicable requirements of Env-Wq 1506 or Env-Wq 1508.
4. *Be capable of:*
    i. *Minimizing erosion;*
    ii. *Collecting sediment and suspended and floating materials; and*
    iii. *Filtering fine sediment;*
    It is required for water quality control measures to be capable of all of the above.
5. *Be maintained so as to ensure continued effectiveness in minimizing erosion and retaining sediment on-site during and after construction;*
It is mandatory for the Contractor to maintain the erosion control on a weekly basis and after each rain event of 0.5 inch or more.
6. *Remain in place until all disturbed surfaces are stabilized to a condition in which soils on the site will not experience accelerated or unnatural erosion, using techniques such as:*
    i. *Achieving and maintaining a minimum of 85% vegetative cover using an erosion control seed mix, whether applied in a blanket or otherwise, that is certified by its manufacturer as not containing any invasive species; or*
    ii. *Placing and maintaining a minimum of 3 inches of non-erosive material such as stone; and*
    The Contractor shall leave all water quality control measures in place until all disturbed surfaces are stabilized to a condition in which soils on the site will not experience acceleration or unnatural erosion using techniques as specified in #6 above, or in #7 below.
7. *If designed and installed as temporary methods, be removed upon completion of work when compliance with (6), above, is achieved;*

d. *Any sediment collected by water quality control measures shall be:*

1. *Removed with sufficient frequency to prevent the discharge of sediment; and*
   The Contractor shall remove sediment from erosion control devices on a weekly basis.
2. *Placed in an upland location in a manner that prevents its erosion into a surface water or wetland.*
   The Contractor shall dispose of sediment from erosion control devices outside of the wetland area to prevent its migration into a surface water or wetland.

e. *All exposed soils and other fills shall be permanently stabilized within 3 days following final grading.*
   The Contractor shall permanently stabilize soils and other fills within 3 days following final grading. Stabilization techniques shall include any of the methods described in Env-Wq 1506.

f. *A cofferdam or other turbidity control shall be:*
   1. *Used to enclose a dredging project conducted in or along the shoreline of a bog, marsh, lake, pond, stream, river, creek, or any other surface water, provided that a cofferdam shall not be installed during periods of high flow; and*
      Cofferdams shall be used on the project, except during periods of high flow. Other erosion control measures shall be used along the perimeter of the project to prevent sediment from entering into the river.
   2. *Removed after work within the cofferdam or other turbidity control is completed, the contained water has returned to background clarity, and removing the structure will not cause or contribute to a violation of (c)(6), above.*
      The Contractor shall completely remove all cofferdams and turbidity control once all disturbed surfaces are stabilized and water has returned to background clarity.

g. *The person in charge of construction equipment shall:*
   1. *Inspect such equipment for leaking fuel, oil, and hydraulic fluid each day prior to entering surface waters or wetlands or operating in an area where such fluids could reach groundwater, surface waters, or wetlands;*
      The Contractor is responsible for checking all equipment daily for leaks.
   2. *Repair any leaks prior to using the equipment in an area where such fluids could reach groundwater, surface waters, or wetlands;*
      The Contractor shall make all repairs outside of jurisdictional areas.
   3. *Maintain oil spill kits and diesel fuel spill kits, as applicable to the type(s) and amount(s) of oil and diesel fuel used, on site so as to be readily accessible at all times during construction; and*
      The Contractor shall maintain the following on site: oil spill kits and diesel fuel spill kits specific to their equipment.
   4. *Train each equipment operator in the use of the spill kits.*
      Each equipment operator shall be trained in the use of spill kits.

h. *Equipment shall be staged and refueled in accordance with Env-Wt 307.15.*
   See responses to 307.15, below.

<u>Env-Wt 307.04 Protection of Fisheries and Breeding Areas Required</u>

Env-Wt 307.04 is not applicable to this project.

Env-Wt 307.05 Protection Against Invasive Species Required

a. *Prior to the installation of swamp 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.*
   The use of swamp mats is not anticipated to construct this project.
b. *Equipment to be used in surface waters shall be completely free of all aquatic and terrestrial invasive plants and all exotic aquatic species of wildlife as defined in RSA 487:16, I-a.*
   It is not anticipated that equipment will need to enter surface waters to construct the project.
c. *All applicable requirements of RSA 487:15-25 shall be met.*
   Contractor shall inspect equipment for any exotic weeds and plants prior to mobilizing them onsite. The Contractor is responsible for ensuring all sediment and erosion control products are free of exotic weeds and plants prior to their use and installation.
d. *No boat washing or rinsing shall occur in jurisdictional areas or in a location where run-off is likely to flow to any jurisdictional area.*
   There will not be any boats on this project. However, the Contractor shall rinse all equipment in non-jurisdictional areas where runoff is unlikely to occur.
e. *To prevent the use of soil or seed stock containing nuisance or invasive species, the contractor responsible for work shall follow the Invasive Plant BMPs, available as noted in Appendix B.*
   The Contractor shall follow the BMPs described in the NHDOT Best Management Practices for Roadside Invasive Plants, latest edition.

Env-Wt 307.06 Protection of Rare, Threatened or Endangered Species and Critical Habitat

No activity shall jeopardize the continued existence of a threatened or endangered species, a species proposed for listing as threatened or endangered, or designated or proposed critical habitat under the:

a. *Federal Endangered Species Act, 16 U.S.C. §1531 et seq.;*
   Both NHB and IPaC reviews were performed as part of this project. By performing these reviews, and following up with the U.S. Fish & Wildlife Services (USFWS) and the Natural Heritage Bureau (NHB), we have met the requirements of the Federal Endangered Species Act, 16 U.S.C. §1531.

b. *State Endangered Species Conservation Act, RSA 212-A; or*
   Both NHB and IPaC reviews were performed as part of this project. The NHB results showed there is an NHB record (e.g. rare wildlife, plant, and/or natural community) present in the vicinity, but the Bureau does not expect it to be impacted by the proposed project. A review was also conducted through USFWS on the IPaC website, and the results show the Northern Long-Eared Bat (NLEB) is a threatened mammal that may be present in the area of proposed action. Kim Tuttle, with the NH Fish & Game, was contacted regarding the NLEB. Ms. Tuttle explained that there are no known hibernacula or known maternity roost trees in the area. The project is state funded, so we chose to complete the NLEB 4(d) Rule determination key on IPaC, and a determination was made that the project "may affect" the NLEB. A Consistency Letter was generated and USFWS has 30

days to comment on the IPaC-assisted determination. Our project is consistent with the USFWS BO for the 4(d) rule and the project will not result in any prohibited take of the species.

The proper reviews and correspondence have been conducted with the applicable State and Federal agencies. The project will not export, take, possess, process, sell, offer for sale, deliver, carry, transport or ship any protected species. Thus, the project is compliant with the New Hampshire Endangered Species Conservation Act (RSA 212-A).

c. *New Hampshire Native Plant Protection Act, RSA 217-A.*
Both NHB and IPaC reviews were performed as part of this project. The NHB results showed there is an NHB record (e.g. rare wildlife, plant, and/or natural community) present in the vicinity, but the Bureau does not expect it to be impacted by the proposed project. A review was also conducted through USFWS on the IPaC website, and the results showed the Small Whorled Pogonia (SWP) is a threatened plant that may be present in the area of proposed action. Susi von Oettingen, Endangered Species Biologist with the USFWS, was contacted regarding the SWP. Ms. Von Oettingen explained that the SWP is likely not present within +/- 30 feet of the culvert. Most of the project work is limited to within +/- 30 feet of the culvert, or just off the road shoulder. The review and correspondence with USFWS led us to conclude that the SWP is not present.

The proper reviews and correspondence have been conducted with the applicable State and Federal agencies. The project will not export, import, transport, take, possess, sell, offer for sale, deliver, carry, or ship any protected species. Thus, the project is compliant with the New Hampshire Native Plant Protection Act (RSA 217-A).

<u>Env-Wt 307.07 Consistency Required with Shoreland Water Quality Protection Act</u>

Env-Wt 307.07 is not applicable to this project.

<u>Env-Wt 307.08 Protection of Designated Prime Wetlands and Dully-Established 100-Foot Buffers</u>

Env-Wt 307.08 is not applicable to this project.

<u>Env-Wt 307.09 Shoreline Structures</u>

No structure shall be built over public trust surface waters, except:

a. *To provide docking for watercraft in accordance with Env-Wt 500;*
Not applicable to this project.
b. *To construct or replace a bridge for public travel; or*
This project will replace a bridge for public travel, so it meets the exception for shoreline structures.
c. *To provide seating for dining establishments in:*
    1. *Areas exempted from RSA 483-B pursuant to RSA 483-B:12; and*
    Not applicable to this project.
    2. *Historic commercial tidal areas as allowed under Env-Wt 600.*
    Not applicable to this project.

Env-Wt 307.10 Dredging Activity Conditions

In addition to all other applicable conditions in this part, the following conditions shall apply to all dredging activities:

a. *No dredging shall occur that would create violations of any set-backs specified in:*
    1. *RSA 485-A or 483-B relative to protecting water quality; or*
       All necessary easements will be in place prior to starting work.
    2. *Env-Wq 1000 relative to septic systems;*
       There are no septic systems included in this project, and this project will not disturb any existing septic systems.
b. *Work shall be done during low flow or in the dry unless a dredge dewatering, diversion, or cofferdam plan has been approved as part of the project;*
   The Contractor shall submit a water diversion and dewatering plan for review by the Engineer.
c. *Turbidity controls shall:*
    1. *Be installed prior to construction and maintained during construction such that no turbidity escapes the immediate dredge area; and*
    2. *Remain in place until suspended particles have settled and water at the work site has returned to normal clarity;*

   Erosion and water quality control measures will meet the applicable turbidity requirements.
d. *Dredged materials shall be disposed of out of jurisdictional areas, unless other disposition is specifically permitted pursuant to (e), below;*
   The Contractor shall dispose of dredged material outside of jurisdictional areas.
e. *If an applicant wishes to use dredged materials as part of the proposed project or dispose of dredged materials in a jurisdictional area, the applicant shall specifically request authorization to do so as part of the application filed pursuant to Env-Wt 311;*
   Dredged material shall not be used as part of the proposed project or disposed of in jurisdictional areas.
f. *Dredged materials to be stockpiled in uplands shall be dewatered in sedimentation basins that are:*
    1. *Contained within turbidity controls that prevent turbid water from leaving the basins; and*
       The Contractor shall dewater dredged materials to be stockpiled using turbidity controls that prevent turbid water from leaving the stockpile area.
    2. *Located outside of any jurisdictional area;*
       The Contractor shall stockpile dredged materials outside of jurisdictional areas.
g. *Subject to (h), below, in non-tidal waters, no dredging shall occur:*
    1. *Between October 1 and March 31 for any fish migration or larval settling area of cold water fish; or*
    2. *In March or April for any area that is habitat for rainbow smelt;*

   This project does not involve logging.
h. *For logging projects, work shall be done to protect water quality in accordance with the Forestry BMPs, available as noted in Appendix B;*
   This project does not involve logging.

i. *In addition to the limitations on tidal dredging in Env-Wt 600, no dredging shall occur in tidal waters during a fish migration or larval setting stage of fish and shellfish, which is between November 15 and March 15;*
The project is not located in tidal waters.

j. *In addition to the limitations on tidal dredging in Env-Wt 600, dredging projects in tidal waters shall be designed and implemented to ensure that there is no disruption of tidal flushing. Tidal flushing means the influx or outflow of water that is associated with the normal ebb and flow of the tide;*
The project is not located in tidal waters.

k. *Dredging shall not impede fish migrations or interfere with spawning areas for fish;*
Cofferdams will be used to isolate the work zone from the Bellamy River. A bypass pipe may be used if water cannot be diverted around the cofferdams, in order to maintain a connection between the upstream and downstream ends of the project. Therefore, the project will not impede fish migrations or interfere with spawning areas for fish.

l. *Dredging shall not disturb contaminated sediment unless dredging of such sediment is specifically identified in the application, authorized in the issued permit, and implemented with such protective conditions as are necessary to ensure that the contaminated sediment is properly managed;*
There are no known contaminants within the project limits.

m. *Dredging operations that are not related to the operation of a public water supply (PWS) shall be no closer than 250 feet from an active intake for the PWS; and*
The proposed project is located roughly 7,000 feet from the nearest public water supply intake, Portsmouth Water Works.

n. *The permittee shall send prior notification of dredging activities to the PWS owner/operator by registered mail at least 30 days prior to dredging when done in a waterbody or other jurisdictional area within 500 feet of a public water supply intake.*
The proposed project is located roughly 7,000 feet from the nearest public water supply intake, Portsmouth Water Works. Therefore, no notifications are required.

<u>Env-Wt 307.11 Filling Activity Conditions</u>

In addition to all other applicable conditions in this part, the following conditions shall apply to all temporary and permanent filling activities:

a. *Fill shall be clean sand, gravel, rock, or other material that:*
    1. *Meets the project's specifications for its use; and*
    The Contractor shall only use fill that is clean sand, gravel, rock, or other material that meets the project specifications for its use.
    2. *Does not contain any material that could contaminate surface or groundwater or otherwise adversely affect the ecosystem in which it is used;*
    The Contractor shall only use fill that does not contain any material that could contaminate surface or groundwater or otherwise adversely affect the ecosystem.

b. *Limits of fill shall be clearly identified prior to commencement of work and controlled in accordance with Env-Wt 307.03 to ensure that fill does not spill over or erode into any area where filling is not authorized;*
Limits of fill are clearly demarcated on the plans.

c. *Slopes shall be immediately stabilized by a method specified in Env-Wq 1506 or Env-Wq 1508, as applicable, to prevent erosion into adjacent wetlands or surface waters;*
The Contractor shall immediately stabilize slopes using methods in Env-Wq 1506 or Env-Wq 1508, as applicable.

d. *No fill shall be allowed to achieve setbacks to septic systems specified in Env-Wq 1000;*
There are no septic systems included in this project, and this project will not disturb any existing septic systems.

e. *Fill shall be not placed so as to direct flows onto adjacent or down-current property;*
Fill placement will not alter stormwater flows into adjacent or down-current property. Fill has been designed to meet current standards and support the bridge, with minimal impacts to adjacent properties.

f. *Swamp mats and construction mats shall be deemed temporary fill for new authorizations only if they meet the requirements of (h)(1) and (h)(2), below;*
Swamp mats will not be necessary for this project.

g. *Authorized temporary fill other than swamp mats, construction mats, and corduroy shall be placed on geotextile fabric laid on preconstruction wetland grade;*
The Contractor shall place temporary fill (other than swamp mats, construction mats, and corduroy) on geotextile fabric laid on preconstruction wetland grade.

h. *Subject to (i), below, temporary fill shall be:*
    1. *In place no longer than one growing season;*
    The Contractor shall remove temporary fill after one growing season.
    2. *Removed immediately upon work completion; and*
    The Contractor shall remove temporary fill immediately upon work completion.
    3. *Disposed of at an upland location in a manner that prevents its erosion into a surface water or wetland;*
    The Contractor shall dispose of temporary fill at an upland location which prevents its erosion into a surface water or wetland.

i. *Corduroy shall be deemed temporary fill that may be left in place if it:*
    1. *Is installed as part of a skid trail in accordance with the Forestry BMPs;*
    2. *Does not exceed 1,000 LF and 20,000 SF per crossing; and*
    3. *Does not cross or otherwise impact a perennial stream, marsh, PRA, or vernal pool;*
    Corduroy will likely not be used on this project, but if it is, the Contractor shall meet i) #1-3 above.

j. *Wetlands and surface waters shall be restored to pre-impact conditions and elevation as specified in Env-Wt 307.12(i), below, unless otherwise authorized in an issued permit;*
The Contractor shall restore wetlands and surface waters to pre-impact conditions and elevations.

k. *Swamp mats shall be:*
    1. *Properly installed, not dragged into position; and*
    2. *Removed immediately upon the completion of work; and*
    Swamp mats are not necessary for this project.

l. *No fill shall take place in a PRA unless:*
   1. *Specifically authorized by the department in an issued permit; or*
      This wetland permit requests the authorization by the department to be able to fill in some of the wetlands as part of this project. The fill will only be used to support the bridge and will have a minimal impact.
   2. *Authorized under applicable project-specific provisions.*
      Fill is necessary to support the proposed bridge.

Env-Wt 307.12 Restoring Temporary Impacts: Site Stabilization

In addition to all other applicable conditions in this part, the following conditions shall apply to restoring all temporary impacts:

a. *Within 3 days of final grading or temporary suspension of work in an area that is in or adjacent to surface waters, all exposed soil areas shall be stabilized by:*
   1. *Seeding and mulching, if during the growing season; or*
   2. *Mulching with tackifiers on slopes less than 3:1 or netting and pinning on slopes steeper than 3:1 if not within the growing season;*

   Within 3 days, Contractor shall stabilize all areas that have had final grading or temporary suspension of work in an area that is in, or adjacent to, surface waters. Contractor shall seed and mulch during the growing season, mulch with tackifiers on slopes less than 3:1, and mulch with netting or pinning on slopes steeper than 3:1, if not within the growing season.

b. *Upon completion of construction, all disturbed wetland areas shall be stabilized with wetland seed mix containing non-invasive plant species only;*
   The Contractor shall stabilize all disturbed wetland areas with wetland seed mix containing non-invasive plant species only.

c. *Any seed mix used shall not contain plant species that are exotic aquatic weeds;*
   The Contractor is prohibited from using seed mix containing plant species that are exotic aquatic weeds.

d. *Mulch used within an area being restored shall be natural straw or equivalent non-toxic, non-seedbearing organic material;*
   The Contractor shall use natural straw or equivalent non-toxic non-seedbearing organic material within areas being restored using mulch.

e. *Wetland soils from areas vegetated with purple loosestrife or other invasive plant species shall not be used in the area being restored;*
   The Contractor is prohibited from using wetlands soils from areas vegetated with purple loosestrife or other invasive plant species for site restoration.

f. *If any temporary impact area that is stabilized with seeding or plantings does not have at least 75% successful establishment of wetlands vegetation after 2 growing seasons, the area shall be replanted or reseeded, as applicable;*
   The Contractor shall replant or reseed, as applicable, the temporary impact areas that do not attain 75% successful establishment of wetlands vegetation after 2 growing seasons.

g. *If a temporary impact area is restored by seeding or plantings, then:*
   1. *The work shall not be deemed successful if the area is invaded by nuisance species such as common reed or purple loosestrife during the first full growing season following the completion of construction; and*

2. *The person responsible for the work shall submit a remediation plan to the department that proposes measures to be taken to eradicate nuisance species during this same period;*

   The Contractor is responsible for submitting a remediation plan to the department for temporary impact areas that are invaded by nuisance species such as common reed or purple loosestrife during the first full growing season following the completion of construction. If nuisance species are present, the Contractor shall propose measures to be taken to eradicate nuisance species.

h. *Unless otherwise authorized, any trees cut in an area of authorized temporary impacts shall be cut at ground level with the shrub and tree roots left intact, to prevent disruption to the wetland soil structure and to allow stump sprouts to revegetate the work area; and*
   For any trees cut in an area of authorized temporary impacts, the Contractor shall leave shrub and tree roots intact.

i. *Unless otherwise authorized, wetland areas where permanent impacts are not authorized shall be restored to their pre-impact conditions and elevation by replacing the removed soil and vegetation in their pre-construction location and elevation such that post-construction soil layering and vegetation schemes are as close as practicable to pre-construction conditions.*
   For wetland areas where permanent impacts are not authorized, the Contractor shall restore wetlands and surface waters to pre-impact conditions and elevations.

<u>Env-Wt 307.13 Property Line Setbacks</u>

a. *As required by RSA 482-A:3, XIII(a), all boat docking facilities shall be at least 20 feet from the abutting property line, whether in tidal or in non-tidal waters.*
   There are no boat docking facilities on this project.

b. *Subject to (c) and (d), below, dredging, filling, or construction activity within a jurisdictional area that is not covered by (a), above, that is covered by an LSA or for which an EXP or standard permit is required shall occur at least 10 feet from an abutting property line.*
   There will be dredging, filling, and other work performed within 10 feet from the estimated abutting property lines. However, the project is a stream crossing project that is being undertaken by a public agency (Town of Madbury) and is in conformance with the Routine Roadway BMPs.

c. *The set-back established in (b), above, shall not apply to utility projects in a utility right-of-way if a boundary survey has been or will be completed prior to initiation of work.*
   The proposed project is not a utility project.

d. *Subject to (e), below, if an applicant wishes to extend an activity that is covered by (b), above, closer than 10 feet to an abutting property line, the applicant shall obtain written consent from the affected abutter.*
   Per Env-Wt 307.13, consent is not required for stream crossing projects undertaken by a public agency.

e. *An applicant shall not be required to obtain consent from the affected abutter to extend work closer than 10 feet to the property line for:*
    1. *A bank stabilization project; or*
       Not applicable to this project.
    2. *Stream crossing projects undertaken by a public agency in conformance with the Routine Roadway BMPs, available as noted in Appendix B.*
       Per Env-Wt 307.13, consent is not required for stream crossing projects undertaken by a public agency.

f. *The department shall inform the applicant that an increase to the setback to property lines is required if the department determines during the review process that the location proposed for an activity:*
    1. *Represents a danger to other waterfront activities due to its size or character, or both, being inconsistent with the size and character of the surrounding area;*
    2. *Is likely to create a navigation hazard due to its size or proximity to other existing legal structures; or*
    3. *Is likely to interfere with an abutter's access to or use of the abutter's property.*

    An increase to the setback to property lines should not be applicable to the project, because the existing culvert is in disrepair and needs replacement. The proposed bridge span meets the current standards and has minimal impacts to the surrounding properties.

g. *If the department determines pursuant to (f), above, that a larger setback is required, the department shall increase the set-back only the distance required to abate the danger, hazard, or interference, as applicable.*
    A larger setback may or may not be possible based on existing topography and the proposed toe of slope.

Env-Wt 307.14 Rock Removal

Env-Wt 307.14 is not applicable to this project.

Env-Wt 307.15 Use of Heavy Equipment in Wetlands

Env-Wt 307.15 is not applicable to this project.

Env-Wt 307.16 Adherence to Approved Plans Required

For any project for which plans were submitted and an SPN, PBN, LSA, EXP, or standard permit was issued, all work on the project shall be done in accordance with the approved plans.
All work will be done in accordance with the approved plans, and a resident project representative will periodically be on site to ensure that this requirement is met.

Env-Wt 307.17 Unpermitted Activities

Env-Wt 307.17 is not applicable to this project.

Env-Wt 307.18 Reports

Env-Wt 307.18 is not applicable to this project.

B. NH GP Requirements

1. Appendix B
2. Impaired Waters
3. NHB Review & Correspondence
4. IPaC Review & Correspondence
5. Highest Ranked Wildlife Habitat by Ecological Condition
6. FEMA Floodplain Map
7. NHDHR Request for Project Review

B-1 Appendix B

US Army Corps of Engineers®
New England District

Appendix B

Regional General Permits (GPs)
Required Information and Corps Secondary Impacts Checklist

In order for the Corps of Engineers to properly evaluate your application, applicants must submit the following information along with the New Hampshire DES Wetlands Bureau application or permit notification forms. Some projects may require more information. For a more comprehensive checklist, go to www.nae.usace.army.mil/regulatory, "Forms/Publications" and then "Application and Plan Guideline Checklist." Check with the Corps at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the State of New Hampshire DES Wetlands Bureau application and Permit by Notification forms.

All Projects:

- Corps application form (ENG Form 4345) as appropriate.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible black and white (no color) plans no larger than 11"x17" with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show mean low water (MLW) and mean high water (MHW) elevations. Show the high tide line (HTL) elevations when fill is involved. In other waters, show ordinary high water (OHW) elevation.
- On each plan, show the following for the project:
- Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. Don't use local datum. In coastal waters this may be mean higher high water (MHHW), mean high water (MHW), mean low water (MLW), mean lower low water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001.
- Horizontal state plane coordinates in U.S. survey feet based on the Traverse Mercator Grid system for the State of New Hampshire (Zone 2800) NAD 83.
- Show project limits with existing and proposed conditions.
- Limits of any Federal Navigation Project in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the Federal Navigation Project;
- Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the ordinary high water in inland waters and below the high tide line in coastal waters.
- Delineation of all waterways and wetlands on the project site,:
- Use Federal delineation methods and include Corps wetland delineation data sheets. See GC 2 and www.nero.noaa.gov/hcd for eelgrass survey guidance.
- GP 3, Moorings, contains eelgrass survey requirements for the placement of moorings.
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact the Corps for guidance.

US Army Corps of Engineers ®
New England District

New Hampshire General Permits (GPs)
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 GC 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

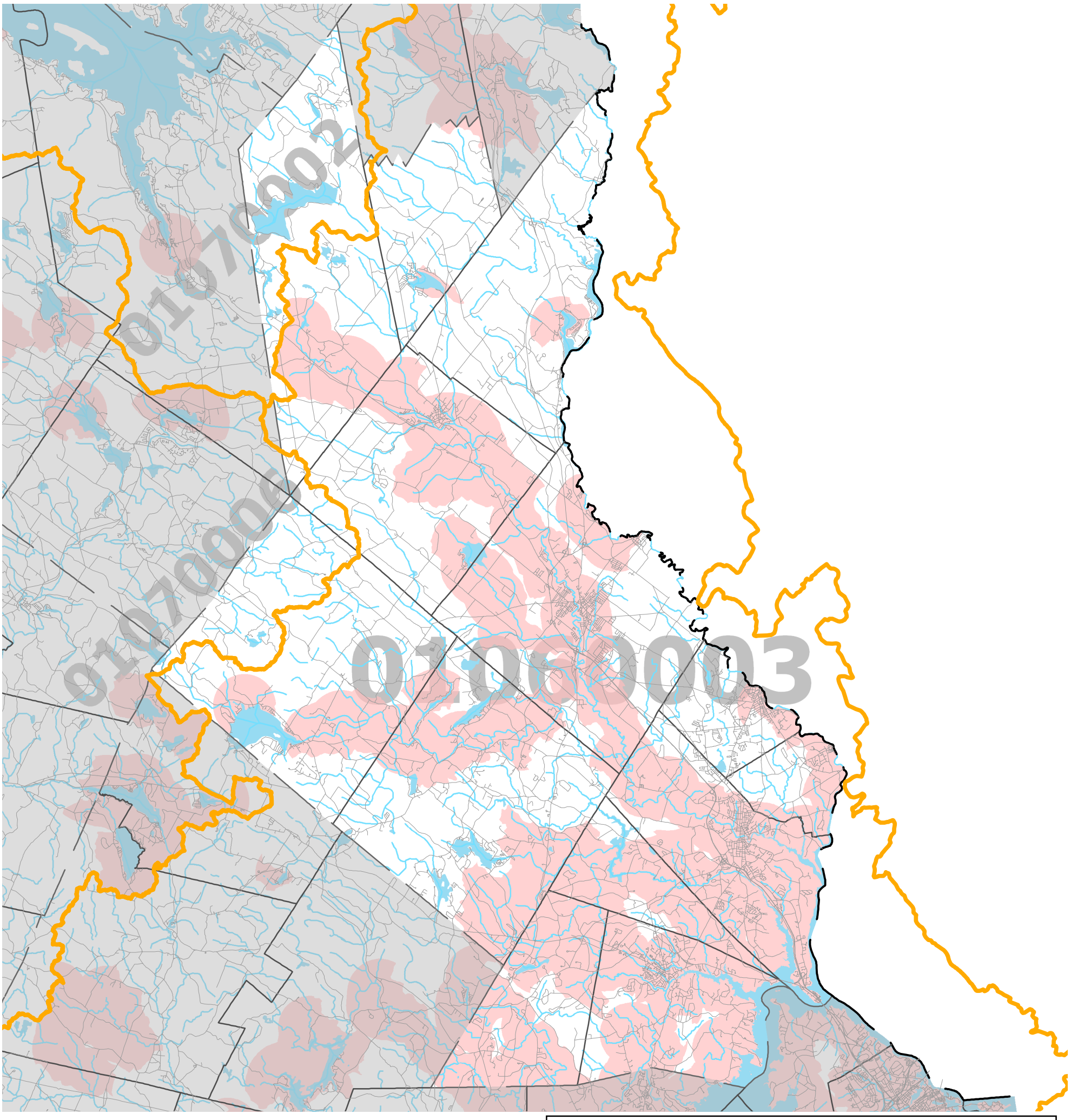
1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	✓	
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	✓	
2.2 Are there proposed impacts to SAS, special wetlands. Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www2.des.state.nh.us/nhb_datacheck/. The book Natural Community Systems of New Hampshire also contains specific information about the natural communities found in NH.		✓
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	✓	
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.)		✓
2.5 The overall project site is more than 40 acres?		✓
2.6 What is the area of the previously filled wetlands?	250 sqft	
2.7 What is the area of the proposed fill in wetlands?	111 sqft	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?	2%	
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/ USFWS IPAC website: https://ecos.fws.gov/ipac/location/index	✓	

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.	✓	
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)?		✓
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		✓
3.5 Are stream crossings designed in accordance with the GC 21?	✓	
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?	✓	
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		✓
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review**)** with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document**	✓	

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

B-2 Impaired Waters

Strafford County: Impaired Waters Vicinity* for which No Additional Loading Criteria Applies



*Vicinity based upon a 1 mile buffer of Assessment Units impaired in the 2006 SWQA for one or more of the following;

- Invertebrates,
- Cadmium,
- Chlorophyll *a*,
- Copper,
- Cyanobacteria,
- Dissolved Oxygen (% Sat or mg/L),
- Enterococcus,
- *E. coli*,
- Algal Growth,
- Fecal Coliform,
- Lead,
- Total Phosphorus,
- Sedimentation & Siltation,
- Zinc.

For more information on the 2006 Surface Water Quality Assessments see:
http://des.nh.gov/wmb/swqa/

0 1 2 4 6 8 10 Miles

N

NHDES

H:\Water Quality\305(B)-303(D) PROGRAM\2006_Int_Aprch\Info_Rqsts\20061025_PMC_No_Add_Load

- Major Divides (HUC8)
- Roads(NHDOT)
- State Boundary
- County Boundary
- Town Boundary
- 2006 Assessment Unit ID Lines (1:100k NHD)
- 2006 Assessment Unit ID Polygons(1:100k NHD)
- One Mile Buffer on No Additional Loading AUIDs

This map is intended solely as a screening tool to assist you in identifying areas within 1 mile upstream in the watershed of an impaired waterbody. This map is not intended to show analytical results regarding pollutant loading or any other information related to sections 305(b) or 401 of the Clean Water Act or any other State or federal laws.

The coverages presented in this program are under constant revision as new sites or facilities are added. They may not contain all of the potential or existing sites or facilities. The Department is not responsible for the use or interpretation of this information, nor for any inaccuracies.

Map Prepared July 17, 2007.

Welcome to New Hampshire's Watershed Report Cards built from the 2018, 305(b)/303(d)

Each Watershed Report Card covers a single 12 digit Hydrologic Unit Code (HUC12), on average a 34 square mile area. Each Watershed Report Card has three components;

1. REPORT CARD - A one page card that summarizes the overall use support for Aquatic Life Integrity, Primary Contact (i.e. Swimming), and Secondary Contact (i.e. Boating) Designated Uses on every Assessment Unit ID (AUID) within the HUC12.
2. HUC 12 MAP - A map of the watershed with abbreviated labels for each AUID within the HUC12.
3. ASSESSMENT DETAILS - Anywhere from one to forty pages with the detailed assessment information for each and every AUID in the Report Card and Map.

How are the Surface Water Quality Assessment determinations made?

All readily available data with reliable Quality Assurance/Quality Control is used in the biennial surface water quality assessments. For a full understanding of how the Surface Water Quality Standards (Env-Wq 1700) are translated into surface water quality assessments we urge the reader to review the 2018 Consolidated Assessment and Listing Methodology (CALM) at https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2018/documents/r-wd-19-04.pdf.

Where can I find more advanced mapping resources?

GIS files are available by assessment cycle at ftp://pubftp.nh.gov/DES/wmb/WaterQuality/SWQA/2018/GIS

I'd like to see the more raw water quality data?

The web mapping tool allows you to download the data used in the assessment of the primary contact and aquatic life designated uses by clicking on the "Data Access Waterbody Data (Aquatic Life and Swimming Uses)" link for any assessment unit. (https://www.des.nh.gov/organization/divisions/water/wmb/swqa/assessment-viewers.htm)

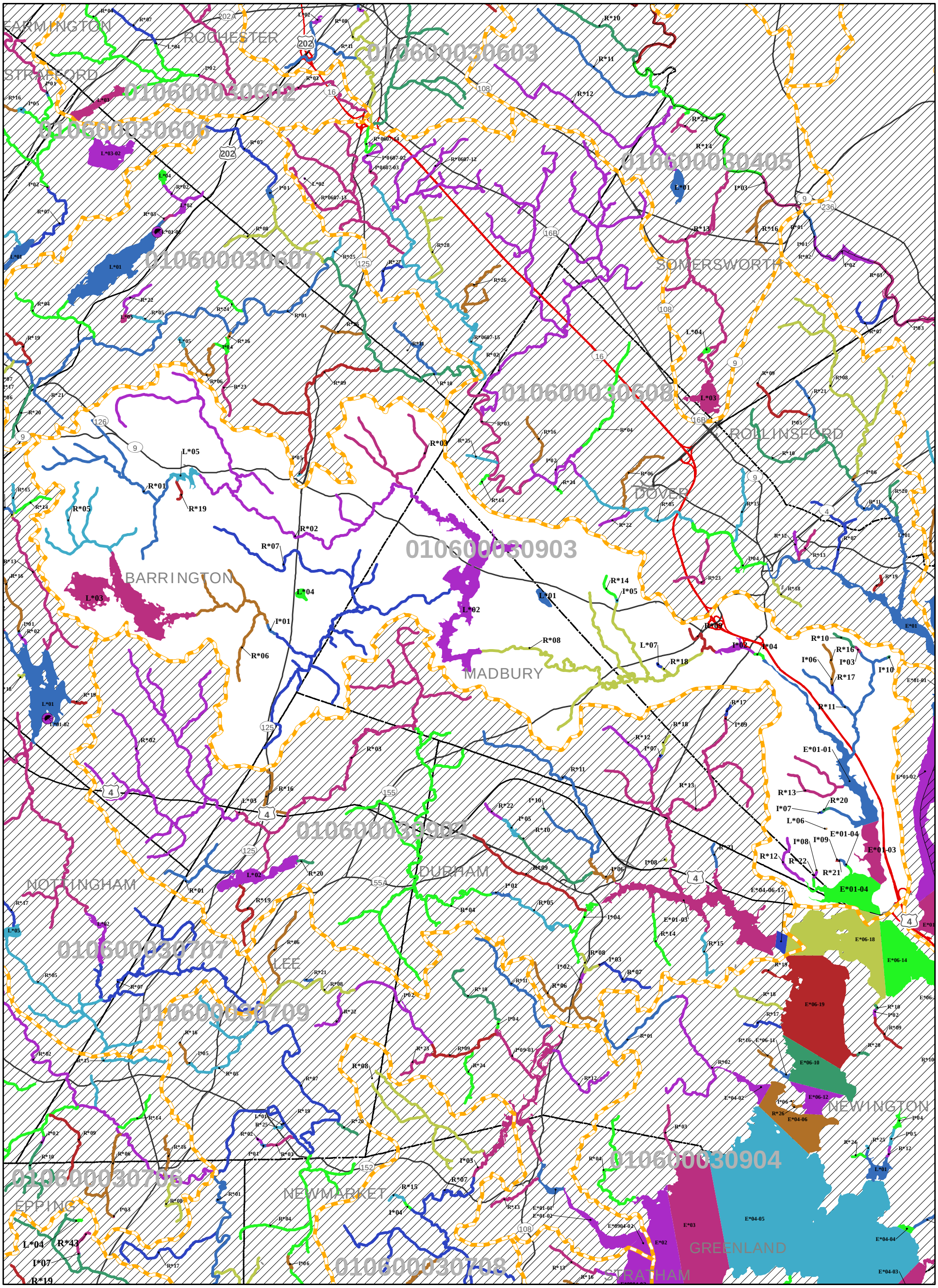
How are assessments coded in the report card?

Assessment outcomes are displayed on a color scale as well as an alpha numeric scale that provides additional distinctions for the designated use and parameter level assessments as outlined in the table below.

		Severe Not Supporting, Severe	**Poor** Not Supporting, Marginal	**Likely Bad** Insufficient Information – Potentially Not Supporting	**No Data** No Data	**Likely Good** Insufficient Information – Potentially Full Supporting	**Marginal** Full Support, Marginal	**Good** Full Support, Good
CATEGORY	**Description**							
Category 2	Meets standards						2-M or 2-OBS	2-G
Category 3	Insufficient Information			3-PNS	3-ND	3-PAS		
Category 4	Does not Meet Standards;							
4A	TMDL* Completed	4A-P	4A-M or 4A-T					
4B	Other enforceable measure will correct the issue.	4B-P	4B-M or 4B-T					
4C	Non-pollutant (i.e. exotic weeds)	4C-P	4C-M					
Category 5	TMDL^ Needed	5-P	5-M or 5-T					

* TMDL stands for Total Maximum Daily Load studies (http://des.nh.gov/organization/divisions/water/wmb/tmdl/index.htm)

AUIDs For HUC12: 010600030903 - Bellamy River



Assessment Unit IDs are derived from the HUC12 they reside within. The labels have been shortened on this map for presentation purposes.
Example: the Label "L*03" in HUC12 = 010700060201 represents AUID = "NHLAK700060201-03"
In rare cases where an AUID extends beyond the boundary of a single HUC12, additional portions of the end of the HUC 12 number have also been replaced.

S:\WD-Watershed\WQ_Planning\305b_303d\2018\AUIDs\HUC12Maps

Assessment Unit ID NHRIV600030903-07
Assessment Unit Name BELLAMY RIVER
Primary Town BARRINGTON

Size 11.5070 MILES
Beach N
Assessment Unit Category*~ 5-P

2018, 305(b)/303(d) - All Reviewed Parameters by Assessment Unit

Designated Use Description	*Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category*	TMDL Priority
Aquatic Life Integrity	5-P	AMMONIA (TOTAL)	N	2016	N/A	2-G	
		Benthic-Macroinvertebrate Bioassessments (Streams)	N			3-ND	
		CHLORIDE	N	2017	N/A	3-PAS	
		Dissolved oxygen saturation	N	2017	2016	5-M	LOW
		Fishes Bioassessments (Streams)	N			3-ND	
		Oxygen, Dissolved	N	2017	2017	5-P	LOW
		PHOSPHORUS (TOTAL)		2006	NLV	3-ND	
		TURBIDITY	N	2017	2014	3-PAS	
		pH	N	2017	2017	5-P	LOW
Fish Consumption	4A-M	Mercury	N			4A-M	
Potential Drinking Water Supply	2-G	ESCHERICHIA COLI	N	2007	2007	3-ND	
Primary Contact Recreation	4A-P	Escherichia coli	N	2007	2007	4A-P	
Secondary Contact Recreation	4A-P	Escherichia coli	N	2007	2007	4A-P	
Wildlife	3-ND						

Severe	Poor	Likely Bad	No Data	Likely Good	Marginal	Good
Not Supporting, Severe	Not Supporting, Marginal	Insufficient Information – Potentially Full Supporting	No Data	Insufficient Information – Potentially Full Supporting	Full Support, Marginal	Full Support, Good

*DES Categories; 2-G = Supports Parameter well above criteria, 2-M = Supports Parameter marginally above criteria, 2-OBS = Exceeds WQ criteria but natural therefore not a WQ exceedence, 3-ND = Insufficient Information/No data, 3-PAS= Insufficient Information/Potentially Attaining Standard, 3-PNS= Insufficient Information/Potentially Not Attaining Standard, (4A=Impaired/TMDL Completed, 4B=Impaired/Other Measure will rectify Impairment, 4C=Impaired/Non-Pollutant, 5=Impaired/TMDL needed) M=Marginal Impairment, P=Severe Impairment, T=Threatened (http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm)

B-3 NHB Review & Correspondence

To: Whitney Chamberlain, CMA Engineers
35 Bow Street

Portsmouth, NH 03801

From: NH Natural Heritage Bureau

Date: 1/27/2020 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau of request submitted 1/15/2020

NHB File ID: NHB20-0162 **Applicant:** Eric Fiegenbaum

Location: Madbury
Tax Maps: Tax Map 2, Lots 17, 18, and 19; Tax Map 4, Lot 15A

Project Description: The proposed work includes replacement of existing 15'-4" long metal arch culvert with a single 30' long span reinforced concrete bridge structure. No baffles or bed stabilization will be used in this project. No plastic, biodegradable plastic, or polypropylene erosion control will be used on this project.

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.

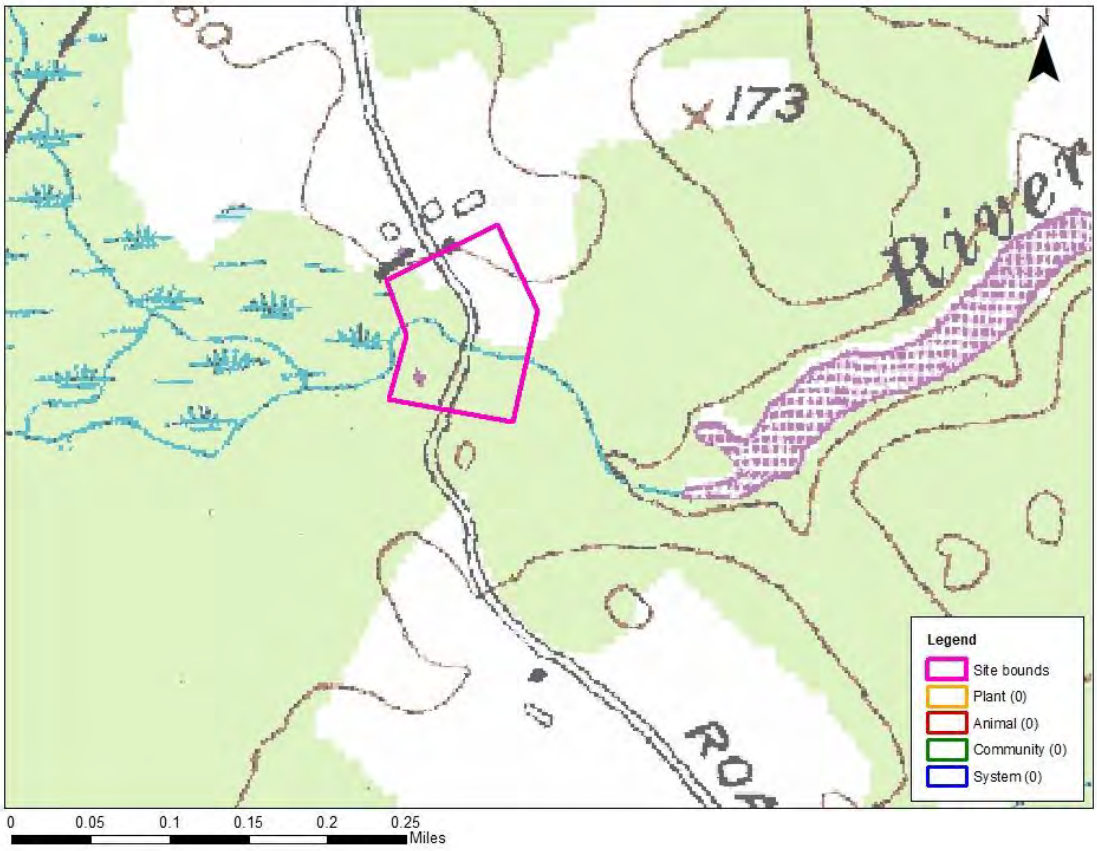
It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 1/15/2020, 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

MAP OF PROJECT BOUNDARIES FOR: **NHB20-0162**

NHB20-0162



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

Whitney Chamberlain

From: Martin, Rebecca <Rebecca.Martin@dot.nh.gov>
Sent: Monday, March 9, 2020 11:02 AM
To: Whitney Chamberlain
Subject: RE: 1162 Madbury Nute Road Crossing Bridge Replacement

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: High Importance

Hello Whitney,

I am happy to help; could you please send me the project number when you have a chance?

The 4(d) determination key is the appropriate review for NLEB for a state funded project. Unless you have done an acoustic survey to demonstrate that NLEB are not in the habitat, we would assume they are present and any tree clearing may affect them. The importance of not having hibernacula or known maternity roost trees in the area is that it allows you to use the 4(d) rule for the project. The 4(d) rule basically is a protection of the most sensitive parts of the NLEB life cycle (roosting and young). If you were near these resources, you couldn't use the 4(d) rule. The 4(d) rule does not say that the project wouldn't have an effect on NLEB, it says that any incidental take from projects that qualify for the 4(d) rule is not prohibited. Your consistency letter is probably correct and you would explain in your environmental document that the project is consistent with those reviewed in the USFWS BO for the 4(d) rule and that it wouldn't result in any prohibited take of the species. Does that make sense?

Please feel free to give me a call if you have any additional questions.

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: Whitney Chamberlain <WChamberlain@cmaengineers.com>
Sent: Friday, March 6, 2020 5:00 PM
To: Martin, Rebecca <Rebecca.Martin@dot.nh.gov>
Subject: FW: 1162 Madbury Nute Road Crossing Bridge Replacement

Hi Rebecca,
I'm emailing you regarding the Madbury Nute Road Crossing Bridge Replacement project. I need your help to complete the ESA Section 7 Consultation.

This project is not funded by FHWA, FRA, or FTA; instead it is funded by the New Hampshire State Aid Bridge program. However, we chose to complete the optional 4(d) Rule determination key on IPaC and the result was that the project "may affect" the Northern Long-Eared Bat (NLEB). A consistency letter has been generated. We believe that the project will not affect the NLEB, because Kim Tuttle from NH Fish & Game explained that there were no known hibernacula or known maternity roost trees in the area.

Additional project information:

- We will be removing some trees that are within slope limits for the bridge and four trees on an abutters property that are close to the slope limits that the owner would prefer to remove due to safety concerns
- The project will not relocate the road to above the tree canopy
- The project will not use percussives for anything except bridge-related work
- The project does not include slash-pile burning
- There are no caves or mines on the site
- This project does not include temporary or permanent lighting
- Work will be done during the active season (April-October)

Could you please let us know if you concur that bats will not likely be affected by this project?

Thank you,
Whitney

Whitney A. Chamberlain, P.E.
Project Engineer

CMA ENGINEERS

CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

P: 603-431-6196
C: 207-615-7116
www.cmaengineers.com

From: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Sent: Monday, March 2, 2020 2:34 PM
To: Whitney Chamberlain <WChamberlain@cmaengineers.com>
Subject: RE: 1162 Madbury Nute Road Crossing Bridge Replacement

Hello Whitney,

The NHB review indicates no known hibernacula or known maternity roost trees in the area. There is a Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat for FHWA projects. Rebecca Martin at NHDOT may be able to help you; more here: https://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/long-eared-bat.htm

Thanks,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
11 Hazen Drive

Concord, NH 03301
603-271-6544

From: Whitney Chamberlain <WChamberlain@cmaengineers.com>
Sent: Monday, March 2, 2020 9:49 AM
To: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Cc: Josh Bouchard <jbouchard@cmaengineers.com>; Liam Kalloch <lkalloch@cmaengineers.com>
Subject: 1162 Madbury Nute Road Crossing Bridge Replacement

Hi Kim,
I'm emailing to follow up on my voicemail to you the other day regarding the Madbury Nute Road Crossing Bridge Replacement project. We need your help to complete the Information for Planning & Consultation (IPaC) bat survey.

Our experience with this survey is that it typically generates a "not likely to affect" statement, but for this project the results explained that we needed to "contact the appropriate USFWS office for additional assistance with your project". We reached out to Maria Tur, who directed us to you. Please review the attached bat survey. We boxed the questions we are unsure of in red. We mainly need to know if there is suitable bat habitat and/or known hibernacula in the project area, and if presence/probable absence surveys have been conducted. Is this information online? We could only find summer survey guidance online, but no information regarding past surveys conducted or suitable habitat/hibernacula location.

In case you want to reference the NHB review for this project, the number is #NHB20-0162.

Let me know if you have questions.

Best,
Whitney

Whitney A. Chamberlain, P.E.
Project Engineer

CMA ENGINEERS

CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

P: 603-431-6196
C: 207-615-7116
www.cmaengineers.com

B-4 IPaC Review & Correspondence

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: March 06, 2020
Consultation Code: 05E1NE00-2020-SLI-1668
Event Code: 05E1NE00-2020-E-04806
Project Name: Madbury Nute Road Bridge

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: 05E1NE00-2020-SLI-1668

Event Code: 05E1NE00-2020-E-04806

Project Name: Madbury Nute Road Bridge

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: The proposed work includes replacement of an existing metal arch culvert with a single span reinforced concrete bridge over the Bellamy River in Madbury, NH (Bridge No. 056/072). Construction is expected to begin in July 2020 and conclude in late 2020.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.18897972816697N70.97737941475194W

Counties: Strafford, 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.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

---

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

Mammals

NAME	STATUS
Northern Long-eared Bat *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 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

IPaC Record Locator: 301-20666444 March 06, 2020

Subject: Consistency letter for the 'Madbury Nute Road Bridge' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Whitney Chamberlain:

The U.S. Fish and Wildlife Service (Service) received on March 06, 2020 your effects determination for the 'Madbury Nute Road Bridge' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

The IPaC-assisted determination for the northern long-eared bat **does not** apply to the following ESA-protected species that also may occur in your Action area:

- Small Whorled Pogonia, *Isotria medeoloides* (Threatened)

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Madbury Nute Road Bridge

2. Description

The following description was provided for the project 'Madbury Nute Road Bridge':

> The proposed work includes replacement of an existing metal arch culvert with a single span reinforced concrete bridge over the Bellamy River in Madbury, NH (Bridge No. 056/072). Construction is expected to begin in July 2020 and conclude in late 2020.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.18897972816697N70.97737941475194W

Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule
This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   No

2. Will your activity purposefully **Take** northern long-eared bats?

   No

3. Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

6. Will the action involve Tree Removal?

   Yes

7. Will the action only remove hazardous trees for the protection of human life or property?

   No

8. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

9. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?
0

Whitney Chamberlain

From: Whitney Chamberlain
Sent: Friday, February 28, 2020 12:28 PM
To: vonOettingen, Susi
Subject: RE: Nute Road Bellamy River Crossing Replacement - Bridge No. 056/072 - Endangered Species Review

Hi Susi,

Correct, the area of impact is small and limited to the edge of the road, culvert, and embankments. We will move forward with the assumption that we are not in small whorled pogonia habitat.

Thank you,
Whitney

Whitney A. Chamberlain, P.E.
Project Engineer

CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

P: 603-431-6196
C: 207-615-7116
www.cmaengineers.com

From: vonOettingen, Susi <susi_vonoettingen@fws.gov>
Sent: Monday, February 10, 2020 7:42 AM
To: Whitney Chamberlain <WChamberlain@cmaengineers.com>
Subject: Re: Nute Road Bellamy River Crossing Replacement - Bridge No. 056/072 - Endangered Species Review

Good morning,

I assume that very little of the forested habitat will be disturbed, basically the vegetation on either side of the road? If so, it is not likely that small whorled pogonia would be present within 30 feet or so of the culvert. However, the forested habitat does look like potential habitat. If the area of impact is small and limited to the culvert, embankments and area that has little to no canopy, then I would consider the project would not be in small whorled pogonia habitat.

Susi

****

Susi von Oettingen
Endangered Species Biologist
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301

(603) 227-6418 (direct line)

From: Whitney Chamberlain <WChamberlain@cmaengineers.com>
Sent: Friday, February 7, 2020 2:30 PM
To: vonOettingen, Susi <susi_vonoettingen@fws.gov>
Cc: Josh Bouchard <jbouchard@cmaengineers.com>; Liam Kalloch <lkalloch@cmaengineers.com>
Subject: [EXTERNAL] Nute Road Bellamy River Crossing Replacement - Bridge No. 056/072 - Endangered Species Review

Hi Susi,

CMA Engineers has completed an endangered species review on the IPaC website as part of a wetlands permit for a proposed bridge replacement project in Madbury, NH. Our results indicate that the Small Whorled Pogonia is a potential threatened species (see attached Species List).

The proposed project aims to replace the culvert that carries Nute Road over the Bellamy River, bridge 056/072, in the Town of Madbury. This work is necessary to address the deteriorating condition of the existing steel pipe arch and the hydraulic opening which does not meet current stream crossing guidelines. Nute Road is a municipal road running generally southeast to northwest from Hayes Road to the town line with Barrington. Please see attached USGS map and representative photos of the existing bridge.

Could you please advise on the potential for the project to effect the Small Whorled Pogonia?

Thank you,
Whitney

Whitney A. Chamberlain, P.E.
Project Engineer

CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

P: 603-431-6196
C: 207-615-7116
www.cmaengineers.com

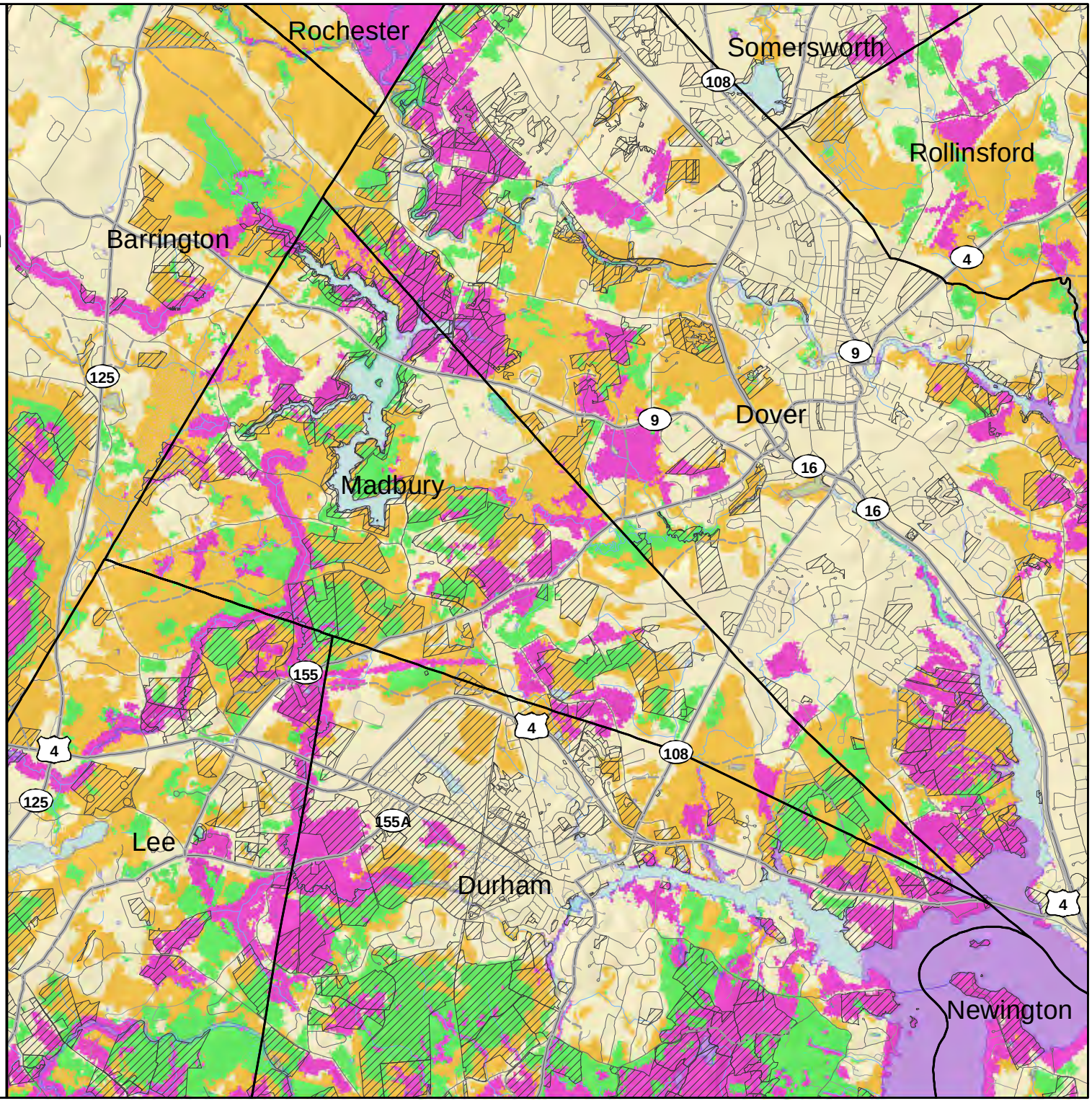
B-5 Highest Ranked Wildlife Habitat by Ecological Condition

2015 HIGHEST RANKED WILDLIFE HABITAT BY ECOLOGICAL CONDITION

- Highest Ranked Habitat in New Hampshire
- Highest Ranked Habitat in the Biological Region

Biological region = TNC ecoregional subsection for terrestrial habitats or Aquatic Resource Mitigation region for wetlands and floodplain forest.

- Supporting Landscapes
- Conservation or public



Base map data provided by NH GRANIT at UNH September 2019. Intended for planning use only.

NEW HAMPSHIRE Wildlife Action Plan
September 2015

0 1.5 3 Kilometers

0 1 2 Miles

B-6 FEMA Floodplain Map

National Flood Hazard Layer FIRMette

FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/29/2020 at 5:00:27 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

B-7 NHDHR Request for Project Review

Please mail 2 copies of the completed form and required material to:

Cultural Resources Staff
Bureau of Environment
NH Department of Transportation
7 Hazen Drive
Concord, NH 03302

DHR Use Only
R&C # 10255
Log In Date ___/___/___
Response Date ___/___/___
Sent Date ___/___/___

RECEIVED
NOV 26 2018

Request for Project Review by the New Hampshire Division of Historical Resources for Transportation Projects

☒ This is a new submittal.
☐ This is additional information relating to DHR Review and Compliance (R&C)#:

GENERAL PROJECT INFORMATION

DOT Project Name & Number ~~N/A~~ Madbury 24226

Brief Descriptive Project Title Nute Bridge Road Bridge over Bellamy River Replacement

Project Location Nute Road

City/Town Madbury

Lead Federal Agency and Contact *(if applicable)* N/A
(Agency providing funds, licenses, or permits)
Permit Type and Permit or Job Reference # N/A

DOT Environmental Manager *(if applicable)* ~~NHDES~~ DOT

PROJECT SPONSOR INFORMATION

Project Sponsor Name Town of Madbury

Mailing Address 13 Town Hall Road Phone Number 6037425131

City Madbury State NH Zip 03823 Email adminmadbury@comcast.net

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company Liam Kalloch CMA Eng.

Mailing Address 10 Free Street Phone Number 2075414223

City Portland State ME Zip 04101 Email lkalloch@cmaengineers.com

This form is updated periodically. Please download the current form at http://www.nh.gov/nhdhr/review. *Please refer to the Request for Project Review for Transportation Projects Instructions for direction on completing this form.* Submit 2 copies of this project review form for each project for which review is requested. Include 1 self-addressed stamped envelope to expedite review response. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation. For some projects, additional information will be needed to complete the Section 106 review. All items and supporting documentation submitted with a review request, including photographs and publications, will be retained by the DOT and the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process and the DHR's role in it, please visit our website at: http://www.nh.gov/nhdhr/review or contact the R&C Specialist at christina.st.louis@nh.gov or 603.271.3558.

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION 10255

Project Boundaries and Description

- ☒ Attach the relevant portion of a 7.5' USGS Map (photocopied or computer-generated) ***indicating the proposed area of potential effect (APE).*** *(See RPR for Transportation Projects Instructions and R&C FAQs for guidance. Note that the APE is subject to approval by lead federal agency and SHPO.)*
- ☒ Attach a detailed narrative description of the proposed project.
- ☒ Attach current engineering plans with tax parcel, landscape, and building references, and areas of proposed excavation, if available.
- ☒ Attach photos of the project area/APE with mapped photo key (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) *(Blank photo logs are available on the DHR website. Informative photo captions can be used in place of a photo log.)*
- ☒ A DHR file review must be conducted to identify properties within or adjacent to the APE. Provide file review results in **Table 1**. *(Blank table forms are available on the DHR website.)*
  File review conducted on 10/17/2018.*

  **The DHR recommends that all survey/National Register nomination forms and their Determination of Eligibility (green) sheets are copied for your use in project development.*

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the APE? ☒ Yes ☐ No
If no, skip to Archaeology section. If yes, submit all of the following information:

- ☒ Attach completed **Table 2**.
- ☒ Photographs of ***each*** resource or streetscape located within the APE. Add to the mapped photo key and photo log noted above. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☐ Copies of National Register boundary (listed *or* eligible) mapping, and add National Register boundaries for listed and eligible properties to the 7.5' USGS project map *(if applicable).*

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☒ Yes ☐ No
If yes, submit all of the following information:

- ☒ Description of current and previous land use and disturbances.
- ☒ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

AGENCY COMMENT *This Space for DOT and Division of Historical Resources Use Only*

Sent to DHR; Authorized DOT Signature:_____ Date: _____

☐ Insufficient information to initiate review.

☐ Additional information is needed in order to complete review.

Comments: NO ARCHAEOLOGICAL CONCERNS DUE TO MINOR IMPACT IN PROJECT AREA.
A New Hampshire Individual Inventory Form should be prepared for c.1800 River View Farm if any impacts to the property, including landscape features and viewsheds, are anticipated. Please provide to the DHR property owners comments.

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized DHR Signature: Laura A Black Date: 1-10-19

C. Remaining Checklist Items

1. Results of Actions
2. Project Plans
3. Maps, Electronic Shape Files and Meta Data
4. Methods, Timing, and Manner of Project
5. Additional Resource-Specific Information
6. Project Specific Information
7. Abutter Notifications
8. Property Owner Permissions
9. Project Design Considerations
10. Town Tax Maps
11. Photographs
12. USGS & Watershed Maps
13. Work Sequence Narrative
14. NHB Memo
15. Local Conservation Commission Comments
16. Federal Agency Comments
17. Stream Crossing Worksheet
18. Avoidance and Minimization Narrative and Checklist
19. Attachment A: Minor and Major Projects
20. Functional Assessment

C-1 Results of Actions

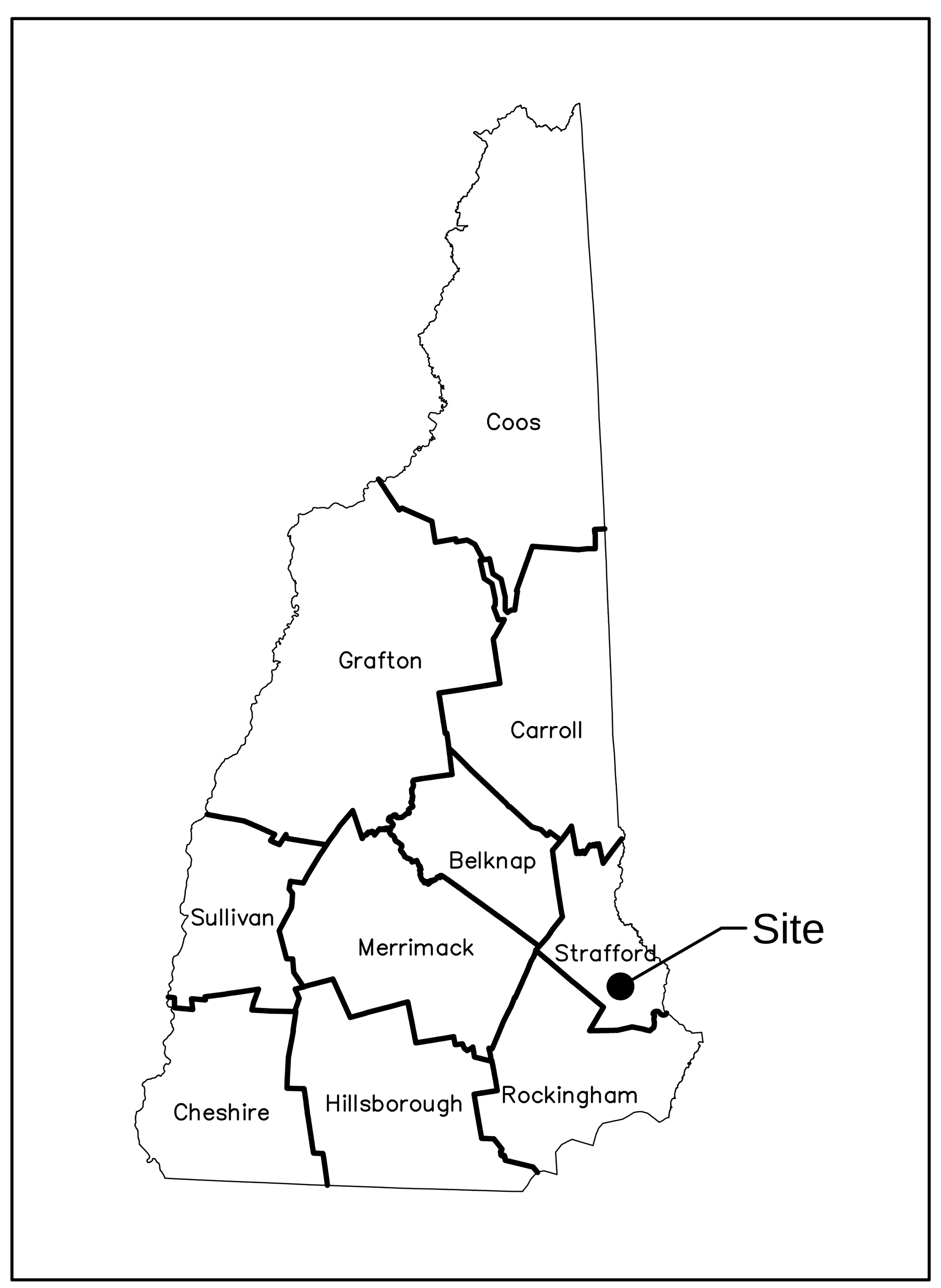
See Appendices B-3 and B-4 for correspondence with NHB and USFWS, respectively.

C-2 Project Plans

Town Of Madbury, New Hampshire
Nute Road
Bellamy River Crossing Replacement
Bridge No. 056/072

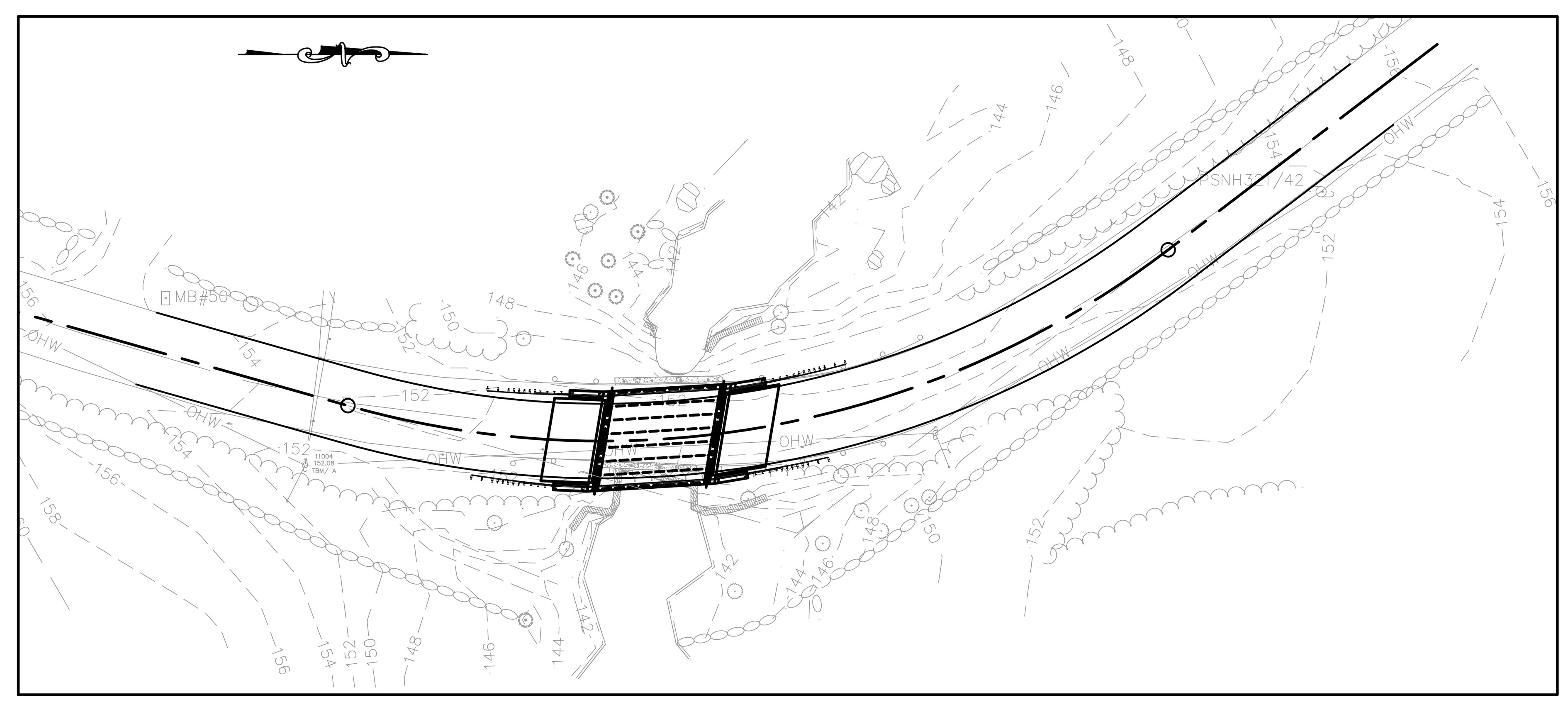
Wetland Permit Plans
Issued for Review - Not for Construction
April 2020

Sheet Index	
Sheet Number	**Sheet Title**
--	Cover
2	Notes
3	Wetlands Permit Plan
4	Typical Bridge and Roadway Sections
5	Boring Logs
6	Channel Cross Section and Profile
7	Details



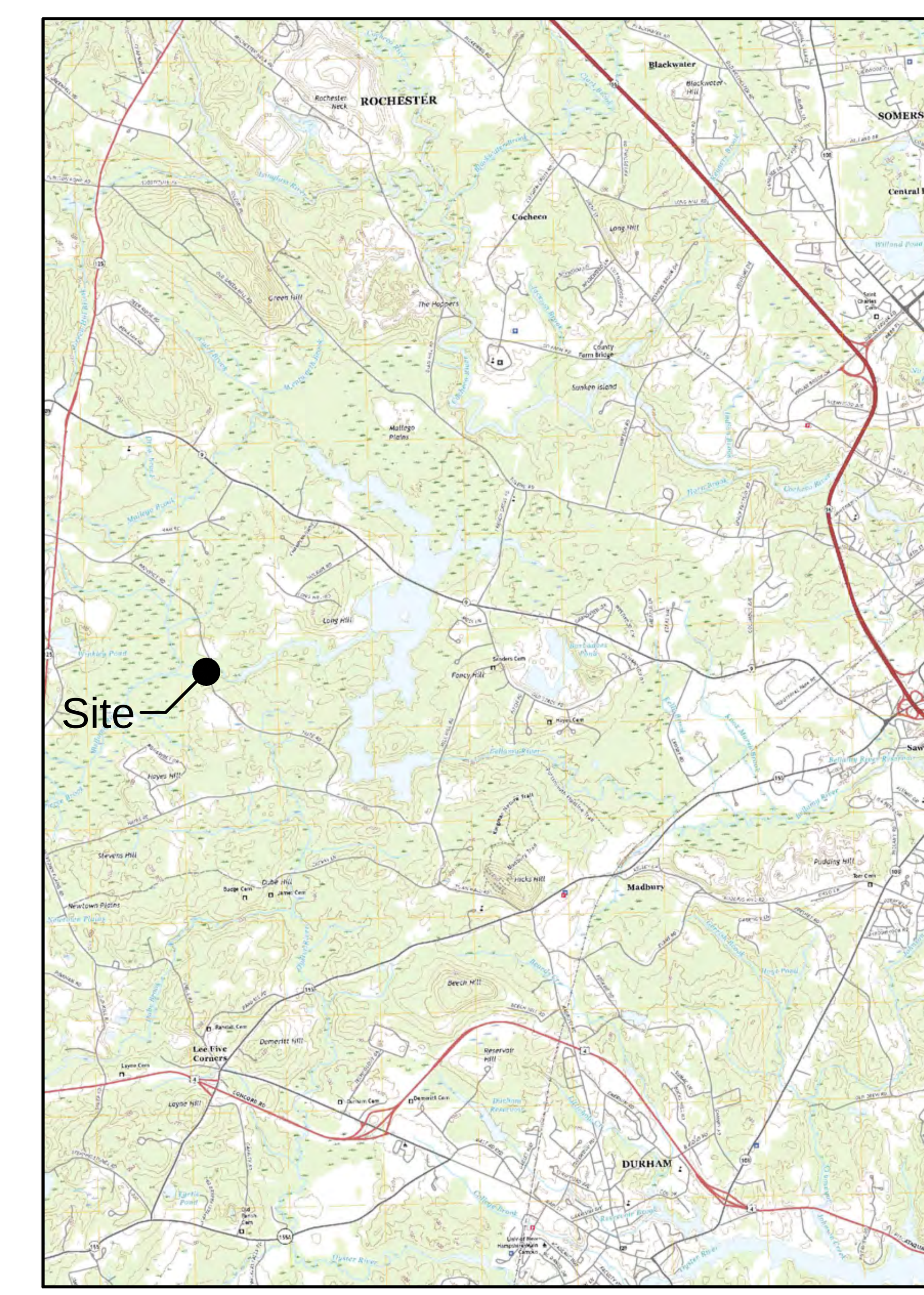
Locus Plan

NTS



Site Overview

Scale: 1" = 40'



Project Location

Scale: 1" = 1 mile

Prepared For:

Town of Madbury
13 Town Hall Road
Madbury, New Hampshire 03823

Prepared By:

CMA ENGINEERS
CIVIL/ENVIRONMENTAL/STRUCTURAL
Portsmouth, NH 603/431-6196 • Manchester, NH 603/627-0708 • Portland, ME 207/541-4223
cmaengineers.com

F:\CADD\PROJECTS\1162 Madbury Nute Rd Br\Production\0-Permitting\1162-Nute - W0-Cover.dwg Date Plotted: Apr 10, 2020 - 12:57pm Plotted By: LKALLOCH

General Notes:

1) DESIGN LOADING: HL–93

2) DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN METHOD (LRFD).

3) SPECIFICATIONS: AASHTO LRFD 2017. NHDOT 2016 STANDARD SPECIFICATIONS AS AMENDED.

4) FOUNDATION DATA: CONCRETE ABUTMENTS SUPPORTED ON SPREAD FOOTINGS, ALLOWABLE BEARING PRESSURE 1 TSF, MINIMUM FROST DEPTH 6.0 FT PERPENDICULAR BETWEEN NEAREST GRADE AND BOTTOM OF FOOTING.

5) REINFORCING STEEL: AASHTO M31 (ASTM A615) GRADE 60. REINFORCING STEEL IN THE DECK OVERLAY, DECK BEAMS, APPROACH SLABS, AND BRUSH CURBS SHALL BE EPOXY COATED.

6) CONCRETE: BRIDGE DECK OVERLAY, CURBS, WINGWALL COPINGS AND APPROACH SLABS = 5 KSI
ABUTMENTS AND WINGWALLS = 5 KSI
PRESTRESSED DECK BEAMS = 6 KSI,
RELEASE = 4.8 KSI

7) POST–TENSIONING STEEL: 0.6" ø SEVEN–WIRE STRAND CONFORMING TO AASHTO M203 (ASTM A416) GRADE 270, LOW RELAXATION.

8) PRESTRESSING STEEL: 0.6" ø SEVEN–WIRE STRAND CONFORMING TO AASHTO M203 (ASTM A416) GRADE 270, LOW RELAXATION.

9) SEISMIC PERFORMANCE ZONE 2: A = 0.16

10) ALL EXISTING BRONZE DISCS REPRESENTING STATE BENCHMARKS OR SURVEY TRIANGULATION POINTS MUST NOT BE DISTURBED. WHEN THE WORK CALLED FOR INVOLVES DISTURBING A BRONZE DISK, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SUFFICIENTLY IN ADVANCE OF THE WORK TO PERMIT THE TOWN, STATE OR AGENCY HAVING JURISDICTION TO TEMPORARILY RELOCATE THE AFFECTED MARKER.

11) MAINTENANCE OF TRAFFIC: ROAD CLOSURE AND DETOUR

Culvert Removal Notes:

1) PLANS OF THE EXISTING STEEL PIPE ARCH ARE AVAILABLE. PLANS OF THE INTERIM REPAIR INSTALLED IN 2012 ARE INCLUDED IN THE CONTRACT DOCUMENTS. THIS REPAIR INCLUDED THE INSTALLATION OF TWO GRADE BEAM FOOTINGS PERPENDICULAR TO THE ROAD WHICH SUPPORT A SLAB ON GRADE SPANNING OVER THE CULVERT.

2) ITEM 502, REMOVAL OF EXISTING BRIDGE STRUCTURE, SHALL INCLUDE REMOVAL OF THE ENTIRE CORRUGATED METAL PIPE ARCH, CONCRETE HEADWALLS, STONE MASONRY RETAINING WALLS, AND 2012 INTERIM REPAIR STRUCTURES (GRADE BEAMS AND SLAB) AS DESCRIBED WITHIN THESE PLANS. SEE SPECIAL CONDITIONS FOR MATERIALS TO BE SALVAGED TO THE TOWN. ALL OTHER EXISTING BRIDGE MATERIALS SHALL BECOME PROPERTY OF THE CONTRACTOR.

3) EXCAVATION AND BACKFILL NOT INCLUDED IN OTHER PAY ITEMS, BUT REQUIRED FOR REMOVAL OF THE EXISTING STRUCTURE SHALL BE SUBSIDIARY TO ITEM 502.

Boring Notes:

1) BORINGS INDICATED THUS ⊕ WERE MADE BY SOIL EXPLORATION CORP. IN AUGUST 2018. BLOW COUNTS SHOWN ARE THE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" O.D. STANDARD SPLIT SPOON SAMPLER 6", USING A 140LB WEIGHT FALLING 30".

2) BORINGS ARE FOR DESIGN PURPOSES ONLY, SHOWING CONDITIONS AT THE BORING POINTS ONLY, AND DO NOT NECESSARILY INDICATE MATERIAL TO BE ENCOUNTERED DURING CONSTRUCTION.

3) GROUNDWATER LEVELS NOTED, IF ANY, WERE MEASURED AT THE TIME OF EXPLORATION. THE WATER LEVELS ENCOUNTERED DURING CONSTRUCTION MAY VARY CONSIDERABLY DUE TO PREVAILING CLIMATE, RAINFALL, OR OTHER FACTORS.

Water Diversion Structure Notes:

1) ITEM 503, DEWATERING/WATER DIVERSION, MAY BE REQUIRED FOR REMOVAL OF THE EXISTING STRUCTURE AND THE CONSTRUCTION OF THE ABUTMENTS DURING HIGH FLOW CONDITIONS. THE CONTRACTOR SHALL SUBMIT THE DIVERSION STRUCTURE TYPE, DESIGN, AND PROPOSED METHOD OF CONSTRUCTION TO THE ENGINEER IN ACCORDANCE WITH SECTION 105.02 OF THE NHDOT STANDARD SPECIFICATIONS. WATER DIVERSION STRUCTURE SUBMITTALS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.

2) WATER DIVERSION STRUCTURE LIMITS SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL DETERMINE THE REQUIRED LIMITS, IN ACCORDANCE WITH THE ENVIRONMENTAL PERMIT, TO MAINTAIN A DEWATERED AND ADEQUATELY SUPPORTED EXCAVATION DURING THE CONSTRUCTION.

3) ALL COSTS FOR DESIGN, INSTALLATION AND REMOVAL OF WATER DIVERSION STRUCTURES SHALL BE INCLUDED IN ITEM 503.

Abutment and Wingwall Notes:

1) THE CONTRACTOR SHALL BE REQUIRED TO PLACE ALL CONCRETE IN THE DRY. DEWATERING, AS REQUIRED, SHALL BE CONTINUOUS UNTIL THE ABUTMENT AND WINGWALLS ARE BACKFILLED TO THE ELEVATION OF THE SURROUNDING WATER TABLE, UNLESS DIRECTED OTHERWISE.

2) ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED $\frac{3}{4}$" EXCEPT AS NOTED.

3) ALL CONCRETE IN THE ABUTMENTS, FOOTINGS, AND WINGWALLS SHALL BE ITEM 520.001, CONCRETE CLASS AAA.

4) ITEM 538.2, BARRIER MEMBRANE, VERTICAL SURFACES (F), SHALL BE PLACED OVER THE ABUTMENT–WINGWALL VERTICAL CONSTRUCTION JOINT, 1'–0" ON EACH SIDE OF THE JOINT.

5) ITEM 534.3, WATER REPELLENT (SILANE–SILOXANE), SHALL BE APPLIED TO THE ENTIRE BRIDGE SEAT, INCLUDING THE BEARING PEDESTAL SURFACES AND ALL EXPOSED SURFACES ON BOTH ABUTMENTS AND ALL WINGWALLS TO 1'–0" BELOW THE FILL LINE.

6) ALL REINFORCING IN THE ABUTMENTS AND WINGWALLS SHALL BE PAID AS ITEM 544.3, REINFORCING STEEL, (CONTRACTOR DETAILED).

7) ALL REINFORCING SHALL BE A MINIMUM OF 2 $\frac{1}{2}$" FROM CONCRETE SURFACES, UNLESS NOTED OTHERWISE.

Erosion Control Notes:

1) THE CONTRACTOR IS RESPONSIBLE FOR THE DEVELOPMENT AND APPROVAL OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP).

2) PRIOR TO CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NECESSARY. THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING CONSTRUCTION. WHEN LAND IS EXPOSED DURING CONSTRUCTION, THE EXPOSURE SHOULD BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF TIME. ANY DISTURBED AREAS THAT ARE TO BE LEFT UN–STABILIZED LONGER THAN TWO WEEKS SHALL BE TEMPORARILY SEEDED AND MULCHED AT THE RATE OF 2 TONS PER ACRE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL REMEDIAL WORK REQUIRED TO REPAIR AREAS WHICH ARE DAMAGED BY EROSION.

3) HAY BALE BARRIERS SHALL BE INSTALLED AND MAINTAINED AT DRAIN INLETS AND OUTLETS AND ALONG LIMITS OF WORK WHERE NECESSARY. HAY BALE BARRIERS SHALL NOT BE PLACED CLOSER THAN 25–FEET TO DRAIN INLETS AND OUTLETS. ADDITIONAL HAY BALES SHALL BE ADDED AS REQUIRED BY THE ENGINEER. HAY BALES WILL BE STAKED AND MAINTAINED PRIOR TO AND DURING CONSTRUCTION UNTIL DISTURBED AREAS HAVE A HEALTHY STAND OF GRASS.

4) ALL DISTURBED AREAS AND SIDE SLOPES THAT ARE AT ARE FINISH GRADED WITH NO FURTHER CONSTRUCTION TAKING PLACE SHALL BE TRACKED, SEEDED (IN ACCORDANCE WITH SECTION 644 OF THE STANDARD SPECIFICATIONS) AND MULCHED. ALL SEED, LIME AND FERTILIZER PROGRAMS SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE SPECIFICATIONS (SECTION 642 AND SECTION 643).

5) CONSTRUCTION TRAFFIC SHALL TRAVEL THE ROADBEDS OF EXISTING ROADS.

6) SILT FENCE SHALL BE INSTALLED AND MAINTAINED WHERE NECESSARY AND ADDITIONAL SILT FENCE ADDED AS REQUIRED BY THE ENGINEER PRIOR TO ANY ON–SITE GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL. GENERALLY, SILT FENCE SHALL BE INSTALLED TO PREVENT MIGRATION OF THE SEDIMENT FROM THE WORK AREA. IT SHOULD BE MAINTAINED DURING AND AFTER CONSTRUCTION TO REMOVE SEDIMENT FROM NATURAL DRAINAGE WAYS. THE SILT FENCE IS TO BE MAINTAINED AND CLEANED UNTIL ALL SLOPES HAVE A HEALTHY STAND OF GRASS.

7) SILT FENCES SHALL BE A MINIMUM OF 36 INCHES HIGH WITH THE BOTTOM OF THE CLOTH KEYING INTO THE GROUND. POSTS SHALL BE OF WOOD OR STEEL.

8) THE EROSION CONTROL DEVICES DESCRIBED AND AS SPECIFIED IN THE SPECIFICATIONS REPRESENT THE MINIMUM REQUIRED MEASURES FOR EROSION CONTROL. THE CONTRACTOR SHALL ADD TO THESE DEVICES ANY OTHER MEASURES AS REQUIRED OR AS DIRECTED BY THE ENGINEER TO EFFECTIVELY PREVENT MIGRATION OF SEDIMENT FROM THE WORK AREA AND PROTECT WETLAND AREAS, WATERWAYS, EXISTING AND PROPOSED DRAINAGE FEATURES, SLOPES, LAWNS, AND PLANTS ADJACENT TO THE WORK AREA.

Construction Notes:

1) ALL WORK SHALL BE IN CONFORMANCE WITH CURRENT NHDOT STANDARD SPECIFICATIONS AND DETAILS

2) ENGINEER SHALL BE DEFINED AS THE RESIDENT ENGINEER/OWNER'S REPRESENTATIVE, WHO IS RESPONSIBLE FOR ENGINEERING SUPERVISION OF THE CONSTRUCTION. ACTING DIRECTLY OR THROUGH HIS DULY AUTHORIZED REPRESENTATIVES ON BEHALF OF THE TOWN OF MADBURY.

3) THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITY LOCATIONS, PUBLIC OR PRIVATE, SHOWN OR NOT SHOWN, ON THESE PLANS PRIOR TO CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION SHALL BE TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL NOTIFY DIG–SAFE PRIOR TO CONSTRUCTION.

4) OVERHEAD UTILITY LINES ARE LOCATED ALONG THE EAST SIDE OF THE PROJECT. THE CONTRACTOR IS ADVISED THAT EXTREME CAUTION WILL BE REQUIRED IN THE OPERATION OF EQUIPMENT, ESPECIALLY CRANES.

5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING THE HORIZONTAL AND VERTICAL CONTROL THROUGHOUT THE PROJECT.

6) THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY RESIDENTS OF ANY WORK RESTRICTING ACCESS TO ANY DRIVEWAY 24 HOURS IN ADVANCE.

7) RIGHT–OF–WAY AGREEMENTS HAVE BEEN ESTABLISHED WITH ABUTTING PROPERTY OWNERS BASED ON THE TOE OF SLOPE SHOWN ON THESE PLANS. ALL WORK SHALL BE PERFORMED WITHIN THE AREA BOUND BY THE TOE OF SLOPE. THE AGREEMENTS ARE INCLUDED AS AN APPENDIX TO THE NHDES WETLANDS PERMIT APPLICATION.

8) CONTRACTOR SHALL PROTECT PRIVATE PROPERTY AND SHALL TAKE ALL NECESSARY MEASURES AND PRECAUTIONS TO AVOID DAMAGE TO EXISTING TREES, SHRUBS, LAWNS, PLANTINGS, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS/REPLACEMENT OF ALL DAMAGED ITEMS.

9) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL METHODS AND MATERIALS FOR CONSTRUCTION OF THIS PROJECT, INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA REGULATIONS. THE OWNER AND ENGINEER WILL PERIODICALLY REVIEW CONSTRUCTION FOR COMPLIANCE WITH THE PLANS AND SPECIFICATIONS. SUCH REVIEW DOES NOT IMPLY APPROVAL OF METHODS OF CONSTRUCTION.

10) THE CONTRACTOR SHALL NOTIFY DIG–SAFE AT 1–800–225–4977 AT LEAST 72 HOURS PRIOR TO BEGINNING WORK TO CONFIRM THE LOCATION OF UNDERGROUND UTILITIES.

11) THE CONTRACTOR SHALL EXERCISE CAUTION AND COMPLY WITH ALL APPLICABLE TRAFFIC LAWS AND REGULATIONS IN THE EXECUTION OF WORK. THE CONTRACTOR SHALL COORDINATE ACTIVITIES WITH THE TOWN'S POLICE AND FIRE DEPARTMENTS TO ENSURE ACCESS DURING CONSTRUCTION. THE CONTRACTOR SHALL FURNISH, ERECT, AND MAINTAIN BARRICADES, WARNING SIGNS, DELINEATORS, STRIPING, FLAGGERS, AND PILOT CARS IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE SPECIFICATIONS. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF MAINTAINING THE SECTION OF ROAD UNDERGOING IMPROVEMENT INCLUDING ALL TEMPORARY APPROACHES OR CROSSINGS AND INTERSECTIONS WITH TRAILS, ROADS, STREETS, BUSINESSES, PARKING LOTS, RESIDENCES, GARAGES, FARMS, AND OTHER FEATURES AS MAY BE NECESSARY. THE CONTRACTOR SHALL USE ALL NECESSARY MEANS TO CONTROL DUST DURING THE CONSTRUCTION PERIOD INCLUDING THE USE OF CALCIUM CHLORIDE.

12) ALL WORK IS TO BE COMPLETED DURING PERIODS OF LOW FLOW. THE CONTRACTOR SHALL PUMP/DIVERT STREAM FLOW AROUND WORK AREA TO MINIMIZE SILTATION OF STREAM WATERS. THE CONTRACTOR SHALL BE PREPARED FOR, AND MAKE PROVISIONS FOR, HIGH FLOW EVENTS THAT MAY OCCUR EVEN DURING TYPICAL LOW FLOW PERIODS.

Permit Requirement Notes:

1) CONTRACTOR IS PROHIBITED FROM INSTALLING BAFFLES OR BED STABILIZATION IN THE RIVER.

2) CONTRACTOR IS PROHIBITED FROM INSTALLING EROSION CONTROL MATING PRODUCTS CONTAINING WELDED PLASTIC OR "BIODEGRADABLE PLASTIC" NETTING OR THREAD.

3) CONTRACTOR SHALL INSTALL PERIMETER CONTROLS PRIOR TO BEGINNING ANY EARTH MOVING OPERATIONS, DIRECT RUNOFF TO TEMPORARY CONTROLS UNTIL STORMWATER BMPS ARE STABILIZED, STABILIZE DITCHES AND SWALES PRIOR TO DIRECTING RUNOFF TO THEM, AND INSPECT EROSION CONTROLS AT LEAST WEEKLY AND AFTER EVERY RAIN EVENT OF 0.5 INCHES OR MORE. IN PAVED AREAS, IT WILL BE MANDATORY FOR THE BASE COURSE GRAVELS TO MEET THE GRADATION REQUIREMENTS OF NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2016, TABLE 304–1, ITEM NO. 304.1, 304.2, OR 304.3. IN AREAS THAT WILL NOT BE PAVED, THE CONTRACTOR SHALL FOLLOW PROPER EROSION CONTROL MEASURES. THE CONTRACTOR SHALL COMPLY WITH SEDIMENT AND EROSION CONTROL METHODS AND STORMWATER TREATMENT PRACTICES PER MANUFACTURER'S RECOMMENDATIONS OR, IF NONE, THE APPLICABLE REQUIREMENTS OF ENV–WQ 1506 OR ENV–WQ 1508.

4) CONTRACTOR SHALL REMOVE SEDIMENT FROM EROSION CONTROL DEVICES ON A WEEKLY BASIS.

5) CONTRACTOR SHALL DISPOSE OF SEDIMENT FROM EROSION CONTROL DEVICES OUTSIDE OF THE WETLAND AREA TO PREVENT ITS MIGRATION INTO A SURFACE WATER OR WETLAND.

6) CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT PRACTICES IN THE 2018 ROUTINE ROADWAY MAINTENANCE ACTIVITIES IN NEW HAMPSHIRE.

7) CONTRACTOR SHALL SELECT WATER QUALITY CONTROL MEASURES ACCORDING TO THE CONTRACT PLANS, PERMITS, AND WHAT IS APPROPRIATE FOR THE SITE CONDITIONS.

8) CONTRACTOR SHALL LEAVE ALL WATER QUALITY CONTROL MEASURES IN PLACE UNTIL ALL DISTURBED SURFACES ARE STABILIZED TO A CONDITION IN WHICH SOILS ON THE SITE WILL NOT EXPERIENCE ACCELERATION OR UNNATURAL EROSION USING TECHNIQUES SUCH AS:

A. ACHIEVING AND MAINTAINING A MINIMUM OF 85% VEGETATIVE COVER USING AN EROSION CONTROL SEED MIX, WHETHER APPLIED IN A BLANKET OR OTHERWISE, THAT IS CERTIFIED BY ITS MANUFACTURER AS NOT CONTAINING ANY INVASIVE SPECIES; OR
B. PLACING AND MAINTAINING A MINIMUM OF 3–INCHES OF NON–EROSIVE MATERIAL SUCH AS STONE; AND
C. IF DESIGNED AND INSTALLED AS TEMPORARY METHODS, AND BE REMOVED UPON COMPLETION OF WORK WHEN COMPLIANCE IS ACHIEVED.

9) WITHIN 3 DAYS, CONTRACTOR SHALL STABILIZE ALL AREAS THAT HAVE HAD FINAL GRADING OR TEMPORARY SUSPENSION OF WORK IN AN AREA THAT IS IN, OR ADJACENT TO, SURFACE WATERS. CONTRACTOR SHALL SEED AND MULCH DURING THE GROWING SEASON, MULCH WITH TACKIFIERS ON SLOPES LESS THAN 3:1, AND MULCH WITH NETTING OR PINNING ON SLOPES STEEPER THAN 3:1, IF NOT WITHIN THE GROWING SEASON.

10) COFFERDAMS SHALL BE USED ON THE PROJECT, EXCEPT DURING PERIODS OF HIGH FLOW. OTHER EROSION CONTROL MEASURES SHALL BE USED ALONG THE PERIMETER OF THE PROJECT TO PREVENT SEDIMENT FROM ENTERING INTO THE RIVER. CONTRACTOR SHALL COMPLETELY REMOVE ALL COFFERDAMS AND TURBIDITY CONTROL ONCE ALL DISTURBED SURFACES ARE STABILIZED AND WATER HAS RETURNED TO BACKGROUND CLARITY.

11) CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL EQUIPMENT DAILY FOR LEAKS. ALL REPAIRS SHALL BE MADE OUTSIDE OF JURISDICTIONAL AREAS.

12) CONTRACTOR SHALL MAINTAIN THE FOLLOWING ON SITE: OIL SPILL KITS AND DIESEL FUEL SPILL KITS SPECIFIC TO THEIR EQUIPMENT. EACH EQUIPMENT OPERATOR SHALL BE TRAINED IN THE USE OF SPILL KITS.

13) CONTRACTOR SHALL STABILIZE ALL DISTURBED WETLAND AREAS WITH WETLAND SEED MIX CONTAINING NON–INVASIVE PLANT SPECIES ONLY.

14) CONTRACTOR SHALL FOLLOW THE BMPS DESCRIBED IN THE NHDOT BEST MANAGEMENT PRACTICES FOR ROADSIDE INVASIVE PLANTS, LATEST EDITION.

15) CONTRACTOR SHALL USE NATURAL STRAW OR EQUIVALENT NON–TOXIC, NON–SEEDBEARING ORGANIC MATERIAL WITHIN AREAS BEING RESTORED USING MULCH.

16) CONTRACTOR SHALL INSPECT EQUIPMENT FOR ANY EXOTIC WEEDS AND PLANTS PRIOR TO MOBILIZING THEM ONSITE. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL SEDIMENT AND EROSION CONTROL PRODUCTS ARE FREE OF EXOTIC WEEDS AND PLANTS PRIOR TO THEIR USE AND INSTALLATION. CONTRACTOR SHALL RINSE ALL EQUIPMENT IN NON–JURISDICTIONAL AREAS WHERE RUNOFF IS UNLIKELY TO OCCUR.

17) CONTRACTOR IS PROHIBITED FROM USING WETLANDS SOILS FROM AREAS VEGETATED WITH PURPLE LOOSESTRIFE OR OTHER INVASIVE PLANT SPECIES FOR SITE RESTORATION.

18) CONTRACTOR SHALL REPLANT OR RESEED, AS APPLICABLE, THE TEMPORARY IMPACT ARES THAT DO NOT ATTAIN 75% SUCCESSFUL ESTABLISHMENT OF WETLANDS VEGETATION AFTER 2 GROWING SEASONS.

19) CONTRACTOR SHALL SUBMIT A WATER DIVERSION AND DEWATERING PLAN FOR REVIEW BY THE ENGINEER.

20) CONTRACTOR SHALL DISPOSE OF DREDGED MATERIAL OUTSIDE OF JURISDICTIONAL AREAS.

21) CONTRACTOR SHALL DEWATER DREDGED MATERIALS TO BE STOCKPILED USING TURBIDITY CONTROLS THAT PREVENT TURBID WATER FROM LEAVING THE STOCKPILE AREA.

22) CONTRACTOR SHALL ONLY USE FILL THAT IS CLEAN SAND, GRAVEL, ROCK, OR OTHER MATERIAL THAT MEETS THE PROJECT SPECIFICATIONS FOR ITS USE.

23) CONTRACTOR SHALL ONLY USE FILL THAT DOES NOT CONTAIN ANY MATERIAL THAT COULD CONTAMINATE SURFACE OR GROUNDWATER OR OTHERWISE ADVERSELY AFFECT THE ECOSYSTEM.

24) CONTRACTOR SHALL IMMEDIATELY STABILIZE SLOPES USING METHODS IN ENV–WQ 1506 OR ENV–WQ 1508, AS APPLICABLE.

25) CONTRACTOR SHALL PLACE TEMPORARY FILL (OTHER THAN SWAMP MATS, CONSTRUCTION MATS, AND CORDUROY) ON GEOTEXTILE FABRIC LAID ON PRECONSTRUCTION WETLAND GRADE.

26) CONTRACTOR SHALL REMOVE TEMPORARY FILL AFTER ONE GROWING SEASON AND IMMEDIATELY UPON COMPLETION OF WORK.

27) CONTRACTOR SHALL DISPOSE OF TEMPORARY FILL AT AN UPLAND LOCATION WHICH PREVENTS ITS EROSION INTO A SURFACE WATER OR WETLAND.

28) IF CORDUROY IS USED ON THE PROJECT, IT MAY BE LEFT IN PLACE IF IT:

A. IS INSTALLED AS PART OF A SKID TRAIL IN ACCORDANCE WITH THE FORESTRY BMPS;
B. DOES NOT EXCEED 1,000 LF AND 20,000 SF PER CROSSING; AND
C. DOES NOT CROSS OR OTHERWISE IMPACT A PERENNIAL STREAM, MARSH, PRA, OR VERNAL POOL;

29) FOR WETLAND AREAS WHERE PERMANENT IMPACTS ARE NOT AUTHORIZED, CONTRACTOR SHALL RESTORE WETLANDS AND SURFACE WATERS TO PRE–IMPACT CONDITIONS AND ELEVATIONS.

30) CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A REMEDIATION PLAN TO THE DEPARTMENT FOR TEMPORARY IMPACT AREAS THAT ARE INVADED BY NUISANCE SPECIES SUCH AS COMMON REED OR PURPLE LOOSESTRIFE DURING THE FIRST FULL GROWING SEASON FOLLOWING THE COMPLETION OF CONSTRUCTION. IF NUISANCE SPECIES ARE PRESENT, CONTRACTOR SHALL PROPOSE MEASURES TO BE TAKEN TO ERADICATE NUISANCE SPECIES.

31) FOR ANY TREES CUT IN AN AREA OF AUTHORIZED TEMPORARY IMPACTS, THE CONTRACTOR SHALL LEAVE SHRUB AND TREE ROOTS INTACT.

no.	revision	date	by
1	WETLAND PERMIT PLANS - ISSUED FOR REVIEW	4/2020	LBK

CMA ENGINEERS
CIVIL/ENVIRONMENTAL/STRUCTURAL
Portsmouth, NH 603/431-6196 • Manchester, NH 603/627-0708 • Portland, ME 207/541-4223
c m a e n g i n e e r s . c o m

STATE OF NEW HAMPSHIRE — Liam B. Kelloch — No. 15432 — LICENSED PROFESSIONAL ENGINEER

designed by: LBK
drawn by: WAC/LBK
approved by: LBK
date: April 2020
project no: 1162
checked by: LBK
scale: N/A

Town of Madbury, New Hampshire

Nute Road
Bellamy River Crossing Replacement

Notes

drawing no. W-1

sheet: 2 of 7

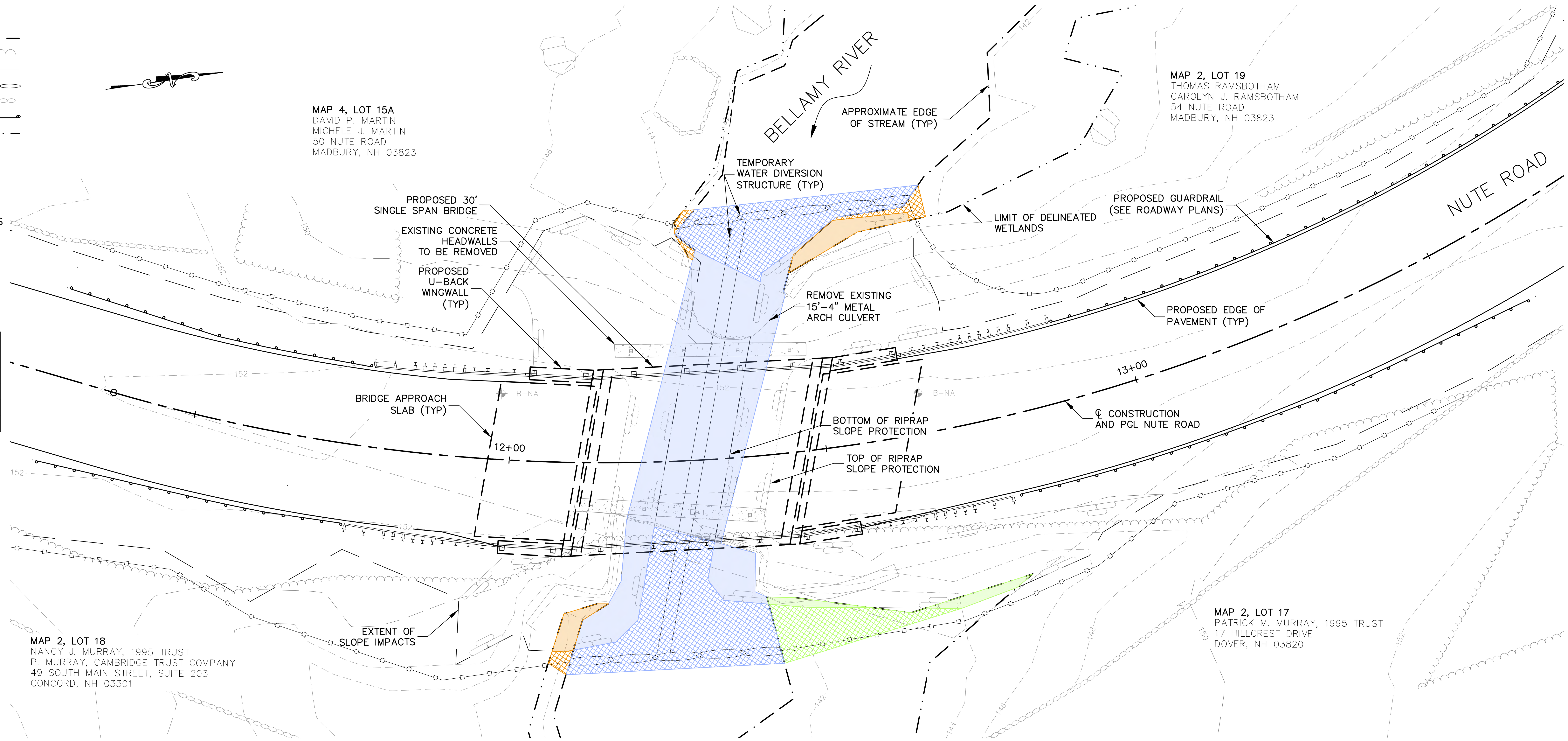
LEGEND

- EDGE OF STREAM
- TREE LINE
- SILT FENCE
- WATER DIVERSION STRUCTURE
- EXISTING STONE WALL
- GUARDRAIL
- WETLANDS

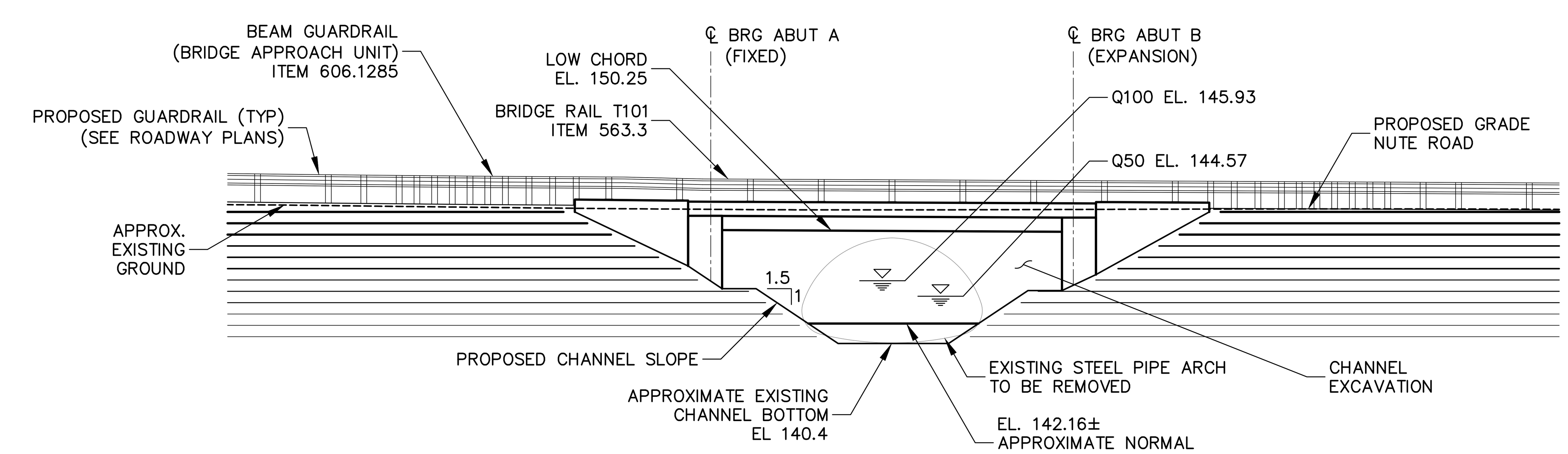
Impact Areas

- STREAM IMPACTS
- SCRUB-SHRUB (SS) WETLAND IMPACTS
- EMERGENT (EM) WETLAND IMPACTS
- TEMPORARY STREAM IMPACTS
- TEMPORARY SS WETLAND IMPACTS
- TEMPORARY EM WETLAND IMPACTS

SUMMARY OF IMPACT AREAS		
TYPE	PERMANENT (S.F.)	TEMPORARY (S.F.)
STREAM	830	624
SS WETLAND	74	35
EM WETLAND	36	132
TOTAL	940	791



General Plan
Scale: 1"=10'-0"



Elevation
Scale: 1"=10'-0"

HYDRAULIC DATA

SUBSTRUCTURE AND HYDRAULIC OPENING DESIGN:

DESIGN FLOOD:	830 CFS (100 YEAR)
DESIGN VELOCITY:	8.09 FT/SEC
DESIGN FLOOD ELEVATION:	145.93 FT (100 YEAR)

SUPERSTRUCTURE LOW CHORD DESIGN:

DESIGN FLOOD:	501 CFS (50 YEAR)
DESIGN VELOCITY:	7.52 FT/SEC
DESIGN FLOOD ELEVATION:	144.57 FT (50 YEAR)

CURVE DATA

PI STA = 12+74.40
N = 251775.08
E = 1168120.70
Δ = 53°10'32"
T = 137.637'
R = 275.00'
L = 255.23'
E = 32.52'

no.	revision	date	by
1	WETLAND PERMIT PLANS - ISSUED FOR REVIEW	4/2020	LBK

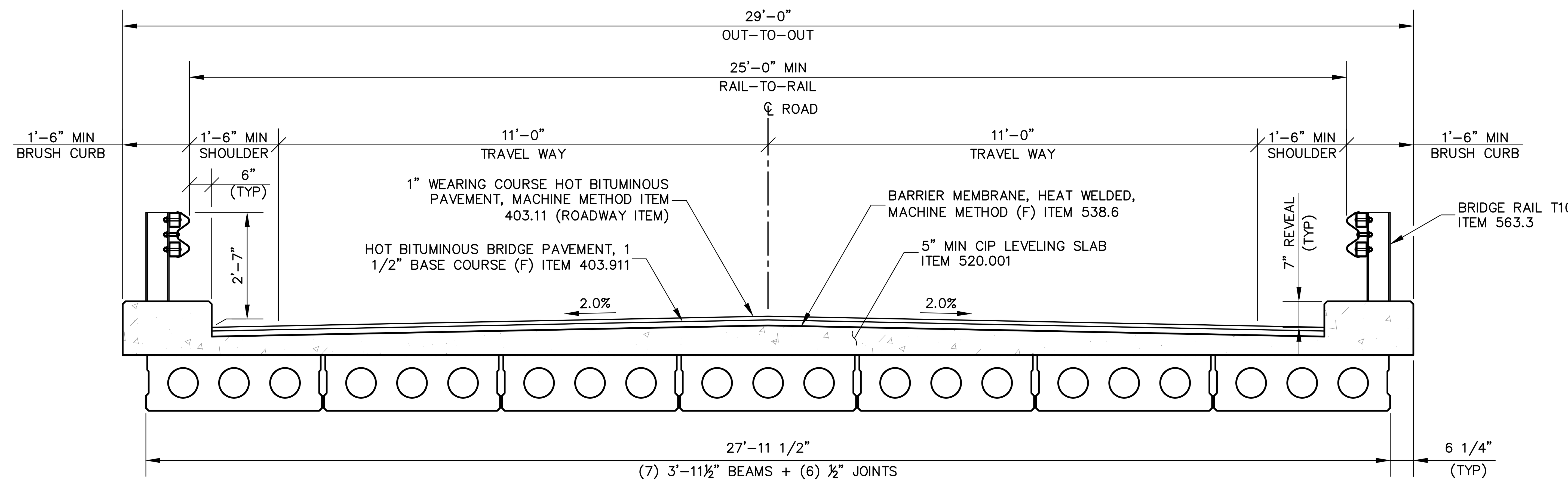
CMA ENGINEERS
CIVIL/ENVIRONMENTAL/STRUCTURAL
Portsmouth, NH 603/431-6196 • Manchester, NH 603/627-0708 • Portland, ME 207/541-4223
cmaengineers.com

date: April 2020
designed by: LBK
project no: 1162
drawn by: LBK/TMA/WAC
checked by: LBK
approved by: LBK
scale: Scale: 1" = 10'

Town of Madbury, New Hampshire
Nute Road
Bellamy River Crossing Replacement
Site Plan and Elevation

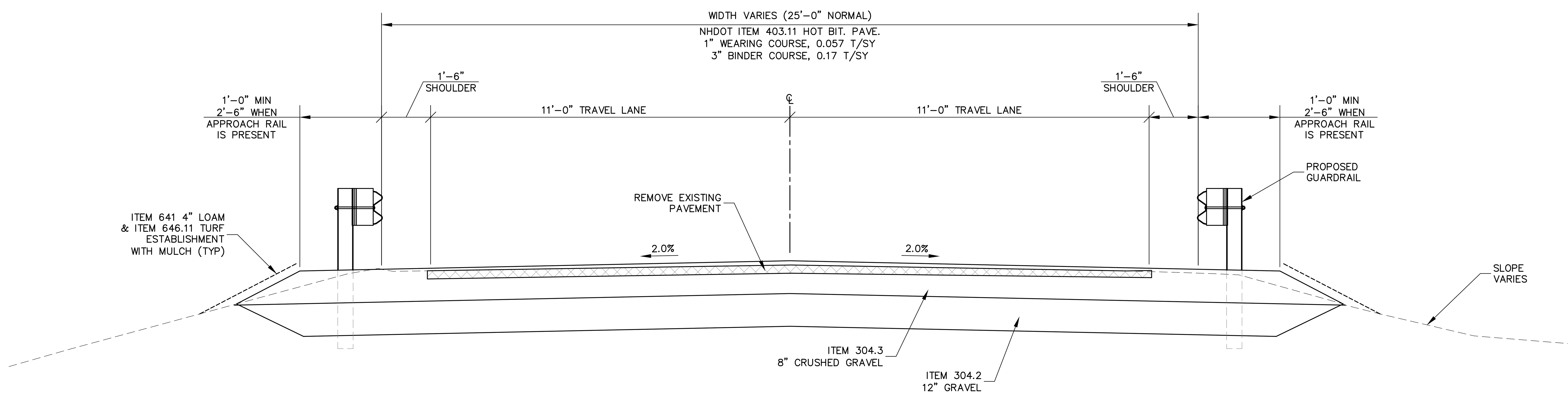
drawing no. W-2
sheet: 3 of 7

F:\CADD\PROJECTS\1162 Madbury Nute Rd Br\Production\0-Permitting\1162-Nute - W2-Site Plan.dwg Date Plotted: Apr 10, 2020 - 12:57pm Plotted By: LKALLOCH



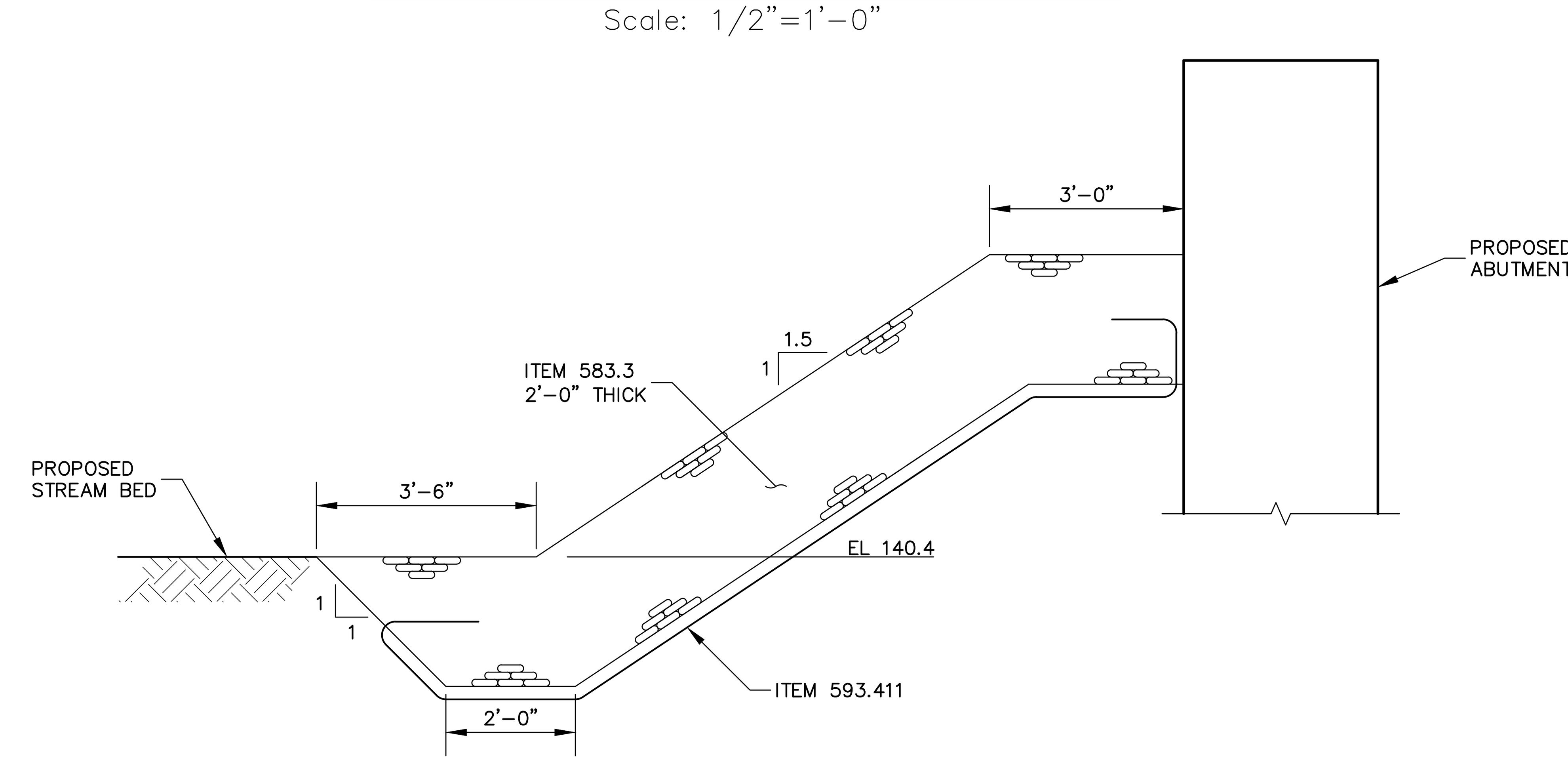
Typical Bridge Section

Scale: 1/2"=1'-0"



Typical Approach Roadway Section

Scale: 1/2"=1'-0"



Channel Slope Detail

Scale: 1/2"=1'-0"

no.	revision	date	by
1	WETLAND PERMIT PLANS - ISSUED FOR REVIEW	4/2020	LBK

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cmaengineers.com

designed by: LBK | drawn by: WAC/LBK | approved by: LBK
date: April 2020 | project no: 1162 | checked by: LBK | scale: AS NOTED

Town of Madbury, New Hampshire

Nute Road
Bellamy River Crossing Replacement

Typical Bridge and Roadway Sections

drawing no. W-3

sheet: 4 of 7

Boring No. B-1

Station 12+65, 3.4 Left

JOHN TURNER CONSULTING

LOG OF BORING No. B-1

PROJECT: Madbury Nute Road Bridge — PROJECT NO.: 18-15-086
CLIENT: CMA Engineers, Inc.
PROJECT LOCATION: Nute Road, Madbury, New Hampshire
LOCATION: See Boring Location Plan — ELEVATION: 151
DRILLER: Soil Exploration, Corp — LOGGED BY: JW
DRILLING METHOD: 3.25" ID HSA — DATE: 8/14/18
DEPTH TO - WATER> INITIAL: 9 — AFTER 24 HOURS:

Depth (feet)	Description	Elevation (feet)	Sample No.	Blow Counts	% < #200	Test Results (Penetration)
0	4" ASPHALT PAVEMENT	151				
.3	Brown, sand with silt (SW-SP); very dense; moist; [FILL] - 1" of former asphalt		SS01	17 26 28 35		
2.5	- becomes dense with gravel	148.5	SS02	31 22 21 14		
5	- becomes loose	146	SS03	9 4 4 4		
7.5	Dark brown, silty gravel with sand (GM); loose; moist to wet; [MARSH DEPOSITS]	143.5	SS04	4 6 4 2		
	- becomes wet at 9 ft bgs					
10	- becomes olive brown with color mottling - becomes very dense	141	SS05	12 36 48 50/2"	21.0	84
12.5		138.5				
15	Brown, silty sand with gravel (SM) and color mottling; dense; wet; [MARSH DEPOSITS]	136	SS06	8 14 32 18		
17.5		133.5				

Test boring backfilled with soil cuttings upon completion

This information pertains only to this boring and should not be interpreted as being indicative of the site.

BOTTOM OF FOOTING ABUTMENT B (EL. 138.2)

Boring No. B-1

(Continued)

JOHN TURNER CONSULTING

LOG OF BORING No. B-1

PROJECT: Madbury Nute Road Bridge — PROJECT NO.: 18-15-086
CLIENT: CMA Engineers, Inc.
PROJECT LOCATION: Nute Road, Madbury, New Hampshire
LOCATION: See Boring Location Plan — ELEVATION: 151
DRILLER: Soil Exploration, Corp — LOGGED BY: JW
DRILLING METHOD: 3.25" ID HSA — DATE: 8/14/18
DEPTH TO - WATER> INITIAL: 9 — AFTER 24 HOURS:

Depth (feet)	Description	Elevation (feet)	Sample No.	Blow Counts	% < #200	Test Results (Penetration)
20		131				
20.3	Gray, silty sand with gravel (SM); very dense; wet; [GLACIAL TILL]		SS07	50 39 50 50/5"	23.0	89
21.9	- Spoon refusal [WEATHERED ROCK]					
22.5		128.5				
24	Begin 5 ft rock core. Gray, fine-grained, sedimentary, moderate weathering, metamorphic intrusive rock; [BEDROCK]. RQD = 59% (Moderately Weathered)					
25		126				
27.5		123.5				
	Boring terminated at 29 ft.					
30		121				
32.5		118.5				
35		116				

Depth (ft)	Time (min)
0-1	6:30
1-2	8:30
2-3	9:00
3-4	10:30
4-5	4:30

Test boring backfilled with soil cuttings upon completion

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Boring No. B-2

Station 11+98, 8.2 Left

JOHN TURNER CONSULTING

LOG OF BORING No. B-2

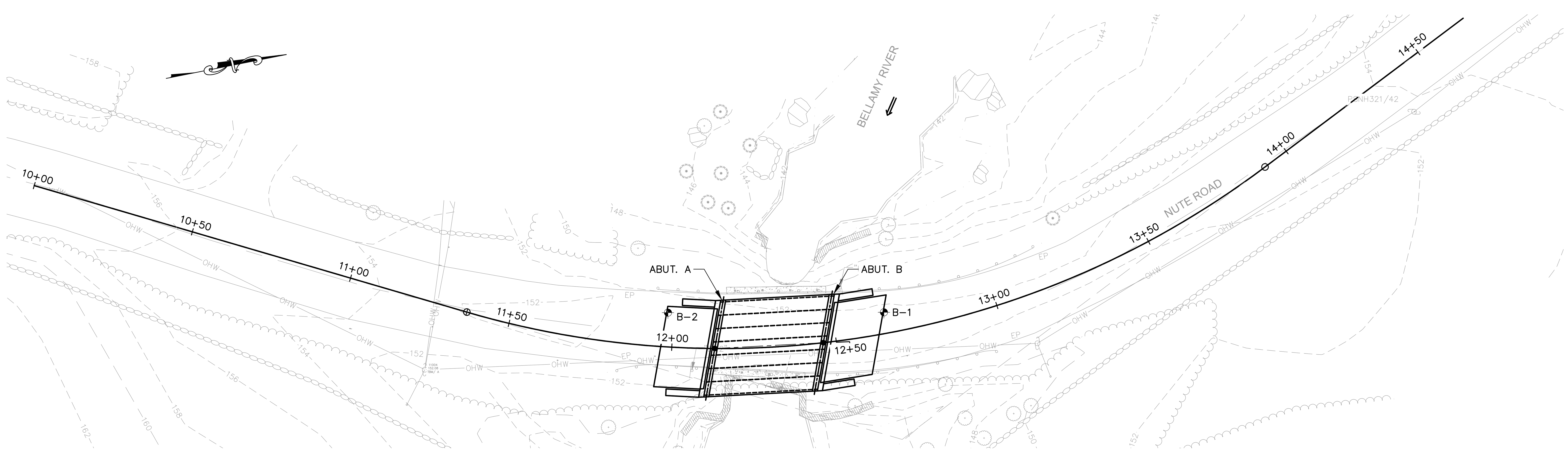
PROJECT: Madbury Nute Road Bridge — PROJECT NO.: 18-15-086
CLIENT: CMA Engineers, Inc.
PROJECT LOCATION: Nute Road, Madbury, New Hampshire
LOCATION: See Boring Location Plan — ELEVATION: 151
DRILLER: Soil Exploration, Corp — LOGGED BY: JW
DRILLING METHOD: 3.25" ID HSA — DATE: 8/14/18
DEPTH TO - WATER> INITIAL: 9 — AFTER 24 HOURS:

Depth (feet)	Description	Elevation (feet)	Sample No.	Blow Counts	% < #200	Test Results
0	4" ASPHALT PAVEMENT	151				
.3	Brown, sand with silt (SW-SP); dense; moist; [FILL]		SS01	14 21 26 29		
2.5	- becomes very dense with gravel	148.5	SS02	14 22 31 39	9.0	
5	- becomes medium dense	146	SS03	11 9 9 6		
7.5		143.5				
8.5	- becomes wet at 9 ft bgs					
10	Olive brown, silty gravel with sand (GM); medium dense; wet; [MARSH DEPOSITS]	141	SS04	7 7 9 10		
12.5		138.5				
13.5						
15	Olive brown, silty sand with gravel (SM); dense; wet; [MARSH DEPOSITS] - Auger refusal	136	SS05	12 18 26 48	24.1	
	Boring terminated at 17 ft.					
17.5		133.5				

Test boring backfilled with soil cuttings upon completion

This information pertains only to this boring and should not be interpreted as being indicative of the site.

BOTTOM OF FOOTING ABUTMENT A (EL. 138.4)



Boring Location Plan

Not to Scale

Town of Madbury, New Hampshire

Nute Road
Bellamy River Crossing Replacement

Boring Logs

date:	designed by:	project no:	drawn by:	checked by:	approved by:	scale:
April 2020	LBK	1162	WAC/LBK	LBK	LBK	AS NOTED

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Civil/Environmental/Structural
Portsmouth, NH 603/431-6196 • Manchester, NH 603/627-0708 • Portland, ME 207/541-4223
cmaengineers.com

STATE OF NEW HAMPSHIRE Liam B. Kelloch No. 15432 LICENSED PROFESSIONAL ENGINEER

no.	revision	date	by
1	WETLAND PERMIT PLANS - ISSUED FOR REVIEW	4/2020	LBK

drawing no. W-4

sheet: 5 of 7

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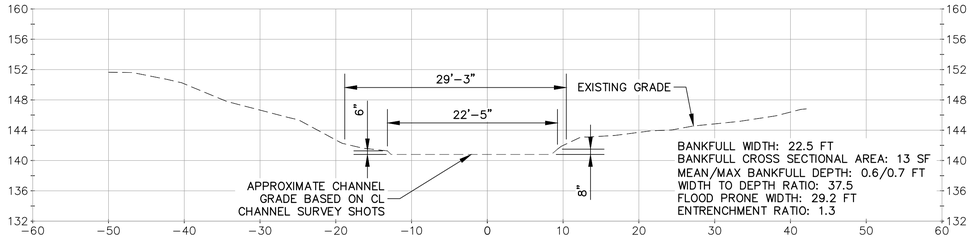
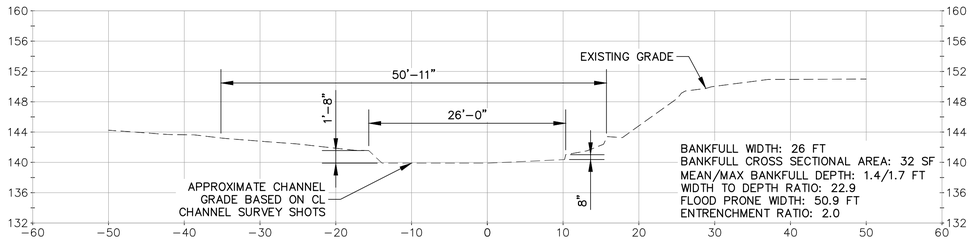


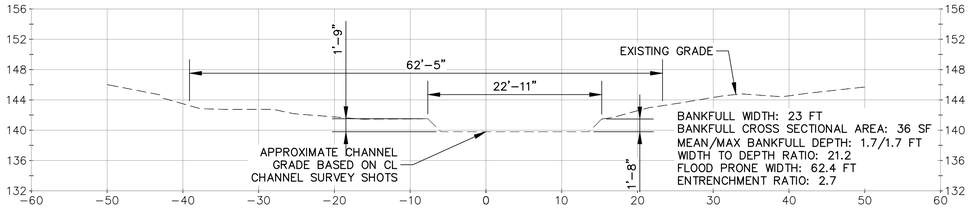
Channel Cross Section #1 – 17.5 ft US of Existing Culvert

Scale: 1"=10'–0"



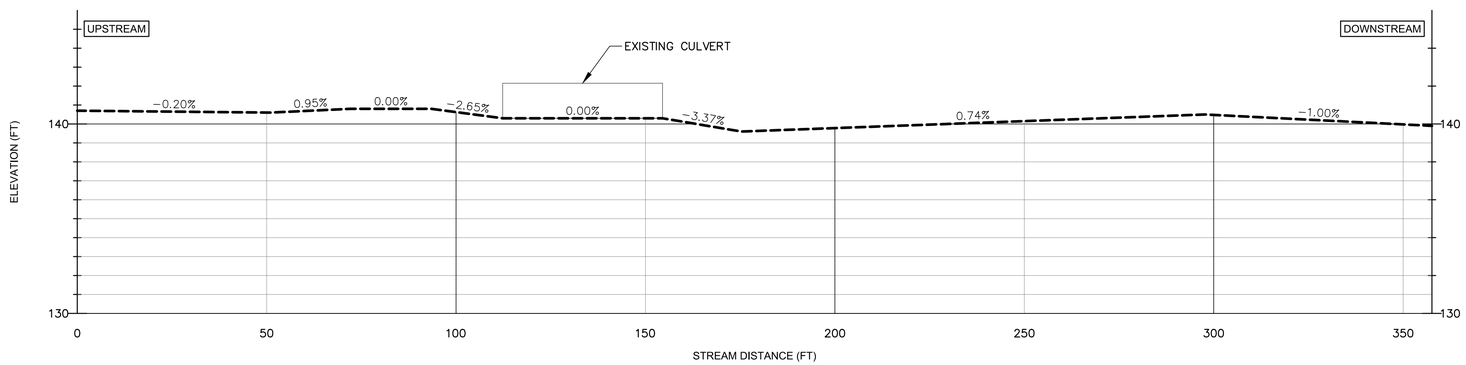
Channel Cross Section #2 – 12.0 ft DS of Existing Culvert

Scale: 1"=10'–0"



Channel Cross Section #3 – 36.0 ft DS of Existing Culvert

Scale: 1"=10'–0"



Bellamy River at Nute Road – Longitudinal Channel Profile

Scale: 1"=20'–0"

Vertical Exaggeration: 1V:5H

no.	revision	date	by
1	WETLAND PERMIT PLANS - ISSUED FOR REVIEW	4/2020	LBK

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designed by: LBK
drawn by: WAC/LBK
approved by: LBK
scale: AS NOTED
date: April 2020
project no: 1162
checked by: LBK

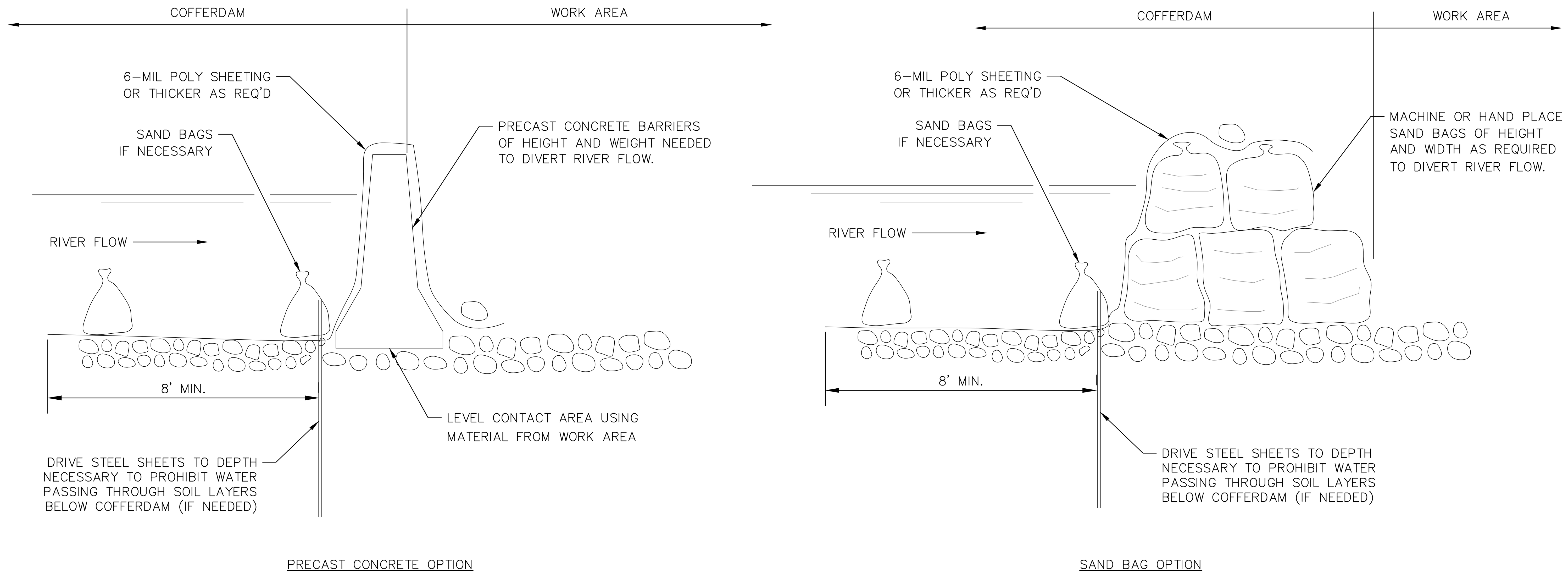
Town of Madbury, New Hampshire

Nute Road
Bellamy River Crossing Replacement

Channel Cross Section and Profile

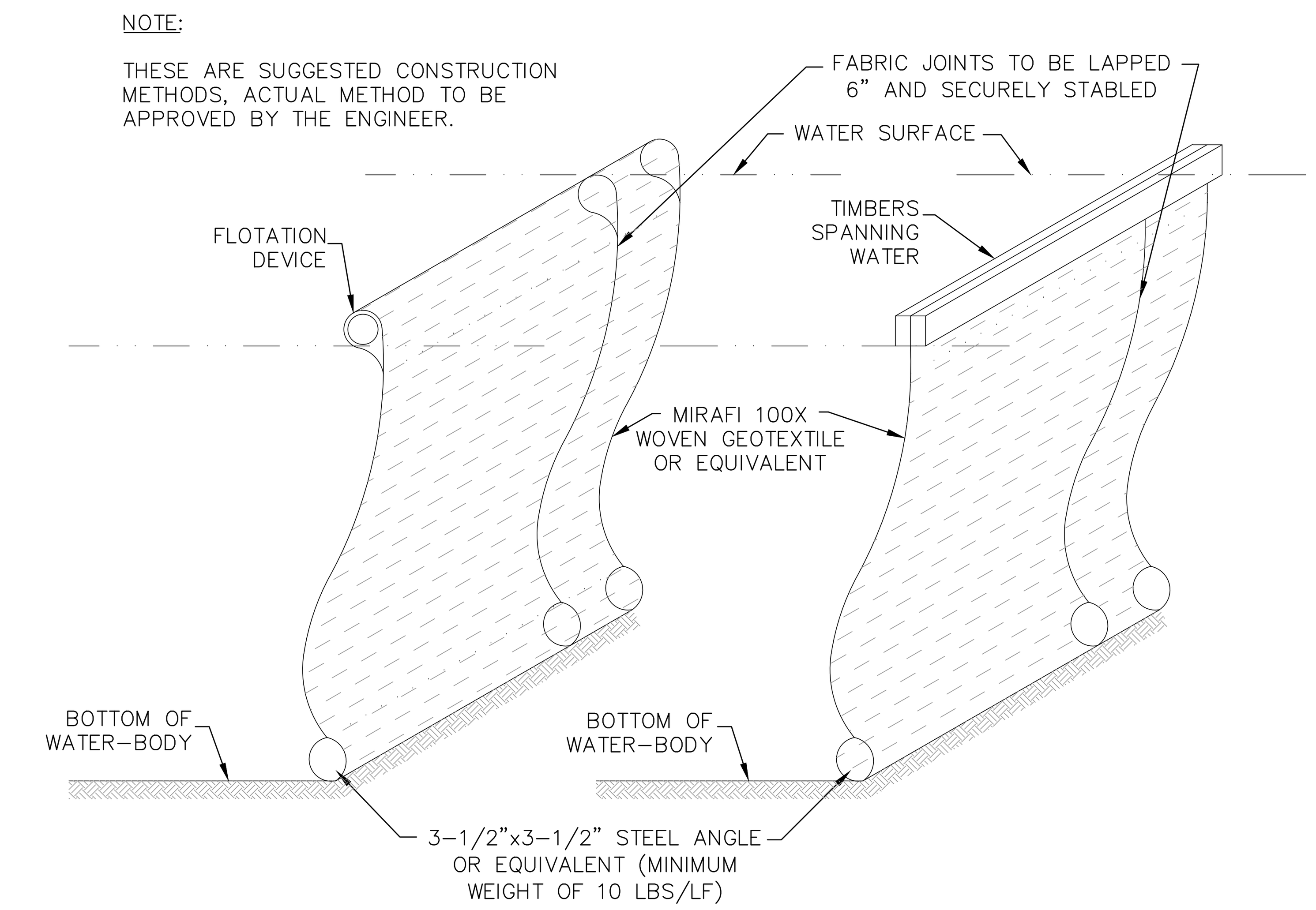
drawing no. W-5

sheet: 6 of 7



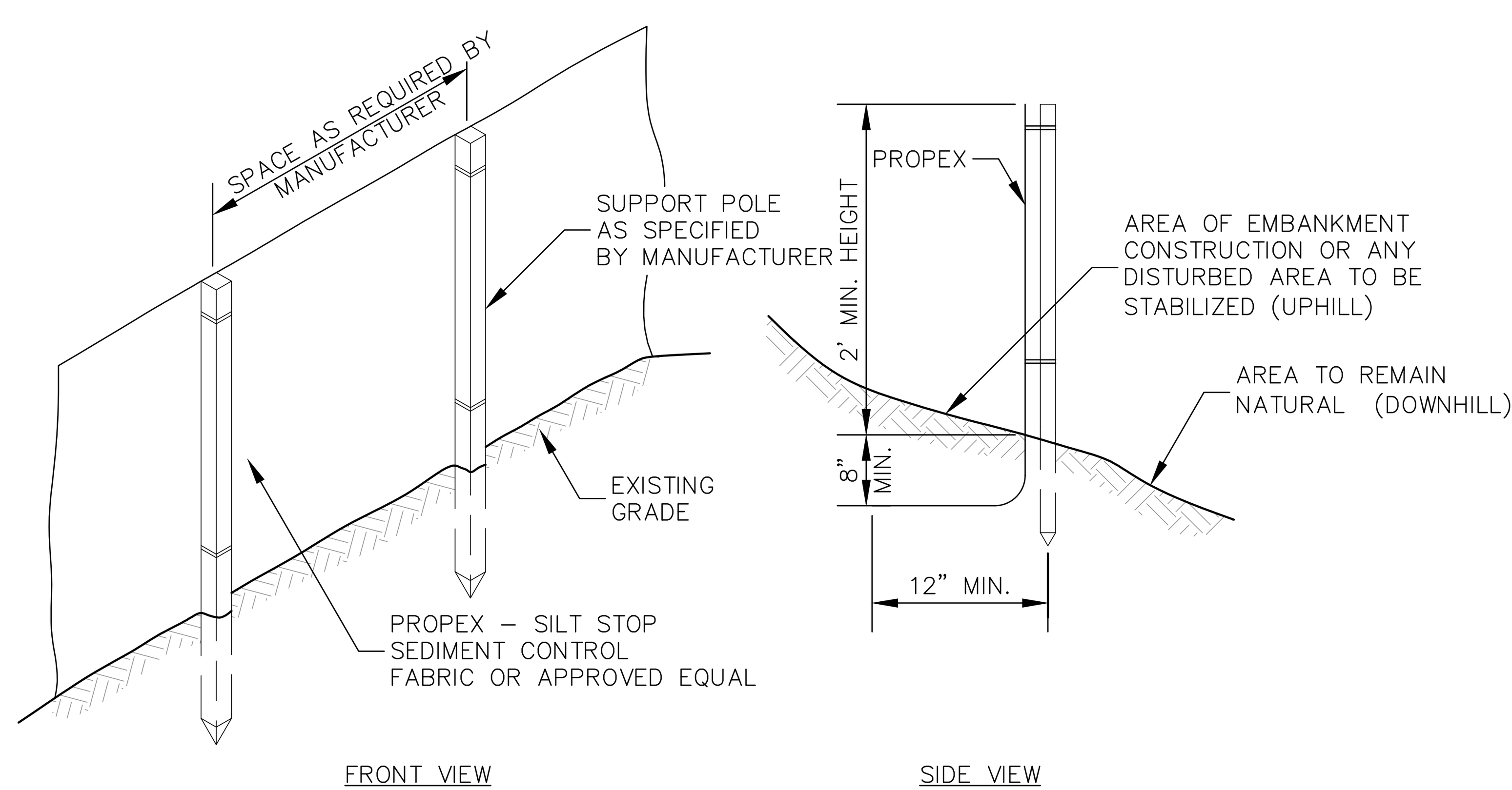
Temporary Cofferdam Options

Not to Scale



Sedimentation Barrier Options

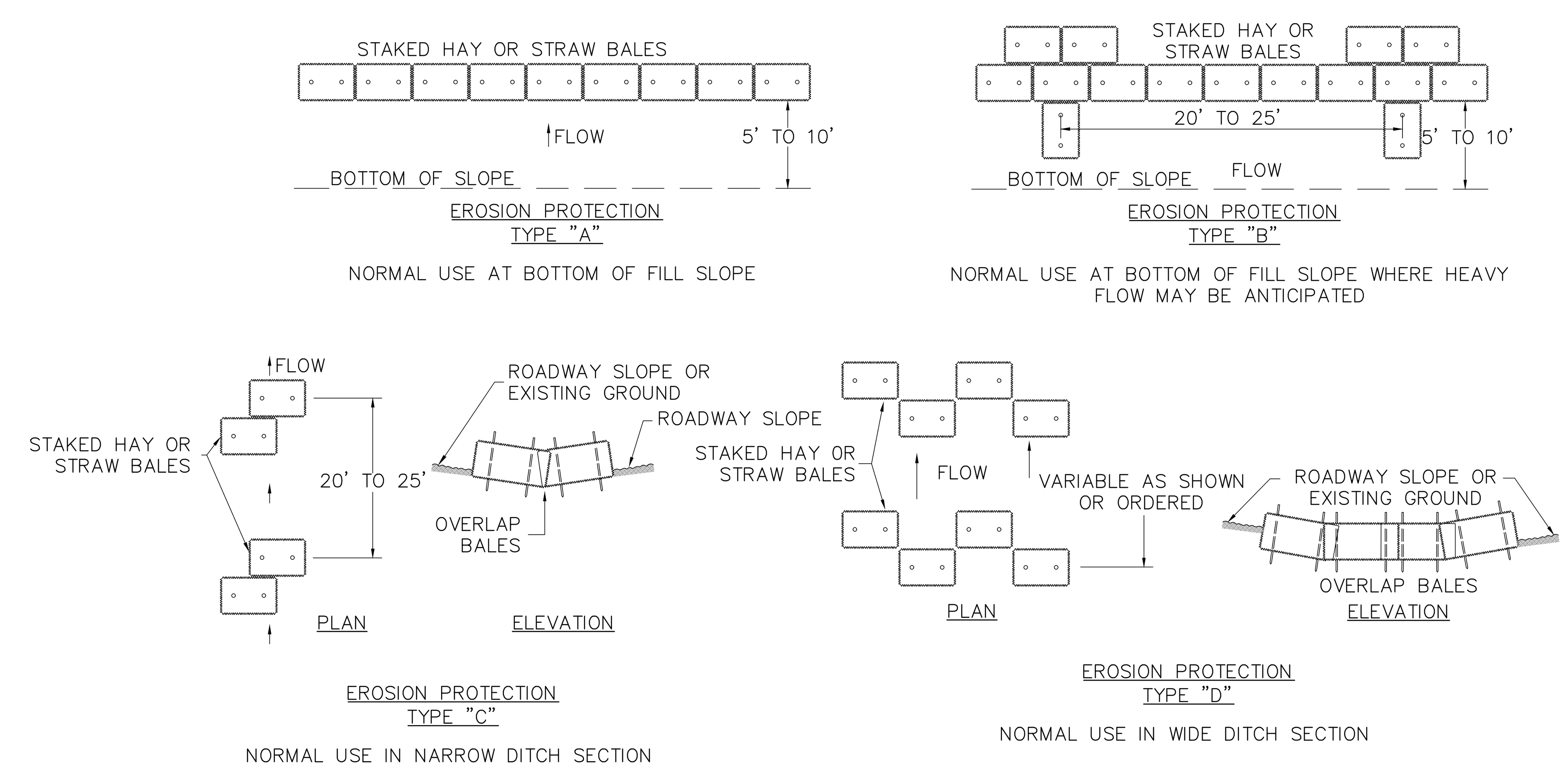
Not to Scale



NOTE:
AT A MINIMUM, SILT FENCE IS TO BE INSTALLED TO PROTECT WETLAND AREAS, WATERWAYS, EXISTING AND PROPOSED DRAINAGE FEATURES, SLOPES, LAWNS AND PLANTINGS ADJACENT TO THE WORK.

Silt Fence

Not to Scale



Hay Bale Detail

Not to Scale

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c m a e n g i n e e r s . c o m

designed by: LBK | drawn by: WAC/LBK | approved by: LBK
date: April 2020 | project no: 1162 | checked by: LBK | scale: NTS

Town of Madbury, New Hampshire
Nute Road
Bellamy River Crossing Replacement
Details

drawing no. W-6
sheet: 7 of 7

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C-3 Maps, Electronic Shape Files, and Meta Data

Maps and other attachments are already accounted for in Appendices B and C.

C-4 Methods, Timing, and Manner of Project

See Appendix A, Section 15 of the Wetlands Permit Application for the methods and manner as to how the project will meet standard permit conditions.

See Appendix B-4 for the timing of the project.

C-5 Additional Resource-Specific Information

Env-Wt 311.09 Required Resource-Specific Information.

a. *For projects in tidal areas, the applicant also shall submit the project-specific information required by Env-Wt 600, including but not limited to the datum and jurisdictional limits specified therein.*
   Not applicable for this project.
b. *For projects affecting non-tidal surface water shoreline, the applicant also shall submit the following:*
   1. *The general shape of the shoreline including the length of frontage and the normal high-water elevation;*
      The general shape of the shoreline on either side of the bridge is jagged.
      Length of frontage: 132 feet
      Normal high-water elevation: 142.16 feet
   2. *The footprint of all existing and proposed structures on the subject property;*
      Existing bridge footprint: 667 ft^2
      Proposed bridge footprint: 1091 ft^2
   3. *The intended use of each proposed structure; and*
      The proposed bridge is intended to be used for transportation purposes and is needed to replace the existing bridge that is in poor condition and is currently on the Municipal Red List.
   4. *The distance from existing and proposed work to abutting property lines.*
      Unknown, see easement documentation in Appendix C-8.
c. *For projects within the protected shoreline as defined by RSA 483-B, the applicant also shall provide the following:*
   1. *The reference line;*
   2. *The location of all existing structures between the primary building line and the reference line;*
   3. *The location of all proposed structures;*
   4. *For projects adjacent to tidal waters, the landward limit of the 100-foot tidal buffer zone; and*
   5. *The total disturbed area within the protected shoreline.*

   The project does not contain any protected shoreline as defined by RSA 483-B.

C-6 Project Specific Information

Env-Wt 500 does not apply to this project.

Env-Wt 600 does not apply to this project.

Env-Wt 903.04 Information Required for All Stream Crossing Standard Permit Applications. In addition to the information required by Env-Wt 311, the applicant shall submit the following for all stream crossing projects that require a standard permit:

a. *On the USGS map or updated data based on LiDAR required by Env-Wt 311.06, the following:*
    1. *The approximate boundaries of the contributing watershed;*
    2. *The size of the contributing watershed; and*
    3. *Identification of the stream tier based on watershed size;*

    See USGS and Watershed maps in Appendix C-12.

b. *Plans showing the following:*
    1. *The scale, a north arrow, and at least 3 cross-sections outside of the construction disturbance area that are representative of the stream system away from the area of direct influence by the crossing;*

        See Channel Cross Section and Profile drawing in Appendix C-2.
    2. *Clearing limits showing all proposed work areas;*

        See Site Plan and Elevation drawing in Appendix C-2.
    3. *For both the existing structure, if any, and the proposed structure, the following:*
        i. a. Location;

            See Site Plan and Elevation drawing in Appendix C-2.
        ii. b. Type;

            See Site Plan and Elevation drawing in Appendix C-2.
        iii. c. Dimensions; and

            See Site Plan and Elevation drawing in Appendix C-2.
        iv. d. Inlet and outlet invert elevations;

            See Site Plan and Elevation drawing in Appendix C-2.
    4. *The extent of channel excavation and filling;*

        The Site Plan and Elevation drawing in Appendix C-2 shows the proposed channel configuration, the existing culvert to be removed, and roadway embankment to be excavated. The Typical Bridge and Roadway Sections drawing in Appendix C-2 shows the limit of riprap to be placed within the graded channel for scour protection.
    5. *Road locations, including road edges, centerline, and boundaries of the right-of-way;*

        The Site Plan and Elevation drawing in Appendix C-2 shows this information. The surveyor and Town have determined the right-of-way is ambiguous. See easement documentation in Appendix C-8.

6. *Proposed channel work including bank erosion control features, grade control, and channel linings; and*

   The Site Plan and Elevation drawing and Typical Bridge and Roadway Sections drawing in Appendix C-2 show the limits of the riprap being added to the banks through the bridge section.
7. *For the proposed structure, cross-sections showing the water surface elevation resulting from the applicable design storm, with bed material and backfill zones;*

   The Site Plan and Elevation drawing in Appendix C-2 shows the Q100 and Q50 flood elevations for the proposed conditions. The Typical Bridge and Roadway Sections drawing in Appendix C-2 shows the limits of the natural bottom and the riprap banks.

c. *Existing crossing metrics, including:*
   1. *Existing riparian zone, including the extent and type of existing vegetation surrounding or in the stream bank; and*

      See Site Plan and Elevation drawing in Appendix C-2.
   2. *Existing tailwater control, including its location and materials, and pool configuration;*

      None known

d. *The dewatering system, as follows:*
   1. *Estimates of the maximum flow anticipated during construction, including any summer storm estimates;*
   2. *The hydraulic calculation for the bypass pipe or channel size, length, and gradient;*
   3. *Location, height, and width of the diversion dam;*
   4. *Sump locations, including estimate of necessary flow and sump capacity;*
   5. *Backwater prevention method; and*
   6. *Sediment treatment plan with methods, release point, and extent;*

   Contractor is to determine means and methods for dewatering and to submit a dewatering plan to Engineer for review.

e. *Erosion and pollution controls, as follows:*
   1. *Any additional methods of controlling erosion;*
   2. *A soil stabilization plan, including but not limited to where to cover stockpiles and place straw bales; and*
   3. *Pollution control methods for pumps, fuel stations, and equipment storage;*

   Contractor is to determine means and methods for erosion and pollution controls and to submit an erosion control plan to Engineer for review.

f. *The number and location of footings, if any, and the following for each:*

   There will be two footings, one on each side of the stream.
   1. *Estimate of bearing capacity;*

      2 ksf based on the geotechnical report
   2. *Dimensions of each footing; and*

      Current calculations have the footings sized at 12’ wide x 33’ long.
   3. *Footing depth;*

      Top of footings are approximately 5 feet below the surface of the sloped bank. Footings are approximately 30 inches thick.

6. *Flood-prone width.*
   Cross Section 1: 29.2 feet
   Cross Section 2: 50.9 feet
   Cross Section 3: 62.4 feet
   Range: 29.2 to 62.4 feet

Env-Wt 903.05 Information Required for Certain Stream Crossing Standard Permit Applications. In addition to the information required by Env-Wt 311 and Env-Wt 903.04, for new and replacement stream crossing projects that require a standard permit the applicant shall submit the following as applicable:

a. *For tier 2 and tier 3 crossings, the following additional channel information at the crossing and for the design reference reach including:*
   1. *A longitudinal profile that is 7 to 10 bankfull widths long with grade controls, pools, and gradients shown; and*
      See Channel Cross Section and Profile drawing in Appendix C-2.
   2. *Particle size distribution of the reference reach;*
      See stream crossing worksheet in Appendix C-17.
b. *For tier 2, tier 3, and tier 4 crossings, streambed details, with figures, that show the following:*
   1. *The distance from the top of the right bank to the top of the left bank;*
      See Channel Cross Section and Profile drawing in Appendix C-2.
   2. *The streambed simulation materials and the extent, depth, and length of the streambed within the proposed crossing;*
      Existing streambed materials to remain in place.
   3. *Approximate elevations, spacing, diameters, and locations of structures for steps, bank stabilization, and other channel rocks for roughness; and*
      See Site Plan and Elevation drawing and Typical Bridge and Roadway Sections drawing in Appendix C-2.
   4. *Details for sediment retention structures, if any, within embedded structures;*
      Not applicable for this project.
c. *For tier 2, tier 3, and tier 4 crossings, the following information on the proposed crossing:*
   1. *The openness ratio, namely the ratio of the area of a cross-section of an individual cell or barrel of a crossing structure, excluding any embedded area, to the length of the structure along the channel;*
      Openness Ratio: 7.83
   2. *A narrative assessment of the streambed details provided pursuant to (b), above, channel information of existing crossing metrics relative to the proposed structure, as discussed in the NH stream crossing guidelines, available as noted in Appendix B;*
      The existing banks outside the limits of the existing culvert crossing have an average width of approximately 24’-0” from top of bank to top of bank. The channel beneath the proposed structure will be a trapezoidal shape with 24’-0” between banks and 3’-0” level platforms along the top of each bank. This will provide a total clear width of 30’-0” between abutments and match into the existing channel upstream and downstream of the proposed structure.

g. *A narrative explaining why the cross-sections identified pursuant to (b)(7), above, are representative;*

Two primary methods were used to identify representative existing channel cross sections for use in sizing the proposed crossing. The river necks down where it crosses under Nute Road. The existing contours were reviewed to ensure that the identified cross sections were outside the apparent limits of the embankment supporting Nute Road. Additionally, where the observed limit of the banks was jagged and variable, a line of best fit was established to help identify cross sections with bankfull widths which matched the average width determined using the lines of best fit.

h. *The design features used to improve aquatic organism passage and the expected distance, in linear feet, of downstream and upstream improvement for aquatic organism passage or fish passage;*

The proposed structure will improve passage of aquatic organisms upstream and downstream by restoring the crossing to match the bankfull width of the adjacent channel reaches

i. *The hydraulic capacity of the proposed crossing, in terms of flood frequency event, and of the existing crossing, if any; and*

The hydraulic capacity is 501 cfs for the 50 year storm event and 830 cfs for the 100 year storm event. These flows are the same for the existing and proposed crossings because there is not a current capacity issue for the 50 and 100 year storm events.

j. *The following channel information at the crossing and for the reference reach:*

1. *The classification of the stream using the Rosgen classification system as described in Applied River Morphology by Dave Rosgen, 1996, available as noted in Appendix B, at the crossing and upstream and downstream of the crossing;*

   The wetlands scientist classified the stream as G3/G4 for the downstream reach and G5c for the upstream reach.

2. *Bankfull width;*

   Cross Section 1: 22.5 feet
   Cross Section 2: 26 feet
   Cross Section 3: 23 feet
   Range: 22.5 to 26 feet

3. *Bankfull depth (mean);*

   Cross Section 1: 0.6 feet
   Cross Section 2: 1.4 feet
   Cross Section 3: 1.7 feet
   Range: 0.6 to 1.7 feet

4. *Entrenchment ratio;*

   Cross Section 1: 1.3
   Cross Section 2: 2.0
   Cross Section 3: 2.7
   Range: 1.3 to 2.7

5. *Sinuosity; and*

   Crossing: 0.0
   Reference Reach: 1.05

Streambed simulation materials are not being proposed for the new crossing at this location. The proposed crossing is a clear span concrete beam structure supported on concrete abutments. The existing channel bottom material outside the limits of the existing culvert will remain in place. The existing culvert, to be removed, is not significantly embedded or perched. The intent is to remove the existing culvert which will leave a channel bottom at approximately the proposed final grade. This area will not require significant grading and will be left to infill with natural channel material providing a continuous natural channel bottom through the crossing area.

No flow control structures are being proposed within the channel area. The existing and proposed grade through the area of the crossing is primarily flat with minor built up deposits and pools before and after the culvert respectively. No natural bank or channel armoring is currently present within the project area. Therefore, the extent of the proposed armoring has been limited to where it is required to protect the proposed foundation elements. Bank stabilization around the upstream and downstream wingwalls, and along the channel banks below the proposed structure will consist of a 2'-0" layer of standard NHDOT Class B Stone placed over the surface. This will only be utilized for the banks and where it is toed in at the base of the bank slope. The stone will not extend across the full width of the channel.

The existing crossing and nearby upstream and downstream reaches do not contain any sediment retention structures (logs dams, bedrock ledges, man-made structure). Based on the lack of existing control structures and the minimal longitudinal channel slope through the project site, no sediment control structures are being proposed. This will allow the channel within the crossing to adjust over time in a similar manner to the natural channel bottom upstream and downstream of the crossing.

3. *A narrative assessment of the long-term erosion and stability consequences of constructing the proposed stream crossing, and methods and structures to be implemented to minimize any consequences identified;*
   The proposed project includes installation of rip rap along the proposed bridge abutments that will serve as scour prevention and prevent erosion of the proposed riverbank.
4. *A narrative assessment of the bed forms and streambed characteristics necessary to cause water depths and velocities within the crossing structure at a variety of flows to be comparable to those found in the natural channel upstream and downstream reaches;*
   Other than removal of the existing culvert, the streambed is matching existing.
5. *The percent of increase in the hydraulic capacity of the stream crossing; and*
   The hydraulic capacity based on the hydraulic opening of the structure at the stream crossing increased by 206%.

6. *A narrative analysis of how connectivity considerations were addressed focusing on stream reach, stream type, stream stability, and existing and potential for erosion in siting and modifying or replacing an existing stream crossing;*
   The existing stream channel appears stable with no log jams or other obstacles which if damaged or removed could result in major changes to the channel profile. Based on this, we are matching the existing profile (essentially flat) and leaving the material along the bottom of the channel essentially undisturbed.
7. *A narrative explanation of the detrimental geomorphic consequences that have occurred as a result of the existing stream crossing, if any; and*
   There have not been any detrimental geomorphic consequences that have occurred as a result of the existing stream crossing. The existing culvert is being replaced by a bridge span which will remove any potential for inlet obstruction. The proposed crossing is in line with the natural direction of the stream channel, which will preserve its natural alignment.
8. *A narrative explanation of the crossing's contribution to flooding that damages the crossing or other human infrastructure;*
   The proposed structure will increase hydraulic capacity at the crossing and will not increase the frequency of flooding. By increasing hydraulic capacity and decreasing flooding risks, there aren't expected to be damages to the crossing or other human infrastructure.

d. *For tier 3 crossings, structural details of the crossing, including the following:*
   1. *Structural section, gauge or thickness, and material, minimum and maximum cover limits;*
      The deck cross section shows the beams and curbs. The bridge profile or elevation view shows the abutments.
   2. *Structures, drawn to scale, on elevation view showing bed material location relative to structure, and special backfill zones; and*
      The bridge profile view shows the elevation/section view limits of the riprap.
   3. *Structural excavation quantity and total excavation estimate;*
      Structural excavation: 415 cy. This quantity includes Item 504.1 Common Bridge Excavation and Item 504.2 Rock Bridge Excavation.
      Total excavation: 1315 cy. This quantity includes Item 203.1 Common Excavation (Roadway), Item 207.1 Common Channel Excavation, Item 504.1 Common Bridge Excavation, and Item 504.2 Rock Bridge Excavation.

e. *For tier 2 and tier 3 crossings, a demonstration that all design and construction considerations outlined in the NH stream crossing guidelines, available as noted in Appendix B, have been addressed; and*
   1. *Crossing Structure Site Selection*
      The project is replacing an existing culvert, at an existing river crossing, and the existing structure is in line with the stream channel, so there is not a need to review other site locations.
   2. *Accounting for Variability*
      The proposed structure is designed to accommodate aggradation and degradation with the construction of an open bottom structure. The alignment of the proposed structure was determined with a best-fit curve of the surveyed natural channel. A

natural channel alignment minimizes the potential for scour and lateral channel movement. The existing channel type is described in the stream crossing worksheet in Appendix C-17, and the longitudinal profile is in the Channel Cross Section and Profile drawing in Appendix C-2.

3. *Structure Slope*
   The proposed structure is bottomless, which is the preferable option according to the NH Stream Crossing Guidelines. The average channel slope of the reference reach is 0.002 ft/ft and the average channel slope at the crossing is 0.0 ft/ft.
4. *Structure Alignment*
   The proposed crossing is in line with the natural direction of the stream channel. The proposed streambed grading will match into the existing elevations upstream and downstream of the crossing. Sediment/woody material obstructions are not an issue, because the culvert is being replaced by a bridge span which will remove any potential for inlet obstruction. The inlet and outlet of the crossing are not designed askew to the natural stream channel, so lateral channel movement and bank scour are not of concern.
5. *Bridges vs. Closed Bottom Structures*
   The proposed structure is a bridge which will span the stream channel, restoring the stream flow to bankfull channel width, flow rates, and substrates consistent with the natural condition of the stream. Additionally, the stream channel within the structure will be rebuilt to mimic the geomorphic processes of the natural stream channel.
6. *Structure Width*
   The width of the proposed stream crossing structure is appropriate to provide for the adequate passage of water, sediment, aquatic biota, and organic matter at all flow levels. The stream crossing structure is wide enough to accommodate the geomorphic characteristics of the stream without impacting the balance of sediment erosion and deposition that occurs naturally at the site. A numeric standard that has been used to determine the appropriate width of the streambed inside the proposed structure is 1.2 times the bankfull width plus 2 feet. This proposed crossing has been designed according to this standard. The proposed crossing is greater than 16 feet wide, so according to the NH Stream Crossing Guidelines, a bridge/span is more practical than a culvert.
7. *Embedding Structures*
   The proposed structure is not enclosed; however, it will be sloped and aligned adequately to provide natural sediment transport, structure stability, and passage of water, organic matter and aquatic biota at all levels of flow.
8. *Natural Substrate Within the Structure*
   Natural substrate is being used within the structure and armoring is being used around the bridge abutments to resist scouring forces. The stream channel dimensions in the crossing structure approximate those in the natural river channel.
9. *Maintaining Depth at Low Flow in Enclosed Structures*
   Not applicable for this project.

10. *Rare, Threatened, and Endangered Species*
    There currently do not appear to be any rare, threatened, or endangered species or exemplary natural community in the subject stream, based on state mandated databases.
11. *Openness Ratio*
    The proposed structure is a bridge span, which should not be a deterrent to any aquatic organisms. The openness ratio for the proposed span is 7.83.
12. *Intermittent Streams*
    Not applicable to this project.

f. *For tier 4 crossings, a narrative explanation of the effect of the crossing on the tidal hydrograph, and the corresponding effect on the upstream and downstream tidal resource.*
   This project is a tier 3 crossing.

Env-Wt 903.06 Hydraulic Capacity Report. The applicant shall submit a hydraulic capacity report that includes drainage calculations and a narrative to demonstrate that the proposed stream crossing has sufficient hydraulic capacity to meet the applicable design standard with any application for:

a. *A new tier 3 or tier 4 stream crossing for which an alternative design is being submitted pursuant to Env-Wt 904.10; or*
   Not applicable to this project.
b. *A replacement tier 3 or tier 4 stream crossing for which the existing stream crossing cannot accommodate the design storm flow.*
   Based on the engineering study hydraulic report, the existing stream crossing can accommodate the design storm flow. Therefore, a hydraulic capacity report is not applicable to this project.

C-7 Abutter Notification

Abutters of the proposed project have been sent notification letters. The list of abutters is provided below. See attached example notification letter.

MAP 2 LOT 17
PATRICK M. MURRAY, 1995 TRUST
17 HILLCREST DRIVE
DOVER, NH 03820

MAP 2 LOT 18
NANCY J. MURRAY, 1995 TRUST
P MURRAY, CMABRIDGE TRUST COMPANY
49 SOUTH MAIN STREET, SUITE 203
CONCORD, NH 03301

MAP 2 LOT 19
THOMAS RAMSBOTHAM
CAROLYN J. RAMSBOTHAM
54 NUTE ROAD
MADBURY, NH 03823

MAP 4 LOT 15A
DAVID P. MARTIN
MICHELE J. MARTIN
50 NUTE ROAD
MADBURY, NH 03823

CMA ENGINEERS, INC.
CIVIL | ENVIRONMENTAL | STRUCTURAL

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Portsmouth
New Hampshire
03801-3819

P: 603|431|6196
www.cmaengineers.com

April 9, 2020

Patrick M. Murray, 1995 Trust
17 Hillcrest Drive
Dover, NH 03820

Re: Nute Road Bridge Replacement Project
Madbury, NH
Wetlands Application
Tax Map 2/ Lot 17
CMA #1162 CERTIFIED MAIL

Dear Sir or Madam:

On behalf of the Town of Madbury, we are writing this letter to provide notice that a Wetlands Permit Application will be filed with the New Hampshire Department of Environmental Services (NHDES) Wetland Bureau for a Wetlands and Non-Site Specific Permit associated with the above referenced project. The proposed project includes replacing the existing culvert at the Nute Road crossing of Bellamy River with a single span bridge. Removal of the existing culvert will require impacts to wetlands for which a Wetlands Permit is required. As an abutter to a property on which wetland impacts are proposed, we are required to notify you about the application under state law RSA 482-A:3 I (d)(1).

Once it is filed, the permit application, including plans that show the proposed project will be available for viewing at the Town Office, at 13 Town Hall Road, Madbury or at the NHDES offices by scheduling a file review by calling (603) 271- 8808 or online at https://www.des.nh.gov/organization/commissioner/pip/index.htm.

Should you have any questions, please feel free to call me at (207) 541-4223.

Very truly yours,
CMA ENGINEERS, INC.

Liam Kalloch, P.E.
Project Engineer

cc: Eric Fiegenbaum, Administrative Assistant, Town of Madbury

C-8 Property Owner Permissions

David P. Martin & Michele J. Martin
50 Nute Rd.
Madbury, NH 03823

Town of Madbury
13 Town Hall Road
Madbury, NH 03823

Re: Mutual Right of Way Agreement

This is a Mutual Right of Way Agreement between David P. Martin & Michele J. Martin (First Party) relating to the property at 50 Nute Road, Madbury, NH, Tax Map 4-15A, recorded at the Strafford County Registry of Deeds in Book 4045 Page 563, and the Town of Madbury (Second Party) relating to the Right of Way for Nute Road in Madbury, New Hampshire.

WHEREAS:

The First Party and the Second Party share a mutual border between their respective property and easement which is ambiguous; the parties wish to establish a mutual right of way over their respective property and easement for the benefit of the public due to the revised alignment of the Nute Road as it passes over the Bellamy River.

NOW THEREFORE in consideration of the mutual covenants and conditions hereinafter set forth and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. The First Party hereby grants to the Second Party a right of way for temporary work during construction and the permanent construction of the roadway embankment which may extend onto the First Party's property, as shown on a plan entitled Mutual Right of Way Agreement Plan prepared for the Town of Madbury by Doucet Survey, LLC, dated February 10, 2020, said plan recorded in the Strafford County Registry of Deeds as plan _____.

2. The foregoing description shall form a mutual right of way for the roadway embankment modification to support pedestrians and vehicles over the revised alignment of Nute Road over the Bellamy River.

3. The Second Party agrees to maintain the roadway and embankment in a good state of repair at its own cost.

4. This agreement shall inure to the benefit of and be binding upon the respective heirs, executors, administrators and assigns of each of the parties hereto.

5. This is the entire agreement between the parties. Any changes must be made in writing and signed by both parties. Any disputes must be brought in the State of New Hampshire.

6. This agreement shall be filed in the Registry of Deeds for the above-mentioned property.

IN WITNESS WHEROF this Agreement has been executed by the parties hereto as of the date written below.

David P. Martin
50 Nute Rd.
Madbury, NH 03823

Michele J. Martin
50 Nute Rd.
Madbury, NH 03823

Mr. Frederick Green
Chairman, Board of Selectmen
Town of Madbury, NH

State of New Hampshire
County of Stafford

This record was acknowledged before me on 3-16-2020 by DAVID P MARTIN AND MICHELE J MARTIN (First Party) and FREDERICK GREEN, SELECTMEN, TOWN OF MADBURY (Second Party).

Eric Fiegenbaum
Notary Public
My Commission Expires: 3-13-2024

ERIC N. FIEGENBAUM
MY COMMISSION EXPIRES MARCH 13, 2024
NOTARY PUBLIC
NEW HAMPSHIRE

Patrick M. Murray 1995 Trust, Patrick M. Murray, Trustee
17 Hillcrest Drive
Dover, NH 03820
and
Nancy J. Murray 1995 Trust, Patrick M. Murray, Trustee
49 South Main St. Suite 203
Concord, NH 03301

Town of Madbury
13 Town Hall Road
Madbury, NH 03823

Re: Mutual Right of Way Agreement

This is a Mutual Right of Way Agreement between Patrick M. Murray 1995 Trust, Patrick M. Murray, Trustee and Nancy J. Murray 1995 Trust, Patrick M. Murray, Trustee (First Party) relating to the property at Nute Road, Madbury, NH, Tax Map 2 Lots 17 and 18, recorded at the Strafford County Registry of Deeds in Book 4380 Page 0967 and Book 3485 and Page 0302 respectively, and the Town of Madbury (Second Party) relating to the Right of Way for Nute Road in Madbury, New Hampshire.

WHEREAS:

The First Party and the Second Party share a mutual border between their respective property and easement which is ambiguous; the parties wish to establish a mutual right of way over their respective property and easement for the benefit of the public due to the revised alignment of the Nute Road as it passes over the Bellamy River.

NOW THEREFORE in consideration of the mutual covenants and conditions hereinafter set forth and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. The First Party hereby grants to the Second Party a right of way for temporary work during construction and the permanent construction of the roadway embankment which may extend onto the First Party's property, as shown on a plan entitled Mutual Right of Way Agreement Plan prepared for the Town of Madbury by Doucet Survey, LLC, dated February 10, 2020, said plan recorded in the Strafford County Registry of Deeds as plan _____.

2. The foregoing description shall form a mutual right of way for the roadway embankment modification to support pedestrians and vehicles over the revised alignment of Nute Road over the Bellamy River.

3. The Second Party agrees to maintain the roadway and embankment in a good state of repair at its own cost.

4. This agreement shall inure to the benefit of and be binding upon the respective heirs, executors, administrators and assigns of each of the parties hereto.

5. This is the entire agreement between the parties. Any changes must be made in writing and signed by both parties. Any disputes must be brought in the State of New Hampshire.

6. This agreement shall be filed in the Registry of Deeds for the above-mentioned property.

IN WITNESS WHEROF this Agreement has been executed by the parties hereto as of the date written below.

Patrick Murray
_____, Attorney-in-Fact, POA
Nancy J. Murray 1995 Trust, Patrick M. Murray, Trustee
49 South Main St. Suite 203
Concord, NH 03301

Patrick Murray
_____, Attorney-in-Fact, POA
Patrick M. Murray 1995 Trust, Patrick M. Murray, Trustee
17 Hillcrest Drive
Dover, NH 03820

_____
Mr. Frederick Green
Chairman, Board of Selectmen
Town of Madbury, NH

ERIC N. FIEGENBAUM
MY COMMISSION EXPIRES MARCH 13, 2024
NOTARY PUBLIC
NEW HAMPSHIRE

State of New Hampshire
County of Stafford

This record was acknowledged before me on MARCH 2, 2020 by PATRICK M. MURRAY by ABIGAIL DROBISEWSKI (First Party) and FREDERICK GREEN, TOWN OF MADBURY (Second Party).

Eric Fiegenbaum _____
Notary Public
My Commission Expires: MARCH 13, 2020

Mr. Thomas Ramsbotham & Mrs. Carolyn J. Ramsbotham
54 Nute Road
Madbury, NH 03823

Town of Madbury
13 Town Hall Road
Madbury, NH 03823

Re: Mutual Right of Way Agreement

This is a Mutual Right of Way Agreement between Mr. Thomas Ramsbotham & Mrs. Carolyn J. Ramsbotham (First Party) relating to the property at Nute Road, Madbury, NH, Tax Map 2 Lot 19, recorded at the Strafford County Registry of Deeds in Book 0885 Page 0334 and the Town of Madbury (Second Party) relating to the Right of Way for Nute Road in Madbury, New Hampshire.

WHEREAS:
The First Party and the Second Party share a mutual border between their respective property and easement which is ambiguous; the parties wish to establish a mutual right of way over their respective property and easement for the benefit of the public due to the revised alignment of the Nute Road as it passes over the Bellamy River.

NOW THEREFORE in consideration of the mutual covenants and conditions hereinafter set forth and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. The First Party hereby grants to the Second Party a right of way for temporary work during construction and the permanent construction of the roadway embankment which may extend onto the First Party's property, as shown on a plan entitled Mutual Right of Way Agreement Plan prepared for the Town of Madbury by Doucet Survey, LLC, dated February 10, 2020, said plan recorded in the Strafford County Registry of Deeds as plan _____.

2. The foregoing description shall form a mutual right of way for the roadway embankment modification to support pedestrians and vehicles over the revised alignment of Nute Road over the Bellamy River.

3. The Second Party agrees to maintain the roadway and embankment in a good state of repair at its own cost.

4. The Second Party agrees to cut and stack any trees removed from the First Party's property due to the revised alignment in a location acceptable to the First Party.

5. This agreement shall inure to the benefit of and be binding upon the respective heirs, executors, administrators and assigns of each of the parties hereto.

6. This is the entire agreement between the parties. Any changes must be made in writing and signed by both parties. Any disputes must be brought in the State of New Hampshire.

7. This agreement shall be filed in the Registry of Deeds for the above-mentioned property.

IN WITNESS WHEROF this Agreement has been executed by the parties hereto as of the date written below.

Thomas Ramsbotham

Mr. Thomas Ramsbotham
54 Nute Road
Madbury, NH 03823

Carolyn J Ramsbotham

Mrs. Carolyn J. Ramsbotham
54 Nute Road
Madbury, NH 03823

Frederick W Green

Mr. Frederick Green
Chairman, Board of Selectmen
Town of Madbury, NH 03823

State of New Hampshire
County of Stafford

This record was acknowledged before me on NOVEMBER 27, 2019 by THOMAS AND CAROLYN RAMSBOTHAM (First Party) and TOWN OF MADBURY, FREDERICK GREEN (Second Party).

ERIC N. FIEGENBAUM
MY COMMISSION EXPIRES MARCH 13, 2024
NOTARY PUBLIC
NEW HAMPSHIRE

Eric Fiegenbaum Eric Fiegenbaum

Notary Public
My Commission Expires: MARCH 13, 2024

C-9 Project Design Considerations

The project design considerations in Env-Wt 313 have been met.

- For Functional Assessment, see Appendix C-20
- For Avoidance and Minimization, see Appendix C-18
- Mitigation is not required per Env-Wt 313.04
- For Resource-Specific criteria, see Appendices A-3 and C-5
- For Project-Specific criteria, see Appendices A-4 and C-6
- For abutting property and setback information, see Appendices C-7 and C-8
- Fill will not be placed in a jurisdictional area to achieve setbacks

C-10 Town Tax Maps

Town of Madbury, New Hampshire
Tax Parcel Map 2

14 C — Tax Parcel [lot sublot]

Adjacent Map tax parcels

0 500 1,000 2,000 Feet

Surface water and railroad features from NH GRANIT GIS database.

Revised 11/2016

Barrington

Patrick M. Murray, 1995 Trust
17 Hillcrest Drive
Dover, NH 03820

Nute Road Bridge
over Bellamy River

Nancy J. Murray, 1995 Trust
P. Murray, Cambridge Trust Company
49 South Main Street, Suite 203
Concord, NH 03301

Thomas Ramsbotham
Carolyn J. Ramsbotham
54 Nute Road
Madbury, NH 03823

S.R. 9
Littleworth Road (S.R. 9)
Huckins Road
Huckins Road (VT)
Long Hill Road (VT)
Long Hill Circle
Champernowne
Moss Lane
Old Stage Road
Farm Way
Mill Hill Road
Hook Mill Road (VT)
Andrew Way
Fitch Road
Fancy Hill
Nute Road
Hayes Road
Town Hall Rd
Madbury Woods

Town of Madbury, New Hampshire
Tax Parcel Map 4

14 C — Tax Parcel [lot sublot]

Adjacent Map tax parcels

0 500 1,000 2,000 Feet

Surface water and railroad features from NH GRANIT GIS database. Revised 11/2016

Nute Road Bridge over Bellamy River

David P. Martin
Michele J. Martin
50 Nute Road
Madbury, NH 03823

Nute Road
Hook Mill Road (V2)
Hayes Road
Town Hall Rd.
Madbury Woods
Cherry Lane
Cherry Lane (VI)
Moharimet Drive
Hayes Road
unknown

15A 15 14 13 12 11 10 9 9 D1,2 9 C 9 B 9 A 8 A 8 8 B 7 14 A 14 B 14 C 4 B 4 4 A 3 3 A 2 A 2 1 A 1 1 B1,2 5 5 A 6 6 A 6 B 16 17 18 19 20 21 22 23 23 A 23 B 23 C 23 D 23 E 23 F 23 G 23 H 23 I 23 J 23 K 23 L 23 M 23 N 23 O 23 P 23 Q 23 R 23 S 23 T 23 U 23 V 23 W 23 X 23 Y 23 Z 24 24 A 24 B 24 C 24 D 24 E 24 F 24 G 24 H 24 I 24 M 25 26 27 28

Barrington
Lee
Durham
Lee

C-11 Photographs

Photo 1 – Bellamy River downstream (looking east)
October 10, 2018

Photo 2 – Bellamy River upstream (looking west)
October 10, 2018

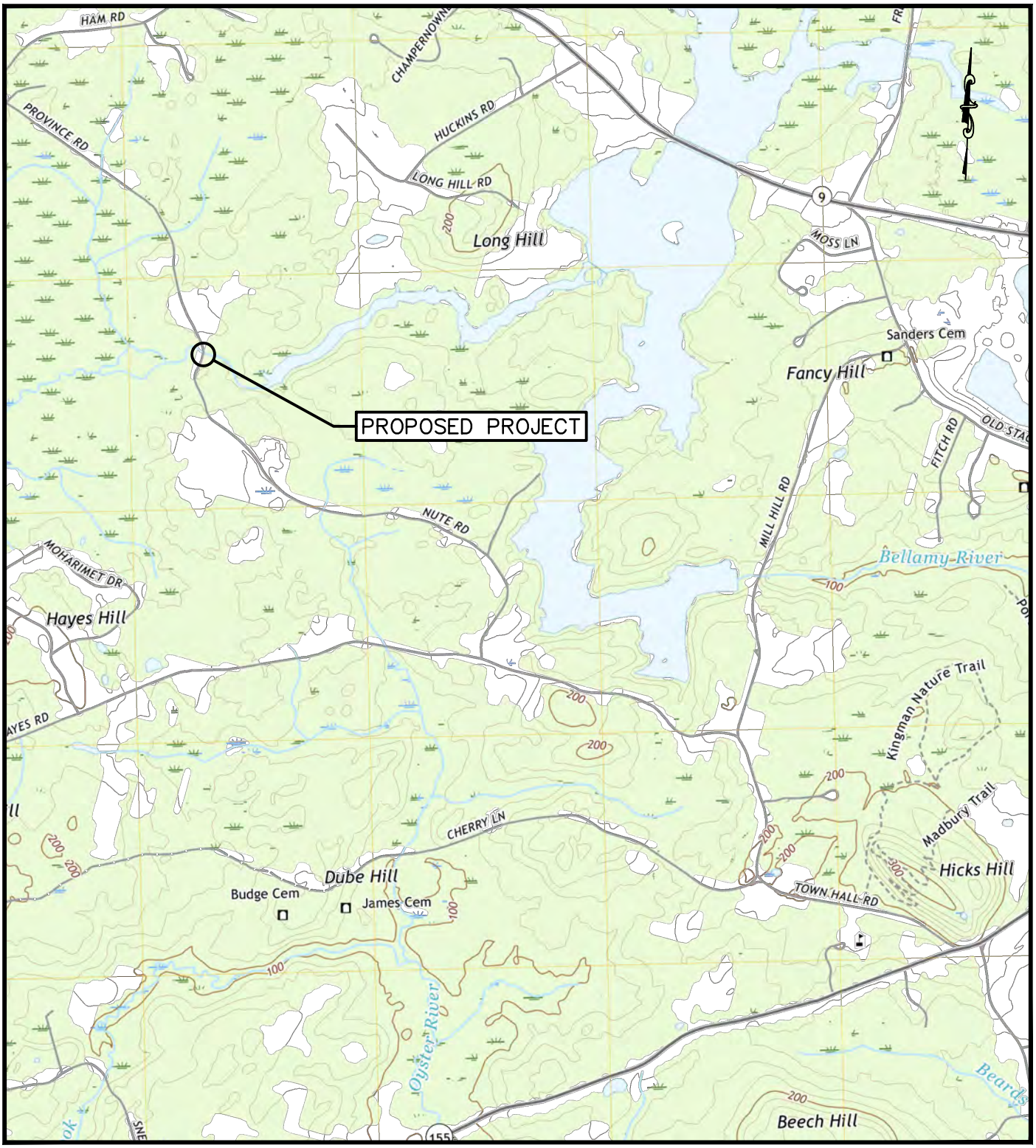
Photo 3 - Bridge elevation looking east
September 10, 2012

Photo 4 - Bridge elevation looking west
August 31, 2012

Photo 5: Nute Road looking north
June 12, 2017

Photo 6: Nute Road looking south
June 12, 2017

C-12 USGS & Watershed Maps

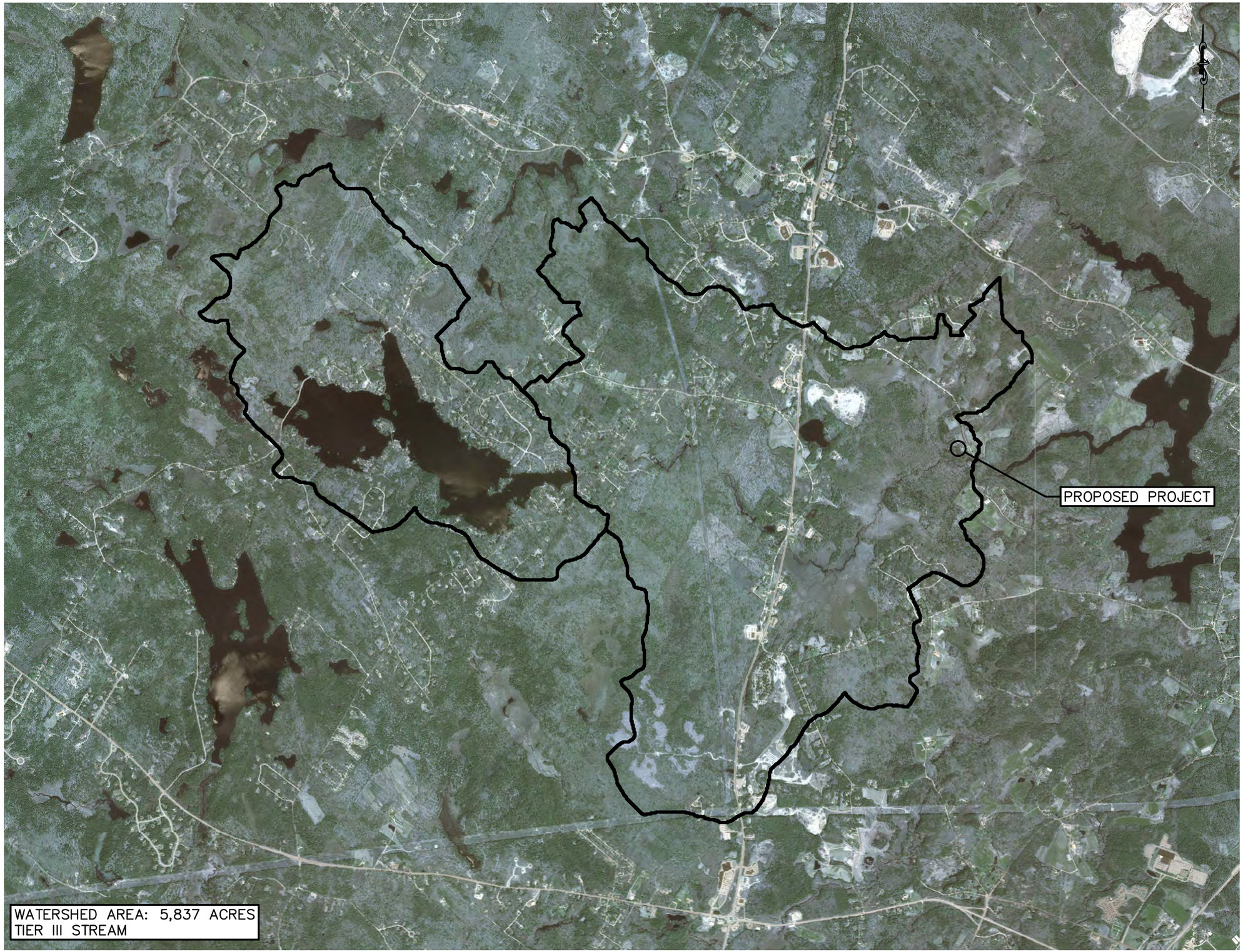


CMA ENGINEERS
CIVIL/ENVIRONMENTAL/STRUCTURAL
Portsmouth, NH • Manchester, NH • Portland, ME
603/431-6196 • 603/627-0708 • 207/541-4223
c m a e n g i n e e r s . c o m

Town of Madbury
Administrative Offices
Nute Road Crossing Bridge Replacement
USGS Map

February 2020

Scale: 1" = 2,000'



CMA
ENGINEERS
CIVIL/ENVIRONMENTAL/STRUCTURAL
Portsmouth, NH Manchester, NH Portland, ME
603/431-6196 603/627-0708 207/541-4223
cmaengineers.com

Town of Madbury
Administrative Offices
Nute Road Crossing Bridge Replacement
Watershed Map

February 2020

Scale: 1" = 3,000'

F:\CADD\PROJECTS\1113 Madbury\Figures\1113 - USGS Map.dwg Date Plotted: Feb 27, 2020 - 2:23pm

C-13 Work Sequence Narrative

The project is currently in the final design stages. The final plans and specifications are expected to be completed by the end of April 2020, and the project will likely be bid in May.

Construction is expected to start at the beginning of June 2020. It is recommended that the bridge be replaced with full closure of the roadway rather than phased construction. The closure of Nute Road is planned for early July, is expected to be closed for 13 weeks, and is planned to reopen at the end of September. Substantial completion and final completion are anticipated to be in early October and early November, respectively.

The following construction sequence for bridge replacement activities is proposed:

1. Install road/lane closure signs and barriers, temporary water diversion device(s), and erosion control
2. Verify horizontal and vertical datum
3. Sawcut pavement and remove existing guardrail within project limits
4. Excavate and remove existing CMP culvert
5. Install foundations and form, install reinforcing and cast abutments
6. Form, install reinforcing, and cast wing walls
7. Backfill using proper compaction techniques
8. Perform channel work and install riprap
9. Place precast prestressed deck beams and install grout and post-tensioning
10. Form, install reinforcing, and cast deck overlay and both closure pours
11. Form, install reinforcing, and cast curbing and sidewalk
12. Form, install reinforcing, and cast approach slabs for roadway and sidewalk
13. Install slope protection
14. Remove temporary diversion devices
15. Construct road as shown in plans
16. Install loam and seed over all disturbed areas
17. Remove all erosion control devices

C-14 NHB Memo

See Appendix B-3.

C-15 Local Conservation Commission Comments

MADBURY CONSERVATION COMMISSION

13 TOWN HALL ROAD
MADBURY, NEW HAMPSHIRE 03823

April 3, 2020

NH Department of Environmental Services
Wetlands Bureau
29 Hazen Drive
PO Box 95
Concord, NH 03302-009529

Re: *Standard Dredge and Fill, Nute Road Crossing Bridge Replacement, Town of Madbury, CMA Engineers.*

Dear Wetland Bureau,

The Madbury Conservation Commission has reviewed a draft wetlands application for the Town of Madbury's replacement of the Nute Road Bridge over the Bellamy River in Madbury, NH.

We had one question and one comment on the application. These were addressed to our satisfaction by CMA acting for the applicant, the Town of Madbury, NH.

The Conservation Commission has no outstanding comments or questions regarding the project as proposed.

Sincerely,

Eric Fiegenbaum

Eric Fiegenbaum
Chair, Madbury Conservation Commission

Whitney Chamberlain

From: Liam Kalloch
Sent: Wednesday, March 25, 2020 1:49 PM
To: Madbury Admin Asst
Subject: RE: ROW agreements

Eric,

Please see the comment responses below.

1. Headwalls (wingwalls) – The wingwalls at all 4 corners of the bridge have been properly sized to account for the proposed site grading. The proposed length of the wingwalls will allow for a slope grade of 2:1 (max) from the ground elevation along the face of the abutment up to the elevation along the shoulder of the roadway. This is shown on the Elevation detail included on Sheet W-2 of the previously submitted Wetland Permit Plans.
2. As discussed during our phone conversation, the Functional Assessment component of the Wetlands Permit Application is to be included in a follow up submittal to NHDES. This is due to scheduling conflicts with sub-consultants due to the updates to the permitting process requirements which arose mid project. Given the limited area of permanent wetland impacts, and the fact that the proposed channel has been designed to closely match upstream and downstream conditions, the potential for notable impacts to the function and value of adjacent wetlands is minimal. A final copy of the Functional Assessment conducted by the certified wetlands scientist will be provided to the Town upon its completion.

Please let me know if any further information is needed for the Con. Com to complete its review and issue the letter we discussed.

Thank you,

Liam B. Kalloch, P.E.

CMA ENGINEERS

10 Free Street
Portland, Maine 04101
207.541.4223
lkalloch@cmaengineers.com

Follow Us On LinkedIn

From: Madbury Admin Asst <adminmadbury@comcast.net>
Sent: Monday, March 23, 2020 2:18 PM
To: Liam Kalloch <lkalloch@cmaengineers.com>
Subject: RE: ROW agreements

The only comment I have is the one I passed along - regarding as to whether the headwall on the upstream side, Martin side is large enough.

Is the Functional Assessment about wetland function and values? If so that may be the only undone section that the CC may want to see. If not, then a short answer to the headwall question should be sufficient to report that there are no negative nor significant comments from the CC. I and another member can write that letter and get it out quickly.
If there is a draft or rough statement on the FA, then we might be able to comment on that.
Eric

Eric Fiegenbaum, Administrator
Town of Madbury
(603) 742-5131 x1

C-16 Federal Agency Comments

Whitney Chamberlain

From: Whitney Chamberlain
Sent: Friday, February 28, 2020 12:28 PM
To: vonOettingen, Susi
Subject: RE: Nute Road Bellamy River Crossing Replacement - Bridge No. 056/072 - Endangered Species Review

Hi Susi,

Correct, the area of impact is small and limited to the edge of the road, culvert, and embankments. We will move forward with the assumption that we are not in small whorled pogonia habitat.

Thank you,
Whitney

Whitney A. Chamberlain, P.E.
Project Engineer

CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

P: 603-431-6196
C: 207-615-7116
www.cmaengineers.com

From: vonOettingen, Susi <susi_vonoettingen@fws.gov>
Sent: Monday, February 10, 2020 7:42 AM
To: Whitney Chamberlain <WChamberlain@cmaengineers.com>
Subject: Re: Nute Road Bellamy River Crossing Replacement - Bridge No. 056/072 - Endangered Species Review

Good morning,

I assume that very little of the forested habitat will be disturbed, basically the vegetation on either side of the road? If so, it is not likely that small whorled pogonia would be present within 30 feet or so of the culvert. However, the forested habitat does look like potential habitat. If the area of impact is small and limited to the culvert, embankments and area that has little to no canopy, then I would consider the project would not be in small whorled pogonia habitat.

Susi

****

Susi von Oettingen
Endangered Species Biologist
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301

(603) 227-6418 (direct line)

From: Whitney Chamberlain <WChamberlain@cmaengineers.com>
Sent: Friday, February 7, 2020 2:30 PM
To: vonOettingen, Susi <susi_vonoettingen@fws.gov>
Cc: Josh Bouchard <jbouchard@cmaengineers.com>; Liam Kalloch <lkalloch@cmaengineers.com>
Subject: [EXTERNAL] Nute Road Bellamy River Crossing Replacement - Bridge No. 056/072 - Endangered Species Review

Hi Susi,

CMA Engineers has completed an endangered species review on the IPaC website as part of a wetlands permit for a proposed bridge replacement project in Madbury, NH. Our results indicate that the Small Whorled Pogonia is a potential threatened species (see attached Species List).

The proposed project aims to replace the culvert that carries Nute Road over the Bellamy River, bridge 056/072, in the Town of Madbury. This work is necessary to address the deteriorating condition of the existing steel pipe arch and the hydraulic opening which does not meet current stream crossing guidelines. Nute Road is a municipal road running generally southeast to northwest from Hayes Road to the town line with Barrington. Please see attached USGS map and representative photos of the existing bridge.

Could you please advise on the potential for the project to effect the Small Whorled Pogonia?

Thank you,
Whitney

Whitney A. Chamberlain, P.E.
Project Engineer

CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

P: 603-431-6196
C: 207-615-7116
www.cmaengineers.com

Whitney Chamberlain

From: Martin, Rebecca <Rebecca.Martin@dot.nh.gov>
Sent: Monday, March 9, 2020 11:02 AM
To: Whitney Chamberlain
Subject: RE: 1162 Madbury Nute Road Crossing Bridge Replacement

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: High Importance

Hello Whitney,

I am happy to help; could you please send me the project number when you have a chance?

The 4(d) determination key is the appropriate review for NLEB for a state funded project. Unless you have done an acoustic survey to demonstrate that NLEB are not in the habitat, we would assume they are present and any tree clearing may affect them. The importance of not having hibernacula or known maternity roost trees in the area is that it allows you to use the 4(d) rule for the project. The 4(d) rule basically is a protection of the most sensitive parts of the NLEB life cycle (roosting and young). If you were near these resources, you couldn't use the 4(d) rule. The 4(d) rule does not say that the project wouldn't have an effect on NLEB, it says that any incidental take from projects that qualify for the 4(d) rule is not prohibited. Your consistency letter is probably correct and you would explain in your environmental document that the project is consistent with those reviewed in the USFWS BO for the 4(d) rule and that it wouldn't result in any prohibited take of the species. Does that make sense?

Please feel free to give me a call if you have any additional questions.

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: Whitney Chamberlain <WChamberlain@cmaengineers.com>
Sent: Friday, March 6, 2020 5:00 PM
To: Martin, Rebecca <Rebecca.Martin@dot.nh.gov>
Subject: FW: 1162 Madbury Nute Road Crossing Bridge Replacement

Hi Rebecca,
I'm emailing you regarding the Madbury Nute Road Crossing Bridge Replacement project. I need your help to complete the ESA Section 7 Consultation.

This project is not funded by FHWA, FRA, or FTA; instead it is funded by the New Hampshire State Aid Bridge program. However, we chose to complete the optional 4(d) Rule determination key on IPaC and the result was that the project "may affect" the Northern Long-Eared Bat (NLEB). A consistency letter has been generated. We believe that the project will not affect the NLEB, because Kim Tuttle from NH Fish & Game explained that there were no known hibernacula or known maternity roost trees in the area.

Additional project information:

- We will be removing some trees that are within slope limits for the bridge and four trees on an abutters property that are close to the slope limits that the owner would prefer to remove due to safety concerns
- The project will not relocate the road to above the tree canopy
- The project will not use percussives for anything except bridge-related work
- The project does not include slash-pile burning
- There are no caves or mines on the site
- This project does not include temporary or permanent lighting
- Work will be done during the active season (April-October)

Could you please let us know if you concur that bats will not likely be affected by this project?

Thank you,
Whitney

Whitney A. Chamberlain, P.E.
Project Engineer

CMA ENGINEERS

CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

P: 603-431-6196
C: 207-615-7116
www.cmaengineers.com

From: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Sent: Monday, March 2, 2020 2:34 PM
To: Whitney Chamberlain <WChamberlain@cmaengineers.com>
Subject: RE: 1162 Madbury Nute Road Crossing Bridge Replacement

Hello Whitney,

The NHB review indicates no known hibernacula or known maternity roost trees in the area. There is a Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat for FHWA projects. Rebecca Martin at NHDOT may be able to help you; more here: https://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/long-eared-bat.htm

Thanks,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
11 Hazen Drive

Concord, NH 03301
603-271-6544

From: Whitney Chamberlain <WChamberlain@cmaengineers.com>
Sent: Monday, March 2, 2020 9:49 AM
To: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Cc: Josh Bouchard <jbouchard@cmaengineers.com>; Liam Kalloch <lkalloch@cmaengineers.com>
Subject: 1162 Madbury Nute Road Crossing Bridge Replacement

Hi Kim,
I'm emailing to follow up on my voicemail to you the other day regarding the Madbury Nute Road Crossing Bridge Replacement project. We need your help to complete the Information for Planning & Consultation (IPaC) bat survey.

Our experience with this survey is that it typically generates a "not likely to affect" statement, but for this project the results explained that we needed to "contact the appropriate USFWS office for additional assistance with your project". We reached out to Maria Tur, who directed us to you. Please review the attached bat survey. We boxed the questions we are unsure of in red. We mainly need to know if there is suitable bat habitat and/or known hibernacula in the project area, and if presence/probable absence surveys have been conducted. Is this information online? We could only find summer survey guidance online, but no information regarding past surveys conducted or suitable habitat/hibernacula location.

In case you want to reference the NHB review for this project, the number is #NHB20-0162.

Let me know if you have questions.

Best,
Whitney

Whitney A. Chamberlain, P.E.
Project Engineer

CMA ENGINEERS

CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

P: 603-431-6196
C: 207-615-7116
www.cmaengineers.com

C-17 Stream Crossing Worksheet

WETLANDS PERMIT APPLICATION
STREAM CROSSING WORKSHEET

Land Resources Management
Wetlands Bureau

RSA 482-A/ Env-Wt-900

NOTE: This worksheet can be used to accompany Wetlands Permit Applications when proposing stream crossings.

1. Tier Classifications

Determine the contributing watershed size at USGS StreamStats

Note: Plans for Tier 2 and 3 crossings shall be designed and stamped by a professional engineer who is licensed under RSA 310-A to practice in New Hampshire.

Size of contributing watershed at the crossing location:	**5837** acres

☐ **Tier 1**: A *tier 1* stream crossing is a crossing located on a watercourse where the contributing watershed size is less than or equal to 200 acres

☐ **Tier 2**: A *tier 2* stream crossing is a crossing located on a watercourse where the contributing watershed size is greater than 200 acres and less than 640 acres

☒ **Tier 3**: A *tier 3* stream crossing is a crossing that meets any of the following criteria:

- ☒ On a watercourse where the contributing watershed is more than 640 acres
- ☐ Within a Designated River Corridor
- ☒ On a watercourse that is listed on the surface water assessment 305(b) report
- ☒ Within a 100-year floodplain (see *section 2* below)
- ☐ In a jurisdictional area having any protected species or habitat (NHB DataCheck)
- ☐ In or within 100 feet of a Prime Wetland

2. 100-year Floodplain

Use the FEMA Map Service Center to determine if the crossing is located within a 100-year floodplain. Please answer the questions below:

☐ **No**: The proposed stream crossing *is not* within the FEMA 100-year floodplain.

☒ **Yes**: The proposed project *is* within the FEMA 100-year floodplain. Zone = _____**A**_____

☒ Elevation of the 100-year floodplain at the inlet: __**145.9**____ feet (FEMA El. or Modeled El.)

3. Calculating Peak Discharge

Existing 100-year peak discharge (Q) calculated in cubic feet per second (CFS): _____**830**_____ CFS	Calculation method: **TR-20 & TR-55**
Estimated Bankfull discharge at the crossing location: _____**136**_____ CFS	Calculation method: **TR-20 & TR-55**

➡ ***Note: If Tier 1 then skip to Section 10*** ⬅

4. Predicted Channel Geometry based on Regional Hydraulic Curves

*For **Tier 2** and **Tier 3** Crossings Only*

Bankfull Width: _____**30.5**____ feet	Mean Bankfull Depth: _____**4.5**_____ feet
Bankfull Cross Sectional Area: _____**80**_____ square feet	

5. Cross Sectional Channel Geometry: Measurements of the Existing Stream within a Reference Reach

*For **Tier 2** and **Tier 3** Crossings Only*

Describe the reference reach location: **134ft US to 224ft DS**

Reference reach watershed size: _____**5837**_____ acres

Parameter	**Cross Section 1** Describe bed form ___**Pool**___ (*e.g. pool, riffle, glide*)	**Cross Section 2** Describe bed form ___**Pool**___ (*e.g. pool, riffle, glide*)	**Cross Section 3** Describe bed form ___**Pool**___ (*e.g. pool, riffle, glide*)	**Range**
Bankfull Width	_____**22.5**____ **feet**	_____**26**_____ **feet**	_____**23**_____ **feet**	___**22.5 to 26**___ **feet**
Bankfull Cross Sectional Area	_____**13**_____ **SF**	_____**32**_____ **SF**	_____**36**_____ **SF**	___**13 to 36**____ **SF**
Mean Bankfull Depth	_____**0.6**_____ **feet**	_____**1.4**_____ **feet**	_____**1.7**_____ **feet**	___**0.6 to 1.7**____ **feet**
Width to Depth Ratio	_____**37.5**_____	_____**22.9**_____	_____**21.2**_____	__**21.2 to 37.5**___
Max Bankfull Depth	_____**0.7**_____ **feet**	_____**1.7**_____ **feet**	_____**1.7**_____ **feet**	___**0.7 to 1.7**____ **feet**
Flood Prone Width	____**29.2**____ **feet**	_____**50.9**____ **feet**	_____**62.4**_____ **feet**	___**29.2 to 62.4**__ **feet**
Entrenchment Ratio	_____**1.3**_____	_____**2.0**_____	_____**2.7**_____	___**1.3 to 2.7**____

*Use **Figure 1** below to determine the measurements of the Reference Reach Attributes*

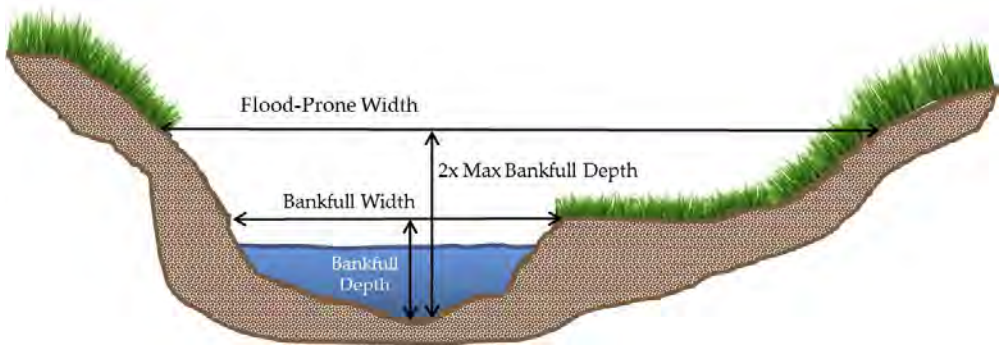


Figure 1: Determining the Reference Reach Attributes

6. Longitudinal Parameters of the Reference Reach and Crossing Location

*For **Tier 2** and **Tier 3** Crossings Only*

Average Channel Slope of the Reference Reach: __**0.002 ft/ft**____

Average Channel Slope at the Crossing Location: ____**0.0 ft/ft**___

7. Plan View Geometry

*For **Tier 2** and **Tier 3** Crossings Only*

Sinuosity of the Reference Reach: ____**1.05**_____

Sinuosity of the Crossing Location: _____**0.00**_____

Note: Sinuosity is measured a distance of at least 20 times bankfull width, or 2 meander belt widths

8. Substrate Classification based on Field Observations *For **Tier 2** and **Tier 3** Crossings Only*	
% of reach that is *bedrock*	0 %
% of reach that is *boulder*	</=5 %
% of reach that is *cobble*	0 %
% of reach that is *gravel*	5 %
% of reach that is *sand*	50 %
% of reach that is *silt*	40G %

9. Stream Type of Reference Reach *For **Tier 2** and **Tier 3** Crossings Only*	
Stream Type of Reference Reach:	G5c

*Refer to Rosgen Classification Chart (**Figure 2**) below*

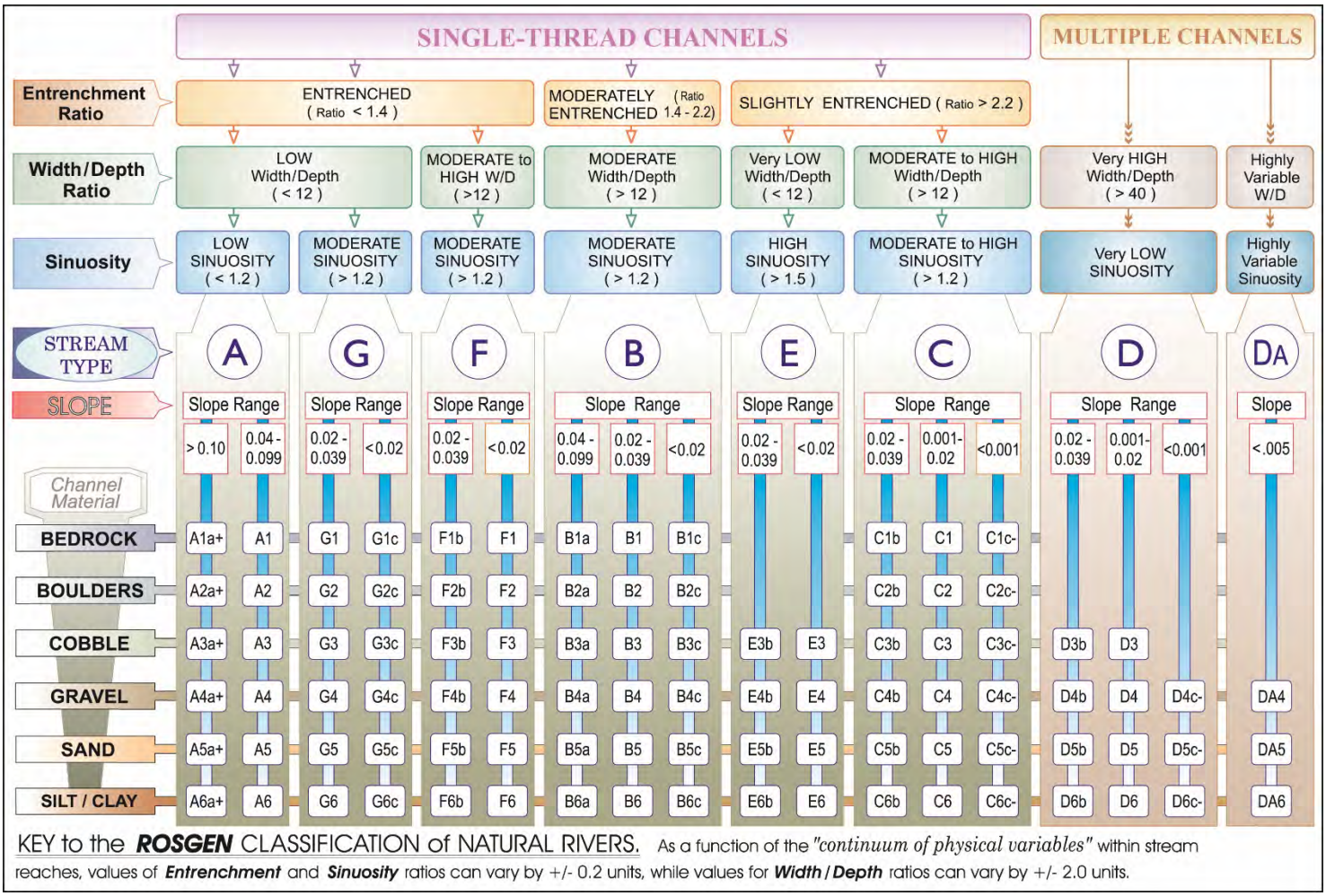


Figure 2. Reference from Applied River Morphology, Rosgen, 1996

8. Substrate Classification based on Field Observations *For **Tier 2** and **Tier 3** Crossings Only*	
% of reach that is *bedrock*	10 %
% of reach that is *boulder*	</=5 %
% of reach that is *cobble*	>/=50 %
% of reach that is *gravel*	</=20 %
% of reach that is *sand*	</=10 %
% of reach that is *silt*	</=5 %

9. Stream Type of Reference Reach *For **Tier 2** and **Tier 3** Crossings Only*	
Stream Type of Reference Reach:	G3 or G4

*Refer to Rosgen Classification Chart (**Figure 2**) below*

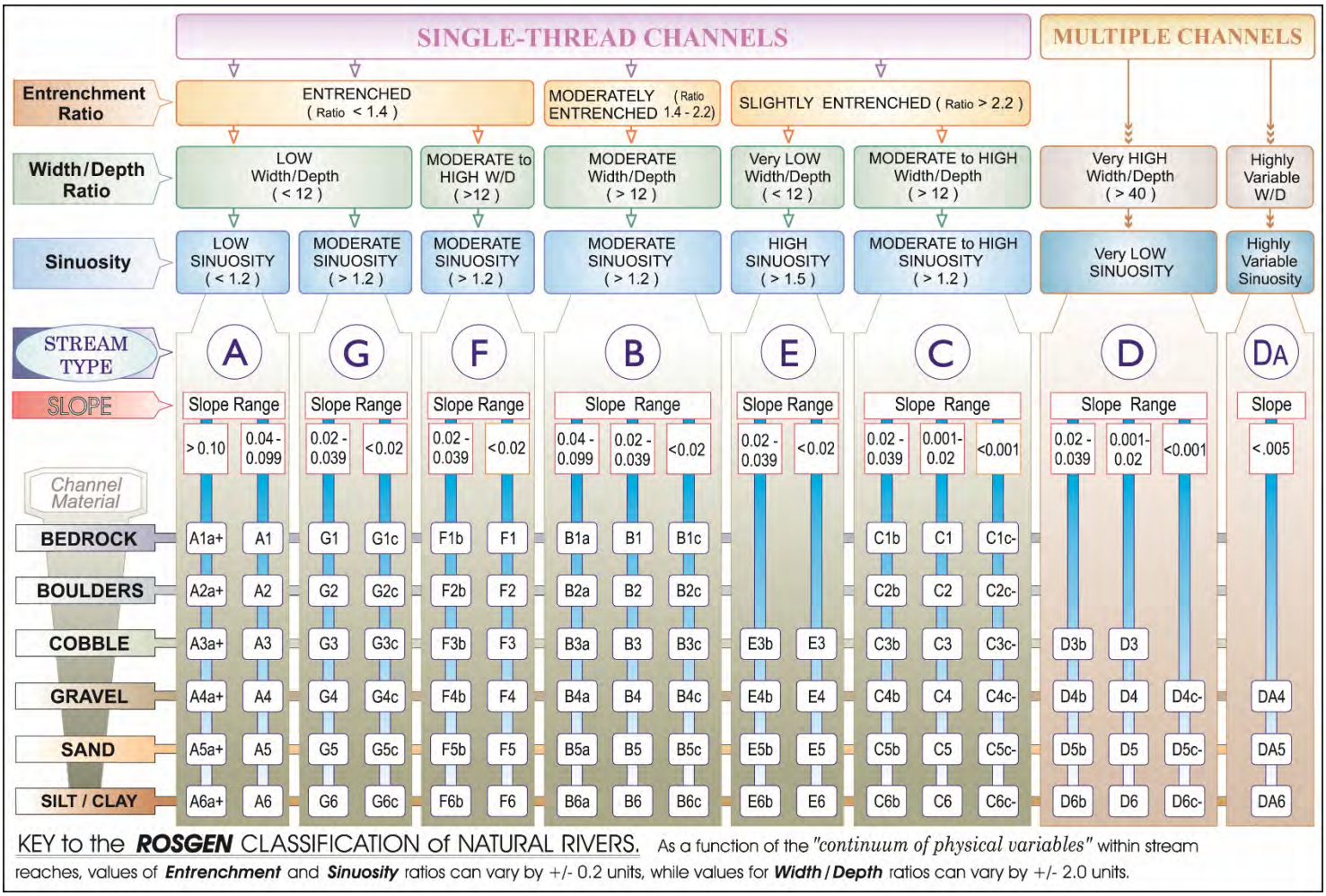


Figure 2. Reference from Applied River Morphology, Rosgen, 1996

10. Crossing Structure Metrics

Existing Conditions

Existing Structure Type:	☐ Bridge Span ☒ Pipe Arch ☐ Open-bottom Culvert ☐ Closed-bottom Culvert ☐ Closed-bottom Culvert with stream simulation ☐ Other: _____	
Existing Crossing Span *(perpendicular to flow)*	_____15.3_____ feet	**Culvert Diameter** _____15.3_____ feet **Inlet Elevation** _____140.3 ft____
Existing Crossing Length *(parallel to flow)*	_____40_____ feet	**Outlet Elevation** _____140.3 ft____ **Culvert Slope** _____0%_____

Proposed Conditions

Proposed Structure Type:	**Tier 1**	**Tier 2**	**Tier 3**	**Alternative Design**
Bridge Span	☐	☐	☒	☐
Pipe Arch	☐	☐		☐
Closed-bottom Culvert	☐	☐		☐
Open-bottom Culvert	☐	☐	☐	☐
Closed-bottom Culvert with stream simulation	☐	☐	☐	☐

Proposed structure Span *(perpendicular to flow)*	_____33_____ feet	**Culvert Diameter** _____ feet **Inlet Elevation** _____
Proposed Structure Length *(parallel to flow)*	_____29_____ feet	**Outlet Elevation** _____ **Culvert Slope** _____
Proposed Entrenchment Ratio* *For **Tier 2** and **Tier 3** Crossings Only*	_____1.25_____	*Note: To accommodate the entrenchment ratio, floodplain drainage structures may be utilized*

* *Note: Proposed Entrenchment Ratio must meet the minimum ratio for each stream type listed in **Figure 3**, otherwise the applicant must address the Alternative Design criteria listed in Env-Wt 904.09*

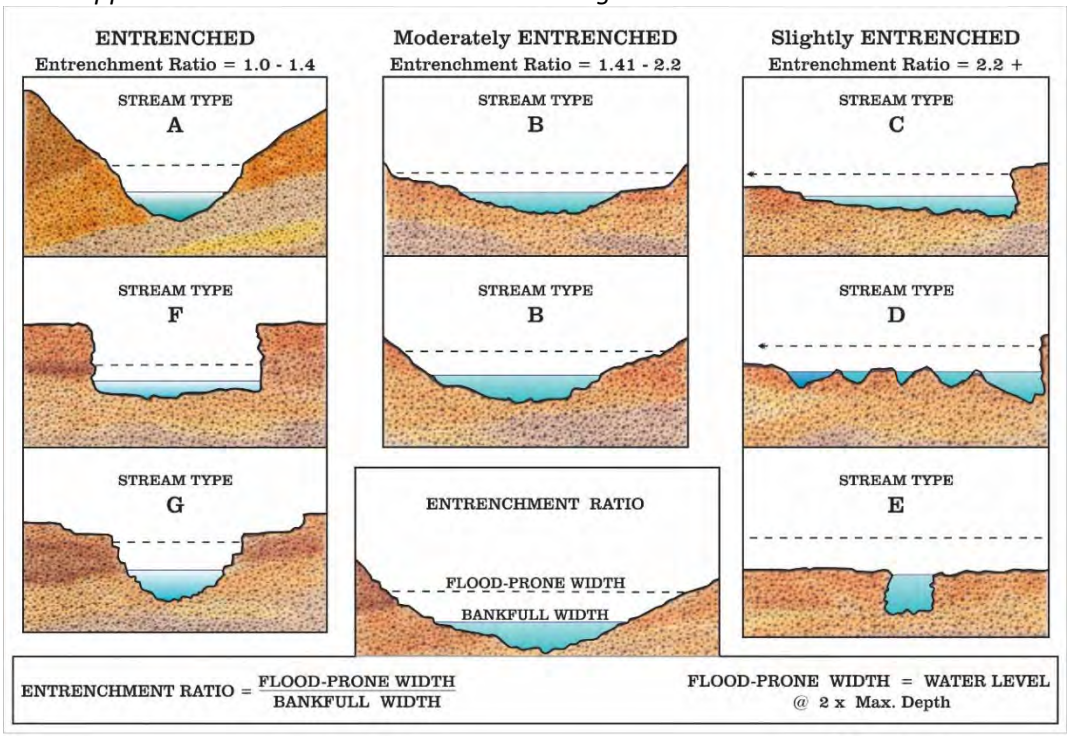


Figure 3. Reference from Applied River Morphology, Rosgen, 1996

11. Crossing Structure Hydraulics

	Existing	Proposed
100 year flood stage elevation at inlet	145.67 ft	145.93 ft
Flow velocity at outlet in feet per second (FPS)	9 fps	8.09 fps
Calculated 100 year peak discharge (Q) for the proposed structure in CFS		830 cfs
Calculated 50 year peak discharge (Q) for the proposed structure in CFS		501 cfs

12. Crossing Structure Openness Ratio

*For **Tier 2** and **Tier 3** Crossings Only*

Crossing Structure Openness Ratio = 7.83

Openness box culvert = (height x width)/length

Openness round culvert = (3.14 x radius^2)/length

13. General Design Considerations

Env-Wt 904.01 requires all stream crossings to be designed and constructed according to the following requirements. Check each box if the project meets these general design considerations.

All stream crossings shall be designed and constructed so as to:

- ☒ Not be a barrier to sediment transport.
- ☒ Prevent the restriction of high flows and maintain existing low flows.
- ☒ Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.
- ☒ Not cause an increase in the frequency of flooding or overtopping of banks.
- ☒ Preserve watercourse connectivity where it currently exists.
- ☒ Restore watercourse connectivity where:
  (1) Connectivity previously was disrupted as a result of human activity(ies); and
  (2) Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both.
- ☒ Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.
- ☒ Not cause water quality degradation.

14. Tier Specific Design Criteria

Stream crossings must be designed in accordance with the Tier specific design criteria listed in Part Env-Wt 904.

☒ The proposed project meets the Tier specific design criteria listed in Part Env-Wt 904 and each requirement has been addressed in the plans and as part of the wetland application.

15. Alternative Design

NOTE: If the proposed crossing does not meet all of the general design considerations, the Tier specific design criteria, or the minimum entrenchment ratio for each given stream type listed in **Figure 3**, then an alternative design plan and associated requirements must be addressed pursuant to Env-Wt 904.09.

☐ I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.09

C-18 Avoidance and Minimization Narrative and Checklist

AVOIDANCE AND MINIMIZATION WRITTEN NARRATIVE

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.04(j); Env-Wt 311.07; Env-Wt 313.01(a)(1),b; Env-Wt 313.01(c)

APPLICANT LAST NAME, FIRST NAME, M.I.: Fiegenbaum, Eric

An applicant for a standard permit shall submit with the permit application a written narrative that explains how all impacts to functions and values of all jurisdictional areas have been avoided and minimized to the maximum extent practicable. This attachment can be used to guide this narrative (attach additional pages if needed). Alternatively, the applicant may attach a completed Avoidance and Minimization Checklist (NHDES-W-06-050) to the permit application.

SECTION 1 - WATER ACCESS STRUCTURES (Env-Wt 311.07(b)(1))

Is the primary purpose of the proposed project to construct a water access structure?

No, the primary purpose of the project is to replace an existing bridge structure.

SECTION 2 - BUILDABLE LOT (Env-Wt 311.07(b)(1))

Does the proposed project require access through wetlands to reach a buildable lot or portion thereof?

No, the project requires access through wetlands to replace an existing bridge structure, not to reach a buildable lot.

SECTION 3 - AVAILABLE PROPERTY (Env-Wt 311.07(b)(2))

For any project that proposes permanent impacts of more than one acre or that proposes permanent impacts to a PRA, or both, are any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, that could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs?

The project proposes permanent impacts of less than one acre, and the project has temporary impacts to a PRA because the property is a floodplain wetland contiguous to a tier 3 or higher watercourse.

The project's purpose would be best achieved by replacing the existing bridge and not impacting jurisdictional areas elsewhere. The project is replacing an existing culvert, at an existing river crossing, and the existing structure is in line with the stream channel, so there is not a need to review other site locations.

SECTION 4 - ALTERNATIVES (Env-Wt 311.07(b)(3))

Could alternative designs or techniques, such as different layouts, different construction sequencing, or alternative technologies be used to avoid impacts to jurisdictional areas or their functions and values on the subject property or on other property that is reasonably available to the applicant as described in the *Wetlands Best Management Practice Techniques for Avoidance and Minimization*?

The proposed bridge structure is believed to have the least impacts to jurisdictional areas. There are no alternatives that avoid impacts altogether. For evidence supporting this claim, see discussion of alternatives below.

Superstructure:

Based on advanced deterioration, complete replacement of the culvert is recommended. As such, bridge superstructure options considered in detail by this study are precast prestressed voided slab beams with a cast-in-place composite concrete overlay and a precast concrete 'buried' frame system supporting a full depth roadway gravel and pavement section.

Two other options were initially considered but eliminated based on key design requirements for this project: The single-cell precast box option was eliminated due to the Tier 3 crossing guidelines preventing the use of closed-bottom structures and requiring a minimum span based on bankfull width. The option of a steel plate arch was eliminated due to the difficulty of achieving the minimum necessary cover for an arch of the required span without significantly raising the roadway grade and concern of potential corrosion and abrasion.

Multi-span precast frame options were not considered due to the potential for debris buildup which can result in clogging during both normal conditions and storm events.

Steel girders were also eliminated due to cost of epoxy coating of the steel girders and potential minimized life cycle from rapid corrosion, with minimum vertical clearances between the bottom chord and the normal water elevation, of the steel girders unprotected. Weathering steel was also eliminated due to the minimal vertical clearance between the water and the low chord elevation of the girders. Adequate clearance for weathering steel is necessary to maintain enough air flow to prevent rapid deterioration in a constantly wet environment.

While timber Glue-Lam and New England Bulb Tee girders are feasible, they were eliminated from consideration based on shorter service life and higher initial costs, respectively.

Cast-in-place rigid frames were not considered due to the long time required to cure the cast-in-place concrete, the additional cost of in-place formwork, and the permitting issues involved with placing formwork supports for the cast-in-place concrete span in the stream.

Substructure Layout and Foundations:

Both shallow and deep foundation options were considered for the precast voided slab bridge alternative. Due to manufacturer recommendations based on the soils present at this site, only deep foundation options were considered for the precast frame. Piles and drilled shafts were both considered for deep foundation options.

Pile-supported stub abutments for the bridge and pile-supported footings for the precast frame were eventually ruled out for two reasons: First, the sedimentary bedrock underlying the site has a relatively poor allowable bearing capacity. An excessive quantity of piles would be required to achieve the necessary capacity for each abutment. Second, the relatively shallow depth to bedrock would make it difficult to develop adequate lateral load capacity with a single row of vertical piles. The stub abutments would need to be increased in size to allow for the addition of some battered piles for lateral load capacity. These two issues would substantially increase the difficulty of construction and the cost compared to a simple stub abutment or footing supported by a single row of piles.

Stub abutments supported by drilled shafts for the bridge alternative and footings supported by drilled shafts for the precast arch alternative were considered. The cost of construction compared to the cost of shallow foundations make this option unfavorable for the precast voided slab bridge. For the precast frame, this is the most viable option compared to the excessive quantity of piles that would be required for a pile-supported structure on the sedimentary bedrock.

As a shallow foundation option for the bridge alternative, abutments founded on concrete spread footings were considered. The depth of these footings is controlled by the need for adequate frost protection and avoidance of channel constriction, which places the footings below the observed normal water level. Despite the additional estimated costs for water diversion and dewatering that this incurs, it still compares favorably in cost to the drilled shaft option, which in turn gives a cost advantage to the bridge alternative over the arch alternative.

Two wingwall configurations were initially considered. A flared wingwall configuration would allow the use of wingwalls of a shorter length but would require greater plan extents of dewatering works and would potentially require work outside the right-of-way. The use of a U-backed wingwall configuration is preferred despite the slightly longer wall lengths, because it allows for the structure to remain entirely within the existing right-of-way and reduces the extents of required dewatering.

SECTION 5 - CONFORMANCE WITH Env-Wt 311.10(c) (Env-Wt 311.07(b)(4))

How does the project conform to Env-Wt 311.10(c)? Please note that for a minimum impact project, the applicant may replace this explanation with a certification signed by a certified wetland scientist that the project is located and designed to minimize impacts to wetlands functions and values.

See Appendix C-20 for the Functional Assessment.

AVOIDANCE AND MINIMIZATION CHECKLIST

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

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

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

"A/M BMPs" stands for *Wetlands Best Management Practice Techniques for Avoidance and Minimization* dated 2019, published by the New England Interstate Water Pollution Control Commission (Env-Wt 102.18).

"Practicable" means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes (Env-Wt 103.62).

SECTION 1 – CONTACT/LOCATION INFORMATION	
APPLICANT LAST NAME, FIRST NAME, M.I.: Fiegenbaum, Eric	
PROJECT STREET ADDRESS: Nute Road Bridge (~50 Nute Road)	PROJECT TOWN: Madbury
TAX MAP/LOT NUMBER: Map 2 Lots 17, 18, 19; Map 4 Lot 15A (Abutters)	

SECTION 2 - PRIMARY PURPOSE OF THE PROJECT		
Env-Wt 311.07(b)(1)	Indicate whether the primary purpose of the project is to construct a water-access structure or requires access through wetlands to reach a buildable lot or the buildable portion thereof.	☐ Yes ☒ No
If you answered "no" to this question, describe the purpose of the "non-access" project type you have proposed. The primary purpose of this project is to replace an existing, deteriorated culvert structure carrying a Town owned roadway.		

SECTION 3 - AVOIDANCE PROJECT DESIGN TECHNIQUES Check the appropriate boxes below in order to demonstrate that these items have been considered in the planning of the project. Use N/A (not applicable) for each technique that is not applicable to your project.		
Env-Wt 311.07(b)(2)	For any project that proposes permanent impacts of more than one acre or that proposes permanent impacts to a Priority Resource Area (PRA), or both, whether any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs.	☐ Check ☒ N/A

Env-Wt 311.07(b)(3)	Whether alternative designs or techniques, such as different layouts, construction sequencing, or alternative technologies could be used to avoid impacts to jurisdictional areas or their functions and values on the subject property or on another property reasonably available to the applicant.	☒ Check ☐ N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(1)	The results of the functional assessment required by Env-Wt 311.03(b)(10) were used to select the location of the proposed project having the least impact to wetland functions.	☒ Check ☐ N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(2)	The proposed project has been designed to have the least impact to wetland functions.	☒ Check ☐ N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(3)	Where impact to wetland functions is unavoidable, the proposed impacts are limited to the wetlands with the least valuable functions on the site while avoiding and minimizing impacts to the wetlands with the highest and most valuable functions.	☒ Check ☐ N/A
Env-Wt 313.01(c)(1)-(2) Env-Wt 313.03(b)(1)	No practicable alternative would reduce adverse impact on the area and environments and the project will not cause random or unnecessary destruction of wetlands.	☒ Check ☐ N/A
Env-Wt 313.01(c)(3)	The project would not cause or contribute to the significant degradation of waters of the state or the loss of any PRAs.	☒ Check ☐ N/A
Env-Wt 313.03(b)(2)	The project avoids impacts to marshes that are documented to provide sources of nutrients for finfish, crustacea, shellfish, and wildlife of significant value.	☐ Check ☒ N/A
Env-Wt 313.03(b)(3) Env-Wt 904.07(c)(8)	The project maintains hydrologic connectivity between adjacent wetlands or stream systems.	☒ Check ☐ N/A
Env-Wt 311.01(b) Env-Wt 313.03(b)(4)	The project avoids and minimizes impacts to wetlands and other areas of jurisdiction under RSA 482-A, especially those in which there are exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern.	☒ Check ☐ N/A
Env-Wt 313.03(b)(5)	The project avoids and minimizes impacts that eliminate, depreciate, or obstruct public commerce, navigation, or recreation.	☒ Check ☐ N/A
Env-Wt 311.10 A/M BMPs	Buildings and/or access are positioned away from high function wetlands or surface waters to avoid impact.	☐ Check ☒ N/A
Env-Wt 311.10 A/M BMPs	The project clusters structures to avoid wetland impacts.	☐ Check ☒ N/A
Env-Wt 311.10 A/M BMPs	The placement of roads and utility corridors avoids wetlands and their associated streams.	☐ Check ☒ N/A

A/M BMPs	Proposed utilities are suspended from bridges to avoid trenching through wetlands.	☐ Check ☒ N/A
A/M BMPs	The width of access roads or driveways is reduced to avoid and minimize impacts. Pullouts are incorporated in the design as needed.	☐ Check ☒ N/A
A/M BMPs	Retaining walls are proposed to avoid placing fill in wetlands. The retaining walls would not block hydrology or wildlife corridors.	☒ Check ☐ N/A
A/M BMPs	The project proposes bridges or spans instead of roads/driveways/trails with culverts.	☒ Check ☐ N/A
A/M BMPs	Natural topography is incorporated in the design to avoid grading.	☒ Check ☐ N/A
SECTION 4 - MINIMIZATION DESIGN TECHNIQUES		
Env-Wt 311.10	The project was designed to minimize impacts to higher-quality wetlands.	☐ Check ☒ N/A
Env-Wt 311.01(b) Env-Wt 313.03(b)	The project was designed to minimize impacts to habitat, reproduction areas, fishery, vernal pools, or protected species or habitat.	☒ Check ☐ N/A
A/M BMPs	The project was designed to minimize the number of crossings and their size.	☐ Check ☒ N/A
A/M BMPs	Wetlands and streams are proposed to be crossed at their narrowest point.	☐ Check ☒ N/A
Env-Wt 500 Env-Wt 600 Env-Wt 900	Wetland and stream crossings include features that accommodate aquatic organism passage and wildlife passage.	☒ Check ☐ N/A
Env-Wt 313.01(c)(1) Env-Wt 313.03(b)(6)	The project was designed to avoid and minimize impacts to floodplain wetlands that provide flood storage.	☒ Check ☐ N/A
Env-Wt 313.01(c)(1) Env-Wt 313.03(b)(7)	Impacts to natural riverine forested wetlands systems and scrub-shrub marsh complexes of high ecologic integrity are avoided and minimized.	☒ Check ☐ N/A
Env-Wt 313.01(c)(1) Env-Wt 313.03(b)(8)	Impacts to wetlands that would be detrimental to drinking water supply and groundwater aquifer levels are avoided and minimized.	☒ Check ☐ N/A
Env-Wt 313.01(c)(1) Env-Wt 313.03(b)(9)	Adverse impacts to stream channels and their ability to handle stormwater runoff are avoided and minimized.	☒ Check ☐ N/A
Env-Wt 900	Stream crossings are sized to address hydraulic capacity and geomorphic compatibility.	☒ Check ☐ N/A

A/M BMPs	Disturbed areas are used for crossings wherever practicable, including existing roadways, paths, or trails upgraded with new culverts or bridges.	☒ Check ☐ N/A
RSA 482-A:11, II	Project is designed to minimize impacts to abutting properties.	☒ Check ☐ N/A
Env-Wt 307.13	Setbacks from property lines required by Env-Wt 307.13 are maintained.	☒ Check ☐ N/A
SECTION 5 - RESOURCE-SPECIFIC DESIGN TECHNIQUES		
Env-Wt 500	The project is designed to address resource-specific avoidance and minimization criteria for non-tidal jurisdictional areas.	☒ Check ☐ N/A
Env-Wt 600	The project is designed to address resource-specific avoidance and minimization criteria for coastal lands and tidal waters/wetlands.	☐ Check ☒ N/A
Env-Wt 307.08 Env-Wt 700	The project is designed to address resource-specific avoidance and minimization criteria for designated prime wetlands.	☐ Check ☒ N/A
SECTION 6 - PROJECT-SPECIFIC DESIGN TECHNIQUES		
Env-Wt 500	The project is designed to use techniques outlined in Env-Wt 500 for projects in non-tidal jurisdictional areas.	☒ Check ☐ N/A
Env-Wt 600	The project is designed to use techniques outlined in Env-Wt 600 for projects in coastal lands and tidal waters/wetlands.	☐ Check ☒ N/A
Env-Wt 900	The project is designed to use stream crossing techniques outlined in Env-Wt 900 for stream crossing projects.	☒ Check ☐ N/A

C-19 Attachment A: Minor and Major Projects

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

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Fiegenbaum, Eric

Attachment A can be used to satisfy some of the additional requirements for minor and major projects regarding avoidance and minimization, as well as functional assessment.

PART I: AVOIDANCE AND MINIMIZATION

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

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

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

A SINGLE SPAN BRIDGE IS PROPOSED. THIS STRUCTURE WILL RESTORE THE WIDTH OF THE RIVER CHANNEL AT THE CROSSING. REMOVAL OF THE EXISTING CULVERT WILL REQUIRE IMPACTS TO THE EXISTING ROAD EMBANKMENT, PORTIONS OF WHICH HAVE BEEN DELINEATED AS WETLANDS. REMOVAL OF THE CULVERT AND CONSTRUCTION OF THE BRIDGE ABUTMENTS WILL REQUIRE IMPACTS TO THE RIVER CHANNEL DURING CONSTRUCTION. CONSTRUCTION OF A SINGLE SPAN BRIDGE WILL ALLOW THE WIDTH OF THE RIVER CHANNEL TO BE RESTORED TO MATCH EXISTING RIVER CHANNEL WIDTHS. RESTORING THE WIDTH OF THE CHANNEL WILL INCREASE HYDRAULIC CAPACITY AND IMPROVE CONNECTIVITY BETWEEN THE UPSTREAM AND DOWNSTREAM SECTIONS OF THE LITTLE RIVER. RESTORING THE CHANNEL WIDTH WILL PROMOTE IMPROVED AQUATIC ORGANISM PASSAGE AS WELL AS WILDLIFE PASSAGE ON THE RIVER BANKS.

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

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

There aren't any marshes in the project area.

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

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

The hydrologic connections are maintained from one side of the proposed bridge to the other, because the proposed structure will allow for greater hydraulic capacity and alleviate the constriction caused by the existing steel plate culvert. There will not be any changes to the water-mediated transfer of matter or organisms. The only change in the water-mediated transfer of energy will be a reduction in energy, because a larger width of river channel will result in slower moving water.

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

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

The Natural Heritage Bureau (NHB) has been notified of the project and has indicated there are no recorded occurrences for sensitive species in the project area, but that there was an NHB record present in the vicinity. However, the Department of Natural and Cultural Resources determined that there would be no impacts by the proposed project. See attached NHB memo dated January 27, 2020 in Section C.

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

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

This project will have no impacts on public commerce, navigation, or recreation as this crossing is not used for any of these purposes.

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

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

Since the proposed project is replacing an existing culvert, floodplain wetland impacts could not be avoided to complete the project. Temporary impacts are necessary both upstream and downstream of the culvert to install cofferdams and water diversion systems, and replacement of the culvert itself requires impacts to wetlands. Additionally, due to the continued need of the road to provide access to properties beyond the stream crossing, the stream crossing could not be abandoned, and the stream restored to its natural state.

Proposed wetlands impacts will result from the removal of the existing culvert, installation of a simulated stream bottom, precast concrete box culvert, and associated disturbances. Impacts are being minimized to the greatest extent possible by utilizing steep side-slopes allowing for a shorter culvert and wingwall length, and using slope protection to prevent erosion and transportation of sediment downstream. Additionally, the proposed crossing is in line with the natural direction of the stream channel. The proposed streambed grading will match into the existing elevations upstream and downstream of the crossing. The proposed structure will allow for greater hydraulic capacity and therefore lower flood elevations at the proposed crossing.

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

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

There are no marsh-scrub/shrub wetlands in the project area.

There will be minimal impacts to natural riverine forested wetlands. See floodplain wetlands section above for avoidance and minimization of impacts to natural riverine forested wetland systems.

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

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

Since the proposed project is replacing an existing culvert, wetland impacts could not be avoided to complete the project. Temporary impacts are necessary both upstream and downstream of the culvert to install cofferdams and water diversion systems, and replacement of the culvert itself requires impacts to wetlands. Additionally, due to the continued need of the road to provide access to properties beyond the stream crossing, the stream crossing could not be abandoned, and the stream restored to its natural state.

The project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels, by installing cofferdams, water diversion systems, and proper slope and sediment protection.

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

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

The opening of the proposed crossing is wider than that of the existing culvert. The increase in hydraulic capacity will not impact flow and sediment transport characteristics that could affect channel stability. Additionally, the flood elevation will be lower following installation of the proposed crossing.

Construction of the proposed crossing will include removing the existing culvert and embankment. The river bottom will be regraded to match into existing river bottom elevations upstream and downstream of the culvert. A natural bottom channel is proposed, with stone fill placed on the embankments to protect the bridge abutments.

PART II: FUNCTIONAL ASSESSMENT
REQUIREMENTS Ensure that project meets requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).
FUNCTIONAL ASSESSMENT METHOD USED: This report provides an assessment of the existing wetland functions and values at Nute Road bridge in Madbury according to the United States Army Corps of Engineers - New England District, Highway Methodology Workbook Supplement - September 1999 Edition (updated in 2015).
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: MARC E. JACOBS
DATE OF ASSESSMENT: 4/9/2020
Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT: ☒
For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable: ☒ Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.

C-20 Functional Assessment

Wetland Functional Assessment

Of

Bellamy River at Nute Road
Madbury, NH

Prepared for

CMA Engineers, Inc.
35 Bow Street
Portsmouth, NH 03801

By

Marc E. Jacobs
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P.O. Box 417
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April 9, 2020

Bellamy River at Nute Road
Madbury, NH

Wetland Functional Assessment

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Wetland Functional Assessment

Bellamy River at Nute Road
Madbury, NH

1.0 Introduction

Pursuant to an anticipated request by CMA Engineers, Inc. for a wetland permit from the State of New Hampshire – Wetlands Bureau for proposed removal and replacement of an existing culvert adjacent to and within jurisdictional resources, including the Bellamy River, at Nute Road in Madbury, NH, we herewith submit this Wetland Functional Assessment (WFA) to supplement the application as required under the NH Code of Administrative Rules Env-Wt 100-900, specifically Env-Wt 306.05(a)(1) and Env-Wt 311.10. This assessment also provides information on substrate classification and stream type according to criteria found in Applied River Morphology, Rosgen, 1996.

Wetland functional assessments generally involve an inventory and survey of physical attributes, such as, but not limited to, topographic position, vegetative patterns and soils, which then allow practitioners to predict functions that arise from those attributes. This report provides an assessment of the existing wetland functions and values at this location according to the United States Army Corps of Engineers - New England District, Highway Methodology Workbook *Supplement* – September 1999 Edition (updated in 2015). This study does not attempt to evaluate the potential effects of global climate change, and where applicable, associated sea level rise or tidal surge, on the functions and values of wetlands at the various locations.

This assessment evaluates fourteen (14) functions and values for this location based upon current conditions. The functions and values of a wetland or adjacent wetlands may be altered, or more specifically, the effectiveness of a wetland or adjacent wetlands to provide a particular function may be altered (increased or decreased) as a result of modifications to adjacent uplands, impacts to wetlands elsewhere on site or other development in the watershed.

Attached is a copy of a composite 7.5 X 15 minute, United States Geological Survey topographic map (Dover West quadrangle) upon which the subject is identified. Refer to Attachment 1.

2.0 Existing Conditions

2.1 General Site Description

The area-of-interest (AOI) generally involves the existing culverted crossing of the Bellamy River at Nute Road, and lands within 100-feet upstream and down. Observations were made on August 14, 2018 and March 27, 2020. The existing crossing involves a large diameter elliptical corrugated steel culvert with a headwall originally comprised of stones. The headwall and culvert appear to have been repaired with poured concrete in the recent past. (Twelve images obtained during site investigations are appended to this report.)

With the exception of some limited residential development, dominant land uses have not changed substantially in the last 50+ years and the area is not under significant development pressure as evidenced by aerial images from 1962 and 2010. Refer to Attachments 2A and 2B respectively.

The Bellamy River flows from Swains Lake in Barrington and is perennial at this location. The contributing watershed, as measured at Nute Road, is approximately 9+ square miles. Therefore, at 5,760+ acres, the watershed is well in excess of the 640 acre minimum that triggers Tier 3 crossing rules under NH Department of Environmental Services (DES) stream crossing rules (Chapter Env-Wt 900).

The Bellamy River is not a designated river according to RSA 483. The existing crossing involves 100-year flood plain and resource maps identify extensive floodplain wetlands upstream of the existing crossing. Similarly, whereas the river is considered Tier 3 the 100-year flood plain is considered a Priority Resource Area (PRA) west / upstream of the culvert according to Env-Wt 103.66(c). The extent of PRA is identified on several of the attachments and maps included herein.

There are no prime wetlands on or immediately adjacent to the subject properties. Prime wetlands are those wetlands with higher functions and values and receive additional protection under state law. Madbury does not have municipally designated prime wetlands recognized by DES. Barrington has municipally designated prime wetlands and considers large portions of the wetlands which are contiguous to wetlands that fall within the AOI as prime. The town line, and therefore the prime wetlands, are located approximately 0.3 miles upstream from the AOI (as measured on a straight line from the existing crossing).

The Bellamy River is listed on the 2018 surface water assessment 305(b) report and this reach of the river has severe impairments for aquatic life, swimming and boating and is ranked poor for fish consumption. A copy of the report is appended as Attachment 3. Remote sensing indicated a kerosene spill of approximately 3 gallons in the road at 54 Nute Road in 2013. DES records state that the Madbury Fire Department applied speedy dry to the road and excavated "three trash bags worth" of soil from the area. We have appended a copy of the DES telephone record from May 5, 2013. Refer to Attachment 4.

An inquiry to the New Hampshire Natural Heritage Bureau (NHB-20-0847) regarding rare, threatened or endangered species identifies blanding's (*Emydoidea blandingii*) and spotted (*Clemmy's guttata*) turtles approximately 0.45 miles away, along Province Road, in Barrington. (Nute Road becomes Province Road in Barrington.) These species are considered state endangered and state threatened respectively. Additionally, the New Hampshire Fish and Game identifies the areas immediately adjacent to the existing river crossing as highest ranked habitat. Refer to Attachment 5.

An abutter to the river claims she has identified painted (*Chrysemys picta*) and snapping (*Chelydra serpentina*) turtles along the river in this area. Any turtles in the area likely use the river and adjacent riparian areas for travel beneath and across Nute Road. The abutter also claims to have observed mammals such as beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), and river otter (*Lontra canadensis*) and bird species such as great blue heron (*Ardea herodius*), Canada goose (*Branta canadensis*) and mallard duck (*Anas platyrhynchos*) as well as warm water fish species such as perch (*Perca* sp.) and sunfish (*Lepomis sp.*).

Remote sensing does not identify the Bellamy River as a predicted cold water stream, nor is it identified as eastern brook trout habitat or containing cold water fish species of concern. Refer to Attachment 7. (We reached out to the NH Fish & Game Department for information regarding trout stocking at this location but were unable to make contact.) Regarding geomorphic compatibility, the culvert achieves the highest score (fully compatible). The culvert is not perched, however, regarding aquatic organism passage it is rated as having reduced passage for fish.

Regarding substrate classification for the Bellamy River, detailed survey data, including bathymetry, plays a role in classification. The observations below are therefore estimates based upon field observations. The culvert provides a slight restriction to flow which is causing differences in substrate upstream and downstream of the crossing. The crossing may therefore be influencing the substrate. The substrate is sandier upstream and more gravelly / cobbly downstream. This may just be a coincidence as the overall gradient upstream of the crossing is slightly less than downstream. Nute Road is a very old road and whoever chose the original road alignment likely noted the same change in gradient. However, we noted earlier that the stone wall on the downstream side of the crossing suggests a slightly different alignment currently than may have existed many years ago. Refer to Page 3 of the attached wetland permit stream crossing worksheets for more specific information. We completed separate forms for upstream and downstream. Refer to Attachments 8A and 8B respectively.

2.2 Wetland Delineation

Wetlands within the AOI were identified and delineated by this office in August of 2018. Solid pink color flags were placed in the field to identify the wetland-upland boundary. Each wetland flag is identified with a unique letter and number combination. The various flag series involved are as follows: A1-A5, B1-B7, C1-C10 and D1-D5. No vernal pools were observed within the AOI. A copy of the existing conditions plan that identifies the wetland-upland boundaries as well as the river bank is appended. Delineation data sheets have not been completed. Refer to Attachment 9.

As is to be expected when delineating wetlands adjacent to roads and highways, varying degrees of altered wetland conditions were frequently encountered. Where altered wetland conditions were encountered, protocols found in Section F of the Federal Wetland Manual were generally followed and best professional judgment was employed as necessary. In the absence of natural vegetation communities, delineations frequently relied on the presence or absence of hydric soil conditions as the rationale for placement of flags identifying the wetland-upland boundary in the field.

2.3 General Wetland Descriptions

The following section describes general physical attributes and conditions found in each wetland study area. The wetland area identified by flag series 'A' generally represents a combination of forested and emergent wetlands. The wetland receives storm flows at flag A3± from a ditch along the east side Nute Road and as a result receives varying amounts of sediment input. The lower portion of the wetland likely receives flood waters during significant storm events. Refer to the attached WFA worksheet for a description of the vegetation community in this area. The substrate generally involves poorly drained mineral soils. The wetland-upland boundary identified by flags A3-A5 generally identify a man-made boundary created by filling associated with road construction. There is a stone wall at the east edge of the wetland study area. This suggests that the road location may have been further to the east at one time. The remains of a gravel road exist on the south side of the river.

The wetland area identified by flag series 'B' generally identifies forested wetlands having a dense shrub understory, which is populated with glossy buckthorn (*Frangula alnus*), a common invasive species. (Other invasive species – shrubs – observed at this general location include honeysuckle (*Lonicera* sp.) and multiflora rose (*Rosa multiflora*)). The wetland receives flood flows during significant storm events. Refer to the attached WFA worksheet for a description of the vegetation community in this area. The substrate generally involves poorly drained mineral soils. The wetland-upland boundary identified by flags B7-B10 generally identify a man-made boundary created by filling and a boulder covered slope associated with road construction.

The wetland area identified by flag series 'C' identify scrub-shrub wetlands, which are dominated by glossy buckthorn. The river bank and the wetland-upland boundary are nearly coincident in this area. The dominant shrub involves glossy buckthorn.

The wetland area identified by flag series 'D' generally identifies emergent wetlands. The river bank and the wetland-upland boundary are nearly coincident in this area.

2.4 Study Area Determination

Selection of appropriate study areas is crucial to the outcome of any WFA. Determination of suitable study areas can be somewhat subjective depending upon the criteria used to define the study area, especially since wetlands are natural systems and do not recognize political boundaries such as property or town lines and because all wetland systems have variations in physical attributes within an otherwise seemingly discreet wetland area. Wetland systems are frequently comprised of numerous wetlands with differing classifications, each having differing physical attributes and therefore exhibiting differing functions and values. Altering the size of a study area can therefore influence the physical attributes which are assessed, affecting the interpretation or perception of functions and values and ultimately the results of an assessment. Further complicating the definition of a study area and thus the wetland functional assessment, some considerations are focused on the watershed while others target wetlands. The results of this WFA however generally apply to the wetlands on both sides of the road and river segment depicted on the attached site plan. The river is the focal point of the WFA at this location. Whereas there are wetlands on both sides of the road, we considered assessing them separately but due to the nature of the proposed work and the small size of the wetlands, we thought it more practical to assess them as one. Minor differences in the two larger wetland areas (A and B) are discussed below in the conclusion section. Correspondingly, one WFA worksheet was completed and is attached to this report and included herein by reference.

3.0 Wetland Functions and Values

Wetland functions are self-sustaining properties and physical attributes of wetlands that exist without regard to subjective human values. Wetland values are benefits derived from these functions and physical attributes. The functions assessed by the US Army Corps of Engineers Highway Methodology are identified below with a brief explanation of what each function and value considers.

Note that the Highway Methodology does not consider Ecological Integrity. Ecological Integrity is a function identified in NH RSA 482-A: Fill and Dredge in Wetlands, specifically Section 482-A:2 XI. This functional wetland assessment utilizes the field criteria in the Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire, December 2015, to assess this function. A NH Method data sheet for this function is attached.

3.1 Functions

1 - Ecological Integrity – The overall health and stability the wetland ecosystem.

3 - Fish & Aquatic Life Habitat – The potential for waterbodies associated with wetlands to provide suitable habitat for fish or shellfish.

4 - Flood Storage – The potential for a wetland to reduce flood damage by attenuating floodwaters through storage and desynchronization of peak flows.

5 - Groundwater Recharge – The potential for a wetland to recharge water to an aquifer or discharge groundwater to the surface.

7 - Nutrient Trapping/Retention & Transformation – The effectiveness of wetlands to protect water quality and prevent adverse effects associated with excess nutrients in a watershed.

8 - Production Export – The ability of the wetland to produce food for humans or other organisms.

10 - Sediment Trapping – The potential for the wetland to protect water quality by trapping sediments, toxicants and pathogens.

11 - Shoreline Anchoring – The ability of a wetland to stabilize stream banks or shorelines against erosion.

14 - Wetland-dependent Wildlife Habitat – The effectiveness of the wetland to provide suitable habitat for important wetland wildlife.

3.2 Values

2 - Educational Potential – The value of the wetland as an outdoor classroom.

6 - Noteworthiness – The effectiveness of the wetland in supporting rare, threatened or endangered species.

9 - Scenic Quality – The visual or aesthetic qualities of a wetland.

12 - Uniqueness/Heritage – The value relating to the wetlands suitability to provide special values such as unique geologic features, archaeological sites and/or vernal pool habitat.

13 - Wetland-based Recreation – The suitability of the wetland and any associated waterbodies to provide consumptive and non-consumptive recreational opportunities.

4.0 Assumptions

The assessment of wetland functions and values can be an inherently subjective process. The Highway Methodology strives to eliminate potential bias through implementation of a qualitative and descriptive approach to functional assessment by requiring the evaluator to review a list of considerations and qualifiers for each function or value. The list of considerations/qualifiers is attached to this report as Appendix A.

The highway methodology lacks definitions or guidelines for certain abstruse terms associated with the considerations and qualifiers discussed, therefore, unless stated otherwise in this document, the assessment has made the following assumptions and/or interpretations as identified below by function/value and consideration/qualifier. The considerations/qualifiers and associated assumptions are numbered to correspond to numbering identified in the Appendix A of the Highway Methodology Workbook Supplement.

Ecological Integrity Function

The highway methodology does not consider Ecological Integrity as a function and provides no considerations or qualifiers. A review of NH RSA 482-A:2, Section XI does not provide any guidance regarding attributes and qualifiers that should be utilized to ascertain ecological integrity. This functional wetland assessment therefore utilizes the field criteria in the Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire, December 2015, to assess this function.

Assumption

Ecological Integrity is interpreted to exist where wetlands proposed for alteration have not been subject to filling, excavation, regrading, artificial drainage or alteration of the vegetation community and generally where the NH Method worksheet for this function indicates a value of 5.0 or higher.

Groundwater Recharge Function

Consideration/Qualifiers 1 and 2

Public or private wells occur downstream of wetland. Potential exists for public or private wells downstream of the wetland.

Assumption

Downstream is interpreted to involve the entire watershed, even where it extends off-site. The Highway Method does not distinguish between dug and drilled wells although their source water is frequently different. This assumption also applies to consideration / Qualifier 6 – Sediment/Toxicant/Pathogen Retention Function.

Consideration/Qualifiers 3 and 11

Wetland is underlain by stratified drift. Groundwater quality of the stratified drift aquifer within or downstream of the wetland meets drinking water standards.

Assumption

Water quality is based on visual observation only. No samples were collected or tested.

Consideration/Qualifier 12

Quality of water associated with the wetland is high.

Assumption

Water quality is based on visual observation only. No samples were collected or tested. (Applies to Number 18 under Uniqueness/Heritage also.)

Flood Storage Function

Consideration/Qualifier 1

Area of this wetland is large relative to its watershed.

Assumption

For the purposes of this assessment, a wetland is considered to be large relative to its contributing watershed if it represents approximately 25 percent or more of the watershed area.

Consideration/Qualifier 11

Valuable properties, structures or resources are located in or near the floodplain downstream from this wetland.

Assumption

Downstream is interpreted to involve the entire watershed, even where it extends off-site. Therefore, it is assumed that valuable properties generally lie in or near the floodplain downstream from the wetland at some point in the watershed.

Fish & Aquatic Life Habitat Function

Consideration/Qualifier 3

Size of this wetland is able to support large fish/shellfish populations.

Assumption

Evidence of any fish/shellfish population was interpreted to constitute a large population.

Sediment Trapping Function

Consideration/Qualifier 5

Long duration water retention time is present in this wetland.

Assumption

Long duration water retention time is interpreted as any time period of sufficient duration that will result in settling of suspended solids constituted by sand and silt size soil particles; excluding clay size soil particles (for which settling times are often calculated in days or even weeks, not hours).

Consideration/Qualifier 8

The wetland is known to have existed for more than 50 years.

Assumption

Best professional judgment was used to estimate the relative age of wetlands. Multiple versions of county soil surveys, aerial photographs and/or topographic quadrangles were not consulted. Natural wetlands are generally assumed to be more than 50 years old.

Shoreline Anchoring Function

Consideration/Qualifier 4

Potential sediment sources are present upstream.

Assumption

Upstream is interpreted to terminate at the nearest property line, where applicable.

Wetland-dependent Wildlife Habitat Function

Consideration/Qualifier 2

Water quality of the watercourse, pond, or lake associated with this wetland meets or exceeds Class A or B standards.

Assumption

Water quality is based on visual observation only and is assumed to meet Class A or B standards where no obvious signs of excessive turbidity or other pollution were observed.

Consideration/Qualifier 14

Wetland exhibits a high degree of plant species diversity.

Assumption

A high degree of plant species diversity was generally assumed to be present where a preliminary inventory of plants at a representative observation location within the subject area revealed a significant number of species relative to other sites in the subject area.

Consideration/Qualifier 15

Wetland exhibits a high degree of diversity in plant community structure (e.g., tree/shrub/vine/grasses/mosses)

Assumption

The presence of representatives of the tree, sapling, shrub, vine, herb/grass, & moss strata was interpreted to represent a high degree of diversity in plant community structure.

Wetland-based Recreation Value

Consideration/Qualifier 5

Wetland is a valuable wildlife habitat.

Assumption

All wetlands provide habitat of one degree or another. It is our interpretation that valuable wildlife habitat refers to wetland wildlife habitat and furthermore that valuable wetland wildlife habitat possesses the physical attributes such that it can reasonably be anticipated to provide habitat for important, uncommon and wetland-dependent wildlife species; those species which owe all or a significant part of their life cycle to wetlands.

Consideration/Qualifier 7

High visual/aesthetic quality of this potential recreation site.

Assumption

The presence of three or more wetland classes was interpreted to represent high visual

and aesthetic quality. (This is consistent with Educational/Scientific Value consideration/qualifier #3, Uniqueness/Heritage Value consideration/qualifier #4 and Visual/Aesthetics Value consideration/qualifier #1.)

Educational Potential Value

Consideration/Qualifier 1/2

Wetland contains or is known to contain rare, threatened or endangered species.

Assumption

We have contacted the Natural Heritage Bureau (NHB) for information on rare, threatened or endangered (RTE) species and a copy of NHB report is attached to this document. Staff completing field investigations for FWA's are always on guard for RTE species but this assessment does not constitute an official survey for RTE species. (This interpretation also applies to Noteworthiness and Uniqueness/Heritage.)

Consideration/Qualifier 9

Potential educational site is within safe walking distance or short drive to schools.

Assumption

"Safe walking distance" is interpreted to be less than ¼ mile from an educational facility. (Distance is not the sole measure of a safe walk however.) "Short drive" is interpreted to be less than 3 miles form an educational facility. (This interpretation also applies to Recreation above and Uniqueness/Heritage.)

Consideration/Qualifier 13

No known safety hazards exist within the potential educational site.

Assumption

"Safety hazards" exist everywhere and no activity is without risk. Safety hazards in the outdoors generally involve physical trip and fall hazards like roots, rocks and holes as well as environmental hazards such as poison ivy and bee stings; and both types are known to occur commonly on virtually every natural site. However, for the purpose of this assessment, known safety hazard is interpreted to involve unusual hazards that a reasonable person would not expect to commonly find in the forest such as explosives, shooting ranges or hazardous waste. (This assumption/interpretation also applies to #10 Uniqueness/Heritage.)

Uniqueness/Heritage Value

Consideration/Qualifier 19

Opportunities for wildlife observation are available.

Assumption

Most wildlife observations are chance encounters but it is assumed that "opportunities for wildlife observations" are available in one form or another at virtually any wetland or location if the observer is quiet, motionless and spends enough time. Wildlife sightings generally increase with distances from human activity, as does the rarity of the species. (Most wildlife studies and their conclusions about anticipated use by wildlife are based upon an evaluation of a particular locations physical attributes and any signs of wildlife and generally not on observations of actual wildlife.)

5.0 SUMMARY AND DISCUSSION

The highway methodology identifies 13 primary functions and values which can potentially be ascribed to wetlands. The presence of these functions and values provide benefits for society and the environment. The State of New Hampshire requires the assessment of each wetland for ecological integrity as well.

A worksheet has been completed for the study area in order to appropriately manage data collection efforts and provide consistency. It can difficult to precisely implement many of the considerations/qualifiers since the Bellamy River and associated wetlands are part of larger contiguous wetland system, only a portion of which falls within the wetland study area. It is accepted however that conclusions about the effectiveness of a wetland study area to provide a particular function can change depending upon a host of factors which include the assessment area involved and the relative juxtaposition with other wetland resources. Conclusions regarding the functions and values associated with these wetland study areas are summarized below by principal function / value and in Table 1.

TABLE 1 TALLY OF PRINCIPAL FUNCTIONS / VALUES

FUNCTION / VALUE	WETLANDS	STREAM
Ecological Integrity 1	Yes	Yes
Educational Potential 2	No	No
Fish & Aquatic Life Habitat 3	No	Yes
Flood Storage 4	Yes	Yes
Groundwater Recharge 5	No	No
Noteworthiness 6	Yes	Yes
Nutrient Trapping/Retention & Transport 7	Yes	No
Production Export (Nutrient) 8	Yes	Yes
Scenic Quality 9	Yes	Yes
Sediment Trapping 10	Yes	No
Shoreline Anchoring 11	Yes	Yes
Uniqueness/Heritage 12	Yes	Yes
Wetland-based Recreation 13	No	No
Wetland-dependent Wildlife Habitat 14	Yes	Yes
TOTAL (14)	10	9

Ecological Integrity

Obviously, the ecological integrity at the existing crossing is diminished by the road construction but the integrity of the system increases quickly and significantly moving away from the crossing, with the possible exception of the southwest quadrant, due to the nearby single-family residence. Most of the property on the downstream (east) side of the crossing is controlled by the City of Portsmouth, presumably to protect their water supply, and as such is likely off limits to development which could threaten ecological integrity. The data form for ecological integrity poses several questions regarding activities and percent impervious cover within 500-feet of the subject so we have attached an aerial image which depicts a 500-foot radius circle. Refer to Attachment 10.

Educational Potential

It was our feeling that both the wetlands and stream possess some suitability for educational potential but that potential was quickly exhausted due to the physical attributes in the area and lack of diversity as well as access.

Fish and Aquatic Life Habitat

The wetlands on the upstream (west) side of the culvert have a small potential for fisheries habitat by providing cover during high flows but spawning is unlikely here and the overall potential was thought to be low on either side of the road. The river apparently provides habitat for warm water fish species.

Flood Storage

Wetland B located upstream (west) of the existing crossing extends well into Barrington and provide considerable flood storage capabilities and are also considered a PRA under the current

regulations. Conversely, wetlands on the downstream (east) side of the culvert provide limited capability in the way of flood storage due to their landscape position and small size. We do not consider flood storage to be a principal function of wetland area A.

Groundwater Recharge

Groundwater recharge is not a function that is provided to any significant degree within resource areas at this location. There may be a small amount of groundwater discharge at the wetland-upland boundary, but this is also not a primary function of wetlands at this location.

Noteworthiness

The river is likely being used by otters and endangered turtles and as such should be considered noteworthy.

Nutrient Trapping / Retention and Transformation

Wetland B located upstream possesses more physical attributes that allow it to perform this function. This area receives minimal runoff from Nute Road. The downstream wetland (Area A) lacks the physical attributes of the upstream wetlands but receives more runoff and more sediment from Nute Road and thus has more opportunity. The river is not equipped to provide this function.

Production Export

Similar to nutrient trapping / retention and transformation, areas located upstream possess more physical attributes and flora allowing wetland B to perform this function. The river provides the mechanism to export the production from upstream.

Scenic Quality

The river provides a soothing if not brief view for passersby in automobiles (if they slow down long enough to enjoy it). However, it can be difficult to see into the woods in either direction when the leaves are out, especially if the town does not maintain the roadside brush that develops in the road fill. The view does contrast nicely with the surrounding land use though and the view was improved (or more specifically restored) by the relatively recent removal of roadside brush.

Sediment Trapping

Wetland B located upstream of the existing crossing possesses more physical attributes allowing it to perform this function. Wetland A located downstream of the crossing has more opportunity to perform the function. The river merely transports sediment at this location and can offer no trapping capabilities.

Shoreline Anchoring

The river banks are almost coincident with wetland boundaries in several places and transition quickly to uplands in places where there are not significant wetlands but the banks are stable upstream and down. Any replacement culvert design must be careful to protect this stability.

Uniqueness / Heritage

The presence of the stone wall and the potential for turtle utilization, among many other lesser attributes, make these wetlands and the river locally noteworthy.

Wetland-based recreation

We felt that the river and wetlands had some suitability for recreational activities, especially non-consumptive recreation (e.g. hiking, canoeing, kayaking, boating, photography and wildlife observation), however, trespass issues and lack of parking diminishes the value of this area for this function. Consumptive recreational opportunities for fishing exist. Opportunities for hunting are not appropriate within the study area but may be appropriate for the larger wetland complex, trespassing issues notwithstanding.

Wetland-dependent Wildlife Habitat

Wetland A located downstream of the existing culvert crossing provides minimal habitat but the upstream wetlands (Area B) provides more significant habitat that improves with distance from Nute Road. The Bellamy River provides the most significant habitat in this study area.

The conclusions above are not to suggest that the various wetland study areas do not perform or provide any function or value or that they cannot provide or perform any functions that are not identified as a principal function; however the data and our observations and subsequent conclusions indicate that the wetlands do not perform or provide those functions at an elevated or significant level. For those interpreting this report, caution needs to be applied when deriving conclusions about impact assessment when using the findings within. Additionally, do not be easily tempted to rank or compare the wetlands described within this report against one another and certainly against other off-site wetlands. Ranking wetlands numerically or rating wetlands low, medium or high is tempting but is inappropriate and implies a level of accuracy or understanding of the wetlands and functional assessment methodologies which may not exist.

WETLAND FUNCTIONAL ASSESSMENT

PHOTOGRAPHS & DESCRIPTIONS

Image 1 – Looking east / downstream toward Nute Rd. *(©Jacobs2018)*

Image 2 – Looking east / downstream toward Nute Rd. *(©Jacobs2020)*

Image 3 – Looking west / upstream toward Nute Rd. *(©Jacobs2018)*

Image 4 – Looking west / upstream toward Nute Rd. (further downstream than image 3). *(©Jacobs2020)*

Image 5 – Looking west / upstream from Nute Rd. *(©Jacobs2018)*

Image 6 – Looking west / upstream from Nute Rd. *(©Jacobs2020)*

Image 7 – Looking east / downstream from Nute Rd. *(©Jacobs2018) (©Jacobs2018)*

Image 8 – Looking east / downstream from Nute Rd. *(©Jacobs2020)*

Image 9 – Wetland B looking north from opposite river bank. *(©Jacobs2018)*

Image 10 – Wetland A looking north from Nute Rd. Note emergent and aquatic vegetation and stone wall. Forested wetlands extend beyond the stone wall. *(©Jacobs2018)*

Image 11 – Wetland C looking south from Nute Rd. *(©Jacobs2018)*

Image 12 – Wetland D looking west from the Bellamy River. *(©Jacobs2018)*

WETLAND FUNCTIONAL ASSESSMENT

WORKSHEETS / DATA FORMS

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: Bellamy River at Nute Road Evaluation Date: March 27, 2020 Evaluator: Marc Jacobs

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	agriculture, sewage disposal, pet waste, possible lawn care products (unlikely)	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	(10) 5 1
2. Is there evidence of fill in the wetland?	the only fill is that associated w/ the original installation of the culvert	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 (5) 1
3. What percentage of the wetland has been altered by agricultural activities?	no apparent direct agricultural impacts	a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	no apparent logging	a. Less than 1% b. From 1 to 10 % c. More than 10 %	(10) 5 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	no apparent human activity w/ exception of one abutter that has manipulated understory down to the river near the road	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	(10) 5 1
6. What percentage of the wetland is occupied by invasive plant species?	honeysuckle, multiflora rose, glossy buckthorn	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 5 (1)
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Nute Road	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?	very little	a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	(10) 5 1
9. What is the percent of impervious surface within 500 feet of the wetland edge?	see attached aerial figure, generally includes Nute Road which we estimate represents 3-4 percent within 500 feet	a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 (5) 1
10. Is there a human-made structure that regulates the flow of water through the wetland? (w/in 1/2 mile)	Dam that impounds Swains Lake in Barrington is approximately 2.4 miles upstream while dam that impounds the Bellamy Reservoir is approximately 1.5 miles downstream - used 5 due to the culvert at Nute Road	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 (5) 1

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 6.7

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management

Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

APPLICANT LAST NAME, FIRST NAME, M.I.: TBD

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the Written Narrative (NHDES-W-06-089) or Avoidance and Minimization Checklist (NHDES-W-06-050) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached with the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: **Near = sparse residential & forested, Distant = agricultural (mostly fallow/hay fields) and forest**	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): **0**	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: **Marc Jacobs, CWS, CSS, CPESC**	
DATE(S) OF SITE VISIT(S): **03/27/20**	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: **Bellamy River at Nute Road**	LOCATION: (LAT/ LONG) **43.18872/70.9774**
WETLAND AREA: **unknown-extends well outside AOI**	DOMINANT WETLAND SYSTEMS PRESENT: **forested**
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? **Bellamy River and road runoff**	COWARDIN CLASS: **PFO**
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island?
if not, where does the wetland lie in the drainage basin? **floodplain**	IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☒ Yes ☐ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE: **TBD**	PROPOSED WETLAND IMPACT AREA: **TBD**

SECTION 4 - WETLANDS FUNCTIONS AND VALUES* (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

1. Ecological Integrity (from RSA 482-A:2, XI)
2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE *The Highway Methodology Workbook Supplement*. Second, indicate which functions and values are principal (Principal Function/value?" column). As described in *The Highway Methodology Workbook Supplement*, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☒ Yes ☐ No	See NH Method for Evaluation of Freshwater Wetlands data form	☒ Yes ☐ No	excluding the culvert at Nute Rd. there are no human-made structures within 1/2 mile
2	☒ Yes ☐ No	1,2,4,10,11,13,	☐ Yes ☒ No	1-possible-see NHB result 4-away from the road
3	☐ Yes ☒ No	1,4,8	☐ Yes ☒ No	4-contiguous to, Wetland A receives road runoff and periodic flood waters
4	☒ Yes ☐ No	5,6,8,9,10,13,14,15,18	☒ Yes ☐ No	Watershed 9+ square miles
5	☐ Yes ☒ No	1,2,6,7,12,15	☐ Yes ☒ No	2- Bellamy Reservior & Ports wtr supply downstream, 12-wetland A moderate, wetland B high
6	☒ Yes ☐ No	See NHB report	☒ Yes ☐ No	NHB identifies 2 turtle species nearby which likely travel this corridor
7	☒ Yes ☐ No	3,5,4,7,8,9,10,11	☒ Yes ☐ No	3-wetland A more potential, 4-marine sediments, 5-mostly wetland B, 8&9-wetland B, 10-mostly upstream of culvert
8	☒ Yes ☐ No	1,2,4,5,7,10,11	☒ Yes ☐ No	1,2,4,7-mostly upstream and wetland B
9	☒ Yes ☐ No	2,6,9,10,11,12	☒ Yes ☐ No	2-open water = Bellamy River, 10-low traffic volumes
10	☒ Yes ☐ No	1,4,6,7,9,10,16, wetland A has more opportunity, wetland B has better physical attributes	☒ Yes ☐ No	1-wetland A road sediments, 6-Ports water supply & Dover wells, 9-Wetland A is partly road ditch
11	☒ Yes ☐ No	2,3,4,6,12,13,14	☒ Yes ☐ No	3-road sand-wetland A, 13-especially upstream
12	☒ Yes ☐ No	5,7,10,11,13,14,16,18,19,22,23,27	☒ Yes ☐ No	5-swamp,13-scrub-shrub, 23-stone wall, 27-flooding issues
13	☒ Yes ☐ No	2,4,6,7,8,10,11	☐ Yes ☒ No	2-warm wtr spec., 8-fishing only, 10-1 or 2 auto's, rec unlikely in wetland A&B, maybe further away

14	☒ Yes ☐ No	2,5,6,8,13,18,19	☒ Yes ☐ No	13-especially upstream, habitat increases in value away from road

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1	NA	NA	NA	NA	NA
2					
3					
4					
5					
6					
7					

8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: **Bellamy River - perennial**	STREAM TYPE (ROSGEN): **G3/G4 down and G5c up**
HAVE FISHERIES BEEN DOCUMENTED? ☒ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No

OTHER KEY ON-SITE FUNCTIONS OF NOTE: **warm water species**

The following table can be used to compile data on stream resources. "Important Notes" are to include characteristics the evaluator used to determine principal function and value of each stream. The functions and values reference number are defined in Section 4.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☒ Yes ☐ No	NH Method for Evaluation of Freshwater Wetlands data form	☒ Yes ☐ No	excluding the culvert at Nute Rd. there are no human-made structures within 1/2 mile
2	☒ Yes ☐ No	2,10,11,13	☐ Yes ☒ No	1-possible-see NHB result
3	☒ Yes ☐ No	1,2,3,4,5,7,8,10,12,14,15,16,17	☒ Yes ☐ No	2&10-esp. upstream, 12 talked to abutter-warm water species
4	☒ Yes ☐ No	1,2,6,8,9,10,13,15	☒ Yes ☐ No	15-Exist culvert at Nute Road creates some constriction
5	☐ Yes ☒ No	1,2,6,7,11,12,15	☐ Yes ☒ No	2- Bellamy Reservior & Ports wtr supply downstream, 12-wetland A mod, wetland B high
6	☒ Yes ☐ No	See NHB report	☒ Yes ☐ No	NHB identifies 2 turtle species which likely travel this corridor
7	☐ Yes ☒ No	1,8,9,13	☐ Yes ☒ No	8&9-upstream
8	☒ Yes ☐ No	10,11	☒ Yes ☐ No	most production upstream
9	☒ Yes ☐ No	2,6,9,10,11,12	☒ Yes ☐ No	2-open water = Bellamy River, 10-low traffic volumes
10	☐ Yes ☒ No	6,10,	☐ Yes ☒ No	6-Portsmouth water supply-Bellamy Res & Dover wells
11	☒ Yes ☐ No	2,4,6,9,12,14	☒ Yes ☐ No	distinct bank most places
12	☒ Yes ☐ No	5,7,10,11,13,14,16,18,19,22,23,27	☒ Yes ☐ No	5-swamp,13-scrub-shrub, 23-stone wall, 27-flooding issues

13	☒ Yes ☐ No	2,4,6,7,8,10,11	☐ Yes ☒ No	2-warm wtr spec., 8-fishing only, 10-1 or 2 auto's, rec unlikely in wetland A&B, maybe further away
14	☒ Yes ☐ No	2,5,6,8,13,18,19	☒ Yes ☐ No	13-especially upstream, habitat increases in value away from road

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list. MEJ

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

Wetland Area A

Big-leaved arrowhead (Sagittaria latifolia)

Bur-reed (Sparganium americanum)

Goldenrod (Solidago sp.)

Blue vervain (Verbena hastata)

Jewelweed (Impatiens capensis)

Multiflora rose (Rosa multiflora)

Red maple (Acer rubrum)

Wetland Area B

Wild raisin (Viburnum cassanoides)

Dogwood (Cornus sp.)

Glossy buckthorn (Frangula alnus)

High bush blueberry (Vaccinium corymbosum)

Red maple

Wetland A cont.

Sensitive fern (Onoclea sensibilis)

Tussock sedge (Carex stricta)

White ash (Fraxinus americana)

Skunk cabbage (Symplocarpus foetidus)

Wetland Area C

Glossy buckthorn

High bush blueberry

Dogwood

Royal fern (Osmunda regalis)

Cardinal flower (Lobelia cardinalis)

Wetland D

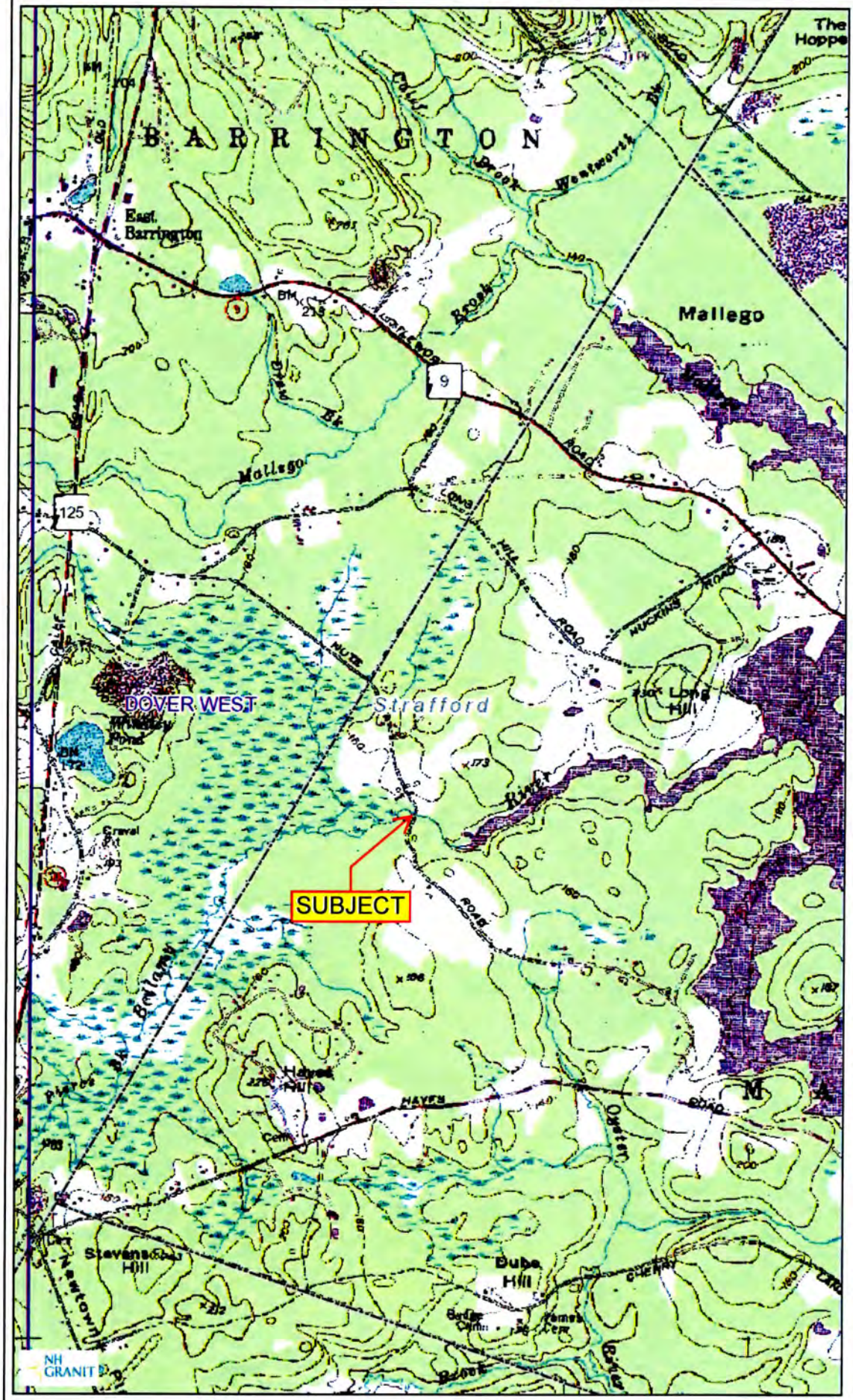
Skunk cabbage

Tussock sedge

Cinnamon fern (Osmundastrum cinnamomeum)

Cardinal flower

Bellamy River at Nute Road - Madbury, NH



Legend

- 7.5-Minute
- State
- County
- City/Town

Map Scale

1: 25,977

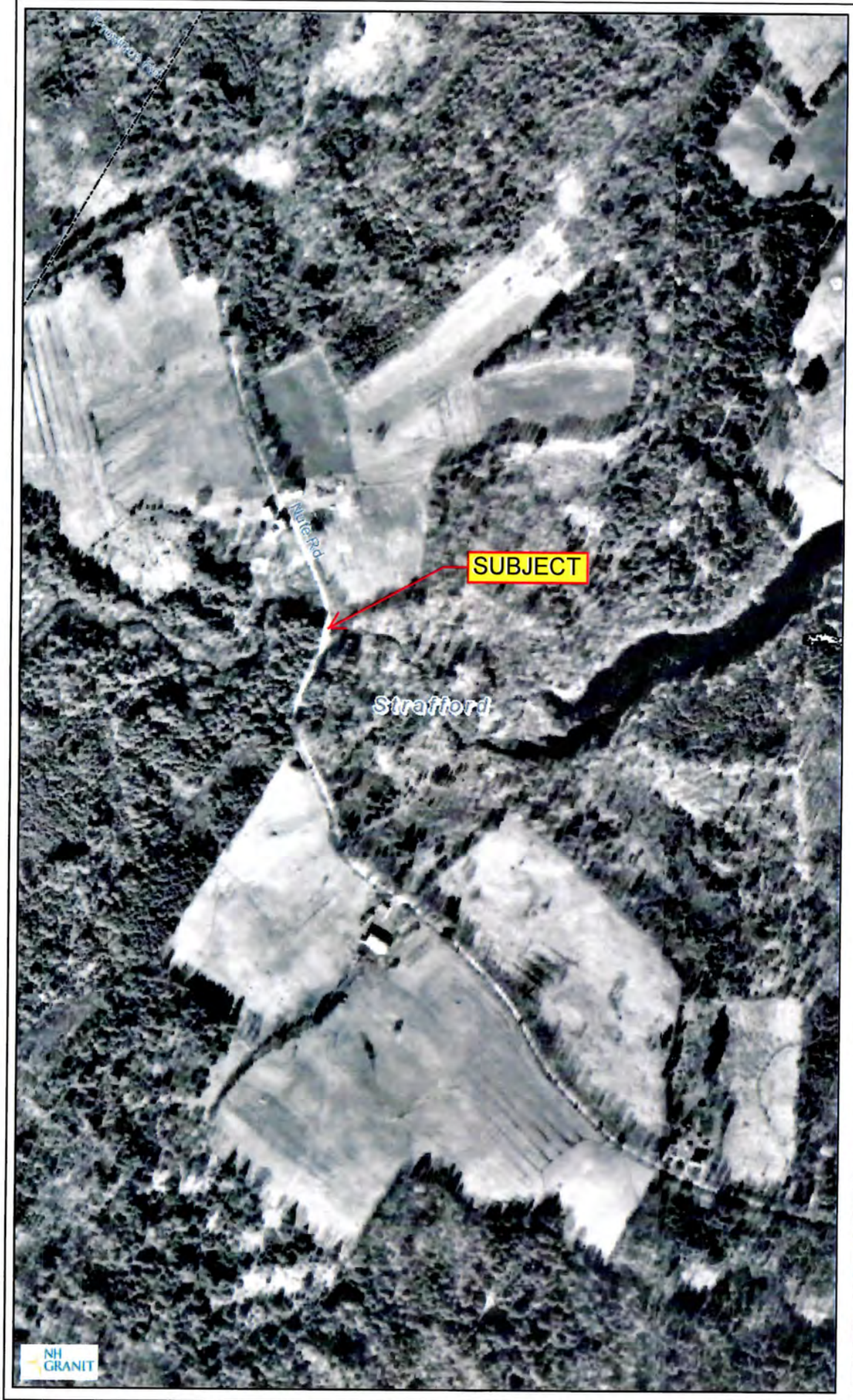
Map Generated: 4/9/2020

Notes

Dover West 7.5 X 15 minute

Attachment 1

Bellamy River at Nute Road in Madbury, NH



Legend

- State
- County
- City/Town

Map Scale

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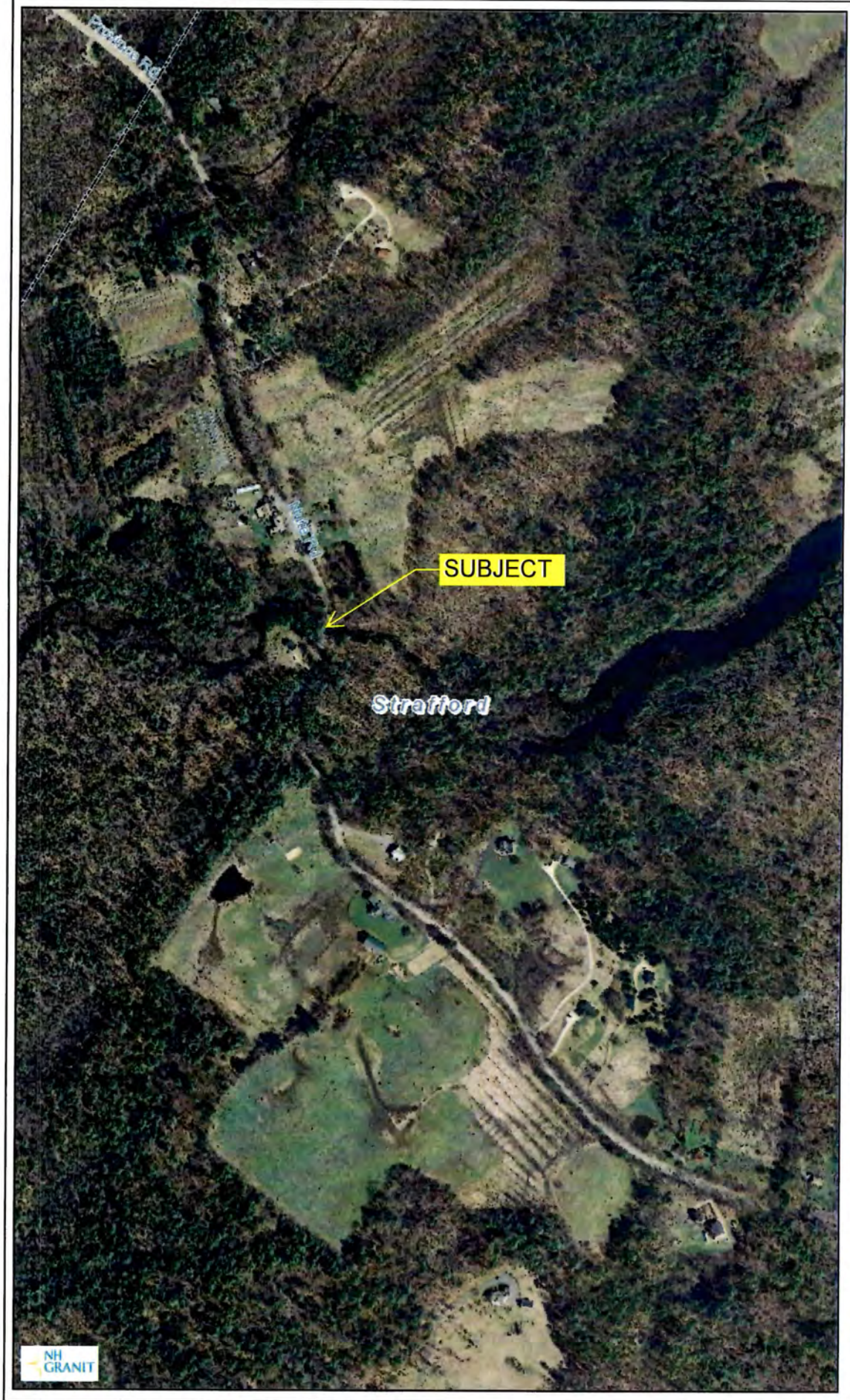
Map Generated: 3/26/2020

Notes

1962 B&W

Attachment 2A

Bellamy River at Nute Road in Madbury, NH



Legend

- State
- County
- City/Town

Map Scale

1: 6,494

Map Generated: 3/26/2020

Notes

2010 Aerial

Attachment 2B

ATTACHMENT 3

WATERSHED 305(b) ASSESSMENT SUMMARY REPORT:

HUC 12 010600030903

HUC 12 NAME BELLAMY RIVER

(Locator map on next page only applies to this HUC12)

Assessment Cycle 2018

Good	Full Support Good
Marginal	Full Support Marginal
Likely Good	Insufficient Information – Potentially Full Support
No Data	No Data
Likely Bad	Insufficient Information – Potentially Not Support
Poor	Not Support Marginal
Severe	Not Support Severe

ASSESSMENT UNIT ID	MAP LABEL	ASSESSMENT UNIT NAME	AQUATIC LIFE	SWIMMING	BOATING	FISH CONSUMP.
NHEST600030903-01-01	E*01-01	BELLAMY RIVER NORTH	5-P	2-G	2-G	5-M
NHEST600030903-01-03	E*01-03	BELLAMY RIVER SOUTH CLEMENT POINT	5-P	2-G	2-G	5-M
NHEST600030903-01-04	E*01-04	BELLAMY RIVER SOUTH	5-P	2-G	2-G	5-M
NHIMP600030903-01	I*01	BELLAMY RIVER	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-02	I*02	BELLAMY RIVER - SAWYERS MILL DAM POND	5-M	5-M	3-ND	4A-M
NHIMP600030903-03	I*03	CANNEY BROOK - WILDLIFE POND	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-04	I*04	BELLAMY RIVER IV DAM	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-05	I*05	KNOX MARSH BROOK	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-06	I*06	UNNAMED BROOK - THORNWOOD COMMONS POND	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-07	I*07	UNNAMED BROOK - BELLAMY RIVER WILDLIFE POND	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-08	I*08	UNNAMED BROOK - FARM POND	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-09	I*09	UNNAMED BROOK - WEBSTER BROOK DAM	3-ND	3-ND	3-ND	4A-M
NHIMP600030903-10	I*10	UNNAMED BROOK - FARM POND	3-ND	3-ND	3-ND	4A-M
NHLAK600030903-01	L*01	BARBADOES POND	3-ND	3-ND	3-ND	4A-M
NHLAK600030903-02	L*02	BELLAMY RESERVOIR	5-M	3-ND	3-ND	4A-M
NHLAK600030903-03	L*03	SWAINS LAKE	5-P	3-PNS	3-ND	4A-M
NHLAK600030903-04	L*04	WINKLEY POND	5-P	3-ND	3-ND	4A-M
NHLAK600030903-05	L*05	BRANCH MALLEGO BROOK POND	3-ND	3-ND	3-ND	4A-M
NHLAK600030903-06	L*06	FARM POND	3-ND	3-ND	3-ND	4A-M
NHLAK600030903-07	L*07	UNNAMED POND	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-01	R*01	MADLA BROOK	5-P	3-ND	3-ND	4A-M
NHRIV600030903-02	R*02	MALLEGO BROOK	5-P	3-ND	3-ND	4A-M
NHRIV600030903-03	R*03	CALEF BROOK	3-ND	3-PAS	3-PAS	4A-M
NHRIV600030903-05	R*05	UNNAMED BROOK - TO SWAINS LAKE	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-06	R*06	BELLAMY RIVER - UNNAMED BROOK	5-M	3-ND	3-ND	4A-M
NHRIV600030903-07	R*07	BELLAMY RIVER	5-P	4A-P	4A-P	4A-M
NHRIV600030903-08	R*08	BELLAMY RIVER - KELLY BROOK - KNOX MARSH BROOK	5-P	4A-P	3-PNS	4A-M
NHRIV600030903-09	R*09	BELLAMY RIVER - UNNAMED BROOK	5-M	4A-P	3-ND	4A-M

WATERSHED 305(b) ASSESSMENT SUMMARY REPORT:

HUC 12 010600030903

HUC 12 NAME BELLAMY RIVER

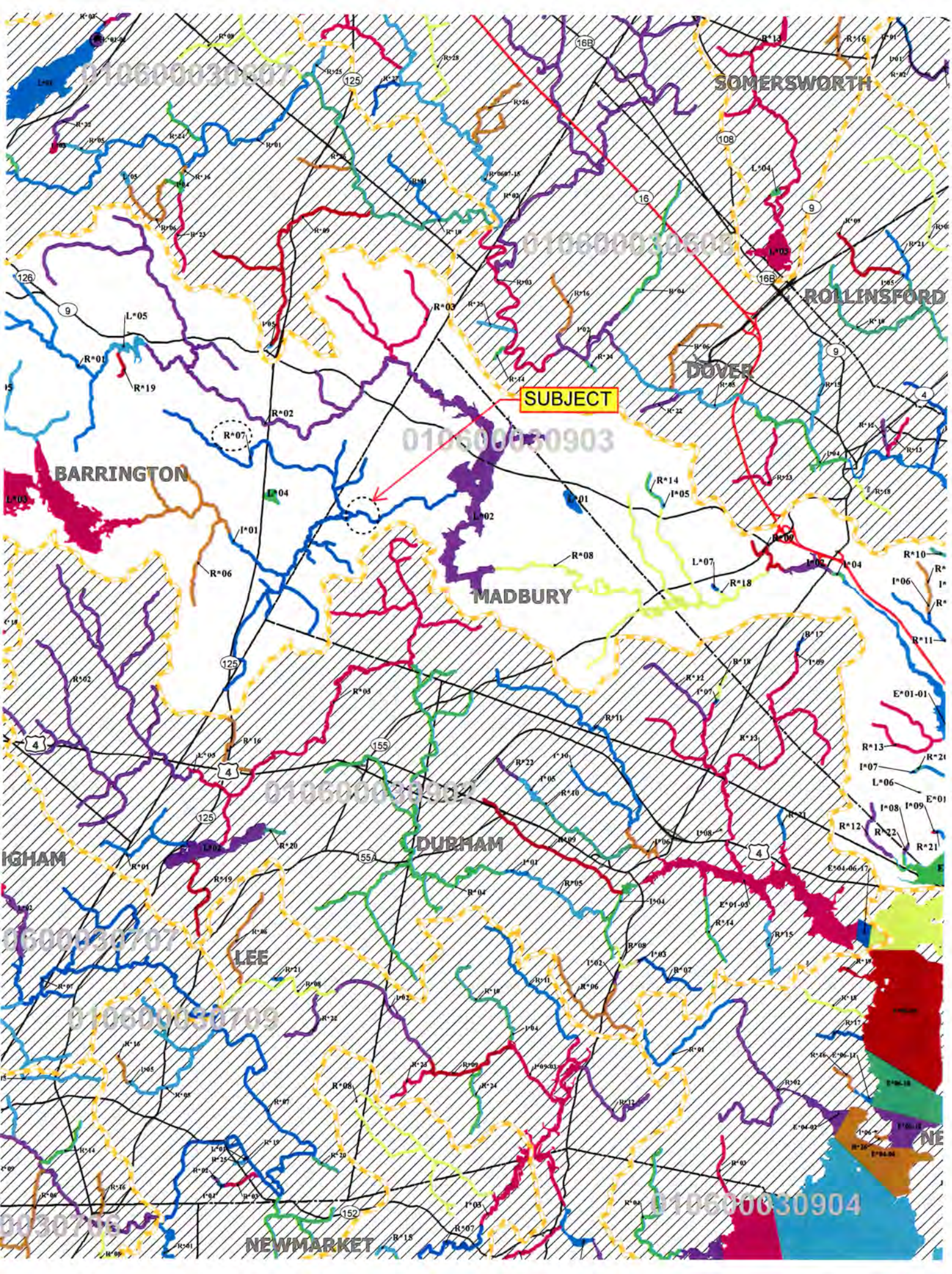
(Locator map on next page only applies to this HUC12)

Assessment Cycle 2018

Good	Full Support Good
Marginal	Full Support Marginal
Likely Good	Insufficient Information – Potentially Full Support
No Data	No Data
Likely Bad	Insufficient Information – Potentially Not Support
Poor	Not Support Marginal
Severe	Not Support Severe




ASSESSMENT UNIT ID	MAP LABEL	ASSESSMENT UNIT NAME	AQUATIC LIFE	SWIMMING	BOATING	FISH CONSUMP.
NHRIV600030903-10	R*10	CANNEY BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-11	R*11	VARNEY BROOK - CANNEY BROOK	3-ND	4B-P	4A-M	4A-M
NHRIV600030903-12	R*12	UNNAMED BROOK - TO BELLAMY RIVER ROYALLS COVE	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-13	R*13	GARRISON BROOK	3-ND	4B-P	3-ND	4A-M
NHRIV600030903-14	R*14	KNOX MARSH BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-16	R*16	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-17	R*17	VARNEY BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-18	R*18	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-19	R*19	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-20	R*20	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-21	R*21	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M
NHRIV600030903-22	R*22	UNNAMED BROOK	3-ND	3-ND	3-ND	4A-M


SUBJECT
SOMERSWORTH
ROLLINSFORD
DOVER
BARRINGTON
MADBURY
DURHAM
LEE
NEWMARKET
01060030903
01060030904

Assessment Unit ID NHRIV600030903-07
Assessment Unit Name BELLAMY RIVER
Primary Town BARRINGTON

Size 11.5070 MILES
Beach N
Assessment Unit Category*- 5-P

2018, 305(b)/303(d) - All Reviewed Parameters by Assessment Unit

Designated Use Description	*Desig. Use Category	Parameter Name	Parameter Threatened (Y/N)	Last Sample	Last Exceed	Parameter Category*	TMDL Priority
Aquatic Life Integrity	5-P	AMMONIA (TOTAL)	N	2016	N/A	2-G	
		Benthic-Macroinvertebrate Bioassessments (Streams)	N			3-ND	
		CHLORIDE	N	2017	N/A	3-PAS	
		Dissolved oxygen saturation	N	2017	2016	5-M	LOW
		Fishes Bioassessments (Streams)	N			3-ND	
		Oxygen, Dissolved	N	2017	2017	5-P	LOW
		PHOSPHORUS (TOTAL)		2006	NLV	3-ND	
		TURBIDITY	N	2017	2014	3-PAS	
		pH	N	2017	2017	5-P	LOW
Fish Consumption	4A-M	Mercury	N			4A-M	
Potential Drinking Water Supply	2-G	ESCHERICHIA COLI	N	2007	2007	3-ND	
Primary Contact Recreation	4A-P	Escherichia coli	N	2007	2007	4A-P	
Secondary Contact Recreation	4A-P	Escherichia coli	N	2007	2007	4A-P	
Wildlife	3-ND						

Severe	Poor	Likely Bad	No Data	Likely Good	Marginal	Good
	Not Supporting, Marginal	Insufficient Information – Potentially Full Supporting	No Data	Insufficient Information – Potentially Full Supporting	Full Support, Marginal	Full Support Good

*DES Categories; 2-G = Supports Parameter well above criteria, 2-M = Supports Parameter marginally above criteria, 2-OBS = Exceeds WQ criteria but natural therefore not a WQ exceedence, 3-ND = Insufficient Information/No data, 3-PAS= Insufficient Information/Potentially Attaining Standard, 3-PNS= Insufficient Information/Potentially Not Attaining Standard, (4A=Impaired/TMDL Completed, 4B=Impaired/Other Measure will rectify Impairment, 4C=Impaired/Non-Pollutant, 5=Impaired/TMDL needed) M=Marginal Impairment, P=Severe Impairment, T=Threatened (http://des.nh.gov/organization/divisions/water/wmb/swqa/index.htm)

ATTACHMENT 4

201305018
Project 30704
Activity 190791

WASTE MANAGEMENT DIVISION

Record of Telephone Conversation

Date of Conversation: 5/5/13 Time: 9:20 a.m./p.m.

Bureau Staff: Degler Title: E-IV

Other Party's Name: DOS- Telephone #: 223-4381

Affiliation/Company: Fire Chief Tom Perley, Madbury

Site: 54 Nute Rd, Madbury

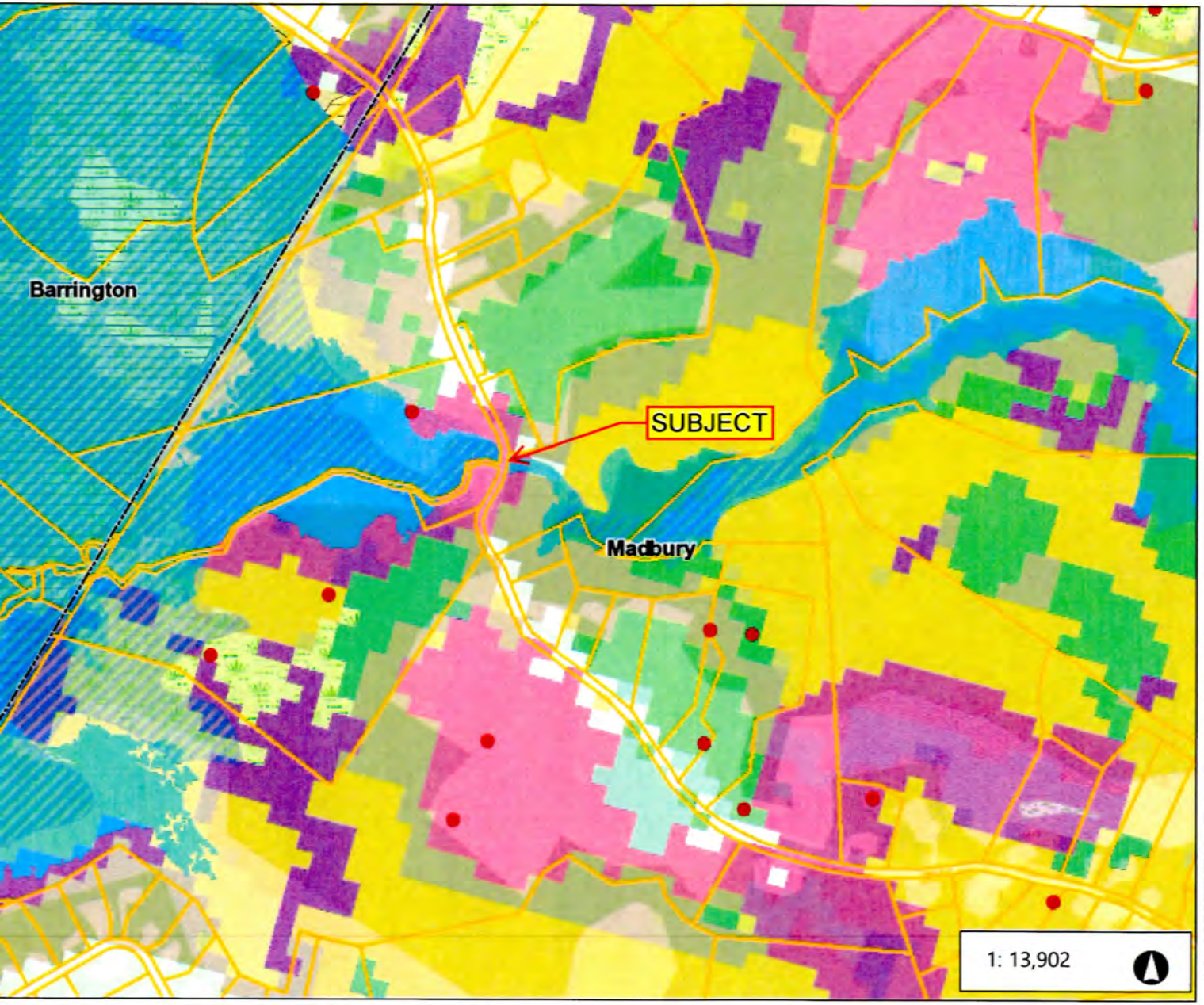
SUMMARY OF CONVERSATION

9:20 DOS notified DES of a 2-3 gal Kerosene spill. Call back info is FC Tom Perley, Ce17-0562

9:27 DES contacted FC Perley concerning the 2-3 gal h-1 spill. It appears a 5-gal container of h-1 fell off a pick up truck early this morning and stained the road + ran alons side the shoulder. The release was observed at 5:30 a.m. this morning. The Madbury FD has dug a 6' x 2' x 4" area alons the side of the road. They applied clay to the stained road. FC Perley estimates 4 bags + 3 5-gal pails of contaminated soil. He will transport back to the fire station and let me know if he needs DES assistance for disposal. He will check Madbury's next HHW day.

Bellamy River - Nute Road - Madbury, NH

ATTACHMENT 5



Legend

- NHDES Wetland and Shorelan
- RiversStreams
- RiversStreams
- RiversStreams
- NH City/Town Boundaries
- NH Parcel Mosaic
- Floodplain Wetland Adjacent tc Watercourse
- Marsh-Scrub / Shrub Wetlands
- 100' Prime Wetland Buffer
- Prime Wetland
- Peatlands
- Shoreland Jurisdiction - Lakes
- Designated Rivers
  - Subject to SWQPA
  - Not Subject to SWQPA
- FEMA Floodplains
  - 1 pct. Annual Chance Flood Hazarc
  - Floodway
  - 0.2 pct. Annual Chance Flood Haza
  - Area of Undetermined Flood Hazar
  - Area Protected by Levee
- Sand Dunes
  - backdune
  - foredune
  - interdune
  - other
- Designated Rivers
- Highest Ranked Wildlife Habita
  - Not Top Ranked

Map Notes

Wildlife Action Plan and Flood Plain

0 0.25 0.5 Miles

_Web_Mercator_Auxiliary_Sphere
Geographics Group Ltd.

This map is a user generated static output from the web-based NHDES Wetlands Permit Scanning Tool and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. No map should be printed with scale 1 to less than 7,500.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

ATTACHMENT 6

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Marc Jacobs, Consulting Natural Scientist
P.O. Box 417
Greenland, NH, NH 03840-0417

From: Amy Lamb, NH Natural Heritage Bureau
Date: 4/2/2020 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB20-0847 Town: Madbury Location: Intersection of Bellamy River and Nute Road

Description: Likely eventual replacement of elliptical corrugated steel culvert (currently being designed) on the Bellamy River at Nute Road. This request is being made as needed to conduct Functional Wetland Assessment as per wetland regulations. Eventual wetland permit application to be filed by others.

cc: Kim Tuttle

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

Comments: Please contact the NH Fish & Game Department.

Vertebrate species	State[1]	Federal	Notes
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).

[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.

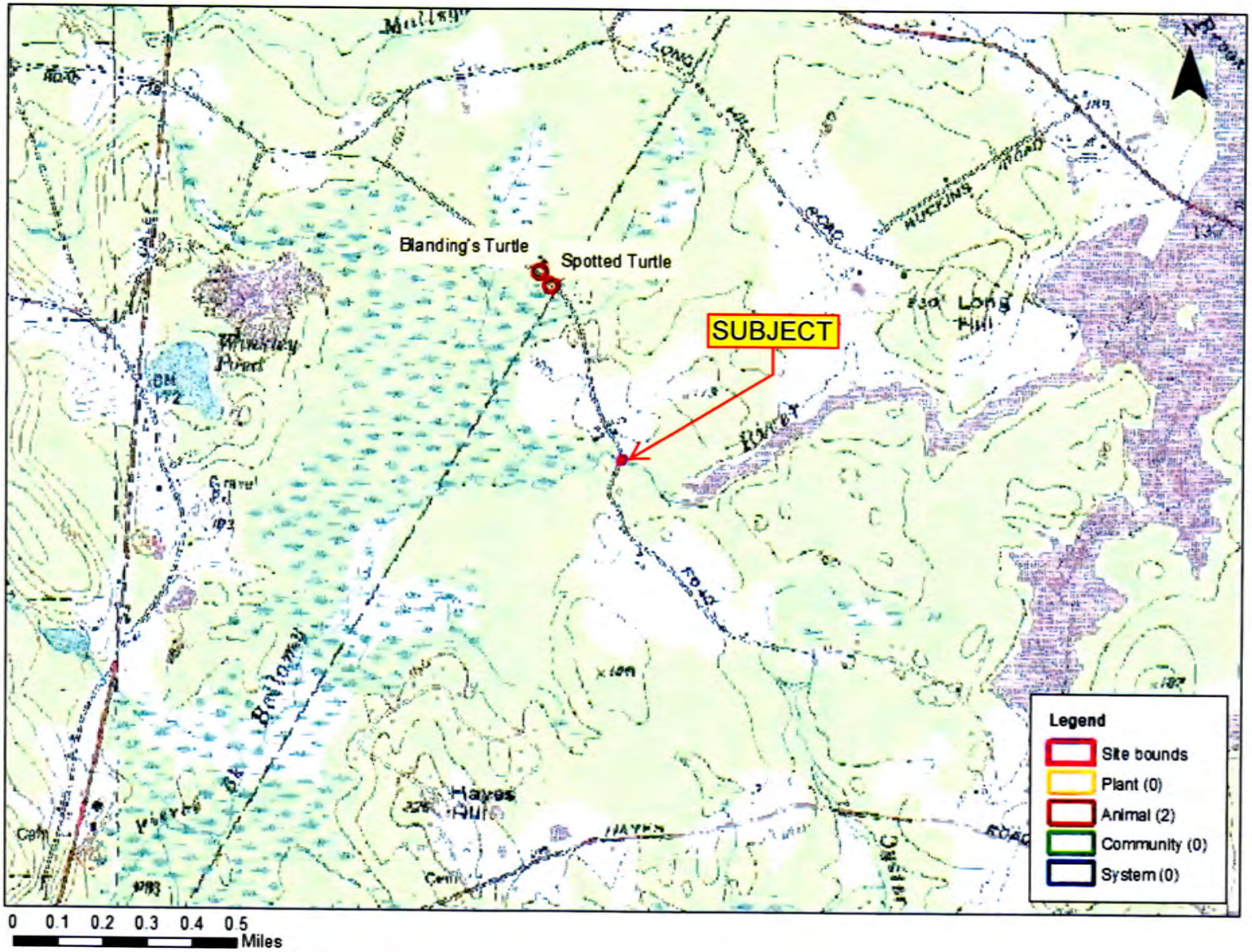
Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

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.

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

NHB20-0847


Blanding's Turtle
Spotted Turtle
SUBJECT
Legend
Site bounds
Plant (0)
Animal (2)
Community (0)
System (0)
0 0.1 0.2 0.3 0.4 0.5
Miles

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Apparently secure but with cause for concern
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2009: Area 12328: 1 male observed.
General Area: 2009: Area 12328: Roadside.
General Comments: --
Management Comments: --

Location

Survey Site Name: Pierce Brook
Managed By:

County: Strafford
Town(s): Barrington
Size: .4 acres
Elevation:

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

Directions: 2009: Area 12328: Crossing Province Road near Madbury town line (43 11 41.51 / 70 58 50.99).

Dates documented

First reported: 2009-06-09 Last reported: 2009-06-09

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

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Animal Record

Spotted Turtle (*Clemmys guttata*)

Legal Status

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2019: Area 14376: 2 adults observed, sex unknown.
General Area: 2019: Area 14376: Dirt road, with extensive wetland to the south.
General Comments: --
Management Comments: --

Location

Survey Site Name: Bellamy River
Managed By:

County: Strafford
Town(s): Barrington
Size: .4 acres
Elevation:

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

Directions: 2019: Area 14376: Province Road, Barrington, just west of Madbury town line [where road name changes to Nute Road].

Dates documented

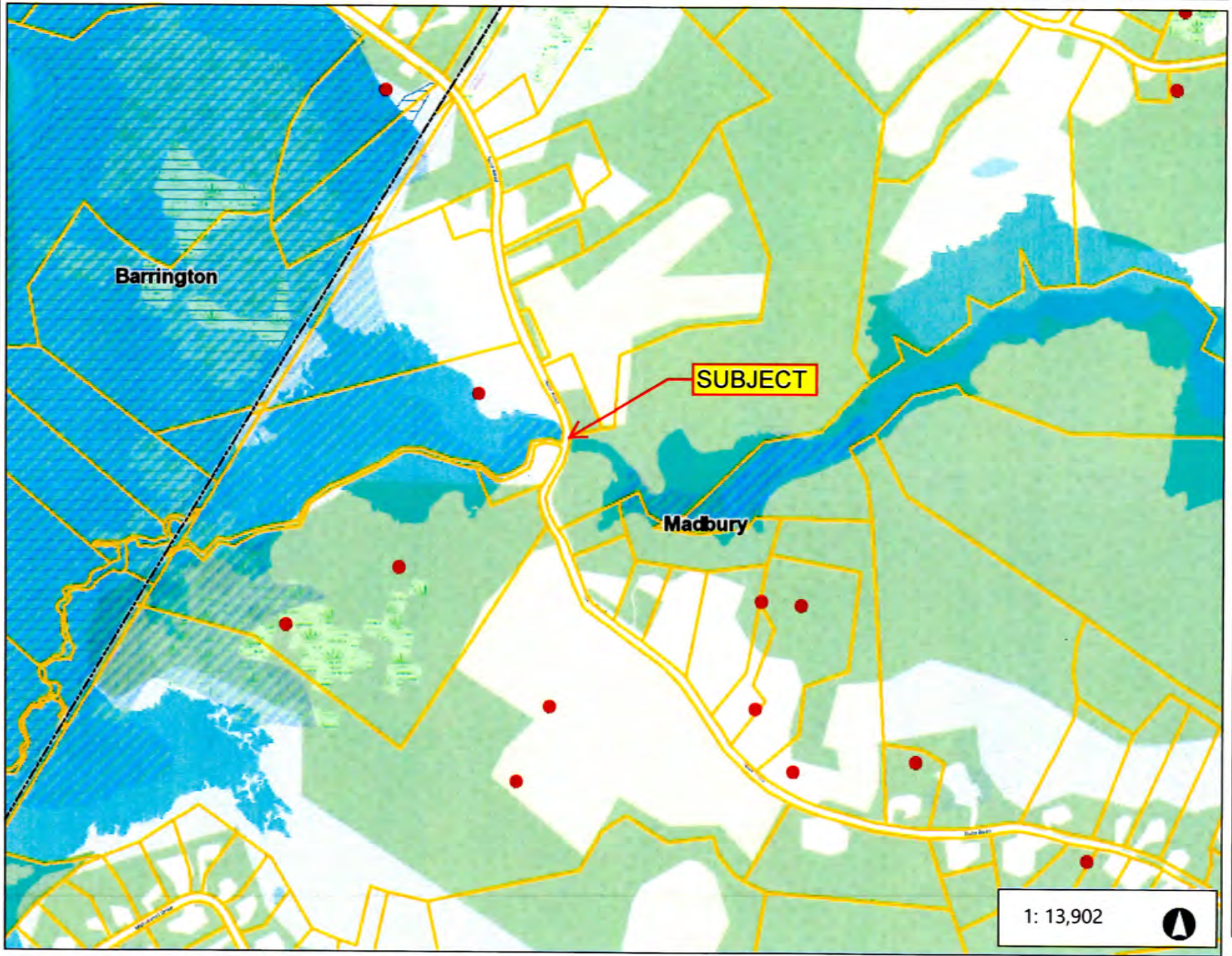
First reported: 2019-06-26 Last reported: 2019-06-26

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

CONFIDENTIAL – NH Dept. of Environmental Services review

Bellamy River - Nute Road - Madbury, NH

ATTACHMENT 7



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- RiversStreams
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- Prime Wetland
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- Designated Rivers
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- FEMA Floodplains
  - 1 pct. Annual Chance Flood Hazarc
  - Floodway
  - 0.2 pct. Annual Chance Flood Haza
  - Area of Undetermined Flood Hazar
  - Area Protected by Levee
- Sand Dunes
  - backdune
  - foredune
  - interdune
  - other
- Designated Rivers

0.5 0 0.25 0.5 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

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THIS MAP IS NOT TO BE USED FOR NAVIGATION

Map Notes

Fisheries and Flood Plain

BELLAMY RIVER AT NUTE ROAD IN MADBURY, NH - UPSTREAM REACH

8. Substrate Classification based on Field Observations *For **Tier 2** and **Tier 3** Crossings Only*	
% of reach that is *bedrock*	0 %
% of reach that is *boulder*	</=5 %
% of reach that is *cobble*	0 %
% of reach that is *gravel*	5 %
% of reach that is *sand*	50 %
% of reach that is *silt*	40G %

9. Stream Type of Reference Reach *For **Tier 2** and **Tier 3** Crossings Only*	
Stream Type of Reference Reach:	G5c

*Refer to Rosgen Classification Chart (**Figure 2**) below*

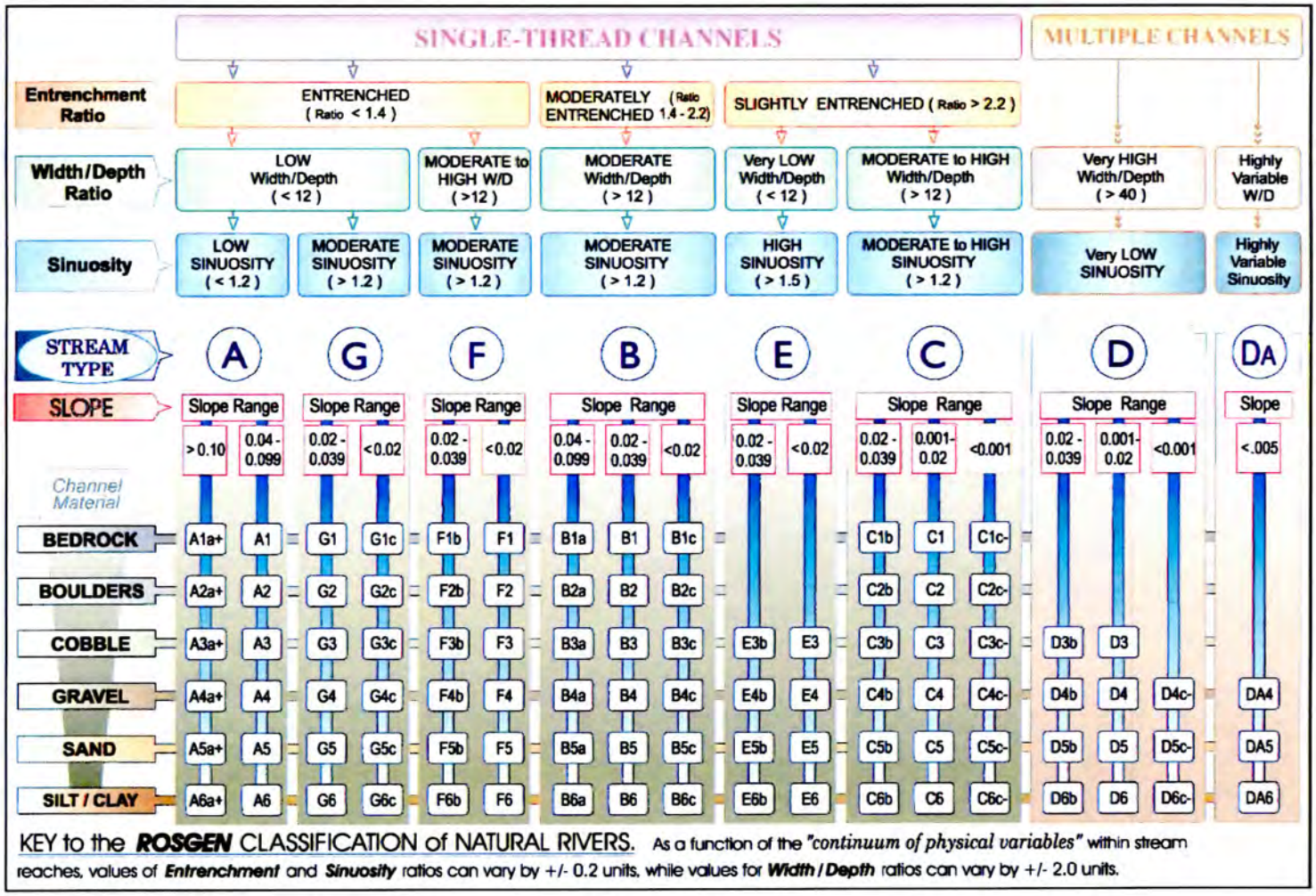


Figure 2. Reference from Applied River Morphology, Rosgen, 1996

BELLAMY RIVER AT NUTE ROAD IN MADBURY, NH - DOWNSTREAM REACH

8. Substrate Classification based on Field Observations *For **Tier 2** and **Tier 3** Crossings Only*	
% of reach that is *bedrock*	10 %
% of reach that is *boulder*	</=5 %
% of reach that is *cobble*	>/=50 %
% of reach that is *gravel*	</=20 %
% of reach that is *sand*	</=10 %
% of reach that is *silt*	</=5 %

9. Stream Type of Reference Reach *For **Tier 2** and **Tier 3** Crossings Only*	
Stream Type of Reference Reach:	G3 or G4

*Refer to Rosgen Classification Chart (**Figure 2**) below*

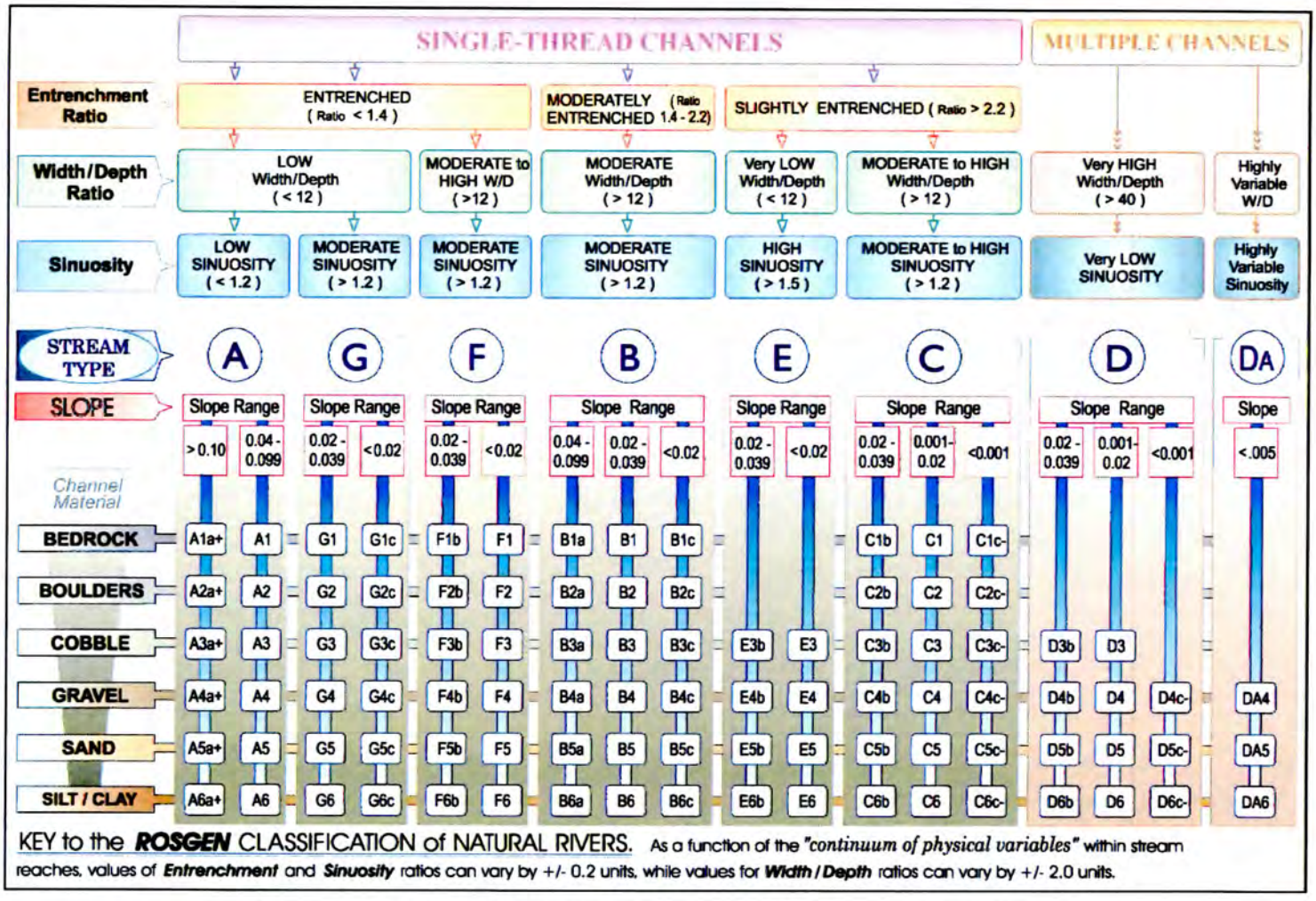
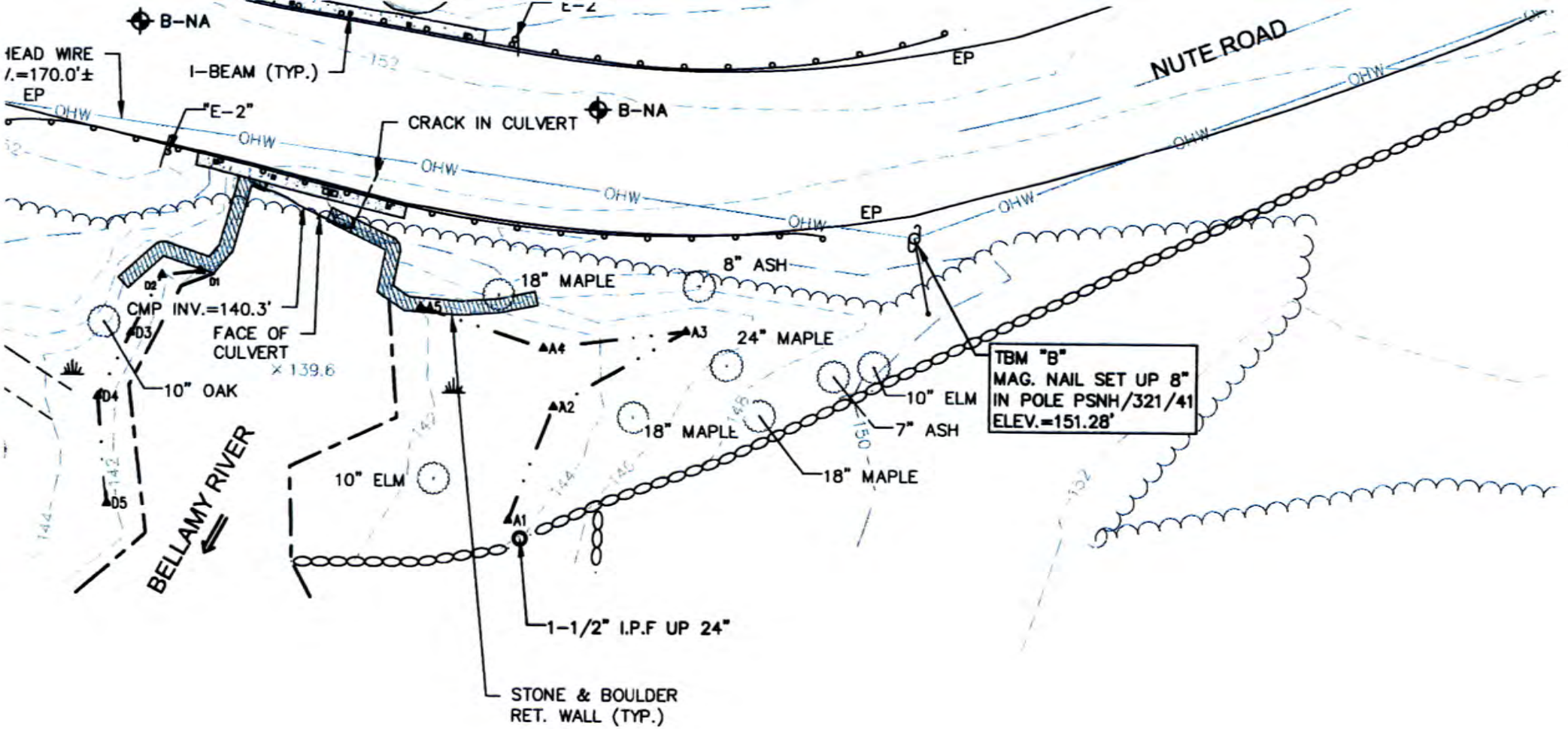


Figure 2. Reference from Applied River Morphology, Rosgen, 1996



TOP OF WATER
ELEV.=141.1'
8/18/2018

NOTES:

Bellamy River at Nute Road in Madbury, NH

500' Radius Circle

Attachment 10

Appendix A

Wetland evaluation supporting documentation; Reproducible forms.

Below is an example list of considerations that was used for a New Hampshire highway project. Considerations are flexible, based on best professional judgment and interdisciplinary team consensus. This example provides a comprehensive base, however, and may only need slight modifications for use in other projects.

GROUNDWATER RECHARGE/DISCHARGE— This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.

CONSIDERATIONS/QUALIFIERS

1. Public or private wells occur downstream of the wetland.
2. Potential exists for public or private wells downstream of the wetland.
3. Wetland is underlain by stratified drift.
4. Gravel or sandy soils present in or adjacent to the wetland.
5. Fragipan does not occur in the wetland.
6. Fragipan, impervious soils, or bedrock does occur in the wetland.
7. Wetland is associated with a perennial or intermittent watercourse.
8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.
9. Wetland is associated with a watercourse but lacks a defined outlet or contains a constricted outlet.
10. Wetland contains only an outlet, no inlet.
11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.
12. Quality of water associated with the wetland is high.
13. Signs of groundwater discharge are present (e.g., springs).
14. Water temperature suggests it is a discharge site.
15. Wetland shows signs of variable water levels.
16. Piezometer data demonstrates discharge.
17. Other

FLOODFLOW ALTERATION (Storage & Desynchronization) — This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecological system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.

CONSIDERATIONS/QUALIFIERS

1. Area of this wetland is large relative to its watershed.
2. Wetland occurs in the upper portions of its watershed.
3. Effective flood storage is small or non-existent upslope of or above the wetland.
4. Wetland watershed contains a high percent of impervious surfaces.
5. Wetland contains hydric soils which are able to absorb and detain water.
6. Wetland exists in a relatively flat area that has flood storage potential.
7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.
8. During flood events, this wetland can retain higher volumes of water than under normal or average rainfall conditions.
9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.
10. In the event of a large storm, this wetland may receive and detain excessive flood water from a nearby watercourse.
11. Valuable properties, structures, or resources are located in or near the floodplain downstream from the wetland.
12. The watershed has a history of economic loss due to flooding.
13. This wetland is associated with one or more watercourses.
14. This wetland watercourse is sinuous or diffuse.
15. This wetland outlet is constricted.
16. Channel flow velocity is affected by this wetland.
17. Land uses downstream are protected by this wetland.
18. This wetland contains a high density of vegetation.
19. Other

FISH AND SHELLFISH HABITAT (FRESHWATER) — This function considers the effectiveness of seasonal or permanent watercourses associated with the wetland in question for fish and shellfish habitat.

CONSIDERATIONS/QUALIFIERS

1. Forest land dominant in the watershed above this wetland.
2. Abundance of cover objects present.

STOP HERE IF THIS WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE

3. Size of this wetland is able to support large fish/shellfish populations.
4. Wetland is part of a larger, contiguous watercourse.
5. Wetland has sufficient size and depth in open water areas so as not to freeze solid and retain some open water during winter.
6. Stream width (bank to bank) is more than 50 feet.
7. Quality of the watercourse associated with this wetland is able to support healthy fish/shellfish populations.
8. Streamside vegetation provides shade for the watercourse.
9. Spawning areas are present (submerged vegetation or gravel beds).
10. Food is available to fish/shellfish populations within this wetland.
11. Barrier(s) to anadromous fish (such as dams, including beaver dams, waterfalls, road crossing) are absent from the stream reach associated with this wetland.
12. Evidence of fish is present.
13. Wetland is stocked with fish.
14. The watercourse is persistent.
15. Man-made streams are absent.
16. Water velocities are not too excessive for fish usage.
17. Defined stream channel is present.
18. Other

Although the above example refers to freshwater wetlands, it can also be adapted for marine ecosystems. The following is an example provided by the National Marine Fisheries Service (NMFS) of an adaptation for the fish and shellfish function.

FISH AND SHELLFISH HABITAT (MARINE) — This function considers the effectiveness of wetlands, embayments, tidal flats, vegetated shallows, and other environments in supporting marine resources such as fish, shellfish, marine mammals, and sea turtles.

CONSIDERATIONS/QUALIFIERS

1. Special aquatic sites (tidal marsh, mud flats, eelgrass beds) are present.
2. Suitable spawning habitat is present at the site or in the area.
3. Commercially or recreationally important species are present or suitable habitat exists.
4. The wetland/waterway supports prey for higher trophic level marine organisms.
5. The waterway provides migratory habitat for anadromous fish.
6. Essential fish habitat, as defined by the 1996 amendments to the Magnuson-Stevens Fishery & Conservation Act, is present (consultation with NMFS may be necessary).
7. Other

SEDIMENT/TOXICANT/PATHOGEN RETENTION — This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas.

CONSIDERATIONS/QUALIFIERS

1. Potential sources of excess sediment are in the watershed above the wetland.
2. Potential or known sources of toxicants are in the watershed above the wetland.
3. Opportunity for sediment trapping by slow moving water or deepwater habitat are present in this wetland.
4. Fine grained mineral or organic soils are present.
5. Long duration water retention time is present in this wetland.
6. Public or private water sources occur downstream.
7. The wetland edge is broad and intermittently aerobic.
8. The wetland is known to have existed for more than 50 years.
9. Drainage ditches have not been constructed in the wetland.

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

10. Wetland is associated with an intermittent or perennial stream or a lake.
11. Channelized flows have visible velocity decreases in the wetland.
12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.
13. No indicators of erosive forces are present. No high water velocities are present.
14. Diffuse water flows are present in the wetland.
15. Wetland has a high degree of water and vegetation interspersion.
16. Dense vegetation provides opportunity for sediment trapping and/or signs of sediment accumulation by dense vegetation is present.
17. Other

NUTRIENT REMOVAL/RETENTION/TRANSFORMATION — This function considers the effectiveness of the wetland as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

CONSIDERATIONS/QUALIFIERS

1. Wetland is large relative to the size of its watershed.
2. Deep water or open water habitat exists.
3. Overall potential for sediment trapping exists in the wetland.

4. Potential sources of excess nutrients are present in the watershed above the wetland.
5. Wetland saturated for most of the season. Ponded water is present in the wetland.
6. Deep organic/sediment deposits are present.
7. Slowly drained fine grained mineral or organic soils are present.
8. Dense vegetation is present.
9. Emergent vegetation and/or dense woody stems are dominant.
10. Opportunity for nutrient attenuation exists.
11. Vegetation diversity/abundance sufficient to utilize nutrients.

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

12. Waterflow through this wetland is diffuse.
13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.
14. Water moves slowly through this wetland.
15. Other

PRODUCTION EXPORT (Nutrient) — This function evaluates the effectiveness of the wetland to produce food or usable products for humans or other living organisms.

CONSIDERATIONS/QUALIFIERS

1. Wildlife food sources grow within this wetland.
2. Detritus development is present within this wetland
3. Economically or commercially used products found in this wetland.
4. Evidence of wildlife use found within this wetland.
5. Higher trophic level consumers are utilizing this wetland.
6. Fish or shellfish develop or occur in this wetland.
7. High vegetation density is present.
8. Wetland exhibits high degree of plant community structure/species diversity.
9. High aquatic vegetative diversity/abundance is present.
10. Nutrients exported in wetland watercourses (permanent outlet present).
11. "Flushing" of relatively large amounts of organic plant material occurs from this wetland.
12. Wetland contains flowering plants that are used by nectar-gathering insects.
13. Indications of export are present.
14. High production levels occurring, however, no visible signs of export (assumes export is attenuated).
15. Other

SEDIMENT/SHORELINE STABILIZATION — This function considers the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.

CONSIDERATIONS/QUALIFIERS

1. Indications of erosion or siltation are present.
2. Topographical gradient is present in wetland.
3. Potential sediment sources are present up-slope.
4. Potential sediment sources are present upstream.
5. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.
6. A distinct step between the open waterbody or stream and the adjacent land exists (i.e., sharp bank) with dense roots throughout.
7. Wide wetland (>10') borders watercourse, lake, or pond.
8. High flow velocities in the wetland.
9. The watershed is of sufficient size to produce channelized flow.
10. Open water fetch is present.
11. Boating activity is present.
12. Dense vegetation is bordering watercourse, lake, or pond.
13. High percentage of energy-absorbing emergents and/or shrubs border a watercourse, lake, or pond.
14. Vegetation is comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet).
15. Vegetation is comprised of a dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events.
16. Other

WILDLIFE HABITAT — This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.[1]

CONSIDERATIONS/QUALIFIERS

1. Wetland is not degraded by human activity.
2. Water quality of the watercourse, pond, or lake associated with this wetland meets or exceeds Class A or B standards.
3. Wetland is not fragmented by development.
4. Upland surrounding this wetland is undeveloped.
5. More than 40% of this wetland edge is bordered by upland wildlife habitat (e.g., brushland, woodland, active farmland, or idle land) at least 500 feet in width.
6. Wetland is contiguous with other wetland systems connected by a watercourse or lake.
7. Wildlife overland access to other wetlands is present.
8. Wildlife food sources are within this wetland or are nearby.
9. Wetland exhibits a high degree of interspersion of vegetation classes and/or open water.
10. Two or more islands or inclusions of upland within the wetland are present.
11. Dominant wetland class includes deep or shallow marsh or wooded swamp.
12. More than three acres of shallow permanent open water (less than 6.6 feet deep), including streams in or adjacent to wetland, are present.
13. Density of the wetland vegetation is high.
14. Wetland exhibits a high degree of plant species diversity.
15. Wetland exhibits a high degree of diversity in plant community structure (e.g., tree/shrub/vine/grasses/mosses)
16. Plant/animal indicator species are present. (List species for project)
17. Animal signs observed (tracks, scats, nesting areas, etc.)
18. Seasonal uses vary for wildlife and wetland appears to support varied population diversity/abundance during different seasons.
19. Wetland contains or has potential to contain a high population of insects.
20. Wetland contains or has potential to contain large amphibian populations.
21. Wetland has a high avian utilization or its potential.
22. Indications of less disturbance-tolerant species are present.
23. Signs of wildlife habitat enhancement are present (birdhouses, nesting boxes, food sources, etc.).
24. Other

---

[1]In March 1995, a rapid wildlife habitat assessment method was completed by a University of Massachusetts research team with funding and oversight provided by the New England Transportation Consortium. The method is called WEThings (wetland habitat indicators for non-game species). It produces a list of potential wetland-dependent mammal, reptile, and amphibian species that may be present in the wetland. The output is based on observable habitat characteristics documented on the field data form. This method may be used to generate the wildlife species list recommended as backup information to the wetland evaluation form and to augment the considerations. Use of this method should first be coordinated with the Corps project manager. A computer program is also available to expedite this process.

RECREATION (Consumptive and Non-Consumptive) — This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland. Non-consumptive opportunities do not consume or diminish these resources of the wetland.

CONSIDERATIONS/QUALIFIERS

1. Wetland is part of a recreation area, park, forest, or refuge.
2. Fishing is available within or from the wetland.
3. Hunting is permitted in the wetland.
4. Hiking occurs or has potential to occur within the wetland.
5. Wetland is a valuable wildlife habitat.
6. The watercourse, pond, or lake associated with the wetland is unpolluted.
7. High visual/aesthetic quality of this potential recreation site.
8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.
9. The watercourse associated with this wetland is wide and deep enough to accommodate canoeing and/or non-powered boating.
10. Off-road public parking available at the potential recreation site.
11. Accessibility and travel ease is present at this site.
12. The wetland is within a short drive or safe walk from highly populated public and private areas.
13. Other

EDUCATIONAL/SCIENTIFIC VALUE — This value considers the suitability of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.

CONSIDERATIONS/QUALIFIERS

1. Wetland contains or is known to contain threatened, rare, or endangered species.
2. Little or no disturbance is occurring in this wetland.
3. Potential educational site contains a diversity of wetland classes which are accessible or potentially accessible.
4. Potential educational site is undisturbed and natural.
5. Wetland is considered to be a valuable wildlife habitat.
6. Wetland is located within a nature preserve or wildlife management area.
7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).
8. Off-road parking at potential educational site suitable for school bus access in or near wetland.
9. Potential educational site is within safe walking distance or a short drive to schools.
10. Potential educational site is within safe walking distance to other plant communities.
11. Direct access to perennial stream at potential educational site is available.
12. Direct access to pond or lake at potential educational site is available.
13. No known safety hazards exist within the potential educational site.
14. Public access to the potential educational site is controlled.
15. Handicap accessibility is available.
16. Site is currently used for educational or scientific purposes.
17. Other

UNIQUENESS/HERITAGE — This value considers the effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location. These functions are clearly valuable wetland attributes relative to aspects of public health, recreation, and habitat diversity.

CONSIDERATIONS/QUALIFIERS

1. Upland surrounding wetland is primarily urban.
2. Upland surrounding wetland is developing rapidly.
3. More than 3 acres of shallow permanent open water (less than 6.6 feet deep), including streams, occur in wetlands.
4. Three or more wetland classes are present.
5. Deep and/or shallow marsh or wooded swamp dominate.
6. High degree of interspersion of vegetation and/or open water occur in this wetland.
7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.
8. Potential educational site is within a short drive or a safe walk from schools.
9. Off-road parking at potential educational site is suitable for school buses.
10. No known safety hazards exist within this potential educational site.
11. Direct access to perennial stream or lake exists at potential educational site.
12. Two or more wetland classes are visible from primary viewing locations.
13. Low-growing wetlands (marshes, scrub-shrub, bogs, open water) are visible from primary viewing locations.
14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.
15. Large area of wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.
17. Overall view of the wetland is available from the surrounding upland.
18. Quality of the water associated with the wetland is high.
19. Opportunities for wildlife observations are available.
20. Historical buildings are found within the wetland.
21. Presence of pond or pond site and remains of a dam occur within the wetland.
22. Wetland is within 50 yards of the nearest perennial watercourse.
23. Visible stone or earthen foundations, berms, dams, standing structures, or associated features occur within the wetland.
24. Wetland contains critical habitat for a state- or federally-listed threatened or endangered species.
25. Wetland is known to be a study site for scientific research.
26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.
27. Wetland has local significance because it serves several functional values.
28. Wetland has local significance because it has biological, geological, or other features that are locally rare or unique.
29. Wetland is known to contain an important archaeological site.
30. Wetland is hydrologically connected to a state or federally designated scenic river.
31. Wetland is located in an area experiencing a high wetland loss rate.
32. Other

VISUAL QUALITY/AESTHETICS — This value considers the visual and aesthetic quality or usefulness of the wetland.

CONSIDERATIONS/QUALIFIERS

1. Multiple wetland classes are visible from primary viewing locations.
2. Emergent marsh and/or open water are visible from primary viewing locations.
3. A diversity of vegetative species is visible from primary viewing locations.
4. Wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.
6. Visible surrounding land use form contrasts with wetland.
7. Wetland views absent of trash, debris, and signs of disturbance.
8. Wetland is considered to be a valuable wildlife habitat.
9. Wetland is easily accessed.
10. Low noise level at primary viewing locations.
11. Unpleasant odors absent at primary viewing locations.
12. Relatively unobstructed sight line exists through wetland.
13. Other

ENDANGERED SPECIES HABITAT — This value considers the suitability of the wetland to support threatened or endangered species.

ES

CONSIDERATIONS/QUALIFIERS

1. Wetland contains or is known to contain threatened or endangered species.
2. Wetland contains critical habitat for a state or federally listed threatened or endangered species.

APPENDIX C

AGREEMENTS FOR ENTRY AND CONSTRUCTION

David P. Martin & Michele J. Martin
50 Nute Rd.
Madbury, NH 03823

Town of Madbury
13 Town Hall Road
Madbury, NH 03823

Re: Mutual Right of Way Agreement

This is a Mutual Right of Way Agreement between David P. Martin & Michele J. Martin (First Party) relating to the property at 50 Nute Road, Madbury, NH, Tax Map 4-15A, recorded at the Strafford County Registry of Deeds in Book 4045 Page 563, and the Town of Madbury (Second Party) relating to the Right of Way for Nute Road in Madbury, New Hampshire.

WHEREAS:

The First Party and the Second Party share a mutual border between their respective property and easement which is ambiguous; the parties wish to establish a mutual right of way over their respective property and easement for the benefit of the public due to the revised alignment of the Nute Road as it passes over the Bellamy River.

NOW THEREFORE in consideration of the mutual covenants and conditions hereinafter set forth and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. The First Party hereby grants to the Second Party a right of way for temporary work during construction and the permanent construction of the roadway embankment which may extend onto the First Party's property, as shown on a plan entitled Mutual Right of Way Agreement Plan prepared for the Town of Madbury by Doucet Survey, LLC, dated February 10, 2020, said plan recorded in the Strafford County Registry of Deeds as plan _____.

2. The foregoing description shall form a mutual right of way for the roadway embankment modification to support pedestrians and vehicles over the revised alignment of Nute Road over the Bellamy River.

3. The Second Party agrees to maintain the roadway and embankment in a good state of repair at its own cost.

4. This agreement shall inure to the benefit of and be binding upon the respective heirs, executors, administrators and assigns of each of the parties hereto.

5. This is the entire agreement between the parties. Any changes must be made in writing and signed by both parties. Any disputes must be brought in the State of New Hampshire.

6. This agreement shall be filed in the Registry of Deeds for the above-mentioned property.

IN WITNESS WHEROF this Agreement has been executed by the parties hereto as of the date written below.

David P. Martin
50 Nute Rd.
Madbury, NH 03823

Michele J. Martin
50 Nute Rd.
Madbury, NH 03823

Mr. Frederick Green
Chairman, Board of Selectmen
Town of Madbury, NH

State of New Hampshire
County of Stafford

This record was acknowledged before me on 3-16-2020 by DAVID P MARTIN AND MICHELE J MARTIN (First Party) and FREDERICK GREEN, SELECTMEN, TOWN OF MADBURY (Second Party).

Eric Fiegenbaum
Notary Public
My Commission Expires: 3-13-2024

ERIC N. FIEGENBAUM
MY COMMISSION EXPIRES MARCH 13, 2024
NOTARY PUBLIC
NEW HAMPSHIRE

Patrick M. Murray 1995 Trust, Patrick M. Murray, Trustee
17 Hillcrest Drive
Dover, NH 03820
and
Nancy J. Murray 1995 Trust, Patrick M. Murray, Trustee
49 South Main St. Suite 203
Concord, NH 03301

Town of Madbury
13 Town Hall Road
Madbury, NH 03823

Re: Mutual Right of Way Agreement

This is a Mutual Right of Way Agreement between Patrick M. Murray 1995 Trust, Patrick M. Murray, Trustee and Nancy J. Murray 1995 Trust, Patrick M. Murray, Trustee (First Party) relating to the property at Nute Road, Madbury, NH, Tax Map 2 Lots 17 and 18, recorded at the Strafford County Registry of Deeds in Book 4380 Page 0967 and Book 3485 and Page 0302 respectively, and the Town of Madbury (Second Party) relating to the Right of Way for Nute Road in Madbury, New Hampshire.

WHEREAS:

The First Party and the Second Party share a mutual border between their respective property and easement which is ambiguous; the parties wish to establish a mutual right of way over their respective property and easement for the benefit of the public due to the revised alignment of the Nute Road as it passes over the Bellamy River.

NOW THEREFORE in consideration of the mutual covenants and conditions hereinafter set forth and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. The First Party hereby grants to the Second Party a right of way for temporary work during construction and the permanent construction of the roadway embankment which may extend onto the First Party's property, as shown on a plan entitled Mutual Right of Way Agreement Plan prepared for the Town of Madbury by Doucet Survey, LLC, dated February 10, 2020, said plan recorded in the Strafford County Registry of Deeds as plan _____.

2. The foregoing description shall form a mutual right of way for the roadway embankment modification to support pedestrians and vehicles over the revised alignment of Nute Road over the Bellamy River.

3. The Second Party agrees to maintain the roadway and embankment in a good state of repair at its own cost.

4. This agreement shall inure to the benefit of and be binding upon the respective heirs, executors, administrators and assigns of each of the parties hereto.

5. This is the entire agreement between the parties. Any changes must be made in writing and signed by both parties. Any disputes must be brought in the State of New Hampshire.

6. This agreement shall be filed in the Registry of Deeds for the above-mentioned property.

IN WITNESS WHEROF this Agreement has been executed by the parties hereto as of the date written below.

Patrick Murray
_____, Attorney-in-Fact, POA
Nancy J. Murray 1995 Trust, Patrick M. Murray, Trustee
49 South Main St. Suite 203
Concord, NH 03301

Patrick Murray
_____, Attorney-in-Fact, POA
Patrick M. Murray 1995 Trust, Patrick M. Murray, Trustee
17 Hillcrest Drive
Dover, NH 03820

_____
Mr. Frederick Green
Chairman, Board of Selectmen
Town of Madbury, NH

ERIC N. FIEGENBAUM
MY COMMISSION EXPIRES MARCH 13, 2024
NOTARY PUBLIC
NEW HAMPSHIRE

State of New Hampshire
County of Stafford

This record was acknowledged before me on MARCH 2, 2020 by
PATRICK M. MURRAY by ABIGAIL DROBISIEWSKI (First Party) and
FREDERICK GREEN, TOWN OF MADBURY (Second Party).

Eric Fiegenbaum _____
Notary Public
My Commission Expires: MARCH 13, 2020

Mr. Thomas Ramsbotham & Mrs. Carolyn J. Ramsbotham
54 Nute Road
Madbury, NH 03823

Town of Madbury
13 Town Hall Road
Madbury, NH 03823

Re: Mutual Right of Way Agreement

This is a Mutual Right of Way Agreement between Mr. Thomas Ramsbotham & Mrs. Carolyn J. Ramsbotham (First Party) relating to the property at Nute Road, Madbury, NH, Tax Map 2 Lot 19, recorded at the Strafford County Registry of Deeds in Book 0885 Page 0334 and the Town of Madbury (Second Party) relating to the Right of Way for Nute Road in Madbury, New Hampshire.

WHEREAS:
The First Party and the Second Party share a mutual border between their respective property and easement which is ambiguous; the parties wish to establish a mutual right of way over their respective property and easement for the benefit of the public due to the revised alignment of the Nute Road as it passes over the Bellamy River.

NOW THEREFORE in consideration of the mutual covenants and conditions hereinafter set forth and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. The First Party hereby grants to the Second Party a right of way for temporary work during construction and the permanent construction of the roadway embankment which may extend onto the First Party's property, as shown on a plan entitled Mutual Right of Way Agreement Plan prepared for the Town of Madbury by Doucet Survey, LLC, dated February 10, 2020, said plan recorded in the Strafford County Registry of Deeds as plan _____.

2. The foregoing description shall form a mutual right of way for the roadway embankment modification to support pedestrians and vehicles over the revised alignment of Nute Road over the Bellamy River.

3. The Second Party agrees to maintain the roadway and embankment in a good state of repair at its own cost.

4. The Second Party agrees to cut and stack any trees removed from the First Party's property due to the revised alignment in a location acceptable to the First Party.

5. This agreement shall inure to the benefit of and be binding upon the respective heirs, executors, administrators and assigns of each of the parties hereto.

6. This is the entire agreement between the parties. Any changes must be made in writing and signed by both parties. Any disputes must be brought in the State of New Hampshire.

7. This agreement shall be filed in the Registry of Deeds for the above-mentioned property.

IN WITNESS WHEROF this Agreement has been executed by the parties hereto as of the date written below.

Thomas Ramsbotham

Mr. Thomas Ramsbotham
54 Nute Road
Madbury, NH 03823

Carolyn J. Ramsbotham

Mrs. Carolyn J. Ramsbotham
54 Nute Road
Madbury, NH 03823

Frederick W. Green

Mr. Frederick Green
Chairman, Board of Selectmen
Town of Madbury, NH 03823

State of New Hampshire
County of Stafford

This record was acknowledged before me on NOVEMBER 27, 2019 by

THOMAS AND CAROLYN RAMSBOTHAM (First Party) and

TOWN OF MADBURY, FREDERICK GREEN (Second Party).

ERIC N. FIEGENBAUM
MY COMMISSION EXPIRES MARCH 13, 2024
NOTARY PUBLIC
NEW HAMPSHIRE

Eric Fiegenbaum Eric Fiegenbaum

Notary Public
My Commission Expires: MARCH 13, 2024

APPENDIX D

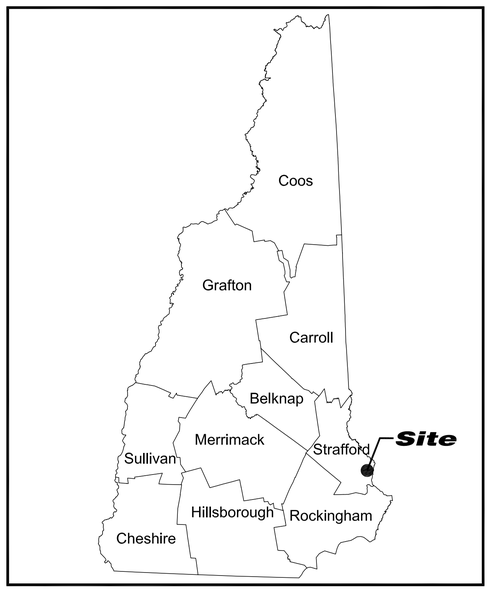
EXISTING PLANS

TOWN OF MADBURY, NEW HAMPSHIRE
Nute Road Bridge (Br. No. 056/072)
Interim Bridge Repairs

Issued For Review
October 2012

Issued For Construction
November 2012

Sheet Index



Locus Plan

Prepared For:

Town of Madbury
13 Town Hall Rd.
Madbury, New Hampshire 03823

Prepared By:

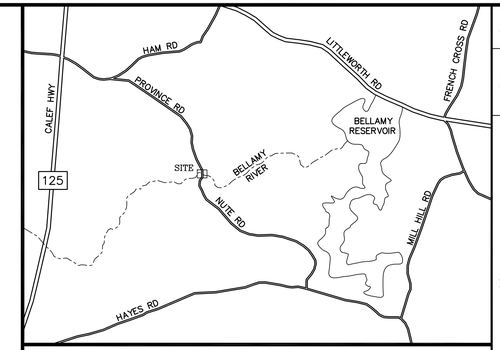
CMA ENGINEERS
CIVIL /ENVIRONMENTAL ENGINEERS

35 Bow Street
Portsmouth, New Hampshire
03801-3819
Phone: 603/431-6196
Fax: 603/431-5376
E-mail: info@cmaengineers.com

Lafayette Center
Storer Street Building, Suite 208
Kennebunk, Maine 04043
Phone: 207/985-8717
Fax: 207/985-5520

55 So. Commercial Street
Manchester, NH 03101
Phone: 603/628-0708
Fax: 603/627-0746

Project Location



Location Map (n.t.s.)

NOTES:

1. FIELD SURVEY PERFORMED BY P.J.S. & J.P.E. DURING 09/12 USING A TRIMBLE 5603 DR 200 PLUS TOTAL STATION WITH A TDS RANGER DATA COLLECTOR AND A SOKKIA B21 AUTO LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.

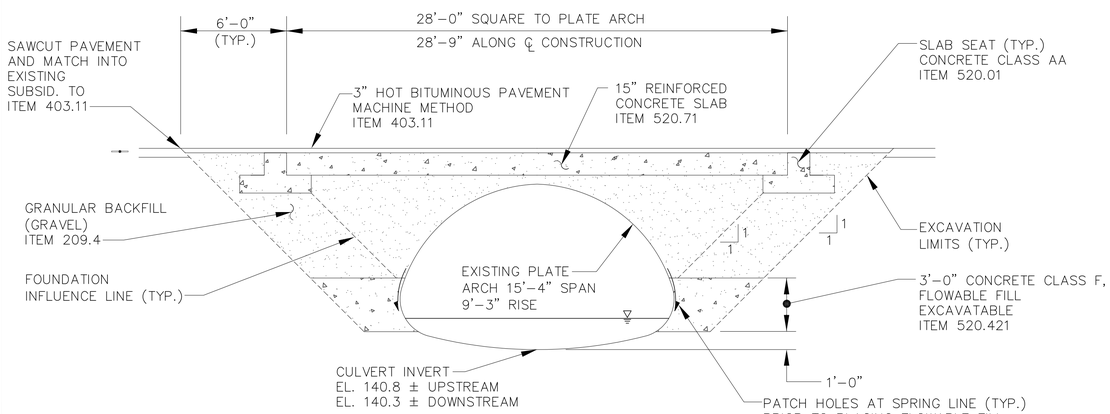
2. HORIZONTAL DATUM BASED ON NEW HAMPSHIRE STATE PLANE(2800) NAD83(2011) DERIVED FROM STATIC GPS OBSERVATIONS PROCESSED BY THE NATIONAL GEODETIC SURVEY ON-LINE POSITIONING USER SERVICE (OPUS).

3. VERTICAL DATUM BASED ON NAVD88(GEOID09) DERIVED FROM STATIC GPS OBSERVATIONS PROCESSED BY THE NATIONAL GEODETIC SURVEY ON-LINE POSITIONING USER SERVICE (OPUS).

4. TREES/BRUSH WERE ACTIVELY BEING REMOVED DURING THE FIELD SURVEY. NOT ALL OF THE TREES SHOWN HEREON MAY STILL EXIST.

SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	UNIT	TOTAL
201.01	CLEARING (F)	AC	0.03
201.21	REMOVING SMALL TREES	EA	5
201.22	REMOVING LARGE TREES	EA	1
202.71	REMOVING OF GUARDRAIL	LF	80
206.1	COMMON STRUCTURE EXCAVATION	CY	172
209.4	GRANULAR BACKFILL (GRAV)	CY	111
403.11	HOT BITUMINOUS PAVEMENT, MACHINE METHOD	T	19
520.01	CONCRETE CLASS AA	CY	10
520.421	CONCRETE CLASS F, FLOWABLE FILL, EXCAVATABLE	CY	20
520.71	15" REINFORCHED CONCRETE DECK SLAB	CY	32
544.2	REINFORCING STEEL, EPOXY COATED (F)	LB	3750
572.2	RECONSTRUCTIONG STONE WALL MULTIPLES STONE WIDE	LF	20
606.14	BEAM GUARDRAIL (STANDARD SECTION-WOOD POSTS)	LF	80
646.3	TURF ESTABLISHMENT WITH MULCH AND TACKIFIERS	AC	0.05
1002.1	REPAIRS OR REPLACEMENTS AS NEEDED - BRIDGE STRUCTURES	$	1



TYPICAL SECTION - INTERIM REPAIRS

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

NUTE ROAD STRUCTURE NOTES:

1. SPECIFICATIONS: NHDOT 2010 STANDARD PLANS AND SPECIFICATIONS AS NOTED.

2. ALL EXISTING BRONZE DISCS REPRESENTING STATE BENCHMARKS OR SURVEY TRIANGULATION POINTS MUST NOT BE DISTURBED. WHEN THE WORK CALLED FOR INVOLVES DISTURBING A BRONZE DISC THE CONTRACTOR SHALL NOTIFY THE ENGINEER SUFFICIENTLY IN ADVANCE OF THE WORK TO PERMIT THE STATE TO TEMPORARILY RELOCATE THE AFFECTED MARKER.

3. EXTREME CAUTION SHALL BE TAKEN NOT TO DAMAGE PORTIONS OF THE EXISTING STRUCTURE THAT ARE TO REMAIN. ANY DAMAGE SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER AND REPAIRED AT THE CONTRACTORS EXPENSE.

4. THE ROADWAY BASE SHALL BE EXCAVATED DOWN TO THE SPRINGLINE OF METAL PLATE ARCH BY REMOVING MATERIAL EQUALLY FROM BOTH SIDES. THE EXPOSED CULVERT SHALL BE INSPECTED JOINTLY BY THE CONTRACTOR AND ENGINEER TO DETERMINE THE EXTENT AND LOCATION OF VOIDS. ANY VOIDS IN THE BACKFILL MATERIAL TO REMAIN SHALL BE FILLED WITH ITEM 520.421, CONCRETE CLASS F, FLOWABLE FILL, EXCAVATABLE.

5. MATERIAL PLACED ABOVE THE CULVERT STRUCTURE SHALL BE COMPACTED WITH A 600 LB MAXIMUM WEIGHT CLASS PLATE COMPACTOR OR WALK BEHIND ROLLER COMPACTOR. RIDE-ON VIBRATORY ROLLER COMPACTORS WILL NOT BE PERMITTED.

LEGEND

- UTILITY POLE & GUY WIRE
- SIGN
- IRON PIPE/ROD FOUND
- TREE STUMP
- CONIFEROUS TREE
- DECIDUOUS TREE
- CONCRETE
- OHW — OVERHEAD WIRES
- TREE LINE
- STONE WALL
- GUARDRAIL
- 100 — CONTOUR LINE
- EDGE OF RIVER

no.	revision	date	by
1	As-Built	12/13	JLG

CMA ENGINEERS
CIVIL/ENVIRONMENTAL ENGINEERS
35 Bow Street, Portsmouth, NH, 603/431-6196
55 So. Commercial Street, Manchester, NH, 603/627-0708
Lafayette Center, Street Street Building, Suite 208, Kennebunk, ME, 207/985-8717
info@cmaengineers.com
www.cmaengineers.com

JASON L GALLANT No. 10551 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE - CMA

designed by: JLG
drawn by: CPD
approved by: JLG
scale: 0 5 10 (in feet) 1" = 10'-0"
date: October 2012
project no: 843
file name:

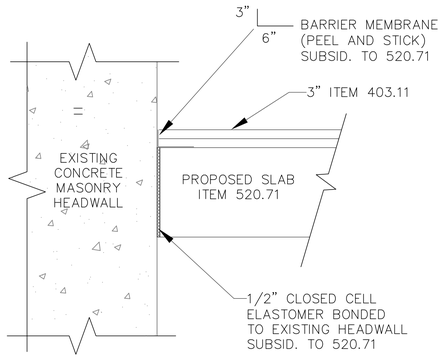
Town of Madbury, NH

Nute Road Over Bellamy River
Br. No. 056/072

General Plan & Section

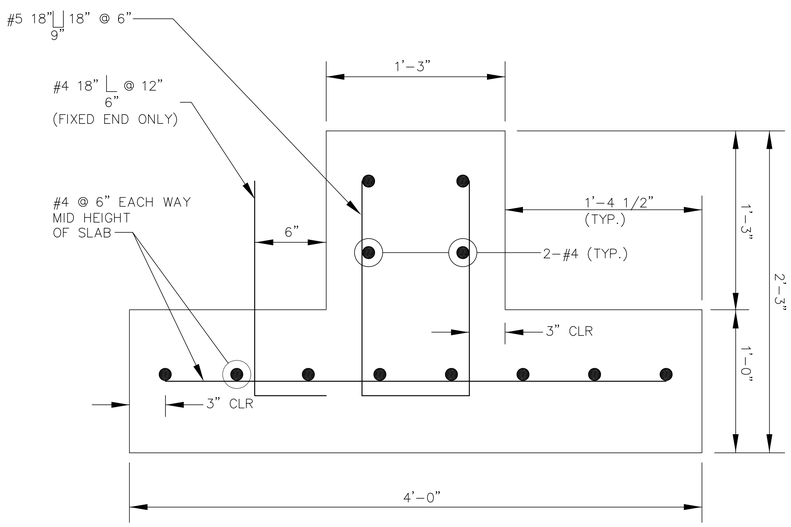
drawing no. 2

sheet: of



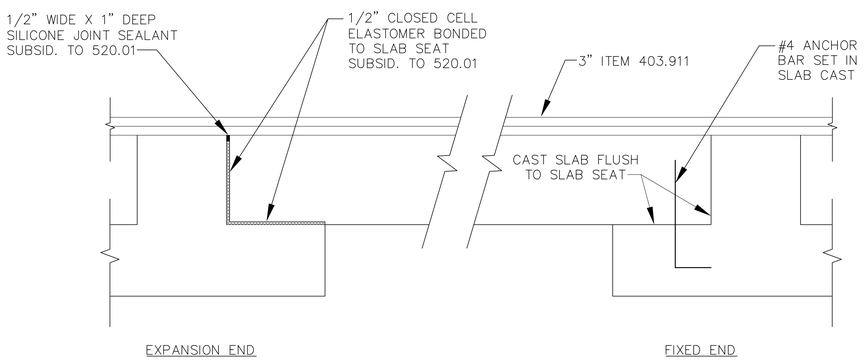
TRANSVERSE SECTION
CURB JOINT DETAIL

SCALE: 1"=1'-0"



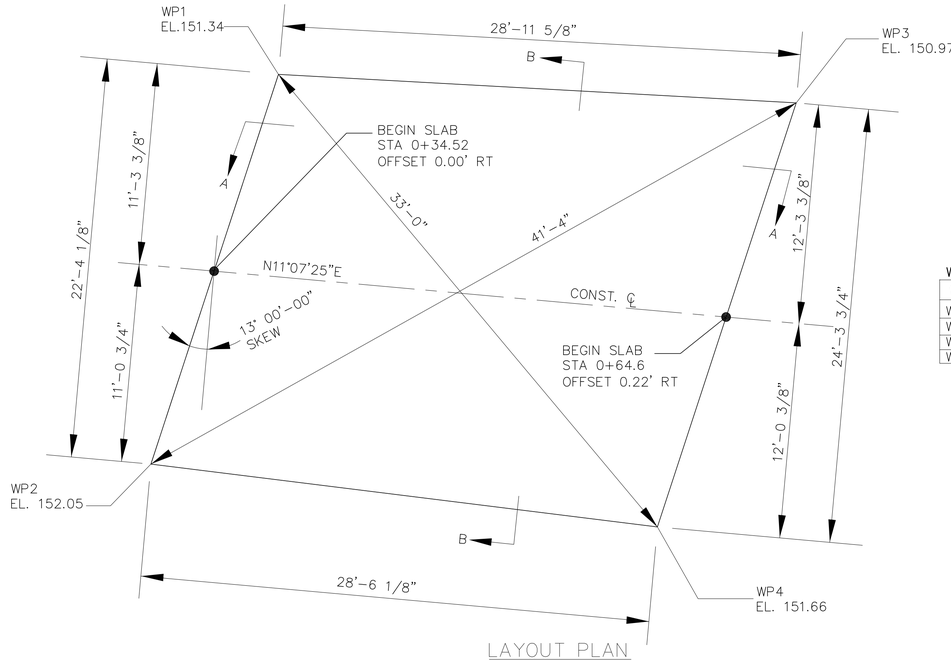
TYPICAL SECTION
SLAB SEAT REINFORCING

SCALE: 2"=1'-0"



LONGITUDNAL SECTION
SLAB JOINT DETAILS

SCALE: 1"=1'-0"



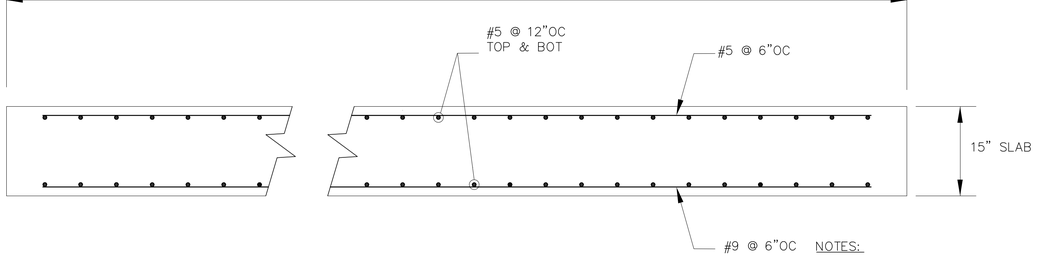
LAYOUT PLAN

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

MAGNETIC

WORKING POINT COORDINATES

WP	NORTHING	EASTING
WP1	251732.64	1168067.74
WP2	251722.90	1168088.50
WP3	251761.17	1168072.84
WP4	251750.58	1168095.43

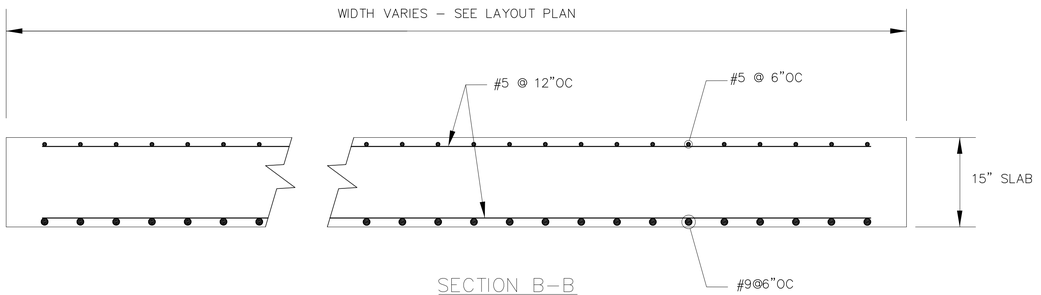


SECTION A–A

SCALE: 1"=1'-0"

NOTES:

1. REINFORCING STEEL SHALL BE GRADE 60 BLACK BAR.
2. TOP CLEAR IS 2 1/2".
3. BOTTOM CLEAR IS 3".



SECTION B–B

SCALE: 1"=1'-0"

no.	revision	date	by
1	As-Built	12/13	JLG

CMA ENGINEERS
CIVIL/ENVIRONMENTAL ENGINEERS
35 Bow Street, Portsmouth, NH 603/431-6196
55 So. Commercial Street, Manchester, NH 603/627-0708
Lafayette Center, Stonehouse #1 Building, Suite 208, Kennebunk, ME 207/985-8717
info@cmaengineers.com
www.cmaengineers.com

JASON L GALLANT No. 10551 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

designed by:	drawn by:	approved by:	
JLG	CPD	JLG	AS NOTED

date:	project no:	file name:	
October 2012	843		

Town of Madbury, NH

Nute Road Over Bellamy River
Br. No. 056/072

Slab Details

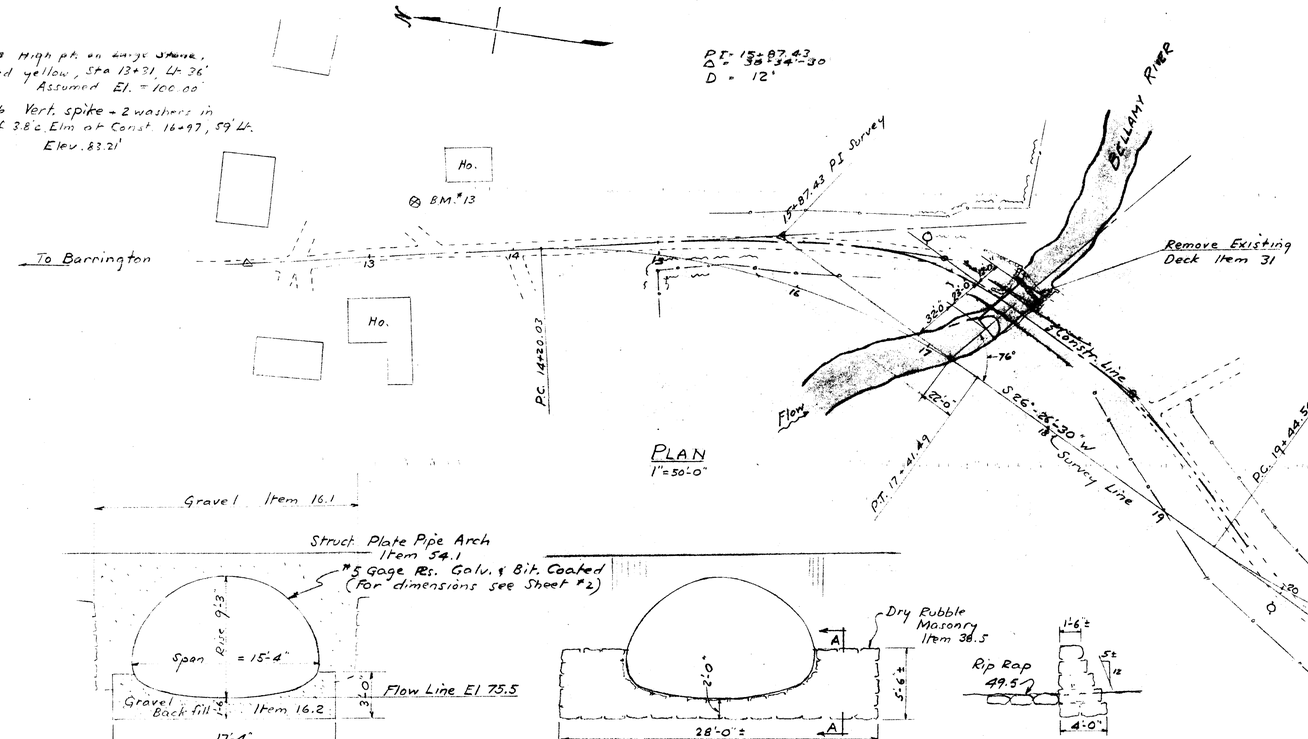
drawing no. 3

sheet: of

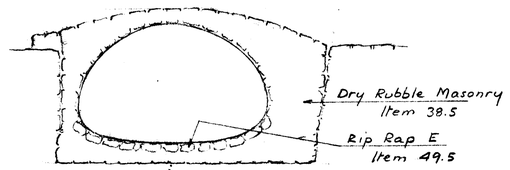
FED. ROAD DIV. NO.	STATE	PROJ.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	N.H.				

NOTE:
B.M.#13 High pt. on large stone, painted yellow, Sta 13+31, Lt 36'
Assumed El. = 100.00'

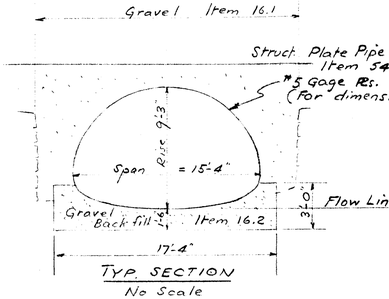
B.M.#16 Vert. spike + 2 washers in root of 38" Elm at Const. 16+97, 59' Lt.
Elev. 83.21'



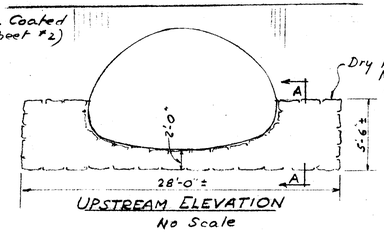
PLAN
1"=50'-0"



DOWNSTREAM ELEVATION



TYP. SECTION
No Scale



UPSTREAM ELEVATION
No Scale

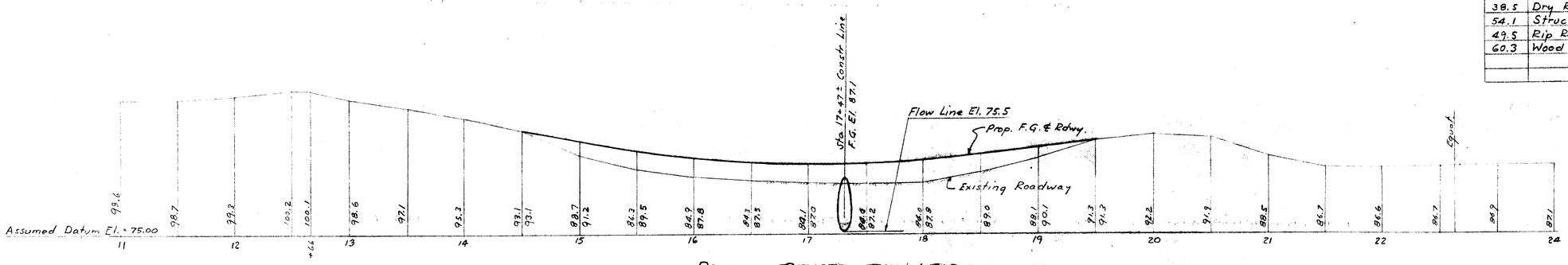
SECTION A-A
No Scale

PI = 21+10.22
Δ = 38°-13'L
D = 12°

GENERAL NOTES
Design Load = H 15
Specifications: A.A.S.H.O. 1957 & N.H.D.P.W. & H. 1959 & Supplement 1958

SUMMARY OF QUANTITIES

Item No.	Description	Quantity	
8.3	Unclass. Structure Excavation	150	C.Y.
11.1	Earth Borrow	1200	C.Y.
16.1	Gravel	450	C.Y.
16.2	Gravel Backfill	100	C.Y.
31	Removing Superstructure	1	Unit
38.5	Dry Rubble Masonry	50	C.Y.
54.1	Structural Plate Pipe Arch	1	Unit
49.5	Rip Rap E	20	C.Y.
60.3	Wood Guard Rail (Single Rail) GP-3A	96	L.F.



PROFILE - CONSTRUCTION LINE
Horizontal Scale: 1" = 50 ft.
Vertical Scale: 1" = 10 ft.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
BRIDGE DIVISION

TOWN MADBURY T.R.B. BRIDGE NO. 056/072
FEDERAL PROJECT — STATE PROJECT T-3258
ROUTE NO. NUTE RD. OVER BELLAMY RIVER
LOCATION 0.5 mi. south of Barrington-Madbury T.L.

14'-3" x 9'-3" STR.-PLATE PIPE-ARCH

	BY	DATE
DESIGNED	A.M.W.	9/58
DRAWN	J.S.B.	9/58
TRACED	—	—
QUANTITIES	J.S.B.	9/58
CHECKED	J.S.B.	9/58
CHECKED	—	—
CHECKED	—	—

BRIDGE SHEET NO. OF
FILE NUMBER 3-5-4-1

PROJ. NO.	SHEET NO.	TOTAL SHEETS
T-3258	1	2

△	DESCRIPTION	BY	DATE
	REVISIONS		

PRINTED BY SMULLENS-HOWE CO., BOSTON, MASS. PURCHASE ORDER NO. H-1803

MADBURY T 3258

NOTE BOOKS
BOOK NO. PAG. TO

SHEET TOTALS

SURVEY LINE

87.5 ℄

TW TW

16+50

87.8 ℄

WALL TW TW

16+00

89.5 ℄

TW TW

15+50

89.2 ℄

AT WALL 4:1 4:1 TW TW FH

15+00

93.1 ℄

FH TW TW

14+50

SURVEY LINE

AT WALL

89.9 ℄

TW TW

19+50

90.4 ℄

TW TW

19+00

89.6 ℄

WALL

1-1.0 Gravel Typ

Earth Borrow Typ

TW TW

18+50

87.8 ℄

WALL TW TW

18+00

16' bet. guard rails

87.2 ℄

1½ 1

4½ 12

Dry Rubble Masonry

EDGE BROOK

3'-2"

40' (true length of pipe arch)

6'

87.0 ℄

1½:1 TW TW WALL 1½:1

EDGE BROOK

17+50

17+00

SECTIONS PLOTTED BY DATE
CHECKED " DATE
TEMPLET PLOTTED BY DATE
CHECKED " DATE
AREAS PLANIM BY DATE
CHECKED " DATE
INKED BY DATE
CHECKED BY DATE

REVISIONS
DATE STATION

AFTER PROPOSAL STATION

MADBURY

PROJECT NO. 2 SHEET NO. 2 TOTAL SHEETS

SM-4-55-108-M Aerograd Vellum, Boston Blue Print Co. Inc., Boston, Mass.

MADBURY T-3258
3-5-4-1