

CONTRACT DOCUMENTS AND SPECIFICATIONS

for

SAGAMORE CREEK BRIDGE REPLACEMENT

PORTSMOUTH; 14493

FEDERAL AID PROJECT NO. X-A000(417)

Bid #12-14

State of New Hampshire

John P. Bohenko, City Manager

Prepared by:

City of Portsmouth
Engineering Division
Public Works Department

July, 2013

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City of Portsmouth
Portsmouth, New Hampshire
Department of Public Works

SAGAMORE CREEK BRIDGE REPLACEMENT

INVITATION TO BID

Sealed bid proposals, **plainly marked, Sagamore Creek Bridge Replacement**, Bid Proposal #12-14 **on the outside of the mailing envelope as well as the sealed bid envelope**, addressed to the Finance/Purchasing Department, City Hall, 1 Junkins Avenue, Portsmouth, New Hampshire, 03801, will be accepted until August 26, 2013 at 2:00 pm; at which time all bids will be publicly opened and read aloud.

There will be a mandatory pre-bid meeting held at the Finance/Purchasing Department, City Hall, 1 Junkins Avenue, Portsmouth, New Hampshire, 03801 on August 5, 2013 at 2:00 pm. All bidders are required to attend. Bidders who do not attend the meeting will not be allowed to submit a bid. Bidders must be Pre-Qualified by the NHDOT before bid opening.

The project involves the replacement of the NH Route 1A Bridge (Br. No. 198/034) over Sagamore Creek in Portsmouth, New Hampshire, and minor improvements to the sections of NH Route 1A approaching the bridge from the north and south. The replacement bridge is a new variable-depth steel girder bridge approximately 418 feet long between abutments, and 42.5 feet wide. The bridge includes two 12-foot travel lanes, two 5-foot paved shoulders for bicycles, and one fully-accessible 5.5-foot sidewalk. Approach roadway improvements involve new curbing and sidewalks, drainage facilities, replacement of the water main that crosses the existing bridge, and retaining walls in three of the project quadrants.

Work may begin at any time on or after Notice to Proceed. The new Sagamore Creek Bridge shall be opened to traffic by December 1, 2014. All sections of the work shall be completed by June 1, 2015. Liquidated damages shall be assessed at \$1,567 per calendar day.

Bidders shall have a minimum of 5 years experience in bridge and roadway construction. Contractor shall be responsible for all work specified in the contract documents including shoring, footings, wall construction, revetment construction, incidental work, and restoration of the existing work that was disturbed during construction. All work shall be in complete accordance with sound construction practices and in conformance with the attached contract documents.

Bidders must determine the quantities of work required and the conditions under which the work will be performed.

The City of Portsmouth reserves the right to reject any or all bids, to waive technical or legal deficiencies, to re-bid, and to accept any bid that it may deem to be in the best interest of the City.

Specifications may be obtained from the Finance/Purchasing Department on the third floor at the above address, or by calling the Purchasing Coordinator at 603-610-7227, or at the City's website: <http://www.cityofportsmouth.com/finance/purchasing.htm> Addenda to this project, if any, including written answers to questions, will not be provided directly to vendors, but will be posted on the City of Portsmouth website.

Hard copies of the plans and specifications may be obtained from the Purchasing Department, at Portsmouth City Hall, upon payment of a fee of \$200.00 per set, which will not be refunded. Partial sets will not be distributed. All requests for mailed documents must be accompanied by an additional fee of \$25.00 to cover the cost of postage and handling.

Each Bidder shall furnish a bid security in the amount of ten percent (10%) of the bid. The Bid Security may be in the form of a certified check or a bid bond executed by a surety company authorized to do business in the State of New Hampshire, made payable to the City of Portsmouth, N.H.

The General Contractor will be permitted to subcontract portions of the work not to exceed an aggregate dollar value of 50% of the total contract bid amount in complete accordance with Section 108 of the State of New Hampshire Standard Specifications for Road and Bridge Construction.

Bidders must be listed with the New Hampshire Department of Transportation as a pre-qualified contractor under the classifications of Road Construction and/or Site Work Construction. Any Bid submitted by a Bidder not pre-qualified will be rejected as non-conforming.

All questions regarding the project or the bid shall be submitted by the Bidder (General Contractor) to the ENGINEER (Owner's Representative) in writing no later than 5 business days prior to the Bid Opening. Any questions received after that time may not receive a response prior to the bid opening. Questions received from third parties other than the Bidders who have purchased plans (sub-contractors or product suppliers) will not receive response until a formal written submission from a Bidder is received. All timely-received bidder questions and subsequent responses will be distributed in writing as a Contract Documents Addendum issued to all bidders via fax or email as soon as available, but no later than 24 hours prior to the bid opening. The Bidder must acknowledge the receipt of all Contract Documents Addenda in the Proposal Documents.

All questions regarding the project bid shall be clearly identified with the project name and the Bidder's contact information for response and shall be submitted via U.S. Mail, fax, or email to the following:

Attn: Mr. David E. McNamara, P.E.
Fay, Spofford & Thorndike LLC
288 South River Road, Building #C
Bedford, NH 03110
Fax: (603)-668-2670

Email: dmcnamara@fstinc.com

INSTRUCTIONS TO BIDDERS

BIDDING REQUIREMENTS AND CONDITIONS

1. Special Notice to Bidders

Appended to these instructions is a complete set of bidding and general contract forms. These forms may be detached and executed for the submittal of bids. The plans, specifications, and other documents designated in the proposal form will be considered as part of the proposal, whether attached or not.

The bidders must submit a statement of bidder's qualifications.

Addenda to this bid document, if any, including written answers to questions, will be posted on the City of Portsmouth website at <http://www.cityofportsmouth.com/finance/purchasing.htm> under the project heading. Addenda and updates will NOT be sent directly to firms. Contractors submitting a bid should check the web site daily for addenda and updates after the release date. Firms should print out, sign and return addenda with the proposal. Failure to do so may result in disqualification.

2. Interpretation of Quantities in Bid Schedules

The quantities appearing in the bid schedule are approximate only and are prepared for the comparison of bids. Payment to the contractor will be made only for actual work performed and accepted in accordance with the contract. Any scheduled item of work to be done and materials to be furnished may be increased, decreased or omitted as hereinafter provided, and no claim for loss, anticipated profits or costs incurred in anticipation of work not ultimately performed will be allowed due to such increase or decrease.

3. Examination of Plans, Specifications and Site Work

The bidder is expected to examine carefully the site of the proposed work, the plans, standard specifications, supplemental specifications, special provisions and contract forms before submitting a proposal. The submission of a bid shall be considered conclusive evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the contract. It will be conclusive evidence that the bidder has also investigated and is satisfied with the sources of supply for all materials.

Plans, surveys, measurements, dimensions, calculations, estimates and statements as to the condition under which the work is to be performed are believed to be correct, but the contractors must examine for themselves, as no allowance will be made for any errors or inaccuracies that maybe found therein.

4. Familiarity with Laws

The bidder is assumed to have made himself or herself familiar with all federal and state laws and all local by-laws, ordinances and regulations which in any manner affect those engaged or employed on the work or affect the materials or equipment used in the work or affect the conduct of the work, and the bidder, if awarded the contract, shall be obligated to perform the work in conformity with said laws, by-laws, ordinances and regulations notwithstanding its ignorance thereof. If the bidder shall discover any provision in the plans or specifications which is in conflict with any such law, by-law, ordinance or regulation the bidder shall forthwith report it to the engineer in writing.

The Bidder is hereby notified that this project utilizes federal funding under the Municipal Off System Bridge Program and that the bidder is required to be familiar with and abide by all Federally funded project requirements, including federal labor compliance and Davis-Bacon wage rates.

5. Preparation of Proposal

a) The bidder shall submit its proposal upon the forms furnished by the Owner. The bidder shall specify a lump sum price in figures, for each pay item for which a quantity is given and shall also show the products of the respective prices and quantities written in figures in the column provided for that purpose and the total amount of the proposal obtained by adding the amount of the several items. All words and figures shall be in ink or typed. If a unit price or a lump sum bid already entered by the bidder on the proposal form is to be altered it should be crossed out with ink, the new unit price or lump sum bid entered above or below it and initialed by the bidder, also with ink.

b) The bidder's proposal must be signed with ink by the individual, by one or more general partners of a partnership, by one or more members or officers of each firm representing a joint venture; by one or more officers of a corporation, by one or more members (if member-managed) or managers (if manager-managed) of a limited liability company, or by an agent of the contractor legally qualified and acceptable to the owner. If the proposal is made by an individual, his or her name and post office address must be shown, by a partnership the name and post office address of each general and limited partner must be shown; as a joint venture, the name and post office address of each venturer must be shown; by a corporation, the name of the corporation and its business address must be shown, together with the name of the state in which it is incorporated, and the names, titles and business addresses of the president, secretary and treasurer.

6. Nonconforming Proposals

Proposals will be considered nonconforming and may be rejected in the Owner's sole discretion for any of the following reasons:

- If the proposal is on a form other than that furnished by the Owner, or if the form is altered or any portion thereof is detached;
- If there are unauthorized additions, conditional or altered bids, or irregularities of any kind which may tend to make the proposal or any portion thereof incomplete, indefinite or ambiguous as to its meaning;
- If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award; or
- If the proposal does not contain a unit price for each pay item listed except in the case of authorized alter pay items.

7. Proposal Guaranty

No proposal will be considered unless accompanied by a bid bond, surety, or similar guaranty of the types and in an amount not less than the amount indicated in the Invitation to Bid. All sureties shall be made payable to the "City of Portsmouth". If a bid bond is used by the bidder it shall be:

- In a form satisfactory to the Owner;
- With a surety company licensed, authorized to do business in, and subject to the jurisdiction of the courts of the State of New Hampshire; and
- Conditioned upon the faithful performance by the principal of the agreements contained in the sub-bid or the general bid.

In the event any irregularities are contained in the proposal guaranty, the bidder will have four business days (not counting the day of opening) to correct any irregularities. The corrected guaranty must be received by 4:00 p.m. If irregularities are not corrected to the satisfaction of the Owner, the Owner, in its sole discretion, may rejected the bid.

8. Delivery of Proposals

When sent by mail, the sealed proposal shall be addressed to the Owner at the address and in the care of the official in whose office the bids are to be received. All proposals shall be filed prior to the time and at the place specified in the invitation for bids. Proposals received after the time for opening of the bids will be returned to the bidder, unopened.

9. Withdrawal of Proposals

A bidder will be permitted to withdraw his or her proposal unopened after it has been submitted if the Owner receives a request for withdrawal in writing prior to the time specified for opening the proposals.

10. Public Opening of Proposals

Proposals will be opened and read publicly at the time and place indicated in the invitation for bids. Bidders, their authorized agents, and other interested parties are invited to be present.

11. Disqualification of Bidders

Any or all of the following reasons may be deemed by Owner in its sole discretion as being 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, or corporation under the same or different name;
- Evidence of collusion among bidders;
- Failure to submit all required information requested in the bid specifications;
- If the Contractor is not listed with the New Hampshire Department of Transportation as a pre-qualified contractor under the classifications of either Road Construction or Site Construction;
- Lack of competency or of adequate machinery, plant or other equipment, as revealed by the statement of bidders qualification or otherwise;
- Uncompleted work which, in the judgment of the owner, might hinder or prevent the prompt completion of additional work if awarded;
- Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts;
- Default or unsatisfactory performance on previous contracts; or
- Such disqualification would be in the best interests of the Owner.

12. Material Guaranty and Samples

Before any contract is awarded, the bidder may be required to furnish a complete statement of the origin, composition and manufacture of any or all materials to be used in the construction of the work, and the Owner may, in its sole discretion, reject the bid based on the contents of the statement or as a result of the failure of the bidder to submit the statement.

AWARD AND EXECUTION OF CONTRACT

1. Consideration of Proposals

After the proposals are opened and read, they will be compared on the basis of the total price for all sections of work and any such additional considerations as may be identified in the bid documents. The results of such comparisons will be immediately available to the public. In case of a discrepancy between the prices written in words and those written figures, the prices written in words shall govern. In case of a discrepancy between the total shown in the proposal and that obtained by adding the products of the quantities of items and unit bid prices, the latter shall govern.

2. Award of Contract

Within 30 calendar days after the opening of proposals, if a contract is to be awarded, the award will be made to the lowest responsible and qualified bidder whose proposal complies with all the requirements prescribed. The successful bidder will be notified, in writing, mailed to the address on his or her proposal, that his or her bid has been accepted and that the bidder has been awarded the contract.

3. Reservation of Rights

The Owner reserves the right to reject any or all proposals, to waive technicalities or to advertise for new proposals, if, in the sole discretion of the Owner, the best interest of the City of Portsmouth will be promoted thereby. The Owner further reserves the right to modify the scope of work in the event that bids exceed budgeted amounts.

The Owner reserves the right to cancel the award of any contract at any time before the execution of such contract by all parties without any liability of the Owner.

The City reserves the right to make such inquiries regarding the firm's qualifications and reputation as it deems necessary to evaluate the firm. The City reserves the right to negotiate directly with the firm selected for additional project work including construction administration services, and/or additional project engineering and design services.

The City reserves the right after bid opening and prior to award of the contract, to modify the amount of work in the event that bids exceed budgeted amount.

4. Return of Proposal Guaranty

All proposal guaranties, except those of the three lowest bidders, will be returned upon request following the opening and checking of the proposals. The proposal guaranties of the three lowest bidders will be returned within ten days following the award of the contract if requested.

5. Contract Bonds

At the time of the execution of the contract, the successful bidder shall furnish:

- A performance bond in the amount of 100 percent of the contract amount.
- Labor and materials payment bond in the sum equal to 100 percent of the contract amount.

At the time of project completion, the Contractor shall furnish a maintenance bond for the entire guaranty period. The bond shall meet the following criteria:

- The bond shall be in an amount equal to 20 percent of the contract amount. Such bond shall guarantee the repair of all damage due to faulty materials or workmanship provided or done by the contractor. The guarantee shall remain in effect for a period of one year after the date of final acceptance of the job by the Owner.

Each bond shall be: (1) in a form satisfactory to the Owner; (2) with a surety company licensed and authorized to do business and with a resident agent designated for services of process in the State of New Hampshire; and (3) conditioned upon the faithful performance by the principal of the agreements contained in the original bid. All premiums for the contract bonds are to be paid by the contractor.

6. Execution and Approval of Contract

The successful bidder is required to present all contract bonds, to provide proof of insurance, and to execute the contract within 10 days following receipt of the City's notification of acceptance of the bid. No contract shall be considered as in effect until it has been fully executed by all parties.

7. Failure to Execute Contract

Failure to execute the contract and file acceptable bonds within 10 days after notification of acceptance of bid shall be just cause for the cancellation of the award and the forfeiture of the proposal guarantee which shall become the property of the Owner, not as a penalty, but in liquidation of damages sustained. Award may then be made to the next lowest responsible bidder, or the City may exercise its reserved rights including the rejection of all bids or re-advertisement.

PROPOSAL FORM

SAGAMORE CREEK BRIDGE REPLACEMENT

CITY OF PORTSMOUTH, N.H.

To the City of Portsmouth, New Hampshire, herein called the Owner.

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

1. All interested in the Bid as Principals are named herein.
2. This bid is not made jointly, or in conjunction, cooperation or collusion with any other person, firm, corporation, or other legal entity;
3. No officer, agent or employee of the Owner is directly or indirectly interested in this Bid.
4. The bidder has carefully examined the sites of the proposed work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this Bid, and the bidder has carefully read and examined the Drawings, Agreement, Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;
5. The bidder understands that the quantities of work calculated in the Bid or indicated on the Drawings or in the Specifications or other Contract Documents are approximate and are subject to increase or decrease or deletion as deemed necessary by the Portsmouth City Engineer. Any such changes will not result in or be justification for any penalty or increase in contract prices; and agrees that, if the Bid is accepted the bidder will contract with the Owner, as provided in the Contract Documents, this Bid Form being part of said Contract Documents, and that the bidder will supply or perform all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other activities required by the Contract Documents in the manner and within the time therein set forth, and that the bidder will take in full payment therefor the following item prices, to wit:

PROPOSAL FORM (continued)

THIS PROJECT SHALL BE BID BY UNIT PRICES.

BASE BID SCOPE ITEMS, QUANTITIES, AND PRICING ARE AS FOLLOWS:

(*) In Quantity Column Designates Available Owner-supplied Materials as Described in the Prosecution of Work – Bidder to initial at bid summary to indicate source choice accordingly.

Base Bid

ITEM #	ESTIMATE QUANTITY & UNIT	ITEM DESCRIPTION, UNIT, & UNIT PRICE IN WORDS	UNIT PRICE IN FIGURES	ITEM TOTAL IN FIGURES
201.1	0.21 AC	Clearing and Grubbing (F), Per Acre		
			\$	\$
201.21	1 EA	Removing Small Trees, Per Each		
			\$	\$
201.881	560 SY	Invasive Species Control Type I, Per Square Yard		
			\$	\$
201.882	140 SY	Invasive Species Control Type II, Per Square Yard		
			\$	\$
202.41	340 LF	Removal of Existing Pipe, 0-24" Diameter, Per Linear Foot		
			\$	\$
202.5	2 EA	Removal of Catch Basins, Drop Inlets, and Manholes, Per Each		
			\$	\$
202.6	125 LF	Curb Removal for Storage, Per Linear Foot		
			\$	\$

202.7	620 LF	Removal of Guardrail, Per Linear Foot		
			\$	\$
203.1	1,650 CY	Common Excavation, Per Cubic Yard		
			\$	\$
203.2	165 CY	Rock Excavation, Per Cubic Yard		
			\$	\$
203.5555	1 U	Guardrail 25 Ft. EAGRT Platform, Per Unit		
			\$	\$
203.6	198 CY	Embankment-in-Place (F), Per Cubic Yard		
			\$	\$
206.1	150 CY	Common Structure Excavation, Per Cubic Yard		
			\$	\$
206.19	10 CY	Common Structure Excavation Exploratory, Per Cubic Yard		
			\$	\$
209.1	70 CY	Granular Backfill, Per Cubic Yard		
			\$	\$
209.201	1,323 CY	Granular Backfill (Bridge) (F), Per Cubic Yard		
			\$	\$
210.6	1 U	Mobilization and Demobilization for Test Boring Drilling Equipment, Per Unit		
			\$	\$
210.61	200 LF	Advancing Cased Boring Hole, Per Linear Foot		
			\$	\$

210.62	108 LF	Advancing Boring Hole by Diamond Core Drilling, Per Linear Foot		
			\$	\$
214.	1 U	Fine Grading, Per Unit		
			\$	\$
304.1	523 CY	Sand (F), Per Cubic Yard		
			\$	\$
304.4	675 CY	Crushed Stone (Fine Gradation) (F), Per Cubic Yard		
			\$	\$
304.5	523 CY	Crushed Stone (Course Gradation) (F), Per Cubic Yard		
			\$	\$
403.11	970 TON	Hot Bituminous Pavement, Machine Method, Per Ton		
			\$	\$
403.12	180 TON	Hot Bituminous Pavement, Hand Method, Per Ton		
			\$	\$
403.6	6,500 LF	Pavement Joint Adhesive, Per Linear Foot		
			\$	\$
403.911	83 TON	Hot Bituminous Bridge Pavement, 1" Base Course (F), Per Ton		
			\$	\$
411.1	110 TON	Hot Bituminous Concrete Leveling Course, Per Ton		
			\$	\$

417.	1,850 SY	Cold Planing Bituminous Surfaces, Per Square Yard		
			\$	\$
500.02	1 U	Access For Bridge Construction, Per Unit		
			\$	\$
502.	1 U	Removal of Existing Bridge Structure, Per Unit		
			\$	\$
503.201	1 U	Cofferdams		
			\$	\$
504.1	2,500 CY	Common Bridge Excavation (F), Per Cubic Yard		
			\$	\$
508.	200 CY	Structural Fill, Per Cubic Yard		
			\$	\$
509.1	1 U	Mobilization and Demobilization of Drilled Shaft Drilling Equipment, Per Unit		
			\$	\$
509.2	430 LF	Drilled Shaft, Per Linear Foot		
			\$	\$
509.3	100 LF	Obstruction Removal, Per Linear Foot		
			\$	\$
509.4	120 LF	Rock Socket Excavation, Per Linear Foot		
			\$	\$
509.5	30 EA	Crosshole Sonic Logging (CSL) Tests, Per Each		
			\$	\$

509.6	130,000 LB	Drilled Shaft Reinforcing Steel, Epoxy Coated (Contractor Detailed), Per Pound		
			\$	\$
520.0102	658 CY	Concrete Class AA (QC/QA) (F), Per Cubic Yard		
			\$	\$
520.0302	62 CY	Concrete Class AA, Approach Slabs (QC/QA) (F), Per Cubic Yard		
			\$	\$
520.2	20 CY	Concrete Class B, Per Cubic Yard		
			\$	\$
520.213	181 CY	Concrete Class B, Footings (On Soil) (F), Per Cubic Yard		
			\$	\$
520.70026	680 CY	Concrete Bridge Deck (QC/QA) (Panel Option) (F), Per Cubic Yard		
			\$	\$
520.99	3,000 SF	Form Liner for Concrete Surfaces, Per Square Yard		
			\$	\$
534.3	120 GAL	Water Repellent (Silane-Siloxane), Per Gallon		
			\$	\$
538.2	27 SY	Barrier Membrane, Vertical Surfaces (F), Per Square Yard		
			\$	\$
538.5	22 SY	Barrier Membrane, Welded by Torch (F), Per Square Yard		
			\$	\$

538.6	1,586 SY	Barrier Membrane, Welded by Torch Machine Method (F), Per Square Yard		
			\$	\$
541.1	125 LF	PVC Waterstops, NH Type 1 (F), Per Linear Foot		
			\$	\$
541.4	62 LF	PVC Waterstops, NH Type 4 (F), Per Linear Foot		
			\$	\$
544.3	58,000 LB	Reinforcing Steel (Contractor Detailed), Per Pound		
			\$	\$
544.31	326,100 LB	Reinforcing Steel, Epoxy Coated (Contractor Detailed), Per Pound		
			\$	\$
544.7	434 LB	Synthetic Fiber Reinforcement, Per Pound		
			\$	\$
547.1	5,055EA	Shear Connectors (F), Per Each		
			\$	\$
548.21	20 EA	Elastomeric Bearing Assemblies (F), Per Each		
			\$	\$
550.1	686,200 LB	Structural Steel (F), Per Pound		
			\$	\$
556.201	1 U	Containment and Environmental Protection, Per Unit		
			\$	\$

556.301	1 U	Worker Protection, Per Unit		
			\$	\$
556.401	1 U	Waste Management, Per Unit		
			\$	\$
561.11	86 LF	Prefabricated Expansion Joint, Type A (F), Per Linear Foot		
			\$	\$
562.1	62 LF	Silicone Joint Sealant (F), Per Linear Foot		
			\$	\$
563.24	1,112 LF	Bridge Rail T4, Per Linear Foot		
			\$	\$
565.242	3 U	Bridge Approach Rail T4 (Steel Posts) (F), Per Unit		
			\$	\$
585.21	600 CY	Stone Fill, Class B (Bridge), Per Cubic Yard		
			\$	\$
585.3	15 CY	Stone Fill, Class C, Per Cubic Yard		
			\$	\$
593.411	900 SY	Geotextile; Perm. Erosion Control, Class 1, Non-Woven, Per Square Yard		
			\$	\$
593.421	75 SY	Geotextile; Perm. Control Class 2; Non- Woven Filter Category 2, Per Square Yard		
			\$	\$
603.0001	700 LF	Video Inspection, Per Linear Foot		
			\$	\$

603.00215	470 LF	15" R.C. Pipe, 2000D, Per Linear Foot		
			\$	\$
603.00315	130 LF	15" R.C. Pipe, 3000D, Per Linear Foot		
			\$	\$
603.36115	3 EA	15" Aluminized Steel End Sections, Per Each		
			\$	\$
603.82206	30 LF	6" PE Pipe (Type S), Per Linear Foot		
			\$	\$
603.82212	10 LF	12" PE Pipe (Type S), Per Linear Foot		
			\$	\$
603.82215	80 LF	15" PE Pipe (Type S), Per Linear Foot		
			\$	\$
604.0007	12 EA	Polyethylene Liner, Per Each		
			\$	\$
604.12	15 U	Catch Basins, Type B, Per Unit		
			\$	\$
604.125	2 U	Catch Basins, Type B, 5' Diameter, Per Unit		
			\$	\$
604.32	2U	Drainage Manholes, Per Unit		
			\$	\$
604.325	1 U	Drainage Manholes, 5' Diameter, Per Unit		
			\$	\$
604.9109	1 U	Flow Control Structure, Per Unit		
			\$	\$

605.906	32 LF	6" Pipe Underdrain (Contractor 's Option), Per Linear Foot		
			\$	\$
606.120	200 LF	Beam Guardrail (Standard Section-Steel Posts), Per Linear Foot		
			\$	\$
606.1255	1 U	Beam Guardrail (Term. Unit Type EAGRT 25 Feet), Per Unit		
			\$	\$
606.1270	2 U	Beam Guardrail (Term. Unit Type G-2, Steel Post), Per Unit		
			\$	\$
606.417	170 LF	Portable Concrete Barrier for Traffic Control, Per Linear Foot		
			\$	\$
608.34	405 SY	4" Reinforced Concrete Sidewalk (F), Per Square Yard		
			\$	\$
608.36	6 SY	6" Reinforced Concrete Sidewalk (F), Per Square Yard		
			\$	\$
608.54	2 SY	Detectable Warning Devices, Cast Iron, Per Square Yard		
			\$	\$
609.01	1,310 LF	Straight Granite Curb, Per Linear Foot		
			\$	\$
609.02	130 LF	Curved Granite Curb, Per Linear Foot		
			\$	\$

611.05206	40 LF	6" Cement Lined Ductile Iron Water Pipe, CL 52, Per Liner Foot		
			\$	\$
611.05210	130 LF	10" Cement Lined Ductile Iron Water Pipe, CL 52, Per Liner Foot		
			\$	\$
611.05212	110 LF	12" Cement Lined Ductile Iron Water Pipe, CL 52, Per Liner Foot		
			\$	\$
611.06210	420 LF	10" Cement Lined Ductile Iron Bridge Crossing Pipe, CL 52, Per Liner Foot		
			\$	\$
611.35220	60 LF	20" Casing Pipe 1/12" Cement Lined DI MJ, CL 52 Carrier Pipe, Per Linear Foot		
			\$	\$
611.70006	1 EA	6" Fitting, Per Each		
			\$	\$
611.70010	4 EA	10" Fitting, Per Each		
			\$	\$
611.70012	9 EA	12" Fitting, Per Each		
			\$	\$
611.71006	1 EA	6" Gate Valve, Per Each		
			\$	\$
611.71012	2 EA	12" Gate Valve, Per Each		
			\$	\$
611.74	1 EA	Chlorine Injection Tap, Per Each		
			\$	\$

611.81	1 EA	Hydrants, Per Each		
			\$	\$
611.90001	3 EA	Adjusting Water Gates and Shut Offs Set by Others, Per Each		
			\$	\$
611.952	480 LF	Round Rigid Pipe Insulation, Per Linear Foot		
			\$	\$
613.1	1 U	Underground Infiltration System, Per Unit		
			\$	\$
615.03	23 SF	Traffic Sign Type C (F), Per Square Foot		
			\$	\$
615.033	2 U	Removing Traffic Sign Type C, Per Unit		
			\$	\$
615.034	5 U	Relocating Traffic Sign Type C, Per Unit		
			\$	\$
618.6	\$	Uniformed Officers		
			\$1,650.00	\$1,650.00
618.7	2,000 HR	Flaggers		
			\$	\$
619.1	1 U	Maintenance of Traffic, Per Unit		
			\$	\$
619.25	2 U	Portable Changeable Message Sign, Per Unit		
			\$	\$

621.2	5 EA	Retroreflective Beam Guardrail Delineator (White), Per Each		
			\$	\$
621.31	4 EA	Single Delineator with Post, Per Each		
			\$	\$
622.1	4 EA	Steel Witness Markers, Per Each		
			\$	\$
628.2	750 LF	Sawed Bituminous Pavement, Per Linear Foot		
			\$	\$
632.0104	5,550 LF	Retroreflective Paint Pavement Marking, 4" Line, Per Linear Foot		
			\$	\$
632.3106	230 LF	Retroreflective, Thermoplastic Pavement Marking, 6" Line, Per Linear Foot		
			\$	\$
632.3118	30 LF	Retroreflective Thermoplastic Pavement Marking, 18" Line, Per Linear Foot		
			\$	\$
641.	180 CY	Loam , Per Cubic Yard		
			\$	\$
643.21	280 LB	Fertilizer For Refertilization, Per Pound		
			\$	\$
644.15	40 LB	Park Seed, Type 15, Per Pound		
			\$	\$
645.0001	1,000 LF	Turbidity Curtain, Per Linear Foot		
			\$	\$

645.3	330 TON	Erosion Stone, Per Ton		
			\$	\$
645.52	1,600 SY	Temporary Slope Stabilization, Type B (Wildlife Friendly), Per Square Yard		
			\$	\$
645.512	600 LF	Compost Stock for Perimeter Berm, Per Linear Foot		
			\$	\$
645.531	1,500 LF	Silt Fence, Per Linear Foot		
			\$	\$
645.7	1 U	Storm Water Pollution Prevention Plan (SWPPP), Per Unit		
			\$	\$
645.71	260 HR	Monitoring SWPPP And Erosion and Sediment Controls, Per Hour		
			\$	\$
646.31	1,600 SY	Turf Establishment with Mulch and Tackifiers, Per Square Yard		
			\$	\$
670.6051	2 CY	Pea Stone, Per Cubic Yard		
			\$	\$
670.641	8 CY	Sand Filter Media Mix, Per Cubic Yard		
			\$	\$
670.9	1 U	Temporary Stabilization of Utility Infrastructure, Per Unit		
			\$	\$
692.	1U	Mobilization		
			\$	\$

693.	\$	On the Job Training of Unskilled Workers, Per \$		
			\$600.00	\$600.00
697.11	1 U	Invasive Species Control and Management Plan, Per Unit		
			\$	\$
697.41	1 U	Critical Path Method (CPM) Electronic Schedule, Per Unit		
			\$	\$
698.12	24 MO	Field Office, Type B, Per MO		
			\$	\$
698.2	21 MO	Physical Testing Laboratory, Per MO		
			\$	\$
699.	\$	Miscellaneous Temporary Erosion and Sediment Control, Per \$		
			\$20,000.00	\$20,000.00
1008.8	\$	Winter Maintenance, Per \$		
			\$25,000.00	\$25,000.00
1010.15	\$	Fuel Adjustment, Per \$		
			\$70,000.00	\$70,000.00
1010.2	\$	Asphalt Cement Adjustment, Per \$		
			\$10,000.00	\$10,000.00
1010.41	\$	Quality Control/Quality Assurance (QC/QA) for Concrete, Per \$		
			\$	\$

PROPOSAL FORM (continued)

To Bidder: It is the intention of this contract that the items listed above describe completely and thoroughly the entirety of the work as shown on the plans and as described in the specifications. All other items required to accomplish the above items are considered to be subsidiary work, unless shown as a pay item.

TOTAL FOR PROJECT (BASE BID) AND BASIS FOR AWARD

In Figures \$ _____

In Words \$ _____

The undersigned agrees that for extra work, if any, performed in accordance with the terms and provisions of the Contract Documents, the bidder will accept compensation as stipulated therein.

Date

Company

By: _____
Signature

Business Address

Title: _____

City, State, Zip Code

Telephone: _____

We certify that the Company is currently pre-qualified with the State of New Hampshire for Site Work or Road Construction.

The Bidder has received and acknowledged Addenda No. _____ through _____. All Bids are to be submitted on this form and in a sealed envelope, plainly marked on the outside with the Bidder's name and address and the Project name as it appears at the top of the Proposal Form.

In order to follow the City's sustainability practices, future bid invitations/specifications may be sent electronically. Please provide an email address as to where I could email future bid invitations/specifications of this type. Thank you in advance for your cooperation.

Email Address: _____

BID SECURITY BOND

(This format provided for convenience, actual Bid Bond is acceptable in lieu of, if compatible.)

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned

_____, as Principal, and

_____, as Surety, are hereby

held and firmly bound unto _____

IN THE SUM OF _____

as liquidated damages for payment of which, well and truly to be made we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of this obligation is such that whereas the Principal has submitted to the

_____ A CERTAIN Bid attached hereto and hereby made a part hereof to enter into a contract in writing, hereinafter referred to as the "AGREEMENT" and or "CONTRACT", for

NOW THEREFORE,

- (a) If said Bid shall be rejected or withdrawn as provided in the INFORMATION FOR BIDDERS attached hereto or, in the alternative,
- (b) If said Bid shall be accepted and the Principal shall duly execute and deliver the form of AGREEMENT attached hereto and shall furnish the specified bonds for the faithful performance of the AGREEMENT and/or CONTRACT and for the payment for labor and materials furnished for the performance of the AGREEMENT and or CONTRACT,

then this obligation shall be void , otherwise it shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder in no event shall exceed the amount of this obligation.

BID SECURITY BOND (continued)

The Surety, for value received, hereby agrees that the obligation of said surety and its bond shall be in no way impaired or affected by any extensions of the time within such BID may be accepted, and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the parties hereto have duly executed

this bond on the _____ day of _____, 20__.

(Name of Principal) L.S.

(SEAL)

BY _____

(Name of Surety)

BY _____

STATEMENT OF BIDDER'S QUALIFICATIONS

Supply with Bid

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. Add separate sheets if necessary

1. Name of Bidder
2. Permanent Main Office Address
3. Form of Entity
4. When Organized
5. Where Organized
6. How many years have you been engaged in the contracting business under your present name; also state names and dates of previous firm names, if any.
7. Contracts on hand; (schedule these, showing gross amount of each contract and the approximate anticipated dates of completion).
8. General character of work performed by your company.
9. Have you ever failed to complete any work awarded to you? ____ (no) ____ (yes). If so, where and why?
10. Have you ever defaulted on a contract?
____ (no) ____ (yes). If so, where and why?
11. Have you ever failed to complete a project in the time allotment according to the Contract Documents?
____ (no) ____ (yes). If so, where and why?
12. List the most important contracts recently executed by your company, stating approximate cost for each, and the month and year completed.
13. List your major equipment available for this contract.
14. List your key personnel such as project superintendent and foremen available for this contract.

STATEMENT OF BIDDERS QUALIFICATIONS (continued)

15. List any subcontractors whom you would expect to use for the following (unless this work is to be done by your own organization).
a.

16. With what banks do you do business?

a. Do you grant the Owner permission to contact this/these institutions?
____(yes) ____ (no).

b. Latest Financial Statements, certified audited if available, prepared by an independent certified public accountant, may be requested by Owner. If requested, such statements must be provided within five (5) business days or the bid proposal will be rejected. Certified Audited Statement are preferred. Internal statements may be attached only if independent statements were not prepared.

17. Please identify any adverse governmental/agency decisions or actions against the company within the last three years excluding: workers compensation claims, wage claims, and OSHA actions that did not involve a penalty, fine or sanction of over \$1,000.

BY SUBMITTING THIS QUALIFICATIONS STATEMENT YOU AUTHORIZE THE CITY OF PORTSMOUTH, NH AND ITS CONSULTING ENGINEERS TO UNDERTAKE SUCH INVESTIGATION AS IS NECESSARY TO VERIFY THE STATEMENTS MADE AND TO CONFIRM THAT BIDDER HAS THE QUALIFICATIONS AND REPUTATION NECESSARY TO COMPLETE THE PROJECT. BIDDER MAY BE ASKED TO AUTHORIZE RELEASES TO OBTAIN INFORMATION FROM THIRD PARTIES. FAILURE TO EXECUTE AN AUTHORIZATION IF REQUESTED MAY RESULT IN DISQUALIFICATION.

Dated at _____ this _____ day of _____, 20__.

Name of Bidder

BY _____

TITLE _____

State of _____, County of _____

_____ being duly sworn, deposes and

says that the bidder is _____ of _____
(Name of Organization)

and answers to the foregoing questions and all statements contained therein are true and correct.

Sworn to before me this _____ day of _____, 20__.

Notary of Public

My Commission expires _____

CONTRACT AGREEMENT

SAGAMORE CREEK BRIDGE REPLACEMENT

THIS AGREEMENT made as of the ____ day of _____ in the year **2013**, by and between the City of Portsmouth, New Hampshire (hereinafter call the Owner) and _____ (hereinafter called the Contractor),

WITNESSETH; that the Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE I- Work - The Contractor shall perform all work as specified or indicated in the Contract Documents for the completion of the Project. The Contractor shall provide, at his expense, all labor, materials, equipment and incidentals as may be necessary for the expeditious and proper execution of the Project.

ARTICLE II - ENGINEER - The Engineer as used in this Contract shall refer to the Director of Public Works, or his authorized representative will act as engineer in connection with completion of the Project in accordance with the Contract Documents.

ARTICLE III - CONTRACT TIME - The work will commence in accordance with the Notice to Proceed. **The new Sagamore Creek Bridge shall be open to traffic prior to December 1, 2014. All work shall be completed no later than June 1, 2015.**

ARTICLE IV - CONTRACT PRICE - Owner shall pay Contractor for performance of the work in accordance with the Contract Documents as shown under item prices in the Bid Proposal.

ARTICLE V - PAYMENT - Partial payments will be made in accordance with the Contract Documents. Upon final acceptance of the work and settlement of all claims, Owner shall pay the Contractor the unpaid balance of the Contract Price, subject to additions and deductions provided for in the Contract Documents.

ARTICLE VI - RETAINAGE – There shall be no retainage withheld as a part of this contract.

ARTICLE VII - LIQUIDATED DAMAGES - In event the Contractor fails to successfully execute the work within the specified contract time the Owner shall assess the Contractor liquidated damages in the amount of **One Thousand Five Hundred and Sixty Seven dollars (\$1,567)** for each calendar day beyond the specified completion date for each section of work. Liquidated damages shall be deducted from the Contract Price prior to final payment of the Contractor.

CONTRACT AGREEMENT (continued)

ARTICLE VIII – CONTRACT DOCUMENTS – The Contract Documents which comprise the contract between Owner and Contractor are attached hereto and made a part hereof and consist of the following:

- 8.1 This Agreement
- 8.2 Contractor’s Bid and Bonds
- 8.3 Notice of Award, Notice to Proceed
- 8.4 Instruction to Bidders
- 8.5 General Requirements, Control of Work, Temporary Facilities, Insurance Requirements, Measurement and Payment
- 8.6 Special Conditions and Critical Timelines, Prosecution of Work, Traffic Control Plan, Environmental Commitments
- 8.7 Standard and Technical Specifications
- 8.8 Drawings
- 8.9 Special Attentions and Special Provisions, Special Conditions and Critical Timelines
- 8.10 Any modifications, including change orders, duly delivered after execution of this Agreement.

ARTICLE IX – TERMINATION FOR DEFAULT – Should contractor at any time refuse, neglect, or otherwise fail to supply a sufficient number or amount of properly skilled workers, materials, or equipment, or fail in any respect to prosecute the work with promptness and diligence, or fail to perform any of its obligations set forth in the Contract, Owner may, at its election, terminate the employment of Contractor, giving notice to Contractor in writing of such election, and enter on the premises and take possession, for the purpose of completing the work included under this Agreement, of all the materials, tools and appliances belonging to Contractor, and to employ any other persons to finish the work and to provide the materials therefore at the expense of the Contractor.

ARTICLE X – INDEMNIFICATION OF OWNER – Contractor will indemnify Owner against all suits, claims, judgments, awards, loss, cost or expense (including without limitation attorneys’ fees) arising in any way out of the Contractor’s negligent performance of its obligations under this Contract. Contractor will defend all such actions with counsel satisfactory to Owner at its own expense, including attorney’s fees, and will satisfy any judgment rendered against Owner in such action.

ARTICLE XI – PERMITS – The Contractor will secure at its own expense, all permits and consents required by law as necessary to perform the work and will give all notices and pay all fees and otherwise comply with all applicable City, State, and Federal laws, ordinances, rules and regulations.

ARTICLE XII – INSURANCE – The Contractor shall secure and maintain, until acceptance of the work, insurance with limits not less than those specified in the Contract.

ARTICLE XIII – MISCELLANEOUS –

- A. Neither Owner nor Contractor shall, without the prior written consent of the other, assign, sublet or delegate, in whole or in part, any of its rights or obligations under any of the Contract Documents; and, specifically not assign any monies due, or to become due, without the prior written consent of Owner.
- B. Owner and Contractor each binds himself, his partners, successors, assigns and legal representatives, to the other party hereto in respect to all covenants, agreements and obligations contained in the Contract Documents.
- C. The Contract Documents constitute the entire Agreement between Owner and Contractor and may only be altered amended or repealed by a duly executed written instrument.
- D. The laws of the State of New Hampshire shall govern this Contract without reference to the conflict of law principles thereof.
- E. Venue for any dispute shall be the Rockingham County Superior Court unless the parties otherwise agree.

IN WITNESS WHEREOF, the parties hereunto executed this AGREEMENT the day and year first above written.

CONTRACTOR

BY: _____

TITLE: _____

CITY OF PORTSMOUTH, N.H.

BY: _____
John P. Bohenko

TITLE: City Manager

NOTICE OF INTENT TO AWARD

Date:

TO:

IN AS MUCH as you were the low responsible bidder for work entitled:

SAGAMORE CREEK BRIDGE REPLACEMENT

You are hereby notified that the City intends to award the aforesaid project to you.

Immediately take the necessary steps to execute the Contract and to provide required bonds and proof of insurance within ten (10) calendar days from the date of this Notice.

The City reserves the right to revoke this Notice if you fail to take the necessary steps to execute this Contract.

City of Portsmouth
Portsmouth, New Hampshire

Judie Belanger,
Finance Director

NOTICE TO PROCEED

DATE: _____, 2013

SAGAMORE CREEK BRIDGE REPLACEMENT

TO:

YOU ARE HEREBY NOTIFIED TO COMMENCE WORK IN ACCORDANCE

WITH THE AGREEMENT DATED _____, 2013. ALL WORK SHALL BE COMPLETED NO LATER THAN JUNE 1, 2015.

CITY OF PORTSMOUTH, N.H.

BY: Peter Rice, P.E.

TITLE: Public Works Director

ACCEPTANCE OF NOTICE

RECEIPT OF THE ABOVE NOTICE TO PROCEED IS HEREBY ACKNOWLEDGED BY

This the _____ day of _____ 20__

By: _____

Title: _____

CHANGE ORDER

Change Order Number

Date of Issuance:

Owner: CITY OF PORTSMOUTH, N.H

Contractor:

You are directed to make the following changes in the Contract Documents:

Description:

Purpose of Change Order:

Attachments:

CHANGE IN CONTRACT PRICE

CHANGE IN CONTRACT TIME

Original Contract Price:
\$

Original Completion Date:

Contract Price prior to this Change Order:
\$

Contract Time prior to this Change Order:

Net Increase of this Change Order:
\$

Net Increase of this Change Order:

Contract Price with all approved Change Orders:
\$

Contract Time with all approved Change Orders:

RECOMMENDED:

APPROVED:

APPROVED:

by _____

by _____

by _____

by _____

PW Director

City Finance

City Manager

Contractor

PERFORMANCE BOND

(This format provided for convenience, actual Performance Bond is acceptable in lieu, if compatible)

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS

that _____ as Principal, hereinafter called Contractor, and _____ (Surety Company) a corporation organized and existing under the laws of the State of _____ and authorized to do business in the State of New Hampshire as surety, hereinafter called Surety, are held and firmly bound unto the City of Portsmouth, N.H. Obligee, hereinafter called Owner, in the amount of _____ Dollars (\$ _____), for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents. WHEREAS, Contractor has by written agreement dated _____ entered into a contract with Owner for _____ in accordance with drawings and specifications prepared by the Public Works Department, 680 Peaverly Hill Road, Portsmouth, N.H. 03801, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Contractor shall well and faithfully do and perform the things agreed by him to be done and performed, according to the terms of said Contract and such alterations as may be made in said Contract during progress work, and shall further indemnify and save harmless the said Owner in accordance with the Contract and shall remedy without cost to the Owner any defect which may develop within one year from the time of completion and acceptance of the work.

The Surety hereby waives notice of any alteration in work or extension of time made by the Owner or any of its agents or representatives.

Whenever Contractor shall be, and declared by Owner to be, in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

- (1) Complete the Contract in accordance with its terms and conditions, or

LABOR AND MATERIAL PAYMENT BOND

(This format provided for convenience, actual Labor and Material Bond is acceptable in lieu, if compatible)

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS:

that _____

as Principal, hereinafter called Contractor, and _____ (Surety Company) a corporation organized and existing under the laws of the State of

_____ and authorized to do business in the State of New Hampshire hereinafter called Surety, are held and firmly bound unto the City of Portsmouth, N.H. Obligee, hereinafter called Owner, for the use and benefit of claimants as herein below defined, in the

amount of _____ Dollars (\$ _____), for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____ entered into a

contract with Owner for _____ in accordance with drawings and specifications prepared by the Public Works Department, 680 Peverly Hill Road, Portsmouth, N.H. 03801, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that the Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract and for the hire of all equipment, tools, and all other things contracted for or used in connection therewith, then this obligation shall be void, otherwise it shall remain in full force and effect, subject however, to the following conditions:

(1) A claimant is defined as one having a direct contract with the Principal or, with a subcontractor of the Principal for labor, material, equipment, or other things used or reasonably required for use in the performance of the Contract. "Labor and material" shall include but not be limited to that part of water, gas, power, light, heat, oil and gasoline, telephone service or rental of equipment applicable to the Contract.

(2) The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such a claimant, may sue on this bond for the use of such claimant, prosecute the suit by final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any such suit or any costs or expenses of any such suit, and principal and surety shall jointly and severally indemnify, defend and hold the Owner harmless for any such suit, costs or expenses.

(3) No suit or action shall be commenced hereunder by any claimant:

(a) Unless Claimant, other than one having a direct contract with the Principal, shall have given notice to all the following:

LABOR AND MATERIAL PAYMENT BOND (continued)

The Principal, the Owner and the Surety above named, within six (6) calendar months after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, Owner, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State of New Hampshire save that such service need not be made by a public officer.

(b) After the expiration of one (1) year following the date on which Principal ceased all work on said contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

(c) Other than in a State court of competent jurisdiction in and for the county or other political subdivision of the State in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere. (4) The amount of this bond may be reduced by and to the extent of any payment of payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed on record against said improvement, whether or not claim for the amount of such lien by presented under and against this bond.

Signed and sealed this _____ day of _____, 20____. In the presence of:

(Witness) BY: _____
(Principal) (Seal)

(Surety Company)

(Witness) BY: _____
(Title) (Seal)

Note:

If the Principal (Contractor) is a partnership, the Bond should be signed by each of the partners.

If the Principal (Contractor) is a corporation, the Bond should be signed in its correct corporate name by its duly authorized Officer or Officers.

If this bond is signed on behalf of the Surety by an attorney-in-fact, there should be attached to it a duly certified copy of his Power of Attorney showing his authority to sign such Bonds.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Agreement.

MAINTENANCE BOND

A maintenance bond in the amount of **Twenty Percent (20%)** of the contract price with a corporate surety approved by the Owner shall be provided at the time of Contract completion. Such bond shall guarantee the repair of all damage due to faulty materials or workmanship provided or done by the Contractor. This guarantee shall remain in effect for a period of one year after the date of final acceptance of the job by the Owner.

CONTRACTOR'S AFFIDAVIT

STATE OF _____:

COUNTY OF _____:

Before me, the undersigned, a _____
(Notary Public, Justice of the Peace)

in and for said County and State personally appeared, _____
(Individual, Partner, or duly authorized representative of Corporate)

who, being duly sworn, according to law deposes and says that the cost of labor, material, and equipment and outstanding claims and indebtedness of whatever nature arising out of the performance of the Contract between

CITY OF PORTSMOUTH, NEW HAMPSHIRE

and _____
(Contractor)

of _____

Dated: _____

has been paid in full for Construction of:

SAGAMORE CREEK BRIDGE REPLACEMENT

(Individual, Partner, or
duly authorized
representative of
Corporate Contractor)

Sworn to and subscribed
before me this _____ day
of _____ 20____

CONTRACTOR'S RELEASE

KNOW ALL MEN BY THESE PRESENTS that _____ does hereby acknowledge that _____ has on this day had, and received from the CITY OF PORTSMOUTH NEW HAMPSHIRE, final and completed payment for the Construction of:

SAGAMORE CREEK BRIDGE REPLACEMENT

NOW THEREFORE, the _____, 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 City of Portsmouth, New Hampshire, 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 manners of action and actions, cause and causes of action and actions, suits, debts, dues, duties, sum and sums of money, accounts, reckonings, bonds, bills, specifications, covenants, contracts, agreements, promises, variances, damages, judgments, extents, executions, claims and demand, whatsoever in law of equity, or otherwise, against the City of Portsmouth, New Hampshire, its successors and assigns, which (I, my heirs, executors, or administrators) (it, its successors and assigns) ever had, now have or which (I, my heirs, executors, or administrators) (it, 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 record time to the date of these presents.

IN WITNESS WHEREOF,

Contractor:

print name of witness: _____

By: _____
Its Duly Authorized _____

Dated: _____

GENERAL REQUIREMENTS

SCOPE OF WORK

1. INTENT OF CONTRACT

The intent of the Contract is to provide for the construction and completion in every detail of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation and supplies required to complete the work in accordance with the terms of the Contract. The Contractor shall be required to conform to the intent of the plans and specifications. No extra claims shall be allowed for portions of the work not specifically addressed in the plans and specifications but required to produce a whole and complete project, such work will be considered subsidiary to the bid items.

2. INCIDENTAL WORK

Incidental work items for which separate payment is not measured includes, but is not limited to, the following items:

- a. Clearing, grubbing and stripping (unless otherwise paid for)
- b. Clean up
- c. Plugging existing sewers and manholes
- d. Signs
- e. Mobilization/Demobilization (unless otherwise paid for)
- f. Restoration of property
- g. Cooperation with other contractors, abutters and utilities.
- h. Utility crossings, (unless otherwise paid for)
- i. Minor items - such as replacement of fences, guardrails, rock wall, etc.
- j. Steel and/or wood sheeting as required.
- k. Accessories and fasteners or components required to make items paid for under unit prices or lump sum items complete and functional.

3. ALTERATION OF PLANS OR OF CHARACTER OF WORK

The Owner reserves the right, without notice to Surety, to make such alterations of the plans or of the character of the work as may be necessary or desirable to complete fully and acceptably the proposed construction; provided that such alterations do not increase or decrease the contract cost. Within these cost limits, the alterations authorized in writing by the Owner shall not impair or affect any provisions of the Contract or bond and such increases or decreases of the quantities as a result from these alterations or deletions of certain items, shall not be the basis of claim for loss or for anticipated profits by the contractor. The contractor shall perform the work as altered at the contract unit price or prices.

4. EXTRA WORK ITEMS

Extra work shall be performed by the Contractor in accordance with the specifications and as directed, and will be paid for at a price as provided in the Contract documents or if such pay items are not applicable than at a price negotiated between the contractor and the Owner or at the unit bid price. If the Owner determines that extra work is to be performed, a change order will be issued.

5. CHANGE ORDERS

The Owner reserves the right to issue a formal change order for any increase, decrease, deletion, or addition of work or any increase in contract time or price. The contractor shall be required to sign the change order and it shall be considered as part of the Contract documents.

6. FINAL CLEANING UP

Before acceptance of the work, the contractor shall remove from the site all machinery, equipment, surplus materials, rubbish, temporary buildings, barricades and signs. All parts of the work shall be left in a neat and presentable condition. On all areas used or occupied by the contractor, regardless of the contract limits, the bidder shall clean-up all sites and storage grounds.

The items prescribed herein will not be paid for separately, but shall be paid for as part of the total contract price.

7. ERRORS AND INCONSISTENCY IN CONTRACT DOCUMENTS

Any provisions in any of the Contract Documents that may be in conflict with the paragraphs in these General Requirements shall be subject to the following order of precedence for interpretation.

1. General Requirements will govern Standard Specifications for Road & Bridge Construction.
2. Technical Specifications, Special Provisions, and Special Attentions will govern General Requirements and Standard Specifications.
3. Plans will govern Technical Specifications, General Requirements and Standard Specifications.

8. QUALITY ASSURANCE

The Contractor shall be responsible at all times for maintaining quality assurance during performance of his work. Particular attention to compaction shall be paid during backfilling operation.

In-place density tests of the backfill material will be conducted by an independent testing laboratory. The amount and frequency of testing will be determined at the time of construction, by the engineer.

A minimum of one density test per 50 feet of road may be required.

Satisfactory compaction shall be a minimum of 95% of the maximum density for the embankment and a minimum of 95% of the maximum density for gravel base course and subbase gravel course.

The Contractor shall be responsible for procuring and paying for the testing services

9. DUST CONTROL FOR STREET

Calcium chloride shall be spread only on disturbed unpaved areas. Calcium chloride shall not be spread on paved areas that are covered by granular material. These areas shall be swept clean of all granular material.

Dust on paved areas shall be controlled with water before sweeping.

This work and materials shall be considered as subsidiary obligation of the contract for which no specific payment will be made

SUPPLEMENTAL GENERAL REQUIREMENTS

Add to the following General Requirements Section(s):

8. QUALITY ASSURANCE

The Contractor shall maintain quality control, equipment, services, site conditions, and workmanship, to produce work of specified quality.

The Contractor shall comply with industry standards except when specified tolerances or requirements are more restrictive or when more precise workmanship is necessary.

Perform work by persons qualified to produce workmanship of specified quality.

The Contractor shall coordinate and be responsible for all costs for sampling and testing as required by the project specifications.

CONTROL OF WORK

1. AUTHORITY OF ENGINEER

(a) All work shall be done under supervision of the City Engineer and to his satisfaction. The City Engineer will decide all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the rate of progress of the work; all questions that may arise as to the interpretation of the plans and specifications; and all questions as to the acceptable fulfillment of the Contract by the Contractor.

(b) The City Engineer will have the authority to suspend the work wholly or in part for such periods as he may deem necessary due to the failure of the Contractor to correct conditions unsafe for workers or the general public; for failure to carry out provisions of the Contract; for failure to carry out orders; for conditions considered unsuitable for the prosecution of the work, including unfit weather; or for any other condition or reason deemed to be in the public interest. The Contractor shall not be entitled any additional payments arising out of any such suspensions.

(c) The Owner reserves the right to demand a certificate of compliance for a material or product used on the project. When the certificate of compliance is determined to be unacceptable to the City Engineer the Contractor may be required to provide engineering and testing services to guarantee that the material or product is suitable for use in the project, at its expense (see Sample of Certificate of Compliance).

2. PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPES

(a) The Contractor shall use every precaution to prevent injury or damage to wires, poles, or other property of public utilities; trees, shrubbery, crops, and fences along and adjacent to the right-of-way, all underground structures such as pipes and conduits, within or outside of the right-of-way; and the Contractor shall protect and carefully preserve all property marks until an authorized agent has witnessed or otherwise referenced their location.

(b) The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project shall have been completed and accepted.

(c) When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or as a result of the failure to perform work by the Contractor, the Contractor shall restore, at its own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing rebuilding, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

(d) The Contractor shall paint with tree paint all scars made on fruit or ornamental trees by equipment, construction operations, or the removal of limbs larger than one inch in diameter. Damaged trees must be replaced if so determined by the City Arborist, in his or her sole discretion.

(e) If the Contractor fails to repair, rebuild or otherwise restore such property as may be deemed necessary, the Owner, after 48 hours notice, may proceed to do so, and the cost thereof may be deducted from any money due or which may become due the Contractor under the contract.

(f) It is the intent of the Parties that the Contractor preserve, to as great an extent as possible, the natural features of the site.

CONTROL OF WORK (continued)

3. MAINTENANCE DURING CONSTRUCTION

The Contractor shall maintain the work during construction and until the project is accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and workers to ensure that the structure is kept in satisfactory conditions at all times.

4. SAFETY PRECAUTIONS

Upon commencement of work, the Contractor shall be responsible for initiating, maintaining and supervising all safety precautions necessary to ensure the safety of employees on the site, other persons who may be affected thereby, including the public, and other property at the site or adjacent thereto.

5. PERMITS

It will be the responsibility of the Contractor to obtain all permits required for the operation of equipment in, or on, all city streets and public ways.

6. BARRICADES, WARNING SIGNS AND TRAFFIC OFFICERS

(a) The Contractor shall provide, erect and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs and other traffic control devices, and shall take all necessary precautions for the protection of the work and safety of the public. Roadway closed to traffic shall be protected by effective barricades. Obstructions shall be illuminated during hours of darkness. Suitable warning signs shall be provided to control and direct traffic in a proper manner, as approved by the engineer.

(b) The Contractor will be held responsible for all damage to the work from traffic, pedestrians, animals or any other cause due to lack of adequate controlling devices.

(c) The Contractor shall provide such police officers as the City Engineer deems necessary for the direction and control of traffic within the site of project.

The work prescribed herein will not be paid for separately but will be paid for as part of the Contract Price unless specifically appearing as a bid item.

SUPPLEMENTAL CONTROL OF WORK

Add to the following Control of Work Section(s):

1. AUTHORITY OF ENGINEER

All materials or equipment that are not suitable for use on this project and/or have been rejected by the Engineer shall be removed from the site immediately; the cost of the removal of these materials shall be the responsibility of the Contractor.

The Engineer shall be permitted at all times to inspect the work and check the lines, grades, elevations, reference marks, etc., set by the Contractor. Any errors or discrepancies in these items discovered by checks shall be corrected by the Contractor. Such checks shall not be construed to be an approval of the Contractor's work and shall not relieve or diminish in any way the responsibilities of the Contractor for the accurate and satisfactory completion of the entire work. The Contractor shall be available to assist the Engineer with these checks as needed.

TEMPORARY FACILITIES

1. STORAGE FACILITIES

(a) The Contractor shall not store materials or equipment in a public right-of-way beyond the needs of one working day. Equipment and materials shall be stored in an approved location.

(b) The Contractor shall protect all stored materials from damage by weather or accident and shall insure adequate drainage at and about the storage location.

(c) Prior to final acceptance of the work all temporary storage facilities and surplus stored materials shall be removed from the site.

2. SANITARY FACILITIES

(a) The Contractor shall provide for toilet facilities for the use of the workers employed on the work.

(b) Temporary toilet facilities may be installed provided that the installation and maintenance conform with all State and local laws, codes, regulations and ordinances governing such work. They shall be properly lit and ventilated, and shall be kept clean at all times.

(c) Prior to final acceptance of the work all temporary toilet facilities shall be removed from the site.

3. TEMPORARY WATER

The Contractor shall make all arrangements with the local water department for obtaining water connections to provide the water necessary for construction operations and shall pay all costs.

4. TEMPORARY ELECTRICITY

The Contractor shall make all arrangements with the Public Service Company for obtaining electrical connections to provide the electrical power necessary for construction operations and security lighting and shall pay all electrical connection and power costs.

The Contractor shall be responsible with obtaining an electrical permit from the City Electrical Inspector.

INSURANCE REQUIREMENTS

Insurance shall be in such form as will protect the Contractor from all claims and liabilities for damages for bodily injury, including accidental death, and for property damage, which may arise from operations under this contract whether such operation by himself or by anyone directly or indirectly employed by him.

AMOUNT OF INSURANCE

- A) Comprehensive General Liability:
Bodily injury or Property Damage - \$2,000,000
Per occurrence and general aggregate
- B) Automobile and Truck Liability:
Bodily Injury or Property Damage - \$2,000,000
Per occurrence and general aggregate

Insurance coverage requirements may be met by excess policies.

Additionally, the Contractor shall purchase and maintain the following types of insurance:

- A) Full Workers Comprehensive Insurance coverage for all people employed by the Contractor to perform work on this project. This insurance shall at a minimum meet the requirements of the most current laws of the State of New Hampshire.
- B) Contractual Liability Insurance coverage in the amounts specified above under Comprehensive General Liability.
- C) Product and Completed Operations coverage to be included in the amounts specified above under Comprehensive General Liability.
- D) Coverage for marine operations in the amount required for commercial general liability.

ADDITIONAL INSURED

All liability policies (including any excess policies used to meet coverage requirements) shall include the City of Portsmouth, New Hampshire as named Additional Insured's.

- 1) The contractor's insurance shall be primary in the event of a loss.
- 2) City of Portsmouth shall be listed as a Certificate Holder. The City shall be identified as follows:

City of Portsmouth
Attn: Legal Department
1 Junkins Avenue
Portsmouth, NH 03801

MEASUREMENT AND PAYMENT

1. MEASUREMENT OF QUANTITIES

- (a) All work completed under the contract will be measured according to the United States standard measure.
- (b) The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice. Unless otherwise stated all quantities measured for payment shall be computed or adjusted for "in place" conditions.
- (c) Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures having an area of 9 square feet or less. Unless otherwise specified, transverse measurements for area computations will be the dimensions shown on the plans or ordered in writing.
- (d) Structures will be measured according to lines shown on the plans or as ordered unless otherwise provided for elsewhere in the specifications.
- (e) In computing volumes of excavation, embankment, and borrow, the average end area method will be used. Where it is impracticable to measure by the cross-section method, acceptable methods involving three-dimensional measurement may be used. When measurement of borrow in vehicles is permitted, the quantity will be determined as 80 percent of the loose volume.
- (f) In computing volumes of concrete, stone and masonry, the prismatic method will be used. The term "ton" will mean the short ton consisting of 2,000 pounds avoirdupois.
- (g) Except as specified below, all materials that are measured or proportioned by weight shall be weighed on scales which the Contractor has had sealed by the State or by a repairman registered by the Commissioner of Agriculture. All weighing shall be performed in a manner prescribed under the Rules and Regulations of the Bureau of Weights and Measures of the New Hampshire Department of Agriculture.
- (h) Weighing of materials on scales located outside New Hampshire will be permitted for materials produced or stored outside the state, when requested by the Contractor and approved. Out-of-state weighing in order to be approved, must be performed by a licensed public weigh master or a person of equal authority in the state concerned on scales accepted in the concerned state.
- (i) Each truck used to haul material being paid for by weight shall bear a plainly legible identification mark, and if required, shall be weighed empty daily at such times as directed.
- (j) When material is weighed, the individual weight slips, which shall be furnished by the Contractor, for trucks, trailers, or distributors, shall show the following information: the date; the project; the material or commodity; the dealer or vendor; the Contractor or Subcontractor; the location of the scales; the vehicle registration number or other approved legible identification mark; the tare and net weights, with gross weights when applicable; and the weigher's signature or his signed initials.
- (k) The right is reserved to weight any truck, trailer, or distributor, at locations designated, before and after making deliveries to the project.
- (l) Bituminous materials will be measured by the gallon or ton.

MEASUREMENT AND PAYMENT (continued)

(m) When material is specified to be measured by the cubic yard but measurement by weight is approved, such material may be weighed and the weight converted to cubic yards for payment purposes. Necessary conversion factors will be determined by the Owner.

(n) The term "lump sum" when used as an item of payment will mean complete payment for the work described in the item.

(o) When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories, so as to provide the item complete and functional. Except as may be otherwise provided, partial payments for lump sum items will be made approximately in proportion to the amount of the work completed on those items.

(p) Material wasted without authority will not be included in the final estimate.

2. SCOPE OF PAYMENT

(a) The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials and for performing all work under the contract in a complete and acceptable manner and for all risk, loss, damage or expense of whatever character arising out of the nature of the work or the prosecution thereof.

(b) The Contractor shall be liable to the Owner for failure to repair, correct, renew or replace, at his own expense, all damage due or attributable to defects or imperfections in the construction which defects or imperfections may be discovered before or at the time of the final inspection and acceptance of the work.

(c) No monies, payable under the contract or any part thereof, except the first estimate, shall become due or payable if the Owner so elects, until the Contractor shall satisfy the Owner that the Contractor has fully settled or paid all labor performed or furnished for all equipment hired, including trucks, for all materials used, and for fuels, lubricants, power tools, hardware and supplies purchased by the Contractor and used in carrying out said contract and for labor and parts furnished upon the order of said Contractor for the repair of equipment used in carrying out said contract; and the Owner, if he so elects, may pay any and all such bills, in whole or in part, and deduct the amount of amounts so paid from any partial or final estimate, excepting the first estimate.

3. COMPENSATION FOR ALTERED QUANTITIES

(a) Except as provided for under the particular contract item, when the accepted quantities of work vary from the quantities in the bid schedule the Contractor shall accept as payment in full, so far as contract items are concerned, at the original contract unit prices for the accepted quantities of work done. No allowance will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor resulting either directly from such alterations or indirectly from unbalanced allocation among the contract items of overhead expense on the part of the Bidder and subsequent loss of expected reimbursements therefore or from any other cause.

(b) Extra work performed will be paid for at the contract bid prices or at the price negotiated between the Owner and the Contractor if the item was not bid upon. If no agreement can be negotiated, the Contractor will accept as payment for extra work, cost plus 15% (overhead and profit). Costs shall be substantiated by invoices and certified payroll.

MEASUREMENT AND PAYMENT (continued)

4. PARTIAL PAYMENTS

Partial payments will be made on a monthly basis during the contract period. From the total amount ascertained as payable, an amount equivalent to ten percent (10%) of the whole will be deducted and retained by the Owner until such time as the work receives final acceptance.

5. FINAL ACCEPTANCE

Upon due notice from the Contractor of presumptive completion of the entire project, the City Engineer will make an inspection. If all construction provided for and contemplated by the contract is found complete to his satisfaction, this inspection shall constitute the final inspection and the City Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of the final inspection.

If, however, the inspection discloses any work in whole or in part, as being unsatisfactory, the City Engineer will give the Contractor the necessary instructions for correction of such work, and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed. In such event, the City Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

6. ACCEPTANCE AND FINAL PAYMENT

(a) When the project has been accepted and upon submission by the Contractor of all required reports, completed forms and certifications, the Owner will review the final estimate of the quantities of the various classes of work performed. The Contractor may be required to certify that all bills for labor and material used under this contract have been paid.

(b) The Contractor shall file with the Owner any claim that the Contractor may have regarding the final estimate at the same time the Contractor submits the final estimate. Failure to do so shall be a waiver of all such claims and shall be considered as acceptance of the final estimate. The Contractor shall provide the required Maintenance Bond prior to the approval of Final Payment by the Owner. After approval of the final estimate by the Owner, the Contractor will be paid the entire sum found to be due after deducting all previous payments and all amounts to be deducted under the provisions of the contract.

(c) All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

7. GENERAL GUARANTY AND WARRANTY OF TITLE

(a) Neither the final certification of payment nor any provision in the contract nor partial or entire use of the improvements embraced in this Contract by the Owner or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express or implied warranties or responsibility for faulty materials or workmanship. The Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom which shall appear within a period of twelve (12) months from the date of final acceptance of the work. The Owner will give notice of defective materials and work with reasonable promptness.

MEASUREMENT AND PAYMENT (continued)

(b) No material, supplies or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease purchase or other agreement by which an interest therein or in any part thereof is retained by the Seller or supplier. The Contractor shall warrant good title to all materials, supplies and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the Owner free from any claims, liens or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract shall have the right to a lien upon any improvements or appurtenances thereon.

Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this paragraph shall be inserted in all subcontractors and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

8. NO WAIVER OF LEGAL RIGHTS

(a) Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or be stopped from recovering from the Contractor or his Surety, or both, such overpayment as it may sustain by failure on the part of the Contractor to fulfill his obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

(b) The Contractor, without prejudice to the Contract shall be liable to the terms of the Contract, shall be liable to the Owner for latent defects, fraud or such gross mistakes as may amount to fraud, and as regards the Owner's right under any warranty or guaranty.

9. TERMINATION OF CONTRACTOR'S RESPONSIBILITY

Whenever the improvement provided for by the Contract shall have been completely performed on the part of the Contractor and all parts of the work have been released from further obligations except as set forth in his bond and as provided in Section 8 above.

SHOP DRAWINGS

Shop Drawings for this project shall be submitted under the following conditions:

1. The Contractor shall submit working and detail drawings, well in advance of the work, to the City Engineer & Building Inspector for review.
2. The Contractor's drawings shall consist of shop detail, erection and other working plans showing dimensions, sizes and quality of material, details and other information necessary for the complete fabrication and erection of the pertinent work.
3. The Contractor shall submit three (3) sets of drawings to the City Engineer.
4. Prior to the approval of the drawings, any work done or materials ordered for the work involved shall be at the Contractor's risk.
5. One (1) set of the drawings will be returned to the Contractor approved or marked with corrections to be made. After approval has been given, the Contractor shall supply the City Engineer with two sets of the revised detail working drawings.
6. The City Engineer's approval of the Contractor's working drawings will not relieve the Contractor from responsibility for errors in dimensions or for incorrect fabrication processes, or from responsibility to complete the contract work.

**SPECIAL CONDITIONS
&
CRITICAL TIMELINES**

REQUIRED DEADLINES

The City has made certain representations to the residents, business owners and stakeholders of this project. A very important part of this project will be meeting certain goals by certain dates. The following criteria and dates are crucial to the success of this project.

Closure of the existing Sagamore Creek Bridge – No earlier than October 15, 2013

Opening of the new Sagamore Creek Bridge to traffic – December 1, 2014

Final Completion of all work – June 1, 2015

Failure to complete by this date will result in liquidated damages of \$1,567 per calendar day.

Access must be available at all times to all properties located within the closed portion of NH Route 1A, and all cooperation given to customers, tourists, and residents alike. The contractor will be required to place appropriate signage on NH Route 1A directing customers and users to the businesses, boat club and health facility. These signs shall be specific to each business and be permanently mounted on NH Route 1A to direct customers around to each business. Also a detour package of signs will be required. These signs will be considered subsidiary to the project and no separate payment will be made.

Accommodations must be made for delivery trucks for the businesses on NH Route 1A.

Dust and mud must be controlled at all times to protect the residents, businesses, and traveling public.

The project site must be kept clean and passable on nights and weekends with gravel areas watered and kept dust free with calcium chloride. Pavements shall be swept clean each night, especially on Fridays and before holidays.

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PROJECT REQUIREMENTS

Prosecution of Work

Traffic Control Plan

Environmental Commitments

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PROSECUTION OF WORK

DESCRIPTION

This project consists of removal and replacement of the NH Route 1A Bridge (Br. No. 198/034) over the Sagamore Creek in Portsmouth, NH. This work begins approximately 350 feet north of the bridge, and continues 1350 feet south to the intersection with NH Route 1B. This work consists of complete removal of the existing 3 span, plate girder steel bridge. The proposed bridge substructure will consist of reinforced concrete, solid wall piers on drilled shafts and drilled shaft supported reinforced concrete abutments. Roadway approach work consists of full box reconstruction in the approaches to the bridge, and milling and overlaying to the project limits. Additional includes construction of three retaining walls supporting the grade separation along the bridge causeway in the northeast, northwest, and southwest quadrants. Additional roadway work includes construction of a new curbing and sidewalk along the westerly edge of work, construction of drainage improvements, and the replacement of the existing water main under the bridge.

CONCURRENT WORK

The Contractor shall coordinate and cooperate with all other contractors involved in concurrent work in the area. Other project(s) in the area include:

Project	Anticipated Beginning	Anticipated Completion	Description
Portsmouth 13455A	Fall 2012	Summer 2014	Removal of a bridge over the US Route 1 Bypass, reconstruct the US Route 1 Bypass and US Route 1 intersection in Portsmouth.
Portsmouth 13455B	Summer 2013	Fall 2015	Replacement of the Middle Road and Islington Street Bridges over the US Route 1 Bypass.
Newington-Dover 11238L	Summer 2010	Winter 2013	Construction of New Little Bay bridge over Little Bay where it meets the Piscataqua River.
Newington-Dover 11238M	Summer 2012	Summer 2015	Reconstruction of NH Route 16 from Exit 1 to Exit 4.
Portsmouth-Kittery 13678F	Winter 2011	Fall 2013	Replacement of the Memorial Bridge carrying US Route 1 over the Piscataqua River.

Sagamore Creek Bridge Replacement

14493

July 2013

Project	Anticipated Beginning	Anticipated Completion	Description
Portsmouth 20258	Summer 2014	Summer 2015	Construction of new sidewalk and striped bicycle shoulders on Peverly Hill Road.
Portsmouth-Kittery 15731	Fall 2014	Summer 2017	Replacement of the Sarah Mildred Long Bridge carrying the US Route 1 Bypass over the Piscataqua River.
Portsmouth 13455C	Fall 2013	Fall 2015	Replacement of the Maplewood Ave. bridge
New Castle – Rye 16127	Spring 2015	Fall 2017	Rehabilitate the NH 1B single leaf bascule movable bridge over Little Harbor.
Intersection of US Route 1/ Peverly Hill Road/ Elwyn Road (former Yoken's site)	Fall 2012	Spring 2013	Private site work to construct a proposed retail facility. The Developer will be constructing two drives, a southbound right turn lane, widening of the northwest quadrant of the Peverly Hill Road intersection, and a northerly extension of the existing raised median on US Route 1 across the frontage. This work will also include pavement work along US Route 1.
Sagamore Avenue Re-construction Project	Spring 2014	Fall 2014	The City will, under separate contract be repairing the roadway and sidewalks from the northern limit of work to the intersection with South Street. The Sagamore Creek Bridge Replacement Contractor shall coordinate backfill and bituminous base course along the northerly end of that project with the Sagamore Avenue Reconstruction project (completed by others).

Refer to 105.07, specifically regarding coordination with other Contractors working concurrently. The Contractor shall not duplicate construction signs, and shall cover, uncover, or remove permanent signs as necessary (subsidiary to Item 619.1 - Maintenance of Traffic) to provide proper signing through the area.

BRIDGE CLOSURE COORDINATION

NH Route 1A is a part of the Seabrook Station Emergency Evacuation Route. As such, during the bridge closure, a compensatory evacuation plan will need to be developed by the New Hampshire Department of Safety (NHDOS). The Contractor shall notify George Muszynski at the Homeland Security Emergency Management (HSEM) division within NHDOS at least 30

days prior to shutting down NH Route 1A for the bridge demolition. The Contractor shall also notify HSEM upon the re-opening of NH Route 1A to vehicular traffic. George Muszynski can be reached by phone at (603) 223-3646, or via e-mail at GEORGE.MUSZYNSKI@HSEM.NH.GOV.

UTILITIES

There are utility installations in the area belonging to, but not necessarily limited to, the following:

Public Service of New Hampshire

Contact: Jim Osborne

Phone: (603) 332-4227

Fairpoint Communications

Contact: Joe Constidine

Phone: (603) 427-5525

Comcast

Contact: Mike Collins

Phone: (617) 279-6360

Aerial:

Joint use poles for overhead utilities shall be relocated at several locations. Relocation shall be coordinated with the appropriate provider to ensure minimal disruption to services. There are aerial lines crossing the Sagamore Creek, adjacent to the bridge. These lines will be in place throughout construction. It is the Contractor's responsibility to take care when working under and near these lines, and report any damage to the respective utility companies. Coordinate with the utilities for insulation and cable protection during construction activities.

The Contractor shall be responsible for maintaining the existing utility poles during construction. Payment for temporary stabilization of utility infrastructure during construction shall be paid for under Item 670.9.

Underground:

There are underground telephone and water lines within the project limits. The underground telephone is routed in conduit under the existing bridge. This line will be relocated aerially prior to the Contractor beginning work. The water main is also hung under the bridge. This crossing of the water main on the bridge will be temporarily discontinued during construction, and replaced as a part of the new bridge. See the plans and specifications for more

details regarding this work. The Contractor shall maintain all utility services to all properties throughout construction.

The Contractor shall, as specified by New Hampshire State Law, RSA 374:51 and 374:55, call **DIG SAFE** (1-888-344-7233) at least 72 hours prior to any excavation. The Contractor shall comply with any notification and other requirements of Town and State excavation permits. In the event the Contractor damages any underground utility, it shall be the Contractor's responsibility for any and all necessary repairs to said utility. The Contractor shall bear all costs incurred to make necessary repairs including emergency or temporary repairs, patch pavement, traffic control, labor, materials, and all other items necessary to repair the damaged utility in accordance with the requirements of the utility owner. If any underground electrical or telephone wire is damaged or broken, the Contractor shall be responsible for the costs to replace the entire line from the nearest junction box, or as required by the utility. The Contractor shall cooperate with the various utility companies, public agencies and the municipality, and provide access through the site as required for their work or to observe work in connection with this project that affects their respective properties. The Contractor should note that existing underground utilities shown on the plans are approximate and based in part on record information. The Contractor shall notify the Engineer immediately upon finding undocumented underground utilities or conditions varying significantly from those shown on the plans. It is intended that Item 206.19 – Common Structure Excavation - Exploratory shall be utilized (prior to the installation of any proposed project feature) at all locations where it is believed a potential utility conflict may exist. The Contractor shall record specific data pertaining to location and elevation of the encountered utility and provide the information to the Engineer for review. Once all applicable information has been obtained and reviewed, the Engineer may direct the Contractor to modify the proposed work and/or notify the appropriate utility that a relocation of the utility will be required, or remove the utility to the property line and cap appropriately.

TEMPORARY LIGHTING

The Contractor shall be responsible for providing adequate lighting for construction activities during night work hours. There is no separate payment for lighting during night work hours, as it is considered subsidiary to the individual tasks.

The Contractor shall maintain adequate lighting at the roadway closure ends. That lighting shall be subsidiary to Item 619.1, Maintenance of Traffic.

RIGHT OF WAY

The proposed work is to be completed within the existing Right of Way (ROW). If the Contractor's work plan requires additional ROW be acquired, it shall be the responsibility of the Contractor to obtain the necessary temporary construction easements.

Protect all mailboxes and maintain them in accessible locations. Upon completion of the project, mailboxes shall be set at permanent locations as ordered and mounted on new posts and assemblies. All work related to mailbox maintenance and relocation shall be subsidiary to Item

619.1 - Maintenance of Traffic. New mailbox supports ordered will be paid under Item 670.066 - Mailbox Post Assemblies.

The Contractor will only be permitted to perform work within the ROW and Temporary Construction Easement areas.

EXISTING BRIDGE PLANS

To assist the Contractor in preparing a bid, the existing bridge plans are available for review during the bidding period at the City of Portsmouth Department of Public Works. A complete set of available existing bridge plans will be forwarded to the successful bidder upon request.

Note that this bridge has received interim repairs, including the addition of supplemental floor beams not reflected on the original structural plans.

ABUTTER ACCESS

Access to private property must be maintained throughout the duration of construction. Work in front of private driveways must be coordinated with the property owners at least one week in advance. Private driveways may be closed off during working hours, they must be reopened at night and on the weekends. Access to businesses shall be maintained at all times. Alternative access must be provided if work will close a driveway temporarily.

BUILDING DEMOLITION

There are no proposed building demolitions as a part of this project.

TEMPORARY AND PERMANENT BARRIER

Use Portable Concrete Barrier for Traffic Control (Item 606.417) to separate traffic from the work areas as necessary. If open excavations adjacent to the traveled way or shoulders open to traffic are permitted to remain through non-work hours, protect traffic from these areas by either using temporary traffic control barrier (conforming to Item 606.417) at the Contractor's expense or providing a 4:1 or flatter slope.

ENVIRONMENTAL CONSIDERATIONS

Attention is directed to the permits described below that have been obtained for this Contract. All stipulations of these documents shall be adhered to at all times throughout the duration of this contract, at no additional cost to the Owner. A copy of each of the permits is included at the end of this specification section.

The Contractor shall apply and obtain any other permits or approvals required by local, state or federal governing authorities.

The Contractor shall comply with all applicable local, state and federal requirements, as well as industry standards and practices regarding materials, methods of work and disposal of excess and waste materials.

HISTORIC

The Sagamore Creek Bridge is eligible for the National Register of Historic Places. The Sagamore Creek Bridge will be removed as a part of the construction. Note the attached Environmental Commitments prior to commencing any work to the Sagamore Creek Bridge.

EXCAVATION, DREDGING, OR FILLING STATE WATERS

The City has secured the necessary Permits to accomplish the work and copies of the Permits are included elsewhere in the Proposal. The work as indicated qualifies under the US Army Corps of Engineers NH Programmatic General Permit (NHPGP). This General Permits is available online at <http://www.nae.usace.army.mil/Regulatory/SGP/index.htm>.

The City's Permit is only for the work shown in the Proposal. Apply sufficiently in advance for any additional Wetlands Bureau or Corps of Engineers Permits or modifications to the existing Permit(s) necessary due to the Contractor's method of construction or for other work not shown on the plans. Prior to submission to the Wetlands Bureau, have any additional impacts reviewed by the City.

To assist the Contractor in preparing a bid, the Wetland Impact Detail(s) included with the Wetlands Permit Application is available for review during the bidding period and may be examined at the Department of Public Works, 680 Peverly Hill Road, Portsmouth, NH (603-427-1530), by appointment with 24 hours advance notice.

EROSION CONTROL AND WATER QUALITY MANAGEMENT

Provide a Storm Water Pollution Prevention Plan (SWPPP) (Item 645.7) and monitoring of the SWPPP (Item 645.71) to ensure that any detrimental impacts are minimized to the extent practical and restricted to the construction phase. Take note of the requirements in Section 645 - Erosion Control, particularly 3.1.1 regarding submittals and approvals of the SWPPP, prior to specific work. Amend the SWPPP as necessary to provide for continued erosion and sediment control. Appropriate temporary measures shall be implemented as necessary to prevent erosion based upon the Contractor's method of operation and schedule.

Before beginning grubbing operations (or tree clearing if so ordered by the Engineer) or earthwork, install erosion control measures along the toe of slopes in areas adjacent to wetlands or other areas as directed. In addition, provide delineation (i.e. fluorescent painted stakes or fluorescent colored flags, subsidiary to Item 645.531) at the limits of construction adjacent to wetlands or other restricted areas or as directed. Maintain the SWPPP measures throughout construction until the area is stabilized.

EPA STORMWATER DISCHARGE

Refer to the Special Attention concerning the Contractor's obligation relative to the National Pollutant Discharge Elimination System (NPDES) Stormwater Construction General Permit as administered by the Environmental Protection Agency (EPA). This project is subject to Notice of Intent, Notice of Termination and other project records to be completed by the Contractor as required in the Construction General Permit (CGP). NPDES General Guidelines,

Notice of Intent and Notice of Termination forms are available on-line in *Doing Business with the DOT* at www.nhdot.com.

CONTAMINATED SOILS AND GROUNDWATER

The Contractor should be aware that there is a site at the southern edge of the project's limits that is active in NHDES's remediation program. There are no anticipated impacts from this site within the project area. The Contaminated Soils report is attached at the end of this document.

LEAD PAINT

The Contractor shall be aware that the existing structure has lead-containing paint and shall be responsible for compliance with all applicable Federal, State, and Local regulations pertaining to work practices, hauling, and disposal of demolition debris and hazardous waste, protection of workers and visitors to the site and persons occupying areas adjacent to the site. The Contractor is required to ensure protection of workers performing work that will affect the surfaces coated with lead-containing paint in accordance with applicable OSHA regulations, including but not limited to Title 29 CFR 1910 and 29 CFR 1926.

INVASIVE PLANTS

Under the statutory authority of RSA 430:55(NH Department of Agriculture) and RSA 487:16-a (NH Department of Environmental Services), the spread of invasive plants listed in Agr 3800 and Env-Wq 1300 is prohibited. The project contains areas of the following prohibited invasive Type I and II plants: black locust, Tatarian honeysuckle, Asiatic bittersweet, Japanese knotweed, autumn olive, and multiflora rose.

To prevent the spread of these plants both within and outside the project area, appropriate containment measures and disposal methods must be in place. Prior to clearing and grubbing operations occurring in areas identified on the General Plans as containing invasive plant species, the Contractor shall mitigate these areas as specified in the Special Provision for Item 201.88X - Invasive Species Control Type X. All work must comply with the NHDOT manual *Best Management Practices for Roadside Invasive Plants*, available in the Department's Records Section or online at www.nh.gov/dot/org/projectdevelopment/environment/documents.htm.

An Invasive Species Control and Management Plan, which details the specific method(s) of controlling the spread of the identified invasive plants and their proper disposal, must be submitted to the Department for review and approval prior to construction (paid for under Item 697.11 - Invasive Species Control and Management Plan).

In areas containing Invasive Species Control Type II plants (Japanese knotweed, purple loosestrife, phragmites), all plant material must be destroyed or contained following appropriate Best Management Practices. These plants have the ability to sprout from stem and root fragments. Mowing of these plants is to be avoided. If areas containing Type II plants must be excavated, control will require the removal of plant material and associated soil within a six-foot radius beyond the limit of the plant and to a depth of three feet (FIVE feet for Japanese knotweed), but in no case excavating below the established subgrade in roadway sections nor

extending beyond the established slope line. If equipment will be used in areas containing Type II plants but excavation will not occur, plants must be cut with hand tools and disposed of following appropriate Best Management Practices.

Removing and handling of invasive plants shall be paid under Item 201.881 - Invasive Species Control Type I and Item 201.882 - Invasive Species Control Type II.

Excavation of invasive plants shall be paid under the appropriate pay items for the class of excavation being performed. Disposal of invasive plants and associated soils by burying on-site shall be paid under Item 203.6 - Embankment-in-Place. Disposal of invasive plants and associated soils on-site but outside of the roadway section, when allowed, shall be paid under either Item 201.1 - Common Excavation or Item 203.6 - Embankment-in-Place. Disposal of invasive plants and associated soils off-site, when allowed, shall be paid under for as extra work as provided for in Section 109.

Established slopes within the project limits are to be reviewed periodically (subsidiary to Item 697.11) for the presence of new populations of invasive plants that have been spread directly by construction activities. The Department shall approve follow-up control measures, which can include but are not limited to pulling and bagging plants or the application of herbicide. Follow-up control measures shall be paid under Item 201.88X.

ENVIRONMENTAL COMMITMENTS

A full listing of the Environmental Commitments pertaining to this Contract can be found in the next section. They are divided into sections, based on responsibility. The Contractor shall be aware of the entirety of the commitments, and required to support the implementation of them. Commitments that are under the direct control of the Contractor are spelled out as such.

SITE AND SUBSURFACE INFORMATION

It was not possible for the Owner and/or Engineer to observe all existing conditions when developing the construction documents. The accuracy of the existing conditions data is not guaranteed to the Contractor.

During the execution of the work, it shall be the Contractor's responsibility to discover, identify and observe existing conditions not anticipated by the Construction Documents and promptly notify the Engineer of such conditions, at no additional cost, in writing with proposed solutions.

Test boring logs and locations for the project are as indicated on the Contract Drawings. The Contractor is cautioned that refusal elevations indicated on the boring logs does not necessarily mean that bedrock was encountered. Information provided is for the actual locations only, and any inferences drawn are the responsibility of the Contractor.

Utilities shown on the Construction drawings are approximate based on limited available information. The Contractor shall contact DigSAFE at least 72 working hours in advance of commencing the work.

The Contractor shall comply with City of Portsmouth ordinances, rules and regulations.

The Contractor shall provide proper notice, make necessary arrangements and perform all other Service required for the removal or the care, protection, and maintenance of utilities, above or below ground, on and around the site, assuming all responsibility and paying all related costs. Service to existing structures shall not be disrupted without the prior approval of the City and the owner of the structure.

Geotechnical reports developed for this project are included in the Attachments of this document.

REMOVAL OF EXISTING SAGAMORE CREEK BRIDGE (Br. No. 198/034)

The existing bridge shall be removed to the limits indicated on the Contract Plans. All components of the existing structure shall be removed and disposed of by the Contractor in accordance with all applicable regulations. Bridge removal operation shall be done in a manner consistent with the Plans or otherwise approved by the Engineer. Special care and precautions, including protective structures, shall be taken to ensure that no damage occurs to existing features to remain in use during bridge removal operations. The Contractor shall submit plans and calculations for the removal of the existing bridge, including protective structures to the Engineer for documentation in accordance with Section 105.02 of the New Hampshire Department of Transportation *Standard Specifications for Road and Bridge Construction*. All costs for work necessary to remove the existing bridge shall be included in Item 502.101, Removal of Existing Bridge Structure.

Refer to information related to lead-containing paint on the existing structure under the Environmental Considerations section of this document.

The Contractor shall, prior to commencement of demolition operations perform control (extermination) of rodents, in accordance with the specifications.

STRUCTURAL STEEL ERECTION & DECK CONSTRUCTION PROCEDURES

Bridge construction operations shall be performed in a manner consistent with the Plans or as otherwise approved by the Engineer. Special care and precautions, including protective measures, shall be taken to ensure that no damage occurs to existing features to remain in use during bridge construction operations. Cost for protective measures shall be subsidiary to the appropriate items of work.

The Contractor shall submit proposed structural steel erection procedures (plans and calculations) and proposed deck construction procedures, including protective structures, to the Engineer for Documentation in accordance with Section 105.02 of the New Hampshire Department of Transportation *Standard Specifications for Road and Bridge Construction*.

CONSTRUCTION REQUIREMENTS

1. Remove topsoil for its total depth within the limits of the slope lines. Unless otherwise directed, stockpile topsoil in accordance with Section 203 and use it on this project as needed under Section 641 - Loam and/or Section 647 - Humus.
2. Provide strict dust control measures and maintain access to properties at all times (Refer to Section 107.04). Pavement shall be swept clean daily.
3. Provide guidance in accessing several commercial developments along NH Route 1A, provide temporary business signs mounted on easels, as directed by the Engineer. The signs and maintenance of the signs is subsidiary to Item 619.1 - Maintenance of Traffic.
4. Tree clearing on the Sagamore Creek bank shall be kept to a minimum. Only clear trees needed to facilitate the proposed construction and minimize disturbance of the adjacent vegetation.
5. Temporary pavement shall be used on NH Route 1A after trenching or isolated excavation, if traffic will be allowed on that section of roadway. Phase the work to minimize the potential for erosion. If the schedule permits, all subsurface work shall be sequenced to minimize the number of times the roadway is disturbed. Temporary pavement shall be subsidiary to Item 619.1 – Maintenance of Traffic.
6. The Contractor shall provide, install and maintain temporary fencing around the landside project limits.
7. The Contractor shall repair, at its own expense, any damage caused to the public or private property; remove from the site all debris, excess materials, tools, and equipment; and shall leave the premises in a neat and orderly condition, to the satisfaction of the Engineer and Owner.
8. The Contractor shall comply with navigational laws, Coast Guard Rules and Regulations, and regulatory agencies if entering the waterways around the site.

EXCAVATIONS

If slopes steeper than 4:1 adjacent to the traveled way or shoulders open to traffic are not protected by existing or new guardrail through non-work hours, protect traffic from these areas using traffic control barrier and temporary lighting if required, as approved by the Engineer at the Contractor's expense.

DRAINAGE

It shall be the Contractor's responsibility to properly maintain existing drainage flows in areas under construction during the life of the Contract.

It shall be the responsibility of the Contractor to repair or clean any drainage systems that have been fouled by the Contractor's operations without additional compensation.

SAW CUTS

Saw cuts shall be made in the existing pavement at ALL limits of the proposed pavement construction, along existing pavement for granite curb installation and as directed by the Engineer.

SURVEY

Locate, protect and maintain bench marks, monuments, control points and project engineering reference points.

The Contractor shall provide, at its own expense, all materials and labor as may be required to establish and maintain all project control range lines, additional reference marks and line and grade stakes. If the Contractor, through willfulness or carelessness, removes or permits the removal of such reference marks before prosecution of the work requires it, they shall be replaced at the Contractor's own expense.

All work shall conform during its progress, and on its completion, truly to the lines and grades given by the Contract Documents. The work shall be done in a thoroughly substantial and workmanlike manner, in accordance with the contract Drawings, these specifications, and as directed by the Engineer.

The Contractor shall make, check and be responsible for all measurements and dimensions necessary for proper construction. The Contractor shall notify the Engineer of discrepancies with the contract drawings.

Vertical datum used for this project is Mean Lower Low Water (MLLW).

Contractor shall consult the Tide Tables issued by NOAA in order to evaluate tidal conditions affecting work.

BOUNDS

The Contractor shall exercise due care when working around all bounds and other survey monuments that are to remain. Should any damage to a monument result from the actions of the Contractor, it shall be replaced and/or realigned by a licensed surveyor in the State of NH, at the Contractor's expense. No further compensation will be due the Contractor for the materials and labor required re-establishing the monument in its proper orientation.

It is the responsibility of the Contractor to record locations of all property/right-of-way monumentation, adjacent to or within the limits of construction, prior to commencement of work. This record will be used to reset any monumentation disturbed by the Contractor's activities. No additional payment shall be made for this work.

ROCK REMOVAL

There is no anticipated rock removal as part of this project.

GUARDRAIL PLACEMENT

The Contractor shall deliver guardrail materials for making a complete installation to the site before removing existing guardrail. The new guardrail shall be installed beginning at the approach end, complete in place, and immediately upon removing the existing rail, unless provisions are made for approved temporary barrier for traffic control (at the Contractor's expense other than as noted in the Schedule of Work).

SALVAGE OF MATERIALS

If the City of Portsmouth, NH deems that the materials listed below are suitable for their re-use on other project, then the Contractor shall salvage, stockpile, and load them onto the indicated recipient's vehicles as required under 104.04. Care shall be taken during the removal operations so as not to damage any salvaged materials. Material damaged during removal due to the Contractor's negligence shall be replaced at the Contractor's expense. Removal of all materials will be paid for under specific items of the contract or subsidiary as shown on the plans or as stated in the Proposal or the Standard Specifications.

Contact XXX with the City of Portsmouth, NH, Department of Public Works for inspection of materials for potential salvage.

Materials identified for potential salvage:

1. Drainage basin grates and frames
2. Straight granite curbing
3. Sloped granite curbing
4. W-beam rail and end units

All materials deemed not salvageable, including guardrail posts, shall become the property of the Contractor who is responsible for proper disposal.

FIELD OFFICE AND TEMPORARY UTILITIES

The Contractor shall provide all temporary sheds, field offices, telephone, power, water and temporary sanitation facilities necessary for his own needs and those of his subcontractors. Contractor shall provide on-site phone service, or other telephone facilities such that the Contractor can be reached at any time throughout the work day. All costs for such facilities shall be considered incidental. The Contractor is solely responsible for the security of all temporary facilities and stockpile areas, including, but not limited to fencing and lighting. All temporary facilities shall comply with the requirements of Federal, State and local laws, regulations and standards, and shall be removed upon completion of the Work with the premises left in a clean and odorless condition. The drinking water and sanitary facilities shall be open to all Contractors, subcontractors, and their employees involved in the Work.

Contractor shall provide phone numbers for communication and emergency contact during off work hours.

OSHA – SAFETY PROGRAM REQUIREMENT (for On-Site Employees)

Contractor must adhere to the provisions of RSA 277 Safety and Health of Employees, RSA 277:5-a, I, which states the following: “Any person signing a contract to work on a construction, reconstruction, alteration, remodeling, installation, demolition, maintenance, or repair of any public work or building by a state agency, municipality, or instrumentality thereof, and with a total project cost of \$100,000 or more, shall have an Occupational Safety and Health Administration (OSHA)10-hour construction safety program for their on-site employees.” The construction safety program’s certification curriculum is available online through the OSHA New England Training Institute Education Center at Keene State College. Visit <http://keene.amersc.com/10-hour-construction.aspx> to learn more and register. Enforcement by the New Hampshire Department of Labor (DOL) can result in the removal of all non-certified employees from the worksite as well as significant civil penalties. The requirement to comply with this RSA is hereby made part of these bid documents. Contractor is responsible to ensure that OSHA construction safety program certifications are held by every employee on the project including subcontractors. To view New Hampshire RSA 277:5-a online, visit: <http://www.gencourt.state.nh.us/rsa/html/XXIII/277/277-5-a.htm>. For questions regarding the RSA and its enforcement, call 603.271.3176 or visit: http://www.labor.state.nh.us/contact_NHDOL.asp

USE OF GROUNDS AND STREET OCCUPANCY

Use of any area outside the limits of the site ROW and Temporary Construction Easements, which the Contractor may require for storage of equipment and materials, or for other purposes necessary in the performance of the Work, shall be secured by the Contractor at his own expense. Materials, including excavation intended for backfill, shall not be stored or stacked within any roadway clear zones, or in a manner that obstructs adequate sight lines unless specifically permitted by the Engineer. The contractor is responsible for providing security as required and erosion controls at no cost to the City.

DISPOSAL OF SURPLUS EXCAVATED MATERIALS

Surplus excess material not required for use on the project shall be disposed of legally and safely by the Contractor at his discretion outside of and away from the limits of the project, without additional compensation. All unsuitable materials shall be removed from the site and disposed of properly by the Contractor.

WORK HOURS

Contractor shall not perform any work involving high noise machinery such as jackhammers or excavating equipment prior to 7:00 a.m. or after 6:00 p.m., unless otherwise permitted in the contract or approved by the City.

STAGING / STORAGE AREA

The Contractor may establish a staging area within the City’s Right-of-Way, outside the clear zone, and subject to the approval of the Engineer. Upon completion of work, the surface of the ground, pavement, and any other areas or property disturbed by the Contractor shall be

restored to the condition in which it existed prior to the commencement of work and to the reasonable satisfaction of the City. Cost to be included in Item 692, Mobilization.

WINTER MAINTENANCE PERIOD

Work will continue on the bridge over the winter, however, the following measures at a minimum shall be implemented and maintained during the winter season (November 1 to April 1):

- Maintain traffic on bituminous pavement with appropriate pavement markings for the winter. Minimum lane widths of 11' with 2' shoulders shall be maintained throughout the winter period.
- Pave all drives that have had pavement removed during construction.
- Stabilize and/or vegetate all disturbed slopes.
- Remove temporary traffic control barrier that hinders winter maintenance. If any temporary traffic control barrier is approved to be left in place, locate the barrier a minimum of 6-feet from the edge of pavement open to traffic.
- Provide pavement marking and striping plans for approval if the pavement layout is other than what is shown on the construction phasing plan to reflect modifications necessary for the construction stage at that time.
- Prior to winter maintenance season (beginning November 1), arrange a review of this project with the City, NHDOT, and Engineer.

SCHEDULE OF WORK

1. Within seven (7) calendar days from Notice to Proceed, the Contractor shall submit to the Engineer a proposed work schedule for documentation consistent with 108.03. Furthermore, the Contractor shall conduct a weekly meeting with the Engineer and the City to discuss the upcoming week's work, traffic control, and any other issues that may be deemed pertinent. The Construction schedule shall be maintained on the project site for review during site meetings. If a major change is made to the schedule, the updated schedule shall be submitted to the Engineer within 24 hours.
2. A pre-construction meeting with NHDOT Labor Compliance Bureau is required. The Contractor must provide documentation of labor classifications, sub-contractor approvals, Davis-Bacon Wage Rates, and other compliance documentation as required by the Contract
3. At least 48 hours prior to the start of construction, a pre-construction conference meeting shall be held with NHDES Wetlands Bureau and / or other Land Resources Management Program staff at the project site or at the NHDES Office in Portsmouth, NH to review the conditions of this wetlands permit and any environmental

- commitments stated in the approved documents. A minimum 5-day notice shall be provided to the NHDES Wetlands Bureau and / or other Land Resources Management Program staff. The meeting shall be attended by the City, wetland scientist, erosion control monitor, and the contractor(s) responsible for performing the work.
4. Prior to commencing construction, the Contractor shall submit a description of equipment to be used for disposal and handling of materials.
 5. The Contractor shall provide necessary measures to maintain drainage and minimize ponding on the pavement during construction, paying particular attention to transitions between existing drainage to new drainage and any necessary modifications to the existing drainage to accommodate the different phases of construction (paid under Item 699).
 6. The Contractor shall maintain the existing pavement during the entire construction period, including the patching of all trenches, potholes, and other deteriorating pavement, as needed and as directed by the Engineer, and in accordance with NHDOT Standard Specifications for Road and Bridge Construction Section 619.3.1.8.1.
 7. The Contractor shall provide the Engineer written notice at least 48 hrs in advance of the re-commencement of construction activities, after non-weather related suspensions.
 8. The Contractor shall submit a letter indicating that all work has been completed per the project requirements and requesting that the Engineer perform a final inspection of all work prior to Contractor demobilization.

PROJECT DOCUMENTS AND PHOTOS

Maintain at the project site, one copy each of the following:

- Contract Drawings
- Specifications
- Addenda
- Reviewed shop Drawings
- Change orders
- Other modifications to Contract
- Field test reports
- Copy of approved work schedule

- Regulatory approvals and requirements
- Photographs

The Contractor shall, at its own expense, furnish digital photographs of the project. Photographs shall be scheduled at low tide to reveal as many site features as possible. The photographs shall be taken with a digital camera and electronic files of each view shall be furnished to the City and the Engineer.

Photographs shall be taken at each milestone in the project, including but not necessarily limited to:

- Before the project commences
- During removals
- During concrete pours for abutments
- Construction of retaining walls
- Pier installations
- Superstructure installation
- Backfilling of NH Route 1A
- Before and after photos of driveway aprons and parking lots
- Completion of project

A minimum of ten (10) photographs shall be taken at each milestone and shall include at a minimum the following:

- North and south abutments and wingwalls
- Face of retaining walls along the southwest, northeast and northwest quadrants
- Topside looking north along NH Route 1A
- Topside looking south along NH Route 1A
- Superstructure construction including topside and underside of bridge
- Bridge Piers
- Specific milestone items, such as drainage structures, sidewalks, or guardrail.

RECORD DRAWINGS

The Contractor shall maintain and submit red line Record Drawings of all work in a format acceptable to the City and the Engineer upon completion and prior to final payment.

INTERMEDIATE COMPLETION DATE:

The Intermediate Completion Date for the project applies to the re-opening of the bridge to traffic.

The Intermediate Completion Date is December 1, 2014.

No additional items are included or payments will be made for winter work or for additional personnel, equipment, etc. that may be required to achieve the Intermediate Completion Date.

No allowance will be given for unfavorable weather or ground conditions (see Special Provision to 108.07) or for delays in materials (see 108.07.B.3). The Special Provision to 108.07 shall only apply to the Intermediate Completion Date as stated above.

COMPLETION DATE

The Completion Date is June 1, 2015

No allowance will be given for unfavorable weather or ground conditions (see Special Provision to 108.07) or for delays in materials (see 108.07.B.3).

The Special Provision to 108.07 shall only apply to the Intermediate Completion Date.

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TRAFFIC CONTROL PLAN

The following are considered part of the Traffic Control Plan:

1. Section 618 and 619 of the Standard Specifications.
2. Work Zone Traffic Control Standard Sheets*
3. *Manual on Uniform Traffic Control Devices, (MUTCD), 2009 Edition, including all current updates, and official interpretations.*
4. *Positive Protection Guidance for Work Zones (PPGWZ)**
5. *Flagger and Uniformed Officer Use in Work Zones Policy and Guidelines**
 - Available on line under *Doing Business with DOT>Contractors* at www.nhdot.com or through the NHDOT Contracts office (603-271-3732).

Effective April 1, 2013, all Uniformed Officers working on any NHDOT funded project, including municipally managed projects, shall have successfully completed a NHDOT approved course on The Safe and Effective Use of Law Enforcement Personnel in Work Zones. The officer shall supply proof of successful course completion upon request.

The Contractor shall provide necessary traffic control devices to ensure the safety of the workers, traveling public, and property on this project. The above referenced specifications, guidelines, and provisions herein provide minimum requirements; the Contractor may be directed to expand upon the Traffic Control Plan if conditions warrant.

All signs, channelizing devices and arrow boards as required by the Manual on Uniform Traffic Control Devices, including part six, as amended, and the above Standard Sheets shall be in place prior to moving any equipment onto the pavement.

Additionally, the special provisions for this project are also set forth in this section.

The Contractor shall provide trained personnel, including Uniformed Officers and Flaggers in accordance with Section 618, to be responsible for the maintenance of traffic control.

All materials specified under Item 619.1, Maintenance of Traffic, shall be required to be certified for reflectivity. Damaged devices shall be replaced as directed by the Engineer without additional compensation.

MAINTENANCE OF TRAFFIC

1. All work shall be prosecuted so that vehicular and pedestrian access is maintained within the public right of way at all times, and access to private residences and businesses shall be maintained at all times.
2. The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs and other traffic control devices and shall take all necessary precautions for the protection of the work and safety of the public, as well as providing safe and passable traffic accommodations for public travel. Effective barricades shall protect roadway areas closed to traffic. Obstructions shall be illuminated during hours of darkness. Suitable warning signs shall be provided to control and direct traffic in a proper manner. Barrier blunt ends shall be protected by impact attenuators, or tapered outside the clear zone as appropriate.
3. The Sagamore Creek Bridge will be closed to traffic during the majority of the project duration. It shall not be closed prior to October 15, 2013, and shall be reopened by December 1, 2014. The detour route shall follow the existing detour established by the City for trucks that exceed the current weight limit. See the plans for more detailed information. The Contractor is responsible for erecting and maintaining detour signage throughout the duration. There shall be no separate payment for this, it is considered a part of Item 619.1 – Maintenance of Traffic.
4. Prior to closing the Sagamore Creek Bridge, the Contractor shall receive approval from the City that the detour route has been clearly signed and established.
5. The Contractor is responsible for providing suitable barricades to prevent motorists from entering the closed portion of NH Route 1A, while maintaining construction access for this contract. Positive protection shall be provided at all times the bridge is closed, preventing access by the public to the bridge area. This protection shall be located between the bridge and the nearest driveway, side road, or other point of access to be maintained. The method of closure shall be approved by the Engineer in advance. Work associated with the closure shall be subsidiary to Item 619.1, including installing and maintaining barricades, signage, and lighting.
6. Shaw Road shall be limited to local traffic only.
7. Traffic will be allowed on gravel surfaces between Monday and Friday, except over holidays. No travel on gravel roads will be allowed over weekends and holidays. While traffic is on gravel, it shall be the Contractor's responsibility to maintain a smooth gravel surface free of pot holes and ruts. The Contractor shall be available 24 hours a day, 7 days a week to make repairs while traffic is on

- gravel surfaces. There will be no separate payment for temporary paving, it is considered subsidiary to Item 619.1.
8. Single lane closures during hours of construction operations, utilizing alternating one-way traffic is allowable during work hours. Single lane closures are limited to providing a single lane for alternating each direction of travel, utilizing traffic control personnel (detail Uniformed Officers and/or Flaggers, as defined in Section 618 and as approved by the Engineer). The length of lane closure shall be as approved by the Engineer. Two-way traffic must be reestablished at the end of the work day, and maintained during non-working hours, weekends and holidays.
 9. Access to all properties shall be maintained throughout the duration of the project. No driveways or property access points shall be within the limits of the full roadway closure. The roadway will be posted for local traffic only at the South Street and NH Route 1B intersections, with the roadway fully closed and barricaded between the last private property and the bridge on each side of the bridge.
 10. Maintain traffic on full width pavement appropriate to the stage of construction during weekends and holidays and the day before and after a holiday.
 11. Travel lanes shall be 11 feet minimum unless otherwise noted.
 12. Shoulder widths shall vary from 0 feet in restricted areas to 4 feet where attainable.
 13. Road plates shall be permitted in areas closed to through traffic only. The road plates shall be a minimum of 1" thick steel. All other trenches in the traveled ways or shoulders within the clear zone shall be backfilled at the end of the work day.
 14. The minimum clear zone for this project shall be 16 feet. The clear zone is measured from the edge of traveled way open to traffic. There shall be no construction vehicles or equipment left in the clear zone during non-working hours.
 15. Traffic shall be maintained on full width pavement appropriate to the stage of construction during weekends and holidays and the day before and after a holiday.
 16. The Contractor's attention is directed to the MUTCD standard lane shift and alternating one-way traffic details in the plans, especially with regard to signing and delineation required for shifting a lane or closing a lane of traffic.
 17. All work required to provide Maintenance of Traffic, unless specifically called out separately, shall be in accordance with Sections 618 and 619 and will be paid for under Item 619.1 in accordance with Sections 618 and 619 of the NHDOT

Standard Specifications for Road and Bridge Construction, and the Special Provisions.

PROHIBITION OF UNNECESSARY TRAFFIC OBSTRUCTION

Neither workers nor construction vehicles shall enter into, or impede the flow of traffic in an open lane. Construction vehicles shall not slow down or stop in any travel lane unless such lane has previously been made safe with signs and channelizing devices as required.

PEDESTRIAN TRAFFIC

Pedestrian traffic shall be maintained throughout the duration of the contract. If any existing sidewalk facilities are impacted by construction, equivalent sidewalk facilities in an adjacent location, with a minimum usable width of 5 feet shall be maintained at all times. Pedestrian crossings shall be approved by the Engineer, and established in advance of closing a section of sidewalk. New or temporary sidewalk facilities shall meet all applicable ADA regulations.

VARIATION FROM THE TRAFFIC CONTROL PLAN

If the Contractor feels that the Traffic Control Plan for this project can be improved, a proposal shall be submitted in writing, with any necessary plans for consideration, to be approved by the Engineer.

CITY OF PORTSMOUTH – FIRE AND POLICE DEPARTMENT TELEPHONE NUMBERS

City of Portsmouth Fire Department:

Coordination Contact:

E-Mail Address:

Address:

City of Portsmouth Police Department:

Coordination Contact:

E-Mail Address:

Address:

SUMMARY OF ENVIRONMENTAL ISSUES

The following is provided to assist in identifying the environmental sensitive aspects of this project. This notification is neither intended to be all-inclusive nor to replace the need to thoroughly read and abide by all contract documents including but not limited to all applicable state specifications and permits.

To Be Completed Prior to Earth Disturbing Activities

- **Storm Water Pollution Prevention Plan (SWPPP):** A SWPPP shall be submitted to the Department at least 15 working days prior to the expected start date. Note: A complete and accurate SWPPP will help ensure that there are no delays to the start of construction. The SWPPP must be approved by the Department and or NH Department of Environmental Services (NHDES) prior to the start of earth disturbing activities.
- **Notice of Intent (NOI):** This project is subject to the National Pollution Discharge Elimination System (NPDES) Phase II requirements administered by the Environmental Protection Agency (EPA). As such, a NOI is required for this project. The NOI must be in active status prior to the commencement of construction related activities. A separate NOI is required for the work in each state. Instructions for each state are located in the Prosecution of Work.
- **Invasive Species Control and Management Plan:** An invasive species control and management plan shall be approved by the Department prior to the start of any earth disturbing activities (including clearing).
- **Project Bulletin Board:** A project bulletin board shall be erected, on site, in a conspicuous location and be protected from the weather. Environmental documents to be placed on the board shall include, but not be limited to, any permits issued by regulatory agencies, NOI's of the contractor and NHDOT, NHNH, or US Fish and Wildlife Service review letter, 24 hour contact information, and other pertinent information.

Other Important Information

- **US Coast Guard Bridge Permit, Condition 2:** The construction of falsework, cofferdams or other obstructions, if required, shall be in accordance with plans submitted to and approved by the District Commander, prior to construction of the bridge. All work shall be so conducted that the free navigation of the waterway is not unreasonably interfered with and the present navigable depths are not impaired. The permittee shall coordinate methods and schedule of construction of this bridge project with the District Commander. Timely notice of any and all events that may affect navigation shall be

given to the District Commander during construction of the bridge. Methods shall be employed to ensure that there will be no increase of sedimentation and turbidity in the waterway during construction. The channel or channels through the structure shall be promptly cleared of all obstructions placed therein or caused by the construction of the bridge to the satisfaction of the District Commander, when in the judgment of the District Commander the construction work has reached a point where such action should be taken, but in no case later than 90 days after the bridge has been opened to traffic.

Summary of Environmental Commitments

1. In-water construction activities associated with this project shall cease in their entirety from 15 March through 14 November of each year that work on the project continues. This moratorium is intended to preclude disruption of winter flounder and diadromous fish spawning. Work in water will be allowed between 1 July and 14 November of any year for the sole purpose of removing temporary trestle piers. The Contractors shall be required to remove intertidal temporary trestle piles during low tide. Silt curtains shall be in place for all sediment-disturbing in-channel work, and turbidity monitoring shall be conducted during in-channel work that has the possibility of producing sediment.
2. Invasive species, including black locust, Tatarian honeysuckle, Asiatic bittersweet, Japanese knotweed, autumn olive, and multiflora rose, all invasive plants, are located in the southeast, southwest, and northwest quadrants of the existing bridge. Excavation and grading in these areas will require careful handling and disposal of site soil material to avoid transport or spread of these species. If plants cannot be avoided during construction, all appropriate BMPs shall be summarized in an Invasive Species Control and Management Plan and implemented during construction to avoid spreading the plants to new sites.

STANDARD AND TECHNICAL SPECIFICATIONS

Special Attentions

Special Provisions

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STANDARD TECHNICAL SPECIFICATIONS

The Standard Specifications for Road and Bridge Construction of the State of New Hampshire Department of Transportation (NHDOT) and any Addenda shall apply, unless noted otherwise. Section 100 “General Conditions” of the NHDOT Standard Specifications shall supplement the City of Portsmouth’s General Requirement specifications. However, the City’s General Requirements shall govern in the event of a conflict with Section 100 of the NHDOT Specifications.

The following sub-sections of Section 100 of the NHDOT’s Specifications shall not apply:

- Section 102 – Bidding Requirements and Conditions
- Section 103 – Award and Execution of Contract
- Section 104 – Scope of Work
- Section 108 – Prosecution and Progress

There shall be no fuel or asphalt adjustment provisions.

Additional Technical Specifications and Special Provisions for this project are attached.

References to the New Hampshire Department of Transportation found in the Standard Specifications for Road and Bridge Construction shall be interpreted to read the City of Portsmouth.

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Special Attentions

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01/10/13

SSD: 09/01/10, 10/05/10, 12/01/10, 02/08/11, 03/07/11, 04/21/11, 09/06/11, 10/02/11, 01/15/12, 11/07/12, 12/05/12

SPECIAL ATTENTION**THIS PROJECT IS TO BE BID AND CONSTRUCTED UNDER THE
2010 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, August 2010* 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	Last Revision Date	Current Revision Date
<i>DIVISION 100</i>				
107.01	Laws to be Observed	Bulletin Board Requirements		11/07/12
108.09	Failure to Complete on Time	Liquidated Damages Chart		10/05/10
109.04	Differing Site Conditions, Changes and Extra Work	Regional Adjustment Factor	03/12/10	09/01/10
109.04.4.4	Equipment and Plant	Rental Equipment Mark-up		11/07/12
109.09	Payments to Subcontractors	Prompt Payment		09/06/11
109.11	Measurement and Payment	Final Pay Quantity		11/07/12
<i>DIVISION 200</i>				
214	Fine Grading	3.1 – Amends the tolerance for specific slopes prior to paving to 0.2%		01/10/13
<i>DIVISION 300</i>				
<i>DIVISION 400</i>				
401	Job Mix-General	2.5.1 - Revises ESAL/Minimum Binder Content Criteria		01/10/13
401	Asphalt Modifiers	2.11 - Adds QC/QA Specifications to High-Strength Mix Quantities over 2,000 Tons		

401	Pavers	Removes 3.11.3 – Performance Requirements to 3.11.1.1 for both QC/QA and Method Work Renames 3.11.1.1.1 – MTV Requirements to 3.11.3 and Assures Ability to Re-mix and Movable Discharge Conveyors for MTVs	01/10/13
401	Compaction	3.12.2.4 (formerly 3.12.1.4) - Requires Informational Density Cores on Shoulders and Lessens Density Penalty for Overlays Not Previously Levelled	01/10/13
401	Joints	2.12.1 - Adds Pavement Joint Adhesive Properties 3.13.4 – Assures full head of Material for Permanent Transverse Joints 3.13.5 - Removes Requirement for Hot Air Lance, Adds Requirements for Melting Kettle, and Allows Echelon Paving In Lieu of Pavement Joint Adhesive	01/10/13
401	Acceptance Testing - Air Voids	3.17.3.2 - Revises AASHTO reference to ASTM reference, Requires Information Shoulder Cores, Eliminates Upper Limit of Core Thickness	01/10/13
410.2.1	Bituminous Surface Treatment	2.1 - Identifies Asphalt Emulsion Grades	01/10/13
<i>DIVISION 500</i>			
520	Portland Cement Concrete	3.1.3.2.1(k) - Performance Requirements (QC/QA) – Requires Ceramic or Porcelain Dishes	12/01/10
538	Barrier Membrane	3.1.1 & 3.3.1.4 – Adds Requirement of Digital Ambient Temperature and Dew Point instrument 3.3.5 – Specifies Laydown Temperature of Pavement Overlays	
563	Bridge Railing	Removes Final Pay (F) Designation from Items	11/07/12
<i>DIVISION 600</i>			
603	Culverts and Storm Drains	603.2.9.1 – PVC Manufacturers' Participation in NTPEP	12/05/12
605	Underdrain	603.2.3 – PVC Manufacturers' Participation in NTPEP	12/05/12

618	Training Requirements for Uniformed Officers and Flaggers	Deletes and Adds revised Description, Equipment, and Construction Requirements sections		01/04/12
621/622	621 - Delineators 622 - Markers and Bounds	621 – AASHTO Update & Required Documentation 622 – Required Documentation		11/07/12
632	Retroreflective Pavement Markings	Deletes 632.3.2.8.1 & 632.3.2.8.2		03/07/11
632	Retroreflective Pavement Markings	Adds 2.2.1 – Levels of Arsenic and Lead in Glass Beads		11/07/12
644	Grass Seed – Slope Seed (WF) Type 45 Mix	Amends 2.3		10/02/11
645	Erosion Control	3.1.7 – Amends Requirement for Permanent Stabilization from 14 Days to 3 Days		
698*	Field Facilities (Computer Specification/ Scanner)	Amends 2.2.1 & 2.2.2	04/21/11	01/15/12

* Supplemental will not be included if there is no Field Office item in the Contract.

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SPECIAL ATTENTION

The Contractor is advised that the existing paint system(s) on the existing bridge is lead-bearing paint (LBP) and contains hazardous concentrations of lead.

The Contractor performing any construction and demolition activities involving bridge components with LBP (e.g. flame cutting, rivet busting, removal of bridge members, etc.) shall comply with the applicable worker protection provisions of OSHA 19286.62, Lead Exposure in Construction Final Rule, and the environmental protection requirements of the NH Department of Environmental Services.

The Contractor shall submit to the Department a compliance plan including worker protection and environmental protection measures. The Contractor shall not commence with bridge construction/demolition activities without approval of compliance plan.

Reference to these regulations shall not preclude or preempt any local, State or Federal regulations that may apply.

The Contractor will not be held responsible for the abatement of pre-existing conditions at the bridge site involving LBP.

SPECIAL ATTENTION

REQUIRED PAINTING CONTRACTOR CERTIFICATION TO SSPC QP1 AND QP2 FOR
BRIDGE PAINTING

Effective November 1, 1988

All painting contractors and painting subcontractors to be used for painting structural steel bridge shall establish proof of competency and responsibility by being registered and certified in accordance with the requirements of the Painting Contractor Certification Program (PCCP) of the Steel Structures Painting Council (SSPC) of Pittsburgh, PA (contact Michael Damiano at tel. 412-281-2331).

Certification for QP1 is required for all painting projects. Certification for QP2 is also required for projects involving the removal or overcoating of lead-based paint.

This program is based upon SSPC QP1, "Standard Procedure for Evaluating Qualifications of Painting Contractors (Field Application to Complex Structures)", August 1, 1998 and SSPC QP2, "Standard Procedures for Evaluating Qualifications of Painting Contractors to Remove Hazardous Paint", August 1, 1995.

The painting contractor and painting subcontractor shall be certified by SSPC PCCP before the day of bid opening and shall maintain certification and certified representation on site throughout the duration of the project until final acceptance of the work.

10/28/10

SSD: 01/28/03

**NEW HAMPSHIRE DEPARTMENT OF EMPLOYMENT SECURITY
EMPLOYMENT OF NEW HIRES**

The following is a list of the local State Employment Security Office's from which the Contractor may secure the unskilled labor for this project is:

Department of Employment Security
151 Pleasant Street, PO Box 159
Berlin, NH 03570-0159
Telephone: (603) 752-5500

Department of Employment Security
404 Washing ton Street, PO Box 180
Claremont, NH 03743-0180
Telephone: (603) 543-3111

Department of Employment Security
10 West Street, PO Box 1140
Concord, NH 03302-1140
Telephone: (603) 228-4100

Department of Employment Security
518 White Mountain Hwy.
Conway, NH 03818-4205
Telephone: (603) 447-5924

Department of Employment Security
109 Key Road
Keene, NH 03431-3926
Telephone: (603) 352-1904

Department of Employment Security
426 Union Avenue, Suite 3
Laconia, NH 03246-2894
Telephone: (603) 524-3960

Department of Employment Security
85 Mechanic Street
Lebanon, NH 03766-1506
Telephone: (603) 448-6340

Department of Employment Security
646 Union Street, Suite 100
Littleton, NH 03561-5314
Telephone: (603) 444-2971

Department of Employment Security
300 Hanover Street
Manchester, NH 03104-4957
Telephone: (603) 627-7841

Department of Employment Security
6 Townsend West
Nashua, NH 03063-1217
Telephone: (603) 882-5177

Department of Employment Security
2000 Lafayette Road
Portsmouth, NH 03801-5673
Telephone: (603) 436-3702

Department of Employment Security
29 South Broadway
Salem, NH 03079-3026
Telephone: (603) 893-9185

Department of Employment Securities
6 Marsh Brook Road
Somersworth, NH 03878
Telephone: (603) 742-3600

05/13/09

Page 1 of 4

SSD: 1/19/95, 4/6/99, 2/14/03 & 7/14/08

SPECIAL ATTENTION

HISTORIC AND ARCHAEOLOGICAL RESOURCES

In order to avoid impacts to archaeological resources, the Contractor shall obtain and submit to the Engineer a written certification from either: 1) the State Archaeologist, or 2) a qualified archaeologist as defined below prior to any offsite excavation or other work at any disposal site, haul road, storage area, staging area, or other areas located outside the right-of-way limits of the project. Such certification shall be made on one of the attached forms. One is intended for site clearance by the state archaeologist and the other for investigation by a qualified archaeologist. Any work in such areas may only commence after receipt of this certification and upon written authorization to proceed by the Engineer.

This Special Attention does not apply to natural materials obtained from pre-existing (i.e., owned and operated by the Contractor prior to bidding on the subject contract) and/or commercially available sources. Commercially available sources is meant to include licensed or permitted sources where anyone could purchase natural materials.

If the State Archaeologist determines that further field investigation is necessary the Contractor must decide whether to pursue alternative locations or to have the site(s) in question evaluated. If the latter is decided, it will be necessary for the Contractor and the Engineer to meet with the NHDOT Bureau of Environment, the Division of Historic Resources and the Federal Highway Administration to determine the appropriate course of action. Note that the latter parties meet twice a month on the first and second Thursdays of each month.

Professional Qualifications for Principal Investigators in Archaeological Investigations

All archaeologists contracting with NHDOT as principal investigators will be qualified for such work, as determined by NHDHR. **See list of qualified archaeological firms at www.nh.gov/nhdhr/consultants_archaeology.html.** According to NHDHR guidelines, principal investigators must meet the minimum standards presented in 36 CFR 61.

These regulations require a graduate degree in archaeology, anthropology, or related field; at least one year full-time professional experience or an equivalent period of training in archaeological research, administration, or management; at least four months of supervised field and analytical experience in general North American archaeology; and demonstrated capability to complete archaeological research through all its phases. These standards distinguish between the prehistorian and historical archaeologist. Each must have a specialization in his/her respective areas and at least one year of full-time professional experience at the supervisory level in the study of the Native American cultural traditions or the historic period.

NHDHR also requires the following additional qualifications. All prehistorians will have at least one year of supervisory experience in the region encompassing the glaciated Northeast. Historical archaeologist will have a least one year of supervisory experience in New England, New Jersey, New York, or Pennsylvania. Historical archaeologists specializing in submerged nautical resources will possess at least one year's experience in the study of such resources along the Atlantic seaboard. NHDOT requires that the principal investigator has successfully completed one or more projects in New Hampshire in a timely manner. Principal investigators will be knowledgeable about the federal and state cultural resources management laws and regulations including those relating to the treatment of human remains in marked and unmarked graves. As soon as research or initial investigations indicate the likely presence of Native American or historic deposits, a principal investigator with training and experience in that area shall supervise the work.

The principal investigator is responsible for each aspect of the project. The principal investigator will maintain sufficient presence in repositories, the field, and laboratory to set up the study, ensure appropriate collection and accurate documentation of data, direct needed modifications as investigations proceed, field-check accuracy of field data, establish and direct analysis, and oversee documentation and preparation of recommendations at its close. In phases II and III as the intensity of excavation increases, it is anticipated that this presence will proportionately rise. All research, field investigations, analysis, and report preparation will be completed within the schedule set in the authorization of work unless notification is given and adequate justification is provided to NHDOT.

Depending on the nature of the site, the prehistoric or historic archaeologist may require additional qualifications or additional personnel qualified in other fields that may not be specified under 36CFR61. For example, projects for NHDOT encounter situations in which personnel with expertise and/or demonstrated experience in geomorphology, botany, faunal analysis, forensic anthropology, and industrial and urban archaeology are needed. These individuals will possess graduate training in their field, two years of professional experience in the area of expertise for which they are being consulted, and the demonstrated ability to complete a research project with a report of findings. Principal investigators may also need to add architectural historians, historians, historical landscape architects, etc. to their team whose professional qualifications will follow those provided in 36 CFR 61.

CERTIFICATION BY NHDHR

For the purpose of compliance with the Special Attention, Historic and Archeological Resources, dated February 14, 2003, relative to Federal-Aid Highway Project No. _____, NHDOT Project No. _____, I certify the following:

1. That I have reviewed the maps, plats, photographs or other identifying geographical information supplied to me by the Contractor.
2. That the areas located on these maps, etc. are to be utilized by the Contractor _____ for the following purposes:
 - a. Excavation area _____.
 - b. Waste material area _____.
 - c. Storage or staging area _____.
 - d. Haul road _____.
 - e. Other (describe) _____

 _____.
3. That I have reviewed the NHDHR site files relative to these locations and proposed uses.
4. On the basis of the above information, I have concluded that:
 - a. The location(s) have been previously reviewed, no resources have been identified, and there is no need for further archaeological evaluation _____.
 - b. The location(s) are such that no further archaeological evaluation is necessary _____.
 - c. The location(s) are such that further field investigation is necessary _____.

NHDHR Review and Compliance Coordinator

Date

Received:

NHDOT Contract Administrator

Date

cc: FHWA
NH Division of Historical Resources
NHDOT, Bureau of Environment

CERTIFICATION BY ARCHAEOLOGICAL CONTRACTOR

For the purpose of compliance with the Special Attention, Historic and Archeological Resources, dated February 14, 2003, relative to Federal-Aid Highway Project No. _____, NHDOT Project No. _____, I certify the following:

- 1. That I have examined the areas identified on the attached plans, maps, or property plats.
- 2. That these areas are to be utilized by the Contractor _____ for the following purposes:
 - a. Excavation area _____.
 - b. Waste material area _____.
 - c. Storage or staging area _____.
 - d. Haul road _____.
 - e. Other (describe) _____

 _____.

- 3. That I have used the following techniques in my examination:
 - a. Literature search _____
 - b. Walkover (describe methodology) _____

 - c. Subsurface testing (if appropriate) _____

4. That in my professional opinion, there is minimal or no likelihood that there are cultural resources (either historic or pre-historic) present or that any such resources present have integrity, and that there is no need for any other evaluative measures prior to the use of the areas described above for the purposes noted.

Archaeological Contractor _____
Date

Review by: _____
NHDHR Review and Compliance _____
Date
Coordinator

Received:

NHDOT Contract Administrator _____
Date

cc: FHWA
NH Division of Historical Resources
NHDOT, Bureau of Environment

SPECIAL ATTENTION

INVASIVE SPECIES

The statutory authority of NH Department of Agriculture *RSA 430:55* and NH Department of Environmental Services *RSA 487:16-a* prohibits the spread of invasive plants listed on the NH Prohibited Species list. Construction activities should avoid impacting areas containing invasive plant species in order to avoid spreading these plants to new sites. If invasive plants cannot be avoided, then the following suggested best management practices (BMPs) should be incorporated into all projects. These BMPs have been summarized from the NHDOT manual “Best Management Practices for Roadside Invasive Plants.”

Earthwork:

- Minimize soil disturbance whenever possible outside the limits of excavation.
- Stabilize disturbed soils by seeding and/or using mulch, hay, rip-rap, or gravel that is free of invasive plant material.
- Materials such as fill, loam, mulch, hay, rip-rap, and gravel should not be brought into project areas from sites where invasive plants are known to occur.

Movement of equipment:

- Equipment movement should be from areas not infested by invasive plants to areas infested by invasive plants whenever possible.
- Staging areas should be free of invasive plants to avoid spreading seeds and other viable plant parts.

Removing vegetation:

- In areas where invasive plants will be impacted by construction activities, vegetation should be cut or removed prior to seed maturation (approximately August 1st).
- These invasive plants have the ability to sprout from stem and root fragments: purple loosestrife, phragmites, and Japanese knotweed. Mowing these plants should be avoided. When these plants are cut by other means, all plant material must be destroyed and extra care should be taken to avoid spreading plant fragments.
- Equipment used to cut or remove invasive plants should be cleaned at least daily, as well as prior to transport.

The NHDOT manual “Best Management Practices for Roadside Invasive Plants” is available on line at www.nh.gov/dot/bureaus/environment/documents.htm or through the NHDOT Records Section (603) 271- 1601.

Items will be included in the contract under Sections 201 or 1008 for projects that will require these control methods.

02/15/11

SSD: 2/1/2001;03/03/04,05/13/04

SPECIAL ATTENTION
**TRAFFIC CONTROL DEVICES CRASH WORTHINESS
 COMPLIANCE WITH NCHR REPORT 350 AND MASH**

The American Association of State Highway and Transportation Officials (AASHTO) recently published the Manual for Assessing Safety Hardware (MASH). The main objective of MASH is to present uniform guidelines for the crash testing of both permanent and temporary highway safety features and evaluation criteria to assess test results. The need for updated crash criteria was based primarily on the changes to the vehicle fleet since the publication of National Cooperative Highway Research Program (NCHRP) Report 350.

IMPORTANT: Any hardware that was designed, tested and accepted prior to January 1, 2011 under the National Cooperative Highway Research Program (NCHRP) Report 350 criteria may continue to be used without retesting. As of January 1, 2011, all new or revised highway safety hardware must be tested or retested and accepted using MASH criteria.

Hardware tested under MASH should be considered for use but there is no requirement to use or replace hardware that was accepted prior to January 1, 2011 under NCHRP Report 350.

The following is a summary of work zone traffic control devices categories, and their crash testing acceptance requirements, titled "Recommended Procedures for the Safety Performance Evaluation of Highway Features," testing and evaluation criteria as implemented by the AASHTO-FHWA Agreement (350 Agreement) dated July 1, 1998. These categories and associated requirements also apply to newly designed or revised devices that would now fall under MASH testing criteria.

Category I: Small, lightweight devices that are known to be crash-worthy from crash testing or years of demonstrable safe operational performance. These include plastic or rubber cones, tubular markers, flexible delineators, and plastic drums with no lights, batteries, signs, etc. added. For devices to be included in this category there must be virtually no potential that they will penetrate windshields, cause tire damage, or have a significant effect on the control or trajectory of an impacting vehicle. These devices will be allowed based upon developers self certification.

Category II: Devices that are not expected to produce significant vehicular velocity change, but may be otherwise hazardous. All or parts of the devices may be substantial enough to penetrate a windshield or injure a worker or they may cause instability when driven over or become lodged under a vehicle. The total mass of a Category II device must be less than 45 kg. Examples of this category are barricades, portable sign supports, intrusion detectors and alarms and drums, vertical panels, or cones with lights.

Category III: Devices expected to cause significant velocity change or other potentially harmful reactions in impacting vehicles and Category II devices with a mass greater than 45 kg. Examples of this category are Truck-mounted attenuators (TMA), portable crash cushions and Portable concrete barrier (requires appropriate sized pin and loop or better connection).

Category IV: Crashworthy installations of Category IV devices are encouraged, though not mandated. Examples of this category are portable, usually trailer mounted devices such as area light supports, flashing arrow panels/arrows displays, temporary traffic signals and changeable message signs. However, these types of devices combined with TMA are considered Category III devices.

All category I, II, and III project work zone traffic control devices in use, except portable concrete barrier that transfers tension and moment from segment to segment, shall conform to the testing and evaluation criteria as outlined above. Devices not conforming to the criteria shall be replaced with conforming devices at no expense to the Department.

06/28/10

Supersedes Spec. Attn. dated 1/7/00, 3/22/00, 6/14/00, 2/8/01, 4/2/01, 1/25/02, 4/1/02, 04/15/03, 04/20/04, 05/06/05, 05/19/06, 09/17/07, 06/12/08, 03/04/09, 08/26/09

SPECIAL ATTENTION

QUALIFIED PRODUCTS LIST

The Qualified Products List is published on an annual basis. Occasionally additional revisions occur. The current Qualified Products List, **Issue 2010-1**, may be purchased at the Bureau of Highway Design, Records Section, located at 7 Hazen Drive, Concord, NH 03302, Tel: (603) 271-3514 for a fee of \$5.00. Checks should be made payable to Treasurer, State of New Hampshire. The Qualified Products List is also available online at www.nhdot.com under the *Doing Business with DOT* link.

SPECIAL ATTENTION**STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION,
STANDARD PLANS FOR ROAD CONSTRUCTION & BRIDGE DETAIL SHEETS**

This project will be constructed under the requirements of the 2010 Standard Specifications for Road and Bridge Construction and the 2010 Standard Plans for Road Construction, which have been adopted and will be utilized for projects advertising after September 1, 2010.

For Bridge Standard Plans, Bridge Design will include the appropriate standard plans, now referred to as Detail Sheets, in the plan set that pertain to the specific project, as necessary.

The Standard Specifications for Road and Bridge Construction and the Standard Plans for Road Construction manuals are available for purchase from NHDOT Records Section (603-271-3514) or can be viewed on the NHDOT website: <http://www.nh.gov/dot/business/contractors.htm>. The Specification Book and the Standard Plans are located under the *Standards and Specifications* heading while the Bridge Detail Sheets are located under the *Plans and Details* heading.

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Special Provisions

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**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION**AMENDMENT TO SECTION 105 – CONTROL OF WORK****AMENDMENT TO SECTION 105.12 – CONSTRUCTION ZONE(S)**

In accordance with Section 105.12 of the Standard Specifications, the construction work zone(s) designated for this contract shall extend 500 feet, beyond the work limits as described below and/or shown on the project layout map on the reverse of this page:

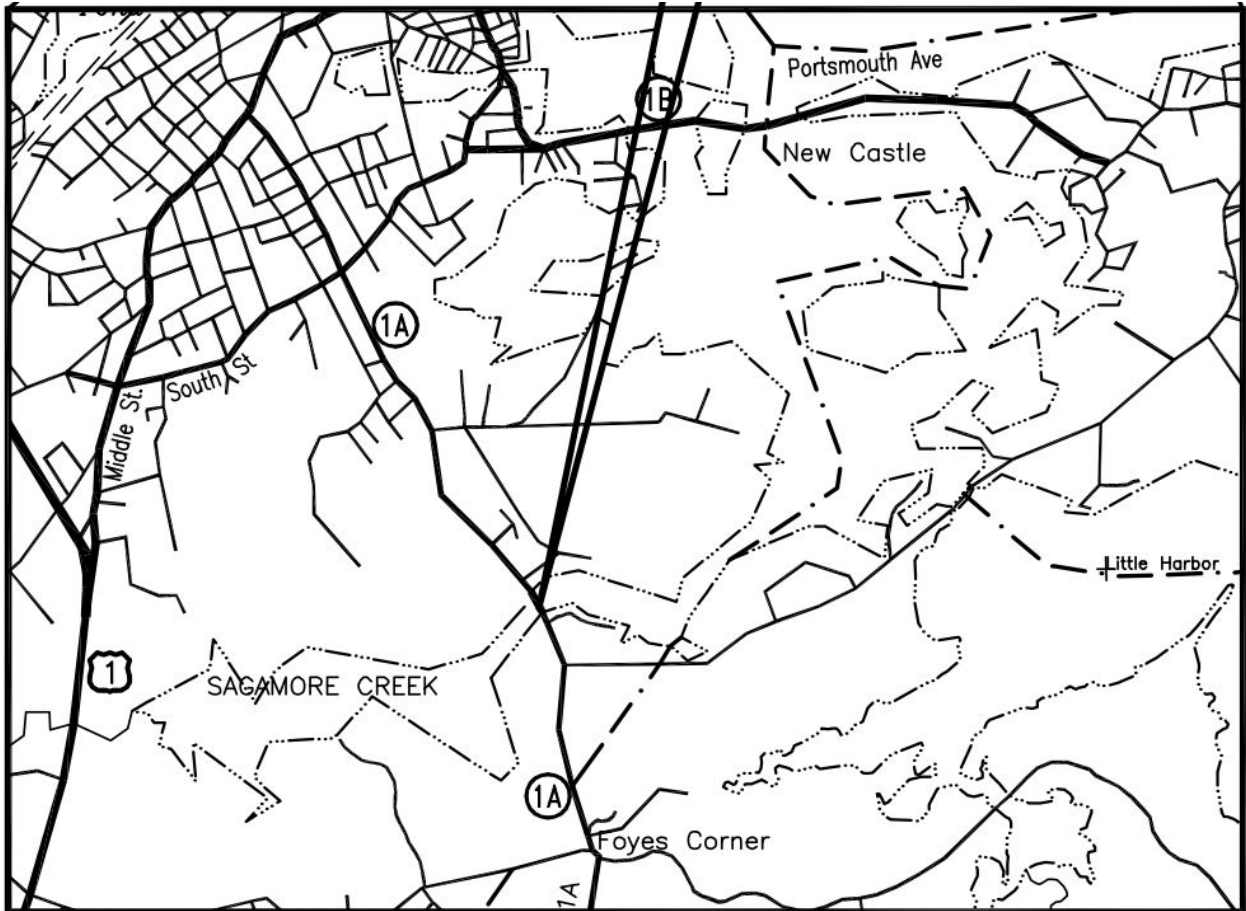
DESCRIPTION OF WORK LIMITS

The project involves work to construct a new bridge over the Sagamore Creek, as well as approach improvements along Route 1A.

The limits of work are as follows:

- Sagamore Ave – Work begins on the private gravel drive approximately 350 feet north of the Sagamore Creek Bridge.
- Work ends at the intersection with NH Route 1B, approximately 650 feet south of the Sagamore Creek Bridge.
- Work involves minor roadway tie-ins at Shaw Road and Sagamore Grove Road.

Project Area



**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July, 2013

SPECIAL PROVISION

AMENDMENT TO SECTION 108 – PROSECUTION AND PROGRESS

**AMENDING SUBSECTION 108.07 – DETERMINATION CONTRACT TIME
EXTENSION FOR EXCUSABLE, NONEXCUSABLE, NONCOMPENSABLE AND
COMPENSIBLE DELAYS**

****See “Prosecution of Work for applicable completion date(s).”****

Amend the fourth paragraph to read:

The Contractor’s plea that insufficient time was specified is not a valid reason for an extension of time. When the contract sets forth a calendar completion date, due consideration will have been given to the Saturdays, Sundays, legal holidays, and the period between December 1 and April 1 inclusive in the anticipated period of construction. **No extension of the contract completion date will be allowed due to such days.** When the contract stipulates a completion date that falls on a Saturday, Sunday, or legal holiday, or when the time as extended by the Engineer falls on a date that is a Saturday, Sunday, or legal holiday, the contract time will be extended to the next working day. **No consideration will be given for unfavorable weather or ground conditions.**

Delete 108.07.B.2.

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**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July, 2013

S U P P L E M E N T A L S P E C I F I C A T I O N

SECTION 108 – PROSECUTION AND PROGRESS

SUBSECTION 108.09 – FAILURE TO COMPLETE ON TIME

Amend 108.09 Liquidated Damages Schedule to read:

Liquidated damages shall be assessed in accordance with the following schedule:

<u>Original Contract Amount</u>		<u>Daily Charge</u>	
From more than	To and including	Calendar Day	Working Day
\$ 0	\$ 100,000	\$ 390	\$ 590
100,000	750,000	590	880
750,000	2,000,000	780	1,170
2,000,000	5,000,000	1,170	1,760
5,000,000	10,000,000	1,560	2,340
10,000,000	20,000,000	1,950	2,930
20,000,000	----	2,350	3,520

**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION

AMENDMENT TO SECTION 201 -- CLEARING AND GRUBBING

**Item 201.881 – Invasive Species Control Type I
Item 201.882 – Invasive Species Control Type II**

Add to Description:

1.5 Invasive species control shall consist of furnishing all labor (including, but not limited to, handling, cutting, stockpiling and spraying), materials, services, equipment and supplies required for removal and proper disposal of the vegetation listed in the Prosecution of Work. The intent of this item is to compensate the Contractor for all additional costs incurred due to the handling of invasive species during construction excavations. This item will be paid in addition to the appropriate pay items for the class excavation and/or embankment work being performed. Work shall be done in accordance with the *NHDOT's Best Management Practices for Roadside Invasive Plants* handbook and the specific Invasive Species Control and Management Plan developed for this project. This work shall be coordinated with the NHDOT Bureau of Environment.

1.5.1 Invasive species control type shall be as specified in the item description. The plant species of concern within the project limits will be specified in the Prosecution of Work.

Add: **Materials** section:

2.1 Backfill to replace contaminated soil that is excavated shall conform to the material requirements of the appropriate section of the Standard Specifications for the material to be placed at that location.

Add to Construction Requirements:

3.4 Invasive Species Control

3.4.1 Type I / Type II

3.4.1.1 Invasive species control for Types I and II shall consist of:

- Cleaning equipment upon leaving the area of the infestation.

3.4.2 Type I

3.4.2.1 Invasive species control Type I methods shall consist of:

- July 1st through February 1st, when mature fruit are most likely present, chip plants and dispose of in a manner that precludes the spreading of mature seeds and/or fruit. Outside of this time period, usual clearing and grubbing methods shall be used.

3.4.3 Type II

3.4.3.1 Invasive species control Type II methods shall consist of one or more of the following treatment measures:

- Bagging cut plant material for later disposal.
- Removing cut plant material from the site to bury, burn, or stockpile on an impervious surface.
- Removing excavated material from an infested site to bury, or stockpile on an impervious surface.
- Applying herbicides to invasive plants.

3.4.3.2 Herbicides shall be registered with and approved for use by the New Hampshire Department of Agriculture, Division of Pesticide Control and applied by a licensed applicator.

3.4.3.2.1 If herbicide use is proposed, the Contractor, or his licensed herbicide applicator, shall submit a site-specific plan and application to the NH Department of Agriculture, Division of Pesticide Control (contact the Division at (603) 271-3550 for information on their permitting process). Issuance of an herbicide application permit(s) may take up to three months for approval.

3.4.3.3 Burning invasive species shall be done in accordance with State and local regulations and Env A-1000 - Prevention, Abatement, and Control of Open Source Air Pollution issued by the New Hampshire Air Resources Division of Environmental Services, a copy of which is included in this Proposal.

3.4.3.3 Excavation, when required, shall be in accordance with the appropriate sections of the Standard Specifications.

3.4.3.4 Backfill in all excavated areas shall be placed and compacted in accordance with the plans and the appropriate sections of the Standard Specifications.

3.4.3.5 When required, disposal of invasive species materials and their contaminated soils by burying shall be in accordance with the appropriate sections of the Standard Specifications for Embankment-in-Place.

3.4.3.6 Monitor the project site for re-growth of invasive species in treated areas. If re-growth occurs secondary treatment shall be preformed. The Engineer may also order areas to receive secondary treatment.

Add to Method of Measurement:

4.6 Invasive species control of the type specified will be measured by the square yard (square meter) to nearest square yard (square meter) from measurements taken on the ground surface covered.

Add to Basis of Payment:

5.7 The accepted quantities of invasive species control of the type specified will be paid for at the contract unit price per square yard (square meter) complete in place.

5.8 Invasive Species Control and Management Plan, including monitoring invasive species re-growth, shall be paid under Item 697.11.

5.9 Excavation of invasive species material shall be paid under the appropriate contract items for the class of excavation being performed.

5.10 Materials required to replace material for excavated areas will be paid for as Item 203.6 - Embankment-In-Place or other appropriate items of the contract.

5.11 Disposal of invasive species material and their associated soils by burying within the road section shall be paid under Item 203.6 – Embankment-in-Place.

5.12 Disposal of invasive species material outside of the road section but with in the job limits, when allowed, will be paid as Item 203.1 – Common Excavation or Item 203.6 – Embankment-In-Place. Disposal of any surplus material from this excavation will be subsidiary to the work.

4.12.1 If disposal off-site is approved disposal fees shall be paid as provided for in 104.02 and 109.04.

5.13 If standard clearing and grubbing methods are used per 3.4.2.1, no additional payment will be made under Item 201.88X.

Add to Pay Items and Units:

201.881	Invasive Species Control Type I	Square Yard (Square Meter)
201.882	Invasive Species Control Type II	Square Yard (Square Meter)

END OF SECTION

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**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July, 2013

SPECIAL PROVISION

AMENDMENT TO SECTION 203 – EXCAVATION AND EMBANKMENT

Item 203.601 – Embankment-in-Place

Amend 4.1 to read:

4.1 Excavation, embankment-in-place, borrow, impervious material, and rehandling surcharge material will be measured by the cubic yard (cubic meter) in accordance with 109.01. Material removed from outside of template lines without prior approval will not be measured.

Amend Method of Measurement 4.2 to read:

4.2 When the item of embankment-in-place is included in the proposal, no measurements of any borrow pits will be made for the purpose of establishing pay quantities for any item, and the item of borrow will not appear in the proposal.

Delete 4.2.1

Amend 5.1.1 to read:

5.1.1 The item of embankment-in-place will be paid only for those materials for which payment is not specified under a separate item.

Amend 5.1.9 to read:

5.1.9 Backfill material meeting the requirements of 3.6.1 (1), (2) or (3) used to backfill unsuitable material excavation will be paid for under the item directed to be used by the Engineer.

Add to pay items and units:

203.601	Embankment-in-Place	Cubic Yard (Cubic Meter)
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**Sagamore Creek Bridge Replacement
14493**

July, 2013

SPECIAL PROVISION**SECTION 210 - GEOTECHNICAL
INSTRUMENTATION****Item 210.60- Mobilization and Demobilization for Test Boring Drilling
Equipment****Item 210.61- Advancing Cased Boring Hole****Item 210.62 -Advancing Boring Hole by Diamond Core Drilling****1.0 Description**

1.1 This work shall consist of furnishing all materials, equipment, labor, and services necessary to drill test borings for the proposed Route 1A over Sagamore Creek Bridge in accordance with this special provision.

1.2 The proposed test borings are required at Abutments A and B and Piers 1 and 2 at the locations indicated on the attached Table 1, and are intended to provide subsurface data for the drilled shaft construction at these piers.

1.3 Test borings at an individual substructure shall be completed a minimum of 30 days prior to initiating drilled shaft work at that substructure, or fabrication of shaft reinforcing steel, whichever is sooner. The Contractor shall notify the Engineer at least 21 days before the start of the test boring work, so that arrangements can be made with the Geotechnical Engineer to provide inspection of the test borings.

1.4 The Contractor is advised to refer to the test boring logs (No. 1 through No. 13 from the 1940 exploration, B-1 through B-8 from the 2008 exploration, and B-101 through B-104 from the 2013 exploration) and location plan for this bridge that are included in the contract plans. The bedrock cores from these test borings are available for inspection the City of Portsmouth Public Works offices. Appointments to review the bedrock cores shall be made at least 3 days in advance.

1.5 This work shall be conducted in conformance with all applicable environmental regulations and permits.

2.0 Materials and Equipment

2.1 Materials and equipment used to advance the test boring through soil and to obtain soil samples shall be equivalent to materials and equipment described in AASHTO T 206, Penetration Test and Split-Barrel Sampling of Soils. The test borings shall be advanced using a minimum 3 inch inside diameter (ID) casing. Soil samples shall be obtained using a 1-3/8 inch ID, 24 inch long, split-barrel sampler driven by the Standard Penetration Test procedure (SPT).

2.2 Materials and equipment used to advance the test boring through weathered and non-weathered bedrock shall be equivalent to material and equipment described in AASHTO T 225, Diamond Core Drilling for Site Investigation. Roller bits, or other non-core barrel tools shall not be used to advance the test boring through weathered and non-weathered bedrock. Bedrock cores shall be made using a NQ size double tube, core barrel, 2 inches ID.

2.3 **Cement Grout.** The cement grout used to seal the completed test borings shall conform to the applicable provisions of Section 520 and shall be a non-shrink neat cement mix with a maximum water to cement ratio of 0.45 by weight, and a minimum 28 day compressive strength of 3000 psi per AASHTO T 106/ASTM C 109.

3.0 Construction Requirements

3.1 The test borings shall be performed at the locations that are provided in Table 1, or as directed. The test boring work shall be conducted in the presence of the Geotechnical Engineer.

3.2 Split-barrel samples shall be taken at 5-foot increments while advancing the test boring through soil to the bedrock surface, or as directed. The sampler shall be driven 24 inches (not 18 inches as described in AASHTO T206). A representative portion of each sample shall be stored in a labeled, sealable, moisture-proof glass container. Labels shall have the date, location, boring number, sample number and depth of sample recorded on them.

3.3 Bedrock shall be cored using materials and equipment described in Section 2.2. The bedrock core length shall be 27 feet, or as directed. Recovered bedrock core samples shall be placed in labeled core boxes. The label shall contain the date, location, boring number, sample number, depth and length of core run.

3.4 Groundwater readings within the test borings are not required.

3.5 Completed test boring holes shall be grouted from the bottom of the test boring to the ground surface using the grout mix described in 2.3.

3.6 The Contractor shall provide a typed log for the test boring that includes the test boring location, boring number, casing and drill rod data, method of advancing and cleaning the boring, sample depths and SPT blow counts, type of SPT hammer, soil and bedrock descriptions, strata changes, groundwater readings, type of drilling machine, date and time of boring, and names of the crew. The log shall be in standard NHDOT format.

3.7 Soil and bedrock samples along with their containers shall be stored by the Contractor at the job site. These samples and containers are the property of the Contractor and may not be disposed of until all drilled shafts are installed and accepted.

4.0 Method of Measurement

4.1 Mobilization and demobilization will be measured as a unit. This unit shall include the furnishing of all supervision, equipment, crews, tools and all other equipment and materials as necessary to properly execute the work, and removal of same upon completion and acceptance of the work.

4.2 Advancing cased boring hole will be measured to the nearest 0.1 of a foot from the highest working grade while drilling the test boring to the bottom of the casing, and includes the length of test boring casing installed through water. The working grade is defined as the barge or trestle deck at the time of the test boring.

4.2.1 Split-barrel samples at five foot increments shall be subsidiary to Item 210.61 and will not be measured.

4.2.2 Grouting completed test borings shall be subsidiary to Item 210.61 and will not be measured.

4.3 Advancing boring hole by diamond core drilling will be measured to the nearest 0.1 of a foot from the top of the core run to the bottom of the core run.

4.3.1 Diamond loss on diamond coring tools or diamond casing bits shall be subsidiary to Item 210.62 and will not be measured.

4.3.2 Core boxes for storage of rock core samples shall be subsidiary to Item 210.62 and will not be measured.

5.0 Basis of Payment

5.1 The accepted quantity of mobilization and demobilization will be paid for at the contract lump sum price complete.

5.2 The accepted quantity for advancing the cased boring hole will be paid for at the contract unit price per linear foot complete in place.

5.3 The accepted quantity for advancing the boring hole by diamond core drilling will be paid for at the contract unit price per linear foot complete in place.

Pay items and units

210.60	Mobilization and Demobilization for Test Boring Drilling Equipment	Unit
210.61	Advancing Cased Boring Hole	Linear Foot
210.62	Advancing Boring Hole by Diamond Core Drilling	Linear Foot

Table 1

Test Boring No.	Station (feet)	Offset (feet)	Substructure
A1-1	108+77	RT5.3	Abutment A
P1-1	109+97	RT5.3	Pier 1
P2-1	111+75	RT5.3	Pier 2
A2-1	112+95	RT5.3	Abutment B

Note: Stations and offsets refer to the Construction baseline.

**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July, 2013

S U P P L E M E N T A L S P E C I F I C A T I O N

A M E N D M E N T T O D I V I S I O N 2 0 0 - E A R T H W O R K

A M E N D M E N T T O S U B S E C T I O N 2 1 4 – F I N E G R A D I N G

*The purpose of this supplemental specification is to match
the cross slope tolerance to the HMA requirement.*

Amend 3.1 as follows:

3.1 The surface of each course of material shall be fine graded to conform to the typical section of the plans prior to placing the succeeding course. Each course shall be fine graded to conform to the lines and grades as shown on the plans. When fine grading to a specific slope prior to paving, the slope tolerance will be +/-0.2%.

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**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July, 2013

SPECIAL PROVISION**SECTION 500 – ACCESS FOR BRIDGE CONSTRUCTION****Item 500.02 – Access for Bridge Construction****Description**

1.1 This work shall consist of the design, construction, maintenance and removal of temporary access by the Contractor for bridge construction. This work shall include storage and staging areas, temporary causeways, temporary access roads (stone fill and geotextile fabric), temporary bridges, work trestles, work platforms, necessary for bridge construction. The limits of the available work areas shall be as indicated on the plans or as permitted.

Materials

2.1 All materials to be used in the construction of the temporary bridges, work trestles and platforms shall be clean and subject to inspection and approval by the Engineer prior to their incorporation in the work. Used materials will be acceptable, provided appropriate allowances are made for their condition.

2.2 Temporary stone fill shall meet the requirements of Section 585 for Stone Fill, Class B or Class C.

2.3 Geotextile fabric shall meet the requirements of Section 593 for Geotextile Separation, Class 1.

Construction Requirements

3.1 The Contractor is advised that the plans for this project have been prepared based upon access for bridge construction from temporary bridges, work trestles, work platforms and temporary access roads as indicated on the plans.

3.2 Temporary bridges, work trestles and platforms shall meet the minimum strength requirements to carry all construction equipment and materials at stress levels not to exceed 33% greater than the stress allowed in the current AASHTO “Standard Specifications for Highway Bridges” as amended.

3.3 Detailed plans and calculations showing sizes, arrangements, connections, bracing, and quality of materials to be used in temporary bridges, work trestles and platforms shall be submitted to the

Engineer for documentation. The plans and calculations shall be designed by a Licensed Professional Engineer licensed in the State of New Hampshire and bear the Engineer's seal.

3.3.1 The height of the temporary bridges, work trestles and platforms shall be sufficient to allow for construction of adequate bracing and also to have a minimum effect on the environment. Consideration shall be given to ice conditions in the river (if applicable) in the design of the bridges, work trestles and platforms.

3.3.2 Temporary bridges, work trestles and platforms shall be of sufficient geometric and structural capacity to handle all anticipated loads resulting from the construction of the proposed bridge.

3.4 All access road work of preparing, improving and restoring roads as required to provide access to the bridge construction site shall be performed in accordance with the applicable governing specifications and the plans. Such work may involve clearing, grading, slope stabilization, construction of base courses, hot bituminous pavement, temporary fencing and gates, temporary drainage, dust abatement where required, and maintenance of affected roadway embankments, guard rail, and drainage structures as directed by the Engineer.

3.5 Clearing shall involve the removal of vegetation to the limits shown on the plans. Stumps and existing topsoil shall not be removed except as required to construct the bridge foundations and as directed by the Engineer. No trees outside the clearing limits shall be removed without approval of the Engineer.

3.6 When the temporary access roads, storage and staging areas, bridges, work trestles, work platforms are not longer required, they shall be completely removed and the area cleaned up, graded, landscaped and restored to the satisfaction of the Engineer to a condition equal to or better than that originally found or as shown on the plans.

Method of Measurement

4.1 Access for bridge construction will be measured as a unit. A unit will consist of the design, construction, maintenance and removal of temporary access for bridge construction.

Basis of Payment

5.1 The accepted quantity of access for bridge construction will be paid for at the contract unit complete in place.

Pay Item and Unit

500.02

Access for Bridge Construction

Unit

**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION**AMENDMENT TO SECTION 502 -- REMOVAL OF STRUCTURES AND
OBSTRUCTIONS**

This amendment requires the extermination of rodents in connection with demolishing the Sagamore Creek Bridge.

Add to 3.4:

3.4 Prior to, and during, the operations of demolishing the bridge or other such installations or appurtenances, rodents (rats) therein shall be exterminated in accordance with the recommended practice of the U.S.D.A. Wildlife Service.

3.4.1 The rodenticide applicator shall be licensed in accordance with NH.

3.4.2 Extermination shall consist of two phases:

(a) **Blitz.** This phase shall start immediately after execution of the contract, and where, and as directed. All foods edible by rodents shall be removed from the bridge surroundings, and then a toxic material consisting of 1 percent zinc phosphide with an emetic added, together with a suitable, attractive, moist bait shall be used. The treated bait shall be placed near all structures to be demolished in accordance with the best practice so as to attract the greatest possible number of rodents. All uneaten baits and dead rats shall be collected and destroyed after 2 days.

(b) **Maintenance.** Three days (more or less, as directed) after the blitz, the Contractor shall start a program of maintenance within the limits of this contract to rid the structures and adjacent areas of any remaining rodents or their carcasses and to prevent rodent migration to other adjacent areas. The toxic material shall consist of anticoagulants with a suitable cereal for treatment of structures, and in torpedo form for the treatment of any adjacent areas within the limits of this contract as ordered.

3.4.3 All visible carcasses of rodents shall be removed and disposed of satisfactorily.

3.4.4 The toxic bait shall be renewed semi-monthly, if so directed, throughout the maintenance period until the structures have been demolished and the cellar holes have been filled to the extent required.

3.4.5 Extermination operations shall be in accordance with any applicable rules and regulations of the municipality and State Department of Agriculture.

3.4.6 No extra payment will be made for this extermination work.

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**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION

SECTION 509 -- DRILLED SHAFTS

**Item 509.1- Mobilization and Demobilization of Drilled Shaft Drilling Equipment
Item 509.201 -Drilled Shafts Item 509.301- Obstruction Removal Item 509.401 -Rock
Socket Excavation
Item 509.501 - Crosshole Sonic Logging (CSL) Tests
Item 509.601- Drilled Shaft Reinforcing Steel (Contractor Detailed)**

1.0 Description

1.1 This work shall consist of furnishing all materials, equipment, labor, and services necessary to construct drilled shafts for the proposed Route 1A over Sagamore Creek Bridge in accordance with this special provision and with details shown on the project plans.

1.2 The two proposed abutments and two proposed piers will each require drilled shafts with rock sockets. The drilled shaft diameter and rock socket diameters are as shown on the plans. The drilled shafts are designed to support the axial and lateral loads through rock sockets that extend into bedrock. The minimum rock socket length for each drilled shaft is provided in the plans.

1.3 A permanent casing with a minimum diameter as shown on the plans is required and shall extend from the design cut-off elevation down to a minimum embedment of 6 inches into the bedrock, as detailed on the plans.

1.4 Drilled shaft installation will require advancement through tidal water with strong currents, existing rip-rap, natural soil deposits with boulders, weathered and solid bedrock. The bedrock is expected to have a sloping surface at some locations based on the test boring data and the bathymetric survey information.

1.5 Subsurface Information. The available test boring data for the site is summarized below and provided in the project plans. The Contractor is advised to refer to the subsurface information to evaluate the subsurface conditions at the site. Requirements for construction phase test borings are also described below.

1.5.1 Test Boring Data from 1940. Test boring summary from the 1940 NH highway bridge plans (Boring No. 1 through 13) and location plan are attached to this special provision.

The elevation indicated on the 1940 logs can be converted to the NAVD88 datum by subtracting approximately 70 feet from the 1940 elevation.

1.5.2 Design Phase Test Boring Data. Test boring logs from 2008 (B-1, B-2, B-3, B-4, B-5, B-6, B-7, B-8) completed for the proposed bridge and location-plan are included in the contract plans. The bedrock cores from these test borings are on file at the City of Portsmouth Public Works offices, and may be reviewed as described in 3.3.

1.5.3 Retaining Wall Test Boring Data. Test boring logs from 2013 (B-101, B-102, B-103, B-104) completed for the proposed retaining walls and location-plan are included in the contract plans. The bedrock cores from these test borings are on file at the City of Portsmouth Public Works offices, and may be reviewed as described in 3.3.

1.5.4 Construction Phase Test Borings. Test borings provided by the Contractor through Special Provision Section 210 will be required in order to provide additional subsurface information for the drilled shaft construction at both abutments and both piers. The test borings at an individual substructure shall be completed a minimum of 30 days prior to initiating drilled shaft work at that substructure.

1.6 Unconfined compression tests were conducted on 2 rock core samples from the 2008 design phase test borings. The results of the tests are summarized in Table 1.

1.7 Crosshole Sonic Logging (CSL) testing will be conducted by the Contractor. The Contractor shall provide the services of a non-destructive testing consultant for the purpose of providing CSL testing of selected drilled shafts under Item 509.5. and if separate CSL testing is considered necessary for a drilled shaft with questionable results.

1.8 Environmental Issues. This work shall be conducted in conformance with all applicable environmental regulations and permits. The Contractor is advised to review all the environmental documents within the contract, including the Draft Sediment Management Plan.

1.9.1 The Contractor's method of construction and unit prices for the drilled shafts shall account for all work necessary to meet the project environmental commitments for, a) maintaining turbidity levels within acceptable limits, and b) disposing of the drilled shaft and rock socket excavation material on land.

1.9.2 The cost of any specialized treatment and disposal of water from the drilled shaft excavation or RCD (reverse circulation drilling) holding tanks beyond what is required under 1.9.1, due to ecological contaminants (as discussed in the Draft Sediment Management Plan) will be paid through *Item 1009.21*, as directed. This item will also be used for any testing that may be required to determine the extent of ecological contamination within the drill water.

2.0 Materials

2.1 Concrete. The Contractor's mix design shall meet the requirements of Class AAA concrete in accordance with Section 520, except as modified herein. The 28-day compressive strength shall be a minimum of 5,000 psi. The slump shall be 8 inches plus or minus 1 inch after batching. The maximum aggregate size shall be 3/8 inches. The concrete shall be designed with the necessary admixtures to maintain the required slump and sufficient workability throughout the entire concrete placement. Air entrainment shall be between 4 and 7 percent.

2.2 Reinforcing Steel. Reinforcing steel used within the drilled shaft shall be measured and paid under Item 509.6 and shall conform to Section 544.

2.2.1 Clearance Spacers for Reinforcing Cage. Spacers used to provide the required sidewall and bottom clearance for the reinforcing cage shall be constructed of non-corrosive material that is equal in quality and durability to the shaft concrete, and shall be subject to approval. The spacers shall be of adequate dimension to ensure that the minimum clearance tolerances for the reinforcing cage are met, and that the reinforcing cage location is maintained during the concrete placement.

2.3 Permanent Outer Casing.

2.3.1 The permanent outer casing shall be steel pipe conforming to ASTM A252, Grade 2 or 3, welded or seamless steel pipe and shall have a minimum diameter and wall thickness as indicated in the plans. The casing shall also be of sufficient thickness and strength to withstand stresses from handling, installation, concrete pressure, surrounding earth and fluid pressures.

2.3.2 The straightness of the casing shall not deviate more than plus or minus 1/2 inch from a straight line over a 40 foot length. The length of the casing shall be sufficient to extend from 6 inches below the lowest point of the bedrock surface to the cut-off elevation on the plans, with splices being allowed. Casing splices shall have no interior splice plates and shall produce a true and straight interior face. Other attachments or connections made to the casing shall also produce a true and straight interior face. Rock cutting teeth or a cutting shoe shall be installed on the bottom of the casing to enable the casing to advance into bedrock.

2.4 CSL Access Tubes. The access tubes for the CSL testing shall consist of Schedule 40 steel pipe conforming to ASTM A53, Grade A or B, Type E, F or S. The inside diameter shall be at least 1.50 inches. All access tubes shall have a round inside surface free of defects and obstructions including all pipe joints. The access tubes shall be watertight, and free of corrosion and other deleterious material that can prevent bonding with the concrete. All access tubes shall be fitted with watertight caps on the bottom and top.

3.0 Construction Requirements

3.1 Qualifications. The Contractor and the Contractor's project superintendent for the drilled shaft work covered under this special provision shall have a minimum of three years experience in constructing drilled shaft foundations within the past five years. The Contractor's project superintendent shall be present at all times during execution of the work covered by this special provision. The Contractor's drill operator shall have a minimum of two years experience within the last four years. A summary of the experience and qualifications shall be submitted in writing to the Engineer at least four weeks prior to the start of the drilled shaft installation. The submittal shall include the name, address and phone number of the owner's representative who can verify the information provided. Acceptance of the Contractor or any Firm to perform the drilled shaft work shall be subject to approval.

3.2 Installation Plan Submittal. At least four weeks prior to constructing drilled shafts, the Contractor shall submit an installation plan in accordance with 105.02 to the Engineer for review and approval. This plan shall be stamped by a licensed NH Professional Engineer knowledgeable in the design and construction of drilled shafts.

3.2.1 The Contractor's submittal shall contain as a minimum, the following specific information:

- a. A complete description of the equipment to be used, including manufacturer's specifications and catalog data for all rigs, drilling tools, rock coring tools, cleaning equipment, desanding equipment, pumps, tremie pipes, casing, and other necessary tools.
- b. A description of the overall construction operation sequence and the sequence of shaft construction.
- c. Method of constructing the drilled shaft within the horizontal location tolerances. Details of frames and templates shall be provided.
- d. The methods of soil, obstruction and rock excavation; installation and removal methods of any temporary oversize casing; permanent casing installation methods including seating the bottom edge of the casing into bedrock.
- e. The type of slurry and the details of the methods to mix, circulate, de-sand and dispose of the slurry, if slurry support is proposed to support the shaft excavation prior to installation of the permanent casing to the final depth.
- f. The method of shaft construction, including details of the reinforcing steel cage lifting and installation procedure, reinforcing steel connections, CSL test access tube installation and grouting, concrete placement, and means of separating the concrete from water within the concrete placement pipe.

- g. Methods and details of constructing the joint between the shaft and the pier column, and if used, the permanent and temporary casing.
- h. Details of the proposed concrete mix design.
- i. Qualification submittals for the Crosshole Sonic Logging consultant.
- j. Methods of complying with all applicable environmental regulations, as described in 1.9.

3.2.2 The Engineer will evaluate the Installation Plan for conformance with the plans, specifications and this special provision. Within 21 days after receipt of the plan, the Engineer will notify the Contractor of additional information or changes needed to meet the contract requirements. Approval of the installation plan shall not relieve the Contractor of the responsibility to install the drilled shafts in accordance with the plans and specifications.

3.3 Subsurface Information. The Geotechnical Report and rock core samples from the test borings are available for inspection by the Contractor at the City of Portsmouth Public Works offices. Appointments to review the report or samples shall be made at least 3 days in advance. Additional test borings will be conducted by the Contractor, as described in 1.5.4. It is the Contractor's sole responsibility to make interpretations and draw conclusions with respect to the character of material to be encountered and its effect on the drilled shaft installation.

3.4 Pre-Drilled Shaft Construction Meeting. A meeting shall be held prior to initiating the drilled shaft construction. The purpose of the meeting shall be to review all aspects of the drilled shaft construction and to facilitate coordination between all parties involved. Individuals attending the meeting shall include the Engineer, the Geotechnical Engineer, the Contractor, the Firm performing the drilled shaft work and all other personnel deemed appropriate by the previously mentioned personnel. The Engineer and the Geotechnical Engineer shall be notified at least 7 days in advance. The meeting shall be scheduled after the Installation Plan has been reviewed by the Engineer.

3.5 Drilled Shaft Tolerance. The drilled shafts shall be constructed to the following tolerances:

- a. The drilled shaft shall be within 3 inches of the plan position in the horizontal plane at the top of shaft elevation. (Note: the center of the drilled shaft is defined as the center of the reinforcing cage). Additionally, the minimum required clear distance indicated on the plans between the outside of the reinforcing cage and both the rock socket and permanent casing shall be provided.
- b. The vertical alignment of a vertical drilled shaft excavation shall be within 2 percent of plumb over the total length of the shaft and rock socket.

- c. The shaft shall have diameters no less than the nominal dimensions shown on the plans including the diameter measured from the outside of the permanent casing, and the diameter measured from the outside of the rock socket.
- d. The excavation equipment and methods shall be designed so that the completed shaft excavation will have a planar bottom. The cutting edges of excavation equipment shall be normal to the vertical axis of equipment within a tolerance of 3/8 inch per foot of diameter.
- e. The bottom of the reinforcing cage shall be placed 6 inches, plus or minus 3 inches above the bottom of the shaft excavation. The bottom of the CSL tubes shall be at the same elevation as the bottom of the reinforcing cage.
- f. During concrete placement, the top of the reinforcing steel cage shall not move more than 1 inch above or below the plan position.
- g. The top elevation of the shaft concrete shall be no more than 1 inch above or below the plan position.

3.6 Drilling Equipment and Tools. The excavation and drilling equipment shall have adequate capacity including power, torque and down thrust to excavate a hole of both the maximum diameter and to a depth of 25 percent beyond the estimated lengths in the contract. The excavation equipment and tools shall be of adequate design, size and strength to perform the work as indicated on the plans or described herein. When the material encountered cannot be drilled using conventional drill buckets and earth augers with soil and rock teeth, the Contractor shall provide special drilling equipment/procedures including but not limited to rock core barrels, rock tools, chisels, boulder breakers, air tools and other equipment necessary to construct the shaft excavation to the required depth.

3.7 Construction Methods. The Contractor shall perform the excavation required for the shafts, through whatever materials and groundwater that are encountered, to the dimensions and elevations shown on the plans or otherwise required by these special provisions. The Contractor's methods and equipment shall be suitable for the intended purpose and the materials encountered.

3.7.1 To the extent possible, the shaft excavation down to the bedrock surface shall use casing methods to support the excavation to comply with environmental requirements. If slurry is used within the excavation, the slurry material, application and disposal shall meet all applicable environmental requirements. Any slurry materials that are used shall be completely flushed from the excavation until the return wash water is clean and free of fines prior to concreting the drilled shaft. Regardless of the shaft excavation support method that was used to reach the bedrock surface, the permanent casing shall be installed prior to initiating the rock socket excavation. The permanent casing shall be in place during the excavation for the rock socket and during concrete placement.

3.7.2 Permanent Casing Installation. The drilled shaft permanent casing shall be installed at the locations shown on the plans to within the tolerances set forth in 3.5. The bottom of the casing shall be seated a minimum of 6 inches into bedrock or deeper as needed to provide an effective seal at the bottom of the permanent casing, measured from the lowest bedrock elevation along the perimeter of the casing. Except for the seating of the permanent casing into bedrock, the casing may be advanced by twisting or rotating the casing into place using rotary drilling equipment, or by driving the casing with vibratory or impact hammers. Seating the casing into bedrock shall be accomplished by rotating the casing. Driving of the casing into bedrock shall not be permitted. The Contractor shall be responsible for repair of any damage to the casing.

3.7.3 If temporary shaft casing is shown on the plans, the temporary casing shall be attached to the permanent casing to construct the shaft through the water column up to the design top of drilled shaft grade. Upon completion and final acceptance of the drilled shaft, the temporary casing shall be removed with the lower permanent casing remaining in place below the permanent casing cut-off elevation. The connection between the permanent and temporary casings shall be watertight and designed by the Contractor and approved by the Engineer. No welding or thermal cutting shall be allowed adjacent to the shaft concrete without approval.

3.7.4 If the Contractor elects to remove a casing from the shaft and substitute a longer casing, the excavation shall be backfilled to the ground surface before the substitution is made.

3.7.5 Oversize Temporary Casing. An oversize temporary casing with a diameter greater than the permanent casing that is installed around the permanent casing may be used during the drilled shaft construction. The bottom of the oversize casing shall not extend below the final bottom elevation of the permanent casing. The removal method of an oversize temporary casing shall not disturb the permanent casing seal into bedrock or the drilled shaft concrete, and shall be subject to approval. Removal of a temporary oversize casing within 72 hours after the initial set of concrete will not be permitted. Oversize temporary casing that cannot be removed in an approved manner shall be cut-off at an approved elevation and left in place at no cost to the City. The Contractor shall assume that any oversize temporary casing that cannot be removed in an approved manner will require cut-off at the channel bottom. Any voids caused by the temporary casing shall be backfilled with granular backfill at no cost to the City.

3.8 Shaft Excavation. The drilled shaft excavation consists of soil and obstruction removal, and bedrock excavation to create a rock socket. Drilled shaft excavations shall be made at the locations shown on the project plans. Excavations shall be made according to the dimensions shown on the plans, and within the tolerances set forth in 3.5. The top of rock socket is defined as the permanent casing final bottom elevation, as determined and approved during the drilled shaft excavation. Excavation methods that result in disturbance of lateral support materials surrounding the shaft or below the shaft shall not be used. Dewatering of the shaft excavation

for excavation purposes will not be required. All excavated materials shall be disposed of in approved areas.

3.8.1 Soil Excavation. Soil excavation is defined as all the material above the approved top of rock socket as defined in 3.8 that is not classified as an obstruction. Excavation of the soil shall be performed with conventional drilling tools as described in 3.6. Material that in the judgment of the Engineer cannot be removed after reasonable effort using conventional tools shall be considered as an obstruction and shall be treated as described in 3.8.2. Reasonable effort shall include operating the approved drilling equipment at maximum power, torque and down thrust for a period of at least 15 minutes.

3.8.2 Obstruction Removal. Obstructions shall be defined as any natural material or man-made objects above the approved top of rock socket that cannot be removed by conventional excavation methods and tools described in 3.6 and 3.8.1. Bedrock that is removed within the permanent casing seating depth down to the approved top of the rock socket shall be classified as obstruction removal. Drilling tools lost in the excavation will not be considered obstructions and shall be removed by the Contractor without compensation. Special drilling tools or removal procedures described in 3.6 that are not detrimental to the shaft excavation shall be employed by the Contractor to remove obstructions. Blasting of obstructions will not be permitted unless approved in writing by the Engineer. The Contractor shall provide the necessary means to accurately measure the obstruction lengths and all measurements shall take place in the presence of the Engineer.

3.8.3 Rock Socket Excavation. Rock socket excavation is defined as all excavation that extends below the approved top of the rock socket as defined in 3.8. The rock socket shall be constructed with the minimum rock socket length indicated in the plans, or deeper, if ordered. The rock socket diameter shall be within the tolerances set forth in 3.5. Methods and tools used to excavate the rock socket shall include, but are not limited to the special methods described in 3.6. Blasting for the rock socket excavation will not be permitted.

3.8.4 Shaft Excavation Acceptance. A shaft excavation including the rock socket will be accepted by the Engineer based on the results of a visual inspection, observation of the drilling operation, and review of the Contractor's drilling log, as described in 3.13.

3.8.4.1 Visual acceptance of the shaft excavation by the Engineer shall be required prior to placement of the steel reinforcement cage and concrete. The completed shaft excavation shall be thoroughly cleaned of all sediment including loose soil, debris and loose or pulverized bedrock prior to inspection. The excavation bottom shall be cleaned so that a minimum of 50 percent of the base will have less than 1/2 inch of sediment and at no place on the base more than 1-1/2 inches of sediment, as measured with a weighted tape.

3.8.4.2 Dewatering of the excavation for inspection purposes will not be required. The Contractor shall make the completed excavation available to the Engineer for inspection. The Contractor shall also provide suitable access for inspection, safety lines and equipment,

communication equipment, electric power, and devices for checking dimensions, alignment and plumbness as needed.

3.8.4.3 Should the Engineer have reason to believe that the drilled shaft excavation techniques or workmanship has been deficient with respect to a given shaft excavation such that the integrity of the excavation is in question, work on the drilled shaft shall be stopped. The Contractor shall not proceed with the shaft excavation in question or any subsequent shaft excavations until the deficient excavation techniques or workmanship have been changed to the Engineer's satisfaction.

3.9 Steel Reinforcement Construction and Installation. The steel reinforcing cage, which consists of longitudinal bars and transverse bars or spirals along with stiffeners, spacers, mechanical connectors, centralizers, and CSL access tubes shall be assembled prior to installation according to the plans. The reinforcing bars shall be 100 percent tied and braced sufficiently to allow lifting and installation as a single unit without damage, racking or deformation. Splicing of the longitudinal bars shall not be allowed, except using approved mechanical connectors, unless otherwise noted on the plans. The reinforcement cage shall be placed into the shaft excavation to within the horizontal and vertical tolerances described in 3.5.

3.9.1 Spacers and other means as necessary shall be used to maintain the horizontal tolerance criteria set forth in 3.5. The spacers shall be securely attached to the reinforcing cage and shall be in firm contact with the sidewalls of the casing and rock socket excavation. The spacers shall be used at regular intervals of 5 feet or less. When the size of the longitudinal reinforcing steel exceeds one inch, such spacing may be increased to a maximum of 10 feet. Each shaft shall have a minimum of 2 rows and 3 vertical lines of spacers. The spacers shall be dimensioned to meet the tolerance criteria set forth in 3.5.

3.9.2 An approved method to restrain the upward and downward movement of the reinforcing cage shall be used to prevent uplift or downdrag of the cage during concrete placement. The elevation of the top of the reinforcing steel shall be checked before and after the concrete is placed. If movement greater than that allowed under 3.5 has occurred, the drilled shaft shall be considered defective and corrective measures shall be undertaken by the Contractor to the satisfaction of the Engineer. No additional shafts shall be constructed until the Contractor has modified his restraining system to prevent the uplift or downdrag problem from reoccurring. Corrective measures shall be the responsibility of the Contractor and shall be at no cost to the City.

3.10 Concrete Placement. Applicable portions of Section 520 shall be followed for concrete placement, except as modified herein. Either the free fall method or underwater placement method shall be used, as defined below. For both methods, the first concrete placement shall be placed in one continuous operation from the bottom of the shaft to the construction joint shown on the plans. Cold joints in the concrete will not be allowed unless approved.

3.10.1 Concrete Placement - Free Fall Method. The free fall method of concrete placement will only be allowed in a cased, dry excavation. A dry excavation shall be defined as having a depth of water of 3 inches or less at the time of initial concrete placement. Excavations that have a greater depth of water or measurable seepage shall be concreted using underwater placement procedures.

3.10.1.1 Free falling concrete shall be placed at the center of the excavation using a hopper with attached hose, or other approved system that centers the concrete fall into the excavation. The maximum concrete drop height shall be limited to a height that is less than 80 feet. Shorter drop heights and other adjustment in the placement procedure shall be required as directed, to prevent the concrete from striking the reinforcing cage during placement.

3.10.2 Concrete Placement - Underwater Method. Underwater placement procedures shall be required within excavations where the criteria for a dry excavation and free fall placement methods cannot be met. The underwater placement method consists of placing the concrete below the water at the bottom of the drilled shaft excavation, using either tremie or pumping methods and equipment as defined below. The water level within the drilled shaft shall be at a stabilized, static level at the time of concrete placement.

3.10.2.1 Concrete Placement Pipe. The placement pipe used for the tremie or pumping methods shall consist of a steel or iron tube of sufficient length and diameter to discharge concrete at the bottom elevation of the excavation. Aluminum pipe will not be permitted. The minimum pipe diameter shall be 8 inches for the tremie placement method and 4 inches for the pumping placement method. The length of the placement pipe shall be clearly marked in one foot increments along the outside of the pipe, measured upward from the discharge end. The inside and outside surfaces of the tremie pipe shall be clean and smooth to permit both flow of concrete and unimpeded withdrawal during concrete placement. The wall thickness of the pipe shall be adequate to prevent crimping and bending. The pipe wall and joints shall be strong enough to resist concrete pumping pressures and shall be watertight.

3.10.2.2 The discharge end of the placement pipe shall be equipped with a watertight valve or disposable plate that prevents water from filling the interior of the pipe when inserted into the excavation. Alternately, a plug that maintains separation between the concrete and water within the pipe may be used at the top of the pipe. The valve, plate or plug shall provide a seal in the pipe until concrete discharge begins, in order to minimize contamination of the concrete. Disposable plates or plugs shall be of a material non-detrimental to the drilled shaft, as approved by the Engineer. Air inflated plugs shall not be used. The discharge end of the pipe shall be designed to allow free radial flow of concrete during placement operations.

3.10.2.3 The placement pipe shall be installed in the center of the shaft excavation and extend to the bottom of the excavation. The pipe shall be properly secured and braced within the excavation to prevent uplift or drift during concrete discharge. The pipe and bracing shall be designed to allow progressive and steady removal as the concrete fills the excavation. Methods to remove air trapped in tremie or pump pipes shall be provided if necessary as determined by the Engineer.

3.10.2.4 The placement pipe discharge end shall be immersed in at least 5 feet of concrete at all times after the start of concrete placement. The flow of concrete in the pipe shall be continuous, and a positive pressure differential shall be maintained at all times to prevent water or slurry intrusion into the pipe. If at any time during concrete placement the pipe discharge orifice is removed or uplifts from the fluid concrete with concrete discharge occurring, the entire drilled shaft shall be considered defective. In such a case, the Contractor shall completely remove the reinforcing cage and concrete by approved methods. The shaft shall then be re-excavated according to these provisions. All costs for replacement of defective shafts shall be the responsibility of the Contractor and shall be at no cost to the City. If concrete discharge has not occurred, then the placement pipe shall be re-immersed into the concrete with a closed valve or disposable plate or plug on the discharge end.

3.10.2.5 The Contractor shall maintain the concrete in a workable state throughout the entire underwater placement operation. In addition to designing the concrete mix with any necessary admixtures, the Contractor shall lubricate the pumping system and cool the placement pipes as necessary, in order to maintain acceptable workability of the concrete. Concrete that has lost sufficient workability to the extent that the provisions of 3.10.2 cannot be met will result in rejection of the drilled shaft, as described in 3.10.2.4.

3.10.2.6 During all phases of the underwater concrete placement, the combined height of concrete and overlying water within the permanent/temporary casing shall be maintained at level the exceeds the exterior fluid pressure from a) the water level within the bay (including the expected tidal level during the placement) and b) the level of fluid in the annular space between the permanent casing and any oversize temporary casing that is in place at the time of concrete placement.

3.10.2.7 The concrete level within the permanent casing shall be monitored inside and outside the reinforcing cage throughout the placement to verify that the concrete is spreading uniformly across the drilled shaft. The Contractor shall implement corrective measures in the event that a differential height of concrete between the inside and outside of the reinforcing cage is measured.

3.11 Nondestructive CSL Testing. CSL testing of the concreted drilled shaft will be performed by the Contractor's CSL testing Consultant.

3.11.1 Qualifications for CSL Consultant. The CSL testing Consultant shall possess the necessary equipment and experienced personnel to perform the required testing services. The Consultant shall have had successful experience in performing CSL testing on at least 10 drilled shaft projects. The Consultant's qualifications shall be submitted in writing as described in 3.2 at least 4 weeks prior to the start of the drilled shaft construction.

3.11.2 Installation of CSL Access Tubes. Six CSL access tubes shall be installed at an equal 60-degree spacing along the inside perimeter of the reinforcement cage. The tubes shall be securely attached to the interior of the reinforcement cage and shall be as near to vertical

and parallel as possible. The tubes shall extend from the bottom of the reinforcing cage to a top elevation as shown on the plans or as directed by the Engineer. The tubes shall be filled with potable water in non-freezing conditions and with an approved non-toxic anti-freeze in freezing conditions. The bottom of the CSL tube shall be securely capped, and the top of the tube shall be temporarily capped prior to placement of the drilled shaft concrete. Care shall be taken in the removal of the caps after concrete placement to not apply excessive torque or other stresses that could break the bond between the tubes and the concrete.

3.11.3 Pre-CSL Testing Meeting. A meeting shall be held at the site prior to any testing by a CSL Consultant. Scheduling of the meeting on the day of the actual CSL testing is acceptable. The purpose of the meeting shall be to review the CSL testing program and equipment and to provide coordination between personnel involved with the testing. Individuals attending the meeting shall include the Engineer, the Geotechnical Engineer, the Contractor, the CSL Consultant and all other personnel deemed appropriate by the previously mentioned personnel. The Geotechnical Engineer shall be notified at least 7 days in advance.

3.11.4 Contractor Assistance. The Contractor shall assist as required during the CSL testing. This includes providing adequate time for performing the test, a stable and reasonable means of access to the drilled shafts, any necessary support personnel, equipment, materials and a power source.

3.11.5 Performance of CSL Testing. The concrete within the tested drilled shaft shall have cured a minimum of 72 hours prior to testing. The CSL testing shall be carried out with the source and receiver probes in the same horizontal plane, unless test results indicate potential anomalies or defects, in which case the questionable zone shall be further evaluated with angled tests. The CSL testing shall be performed between all perimeter tubes and between all combinations of diagonal tubes. The CSL measurements shall proceed from the bottom of a pair of access tubes to the top in increments of 2 inches. The probes shall be pulled simultaneously over the depth being measured with all slack removed from the cables. The access tubes shall be grouted with materials that conform to the applicable provisions of Section 520 and shall be a non-shrink neat cement mix with a maximum water to cement ratio of 0.45 by weight, and a minimum 28 day compressive strength of 3000 psi per AASHTO T 106/ASTM C 109. The grout should be added with an approved method after the shaft has been completed and approved.

3.11.6 Interpretation of Data and Reporting of Test Results. The preliminary results of the CSL testing shall be evaluated and discussed with the Engineer at the site on the day of testing. The final CSL results shall be presented in a report that includes a graph of initial pulse arrival time or compression wave velocity versus depth, and pulse energy versus depth for each pair of tubes that were tested. All anomaly or defect zones shall be interpreted and discussed in the report along with recommendations for any additional testing.

3.12 Acceptance of Completed Drilled Shaft. The final acceptance of each drilled shaft shall be the decision of the Engineer based on the conformance to the contract requirements and on the results of CSL testing. If the drilled shaft integrity is questionable, the Engineer

may require a core hole through the shaft to evaluate its condition. If a defect is confirmed, the Contractor shall pay for all coring costs. If no defect is encountered, the City shall pay for all coring and grouting costs. If a shaft is deemed unacceptable, the Contractor shall submit a plan for remedial action with calculations and working drawings prepared and stamped by a licensed NH Professional Engineer. Materials and work required to perform remedial shaft actions, including engineering analysis and redesign, shall be provided at no cost to the City.

3.13 Contractor's Records. The Contractor shall keep a record independent of that which may be kept by the Engineer, of all pertinent data relative to the installation of the drilled shaft. This record shall be available for the Engineer's inspection, and shall be transmitted as directed. The Contractor's record shall include the following:

- a. Shaft location and dates of installation
- b. Slurry data including test data
- c. Total length of each shaft, including the top and bottom elevations of the permanent casing and any temporary oversize casing that is used during the drilled shaft construction
- d. Plumbness of shaft
- e. Placement and condition of the reinforcing cage
- f. The time, method and duration of the concrete placement, with a log of the temperature at the time of placement
- g. The concrete mix design and results of unconfined compressive strength testing
- h. The quantity of concrete versus the height of the filled shaft

3.13.1 Additionally the Contractor shall maintain a construction method log during shaft excavation. The log shall contain information such as: the top and bottom elevation of each soil and obstruction layer, the bedrock surface elevation, ground water depth, drilling rate and remarks. The log shall be provided to the Engineer a minimum of 24 hours prior to concreting the drilled shaft.

4.0 Method of Measurement

4.1 Mobilization and demobilization of drilled shaft drilling equipment will be measured as a unit. This unit shall include the furnishing of all supervision, equipment, crews, tools and all other equipment and materials as necessary to properly execute the work.

4.2 Drilled shafts, including excavation and concrete will be measured by the linear foot to the nearest 0.1 of a foot from the plan top of drilled shaft concrete elevation to the rock socket

bottom elevation at the center of the shaft.

4.2.1 The permanent casing shall be subsidiary to Item 509.2 and will not be measured.

4.2.2 The CSL tubes, the grouting of CSL tubes and all assistance provided for the CSL testing as described in 3.11.4 for both the Geotechnical Engineer or a CSL Consultant shall be subsidiary to Item 509.201 and will not be measured.

4.3 Obstruction removal as defined in 3.8.2 will be measured by the linear foot to the nearest 0.1 of a foot from the top of the obstruction to the bottom of the obstruction. No measurements will be taken unless this work is authorized by the Engineer prior to the start of obstruction removal. Obstruction removal will not be measured at any depth within fill material placed as part of this construction project.

4.4 Rock socket excavation will be measured by the linear foot to the nearest 0.1 of a foot from the approved bottom of the permanent casing to the approved bottom of the rock socket at the center of the shaft. Rock socket excavation that extends below the approved rock excavation depth will not be measured.

4.5 Crosshole Sonic testing by the CSL testing consultant will be measured as each per drilled shaft tested. This shall include mobilization of equipment and personnel, all CSL testing on the required pairs of tubes, and the final report. CSL testing by the Geotechnical Engineer will not be measured.

4.6 Reinforcing Steel, Epoxy Coated (Contractor Detailed) will be measured by the pound of reinforcing steel placed within the approved length of the drilled shaft from the plan bar extension above the top of drilled shaft elevation, down to the approved rock socket bottom elevation. The theoretical weight of reinforcing steel shall be computed in accordance with 544.4.1.

4.6.1 Reinforcing steel that is cut-off from a prefabricated cage to fit the as-drilled length shaft will not be measured.

4.6.2 All work associated with detailing the drilled shaft reinforcing steel shall be subsidiary to Item 509.6 and will not be measured.

5.0 Basis of Payment

5.1 The accepted quantity of mobilization and demobilization of drilled shaft drilling equipment will be paid for at the contract lump sum price complete.

5.2 The accepted quantity of drilled shafts will be paid for at the contract unit price per linear foot, complete in place.

5.3 Obstruction removal will be paid for at the contract unit price per linear foot, complete

in place.

5.4 Rock socket excavation will be paid for at the contract unit price per linear foot, complete in place.

5.5 The accepted quantity of Crosshole Sonic Logging Tests by the CSL testing consultant will be paid at the contract unit price per drilled shaft tested and completed.

5.6 The accepted quantity of Reinforcing Steel, Epoxy Coated (Contractor Detailed) will be paid for at the contract unit price per pound, complete in place. No allowance will be made for the weight of clips, splices, wire ties or mechanical connectors.

Pay items and units

509.1	Mobilization and Demobilization of Drilled Shaft Drilling Equipment	Unit
509.2	Drilled Shafts	Linear Foot
509.3	Obstruction Removal	Linear Foot
509.4	Rock Socket Excavation	Linear Foot
509.5	Crosshole Sonic Logging (CSL) Tests	Each
509.6	Reinforcing Steel, Epoxy Coated (Contractor Detailed)	Pound

Table 1
Summary of Unconfined Compression Test Results

Boring Number	Core Run No.	Sample Depth Range (ft.)	Unconfined Compression Strength (psi)
B-4	C1	27.0 to 27.4	23,080
B-7	C2	49.2 to 49.7	16,420

**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION

AMENDMENT TO SECTION 520 -- PORTLAND CEMENT CONCRETE

ITEM 520.99 – FORM LINER FOR CONCRETE SURFACES

Add to Description:

1.2 This work shall consist of furnishing form liners to produce patterns in the exposed concrete surfaces as designated on the plans and in Bid Alternate 2 and as described below.

Add to 3.12.1:

3.12.1.6 Where designated on the plans and in Bid Alternate 2, exposed concrete surfaces shall have an Ashlar Stone form liner pattern that conforms to Ashlar Stone P/C 30664, Symons Dura-Tex as manufactured by Symons Corporation; or Ashlar Stone No. 330 Multi-Cast as manufactured by Greenstreak, Inc.; or approved equal. The form liner pattern shall extend to a minimum of 12 inches below the finished grade at the face of the wall.

Add to Methods of Measurement:

4.4 Form Liner for Concrete Surfaces but shall be the square foot (square meter) quantity complete and in place.

Add to Basis of Payment:

5.9.7 Form Liner for Concrete Surfaces will be paid at the contract unit price per square foot (square meter) to produce the specified pattern on the designated concrete surfaces. All miscellaneous material or work necessary, including the incremental volume of concrete necessary to produce the specified pattern, will not be paid separately but will be considered subsidiary to the Form Liner for Concrete Surfaces pay item.

Add to Pay items and units:

520.99	Form Liner for Concrete Surfaces	Square Foot (Square Meter)
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**Sagamore Creek Bridge Replacement
Portsmouth, 14493**

July 2013

SPECIAL PROVISION

AMENDMENT TO SECTION 520 -- PORTLAND CEMENT CONCRETE

Item 520.70026 - Concrete Bridge Deck (QC/QA) (Panel Option) (F)

This special provision has applicability for substitution of Prestressed Concrete Deck Panels as stay-in-place formwork for a similar volume of cast-in-place reinforced bridge deck concrete.

Add to Description:

1.3 This work shall consist of furnishing and placing partial depth, prestressed concrete deck panels as stay-in-place formwork, as a substitution for cast-in-place concrete. In addition to the requirements set forth in 520 and 528, and the details shown on the Precast Concrete Deck Panel Details sheet in the Contract Plans shall apply.

Add to 3.2 Forms and Falsework:

3.2.9 Deck Falsework Hardware. Falsework hangers and other hardware cast permanently into the concrete bridge deck shall not extend beyond the neat lines of the deck or haunch detailed on the plans.

Add to Construction Requirements:

3.13 Use of Prestressed Concrete Deck Panels.

3.13.1 The option to use Prestressed Concrete Deck Panels as stay-in-place formwork will be indicated in the Contract Plans.

3.13.2 Changes to the design of the cast-in-place deck detailed on the plans or the deck panel design details will not be allowed unless approved by the Bureau of Bridge Design.

3.13.3 Changes to the deck reinforcing. Modified deck reinforcing sections with details showing all areas affected, due to the use of prestressed concrete deck panels, shall be submitted for approval in accordance with 105.02. The Reinforcing Schedule shall be revised and submitted for documentation in accordance with 105.02.

Add to Method of Measurement:

4.4 The furnishing and placing of precast deck panels will not be measured.

Add to 5.9.1:

When the Contractor exercises the deck panel option, the Unit Price (UP) for determining QC/QA pay adjustments will be determined by the following method. The UP will be the Contract final pay quantity (adjusted Contract final pay quantity, if field changes have been made) minus the theoretical (calculated) volume if the deck panels, with the result multiplied by the unit price bid for the item, divided by the total quantity computed from all accepted delivery records for deck concrete (including any additional deck thickness required for the pane option).

Add to Basis of Payment:

5.10 Prestressed Concrete Deck Panels.

5.10.1 The furnishing and placing of precast concrete deck panels shall be subsidiary.

5.10.2 The Contract final pay quantity for the bridge deck concrete will not be adjusted by the volume of the prestressed concrete deck panels or for any additional deck concrete thickness required for the panel option.

5.10.3 The Contract final pay quantity for reinforcing steel will not be adjusted by the quantity of reinforcement replaced by the prestressed concrete deck panels.

5.10.4 If reinforcing steel is not a Contract final pay quantity, payment will be made for the bottom mat reinforcing steel that is displaced by the prestressed concrete deck panels in accordance with the Special Provision to Section 544.X – Reinforcing Steel (Contractor Detailed).

5.10.5 QC/QA pay adjustments will be determined in accordance with 5.9.1 (above).

Add to Pay items and units:

520.70026 Concrete Bridge Deck (QC/QA) (Panel Option) (F) Cubic Yard

END OF SECTION

12/01/2010

Route 1A over Sagamore Creek Bridge
Portsmouth, NH
164493
June 2013

520
SS

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S U P P L E M E N T A L S P E C I F I C A T I O N

AMENDMENT TO SECTION 520 – PORTLAND CEMENT CONCRETE

Amend 520.3.1.3.2.1(k) to read:

- (k) Sufficient number of microwave safe **ceramic or porcelain** dishes.

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SUPPLEMENTAL SPECIFICATION**AMENDMENT TO SECTION 538 – BARRIER MEMBRANE**

This supplemental specification adds the requirement that contractors supply and use a dew point measuring device and an infrared surface temperature measuring instrument. It also specifies the laydown temperature of pavement overlays.

Amend 3.1.1 to read:

3.1.1 Concrete shall be cured in accordance with the requirements of 520.3.10. The primer and membrane shall only be applied when the substrate surface has a moisture content of 6 percent or less, and when the temperature of the substrate exceeds the dew point by at least 5° F (3° C). The Contractor shall supply a portable electronic surface moisture meter capable of measuring the moisture content of concrete surfaces in percent. The moisture meter shall be a product that is listed on the Qualified Products List and shall be calibrated annually by the meter manufacturer. A certificate of calibration from the meter manufacturer shall accompany the moisture meter. **The Contractor shall also supply a digital weather instrument that can measure both ambient temperature and dew point, and an infrared surface temperature measuring instrument.**

Amend 3.3.1.4 to read:

3.3.1.4 The Contractor shall perform moisture testing of the deck surface using a Contractor-supplied portable electronic surface moisture meter as described in 3.1.1. Moisture tests shall be performed at locations as determined by, and in the presence of, the Engineer. **The Contractor shall determine the substrate temperature and dew point using Contractor-supplied digital instruments as described in 3.1.1.** The primer shall only be applied when the moisture content of the substrate surface is 6 percent or less and when the temperature of the substrate exceeds the dew point by at least 5° F (3° C). Special attention shall be given to assure that there is no moisture present at the interface between the deck and bridge curb. The Engineer may perform additional moisture testing of the substrate.

Amend 3.3.5 to read:

3.3.5 Application of hot bituminous overlay. The deck shall be paved within 3 days of membrane application unless otherwise permitted by the Engineer. The required laydown temperature of pavement overlays used in connection with **heat-welded** barrier membrane shall be **between 290° F and 330° F (140° C and 165° C)**. It should be noted that the laydown temperatures are extremely critical in order to preserve membrane integrity.

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**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION

AMENDMENT TO SECTION 544 -- REINFORCING STEEL

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.

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, 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, Pier, 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) and Reinforcing Steel, Epoxy Coated (Contractor Detailed) 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) and 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

Revised:

10/24/07, 10/24/08, 9/25/09, 2/11/10, 4/19/10, 5/4/11, 4/26/12, 4/16/13
(see List of Revisions in Part I)

PORTSMOUTH
14493

July, 2013

SPECIAL PROVISION

AMENDMENT TO SECTION 550 -- STRUCTURAL STEEL

PART I of III -- PROJECT-SPECIFIC REQUIREMENTS

This special provision amends Section 550 and applies to the coating of new structural steel as shown on the plans or otherwise specified to be painted. This special provision consists of three parts. Part I amends the general requirements of Part II with project-specific requirements. Part III contains Section 708, Paints.

Amend 550.3.13.1.2 to read:

1.2 DESCRIPTION OF BRIDGE(S)

1.2.1 The description of newly fabricated structural steel to be painted is stated herein. All descriptions regarding the bridge(s) and surface area(s) are intended to be generally, but not guaranteed to be precisely, accurate.

1.1.2.1

DESCRIPTION OF BRIDGES - SUMMARY TABLE 1.2.1				
Town	Br. No.	Route	over	structure type
Portsmouth	198/034	NH Rt. 1A	Sagamore Creek	Steel plate girders

Amend 550.3.13.1.3 to read:

1.3 SCOPE OF WORK

SCOPE OF WORK - SUMMARY TABLE 1.3				
Item. No.	Surfaces to be painted	Surface Preparation	Required Paint System	Final Color
550.1	All structural steel surfaces, full length of bridge (incl. bearings)	SSPC-SP10 & SC 2	3-coat system A, B, or C (with Finish #1)	To Be Determined

1.3.1 Surfaces to be painted. All new steel surfaces, including beams, stiffeners and connection plates, diaphragms, cross frames, and bearings within the distance at the end of the beams as described in Table 1.3, shall be cleaned and painted, including the portion encased in concrete (if applicable), except the fascia surfaces of exposed fascia beams, as shown on the plans or as described herein for the applicable item. See Table 1.3.

1.3.1.1 Finished bearing surfaces. When bearings are to be painted, the surface preparation and painting shall include the machined finish for rolling (but not for sliding) surfaces. All surfaces shall receive the full paint system except steel-to-steel contact surfaces shall be primed only. The bottom surface

of masonry plates shall receive the full paint system. Areas to be field welded shall be masked off, welded, and then cleaned and painted with the full paint system.

1.3.2 Required Surface Preparation. All steel surfaces to be painted shall be cleaned in conformance to SSPC-SP10 and the chloride level remediated to SC 2 (see Section 3.2.6.7).

1.3.3 Required Paint System

1.3.3.1 The complete paint system shall be shop applied to the structural steel as described in Table 1.3 and shown on the plans, except for areas masked for field welding or bolted connections (see Section 3.4.12), or as directed. Field bolted connections shall receive one application of primer prior to installation of the member, and the remaining coats of the system after installation. New top flange surfaces to be embedded in deck concrete shall receive a light rust preventative dust coat of 0.5 to 1.5 mils (13-38 microns) of primer only in the length of beam to be painted. Beam ends to be encased in back wall concrete (if applicable) shall receive the full paint system.

1.3.3.1.1 Steel surfaces with a non-skid finish shall meet the requirements of 2.1.1 and 3.4.13.

1.3.3.2 The finish color and paint system for Items 550.xxx SHALL BE THE SAME AS FOR ITEM 556, Painting Existing Structural Steel. See Table 1.3. It is the Contractor's responsibility to coordinate suppliers to achieve this requirement.

1.3.3.3 The finish color shall be as shown in Table 1.3.

Add to 550.1.7.3 the following:

Batch samples for testing are not required. Provide to the Materials Lab a certificate of conformance from the coating manufacturer including a batch analysis for each production lot for each coating.

Add the following to 2.2. Coatings:

10. Coatings containing lead or chromium, other than naturally occurring trace amounts associated with the coating pigments, are not permitted.
11. A dry film sample of each coat (e.g. primer, intermediate, and finish) shall be tested by a laboratory certified by AIHA or A2LA under the ELLAP program (Environmental Lead Laboratory Accreditation Program) to determine its total lead content. The analytical test method shall be sufficient to provide a minimum detection limit no greater than 100 ppm. Acceptable test methods include: ASTM D 3335 (Atomic Absorption Spectroscopy), AOAC 974.02 (Lead in Paint), and ASTM E1613 (Inductively Coupled Plasma (ICP) spectroscopy).
12. The percentage of total lead in each coating shall be reported to the Department and shall not exceed 0.01 percent (100 ppm).
13. A written certificate of conformance shall be submitted to the Department for the coatings supplied stating that the paint is "lead-free".

Revision date	LIST OF REVISIONS (generally stated - see specification for actual wording)
04/16/13	<ul style="list-style-type: none"> • Update Part III - Section 708 approved paint systems.
04/26/12	<ul style="list-style-type: none"> • Update Part III - Section 708 approved paint systems.
05/04/11	<ul style="list-style-type: none"> • Update Part III - Section 708 approved paint systems.
11/18/10	<ul style="list-style-type: none"> • Update Part III - Section 708 approved paint systems.
4/19/10	<ul style="list-style-type: none"> • 2.2 - Reduce maximum total lead content from 600 ppm to 100 ppm;
2/11/10	<ul style="list-style-type: none"> • 2.2.9 - Change color number for dark brown to 20062. • Update Part III - Section 708 approved paint systems.
9/25/09	<ul style="list-style-type: none"> • 2.2 - Add requirement coatings with more than trace amounts of lead and chromium are not permitted; • 2.2 - Add requirement to test for lead, report results to the Department, limit total lead content to 600 ppm max., and submit "lead-free" certificate of conformance for coatings;
10/24/08	<ul style="list-style-type: none"> • Update Part III - Section 708 approved paint systems.
10/24/07	<ul style="list-style-type: none"> • 3.1.1 - add requirement for acceptable final appearance • 3.1.4 - add wording that quality control be performed daily and per SSPC-QP1 • 3.6.1 - update form reference • 3.6.2 - add requirement to provide lighting for inspectors • 4.1.2 (4) - add requirement for neat and uniform final appearance
6/8/07	<ul style="list-style-type: none"> • 4.1.2 (3) - add requirement to clean off concrete spatter and drippings • 2.2.3 - add VOC max limit of 2.8 lb/gal (340 g/L) for intermediate and topcoats.
10/5/06	<ul style="list-style-type: none"> • Update Part III - Section 708 approved paint systems
1/13/06	<ul style="list-style-type: none"> • 3.2.6.3a- Remove proprietary reference to 3M Scotch-Brite™ Clean and Strip discs • 3.5.3- Remove proprietary reference to 3M Scotch-Brite™ Clean and Strip discs • 4.2.2- Remove proprietary reference to 3M Scotch-Brite™ Clean and Strip discs
4/11/05	<ul style="list-style-type: none"> • 2.1.2 - add requirements for non-skid grain • 2.2 - add Paint System E • 3.4.11 (2) - reword the number of DFT readings to be taken by QA inspection • 3.4.13 - add requirements for a non-skid walking surface finish • 4.5 - extend the warranty to 3 years and clarify the definition of coating failure. • Update Part III - Section 708 approved paint systems.

PART II of III -- GENERAL REQUIREMENTS

Part II states general requirements for painting new structural steel as amended by project specific requirements of Part I.

Amend 3.2.3 to read:

3.2.3.1 Shop painting certification. Fabricators supplying shop applied painted or metalized steel products shall be certified with the American Institute of Steel Construction (AISC) Sophisticated Paint Endorsement (SPE), or with the Society for Protective Coatings (SSPC) Quality Procedure 3 “Standard Procedure for Evaluating Qualifications of Shop Painting Contractors (QP3).

3.2.3.2 Field painting contractor certification. Painting contractors and subcontractors shall be certified by the Society for Protective Coatings (SSPC) Painting Contractor Certification Program (PCCP) to the requirements of SSPC-QP1 for all field painting work, and to the requirements of SSPC-QP2 for work involving the removal or overcoating of lead-based paint.

Amend 3.13 to read:

3.13 PAINTING NEW STRUCTURAL STEEL

OUTLINE OF SECTION 550.3.13

- | | |
|-----|-----------------------------------|
| 1 | DESCRIPTION |
| 1.1 | General |
| 1.2 | Description of Bridge |
| 1.3 | Scope of Work |
| 1.4 | Regulatory Compliance |
| 1.5 | Contractor Responsibility |
| 1.6 | Reference Standards |
| 1.7 | Submittals |
| 2 | MATERIALS |
| 2.1 | Abrasives |
| 2.2 | Coatings |
| 2.3 | Equipment |
| 3 | SHOP PAINTING |
| 3.1 | General |
| 3.2 | Surface Preparation |
| 3.3 | Paint Storage Mixing & Handling |
| 3.4 | Coating Application |
| 3.5 | Repair of Damage |
| 3.6 | Inspection |
| 4 | FIELD PAINTING |
| 4.1 | General |
| 4.2 | Surface Preparation |
| 4.3 | Housecleaning |
| 4.4 | Final Acceptance |
| 4.5 | Three-Year Anniversary Inspection |

Note: The sections of this specification to follow are numbered in the manner of the outline above without the prefix “550.3.13”, which is implied.

DESCRIPTION

1.1 GENERAL

1.1.1 General Description. This work shall consist of the cleaning, surface preparation, and painting of new structural steel, including the proper preparation of the steel surfaces, the application, drying, cure, and protection of coatings, both in the shop and in the field, and worker and environmental protection, as described herein or as directed.

1.2. DESCRIPTION OF BRIDGE

(See Section 550 Part I)

1.3 SCOPE OF WORK

(See Section 550 Part I)

1.4 REGULATORY COMPLIANCE

1.4.1 Comply with the requirements of this Item and all applicable Federal, State and local laws, codes, and regulations, including, but not limited to the regulations of the United States Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and the New Hampshire Department of Environmental Services (NHDES) in conformance to Section 107.

1.4.2 Identification of the items below which are of specific interest to NHDOT in no way relieves the Contractor of the responsibility to comply with all OSHA and EPA requirements, nor should it be construed that the NHDOT, the EPA, NHDES, or other State and City regulators are only interested in these items. If a Federal, State, or City regulation is more restrictive than the requirements of this Item, follow the more restrictive requirements.

1.5 CONTRACTOR RESPONSIBILITY. The Contractor is responsible for performing the requirements stated herein, whether the specification wording states this explicitly (e.g. "The Contractor shall conduct all operations...") or implicitly (e.g. "Conduct all operations..."), unless the wording specifically names a different party (e.g. 3.6.1 "The Department will inspect...").

1.6 REFERENCE STANDARDS

1.6.1 The latest edition of the following standards and regulations in effect at the time of the Bid form a part of this Specification. A copy of the reference standards applicable to the work shall be available at the shop painting facility and in the field.

1.6.2 American Society for Testing and Materials (ASTM)

1. ASTM D1400, Standard Test Method for Non-Destructive Measurement of Dry Film Thickness of Non-Conductive Coatings Applied to a Non-ferrous Metal Base
2. ASTM D3335, Test Method for Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy
3. ASTM D3359, Standard Test Methods for Measuring Adhesion by Tape Test

4. ASTM D4138, Standard Test Method for Measurement of Dry Paint Thickness of Protective Coating Systems by Destructive Means
5. ASTM D4285, Standard Test Method for Indicating Oil or Water in Compressed Air
6. ASTM D4414, Standard Practice for Measurement of Wet Film Thickness by Notch Gages
7. ASTM D4417, Standard Test Methods for field Measurement of Surface Profile of Blast Cleaned Steel
8. ASTM D4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
9. ASTM E1613, Standard Test Method for Determination of Lead by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES), Flame Atomic Absorption Spectrometry (FAAS), or Graphite Furnace Atomic Absorption Spectrometry (GFAAS) Techniques.

1.6.3 Society for Protective Coatings (SSPC)

1. SSPC-SP 1, Solvent Cleaning
2. SSPC-SP 2, Hand Tool Cleaning
3. SSPC-SP 3, Power Tool Cleaning
4. SSPC-SP 5 / NACE No. 1, White Metal Blast Cleaning
5. SSPC-SP 7 / NACE No. 4, Brush Off Blast Cleaning
6. SSPC-SP 10 / NACE No. 2, Near-White Metal Blast Cleaning
7. SSPC-SP 11, Power Tool Cleaning to Bare Metal
8. SSPC-SP 12 / NACE No. 5, Surface Preparation and Cleaning of Steel and Other Hard Metals by High- and Ultrahigh- Pressure Water Jetting Prior to Recoating
9. SSPC-AB 1, Mineral and Slag Abrasives
10. SSPC-AB 2, Specification for Cleanliness of Recycled Ferrous Metallic Abrasives.
11. SSPC-AB 3, Newly Manufactured or Re-Manufactured Steel Abrasives
12. SSPC-PA 1, Shop, Field, and Maintenance Painting
13. SSPC-PA 2, Measurement of Dry Film Thickness with Magnetic Gages
14. SSPC-SP COM, Surface Preparation and Abrasives Commentary, SSPC Painting Manual, Vol. 2, "Systems and Specifications"
15. SSPC-TU4, Field Methods for Retrieval and Analysis of Soluble Salts on Substrates.
16. SSPC-VIS 1, Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blasting
17. SSPC-VIS 3, Visual Standard for Power- and Hand- Tool Cleaned Steel
18. SSPC QP1, "Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures)", August 1, 1998
19. SSPC QP2, "Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint", August 1, 1995
20. SSPC-QP3, Standard Procedure for Evaluating Qualifications of Shop Painting Contractors

1.6.4 American Association of State and Highway Transportation Officials (AASHTO)

1. AASHTO Standard Specification for Highway Bridges, Division II Construction, Section 13, Painting
2. AASHTO/NSBA Steel Bridge Collaboration, S8.1-2001, Standard Specification for Coating Systems with Inorganic Zinc-Rich Primer, November 2001

1.6.5 American Institute for Steel Construction (AISC)

1. Sophisticated Paint Endorsement (SPE)

1.6.6 Research Council on Structural Connections (RCSC)

1. Specification for Structural Joints Using ASTM A325 or A490 Bolts, Section 5(b), endorsed by the Research Council on Structural Connections

1.7 SUBMITTALS

1.7.1 Surface Preparation/Painting Plan. Provide the following surface preparation / painting plan to the Department for documentation in conformance to 105.02.

1. Provide written procedures covering such items as the paint manufacturer, wet and dry film thickness, cure time between coatings, protection and treatment of faying surfaces, repair of typical damage and defects in the coating, and other information needed to successfully apply all coats of paint in the shop.

1.7.2 Coating Material Documentation

1. Identify the coating materials to be applied. Include the manufacturer's name, product names, and product numbers. Provide material product data sheets, volatile organic compound (VOC) levels, MSD sheets, and written application instructions including mixing requirements, specified thinners, and thinner amounts.
2. The finish coat color shall be as shown in Section 550 Part I as per Federal Standard 595 (see 2.2.(9)). Provide a 3 x 6 inch (75 x 150 mm) panel coated with the finish color to the Department for approval prior to application.
3. Submit documentation that the complete system meets the specified standard of 708 and a Certificate of Compliance for the paint material, in conformance to the requirements of 106.04.
4. In the event of a conflict between the manufacturer's technical data and the requirements of this Item, comply with this Item unless the requirements of the manufacturer are more restrictive. In these cases, advise the Department of the discrepancies in writing, and comply with the Department's written resolution.

1.7.3 Coating Samples for Testing

1. If required, submit one sample of each initial coating material batch to the NHDOT Bureau of Materials and Research lab for testing and acceptance (Stickney Ave., Concord, NH 03301 Tel. 603-271-1660).
2. Provide original, unopened, one-pint (0.47 L) samples directly from the manufacturer, or 5-gallon (18.9 L) containers directly from the jobsite. Mark all samples with the job-specific project name and number.
3. Submit the samples a minimum of ten (10) days prior to the commencement of field painting operations.

4. Provide samples of subsequent batches as directed by the Department throughout the course of the project.
5. When samples are requested, paint from the respective batches cannot be used until authorized by the Department.

MATERIALS

2.1 ABRASIVES

1. Provide abrasives that are dry and free of oil, grease, and corrosion producing, or other deleterious contaminants. Only recyclable metal (steel or aluminum oxide) abrasives shall be used for dry abrasive blast cleaning and shall be tested daily (or as otherwise approved) to meet the cleanliness standards of SSPC-AB2 or AB3.
2. Provide an abrasive mixture of shot and grit that is sized to produce a sharp, angular, uniform anchor pattern profile height of 1.0 to 3.0 mils (25 to 75 microns), unless the requirements of the coating manufacturer are more restrictive.
3. Provide the abrasives to the jobsite in original packaging or in bulk, and store in a clean, dry environment.

2.1.2 Non-skid grain. Grains when required for non-skid walking surfaces shall be aluminum oxide granules passing No. 18 screen having sharp and angular surfaces similar to metal grit abrasive. The coating manufacturer in writing shall approve the non-skid grain or recommend a comparable substitute.

2.2 COATINGS

1. Provide the type and quantity of coating materials, thinners, and cleaning solvents needed to paint all surfaces as required (1.1.3.1). A listing of pre-approved coating systems is found in Section 556 Part III, 708 Paint.

TABLE 2.2 - COATING AND FILM THICKNESS

Coat	Material	Film thickness (mils)	Film thickness (microns)
PAINT SYSTEM A:			
Primer:	708-NH 1.70 Inorganic zinc rich	3-5 mils DFT	(75-125 microns)
Intermediate:	708-NH 3.21 High build epoxy polyamide	4-6 mils DFT	(100-150 microns)
Stripe coat:	(Intermediate coat)	Uniform Coat	Uniform Coat
Finish:	708-NH 3.81 Aliphatic polyurethane	2-4 mils DFT	(50-100 microns)
	Total system thickness	9-15 mils DFT	(225-375 microns)
PAINT SYSTEM B:			
Primer:	708-NH 1.20 Organic zinc rich primer	3-5 mils DFT	(75-125 microns)
Intermediate:	708-NH 3.21 High build epoxy polyamide	4-6 mils DFT	(100-150 microns)

Stripe coat:	(Intermediate coat)		Uniform Coat	Uniform Coat
Finish:	708-NH 3.81 Aliphatic polyurethane		2-4 mils DFT	(50-100 microns)
		Total system thickness	9-15 mils DFT	(225-375 microns)
<hr/>				
PAINT SYSTEM C:				
Primer:	708-NH 1.40 Single-component moisture-cure zinc-rich polyurethane		3-5 mils DFT	(75-125 microns)
Intermediate:	708-NH 2.40 Single-component moisture-cure aromatic polyurethane with micaceous iron oxide		3-5 mils DFT	(75-125 microns)
Stripe coat:	(Intermediate coat)		Uniform Coat	Uniform Coat
Finish #1:	708-NH 3.41 Single-component moisture-cure aliphatic polyurethane with micaceous iron oxide		2-4 mils DFT	(50-100 microns)
Finish #2:	708-NH 3.43 Single-component moisture-cure aliphatic polyurethane		2-4 mils DFT	(50-100 microns)
		Total system thickness	8-14 mils DFT	(225-325 microns)
<hr/>				
PAINT SYSTEM E:				
Primer:	708-NH 1.43 Single-component moisture-cure micaceous iron oxide zinc-rich polyurethane		3-5 mils DFT	(75-125 microns)
Intermediate:	708-NH 2.42 Single-component moisture-cure refined coal tar aromatic polyurethane with micaceous iron oxide		4-6 mils DFT	(100-150 microns)
Stripe coat:	(Intermediate coat)		Uniform Coat	Uniform Coat
Finish:	708-NH 3.42 Single-component moisture-cure refined coal tar aromatic polyurethane with micaceous iron oxide		4-6 mils DFT	(100-150 microns)
		Total system thickness	11-17 mils DFT	(275-425 microns)

2. Film thicknesses shall be as shown in Table 2.2 unless the coating manufacturer's recommended thickness range differs. In such cases, the manufacturer shall provide written documentation that the range cited satisfies the Department's performance requirements.
3. Use coatings that are compliant with Federal and State VOC regulations at the time of application. The maximum VOC limit for the State of NH is 3.5 Lb./Gal. (420 g/L) at the time of application for zinc-rich primers and 2.8 Lb./Gal. (340 g/L) for all other coats. (See Section 550 Part III, 708 Paint). This includes the use of any required thinners.
4. Use the same manufacturer for all coats on a given structure, including thinners and additives. Do not co-mix coating products or components produced by different manufacturers under any circumstances.
5. Provide each coat of paint in sufficiently contrasting color to facilitate proper coverage and to distinguish it from cleaned steel and previously applied coatings.
6. Order all paint, thinner, and cleaning materials well in advance of intended use. Maintain an adequate supply of all materials on site at all times so as to not delay the work.

7. Provide all paint materials in sealed, original, containers that are properly marked and labeled to allow verification with applicable material safety data sheets, application precautions, and instructions. Verify that the labeling includes the manufacturer’s name, type of material, brand name, color designation, shelf life, contract or order number under which the material has been ordered, lot and batch numbers, and quantity.
8. Provide a 3 x 6 inch (75 x 150 mm) panel coated with the finish color with the submittals.
9. The finish color, as specified in Section 550 Part I, shall match the required Federal Standard 595 Color number as follows:

SAGE GREEN	Federal Color #	24227
LIGHT (ODOT) GREEN		24272
DARK (DARTMOUTH) GREEN		24109
DARK BROWN		20062
ALUMINUM		27178
BLACK		27038
OTHER COLOR		To Be Determined

2.3 EQUIPMENT

2.3.1 Surface Preparation and Painting Equipment.

1. Provide all brushes, discs, wheels, scrapers, descalers, blast cleaning, and other surface preparation equipment to conduct the work as specified in this Item.
2. Use equipment and materials that are clean and sized properly to accomplish the work, including the required surface profile and finish as required by this Item.
3. Provide paint brushes, rollers, daubers, and spray equipment to conduct the work as specified in this Item.

2.3.2 Personal Protective Equipment.

1. Provide all of the necessary personal protective equipment (PPE), such as respirators, for workers to assure protection from hazards during surface preparation, coating application, and clean-up activities. Make the equipment available for use by one Department Representatives per shift
2. Repair or replace PPE as required to assure that it continues to provide its intended purpose.

2.3.3 Inspection Equipment

1. Provide all of the inspection and testing equipment needed, for use in the shop or in the field, to verify the quality of the entire surface preparation and painting process, including mirrors to inspect hard to reach areas.
2. Make the equipment available for use by the Department.

SHOP PAINTING

3.1 GENERAL

3.1.1 Provide all materials, apparatus, and labor necessary to perform the scope of work whether or not the material or apparatus is specifically identified in this Item. Conduct all surface preparation and painting operations in a neat and workmanlike manner to the satisfaction of the Department. At the completion of the work painted surfaces shall be clean, undamaged, and present an acceptable appearance to the Department.

3.1.2 Specifications. The work shall be performed in conformance to the Contract requirements, the reference standards (1.6), and the coating manufacturer's instruction, respectively.

3.1.3 Safety. Conduct all work in strict conformance to the relevant OSHA regulations and the safety and protection requirements stipulated by equipment and material manufacturers.

3.1.4 Quality Control. The applicator (i.e. fabricator or field painting contractor) is required to conduct and document quality control inspection of the cleaning and painting operations on a daily basis by an individual meeting the requirements of SSPC QP1, including at a minimum, all measurements required by SSPC QP1 and those specified in 3.6, including ambient conditions, surface profile, surface cleanliness, dry film coating thickness, and visual inspection for coating defects.

3.1.5 Technical representation by coating manufacturer

3.1.5.1 Arrange for a technical representative (not a sales representative) of the coating manufacturer to make one visit of the work at the project startup if necessary to inspect the work in the shop and in the field to verify that the quality of surface preparation and cleaning are satisfactory for the coating system, that the mixing and application are satisfactory, and that the coating system will perform as expected.

3.1.5.2 Have the manufacturer summarize the results of the inspection in writing, together with recommendations. Provide the report to the Department within one week of the representative's visit.

3.2 SURFACE PREPARATION

3.2.1 Surface Preparation Plans. Prepare all surfaces in conformance to the requirements of this Item, and the approved Surface Preparation/Painting Plan provided under 1.7, Submittals.

3.2.2 Grinding.

3.2.2.1 Corners. All corners of sheared or flame cut edges of members to be painted shall be blunted or flattened, i.e. chamfered to a small 45° chamfer (approximately 1/16 inch (2 mm)), by passing a grinder or other suitable device along the corner, normally in a single pass, prior to blast cleaning.

3.2.2.2 Flame-cut edge surfaces. All flame-cut edge surfaces of members to be painted shall be conditioned before blasting to achieve the proper profile by grinding to bright metal to remove the hardened flame cut surface. Light grinding is generally sufficient to remove this hardened material and is only necessary if the hardness interferes with achieving the desired profile during blast cleaning.

3.2.3 Steel defects and weld irregularities. All visually evident detrimental surface imperfections (e.g. fins, tears, scabs, projections, slivers, and weld spatter) that are present on any steel member shall be removed by grinding to produce an acceptable surface. When surface imperfections discovered after blast cleaning are removed, the profile of the repair area shall be restored by blast cleaning or by mechanical tools in conformance to SSPC-SP11. The cost shall be subsidiary to Item 550.

3.2.4 Compressed Air Cleanliness

1. Provide compressed air that is free from moisture and oil contamination.
2. Conduct a white blotter test in conformance to ASTM D 4285 to verify the cleanliness of the compressed air. Conduct the test at least once per shift for each compressor system. Sufficient freedom from oil and moisture is confirmed if soiling or discoloration is not visible on the paper.
3. If air contamination is evidenced, change filters, clean traps, add moisture separators or filters, or make other adjustments as necessary to achieve clean, dry air.

3.2.5 Ambient Conditions. Do not conduct final surface preparation which exposes bare steel under damp environmental conditions, or when the surface temperature is less than 5°F above the dew point temperature of the surrounding air, except as permitted otherwise by the coating manufacturer. See 3.4.5(3).

3.2.6 Surface Cleaning Requirements - Steel Substrates. Section 550, Part I, identifies the degree of cleaning required for the project. Definitions for the specified degree(s) of cleaning are provided below:

1. SSPC-SP 1 Solvent Cleaning

- a) Remove all visible oil, grease, dust, soil, drawing and cutting compounds, and other soluble contaminants from the surface in conformance to SSPC-SP 1, Method 4.1.1 only, prior to coating removal (with emphasis on using clean rags or brushes).
- b) Only use solvents or detergents that are acceptable to the coating manufacturer in writing and the Department.

2. SSPC-SP 2 Hand Tool Cleaning

- a) Upon approval of the Department, use scrapers, putty knives, wire brushes, chipping hammers and other similar tools to thoroughly clean any surfaces that cannot be adequately addressed using abrasive blasting or power tool cleaning. Comply with the requirements of SSPC-SP 2 to remove all loose mill scale, loose rust, loose paint, and other loose foreign matter on a best effort basis.
- b) It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered to be adherent if they cannot be removed by lifting with a dull putty knife.
- c) SSPC-VIS 3 may be used as an aid in determining the quality of cleaning.

3. SSPC-SP 3 Power Tool Cleaning

- a) Use power assisted hand tools such as sanding discs or non-woven open-web abrasive rotary discs, wire brushes, needle guns, or similar tools to thoroughly clean corrosion and disbonded coating on surfaces specified in 1.1.3, Scope of Work, and Section 556 Part I. Comply with the requirements of SSPC-SP 3 to remove all loose mill scale, loose rust, loose paint, and other loose foreign matter.
- b) It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife.
- c) Feather the coating surrounding each prepared area to provide a smooth tapered transition into the surrounding existing intact coating. Verify that the edges of the coating around the periphery of the prepared areas are tight and intact by probing with a putty knife in conformance to the requirements of SSPC-SP3.
- d) SSPC-VIS 3 may be used as an aid in determining the quality of cleaning.

4. SSPC-SP 7 Brush-off Blast Cleaning

- a) When abrasive blast cleaning preparation of the newly applied coating is required for the purposes of overcoating or repair, thoroughly clean all surfaces designated by the Department. Comply with the requirements of SSPC-SP 7 to remove all loose paint, loose rust, loose mill scale, and other foreign matter. Verify that the surfaces have been exposed to the abrasive and that the surfaces are densely and uniformly roughened.
- b) It is not intended that adherent paint be removed by this process. Paint is considered to be adherent if it cannot be removed by lifting with a dull putty knife. Verify that the edges remaining paint are feathered.
- c) Unless restricted otherwise by the Department, accomplish the SP 7 degree of cleaning using any of the following: dry blast cleaning with recyclable abrasives, wet abrasive blast cleaning, water jetting with abrasive injection, or vacuum blast cleaning.
- d) SSPC-VIS 1 may be used as an aid in determining the quality of cleaning.

5. SSPC-SP 11 Power Tool Cleaning to Bare Metal

- a) Use power assisted hand tools such as needle guns, Roto peening equipment, or similar tools to thoroughly clean all surfaces specified in Section 550, Part I. Comply with the requirements of SSPC-SP 11 to remove all visible oil, grease, dirt, dust, mill scale, rust, paint, oxide, corrosion products, and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted.
- b) Provide a minimum surface profile of 1 mil (25 microns) on all prepared surfaces or a profile of greater depth if required by the coating manufacturer or the Department.

Measure the surface profile using the Testex Replica Tape in conformance to ASTM D4417.

- c) SSPC-VIS 3 may be used as an aid in determining the quality of cleaning.

6. SSPC-SP 10 Near-White Blast Cleaning

- a) Thoroughly blast clean all surfaces specified in 1.3, Scope of Work. Comply with the requirements of SSPC-SP 10 to remove all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining.
- b) Provide a sharp, angular, uniform surface profile of 1.0 to 3.0 mils (25 to 75 microns) for abrasive blast cleaning unless the requirements of the coating manufacturer are more restrictive. Measure the surface profile using extra course Testex Replica Tape in conformance to ASTM D4417, Method C, at least once per shift, and when the abrasive mixture is changed.
- c) Allow staining to remain on no more than 5 percent of each nine square inch increment of surface area. Acceptable staining is limited to light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied paint.
- d) Accomplish the SP 10 degree of cleaning using dry blast cleaning with recyclable metal abrasives. Allow the surface to thoroughly dry prior to painting, and apply the primer before any visible rusting occurs.
- e) SSPC-VIS 1 shall be used as an aid in determining the quality of cleaning.

7. Remediation of Chlorides

- a) Verify that residual chloride levels on the structural steel (e.g. in previously rusted areas as well as unrusted areas) are remediated to a surface cleanliness condition of SC-2 ($7 \mu\text{g}/\text{cm}^2$) in accordance with SSPC-SP12, as determined by the Chlor*Test™, manufactured by Chlor*Rid International Inc. (Tel. 800-422-3217).
- b) Methods of chloride removal may include, but are not limited to, steam cleaning or pressure washing and scrubbing, reblasting, or blast cleaning with blends of fine and course abrasives. Describe the proposed method(s) of chloride remediation in the submitted Surface Preparation/Painting Plan.
- c) Test for chlorides at a minimum frequency of two representative locations per project. Test locations are to be determined by the Department.
- d) If unacceptable levels of chlorides remain, test at a greater frequency, and reclean the affected areas until acceptable results are achieved.

3.3 PAINT STORAGE, MIXING, AND HANDLING

3.3.1 Paint Storage

1. Store all paint, thinners, and solvents in conformance to OSHA regulations and the requirements of the paint manufacturer. Store the paint and solvents under cover, out of direct sunlight, and protected from vandalism.
2. Maintain the storage temperature between 40°F and 90°F (5°C and 33°C), unless the requirements of the manufacturer are more restrictive.
3. Maintain MSD sheets for all materials.

3.3.2 Mixing and Thinning of Coating Materials

1. Verify that the paint to be mixed has not exceeded its shelf life. When required by the manufacturer, warm paints stored at less than 50°F (10°C) to above 50°F (10°C) prior to mixing.
2. Utilize proper ventilation in the mixing area to prevent injury to workmen or the accumulation of volatile gases.
3. Mix all coatings in conformance to the requirements of the coating manufacturer using mechanical equipment such as a Jiffy mixer. Do not create a vortex when using the power mixer.
4. Do not thin any paints unless approved in writing by the paint manufacturer and the Department. If thinning is required and authorized, use only those types, brands, and amounts of thinner stipulated by the coating manufacturer. Carefully measure the amount of thinner added. Do not “eye ball.”
5. Strain materials after mixing to remove agglomerations.

3.4 COATING APPLICATION

3.4.1 Painting Plans. Apply all coatings in conformance to the requirements of this Item, the coating manufacturer’s instructions, and the approved Surface Preparation/Painting Plan provided under 1.7, Submittals.

3.4.2 Applicator Proficiency. Unless directed otherwise by the Department, have each applicator demonstrate his or her proficiency in applying the coating system to test areas prior to commencing the production application.

3.4.3 Quality of Surface Preparation Prior to Painting

1. Verify that the surface exhibits the specified degree of hand, power tool, or abrasive blast cleaning immediately prior to painting.

2. Apply the first coat before rusting or degradation of the surface occurs, but in no case allow the prepared surface to stand for more than 24 hours in the shop prior to painting. Reclean rusted or degraded surfaces, or those surfaces that have stood for more than 24 hours prior to painting. In the field the maximum time limit is 8 hours.

3.4.4 Surface Cleanliness Prior to Painting and Between Coats

1. Thoroughly clean the surface of each coat prior to the application of the next to remove spent abrasive, dirt, dust, cement spatter, and other interference material.
2. If grease or oil have become deposited on the bare steel or on the surface of any of the applied coats, remove by solvent cleaning in conformance to SSPC-SP1 prior to the application of the next coat. Use solvents that are compatible with the coating being cleaned. Upon completion of the cleaning, verify that the grease and oil have been removed by wiping the surface with a clean, white cloth and inspecting the cloth for residue. If a residue is visible on the cloth, conduct additional cleaning.
3. Prior to applying a spot prime coat to areas of hand or power tool surface preparation, verify that the existing coatings have been thoroughly cleaned in the overlap areas, and that pockets are dry and free of mud, dirt, and other accumulations.

3.4.5 Ambient Conditions during Coating Application. Apply coatings under the following conditions unless the requirements of the coating manufacturer are more restrictive. Do not apply coatings under less restrictive conditions without written approval of the coating manufacturer, and specific written authorization from the Department.

1. Surface and Air Temperatures – Between 40°F (5°C) and 100°F (38°C). For coating system C the low temperature is 35°F (2°C).
2. Relative Humidity – Less than 85%. For coating system C, R.H. less than 98%.
3. Dew Point – Surface temperature above the dew point. Normal dew point restrictions apply (i.e. 5 °F (2.7°C) spread). For coating system C the restriction is 2°F (1°C), and do not apply the coating to surfaces that are visibly damp.
4. Frost/Rain - Do not apply coatings to surfaces containing frost or free standing water, or during rain, fog, or similar detrimental weather conditions, but only to surfaces that are thoroughly dry.
5. Remove and replace any paint that is exposed to unacceptable conditions (e.g. rain) prior to adequate curing.

3.4.6 Methods of Application - Apply all coats by the methods shown below, unless the methods recommended by the paint manufacturer are more restrictive.

1. Brush application. Use round or oval brushes. Use flat brushes only on large plate surfaces between connections, and only upon approval of the Department. Brush apply the paint using a series of small circles to thoroughly fill in all surface irregularities, and end with a series of parallel strokes to smooth the finish.

2. Roller application. Use rollers only on large plate surfaces between connections, and only upon approval of the Department. Select a nap size and roller quality that will properly wet the substrate and produce a smooth, uniform film. Apply the coating in a such a manner as to achieve complete and thorough coverage of the surface and all irregularities. Back-roll the surface after application to create a smooth, uniform finish.
3. Daubers. On metal surfaces that are inaccessible for paint brushes, use sheepskins or daubers especially constructed for the purpose.
4. Airless or conventional spray application. If conventional spray is approved for use, verify that the compressed air supply is clean and dry as determined by the blotter test in conformance to ASTM D 4285. When spraying, use extreme care and appropriate containment to avoid contamination of surrounding areas or property by overspray.

3.4.7 Recoat Times

1. Apply each coat only after the previous coat has been allowed to dry as required by the manufacturer's written instructions, but as soon as possible to minimize the length of time that the coating is exposed to dust and contamination.
2. Do not allow any coat to remain exposed for longer than 14 days prior to overcoating.
3. If a coat is exposed over the winter months prior to the application of the next coat, or the applied coat(s) exceed the manufacturer's maximum recoat times or 14 days for any reason, remove and replace the coating. As an alternative, provide written instructions from the coating manufacturer for the specialized preparation that can be undertaken (e.g. scarifying the surface) to properly prepare the surface to receive the next coat. The specialized steps can be undertaken only if approved by the Department. Perform the specialized cleaning or removal and replacement of the coatings at no additional cost to the Department.

3.4.8 Coverage, Continuity, and Stripe Coating

1. Apply each coat in a neat and workmanlike manner to assure thorough wetting of the substrate or underlying coat, and to achieve a smooth, streamline surface relatively free of dryspray, overspray, and orange peel. Shadow-through, pinholes, bubbles, skips, misses, lap marks between applications, or other visible discontinuities in any coat are unacceptable. Runs or sags may be brushed out while the material remains wet.
2. Remove dryspray and overspray (e.g. by sanding) prior to the application of the next coat. When present on the finish, remove as directed by the Department and apply another coat of finish to the area. Remove all other defective coating to sound material and reapply.
3. Thoroughly coat all surfaces with special attention to hard-to-reach areas, and irregular surfaces such as lacing bars and rivets. When coating configurations such as bolts, apply the material from multiple directions to assure complete coverage.
4. Apply a stripe coat using the intermediate coating material by brush, roll or spray to all edges and outside corners, and by brush to all welds, snipes, crevices, rivets, bolt nuts and threads,

bolt heads, and other surface irregularities prior to the application of the full intermediate coat. Apply the stripe coat to ensure complete and uniform coverage, and to build up the thickness of the coating on the irregular surfaces.

3.4.9 Coating Adhesion

1. Apply all coats in such a manner to assure that they are well adherent to each other and to the substrate. If the application of any coat causes lifting of an underlying coat, or there is poor adhesion between coats or to the substrate, remove the coating in the affected area to adjacent sound, adherent, coating, and reapply the material.
2. If adhesion is suspect, conduct adhesion tests in conformance to ASTM D 3359 or ASTM D 4541 as directed by the Department, and repair all test areas. The Department and the coating manufacturer will establish the acceptance criteria for the testing. Replace all defective coating that is revealed by the testing, at no cost to the Department.

3.4.10 Wet Film Thickness. Use wet film thickness gages in conformance to ASTM D4414 to verify the thickness of each coat at the time of application.

3.4.11 Dry Film Thickness and Corrective Action for Thickness Deviations

1. Apply each coat to the thicknesses specified in 2.2 to a dry film thickness as measured above the top surface of the substrate profile peaks per SSPC-PA2, Type 2.
2. Measure the thickness of each coat using nondestructive magnetic dry film thickness gages. Comply with SSPC-PA2 for the calibration and use of gages and the minimum frequency of thickness measurements. QA Inspectors will not be limited by the frequency of thickness measurements of PA2 but will take measurements sufficient to assure that proper thickness is achieved on all surfaces as specified.
3. If there are questions regarding the non-destructive measurements of coating thickness, a Tooke Gage (destructive scratch gage) may be used when authorized by the Department. Conduct measurements in conformance to ASTM D 4138, but limit the use of the gage to a minimum of locations. Mark and repair all damage caused by the destructive testing, whether created by the Department or the Contractor at no cost to the Department.
4. Apply additional coating of the same type to areas of insufficient thickness. Use care during application to assure that all repairs blend in with the surrounding material.
5. Unless directed otherwise by the Department in writing, remove excessive coating thickness and reapply the affected coat(s). Coating thickness in excess of that specified, but not exceeding two times the maximum specified thickness, may be acceptable as long as: the coating is free of visible defects prior to applying successive coat; AND the coating manufacturer provides written documentation and test data (if required) to confirm that the thickness will not adversely affect the coating performance for the specific situation.

3.4.12 Bolted Contact Surfaces.

1. Regardless of which paint system is used, the faying surfaces (i.e. contact surfaces internal to the connection) of bolted connections shall be painted with one coat of a zinc-rich primer meeting the AASHTO / RCSC requirements for Class B slip-critical connections. This coat shall not exceed the maximum thickness nor fail to meet the minimum cure time specified on the Certificate of Approval for Class B use.
2. The external surfaces of bolted connections shall be painted with one coat of the primer used on the bridge. Both surfaces of bolted connections shall be masked off within three inches of bolt holes after application of the primer for subsequent coating application.

3.4.13 Non skid walking surfaces.

During the application of the first finish coat the non-skid abrasive shall be immediately broadcast onto the surface over the wet layer of coating to provide a non-slip surface. Vacuum excess granules upon curing of the coating. After the first finish coat has cured, apply one additional encapsulation coat of the finish coat to the non-skid surfaces. The DFT of the encapsulation coat will be 2.5 - 3.5 mils (60-90 microns).

3.5 REPAIR OF FIELD WELDS, DAMAGED AND UNACCEPTABLE NEWLY APPLIED COATINGS

3.5.1 Surface Preparation of Localized Areas

1. Repair field welds, localized handling and erection damage, minor coating defects, corrosion, and unacceptable coatings at no additional cost to the Department.
2. Prepare the surface by solvent cleaning in conformance to SSPC-SP 1 prior to mechanical cleaning.
3. In areas previously blast cleaned, if the damage exposes the substrate, remove all loose material and prepare the steel in conformance to SSPC-SP 11. Follow with solvent cleaning in conformance to SSPC-SP 1 to remove surface contamination.

3.5.2 Surface Preparation of Extensive Areas

1. Repair extensive areas of damage, significant defects, or unacceptable coating only after submitting written repair procedures to the Department for approval and at no additional cost to the Department.
2. The Department will stipulate the degree of cleaning required based on the nature of the defect.
3. Prevent damage to the surrounding coating due to over blast.

3.5.3 Feathering of Repair Areas

1. Feather the existing coating surrounding each repair location for a distance of 1 to 2 inches (25 to 50 mm) to provide a smooth, tapered transition into the surrounding existing intact coating, using a non-woven open-web abrasive rotary discs sander (or equal).

2. Verify that the edges of coating around the periphery of the repair areas are tight and intact by probing with a putty knife in conformance to the requirements of SSPC-SP 3. Roughen the existing coating in the feathered area to assure proper adhesion of the repair coats.

3.5.4 Coating Application in Repair Areas

1. When the bare substrate is exposed in the repair area, apply all coats of the system to the specified thicknesses.
2. When the damage does not extend to the bare substrate, apply only the affected coats.
3. Maintain the thickness of the system in overlap areas within the specified total thickness tolerances.
4. Repairs to the finish coat shall result in an acceptable uniform gloss and color on visible members.

3.6 INSPECTION

3.6.1 Quality Control (QC).

1. The applicator (i.e. fabricator or field painting contractor) is required to conduct and document quality control inspection of the cleaning and painting operations (see 3.1.4). QC inspection shall include the components and at the frequency listed in Tables 5.2, 6.1, 6.2, and 6.3 of the AASHTO/NSBA Collaboration S8.1 Standard Specification, and using Appendix 1 forms, or approved equal.
2. The data shall be recorded in a log maintained at the site and available for the Department's review during working hours.
3. Refer to the internet website for Tables and forms (at <http://www.steelbridge.org/TG8/S8.1>).

3.6.2 Quality Assurance (QA). The Department will perform QA inspection on all phases of the work to verify that it is in conformance to the requirements of this Item.

1. Facilitate QA inspection as required, including proper notification, allowing adequate time for the inspections, and providing lighting and access to the work together with all necessary safety and inspection equipment.
2. QA inspections will include the following minimum hold points to determine specification compliance. Do not proceed with subsequent phases of the work until the preceding phase has been approved by the Department:
 - a) prior to the start of work,
 - b) immediately following surface preparation,
 - c) immediately prior to the application of the first coat,
 - d) prior to the application of each additional coat, and
 - e) after the final coat is applied and dried.

3. The presence or activity of Department QA inspections in no way relieves the Contractor of the responsibility to comply with all requirements of this Item, and to provide adequate inspections of its own to assure compliance with the requirements of this Item.
4. Furnish, until final acceptance of the coating system, all equipment and instrumentation needed to inspect all phases of the work.

3.7 HANDLING

3.7.1 Care shall be exercised in handling coated steel in the shop, during shipping, field erection, and subsequent construction of the bridge. Coated steel shall be insulated from lifting devices and from the scraping and rubbing of parts that would damage the coating by the use of lifting softeners, padded slings, storage pallets, separators, cushioners, tie-downs, and other approved supports.

3.7.2 The fabricator shall be responsible for the condition of the paint until the structural members arrive at the jobsite.

3.7.3 Structural steel material shall not be lifted, placed on supports, or loaded for shipment until the shop coating has been adequately cured and inspected. The steel members will be stamped "Approved" only after the loading has been completed and approved. No structural steel shall be shipped without the prior approval of the Department.

FIELD PAINTING

4.1 GENERAL

4.1.1 All field painting and repairs shall conform to the applicable requirements of this Item for shop painting (including section 3.5 for repairs) and the coating manufacturer's instructions.

4.1.2 Field work shall consist of the following:

1. Repair of damage to the shop applied coats due to handling, shipping, erecting, etc.;
2. The satisfactory cleaning and painting of field welded areas or field bolted connections with appropriate surface preparation and the application of the prime (if required), intermediate, and finish coats to these areas.
3. The finished painted surfaces shall be cleaned of all cement and concrete spatter and drippings to the satisfaction of the Department.
4. At the completion of the work painted surfaces, especially fascia surfaces exposed to public view, shall be clean, neat, undamaged, and present a uniform, acceptable appearance to the satisfaction of the Department.

4.1.3 Contain the surface preparation and painting operations to avoid contamination of surrounding property. Use extreme diligence to assure that vehicles, equipment, hardware, fixtures, surrounding property, and other materials are protected against abrasive impact, paint spillage, overspray, falling objects, and other damage. Make full restitution for damages caused at no additional cost to the Department.

4.1.4 Requirements for containment when removing paints that contain lead or other toxic metals are found in Item 556.

4.1.5 Use protective coverings, shields, or masking as necessary to protect surfaces that are not designated to receive surface preparation or coating, including nameplates, electrical equipment, bridge substructure, highway appurtenances, and slope protection.

4.1.6 Maintain all protective coverings during the entire period the work is being performed, and remove all coverings upon completion of the work.

4.1.7 Erect all scaffolding and staging required for the work and remove it upon project completion. Exercise extreme care in fastening, bracing, and handling the scaffolding and staging to avoid scratching or damaging bridge surfaces and surrounding property and equipment. Repair any damage created at no cost to the Department.

4.1.8 Structural steel surfaces which will be inaccessible for painting after erection, except for bolted connections, shall be inspected, repaired, and coated prior to erection.

4.2 SURFACE PREPARATION.

4.2.1 Removal of Existing Debris. Remove and properly dispose of accumulated pigeon droppings, cinders, dirt, and debris from all areas to be prepared and painted prior to undertaking any surface cleaning or surface preparation operations.

4.2.2 Surface Cleaning Requirements - Bolts

1. Remove machine oil, lubricant or residuals from the surface of new installed black or galvanized bolts by solvent cleaning in conformance to SSPC-SP 1.
2. Supplement the solvent cleaning of galvanized bolts by hand or power tool cleaning in conformance to SSPC-SP 2 or SSPC-SP 3 as needed to remove insoluble contaminants such as white rust and to thoroughly roughen the entire surface without removing the zinc layer. An additional pre-treatment or tie coat may be required if recommended by the paint manufacturer and approved by the Department. A clean white cloth wipe test may be used to confirm that all lubricant and non-absorbed dye has been removed, leaving only the residual "stain" on the surface.
3. Supplement the solvent cleaning of rusted black bolts by power tool cleaning in conformance to SSPC-SP 3. Use a 2 3/4 inch diameter knot wire cup brush as manufactured by Weiler Corporation and supplied by Grainger Industrial Supply, or using a non-woven open-web abrasive rotary discs sander, unless other methods are approved by the Department.

4.3 HOUSEKEEPING AND WASTE DISPOSAL

4.3.1 Conduct housekeeping daily to maintain the work site in a neat and orderly condition. Do not store any paint or equipment on or below the bridge structure.

4.3.2 Unless directed otherwise by the Department, at the end of each day at a minimum, haul empty paint cans and other debris to the waste storage area.

4.3.3 Remove all paint drips, splashes, and overspray from surfaces not intended to be painted or previously painted work.

4.3.4 Upon project completion, remove all equipment and materials, correct any damage caused by the operation, and leave all surfaces in a clean and acceptable condition, including the revegetation of ground areas defoliated by the work.

4.3.5 Handle, store, transport, and dispose of all hazardous and non-hazardous project waste in strict conformance to Federal and state regulations.

4.4 FINAL ACCEPTANCE

4.4.1 Although the Department's Quality Assurance Inspector may accept the shop painted fabricated items before shipment to the jobsite, final acceptance of the paint system by the Department will occur at the jobsite after erection of the steel, and after all coats and repairs have been completed.

4.5 THREE-YEAR ANNIVERSARY INSPECTION

4.5.1 A three-year anniversary inspection will be conducted after completion of the painting. Participate in this inspection with the Department.

4.5.2 Should the coating system fail within three years after the project has been accepted, the coating shall be repaired by the Contractor at no cost to the State. The extent and method of repair must be acceptable to the Department. System failure does not include damage from external agents, such as scraping from snow removal equipment, vandalism, debris impacts, collisions, etc., or normal loss of gloss and color. Once the coating system has been accepted, a failure shall mean any visible corrosion, blistering, checking, cracking, or delamination (peeling) of the paint resulting from the installation of the product or from the performance of the coating. Perform all repairs in accordance with the requirements of this Item and the coating manufacturer's written instructions.

PART III of III -- SECTION 708 PAINTS**SECTION 708 - PAINT SYSTEM A
Inorganic zinc rich / Epoxy / Urethane****NH 1.70 Inorganic Zinc-Rich Primer**

1. General. This VOC-compliant inorganic zinc-rich primer is to be used on structural steel cleaned to SP10 and meeting the requirements of NEPCOAT. Water-base systems are not permitted.

(NEPCOAT refers to the qualified products list of coatings approved by the Northeast Protective Coatings Committee and meeting the requirements of the NEPCOAT Specification Criteria for Protective Coatings for Use on New and Bare Existing Steel).

NH 3.21 High-Build Epoxy Polyamide Intermediate

1. General. This specification covers a VOC-compliant epoxy polyamide and is suitable for use on steel surfaces which have been properly cleaned and primed.

2. Composition.

Mixed Epoxy-Polyamide (All parts mixed)

VOC content, 2.8 max. Lb./Gal. (340 g/L)

3. Color.

The color when dry shall Contrast with primer & topcoat

NH 3.81 Aliphatic Polyurethane Finish

1. General. This specification covers a VOC-compliant, polyurethane having good color retention and weathering resistance and suitable for use over an intermediate coat.

2. Composition.

Mixed Aliphatic Polyurethane Enamel (All parts mixed)

VOC content, 2.8 max. Lb./Gal. (340 g/L)

3. Color.

Color: See 2.2 (9)

Finish: Semi-gloss

SECTION 708 - TABLE A
PAINT SYSTEM A - Inorganic zinc rich / Epoxy / Urethane

The following list of paint systems are approved for the painting of structural steel cleaned to SP10. These coatings have been tested and approved by NEPCOAT.

1. Carboline Company (www.carboline.com)
350 Hanley Industrial Court, St. Louis, MO 63144-1599 (800) 848-4645
Local contact: Charles Vaillant (603) 329-9691

Primer: Carbozinc 11 HS Inorganic Zinc Rich
Intermediate: Carboline 893 High Build Epoxy
Finish: Carboline 133 LH Aliphatic Polyurethane

2. Sherwin Williams Company (www.sherwin-williams.com)
101 Prospect Ave, N.W. Cleveland, OH 44115 (216) 566-2000

Primer: Zinc Clad DOT Inorganic Zinc Rich Primer
Intermediate: Steel Spec Epoxy Intermediate
Finish: High Solids Polyurethane

3. International Protective Coatings (www.international-pc.com)
6001 Antoine, Houston, Texas, 77091, (800) 525-6824 x 1289
Local contact: Mark Ellis (508) 587-8877

Primer: Interzinc 22 HS Inorganic Zinc Rich Primer
Intermediate: Intergard 475 HS Epoxy
Finish: Interthane 870 UHS

SECTION 708 - PAINT SYSTEM B
Organic zinc rich / Epoxy / Urethane

NH 1.20 Organic Zinc-Rich (Epoxy or Urethane) Primer

1. General. This VOC-compliant organic zinc-rich primer is to be used on structural steel cleaned to SP10 and meeting the requirements of NEPCOAT. Water-base systems are not permitted.

(NEPCOAT refers to the qualified products list of coatings approved by the Northeast Protective Coatings Committee and meeting the requirements of the NEPCOAT Specification Criteria for Protective Coatings for Use on New and Bare Existing Steel).

NH 3.21 High-Build Epoxy Polyamide Intermediate

1. General. This specification covers a VOC-compliant epoxy polyamide and is suitable for use on steel surfaces which have been properly cleaned and primed.

2. Composition.

Mixed Epoxy-Polyamide (All parts mixed)

VOC content, 2.8 max. Lb./Gal. (340 g/L)

3. Color.

The color when dry shall Contrast with primer & topcoat

NH 3.81 Aliphatic Polyurethane Finish

1. General. This specification covers a VOC-compliant, polyurethane having good color retention and weathering resistance and suitable for use over an intermediate coat.

2. Composition.

Mixed Aliphatic Polyurethane Enamel (All parts mixed)

VOC content, 2.8 max. Lb./Gal. (340 g/L)

3. Color.

Color: See 2.2 (9)

Finish: Semi-gloss

SECTION 708 - TABLE B
PAINT SYSTEM B - Organic zinc rich / Epoxy / Urethane

The following list of paint systems are approved for the painting of structural steel cleaned to SP10. These coatings have been tested and approved by NEPCOAT.

1. Carboline Company (www.carboline.com)
 350 Hanley Industrial Court, St. Louis, MO 63144-1599 (800) 848-4645
 Local contact: Charles Vaillant (603) 329-9691

 Primer: Carboline 859 Organic Zinc Rich primer Class B Slip Coefficient
 Intermediate: Carboline 888 Epoxy intermediate
 Finish: Carboline 133 LH Aliphatic Polyurethane

3. Carboline Company (www.carboline.com)
 350 Hanley Industrial Court, St. Louis, MO 63144-1599 (800) 848-4645
 Local contact: Charles Vaillant (603) 329-9691

 Primer: Carboline 859 PRIMER Organic Zinc Rich primer
 Intermediate: Carboline 825 Epoxy intermediate
 Finish: Carboline 133 LH Aliphatic Polyurethane

4. International Protective Coatings (www.international-pc.com)
 6001 Antoine, Houston, Texas, 77091 (800) 525-6824 x 1289
 Local contact: Mark Ellis (508) 587-8877

 Primer: Interzinc 315B Epoxy Zinc Rich Primer Class B Slip Coefficient
 Intermediate: Intergard 475 HS Epoxy
 Finish: Interthane 870 UHS

5. PPG Protective & Marine Coatings (www.ppgamercoatus.ppgpmc.com)
 One PPG Place, Pittsburgh, PA 15272 (412) 434-3131
 Local contact: C. G. Edwards & Co. (617) 268-4111

 Primer: Amercoat 68 HS Zinc Rich Epoxy Primer Class B Slip Coefficient
 Intermediate: Amercoat 399 Fast Drying Epoxy
 Finish: Amercoat 450H Gloss Aliphatic Polyurethane

6. Sherwin Williams Company (www.sherwin-williams.com)
 101 Prospect Ave, N.W. Cleveland, OH 44115 (216) 566-2000

 Primer: Zinc Clad III HS Organic Zinc Rich Epoxy Primer Class A Slip Co
 Intermediate: Steel Spec Epoxy Intermediate
 Finish: Hi-Solids Polyurethane

6. Sherwin Williams Company (www.sherwin-williams.com)
101 Prospect Ave, N.W. Cleveland, OH 44115 (216) 566-2000
- Primer: Zinc Clad III HS Organic Zinc Rich Epoxy Primer Class A Slip Co
Intermediate: Macropoxy 646 Fast Cure Epoxy
Finish: Acrolon 218 HS Acrylic Polyurethane
7. Wasser Corporation (www.wassercoatings.com)
4118 B PL NW-Suite B, Auburn, Washington 98001 (800)-627-2968
Local contact: Ben Forde (benforde3@msn.com) (508)-930-0330
- Primer: Wasser MC-Zinc 100 (shop applied) or MC-Miozinc 100 (field applied)
Intermediate: Wasser MC- Miomastic 100 (shop and field applied)
Finish #1: Wasser MC-Ferrox A 100
Finish #3: Wasser MC-Antigraffiti

SECTION 708 - PAINT SYSTEM C
Single-component moisture-cure Zinc urethane / Mio / U

NH 1.40 Single-component moisture-cure zinc-rich polyurethane primer

Generic type:	Zinc-rich, single-component, moisture-cure polyurethane
Vehicle type:	Moisture-cure polyurethane
Volume solids:	60% minimum
Pigment type:	83% min. zinc dust in the dry film by weight
Weight per volume:	22 pounds (2.64 kg/L) minimum
VOC:	2.8 lb./gal. (340 g/L) maximum
Recoat time:	4 to 6 hours minimum
Color:	Tinted to contrast with blasted steel

**NH 2.40 Single-component moisture-cure
aromatic polyurethane with micaceous iron oxide (MIO) intermediate**

Generic type:	MIO, single-component, moisture-cure aromatic polyurethane
Vehicle type:	Moisture-cure polyurethane
Volume solids:	60% minimum
Pigment type:	3.0 pounds/gallon micaceous iron oxide
Weight per volume:	12-14 lb./gal. (1.4-1.68 kg/L) minimum
VOC:	2.8 lb./gal. (340 g/L) maximum
Recoat time:	6 to 8 hours minimum
Color:	To contrast with primer and finish coat

**Finish #1 - NH 3.41 Single-component moisture-cure
aliphatic polyurethane with micaceous iron oxide (MIO) finish**

Generic type:	Single-component, moisture-cure aliphatic polyurethane
Vehicle type:	Moisture-cure polyurethane
Volume solids:	53% minimum
Pigment type:	3.0 pounds/gallon micaceous iron oxide
Weight per gallon:	12-14 pounds/gallon minimum
VOC:	2.8 lb./gal. (340 g/L) maximum
Recoat time:	4 hours minimum
Color:	See 2.2 (9).
Finish:	Semi-gloss

Finish #2 - NH 3.43 Single-component moisture-cure aliphatic polyurethane finish

Generic type:	Single-component, moisture-cure aliphatic polyurethane
Vehicle type:	Moisture-cure polyurethane
Volume solids:	53% minimum
Weight per volume:	11-12 pounds/gallon (1.3-1.4 kg/L) minimum
VOC:	2.8 lb./gal. (340 g/L) maximum
Recoat time:	4 hours minimum
Color:	See 2.2 (9).
Finish:	Semi-gloss

SECTION 708 - TABLE C
PAINT SYSTEM C - SC MC Zinc Urethane/ Mio / Urethane

The following list of paint system(s) are approved for the painting of structural steel cleaned to SP10. These coating(s) have been tested by NEPCOAT.

1. Wasser Corporation (www.wassercoatings.com)
4118 B PL NW-Suite B, Auburn, Washington 98001 (800)-627-2968
Local contact: Ben Forde (benforde3@msn.com) (508)-930-0330

Primer: Wasser MC-Zinc (shop applied) or MC-Miozinc (field applied)
Intermediate: Wasser MC-MC-Miomastic (shop or field applied)
Finish #1: Wasser MC-Ferrox A
Finish #3: Wasser MC-Antigraffiti

2. Xymax Coatings Incorporated
520 Cure Boivin, Boisbriand, PQ J7G2A7 Canada (450)-430-6780
Contact: Marc Schondorf

Primer: Xymax MonoZinc ME III
Intermediate: Xymax MonoFerro PUR
Finish #1: Xymax Bridge Finish (or Mono Brite for aluminum color)
Finish #3: Xymax Maxcoat Clearcoat

SECTION 708 - PAINT SYSTEM E**Single-component moisture-cure micaceous iron oxide zinc rich urethane / Tar / Tar****NH 1.43 Single-component moisture-cure micaceous iron oxide zinc-rich polyurethane primer**

Generic type:	Single-component, moisture-cure micaceous iron oxide- zinc rich polyurethane
Vehicle type:	Moisture-cure polyurethane
Volume solids:	60% minimum
Pigment type:	micaceous iron oxide / zinc dust
Weight per volume:	20 pounds (2.40 kg/L) minimum
VOC:	2.8 lb./gal. (340 g/L) maximum
Recoat time:	4 to 6 hours minimum
Color:	Tinted to contrast with blasted steel

NH 2.42 Single-component moisture-cure refined coal tar aromatic polyurethane with micaceous iron oxide (MIO)

Generic type:	Refined coal tar / micaceous iron oxide-filled, single-component, moisture-cure polyurethane
Vehicle type:	Moisture-cure polyurethane
Volume solids:	60% minimum
Barrier filler:	3 pounds/gallon micaceous iron oxide
VOC:	2.8 lbs./gallon maximum
Recoat time:	6 minimum
Color:	Red-oxide

NH 3.42 Single-component moisture-cure refined coal tar aromatic polyurethane with micaceous iron oxide (MIO)

Generic type:	Refined coal tar / micaceous iron oxide-filled, single-component, moisture-cure polyurethane
Vehicle type:	Moisture-cure polyurethane
Volume solids:	60% minimum
Barrier filler:	3 pounds/gallon micaceous iron oxide
VOC:	2.8 lbs./gallon maximum
Recoat time:	6 minimum
Color:	Black

SECTION 708 - TABLE E
PAINT SYSTEM E - SC MC Zinc Urethane/ Tar / Tar

The following list of paint systems are approved for the painting of structural steel cleaned to SP11 or better:

1. Wasser Corporation (www.wassercoatings.com)
 4118 B PL NW-Suite B, Auburn, Washington 98001 (800)-627-2968
 Local contact: Ben Forde (benforde3@msn.com) (508)-930-0330

Primer: Wasser MC-Zinc (shop applied) or MC-Miozinc (field applied)
 Intermediate: Wasser MC-Tar
 Finish: Wasser MC-Tar

2. Xymax Coatings Incorporated
 520 Cure Boivin, Boisbriand, PQ J7G2A7 Canada (450)-430-6780
 Contact: Marc Schondorf

Primer: Xymax MonoZinc ME III
 Intermediate: Xymax MonoGuard
 Finish: Xymax MonoGuard

July 2013

S U P P L E M E N T A L S P E C I F I C A T I O N**AMENDMENT TO SECTION 563 – BRIDGE RAILING**

This intent of this Supplemental Specification is to remove the final pay (F) designation from bridge rail items.

Replace 4.1 with the following:

4.1 Bridge rail, of the type specified, will be measured by the linear foot.

Replace 5.1 with the following:

5.1 Bridge rail, of the type specified, will be paid for at the Contract unit price per linear foot complete in place.

Replace Pay items and units with the following:

563.12	Bridge Rail ST	Linear Foot
563.22	Bridge Rail T2	Linear Foot
563.221	Bridge Rail T2 with Protective Screening	Linear Foot
563.223	Bridge Rail T2 with Snow Screening	Linear Foot
563.23	Bridge Rail T3	Linear Foot
563.231	Bridge Rail T3 with Protective Screening	Linear Foot
563.24	Bridge Rail T4	Linear Foot
563.241	Bridge Rail T4 with Protective Screening	Linear Foot
563.243	Bridge Rail T4 with Snow Screening	Linear Foot
563.3	Bridge Rail T101	Linear Foot
563.72	Bridge Rail F (2-Bar)	Linear Foot
563.721	Bridge Rail F (2-Bar) with Protective Screening	Linear Foot
563.723	Bridge Rail F (2-Bar) with Snow Screening	Linear Foot
563.73	Bridge Rail F (3-Bar)	Linear Foot
563.731	Bridge Rail F (3-Bar) with Protective Screening	Linear Foot
563.733	Bridge Rail F (3-Bar) with Snow Screening	Linear Foot
563.739	Bridge Rail F (3-Bar) (Anodized)	Linear Foot

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**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July, 2013

SPECIAL PROVISION

**AMENDMENT TO SECTION 604 – CATCH BASINS, DROP INLETS,
AND MANHOLES**

Item 604.9109 – Flow Control Structure

This Special Provision provides for the detention basin Flow Control Structure. Neither amends nor modifies the provision of this section except as noted below.

Description

1.1 This work shall consist of furnishing and constructing Precast Flow Control Structures to be installed in as shown on the plans or as ordered. Each Flow Control Structure is custom constructed to meet the design needs of the BMP. Common structure excavation to the depth specified in Section 206.4.1, bedding if required, and backfill shall be included in this work.

Method of Measurement

4.1 The Flow Control Structure shall be measured as a unit, inclusive of all accessories and appurtenances.

Basis of Payment

5.1 Flow Control Structures will be paid in the same manner as structures as stated in Section 604.5.1.1.

Add to pay items and units:

604.9109 – Flow Control Structure	Unit
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END OF SECTION

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**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION

SECTION 608 -- SIDEWALK

ADD Item 608.54 – Detectable Warning Devices, Cast Iron

This Special Provision provides for Item 608.54 and neither modifies nor amends any provisions of this section unless specifically noted.

Description

1.1 This work shall consist of furnishing and installing a detectable warning surface and accessories on sidewalk ramps at locations shown on the plans, as specified herein, or as ordered including any and all required surface preparation. Detectable warnings shall be installed at sidewalk ramps where indicated on the plans or as ordered. Detectable warnings shall measure 24 in (600 mm) in the direction of travel and extend the full width of the sidewalk ramp and the edge nearest the curbline shall be located 6 to 8 in (150 to 200 mm) from the face of curbline.

Materials

2.1 Detectable Warning Devices:

2.1.1 Material. Detectable warning devices shall be gray cast iron conforming to AASHTO M105 and AASHTO M306 as manufactured by East Jordan Iron Works, Inc., 301 Spring Street, East Jordan, Michigan 49727, www.ejiw.com (Phone: (800) 626-4653), or Neenah Foundry Company, 2121 Brooks Avenue, Neenah, Wisconsin 54956 www.NFCO.com (Phone: (800) 558-5075) distributed in New Hampshire by Waste, Incorporated, Route 106, Concord, New Hampshire 03301 www.wasteinc.com (Phone: (603) 224-6596), or approved equal.

2.1.2 Color. Cast iron panels shall have no surface coating, and shall be allowed to transition to their natural patina.

2.1.3 Detectable Warning Panel Truncated Dome Geometry:

2.1.3.1 Detectable warning devices shall be in full compliance with ADAAG guidelines (Title 49 DFR Transportation, Part 37.9 Standard for Accessible Transportation Facilities, Appendix A, Section 4.29.2- Detectable Warning on Walking Surfaces).

- 2.1.3.2** Size and spacing for truncated domes shall be as follows: base diameter of nominal 0.9 in (23 mm), top diameter of nominal 0.4 in (10 mm), height of nominal 0.2 in (5 mm), with a center to center spacing of nominal 2.35 in (60 mm).
- 2.1.3.3** The truncated domes shall be arranged in a grid pattern and shall align properly from panel to panel.

Construction Requirements

- 3.1** The Contractor shall submit manufacturer's descriptive literature for materials specified in accordance with 105.02.
- 3.2** Transport, storage, and handling of products shall be in accordance with manufacturer's instructions.
- 3.3** Install detectable warning devices and any anchoring hardware in accordance with manufacturer's instructions. Panels shall be set into a bed of 4 in (100 mm) wet unreinforced concrete.
- 3.4** Use a combination of available panel widths as manufactured to cover the full sidewalk ramp width to the extent practicable. Field cutting of panels is not permitted.
- 3.5** Care shall be taken to ensure the safety of pedestrians when sidewalks must remain in service during construction.

Method of Measurement

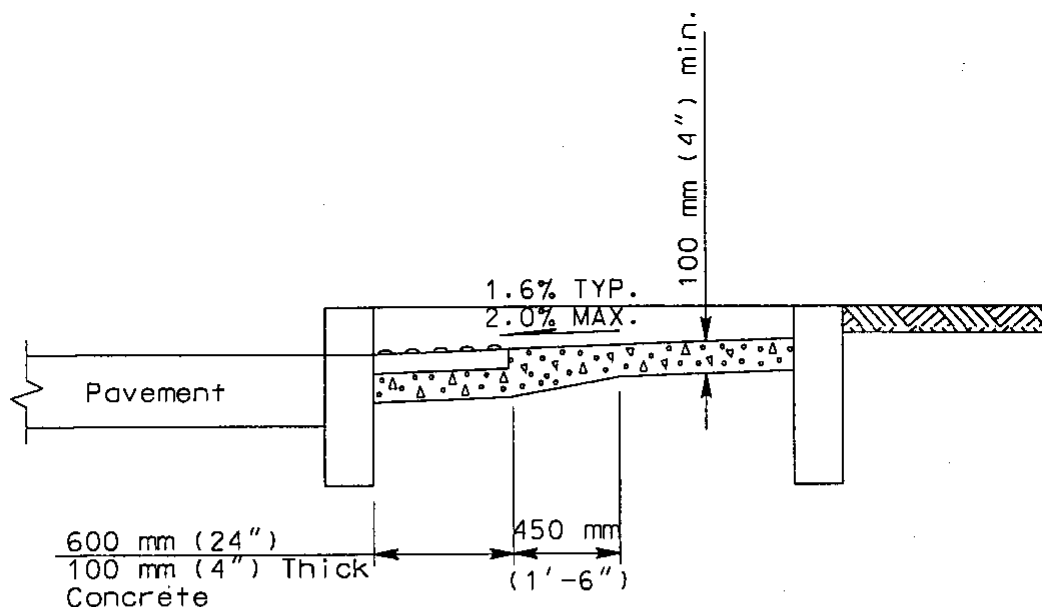
- 4.1** Detectable Warning Devices will be measured by the square yard (SY) to the nearest 0.1 of a square yard (SY).

Basis of Payment

- 5.1** Detectable Warning Devices will be paid for at the contract unit price per square yard (SY) complete in place including accessories, anchoring hardware and any required surface preparation.

Pay Item and Unit

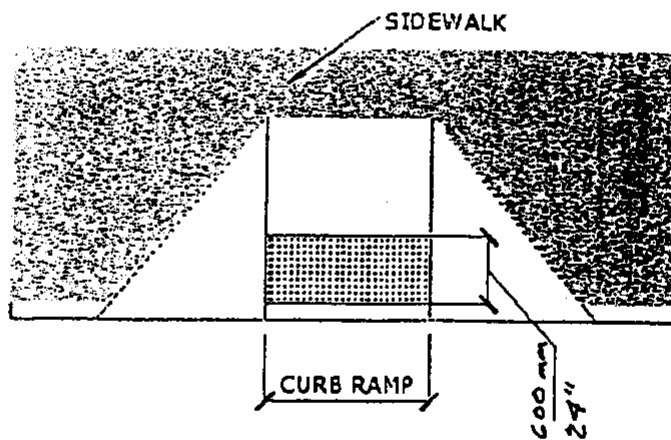
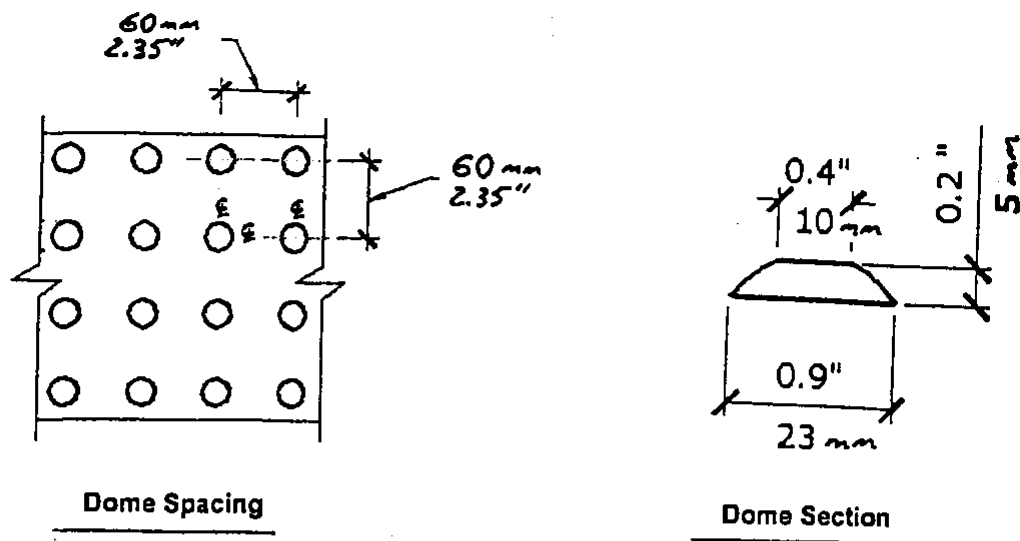
608.54	Detectable Warning Devices, Cast Iron	Square Yard (SY)
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SECTION

GENERAL NOTES

1. THE MAXIMUM RUNNING SLOPE OF ANY SIDEWALK CURB RAMP IS 12:1. THE MAXIMUM CROSS SLOPE IS 2%. THE SLOPE OF THE LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
2. TRANSITIONS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. ROADWAY SHOULDER SLOPES ADJOINING SIDEWALK CURB RAMP SHALL BE A MAXIMUM OF 5% (FULL WIDTH) FOR A DISTANCE OF 600 mm (2 FT.) FROM THE ROADWAY CURBLINE.
3. INTERCEPT DRAINAGE ALONG THE CURB IN ADVANCE OF SIDEWALK CURB RAMP OR LANDINGS. CATCH BASINS, MANHOLES, ETC. SHALL NOT BE LOCATED IN, OR AT THE BASE OF, SIDEWALK CURB RAMP OR LANDINGS.
4. THE BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING, EXCLUSIVE OF THE FLARED SIDES, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.
5. THE SURFACE OF A PERPENDICULAR SIDEWALK CURB RAMP OR THE LANDING OF A PARALLEL SIDEWALK CURB RAMP SHALL CONTRAST VISUALLY WITH THE ADJOINING SIDEWALK SURFACE, EITHER ASPHALT/LIGHT-COLORED CONCRETE OR LIGHT-COLORED CONCRETE/DARK-STAINED CONCRETE. THE CONCRETE SURFACE SHALL BE SLIP RESISTANT.
6. INSTALL DETECTABLE WARNINGS (TRUNCATED DOMES) AT THE LOCATIONS SHOWN. DETECTABLE WARNINGS SHALL MEASURE 600 mm (24") IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE SIDEWALK RAMP, AND THE EDGE NEAREST THE CURBLINE SHALL BE LOCATED 150 mm TO 200 mm (6"-8") FROM THE FACE OF CURBLINE.



Illustrates 24" deep detectable warning located near the street edge of the curb ramp.

Transition Ramp with Detectable Warning

**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION**SECTION 611 -- WATER MAIN INSTALLATION****Description**

1.1 General Description of Work. The purpose of this work is to install approximately 540 linear feet of 10-inch cement lined ductile iron water main and bridge crossing water main and 106 linear feet of 12-inch cement lined ductile iron pipe, valves, hydrants, fittings and services. The work also includes removal and disposal, or abandoning, of the existing water main as shown on the drawings, and reconnecting the water mains in the side streets along the route from the existing water main over to the new water main. The CONTRACTOR is responsible for furnishing and installing the new water mains and appurtenances in accordance with the water main plans and as specified herein or as ordered by the ENGINEER.

1.1.1 The NHDOT and City of Portsmouth or its Designated Agent, hereinafter called OWNER, together with the ENGINEER, will inspect, accept and/or reject work related to the water main herein specified.

1.1.2 The CONTRACTOR shall furnish all materials, labor, tools and equipment, and perform all operations, testing, and incidentals necessary for a complete operating water main installation, as outlined herein and on the plans and for maintaining water service to all customers at all times, except for authorized shutdowns approved by the City of Portsmouth Utility Operations Group.

1.2 Sequence/Maintenance of Service. The CONTRACTOR is responsible for maintaining continuous water service to all affected customers, except when construction requires an interruption of water service. A service interruption may last for a maximum of six hours. The CONTRACTOR must obtain written approval from the OWNER prior to interruption of water service to affected water users. The OWNER requires that a written notice be sent to all water customers at least 48 hours in advance of the scheduled shutdown. The OWNER will provide written notification, but it is the CONTRACTOR's responsibility to establish and address needs and coordinate with the ENGINEER and the OWNER.

1.3 Reference Drawings and Information. Neither the NHDOT nor the OWNER guarantees the accuracy or completeness of existing conditions shown on the NHDOT project construction plans for this water main work. Sufficient investigations shall be made by the CONTRACTOR so that the CONTRACTOR is knowledgeable of existing conditions prior to tendering a bid.

1.4 CONTRACTOR shall not operate any existing valves or hydrants. All valves and hydrants shall be operated by the OWNER.

1.5 Contractor shall notify Utility Maintenance Supervisor at least 72 hours in advance of any construction.

Materials

2.1 The CONTRACTOR shall provide the following material for the installation of the water mains, services, and appurtenances.

2.1.1 Common Backfill. Common backfill shall be granular material, consisting of hard sand and gravel so graded that, of the material passing the No. 4 (4.75 mm) sieve, not more than 35 percent shall pass the No. 200 (0.075 mm) sieve. Common backfill shall be free of organic matter, trash, roots or other deleterious material and shall contain no stone measuring greater in any dimension than two-thirds of the loose lift thickness or 8 inches (200 mm), whichever is smaller. Common backfill shall be capable of forming a firm, stable base when spread and compacted in accordance with this specification. In addition, common backfill shall be non-plastic (plasticity index zero, defined as liquid limit minus plastic limit). Common backfill may be obtained from either on-site excavations or off-site sources. Any materials excavated from the trench not conforming to this specification shall be disposed of as specified and replaced with approved material, as required, at no additional cost to the OWNER or NHDOT.

2.1.2 Sand Bedding and Blanket. Sand bedding and blanket material required for installation of the water mains, services, and appurtenances shall meet the following gradation requirements, 100% passing the 1/2" (12.5 mm) sieve and, of the material passing the #4 (4.75 mm) sieve, no more than 12% shall pass the #200 (0.075 mm) sieve.

2.1.3 Gravel Fill. Gravel fill shall consist of hard, durable gravel free from trash, organic matter, clay, surface coatings, and other deleterious materials. Gravel fill shall have a maximum stone size of two-thirds of the loose lift thickness or 6 inches, whichever is smaller. That portion passing the 4-inch (100 mm) sieve shall meet the following gradation requirements, as determined by ASTM C 136 and ASTM C 117:

<u>Sieve Size</u>	<u>Percent Passing</u>
6 inch (150 mm)	100
No. 4 (4.75 mm)	25-70
No. 200 (0.075 mm) *	0-12

* Based on fraction passing the No. 4 (4.75 mm) sieve.

2.1.3.1 When approved by the OWNER, gravel fill used for pipe bedding shall have a maximum stone size of 1-1/2 inches (37.5 mm).

2.1.4 Crushed Gravel. Crushed gravel shall consist of hard durable sand and gravel, free from trash, organic matter, clay, surface coatings, and other deleterious materials. Crushed gravel material shall meet the following gradation requirements, as determined by ASTM C 136 and ASTM C 117:

<u>Sieve Size</u>	<u>Percent Passing</u>
3 inch (75 mm)	100
2 inch (50 mm)	95-100
1 inch (25 mm)	55-85
No. 4 (4.75 mm)	27-52
No. 200 (0.075 mm)*	0-12

* Based on fraction passing the No. 4 (4.75 mm) sieve.

2.2 Water Mains and Appurtenances. All products and materials shall conform to the latest appropriate section of American Water Work Association (AWWA) and American National Standards Institute (ANSI) Standards and as otherwise specified hereinafter. The valves and appurtenances shall be products of well-established reputable firms with experience in the manufacture of particular equipment hereinafter specified. Where a particular manufacturer's model or figure number is mentioned it is to indicate construction and quality or operating ability. Except where products are a specific standard of the City, equal products of other manufacturers are acceptable. The CONTRACTOR shall provide to the City a sworn affidavit upon receipt of valves that they comply with all applicable provisions of the reference standards and the other provisions of these Standards including the coating requirements. Manufacturers operating and maintenance instructions shall be furnished to the City for equipment furnished under this Section. Special tools, if required for normal operation and maintenance, shall be furnished with the equipment.

2.2.1 Ductile Iron Water Main Pipe:

2.2.1.1 Class 52 push-on type ductile iron water pipe - Water pipe shall be ductile iron complying with ANSI A21.51 and AWWA C 151, Thickness Class 52. Pipe shall be double cement-lined 1/8" (3 mm) thick and seal coated inside and out in accordance with ANSI A21.4 and AWWA C 104. Joints shall be rubber gasket, push-on type in accordance with ANSI A21.11 and AWWA C 111. Use only lubricant that is specified by the pipe manufacturer.

2.2.1.2 Class 52 Push on Restrained Joint Ductile Iron Pipe for use on bridge crossings shall conform to ANSI A21.51/AWWA C 151 Class 52. Mechanical joint fittings shall be ductile iron conforming to ANSI A21.10/AWWA C 110. Pipe and fitting joints shall meet ANSI A21.11/AWWA C 111 standards and shall include plain rubber gaskets. Pipe and fittings shall be double cement lined and seal coated in accordance with ANSI A21.4/AWWA C 104. All pipe and fittings shall be furnished with ductile iron retainer glands. T-Bolts and Nuts shall be "Car-Blue T-Bolt" as manufactured by NSS Industries, or approved equal.

2.2.1.3 All necessary rubber gaskets and fitting lubricant as required by manufacturer shall be supplied with the pipe.

2.2.3 Ductile Iron Fittings shall be mechanical joint type with a 350 psi (2.40 Mpa) pressure rating in accordance with ANSI A21.10 and AWWA C 110. Fittings shall be double thick cement lined 1/8" (3 mm) and seal coated inside and out in accordance with ANSI A21.4 and AWWA C 104. Fitting shall be Tyler or approved equal. See paragraph 2.3 for thrust restraint.

2.2.3.1 All fittings shall be supplied with all necessary glands, rubber gaskets, bolts and nuts.

2.2.4 Mechanical Joint Restraining Devices shall be used with all mechanical joints. Glands shall be manufactured of ductile iron conforming to ASTM A 536. The ring shall be grade 65-45-12 ductile iron in accordance with ASTM A 536. Retaining glands shall be Mega-Lugs, Series 1100, manufactured by EBBA Iron, or approved equal.

2.2.5 Couplings shall be mechanical joint ductile iron solid sleeve type meeting the requirements stated above for ductile iron fittings.

2.2.6 Gate Valves shall be in accordance with AWWA C 509. Gate valves shall be resilient-wedge type with a non-rising bronze stem, 2-inch (50 mm) AWWA operating nut and fusion bonded epoxy coated both inside and out. Gate valves shall have mechanical joints as specified above and be supplied with all rubbers, glands, nuts and bolts. Valves shall open right.

2.2.6.1 Wedge shall be constructed of ductile iron, fully encapsulated in synthetic rubber except for guide and wedge nut areas.

2.2.6.2 Waterway shall be smooth and shall have no depressions in seat where foreign material can accumulate and prevent proper closing and sealing.

2.2.6.3 Stem shall be sealed by at least two O-rings and be the non-rising type

2.2.6.4 Valve body and bonnet shall be fusion bonded epoxy coated, inside and out at least 8 mil. Thick.

2.2.6.5 Valves shall have mechanical joint ends, except where flanged joints are required by the City. Valves shall be the iron body, bronze mounted, non-rising stem type with disc, which has a bonded rubber seat. Valves shall open right (clockwise) and indicate so on the hub nut. Hub nut shall be standard AWWA 2" operating nut.

2.2.6.6 Resilient wedge gate valves shall have bronze stem and stem nut fixed into the wedge.

2.2.6.7 Valves shall be tested by the manufacturer for a bubble tight two hundred (200) psi differential sealing ability and four hundred (400) psi valve-open shell test.

2.2.7 Butterfly Valves

2.2.7.1 Butterfly valves and operators for buried service shall be Dresser 450 Style or Pratt "Groundhog" and shall conform to AWWA C-504, except as hereinafter provided. Butterfly valves shall be rated one hundred fifty (150) psi working pressure and both valve and operator shall be especially designed for service buried in the ground where the ground water may at times completely submerge the valve and operator. Valves shall be designed for bi-directional flow.

2.2.7.2 The valve bodies shall be of cast iron. Valve ends shall be mechanical joint except where flanged joints are required by the City. Joints shall meet ANSI Standards.

2.2.7.3 Except as otherwise specified herein, valve shafts shall conform to the requirements of AWWA C-504. Shaft seals shall be rubber O-ring seals. Round hexagonal high strength equivalent to shafts having a minimum torsional strength equivalent to shaft specified in AWWA C-504, and completely isolated from the pipeline contents may be furnished with the approval of the City. Connections between high strength steel shafts and discs shall be designed to transmit full shaft torque.

2.2.7.4 If the rubber seat is in the body, the disc shall be of alloy cast iron conforming to ASTM A-436 Type I with the porphyry machined to a smooth spiracle surfaces or the edge. If the rubber seat is mounted on the disc edge it shall be held in place by a one-piece Type 304 stainless steel retaining ring and stainless steel Nylock screws, the disc shall be of ASTM A48, Class 40 cast iron and a mating Type 304, 360 degree stainless steel ring shall be installed in the valve body.

2.2.7.5 The unit shall be permanently lubricated with grease or oil. Valves shall open right (clockwise).

2.2.7.6 Operators shall be manual and shall conform to AWWA C-504, where applicable.

2.2.7.7 Valve and operator assemblies shall be given a coating of epoxy conforming to AWWA C-504.

2.2.8 Valve Boxes

2.2.8.1 Each gate and butterfly valve shall be accompanied by a valve box of the two (2) sections, Erie style adjustable type of heavy pattern, constructed of cast iron and provided with cast-iron cover.

2.2.8.2 The upper section of each box shall have a flange at the bottom, having sufficient bearing area to prevent settling. The bottom of the lower section shall enclose valve stuffing box and the operating nut of the valve. The bottom shall be cylindrical not tapered. Boxes shall be of lengths consistent with pipe depths. (In general all water pipe installed in the City of Portsmouth will have five (5) feet cover). Boxes shall be adjustable slide type, with an overlap of at least six (6) inches when in the most extended position. Covers shall have the letters "WATER" cast in the top.

2.2.8.3 Buried valves and valve boxes shall be set with the stem vertically aligned in the center of the gate box. Valves shall be set on a firm foundation and supported by tamping selected excavated material under and at the sides of the valve. The valve box shall be vertically centered over the operating nut and maintain vertical alignment during backfilling operation. Set top flush with finish grade.

2.2.8.4 Buried valves and valve boxes located in wet areas shall be backfilled with $\frac{3}{4}$ inch crushed stone, to prevent mud infiltration into valve box.

2.2.8.5 After completing the installation, the valve shall be flushed to ensure that the valve seat is cleaned.

2.2.8.6 The entire installations shall be conducted by workmen thoroughly experienced in the installation of mechanical restrained and flanged joint valves.

2.2.9 Hydrants and Appurtenances:

2.2.9.1 Hydrants shall be Kennedy K-81A Guardian Fire Hydrant, with a 5 ¼” valve opening, which are the City’s Standards, and shall conform to the “Standard Specification for Fire Hydrants for Ordinary Water Works Service”, AWWA C-502.

2.2.9.2 The joint at the base of the hydrant shall be a six (6) inch restrained mechanical joint inlet. The hydrant shall have a six (6) foot bury, a five and a quarter (5-1/4) inch valve opening and be obstructed only by the valve rod. The hydrant shall be able to deliver six hundred (600) gallons minimum through its two, two and a half (2-1/2) inch hose outlets when opened together with a loss of not more than two (2) psi in the hydrant. The hydrant shall have one, four and a half (4-1/2) inch pumper nozzle outlet. The operating nut shall be standard AWWA pentagon operating nut with 1 ½” point to flat dimensions.

2.2.9.3 Hydrants shall be of such design that, if the hydrant barrel is broken off, the hydrant will remain closed; there shall be a joint of the frangible type, just above the normal ground line. (Traffic Safety Flange).

2.2.9.4 Each hydrant shall be designed for installation in a trench that will provide five (5) feet cover. Additional extension section shall be added where depths of cover exceed five (5) feet.

2.2.9.5 Hydrants shall be hydrostatically tested as specified in AWWA C-502.

2.2.9.6 All nozzle threads shall be National Standard Hose Thread.

2.2.9.7 Hydrants shall be so arranged that the direction of outlets may be turned ninety (90) degrees without interference with the drip mechanism and without the mechanism obstructing the discharge from any outlet.

2.2.9.8 Hydrants must be capable of being extended without removing any operating parts.

2.2.9.9 A bronze nut and check nut shall be provided to hold the main hydrant valve on its stem.

2.2.9.10 Hydrants shall open right (clockwise) and indicate so on the hydrant. The hydrant must be marked with an arrow and word “open” to indicate the direction to turn stem to open.

2.2.9.11 All iron work to be set below ground, after being thoroughly cleaned, shall be painted with two coats of asphalt varnish specified in AWWA C-502 and iron work to be left above ground shall be shop painted with two coats of red paint to quality to correspond to the present standard of the City.

2.2.9.12 Each hydrant shall be designed such that the hydrant valve closes with line pressure preventing loss of water and consequent flooding in the event of traffic damage.

2.2.9.13 The hydrant drain shall be plugged.

2.2.9.14 Hydrants shall be set at the location approve by the City and bedded on a firm foundation. A drainage pit three (3) feet in diameter and two (2) feet deep, below and to the rear of the hydrant shall be filled with $\frac{3}{4}$ inch crushed stone and satisfactory compacted. During backfilling, additional pea stone shall be brought up around and six (6) inches over the drain port.

2.2.9.15 Hydrants shall be set in true vertical alignment and properly supported during backfilling.

2.2.9.16 Concrete thrust blocks shall be placed between the back of the hydrant inlet and undisturbed soil at the end of the trench. Minimum bearing area shall be as shown on the attached Thrust Block Bearing Area Table. Four (4) millimeter plastic shall be placed around the hydrant elbow before placing concrete. CARE SHALL BE TAKEN TO INSURE THAT CONCRETE DOES NOT PLUG THE DRAIN PORTS. If directed, the hydrant shall be tied to the pipe with suitable rods or clamps, galvanized, painted or otherwise rustproof treated. Concrete used for backing shall be three thousand (3,000) psi design strength. Hydrants shall be touched up with paint as required after installation.

2.2.9.17 All valves, couplings and appurtenances shall be installed true to alignment and rigidly supported. Any damage shall be replaced to the satisfaction of the City or Engineer before they are accepted.

2.2.9.18 No hydrant shall be backfilled until directed by the City or Engineer.

2.2.9.19 Hydrants shall be installed with anchor tee.

2.2.10 Corporation Stops shall be Mueller with Mueller threads at the inlet and a compression type fitting at the outlet. Corporation stops shall be the same size as the service, minimum $\frac{3}{4}$ inch diameter.

2.2.11 Service Saddles shall be required for corporation stops in accordance with paragraph 3.7 herein. Service saddles shall be double strap type with 360° contact on the main. The body shall be constructed of nylon-coated ductile iron and the straps shall be stainless steel. Service saddles shall be Mueller.

2.2.12 Service Pipe for house services and chlorine injection points shall be Type "K" copper tubing conforming to ASTM B 88. The name of trademark of the manufacturer and type shall be stamped at intervals along the pipe. Copper tubing shall be $\frac{3}{4}$ inch diameter, minimum.

2.2.13 Curb Stops shall have a quarter turn plug type valve and an O-ring type seal. Curb stops shall open left and have a positive stop. Curb stops shall be provided with drains. Both the inlet and the

outlet of the curb stop shall have conductive compression fittings. The tee head of the curb stop shall have provision for the connection of a service rod. Curb stops shall be the same size as the service, minimum $\frac{3}{4}$ inch diameter.

2.2.14 Curb Boxes shall be of sliding adjustable type capable of adjusting from five (5) feet to six (6) feet. The base of the box shall be arch type so as to prevent the box from resting directly on the curb stop. The adjustable upper section shall be one (1) inch diameter for $\frac{3}{4}$ inch curb stops. For larger curb stops, the upper section shall be one and a quarter (1-1/4) inches in diameter. For stationary rods affixed to the key of the curb stops shall be of appropriate lengths. The cover of the box shall have a countersunk brass pentagon plug threaded for "rope" thread. The word "WATER" shall be inscribed on the cover of the box. Both the cover and the upper section of the box shall be able to be located with a dip needle type metal detector.

2.2.15 Service Pipe Couplings shall be made of brass. Both ends of the coupling shall be compression type with a grip joint. Couplings shall be Mueller or approved equal.

2.2.16 Temporary Water Main and Fittings BLANK.

2.2.17 Temporary Service Pipe and Fittings BLANK.

2.2.18 Tapping Gate Valves

2.2.18.1 Tapping gates shall conform to specification for gate valves except one outlet shall be flanged to fit standard same size tapping sleeve flange.

2.2.18.2 Tapping gate valve shall be supplied with all necessary rubber gaskets, nuts and bolts.

2.2.18.3 No lead gaskets shall be permitted under any circumstances.

2.2.19 Tapping Sleeves, Mechanical Joint

2.2.19.1 The tapping sleeves shall be a full mechanical joint type fitting, split tee, with branch flange faced and slotted for 125 pound template such as Clow Fig. No. F-5205 or approved equal.

2.2.19.2 The tapping sleeve shall be provided with all necessary glands, rubber gaskets, nuts and bolts. (Poured lead gasket joints are not acceptable)

2.2.20 Tapping Sleeves, Stainless Steel Type

2.2.20.1 Stainless steel tapping sleeves shall have a full rubber inside gasket in contact with the pipe such as a Ford "SST" type or Romac type or approved equal.

2.3 Concrete for thrust restraint shall be Class B in accordance with Section 520.

2.4 Insulation

2.4.1 Rigid Insulation. Trench insulation shall be rigid extruded polystyrene 8 feet long, 2 feet wide and 2 inches thick (2.45 m long, 0.6 m wide, 50 mm thick,) having an R value of 10 and conforming to ASTM C 578, Type VII, and shall be STYROFOAM HI-60 as manufactured by Dow Corning Chemical Co. or approved equal.

2.4.2 Round Rigid Foam Pipe Insulation. Insulation shall be a rigid pipe insulation supplied in half shells to completely cover the exterior of the pipe, joints and expansion joint with three inches of insulation to yield a minimum R-value of 15 (R=5 per inch of thickness). The compressive strength of the insulation shall be 24-PSI minimum in accordance with ASTM D 1621. The water absorption shall be 0.7% maximum in accordance with ASTM C 272. Service temperature range shall be -50° F to 150° F.

2.4.3 Aluminum Jacket. Aluminum Insulation Jacket shall conform to ASTM B-209 standards and have a nominal thickness of 0.020". The jacket shall be factory wrapped around the insulated pipe and fittings, and sealed.

2.5 Casing Pipe. Casing pipe for highway crossing shall be steel and shall be in accordance with AP1 STD.5L, Grade B, X-42, ASTM A 139.

2.5.1 Casing Pipe:

<u>Description</u>	<u>10" (150 mm) Carrier Pipe</u>
Nominal Casing Size	20" (600 mm)
Outside Diameter	20" (600 mm)
Wall Thickness (min)	0.375" (9.52 mm)
Weight per Foot (min)	94.62 #/ft (141 kg/m)
Yield Strength (min)	35,000 psi (241 Mpa)
Type of Joint	Butt Welded
Type of Coating	None

2.5.2 Tolerance - Out-of-round tolerance shall not exceed 0.50 inches (12.5 mm).

2.5.3 Pipe Spacers shall be a two-piece 14-gauge (1.90 mm) T-304 stainless steel assembly with stainless steel bolts. Assembly shall be the restrained positioning type. The runners shall be a ultra high molecular weight polymer with a maximum coefficient of friction 0.12. The assembly shell liner shall be 0.090" (2.3 mm) ribbed PVC with 85-90 durometer. Spacer assembly shall be as manufactured by Cascade Waterworks MFG. Co. or approved equal.

2.5.4 Carrier Pipe shall be mechanical joint ductile iron per paragraph 2.2.2.

2.5.5 Bulkhead Materials shall be one of the following: (see plan for type)

2.5.5.1 Brick and Mortar. Brick for bulkheads shall be sound, uniformly burned and shall comply with ASTM C 32, Grade SA. Mortar shall consist of one part cement, one-quarter part lime, and two parts sand. Sand shall comply with ASTM C 144; lime shall comply with ASTM C 207, Type S; cement shall comply with ASTM C 150, Type II.

2.5.5.2 Rubber Seal. Rubber shall have one adhesive side for initial attachment to the pipe. Bonding agent shall seal the two ends of the rubber. Three-quarter-inch stainless steel bands shall secure the rubber seal to the casing and carrier pipes. Rubber seal shall be Model CCES as manufactured by Cascade Waterworks MFG or approved equal.

Construction Requirements

3.1 General. The CONTRACTOR shall furnish all water main pipe, fittings, services and related material and appurtenances, labor, tools and equipment, granular material, and concrete; and perform all operations and incidentals necessary for complete excavation, installation, backfill, and testing as outlined herein and on the plans; and maintain service at all times.

3.1.1 The CONTRACTOR shall be responsible for the layout of the work. NHDOT will provide control points as described in Section 105.08. The temporary and permanent water mains, service connections and appurtenances shall be built at the locations indicated on the plan to facilitate reconstructing other facilities within this area of the project.

3.1.2 The CONTRACTOR shall be responsible to field locate all existing water services, with the assistance of the OWNER, for the purpose of connecting them to the proposed mains. This may involve exploratory test pits of which payment will be made under Item 206.19.

3.1.3 Consequential damages resulting from the CONTRACTOR not locating the facilities as shown on the plan are the responsibility of the CONTRACTOR.

3.1.4 The CONTRACTOR, at the completion of each part of the work, shall furnish the as-built locations of the water main and appurtenances referenced to NHDOT'S Construction Base Line and Bench Marks. The as-built locations shall be to an accuracy of plus or minus 0.10 feet (0.03 m) in plan and elevation.

3.1.5 Any deviations from the locations shown on the plans require the OWNER's and the ENGINEER's approval. Any discrepancies with locations shown on the plans will be brought to the ENGINEER's attention and subsequently resolved between the OWNER, the ENGINEER and the CONTRACTOR.

3.2 Temporary Water System: BLANK.

3.3 Trench Excavation:

3.3.1 General. Excavation, dewatering, sheeting, and bracing shall be carried out in such a manner as to eliminate any possibility of undermining or disturbing the foundations of any existing structure, utilities or any work previously completed under this contract.

3.3.2 On paved surfaces that will not be resurfaced under this contract, the CONTRACTOR shall not use or operate tractors, bulldozers, or other power-operated equipment with treads or wheels which are so shaped as to cut or otherwise damage such surfaces during excavation or other phases of the work.

3.3.3 All lawns, paved surfaces, roadways, and structures which have been damaged or disturbed by the CONTRACTOR's operations outside of the project work areas shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of operations or as specified on the drawings.

3.3.4 The CONTRACTOR shall provide trench shoring and dewatering, if necessary, to provide a stable and dry trench at all times. The pipe trench must be dewatered to 1 foot 6 inches (0.5 m) below the invert of the new water main pipe. Trench width shall be 2 feet (0.6 m) plus the diameter of the pipe. Cover on pipe shall be a minimum of 5 feet 0 inches. Trench depth shall extend to 6 inches below the invert of the main.

3.3.5 As the excavation approaches pipes, conduits, or other underground structures, digging by conventional trenching machine methods shall be discontinued. Only manual methods of excavating shall be employed around buried utilities.

3.3.6 Prior to doing any work outside the right-of-way line on private property for connection of water services, the CONTRACTOR shall advise the property owner of the work and/or disturbance of the person's property that will be done, and the restoration thereof.

3.3.7 The CONTRACTOR shall maintain utilities, utility services and sewers encountered in the excavation, and repair or replace them to their owner's satisfaction and be responsible for consequential damages thereof.

3.3.8 The CONTRACTOR shall not be compensated for any additional work involved if a utility line, sewer or underground structure is in the trench line above or below the water main, except for common structure excavation if required.

3.3.9 Excavations shall be kept dry until the pipes and appurtenances to be built therein have been completed to such extent that they will not be damaged.

3.3.9.1 Provide, operate and maintain any dewatering system required to lower and control groundwater levels and groundwater hydrostatic pressure during the construction of the Work as required by this Section and the Contract Documents. The CONTRACTOR shall assume full responsibility and expense for the adequacy of the dewatering system with no additional time for performance.

3.3.9.2 The dewatering system shall be capable of developing an excavated subgrade relieved of any hydrostatic pressure that could cause a decrease in the stability of the excavated subgrade and which will provide the necessary groundwater control for the proper performance required for completion of the Work.

3.3.9.3 Dispose of subsurface water collected in a manner that conforms to all applicable local and state ordinances, statutes and laws.

3.3.9.4 Maintain continual and complete effectiveness of the dewatering system operation to provide a firm, stable, excavated subgrade at all times as required for proper performance of the Work.

3.3.9.5 Provide dewatering necessary to maintain the groundwater table 1 foot 6 inches (0.5 m) below the base of the proposed structure and/or pipe at all times.

3.3.9.6 Erosion Control. Provide adequate protection from erosion from any of the dewatering operations utilized during the course of the construction. Any damage, disruption or interference to newly constructed work or existing properties, buildings, structures, utilities and/or other work resulting directly or indirectly from dewatering operations conducted under this Contract shall be remedied by the CONTRACTOR, at no cost to the OWNER or NHDOT.

3.3.9.7 Treatment of Dewatering Operations Discharges. Provide such additional treatment devices as may be required to meet the provisions of the Contract. This may include the construction of sumps and/or settling basins, stone rip-rap, silt fences or other requirements. The treatment devices shall be later removed and/or filled in with acceptable backfill material, and restored to original conditions once they are no longer needed, at no additional cost to the OWNER or NHDOT.

3.3.10 Over-Excavation. If, in the opinion of the ENGINEER together with the OWNER, the material at or below the depth of the trench is unsuitable for foundation, it shall be removed to such depths as directed by the OWNER and ENGINEER and shall be replaced with Granular Backfill (sand), conforming to 209.2.1.1 and placed as provided in 209.3.

3.3.11 If the bottom of the excavation is deeper than the depth shown on the drawings, by error of the CONTRACTOR, the condition shall be corrected by refilling to the proper grade with compacted Granular Backfill (sand), conforming to 209.2.1.1. All costs shall be borne by the CONTRACTOR.

3.3.12 Rock and Boulder Excavation. Rock and boulder excavation shall be in accordance with “Section 206, Structure Excavation for Pipes and Other Minor Structures.”

3.3.13 Excess and Unsuitable Excavation. Excess excavation that will not be used for backfill and unsuitable excavation shall be removed from the site and disposed of by the CONTRACTOR in accordance with local, state or federal regulations.

3.4 Trench Backfill:

3.4.1 General. After the pipe has been placed and has been inspected by the OWNER together with the ENGINEER, backfilling shall be performed without delay.

3.4.2 Bedding. Bedding shall meet the requirements of 2.1.2 and shall extend the full width of the trench from a minimum of 6 inches, or the diameter of the pipe, whichever is greater, below the pipe, to the springline of the pipe. Compact the bedding material to 95% modified proctor (in accordance with ASTM D 157 and ASTM D 2922) prior to the placement of the blanket material.

3.4.3 Blanket. Blanket material shall meet the requirements of 2.1.2 and shall be placed from the springline of the pipe to a minimum of 12 inches (300 mm) above the pipe crown. The trench shall be backfilled by placing and compacting the sand in lifts of 6 inches (150 mm) or less. The blanket shall be carried up evenly on both sides of the pipe, so as not to disturb the pipe. Compact the blanket material to 95% modified proctor (in accordance with ASTM D 157 and ASTM D 2922) with approved hand-

operated devices.

3.4.4 Backfill. Backfill material from 12 inches (300 mm) above the pipe to the underside of the pavement select material profile, or to the underside of loam and grassed areas, shall be backfilled with common backfill described herein and as approved by the ENGINEER.

3.4.4.1 Backfill shall be placed and compacted in layers of 6 inches (150 mm) or less. Compact the backfill material to 95% modified proctor (in accordance with ASTM D 157 and ASTM D 2922). Compaction shall be by hand-operated compactors or other approved method.

3.4.4.2 Jetting and bucket compaction are not acceptable means of compaction.

3.4.4.3 Trench areas improperly backfilled or having excessive settlement, as determined by the ENGINEER, shall be reopened to the required grade, backfilled using proper techniques, and repaved as necessary. The CONTRACTOR shall receive no additional compensation for repair of trenches constructed under this Contract.

3.4.4.4 A conductive indicator/tracer tape stating "CAUTION WATER LINE BURIED BELOW" shall be placed at a depth of 2' directly over the main. A sample of this tape shall be submitted to the Water Division Engineering Technician's office for approval prior to its use.

3.4.5 Temporary Trench Pavement Patch. All pavement patching of water main-related trenches shall be in accordance with Section 401.3. The water main trench pavement edges shall be wheel cut prior to patching.

3.5 Pipe Installation:

3.5.1 There shall be no physical connection between a public or private potable water supply system and a sewer, or sewer appurtenance which would permit the passage of any sewage or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole. Locate the new water main with a minimum 10-foot (3 m) horizontal separation between it and the existing or proposed sewer main.

3.5.2 A deviation from the separation requirements of 3.5.1 above shall be allowed where necessary to avoid conflict with subsurface structures, utility chambers and building foundations, provided that the sewer is constructed as follows:

3.5.2.1 Sewer pipe shall be Class 52 ductile iron.

3.5.2.2 Joints shall be pressure tested with zero leakage at 25 psi (172 kPa) for gravity sewers, and at 1-1/2 times working pressure for force mains.

3.5.3 Whenever sewer mains must cross water mains, the sewer shall be constructed as follows:

3.5.3.1 Sewer pipe joints shall be located at least nine feet (2.7 m) horizontally from the water main.

3.5.3.2 Sewer pipe joints shall be pressure tested with zero leakage at 25 psi (172 kPa) for gravity sewers, and at 1-1/2 working pressure for force mains.

3.5.3.3 Vertical separation of the sewer and water main shall be not less than 18 inches (450 mm).

3.5.4 Piping in place shall be subject to inspection and approval of the ENGINEER together with the OWNER.

3.5.5 Pipe and accessories shall be kept in a sound, undamaged condition. They shall, at all times, be handled with care and shall not be dropped, dumped or bumped against any other object. Damaged material shall be replaced at no cost to NHDOT or OWNER, at any time during the construction that the damage is identified or occurs.

3.5.6 Pipe shall be stored off the ground.

3.5.7 Buried Pipe Installation. Installation of all buried piping shall be in accordance with AWWA Standard for installation of ductile iron water mains and their appurtenances, AWWA C 600.

3.5.8 Pipe and fittings shall be thoroughly cleaned before they are placed. All lumps, blisters, and excess coal tar coating shall be removed from the spigot and from the interior of the bell, and these surfaces shall be wire-brushed, wiped clean and dry, and be free from oil and grease before the pipe is laid.

3.5.9 The interior of pipe, fittings and valves shall be kept clean and free of foreign material or soils at all times during storage and installation, or the material may be rejected by the OWNER and ENGINEER.

3.5.10 All pipes and appurtenances laid in open trench excavation shall be bedded and uniformly supported over their full-length on bedding of the types specified herein and shown on the drawings. All work shall be performed in a dry trench.

3.5.11 At all times when pipe laying is not actually in progress, the open ends of pipe in the trench shall be closed by temporary water-tight plugs or by other approved means. If water is in the trench when work is resumed, the plug shall not be removed until all danger of water entering the pipe has passed.

3.5.12 Pipe and fittings shall be laid accurately to the line and grades. Care shall be taken to provide a firm bearing for the pipe along its entire length. Pipes shall not be laid in water, nor shall water be allowed to flow through them.

3.5.13 Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane, the amount of deflection allowed shall not exceed that required for making a satisfactory joint and shall be subject to the approval of the OWNER and ENGINEER.

3.5.14 For mechanical joints, the spigot shall be centrally located in the bell, and adequate anchorage shall be provided at abrupt changes in direction and at dead-ends. All surfaces in contact with the rubber gaskets shall be brushed thoroughly with a wire brush immediately prior to assembly.

The clean surfaces shall then be brushed with manufacturer's recommended lubricant prior to slipping the gasket over the spigot and into the bell. Lubricant shall also be brushed over the gasket prior to installation for the purpose of removing loose dirt and lubricating the gasket, as it is forced into its retaining space. The CONTRACTOR shall use wrenches as recommended by the manufacturer. When tightening bolts, it is essential that the gland be drawn toward the pipe flange evenly, maintaining approximately the same distance between the gland and the face of the flange at all points around the socket.

3.5.15 For push-on joints, all foreign matter in the gasket seat in the socket shall be removed and the gasket wiped clean and flexed before placing in its seat. A thin film of lubricant shall be applied to the inside surface of the gasket. The plain end of the next pipe, after wiping clean, shall be aligned and carefully entered into the socket until it just makes contact with the gasket. Joint assembly shall be completed by forcing the end of the pipe past the gasket until it makes contact with the bottom of the socket. Final joint assembly of pipe 8 inches (200 mm) and smaller shall be accomplished by pushing against the face of bell of the entering pipe with a crow-bar or other tool. For larger pipe, the assembly shall be made with a jack and suitable slings. Protect the end of the pipe from damage at all times by using a timber header between the end of the pipe and bar or jack.

3.5.16 When pipe is cut in the field, the cut end shall be tapered back approximately 1/8" (3 mm) at an angle of 30 degrees with the centerline of the pipe with a coarse file or grinder to remove any rough edges which might injure the gasket.

3.5.17 The CONTRACTOR shall furnish and install all supports necessary to hold the piping and appurtenances in a firm, substantial manner at the lines and grades indicated on the drawings or as directed by the OWNER and ENGINEER.

3.5.18 Bends, tees, and other fittings in pipe lines buried in the ground shall be backed up with thrust restraint Class B concrete, 1/2 cubic yard (1/2 cubic meter) minimum, against undisturbed earth (bearing area as shown on the drawings). If the soil does not provide firm support, then retaining glands shall be installed to brace the fittings properly. All accessories shall be seal-coated thoroughly and heavily with an approved material per AWWA C 104 and shall be subsidiary to the ductile iron fitting unit price.

3.5.19 As shown on the drawings and as directed by the ENGINEER, insulation shall be installed over water mains having less than 5 foot 6 inches (1.7 m) cover. Limits of insulation shall be as shown on the drawings or as directed by the ENGINEER.

3.6 Casing Installation:

3.6.1 Casing pipe shall be installed by open cut with bedding and cover material as shown on the drawings.

3.6.2 Casing pipe ends shall be beveled with a single V-groove for field welding. Pipe joints shall be butt welded and shall be a full penetration on the outside circumference of the pipe. The single V-groove butt weld shall conform to the latest AWS Welding Code. All joints of the casing pipe shall be butt welded by a welder certified by the State of New Hampshire for the specific application.

3.7 Carrier Pipe Installation:

3.7.1 After casing pipe has been installed and cleaned of dirt and debris, pipe spacers shall be attached to carrier pipe as shown on the Drawings. As carrier pipe is jointed, it shall be pushed into position inside the casing pipe.

3.7.2 After the carrier pipe has been tested for leakage, bulkheads shall be constructed at each end of the casing pipe. On brick bulkheads, a “one brick” opening shall be left in the bulkhead at the top of the casing pipe at each end and covered with polyethylene to prevent entry of backfilling materials. The portion of the carrier pipe passing through the brick bulkhead shall be wrapped with three layers of fifteen pound (6.8 kg) asphalt-impregnated felt before the bulkhead is constructed.

3.8 Valve Installation. Valves and boxes shall be set with the stem vertical and box vertically centered over operating nut in accordance with the manufacturers guidelines. Valves shall be set on a firm foundation and supported by tamping selected excavated material under and at the sides of the valve. The gate box shall be supported during backfilling and maintained in vertical alignment with the top flush with finish grade.

3.9 Hydrants. Hydrants shall be set at the locations shown and bedded on a firm foundation. Each hydrant shall be set in true vertical alignment and properly braced.

3.9.1 Hydrants shall be mechanically restrained by Mega-Lugs, Series 1100, or approved equal joint restraint systems.

3.9.2 Height adjustments shall be made to the hydrants so that the bottom flange of the hydrant is 3 inches (75 mm) above finish grade. Height adjustments shall be made with extension as manufactured by the hydrant supplied. All hydrant extension shall be considered subsidiary to the hydrant bid item.

3.9.3 Wherever a hydrant is set in soil that is pervious, a drainage pit 2 feet (600 mm) in diameter and 1 foot (300 mm) deep shall be excavated below each hydrant and filled with coarse gravel or crushed stone mixed with coarse sand, under and around the elbow of the hydrant and to a level of 6 in (150 mm) above the waste opening. Compaction shall be in accordance with 304.3.7.

3.9.4 Wherever a hydrant is set in clay or other impervious soil, a drainage pit 2 feet (600 mm) in diameter and 3 feet (900 mm) deep shall be excavated below each hydrant and filled with coarse gravel or crushed stone mixed with coarse sand, under and around the elbow of the hydrant and to a level of 6 in. (150 mm) above the waste opening. Drainage pits shall not be connected to a sewer. Compaction shall be in accordance with 304.3.7.

3.9.5 Hydrants shall be set on a concrete base or other materials approved by the Engineer and shall be well braced and anchored by depositing concrete behind the hydrants on undisturbed earth at the end of the trench, or by wedging granite block in place of concrete.

3.9.6 Height adjustments for hydrants shall be made with appropriate extensions as approved by the OWNER.

3.9.7 When hydrants are to be removed the existing isolation valve and box shall be removed and hydrant piping shall be cut and capped a maximum of 12 in (300 mm) from the water main tee with a 1/3 cy (0.25 m³) concrete thrust block poured against the cap.

3.9.7.1 New hydrants are to be bagged until the time they are in service. The Contractor is responsible for coordinating with the Fire Department when existing hydrants are to be taken out of service.

3.9.7.2 No existing hydrants may be excavated or removed from service until the new water main and hydrants are installed, tested, disinfected, in service, approved by the ENGINEER, and accepted by the OWNER.

3.9.7.3 At no time shall both the existing fire hydrants and the new fire hydrants be out of service.

3.9.8 The water main may be shut off for a maximum of 4 hours beginning after 9:00 a.m. for the removal of hydrants or installation of the tap or tee. The Contractor is responsible for coordinating shut-downs with the OWNER.

3.9.9 No new hydrant installation shall be backfilled until directed by the ENGINEER.

3.10 Service Installation. Install corporation stops on the new water main. The tapping machine shall be rigidly fastened to the pipe halfway between the horizontal and vertical position. The length of travel of the tap should be established so that when the stop is inserted and tightened with a 14-inch (350 mm) wrench, not more than one to three threads shall be exposed on the outside. When a wet tapping machine is used, the corporation stop shall be inserted with the machine while it is in place. Stops shall be tightened only sufficiently to give water-tightness, and care must be constantly exercised not to over-tighten them.

3.10.1 Service saddles shall be required as indicated by the following chart:

<u>Pipe Size</u>	<u>Saddle Requirements for Class 52 D.I. Pipe</u>
6-inch (150 mm)	Taps > 3/4 inch (19 mm)
8-inch (200 mm)	Taps > 3/4 inch (19 mm)
10-inch (250 mm)	Taps > 1 inch (25 mm)
12-inch (300 mm)	Taps > 1 inch (25 mm)

3.10.2 Bury copper service lines to a depth of at least five and a half (5-1/2) feet. Care shall be exercised in the placing and laying of copper tubing to be sure that the pipe does not have kinks or is not placed on stones or ledge which would cause damage to the pipe. Place at least six (6) inches of select fill, maximum stone sizes of two (2) inches adjacent to and above the tubing. No stone shall be dropped on the tubing.

3.10.3 Install curb stops and curb boxes at the approximate property line, or as indicated on the drawings, and connect with new copper tubing coming from the new main. Place concrete block or flat

stone beneath curb stop. Install curb box vertically centered over the operating key, with the elevation of the top adjusted to conform to the finished grade. Prior to backfilling, the CONTRACTOR shall ensure corporation stops are in the open position and curb stops are fully shut. Adequately support the box during backfilling to maintain vertical alignment. Care must be taken to ensure that the curb box does not rest on the curb stop.

3.10.4 Make connections of new copper services to existing services as directed by the ENGINEER. Connection shall be made using suitable couplings.

3.11 Inspection. Each section of installed water main will be visually inspected by the OWNER and ENGINEER. The pipe shall be true to both line and grade, shall contain no broken pipe, shall show no leaks, and shall contain no debris or other deposits of which shall in any way reduce the full cross-sectional area of the pipe.

3.11.1 Any section of water pipe which does not comply with these inspection criteria, as determined by the OWNER and ENGINEER, shall be promptly corrected, replaced or repaired by the CONTRACTOR at no cost to the OWNER or NHDOT. Such methods as are employed for the correction shall be approved by the OWNER.

3.12 Pressure and Leakage Testing. The CONTRACTOR shall furnish all necessary equipment and labor for, and perform, pressure testing and leakage tests on the pipeline in accordance with AWWA C 600 Specifications.

3.12.1 The CONTRACTOR shall make any taps and furnish all necessary caps, plugs, etc., as required in conjunction with testing, and also furnish a test pump, gauges, and any other equipment required in conjunction with carrying out the hydrostatic tests. The CONTRACTOR shall at all times protect the new water mains and the existing water mains against the entrance of polluting material.

3.12.2 Testing Requirements:

1. Test duration: Two (2) hours, minimum.
2. Test pressure: 1.5 times the operating pressure as determined by the ENGINEER, or 150 psi, whichever is higher.
3. There shall not be less than one and a quarter times the working pressure at the highest point along the test section.
4. The pressure shall not exceed pipe or thrust restraint design pressures. The pressure shall not exceed twice the rated pressure of the valves or hydrants when the pressure boundary of the test section, including closed gate valves or hydrants.
5. Allowable pressure loss: Pressure shall not vary more than 5 psi (34 kPa) for the duration of the pressure test.
6. Allowable leakage: Allowable leakage shall be determined by the following formula:

ENGLISH	

$L = \frac{ND(\sqrt{P})}{7400}$	
L = allowable leakage, in gallons per hour. N = number of joints in the length of pipe tested D = nominal pipe diameter, in inches. P = average test pressure, in psi (gauge).	

7. Allowable leakage at various pressures is shown below:

Allowable Leakage per 1,000 feet of pipeline gph (For pipes with 18-ft nominal lengths)							
Average Test Pressure (psi)	Nominal Pipe Diameter (in)						
	2	3	4	6	8	10	12
150	0.19	0.28	0.37	0.53	0.74	0.92	1.10
125	0.17	0.25	0.34	0.50	0.67	0.84	1.01
100	0.15	0.23	0.30	0.45	0.60	0.75	0.90

8. Acceptance of installation shall be determined on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than that specified, the CONTRACTOR shall, at his own expense, locate and make repairs as necessary until the leakage is within the specified allowance.
9. All visible leaks are to be repaired regardless of the amount of leakage.
10. The leakage test shall be constructed concurrently with the pressure test.
11. A written Certificate of test must be submitted to the Portsmouth Water Division prior to the main being considered for acceptance.
12. All companies wishing to do testing must have a Portsmouth Water Division representative present before testing can begin.

3.13 Disinfection. Before being placed in service, all new water pipelines shall be chlorinated by the CONTRACTOR in accordance with the requirements of AWWA C-651. The procedure shall be

discussed with the OWNER and ENGINEER prior to proceeding with the work.

3.13.1 The location of the chlorination and sampling points will be determined by the OWNER and ENGINEER in the field. Taps for chlorination and sampling shall be uncovered and backfilled by the CONTRACTOR, as required. The general procedure for chlorination shall be first to flush all dirty or discolored water from the lines, and then introduce chlorine in approved dosages through a tap at one end, while water is being withdrawn at the other end of the line. The chlorine solution shall remain in the pipeline for a minimum of 24 hours.

3.13.2 Following the chlorination period, all treated water shall be flushed from the lines at their extremities, and replaced with water from the distribution system. Bacteriological sampling and analysis of the replacement water shall then be made after the replacement water has occupied the chlorinated pipeline for a minimum of 16 hours.

3.13.2.1 Mains shall be thoroughly flushed prior to sampling.

3.13.2.2 The Portsmouth Water Division laboratory personnel will do the sampling and testing.

3.13.2.3 Samples can only be collected Mondays – Thursdays

3.13.2.4 Results of samples are usually ready to read 24 hours after it has been collected.

3.13.2.5 The CONTRACTOR will be required to rechlorinate at no cost to the OWNER if the test fails to achieve satisfactory results. The new water main shall not be placed in service until the requirements of the NHDES and the Portsmouth Water Division are met.

3.13.3 Special disinfection procedures, such as soaking or swabbing approved by the ENGINEER, shall be used in connections to existing mains and where the method outlined above is not practical.

3.14 Spare Parts. The CONTRACTOR will be required to have on-site, at all times, the following spare parts:

11 1/4° bends	2 for each size pipe
22 1/2° bends	2 for each size pipe
45° bends	2 for each size pipe
Solid sleeve couplings	2 for each size pipe
SDR 35 PVC pipe	2 lengths of 6" (150 mm) and 8" (200 mm)
Dresser couplings	2 for each size pipe
Retainer glands	2 for each size pipe

Method of Measurement

4.1 Pipe of the kind, type and size specified (water main and service tubing) will be measured by the

linear foot (linear meter) to the nearest 0.1 foot (meter) of furnished and installed and operational water main. Measurements will be taken along the centerline of the pipe, end to end, with no deductions for any valves and fittings.

4.2 BLANK

4.3 Water main casing pipe, including carrier pipe of the kind, type and size specified, will be measured by the linear foot (linear meter) to the nearest 0.1 foot (meter).

4.4 Valves, fittings, chlorine injection taps, corporation stops, and curb stops will be measured by the each for the number of units furnished and installed.

4.5 Hydrants including valve, pipe fittings and any other incidental work, including excavation and backfill, will be measured by the number of units furnished and installed.

4.6 Round rigid pipe insulation and jacket will be measured by the linear foot to the nearest 0.1 linear foot. Measurement will be from end to end along the top (or bottom) of the insulation.

4.7 The ENGINEER must be involved in and approve of the measurement of any pay item.

Basis of Payment

5.1 The accepted quantity of ductile iron pipe and copper tubing will be paid for at the contract unit price per linear foot (linear meter) of the kind, type, and size specified complete in place, with the following stipulations:

5.1.1 Common structure excavation required for the removal of unsuitable material below the typical trench section will be paid for as provided in 206.

5.1.2 All rock structure excavation, any common structure excavation exploratory and any common structure excavation below the depth specified in 206.4.1.1 shall be paid as provided in 206.

5.1.3 Granular backfill (sand), to replace material excavated under 5.1.1 only, will be paid as provided in 209.

5.2 The accepted quantity of water main casing pipe, including carrier pipe, will be paid at the contract price per linear foot (linear meter) complete in place as shown on the plan and specified herein, and shall include furnishing and installing casing pipe, assembly of casing pipe, excavation, bedding, blanket, backfill, furnishing and installing carrier pipe, pipe spacers, bulkheads and appurtenances, and all other work required for or incidental to the completion of this item, except as noted below.

5.3 BLANK.

5.4 The accepted quantity of valves, fittings, chlorine injection taps, corporation stops, and curb stops will be paid for at the contract unit price of each of the kind, type, and size specified complete in place.

5.5 The accepted quantity of hydrants will be paid for at the contract unit price for each complete in place.

5.6 Excavation, bedding, sheeting and shoring, dewatering, concrete thrust blocks, thrust restraining systems, restoration of existing service connections, MJ glands, valve boxes, pressure testing, disinfection, flushing, maintaining water service, abandonment of existing water pipe, removing and stacking existing hydrants, couplings, connections to existing water mains, backfill, temporary trench pavement repair, restoration of property, utilities, loam and seed, as-built drawings, and any other work necessary or required for a complete operational water main relocation shall be subsidiary to the pipe, valves, fittings, chlorine injection taps, corporation stops, service pipe, curb stops and hydrants.

5.7 The accepted quantity of round rigid pipe insulation and jacket, including all appurtenances needed to install the insulation around the pipe, will be paid for at the Contract unit price per square yard (square meter), complete in place.

Pay items and units (ENGLISH):

611.05206	6" CEMENT LINED DUCTILE IRON WATER PIPE, CL. 52	LF
611.05210	10" CEMENT LINED DUCTILE IRON WATER PIPE, CL 52	LF
611.05212	12" CEMENT LINED DUCTILE IRON WATER PIPE, CL 52	LF
611.06210	10" CEMENT LINED DUCTILE IRON BRIDGE CROSSING PIPE, CL 52	LF
611.35220	20" CASING PIPE WITH 12" DIA. CL 52 D.I. M.J. CARRIER PIPE	LF
611.70006	6" FITTING	EA
611.70010	10" FITTING	EA
611.70012	12" FITTING	EA
611.71006	6" GATE VALVE	EA
611.71012	12" GATE VALVE	EA
611.74	CHLORINE INJECTION TAP	EA
611.81	HYDRANTS	EA
611.90001	ADJUSTING WATER GATES AND SHUTOFFS SET BY OTHERS	EA
611.952	ROUND RIGID PIPE INSULATION	LF

**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION**SECTION 613 – UNDERGROUND SAND FILTER****Description**

1.1 The work to be done under this Section consists of furnishing all materials, labor, tools, and equipment, and performing all operations necessary to construct the underground sand filter system as described herein and shown on the Drawings and as herein specified.

1.2 The Contractor shall include in his bid all fees paid by him for the necessary permits, authorizations and certificates required for the installation and testing of the work shown on the Drawings and as specified herein.

Materials**2.1 Precast Underground Sand Filter**

2.1.1 The underground sand filter shall be a standard product in regular production by a single manufacturer who shall have a minimum of five years successful experience in the design and assembly of products similar to that specified herein. The manufacturer shall have also satisfactorily furnished a minimum of five units of the type described herein within the last five years. The manufacturer shall be reputable and thoroughly qualified in the manufacture, assembly and installation of the products and equipment specified herein.

2.1.2 The Engineer reserves the right to reject any structure that fails to meet any requirements specified herein. Rejection may occur at place of manufacture, at work site, or following installation and will not cause the Owner to incur any additional costs.

2.1.3 Minor repairs to pre-cast concrete sections, if required, are not accepted unless authorized by the Engineer.

2.1.4 Pre-cast concrete structures shall be manufactured with concrete that meets the following requirements:

2.1.4.1 Minimum compressive strength shall be 5,000-psi at 28 days.

- a. Pre-cast concrete sections shall not be shipped until after concrete has attained a minimum 5,000-psi compressive strength.

2.1.4.2 Maximum water-to-cement ration shall be 0.40 by weight.

2.1.4.3 Minimum cement content shall be 600 lbs of cement per cubic yard of concrete.

2.1.4.4 Shall conform to American Concrete Institute ACI 318 and ACI 350.

2.1.4.5 When “fy” exceeds 40,000 psi, “z” (ACI 318) shall not exceed 95 kips/in, “fs” shall be completed and shall not exceed 50 percent of “fy.”

2.1.4.6 Products shall be designed to support their own weight, weight of soil at 130-pcf, and a life load equal to AASHTO HS-20 applied to the top slab.

2.1.4.7 Cement shall be domestic Portland cement conforming to ASTM C150, Type II.

2.1.5 Lifting lugs or holes in each pre-cast section shall be provided for proper handling. Lifting lugs shall be provided for the top and bottom slab.

2.1.6 Pre-cast concrete structures shall conform to ASTM C478.

2.1.7 Pre-cast underground sand filter system shall be marked on the inside of each pre-cast section with the date of manufacture, name and trademark of manufacturer.

2.1.8 Base slab and walls shall be integrally cast to form a monolithic base section.

2.1.9 Structure walls shall be designed for a lateral pressure based on an equivalent fluid unit weight of 90-pcf. Pressure diagram shall originate at finished ground surface. Lateral pressure from vehicles shall be included in accordance with AASHTO.

2.1.10 Discontinuities in structures produced by openings and joints shall be considered in the design. Additional reinforcing around openings shall be provided. Frame openings shall carry full design loads to support walls.

2.1.11 Underground Sand Filter system shall be designed against floatation with ground water level at finished ground surface. Floatation prevention shall be achieved by dead weight of the structure and soil load above it. Skin friction, soil friction, or weight of equipment in the structure, if any, cannot be considered in the design against floatation.

2.1.12 Access openings, wall sleeves, and knockouts shall be provided at locations where indicated by the Engineer or as shown on the Drawings and as follows:

2.1.12.1 Integrally cast knockout panels shall be sized for intended pipe sizes. Knockout panels shall have no steel reinforcing.

2.1.12.2 Pre-cast underground sand filter system sections shall have formed tapered circular opening larger than the intended pipe size (outside diameter).

2.1.12.3 Horizontal wall joints shall be located 18-inches minimum from horizontal centerline of wall openings.

2.2 Steps

2.2.1 Steps shall be polypropylene conforming to ASTM D4101 and reinforced with one-half inch Grade 60 steel conforming to ASTM A615 that shall be continuous throughout step.

2.2.2 Steps shall be embedded a minimum of 3 inches into the concrete. Steps shall be shaped so that they cannot be pulled out of the concrete wall into which they are secured. Steps shall meet the requirements of ASTM C478 for load carrying capacity and pullout resistance. Steps shall not be secured in mortar.

2.2.3 Steps shall have a drop section or raised abutments to prevent sideways slippage off the step, and shall have non-skid safety serrations on the foot contact surfaces.

2.2.4 Step shall meet all OSHA requirements.

2.3 Flexible Pipe-to-Structure Connectors

2.3.1 A flexible pipe to structure connector shall be used whenever a pipe penetrates into a precast concrete structure. The connector shall provide a flexible, watertight seal between the pipe and the concrete surface. A stainless steel expansion mechanism shall increase the bands overall circumference and compress the connector against the sides of the hole opening. A stainless steel take-down band shall compress the connector against the outside circumference of the pipe. Connectors shall conform to ASTM C923 and shall be manufactured by A-LOK, KOR-N-SEAL, Press-Seal or equal.

2.4 Damp Proofing

2.4.1 The exterior surface of all sewer structure shall be damp-proofed with bituminous material coating conforming to ASTM Standard D449.

2.4.2 Damp proofing shall be Hydrocide 648 by Sonneborn Building Products; Dehydraine 4 by W.R. Grace and Company; Meadows Trowel Mastic (Type 3), or approved equal.

2.5 Frames, Grates and Covers

2.5.1 All castings shall be of tough, gray cast-iron conforming to ASTM Standard A48, Class 30, true to pattern and free from flaws.

2.5.2 Manhole covers shall have a diamond pattern, pick holes and the words "DRAIN" in raised relief.

2.5.3 Manhole covers for drainage structures shall be as shown on the Contract Drawings.

2.5.4 New manhole frame and covers on new manhole structures shall have a 30-inch diameter access opening and a 32-inch diameter cover.

2.5.5 Pick holes shall include two blind non-penetrating pick holes on the side, and one pocket lift handle with integral stainless steel center rod in the location shown on the standard detail. The strength of the center rod must be such that the manhole cover may be lifted by this rod using a pick or cover lifter without breakage.

2.5.6 The manhole frame shall also include a continuous, self-sealing gasket cemented in a machine groove on the underside of the cover or as otherwise approved by the Engineer.

2.5.7 Bearing surfaces of frames, grates and covers shall be machined to give continuous contact over their entire perimeters.

2.6 Brick and Mortar

2.6.1 Any miscellaneous brickwork ordered by the Engineer shall conform to ASTM Standard C32. Brick for inverts and shelves shall be Grade SS and tested so that the mean of five tests for absorption shall not exceed 8 percent and no individual brick exceed 11 percent; all other manhole brick may be Grade MS, or better.

2.6.2 Brick shall be sound, hard, uniformly burned, regular and uniform in shape and size. Under burned or salmon brick are not acceptable. Only whole brick shall be used for masonry.

2.6.3 Tests of brick for conformance with Specifications shall be made at the Contractor's expense, and certified reports thereof shall be sent to the Engineer. Samples for testing will be selected by the Engineer and shall be furnished by the Contractor.

2.6.4 Brick masonry shall be laid in Portland cement mortar composed of 1 part Portland cement and 2 parts sand, measured by volume, to which not more than 10 pounds of lime shall be added for each bag of cement.

2.6.5 Portland cement for the mortar shall conform to ASTM Standard C150, Type II. Hydrated lime shall conform to ASTM C207.

2.6.6 Sand for the mortar shall be clean and sharp and contain no grains larger than will pass a 1/8-inch mesh screen. Sand shall be of such size that no more than 10 percent of the total dry weight will pass a sieve of 100 meshes to the linear inch and not more than 35 percent of the total dry weight will pass a sieve of 50 meshes to the linear inch. Sand shall conform to ASTM C33.

2.7 Non-Shrink Mortar

2.7.1 Non-shrink mortar shall be waterproof and used in accordance with manufacturer's recommendations.

2.7.2 Non-shrink mortar shall be Hallemite, Waterplug, Embeco or approved equal.

2.8 Filter Media and Underdrain

2.8.1 Filter media and underdrain shall conform to the requirements of the respective items.

Construction

3.1 Underground Sand Filter. The structure shall be constructed as shown on the Drawings. Concrete and brick masonry shall be as provided elsewhere in these Specifications. Manhole steps, frames and covers shall be installed as shown and specified.

3.1.1 The inverts and shelves of all manholes shall be lined with dense, hard-burned brick (ASTM Standard C32, Grade SS), set in a full bed of mortar with all joints flush or shall be concrete.

3.1.2 Joints between the structure and pipes shall be made using the approved jointing materials in accordance with the manufacturer's instructions. Flexible rubber connectors with stainless steel screw clamps shall be used for sewers and non-shrink mortar joints shall be used on drains.

3.1.3 Lifting holes shall be filled solid with non-shrinking mortar or plastic joint material.

3.1.4 The structure shall be set so that the frame, grates and cover will be at the final finished grade of the street or surrounding ground surface. Brick masonry used for adjustment shall be smooth on the inside and parged on the exterior.

3.1.5 The structure shall be placed on a base of 6-inches for crushed stone wrapped in filter fabric.

3.2 Filter media and underdrain shall be constructed in accordance with the requirements of those items.

Method of Measurement

- 4.1** The measurement for underground sand filter systems will be each, complete in place, including furnishing and installing the underground sand filter system. The completed unit shall include all necessary piping, fittings, manifold, access risers and/or manholes, backfill material, geotextile, inspection ports, and final grading.
- 4.2** Filter media and underdrain shall be measured by the respective items.

Basis of Payment

- 5.1** Underground sand filter systems will be paid for by each, complete in place, including furnishing and installing the underground sand filter system. The completed unit shall include all necessary piping, fittings, manifold, access risers and/or manholes, backfill material, geotextile, inspection ports, and final grading.
- 5.2** Filter media and underdrain shall be paid by the respective items.

Pay items and units:

613.3	Underground Sand Filter	Unit
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END OF SECTION

**Sagamore Creel Bridge Replacement
Portsmouth; 14493**

July, 2013

S U P P L E M E N T A L S P E C I F I C A T I O N**AMENDMENT TO SECTION 618 – UNIFORMED OFFICERS AND FLAGGERS**

This supplemental specification deletes the existing Description, Equipment, and Construction Requirements sections from the specification and inserts the revised sections. Revisions include current training requirements for uniformed officers and flaggers.

Delete the *Description, Equipment, and Construction Requirements* sections.

Add the following *Description, Equipment, and Construction Requirements* sections.

Description

1.1 This work shall consist of furnishing qualified uniformed officers, with or without vehicles, or flaggers as required to direct or control traffic through or around the work or as ordered.

1.1.1 The Contractor may perform flagging operations with his own forces or through approved Subcontractors. Subcontractors shall comply fully with Section 108.01. Flaggers shall be the primary means for providing dynamic temporary traffic control operations in work zones.

1.1.2 Uniformed officers shall have legal authority to enforce traffic laws on the roadways within the work zone. Uniformed officers may be utilized for their specific authority for operations beyond that of a flagger, such as assistance in speed control and traffic law enforcement, as necessary, and as approved by the Engineer.

Equipment

2.1 Vehicles for use with uniformed officers shall be official police vehicles with associated equipment including roof mounted blue flashing lights that are visible to oncoming traffic and appropriate police markings.

2.2 Traffic paddles and flagger equipment shall conform to those described in the MUTCD.

2.3 Two-way radios for uniformed officers and flaggers shall be dependable, providing clear communication at all times between radio operators.

2.4 For night operations, the use of lighting at flagger stations is required as stated in the MUTCD.

Construction Requirements

3.1 Uniformed Officers. Uniformed officers furnished by the Contractor shall have had formal training in the *Safe and Effective Use of Law Enforcement in Work Zones* course or approved equivalent.

3.1.1 Effective April 1, 2013, all Uniformed Officers working on all NHDOT funded, including municipally managed, projects shall have successfully completed a NH'DOT approved course on *The Safe and Effective Use of Law Enforcement Personnel in Work Zones*. This course shall be taken once every four years. Sources of NHDOT approved training can be found on the NHDOT website.

3.1.2 Upon request by the Engineer, the officer shall provide verification of training within 48 hours.

3.1.3 Uniformed officers shall be attired with regulation duty uniforms, headgear, high-visibility apparel in accordance with the MUTCD, and shall wear an exposed badge.

3.2 Designed Flagger Trainers. The Contractor or Subcontractor(s) supplying flaggers shall have an employee(s) designated to train flag personnel. Designated trainers shall have taken a formal flagging course as described in 3.2.1 at least once every four years.

3.2.1 A flagging course taken by employees designated to train shall consist of a minimum of 3 hours of training providing the following general information:

- A. Federal requirements as specified in MUTCD.
- B. Need for consistent, current and understandable instructions from flaggers.
- C. Understanding of the MUTCD Part VI requirements.
- D. Awareness of types of motorists and vehicles (commuters, tourists, passenger, trucks, emergency, oversized, etc.).
- E. Safety of the work crew, motorists and the flagger.
- F. Qualities of the flagger.
- G. Flagger attire.

- H. Tools necessary to perform flagging operations and their correct use.
 - 1. Equipment which includes, but is not limited to, paddles, flags, flashlights for night, etc.
 - 2. Correct and appropriate hand signals.
- I. Work station safety including, but is not limited to, placement of advance warning signs, flagger station location, and flagger position.
- J. Additional requirements and differences of night flagging operations.
- K. Coordination with other flaggers, work crew, uniformed officers, and traffic signals.

3.2.2 Designated trainers shall pass a written examination containing thirty or more questions reviewing principles of flagging. A passing score shall be a minimum of 80 percent.

3.2.2.1 Upon successful completion of the flagging course and passing the written examination, the attendee shall receive a flagger handbook and a designated trainer completion certificate. The completion certificate shall contain the name of the successful attendee, the name of the course provider, and the date of the course.

3.3 Flaggers. All flagging personnel shall be trained by a designated trainer at least once every four years. The course shall cover the topics outlined in 3.2.1. Each flagger shall receive from the designated trainer, a card or certificate that provides the date of training and the designated trainer's name. Upon request by the Engineer, the Contractor and its Subcontractors shall provide verification of training within 48 hours. Any flagger who is trained by a designated trainer and changes employers, must be retrained by the new employer. Flaggers may elect to take a designated trainer course to meet the training requirements in this section, which would not expire with the change of employers.

3.3.1 Flaggers shall wear high visibility apparel in accordance with the MUTCD and their attire shall be distinctive from the other workers. Flaggers shall wear ANSI Performance Class 3 safety apparel when flagging during hours of darkness. While encouraged, the Class 3 requirement does not apply to pants.

3.5 Personnel Requirements and Authority.

3.5.1 Uniformed officers and flaggers shall work well alone and as a member of a group, since traffic control operations are a team effort. Therefore, uniformed officers and flaggers shall also possess strong communication skills, as relaying traffic information to others (uniformed officers, flaggers, construction personnel, the public, etc.) is essential. The Contractor shall be responsible for providing specific instructions to uniformed officers and flaggers regarding their duties and responsibilities, both to the public and to their fellow workers on the job. They shall

have authority to direct the movement of construction vehicles as well as vehicles of the traveling public, and shall do all that is reasonable to expedite that movement.

3.5.2 Uniformed officers shall have police powers granted by the authorities having legal jurisdiction in the work area.

3.5.3 The Contractor shall designate a person as the responsible party to coordinate the traffic control procedures. This person shall be responsible to collect and report the time of actual traffic control to the Engineer.

3.6 When more than one Uniformed Officer or Flagger is required for traffic control, effective communication shall be maintained between stations. If effective communication cannot be maintained by voice or hand signals, two-way radios shall be used. Necessary safety precautions shall be taken when two-way radios are used in the vicinity of blasting operations.

**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July, 2013

S U P P L E M E N T A L S P E C I F I C A T I O N

SECTION 645 – EROSION CONTROL

This supplemental specification brings language in-line with current NHDES regulations.

Amend 3.1.7 to read:

3.1.7 Earth excavation and embankment slopes shall be permanently and temporarily treated for stabilization before the time the slant height of exposed slopes reaches 30 feet (9 m), unless otherwise approved. Where construction activities are completed within the growing season, all exposed soil areas shall be permanently stabilized within **3** calendar days. Where construction activities are temporarily suspended or completed outside of the growing season, all exposed soil areas shall be treated for stabilization within 14 calendar days.

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**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July, 2013

**SPECIAL PROVISION
SECTION 645 – EROSION CONTROL**

Item 645.0001 – Turbidity Barrier

Add to Materials:

2.11 Turbidity Barrier

- A. Siltation fence shall be made of XX mil industrial polypropylene 625 g/sy. Fabric shall be impermeable and shall be stable against ultraviolet radiation.
- B. The turbidity barrier shall consist of a woven and calendared polypropylene geotextile fabric suspended from a floatation device and sealed against the bottom of the water body by ballast sewn into the bottom of the geotextile. All seams shall have a minimum of 2 rows of stitches (Federal Stitch Type 401, 2 thread stitch). Stitch count shall be between 2 and 3 stitches per centimeter. Seam strength shall develop at least 50 percent of Wide Width Tensile Strength of the geotextile when tested in accordance with ASTM D4884.

The geotextile fabric shall be woven and calendared polypropylene manufactured to form a stable network such that the filaments retain their relative positions. The specific gravity of the fabric shall be 0.95 or greater.

The geotextile fabric shall have the following properties based upon minimum average roll values:

Property	Test Method	Unit	Value
Percent Open Area	CWO-22125	Percent	none
Apparent Opening Size	ASTM D4751-87	US Sieve	none
Permittivity	ASTM D4491-92	sec-1	none
Puncture	ASTM D4833-88	kgs.	greater than 60
Mullen Burst	ASTM D3786-87	kg/centimeter ²	greater than 32
Trapezoidal Tear	ASTM D4533-91	kgs.	greater than 43x25
Grab/Tensile	ASTM D4532-91	kgs.	greater than 159x113
Wide Width Tensile	ASTM D4595	kg/centimeter	greater than 38 (MD)x24 (MD)
UV Resistance	ASTM D4355 (after 150 hours)	percent	greater than 90

The barrier shall be assembled according to manufacturer's recommendations. High water and high wind conditions shall be considered in the determination of the necessary lengths and widths of the barrier. Connections between adjacent sections of floatation booms shall be designed to withstand all stresses and movements and shall be tightly sealed to prevent flow of turbid water through the barrier. All splices in the geotextile shall be sewn except at connections between adjacent segments of the barrier. Geotextile splices at connections must form a closure as tight as the sewn stitch specified. Open stitching or splicing through widely spaced grommets are not permitted.

- C. "Booms", logs or other types or floats that may be used to suspend flexible fabric filter membrane enclosing areas of excavation, trenching, etc., along or out into the bodies of water shall be standard products normally used in this type of work and shall be approved by the Engineer prior to their use.

Add to Construction Requirements:

3.10 Turbidity Barrier. The Contractor is advised that stream flows and water levels of resource areas may vary substantially due to climatic and seasonal conditions and shall be responsible for controlling and handling ground and/or surface water regardless of the volume of water and regardless of whether this flow is due to flood waters from storms.

3.10.1 Erosion and Turbidity Control.

- A. The Contractor shall take every precaution to minimize and control erosion and turbidity within the project area. These precautions shall be subject to approval by the Engineer and shall include, but not be limited to, the following:
 - 1. The turbidity barrier shall be installed as noted in the Prosecution of Work to contain suspended material disturbed by the construction activities. The turbidity barrier shall be anchored to prevent significant movement resulting from wind, water currents or construction activities. The bottom of the barrier shall be held tight against the bottom by the ballast chain, supplemented by sand bags or other weights where necessary. There shall be sufficient slack in the barrier and anchorage system to allow movement with shifts in water current or wind and changes in water depth without causing submergence of the floatation devices or lifting of the bottom of the barrier off the bottom of the water body. The barrier shall be so designed and installed to prevent movement of turbid water over, under or through the barrier during all conditions of weather, construction activities or other circumstances.

The area contained by the turbidity barrier shall not be used as a sedimentation basin for site runoff.

The Contractor shall inspect the turbidity barrier and adjacent water for signs of leakage at least once per day during period of construction activities and more

frequently during period of adverse weather. The Contractor shall perform any necessary repairs immediately. If water quality outside of the barrier exceeds the maximum allowable turbidity levels specified in 107.01, the Contractor shall cease all activities which may be contributing to the excessive turbidity and notify the Engineer. The Contractor shall perform the necessary repairs to the turbidity barrier or change operations to return the turbidity to within acceptable levels. The cost of all inspection/monitoring by the Contractor of the turbidity barrier shall be paid under Item 645.0001.

The turbidity barrier shall be kept in place until the turbidity is below the maximum allowable levels specified in 107.01. The Contractor shall then remove all components of the barrier and dispose of them offsite.

2. If for any reason the turbidity barrier becomes damaged or drops below the 230 mm above the water surface or is found to be lifting of the bottom, the Contractor shall immediately make all necessary repairs to insure proper turbidity control. If the Contractor fails to make immediate repairs, all work shall be stopped until repairs have been made and the Contractor shall assume all costs related to the work stoppage for nonconformance to these requirements.

Amend 4.5 to read:

4.5 The silt fence and turbidity barrier will be measured by the linear feet (linear meter) to the nearest 1-foot (one-half meter). Measurements will be along the top for each continuous run in place.

Amend 5.5 to read:

5.5 The accepted quantity of silt fence and turbidity barrier will be measured by the linear feet (linear meter) for barrier ordered and delivered to the project. Relocating barriers on the project will not be measured. No payment will be made for overlaps or splices.

5.5.1 Removing sediment deposits will be paid for under Item 699.

Pay Items and Units:

645.0001	Turbidity Barrier	Linear Feet (Linear Meter)
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SPECIAL PROVISION**AMENDMENT TO SECTION 645 -- EROSION CONTROL****Item 645.512 - Compost Sock for Perimeter Berm**

This special provision provides for compost sock for perimeter berm and neither amends nor modifies the provision of this section except as noted below. The intent of this item is to work in conjunction with, or in-lieu of silt fence where entrenched silt fence is not feasible.

Description

1.1 The Contractor shall furnish and install degradable compost socks for perimeter berm at locations shown on the SWPPP plans or as ordered. Removal, if necessary, will be subsidiary to the item, and will be conducted as directed by the Engineer. The compost sock for perimeter berm shall be used as such and is not intended for areas which may receive concentrated flows such as channels or restricted outlets.

Materials**2.1 Compost Sock for Perimeter Berm.** Sock must be:

2.1.1 A mesh tube, oval to round in cross section, 12 inches in diameter. Sock must have a minimum durability of one year after installation.

2.1.2 Composed of a knitted biodegradable or photodegradable material with 1/8 to 3/8 inch openings. Fabric must be clean; evenly woven; free of encrusted concrete or other contaminated materials; and free from cuts, tears, broken or missing yarns and thin, open, or weak places.

2.2 Compost Media

2.2.1. Compost may be derived from green material consisting of chipped, shredded, or ground vegetation; or clean recycled wood products.

2.2.2 Compost must not be derived from mixed municipal solid waste and be reasonably free of visible contaminants. Compost must not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth. Compost must not possess objectionable odors.

2.3 Chemical, Physical and Biological Parameters

2.3.1 Compost products specified for use in this application must meet the criteria specified in Table 1, below.

2.3.2 Only compost products that meet all applicable state and federal regulations pertaining to its production and distribution may be used in this application. Approved compost products must meet related state and federal chemical contaminant (e.g., heavy metals, pesticides, etc.) and pathogen limits pertaining to the feedstocks (source materials) in which it is derived.

Table 1 – Compost Media Parameters

Parameters	Reported as (units of measure)	Characteristics
pH ²	pH units	5.0 - 8.5
Soluble Salt Concentration ² (electrical conductivity)	dS/m (mmhos/cm)	Maximum 5
Moisture Content	%, wet weight basis	30 – 60
Organic Matter Content	%, dry weight basis	25 – 65
Particle Size	% passing a selected mesh size, dry weight basis	3" (75 mm), 100% passing 1" (25mm), 90% to 100% passing 3/4" (19mm), 70% to 100% passing 1/4" (6.4mm), 30% to 75% passing Maximum: particle size length of 6" (152mm) (no more than 60% passing 1/4" (6.4 mm) in high rainfall/flow rate situations)
Stability ³ Carbon Dioxide Evolution Rate	mg CO ₂ -C per g OM per day	< 8
Physical Contaminants (man-made inerts)	%, dry weight basis	< 1

Note: The composition of this media is similar to the vegetated filter berm media from AASHTO R 51. Very coarse (woody) composts that contain less than 30% of fine particles (1mm in size) shall be avoided, as optimum reductions in total suspended solids (TSS) is desired and berms may be seeded.

Construction Requirements

3.1 Site Preparation. To ensure optimum performance, cut down or remove heavy vegetation, and level uneven surfaces to ensure that the filter sock uniformly contacts the ground surface.

3.2 Installation

3.2.1 Prior to installation, clear the area of obstructions including rocks, clods, and debris greater than one inch.

3.2.2 Fill socks uniformly with compost to the desired length such that the logs do not deform. Secure ends.

3.2.3 When more than one compost sock is required to achieve desired length, join socks longitudinally with a 1 foot 6 inch overlap.

3.2.4 Compost sock may be installed using installation method Type 1, Type 2, or a combination:

3.2.4.1 Installation Method Type 1:

- Place directly on the ground with good contact with the finish grade.
- Secure with wood stakes every 4 feet along the length of the compost sock.
- Secure the ends of the compost sock by placing a stake 6 inches from the end of the compost sock.
- Drive the stakes into the soil so that the top of the stake is less than 2 inches above the top of the compost sock.

3.2.4.2 Installation Method Type 2:

- Place directly on the ground with good contact with the finish grade.
- Secure with rope and notched wood stakes.
- Drive stakes into the soil until the notch is even with the top of the compost sock.
- Lace the rope between stakes and over the compost sock. Knot the rope at each stake.
- Tighten the compost sock to the surface of the slope by driving the stakes further into the soil.
-

3.2.5 Install compost sock approximately parallel to the slope contour or as otherwise specified in the SWPPP or ordered by the Engineer.

3.3 Maintenance

3.3.1 Inspect compost socks regularly, and after each rainfall event, to ensure that they are intact and functioning correctly. Remove sediment that builds up behind the sock before it interferes with the functionality of the sock. Deposit the removed sediment within the project limits so that the sediment is not subject to erosion by wind or by water.

3.3.2 Repair or replace split, torn, or unraveling socks. Replace broken or split stakes. Sagging or slumping compost socks must be repaired with additional stakes or replaced. Correct locations where rills and other evidence of concentrated runoff have occurred beneath the socks. Compost socks must be repaired or replaced within 24 hours of identifying the deficiency.

3.3.3 Remove sock mesh tubes when directed by the Engineer. Cut mesh and empty sock contents in place and rake to distribute evenly.

Method of Measurement

4.1 Compost sock for perimeter berm will be paid for by the linear foot (linear meter) to the nearest 1 foot (one-half meter). Measurement will be along the top of each continuous run complete in place.

Basis of Payment

5.1 The accepted quantity of compost sock for perimeter berm will be paid for at the contract unit price per linear foot (linear meter) installed. No additional payment will be made for overlaps, splices or the anchoring of the system.

Pay items and units:

645.512	Compost Sock for Perimeter Berm	Linear Foot (Linear Meter)
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END OF SECTION

**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION

AMENDMENT TO SECTION 670 - MISCELLANEOUS INCIDENTALS

ADD 670.1 – Support of Utility Infrastructure

Description

- 1.1** This work shall consist of all labor and materials necessary for the design, construction, maintenance and removal of a contractor-designed and supplied support system for existing utility poles that are to remain during construction. Work shall include furnishing and installing all components required to support any poles that may be impacted throughout the Contractor's construction operations. The proposed utility poles noted on the plans have been set for the project, and will not be relocated again. The Contractor shall plan and coordinate his work plan to account for this existing utility infrastructure. If excavations are necessary adjacent to these poles, the Contractor shall be responsible for maintaining the utility poles in place for the duration of the construction operations.
- 1.2** The contractor shall be responsible for obtaining all necessary existing sub-surface soil conditions information as needed for the design of the support system. The contractor shall also obtain any supplemental existing site feature information or topographic information as needed for the bid proposal and support system design.
- 1.3** Contractor shall submit utility support system design calculations and layout/shop drawings stamped by a NH licensed Professional Engineer for each of the proposed locations to the Owner's Representative for review of conformance to project specifications prior to procurement of materials. Materials called for in the design calculations and on layout/shop drawings shall be identified by the NHDOT Item Number where applicable.

Materials

- 2.1** The system shall be a Contractor designed system. All materials to be used in the construction of this work shall be subject to inspection and approval prior to their installation.
- 2.2** Complete product data shall be submitted for all materials that are subsidiary to the support system that are not applicable to an item provided in the NHDOT Standard Specifications for Road and Bridge Construction.

Construction Requirements

- 3.1** Support of Utility Infrastructure shall be constructed per the Contractor's stamped plans.
- 3.2** The system shall be safely designed and constructed, and provide proper clearance for the proper performance of the work which must be done adjacent to the system.

Method of Measurement

- 4.1** The accepted quantity of the Support of Utility Infrastructure will be measured as a unit for the project. The Contractor's work plan will dictate how many systems will be required.

Basis of Payment

- 5.1** The measured and accepted quantity of the Support of Utility Infrastructure will be paid for at the contract lump sum price.

5.2 Pay items and units:

Item 670.1	Support of Utility Infrastructure	U
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SPECIAL PROVISION**AMENDMENT TO SECTION 670 - MISCELLANEOUS INCIDENTALS****ADD Item 670.641 – Sand Filter Media Mix****Description****1.1 General:**

- 1.1.1** This work shall consist of all labor, materials, materials testing and certification, and equipment necessary for the installation of the Sand Filter Media Mix as described in this Special Provision and as shown on the plans or as ordered.

1.2 Submittals:

- 1.2.1** Contractor shall submit results of soil testing and certification by an independent testing agency for the compliance of the composition of the Sand Filter Media Mix in accordance with specifications.

1.3 Quality Assurance:

- 1.3.1** Contractor shall secure the services of an independent testing agency experienced in the testing of soil materials to provide sampling, analysis, and report with certification that the materials utilized for Item 670.641 -- Sand Filter Media Mix meet specifications and requirements set forth in this Special Provision and related sections of the NHDOT Standard Specifications for Road and Bridge Construction.

Materials**2.1 Sand Filter Media Mix:**

- 2.1.1** Sand Filter Media Mix shall consist of a mixture of 50-60% sand, 20-30% leaf compost, and 20-30% loam, by volume. Maximum clay content shall be less than 1%.
- 2.1.2** Loam for use in Item 670.641 shall conform to Section 641 – Loam.
- 2.1.3** Sand for use in Item 670.641 shall conform to Section 304 – Aggregate Base Courses
- 2.1.4** The Sand Filter Media mix shall be uniform, free from stones, stumps, roots, or other similar objects larger than 1 inch. No other materials or substances shall be mixed or dumped within the soil mix that may be harmful to plant growth.

2.2 Soil Treatments:

2.2.1 In the event that testing results require modification and/or treatments of the Sand Filter Media Mix, the soil treatments as required to prepare the Sand Filter Media Mix to specification shall be in accordance with Section 642 -- Limestone. Re-testing of the materials shall be required after treatments to confirm conformance.

Construction Requirements**3.1 Soil Mix Preparation and Delivery:**

3.1.1 Soil preparation can be performed offsite and transported to the site when ready for installation. The soil mix must be certified as meeting the criteria outlined above prior to shipment and approved by the Engineer. The Sand Filter Media mix shall not be delivered until the Engineer has approved the prepared subbase.

3.2 Placement:

3.2.1 The Contractor shall not compact the Sand Filter Media mix and shall allow time for natural settlement. The Contractor shall overfill above the proposed surface to allow for settlement. Up to 20% natural compaction may occur.

3.2.2 The Contractor shall place soil in 8" to 12" lifts. Lifts may be lightly watered to encourage natural compaction. Soil material shall be raked to level out surface. If time does not permit and as approved by the Engineer, the contractor may presoak the placed soil to speed up settlement.

Method of Measurement

4.1 Item 670.641 -- Sand Filter Media Mix will be measured by the cubic yard (CY) as determined by the actual surface measurements of the lengths and widths of the installed Sand Filter Media Mix areas multiplied by the depths specified for each area. Measurements will be made to the nearest 0.1 of a cubic yard.

Basis of Payment

5.1 The accepted quantities of Sand Filter Media Mix of the various depths specified will be paid for at the contract unit price per cubic yard (CY) complete and in place.

Pay item and unit:

Item 670.641

Sand Filter Media Mix

Cubic Yard (CY)

**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July 2013

SPECIAL PROVISION

SECTION 697 – PROJECT MANAGEMENT PLANS

Item 697.11 – Invasive Species Control and Management Plan

This section is intended to provide and pay for certain Plans associated with project construction.

Description

1.1 This work shall consist of providing an Invasive Species Control and Management Plan, which includes detailing the specific method(s) of controlling the spread of the identified invasive species, and the continued monitoring and management of invasive plan species found on the site for the duration of the contract.

Construction Requirements

3.1 Develop an Invasive Species Control and Management Plan detailing specific measures to control identified invasive plan species within the project area.

3.1.1 The Invasive Species Control and Management Plan shall include updating, modifying, and revising the Plan as appropriate and/or as directed by the Contract Administrator; monitoring existing invasive plan species for the duration of the project; and taking measures to not encourage the establishment of invasive plan species within the project limits.

3.1.2 The Invasive Species Control Plan shall also consist of but not be limited to the following:

- List of plans that were identified within project limits as shown on the plans.
- Appropriate Best Management Practices that will be utilized to prevent the spread of these plants during construction.
- A proposed schedule that describes the sequence of BMP's relative to construction activities.

- If Type II plants are to be excavated, the extent of excavation needs to be noted.
- A preliminary plan showing approximate locations of any proposed disposal area within the project limits, including areas where plants will be buried or stockpiled.
- If invasive plant material or soil that contains invasive plant material will be transported, the method of transport needs to be described.
- If invasive species are to be transported off-site, when allowed, the method of transport needs to be described as well as the terminus of plant material.
- A general overview should be given of how invasive plants will be managed throughout construction, including but not limited to:
 - Monitoring of newly established slopes;
 - Proposed methods of eradication of any plants that appear in new areas as a result of construction activities and re-growth;
 - General BMP's such as cleaning of equipment, location of staging areas, and importation of weed-free materials, see Invasive Species Special Attention.

3.2 Invasive Species Control and Management Plan shall be submitted for approval through the Contract Administrator to the Bureau of Environment and be compliant with NHDOT's "Best Management Practices for Roadside Invasive Plants" Manual available on-line at www.nh.gov/dot/bureau/environment/documents.htm and include the continued management of invasive plants during the duration of the project.

3.3 The Contractor shall perform the work necessary to control, remove and dispose of the invasive plant species found on the site as directed and in accordance with Special Provision, Amendment to Section 201 - Clearing and Grubbing, Item 201.881 – Invasive Species Control Type I and/or Item 201.882 - Invasive Species Control Type II.

Method of Measurement

4.1 Invasive Species Control and Management Plan will be measured as a unit.

Basis of Payment

5.1 Invasive Species Control and Management Plan will be paid for at the Contract unit price.

Pay item and unit:

697.11	Invasive Species Control and Management Plan	Unit
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**Sagamore Creek Bridge Replacement
Portsmouth; 14493**

July, 2013

SPECIAL PROVISION

SECTION 697 – PROJECT MANAGEMENT PLANS

Item 697.41 – Critical Path Method (CPM) Electronic Schedule

Description

1.1 This work shall consist of producing a CPM schedule and updates meeting all the requirements of 108.03. A Progress Schedule with the exception of 108.03.A.1.5, which shall be deleted.

Method of Measurement

4.1 This item will be measured as a unit based on a submission schedule as described in 108.03.A.1.4, not exceed one (1) unit, unless authorized by the Engineer.

Basis of Payment

5.1 Partial payments for this item will be made approximately as follows:

- (a) When the Initial CPM Schedule as described in 108.03.A.2.2 is submitted and accepted, the initial payment will be 50% of the amount bid.
- (b) The balance will be paid as a monthly prorated sum based upon the specified Contract duration.
- (c) Failure to submit and updated schedule per 108.03.A.1.4 shall result in the forfeiture of that month's prorated sum as described in (b).

Pay item and unit:

697.41	Invasive Species Control and Management Plan	Unit
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APPENDIX A

List of Permits Obtained by the City

1. Class II (CE) with Programmatic Section 4(f): Obtained by Owner, copy of letters from FHWA and NHDOT, dated December 27, 2012 and December 19, 2012.
2. US Coast Guard Bridge Permit: Obtained by Owner, copy of letter from USCG, dated March 20, 2013.
3. NHDES Dredge and Fill: Obtained by Owner, copy of letter from NHDES, dated September 19, 2011.
4. Army Corps of Engineers: Obtained by Owner, copy of letter from Army Corps, dated October 6, 2011.
5. NHDES Shoreland Protection: Obtained by Owner, copy of letter from NHDES, dated May 10, 2011.
6. NHDES Federal Consistency Determination: Obtained by Owner, copy of letter from NHDES dated November 14, 2011.
7. NHDES Alteration of Terrain: Obtained by Owner, copy of letter from NHDES dated June 20, 2013.



U.S. Department
of Transportation
**Federal Highway
Administration**

New Hampshire Division

December 27, 2012

53 Pleasant Street, Suite 2200
Concord, NH 03301
(603) 228-0417

In Reply Refer To:
HDA-NH

Mr. Christopher D. Clement, SR., Commissioner
New Hampshire Department of Transportation
7 Hazen Drive
Concord, NH 03301

Attn: Mr. Kevin Nyhan, Administrator
Bureau of Environment

Dear Mr. Clement:

Subject: Project Classification

We have reviewed Mr. Kevin Nyhan's December 19, 2012 project classification recommendation for the following project and hereby concur:

Portsmouth, X-A000(417), 14493 – Class II (CE) w/ Programmatic Section 4(f)
(NH Route 1A Bridge over Sagamore Creek)

It appears that this project qualifies for the use of the Programmatic Wetlands Finding, Programmatic Floodplains Finding and Programmatic Section 4(f) Finding. This project is now considered acceptable for project progression.

Sincerely yours,

Jamison S. Sikora
Environmental Program Manager

cc: CR Willeke, NHDOT BPCA (electronic copy)
Kevin Nyhan, NHDOT Environmental (electronic copy)
Project file



THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION



CHRISTOPHER D. CLEMENT, SR.
COMMISSIONER

JEFF BRILLHART, P.E.
ASSISTANT COMMISSIONER

December 19, 2012

Patrick Bauer
Division Administrator
Federal Highway Administration
J.C. Cleveland Federal Building
53 Pleasant Street, Suite 2200
Concord, New Hampshire 03301

Dear Mr. Bauer:

Re: Project Classification

The project noted below is submitted for your concurrence in its environmental classification. Environmental documentation is enclosed for your review.

PROJECT

RECOMMENDED CLASSIFICATION

Portsmouth, X-A000(417), 14493
(NH Route 1A Bridge over Sagamore Creek)

CLASS II/4(f)

This project does not require a public hearing, therefore the recommended classification is the final classification. Please approve the *Programmatic Section 4(f) Evaluation*. This project should qualify for the *Programmatic Wetlands Finding* and the *Programmatic Flood Plain Finding*.

This project is scheduled to advertise on May 15, 2013.

Very truly yours,


Kevin T. Nyhan
Administrator
Bureau of Environment
Room 160 - Tel. 271-3226

KTN:ktn
Encl.

c.c. J. Sikora, via E-mail
B. Cass, via E-mail
C. Willeke, via E-mail

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**STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION**

FROM  Kevin T. Nyhan
Administrator

DATE December 31, 2012
AT (OFFICE) Department of
Transportation

SUBJECT PORTSMOUTH Bureau of
X-A000(417) Environment
14493
Bridge Replacement – NH Route 1A over Sagamore Creek

TO C. R. Willeke
Project Manager
Bureau of Planning and Community Assistance

Enclosed for your use is a copy of the environmental document prepared for the subject project. A fully executed copy of this memo and the environmental document are available on the v:\drive at: V:\Towns\Portsmouth\14493\Environment Commits.pdf and Envdoc.pdf respectively.

The Federal Highway Administration confirmed the environmental classification (Class II, Categorical Exclusion, with 4(f)) for this project on 12/27/2012. FHWA approved the Programmatic Section 4(f) Evaluation on 12/27/2012. This project qualifies for the *Programmatic Wetlands Finding*, and *Programmatic Flood Plains Finding*. These determinations represent design approval. **This concludes the NEPA process.**

This project is exempt from FHWA oversight.

NH Wetlands Bureau (NHWB) wetlands and shoreland permits have been obtained for this project (#2011-00200 and 2011-00863, respectively). In addition, the project qualifies for use of the US Army Corps of Engineers' State Program General Permit (SPGP) (NAE-2011-00422). Please review the permits and ensure the project complies with all conditions.

Environmental commitments have been made as noted on page 20 of the enclosed environmental document, and as detailed below:

1. *A New Hampshire Historic Property Document Form shall be completed for the bridge (Br. No. 198/034) prior to commencement of construction.*
2. *The existing bridge shall be marketed for adaptive reuse (sale) prior to demolition.*
3. *The bridge type shall be incorporated into bridge Inventory and Management Plan as a priority.*
4. *To address Environmental Justice issues, the following entities shall be included in all project-related public notices and meeting invitations: the Portsmouth Community Action Center, Clipper Harbor Care & Rehabilitation, Edgewood Centre, Portsmouth Housing Authority, and Victorian Heights.*
5. *Treatment of stormwater runoff has been designed for the project, and shall be reviewed by the New Hampshire Department of Environmental Services Alteration of Terrain program prior to construction.*
6. *The contractor shall prepare a Stormwater Pollution Prevention Plan, comply with the conditions of the permit, and file a Notice of Intent with the EPA under the Construction General Permit.*

7. *The City shall implement the restoration planting and monitoring plan submitted to the NHDES Wetlands Bureau for the Dredge and Fill Application immediately after construction.*
8. *The in-channel work that has the possibility of disturbing sediment shall occur between November 15th and March 15th (installation of temporary trestle piles, permanent pier casings, and old pier removal) and after July 1 (removal of temporary trestle piles). The Contractors shall be required to remove intertidal temporary trestle piles during low tide. silt curtains shall be in place for all sediment-disturbing in-channel work, and turbidity monitoring shall be conducted during in-channel work that has the possibility of producing sediment.*
9. *The Construction Contract shall require a Soils and Materials Management Plan be developed and implemented by the contractor.*
10. *The City of Portsmouth shall keep the public informed as needed as the project progresses.*

Please be advised, if project changes occur this bureau should be consulted to determine if a follow-up review of environmental impacts is required.

KTN:ktn

Encl.

c.c. C. R. Willeke, via E-mail
D. Deporter, w/Encl.
FHWA, via E-mail
City of Portsmouth (thru C. R. Willeke)
Project Programming, via E-mail
V. Chase, via E-mail
Lee Carbonneau, via E-mail (lcarbonneau@normandean.com)

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BRIDGE PERMIT

MAR 20 2013

(1-13-1)

WHEREAS by Title V of an act of Congress approved August 2, 1946, entitled "General Bridge Act of 1946," as amended (33 U.S.C. 525-533), the consent of Congress was granted for the construction, maintenance and operation of bridges and approaches thereto over the navigable waters of the United States;

AND WHEREAS the Secretary of Homeland Security has delegated the authority of Section 502(b) of that act to the Commandant, U. S. Coast Guard by Department of Homeland Security Delegation Number: 0170.1;

AND WHEREAS before construction is commenced, the Commandant must approve the location and plans of any such bridge and may impose any specific conditions relating to the construction, maintenance and operation of the structure deemed necessary in the interest of public navigation, such conditions to have the force of law;

AND WHEREAS the Commandant of the Coast Guard has further delegated to the District Commanders, by Section 1.01-60(b) of Title 33, Code of Federal Regulations, authority to issue permits for the construction, reconstruction, or alteration of bridges across navigable waters of the United States;

AND WHEREAS the - CITY OF PORTSMOUTH - has submitted for approval the location and plans of a bridge to be constructed across Sagamore Creek at Portsmouth, New Hampshire;

NOW THEREFORE, This is to certify that the location and plans dated December 2010 are hereby approved by the Commandant, subject to the following conditions:

1. No deviation from the approved plans may be made either before or after completion of the structure unless the modification of said plans has previously been submitted to and received the approval of the Commandant.

**Replacement of the US Route 1A Bridge across Sagamore Creek at
Portsmouth, New Hampshire (1-13-1)**

2. The construction of falsework, cofferdams or other obstructions, if required, shall be in accordance with plans submitted to and approved by the District Commander, prior to construction of the bridge. All work shall be so conducted that the free navigation of the waterway is not unreasonably interfered with and the present navigable depths are not impaired. The permittee shall coordinate methods and schedule of construction of this bridge project with the District Commander. Timely notice of any and all events that may affect navigation shall be given to the District Commander during construction of the bridge. Methods shall be employed to ensure that there will be no increase of sedimentation and turbidity in the waterway during construction. The channel or channels through the structure shall be promptly cleared of all obstructions placed therein or caused by the construction of the bridge to the satisfaction of the District Commander, when in the judgment of the District Commander the construction work has reached a point where such action should be taken, but in no case later than 90 days after the bridge has been opened to traffic.

3. Issuance of this permit does not relieve the permittee of the obligation or responsibility for compliance with the provisions of any other law or regulation as may be under the jurisdiction of any federal, state or local authority having cognizance of any aspect of the location, construction or maintenance of said bridge.

4. In-water construction activities associated with this project shall cease in their entirety from 15 March through 14 November of each year that work on the project continues. This moratorium is intended to preclude disruption of winter flounder and diadromous fish spawning. Work in water will be allowed between 1 July and 14 November of any year for the sole purpose of removing temporary trestle piers.

5. A bridge fendering system shall be installed and maintained in good condition by and at the expense of the owner of the bridge when so required by the District Commander. Said installation and maintenance shall be for the safety of navigation and be in accordance with plans submitted to and approved by the District Commander prior to its construction.

6. Clearance gauges shall be installed and maintained in a good and legible condition by and at the expense of the owner of the bridge when so required by the District Commander. The type of gauges and the locations in which they are to be installed will be submitted to the District Commander for approval.

7. The permittee shall coordinate the methods and schedule of construction of this bridge project with the U. S. Department of Commerce, National Marine Fisheries Service, for the purpose of keeping disruption of fish migration and fishery resource harms and losses to a minimum.

**Replacement of the US Route 1A Bridge across Sagamore Creek at
Portsmouth, New Hampshire**

(1-13-1)

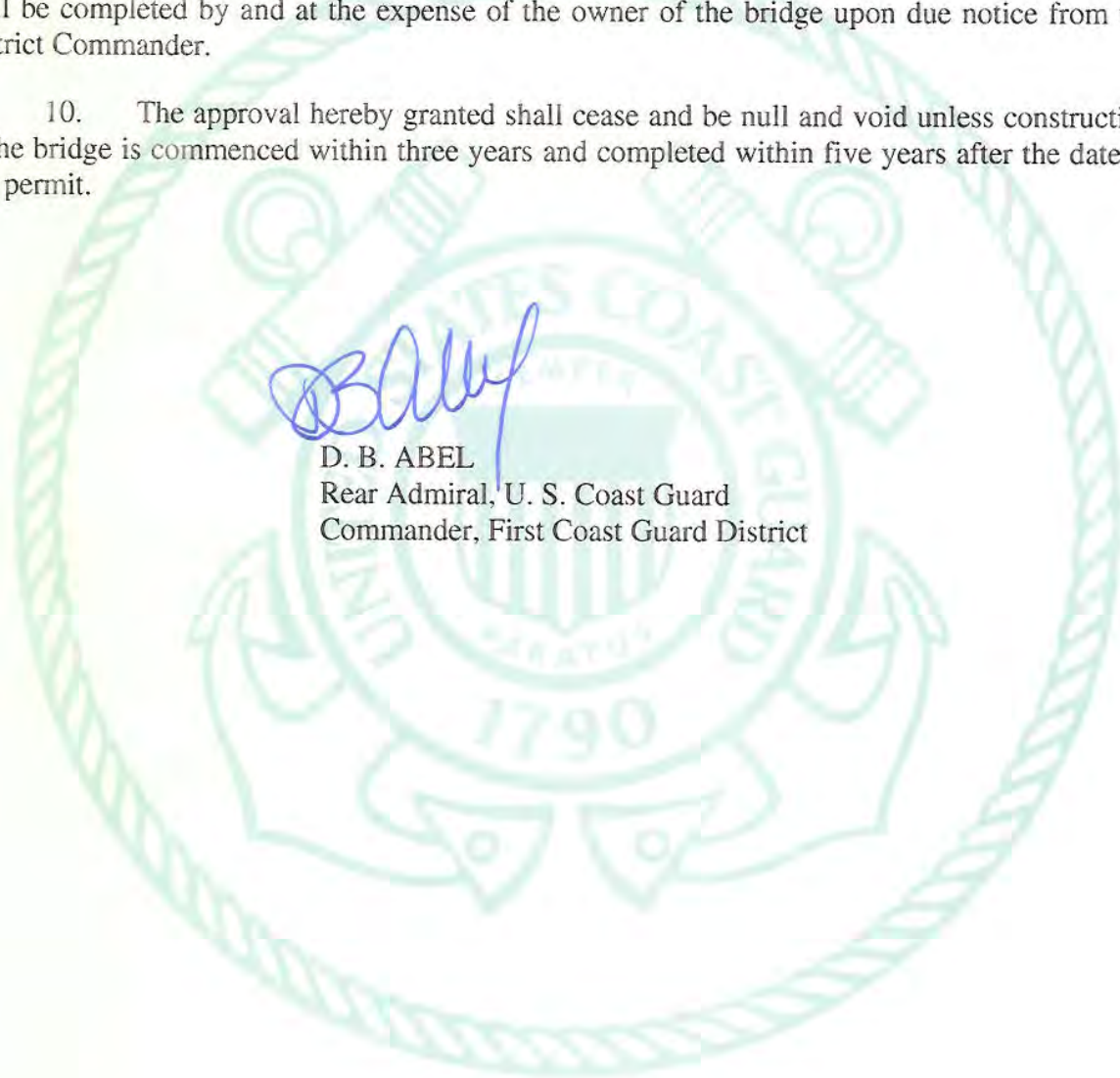
8. All parts of the existing to-be-replaced US Route 1A Bridge across Sagamore Creek, mile 0.95, not utilized in the new bridge shall be removed to a minimum elevation -11.5 feet (NAVD88) with the exception of the abutments which will be removed in their entirety or to a minimum of three feet below finished grade. The waterway shall be cleared to the satisfaction of the District Commander when in the judgment of the District Commander the construction of the new bridge, mile 0.95, has reached a point where such action should be taken.

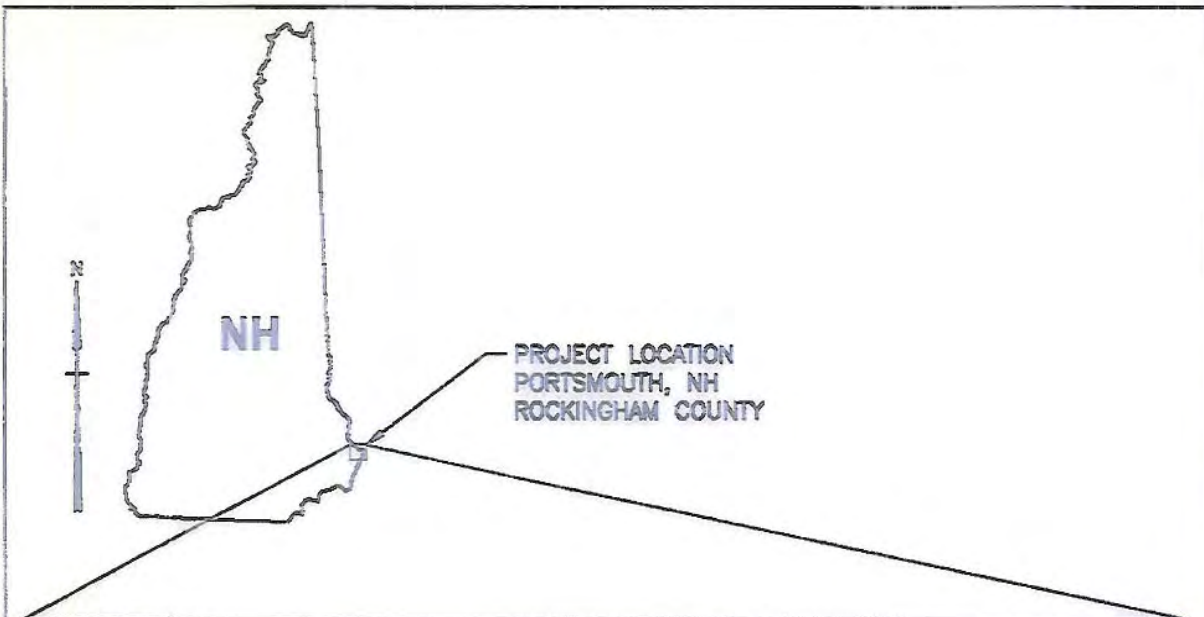
9. When the proposed bridge is no longer used for transportation purposes, it shall be removed in its entirety or to an elevation deemed appropriate by the District Commander and the waterway cleared to the satisfaction of the District Commander. Such removal and clearance shall be completed by and at the expense of the owner of the bridge upon due notice from the District Commander.

10. The approval hereby granted shall cease and be null and void unless construction of the bridge is commenced within three years and completed within five years after the date of this permit.

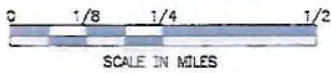


D. B. ABEL
Rear Admiral, U. S. Coast Guard
Commander, First Coast Guard District





LOCATION PLAN



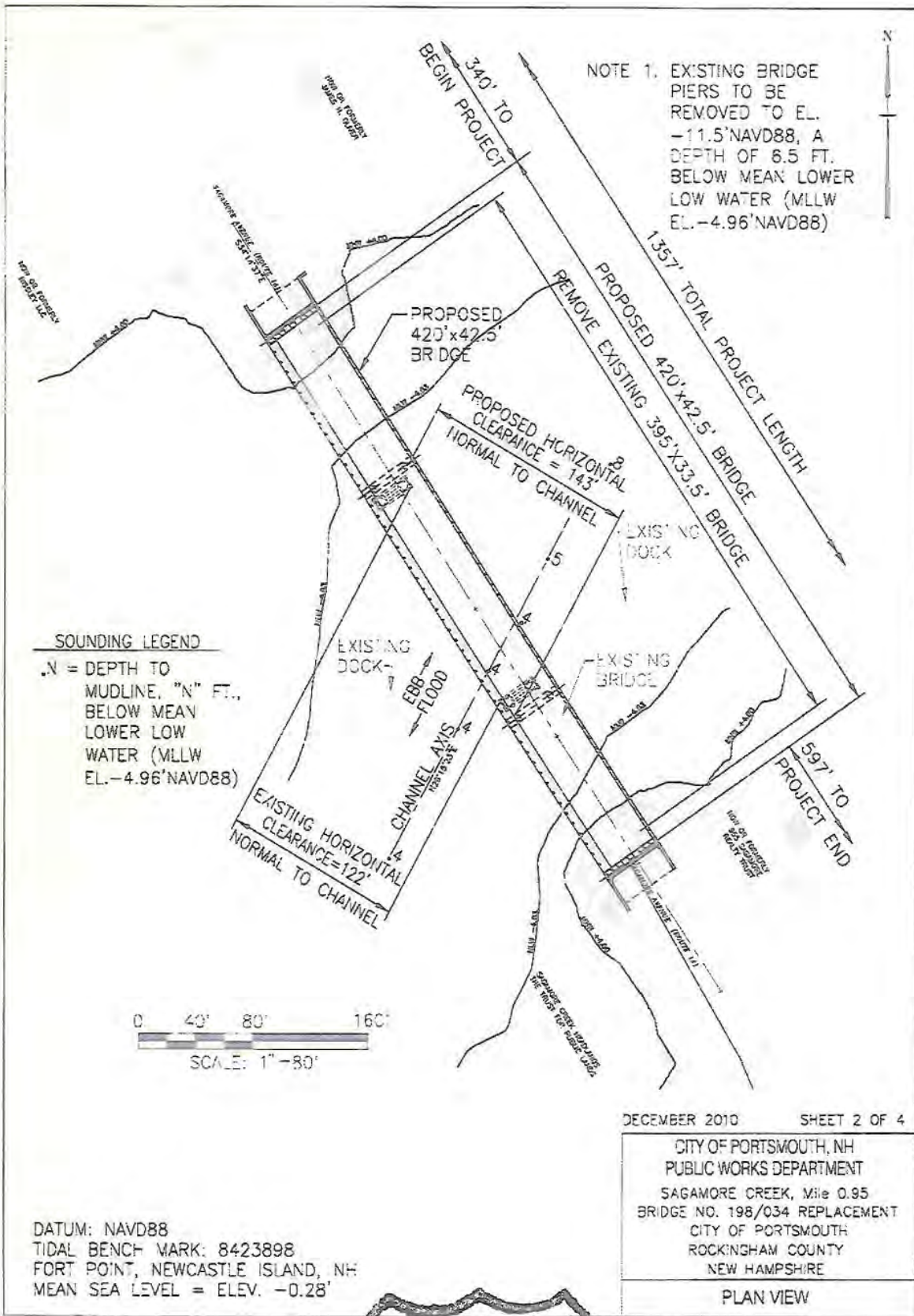
DECEMBER 2010 SHEET 1 OF 4

US COAST GUARD PERMIT PLAN
BRIDGE REPLACEMENT
US ROUTE 1A (SAGAMORE AVE.)
OVER SAGAMORE CREEK

CITY OF PORTSMOUTH, NH
PUBLIC WORKS DEPARTMENT
SAGAMORE CREEK, Mile 0.95
BRIDGE NO. 198/034 REPLACEMENT
CITY OF PORTSMOUTH
ROCKINGHAM COUNTY
NEW HAMPSHIRE

LOCATION MAP





NOTE 1. EXISTING BRIDGE PIERS TO BE REMOVED TO EL. -11.5' NAVD88, A DEPTH OF 6.5 FT. BELOW MEAN LOWER LOW WATER (MLLW EL. -4.96' NAVD88)

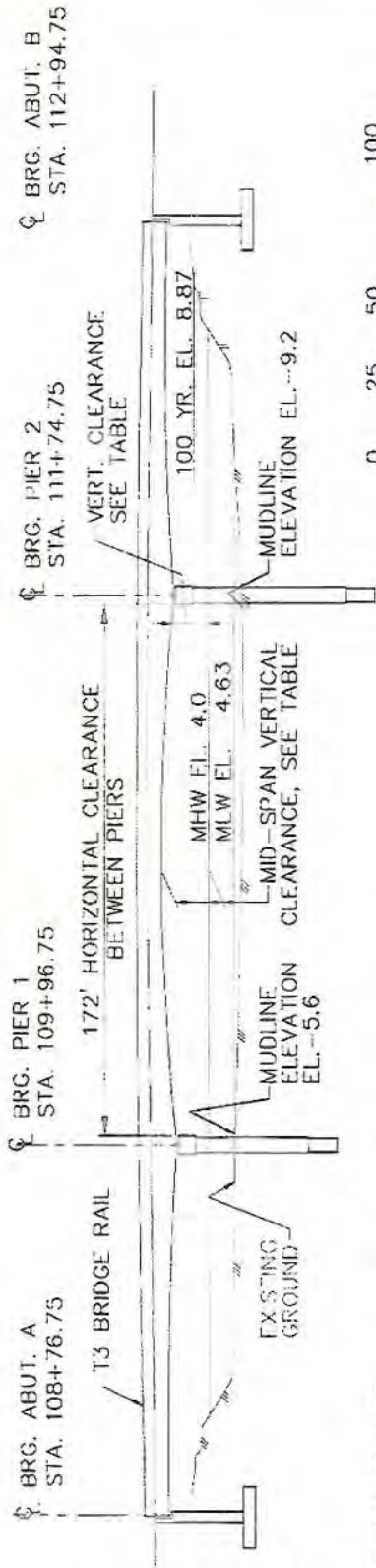
SOUNDING LEGEND
 .N = DEPTH TO MUDLINE, "N" FT., BELOW MEAN LOWER LOW WATER (MLLW EL. -4.96' NAVD88)

0 40' 80' 160'
 SCALE: 1" = 80'

DECEMBER 2010 SHEET 2 OF 4
 CITY OF PORTSMOUTH, NH
 PUBLIC WORKS DEPARTMENT
 SAGAMORE CREEK, Mile 0.95
 BRIDGE NO. 198/034 REPLACEMENT
 CITY OF PORTSMOUTH
 ROCKINGHAM COUNTY
 NEW HAMPSHIRE
 PLAN VIEW

DATUM: NAVD88
 TIDAL BENCH MARK: 8423898
 FORT POINT, NEWCASTLE ISLAND, NH
 MEAN SEA LEVEL = ELEV. -0.28'





PROPOSED ELEVATION
SCALE: 1"=50'

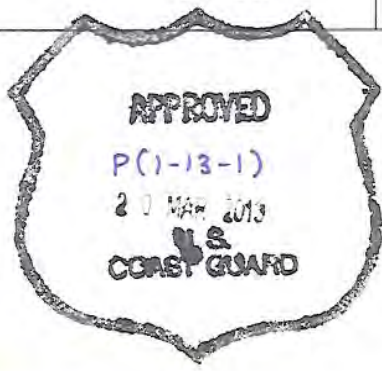
DATUM: NAVD88
TIDAL BENCH MARK: 8423898
FORT POINT, NEWCASTLE ISLAND, NH
MEAN SEA LEVEL = ELEV. -0.28'

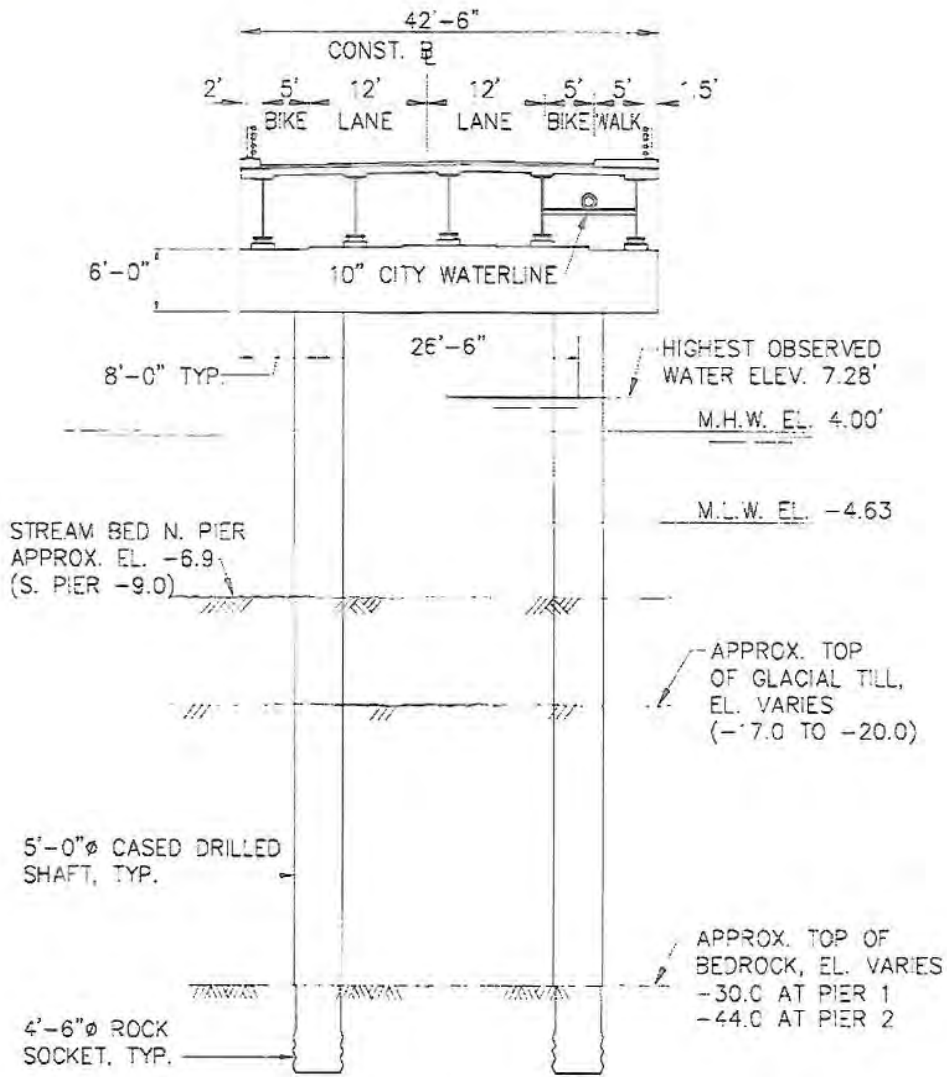
PROPOSED CHANNEL VERTICAL CLEARANCES	ELEVATION (FT. NAVD88)	PIER 1 MIN. VERT. CLEARANCE, FT.	MIDSPAN MIN. VERT. CLEARANCE, FT.	PIER 2 MIN. VERT. CLEARANCE, FT.
MEAN HIGH WATER (MHW)	4.00	10.38	15.45	11.13
MEAN LOW WATER (MLW)	-4.63	19.01	24.08	19.76

DECEMBER 2010 SHEET 3 OF 4

CITY OF PORTSMOUTH, NH
PUBLIC WORKS DEPARTMENT
SAGAVORE CREEK, Mile 0.95
BRIDGE NO. 198/034 REPLACEMENT
CITY OF PORTSMOUTH
ROCKINGHAM COUNTY
NEW HAMPSHIRE

ELEVATION VIEW





DATUM NAVD88 ELEV. 0.0
 PROPOSED SECTION AT PIERS
 SCALE: 1"=15'

DECEMBER 2010 SHEET 4 OF 4

CITY OF PORTSMOUTH, NH
 PUBLIC WORKS DEPARTMENT
 SAGAMORE CREEK, Mile 0.95
 BRIDGE NO. 198/034 REPLACEMENT
 CITY OF PORTSMOUTH
 ROCKINGHAM COUNTY
 NEW HAMPSHIRE

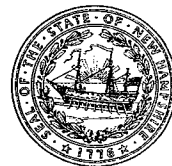
0 7.5 15 30
 SCALE IN FEET

SECTION VIEW





The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

WETLANDS AND NON-SITE SPECIFIC PERMIT 2011-00200

Permittee: City of Portsmouth,
680 Peverly Hill Rd, Portsmouth, NH 03801
Project Location: Route 1A Bridge, Portsmouth
Portsmouth Tax Map/Lot No. 223 /
Waterbody: Sagamore Creek

**NOTE--
CONDITIONS**

Page 1 of 2

APPROVAL DATE: 09/19/2011

EXPIRATION DATE: 09/19/2016

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. This permit shall not be considered valid unless signed as specified below.

PERMIT DESCRIPTION: Dredge and fill 1,049 square feet of tidal wetland and impact 14,992 square feet of previously developed upland tidal buffer zone for the removal and replacement of an existing deteriorated bridge. Temporarily impact 85 square feet of tidal wetland and 15,080 square feet of previously developed upland tidal buffer zone for the installation of temporary trestles for construction access and roadway approach work to the bridge.

THIS APPROVAL IS SUBJECT TO THE FOLLOWING PROJECT SPECIFIC CONDITIONS:

1. All work shall be in accordance with revised plans by Fay, Spofford & Thorndike, LLC dated November 2010, revised April 14, 2011 as received by the NH Department of Environmental Services (DES) on August 2, 2011.
2. This permit is contingent upon the submission to and approval by DES Wetlands Bureau of the final draft of the stormwater pollution prevention plan ("SWPPP").
3. The applicant shall notify and coordinate with the National Marine Fisheries and NH Fish and Game Department immediately prior to commencement of project construction to coordinate fisheries resources timing protections within the project area, and shall notify DES in writing that the required coordination has taken place to the resource agencies satisfaction.
4. The applicant shall notify the DES Shellfish Program immediately prior to commencement of project construction, and shall notify DES Wetlands in writing that the required notification has taken place.
5. Dredging in tidal waters shall be done between November 15 and March 15, and shall not be permitted during fish migration or larval setting stage of shellfish.
6. Dredged material shall be placed out of the NHDES jurisdiction unless otherwise specified.
7. Unconfined work within the river, exclusive of work associated with installation of a cofferdam, shall be done during low tide.
8. Prior to commencing work on a substructure located within surface waters, a cofferdam shall be constructed to isolate the substructure work area from the surface waters, unless other methods are specifically authorized by the DES Wetlands Bureau after submittal of a SWPPP.
9. Temporary cofferdams shall be entirely removed immediately following construction.
10. Construction equipment shall not be located within surface waters.
11. Discharge from dewatering of work areas shall be to sediment basins that are: a) located in uplands; b) lined with hay bales or other acceptable sediment trapping liners; and c) set back as far as possible from wetlands and surface waters, in all cases with a minimum of 20 feet of undisturbed vegetated buffer.
12. Appropriate siltation/erosion/turbidity controls shall be in place prior to construction, shall be maintained during construction, and remain in place until the area is stabilized. Silt fence(s) must be removed once the area is stabilized.
13. Installation and removal of temporary piers shall occur at low tide.
14. Within three days of the last activity in an area, all exposed soil areas, where construction activities are complete, shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack on slopes steeper than 3:1 or netting /matting and pinning on slopes steeper than 2:1.
15. Where construction activities have been temporarily suspended within the growing season, all exposed soil areas shall be stabilized within 14 days by seeding and mulching or if temporarily suspended outside the growing season, all exposed areas shall be stabilized within 14 days by mulching, mulching with tack on slopes steeper than 3:1 and stabilized by matting and pinning on slopes steeper than 2:1.

DES Web site: www.des.nh.gov

P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095

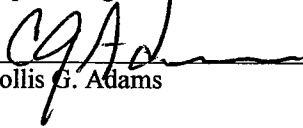
Telephone: (603) 271-3503 • Fax: (603) 271-6588 • TDD Access: Relay NH 1-800-735-2964

16. The contractor responsible for completion of the work shall utilize techniques described in the New Hampshire Stormwater Manual, Volume 3, Erosion and Sediment Controls During Construction (December 2008).
17. Appropriate storm water management and erosion control Best Management Practices (BMP) shall be implemented to ensure turbidity impacts are minimized and water quality standards are not violated. If the BMP conflicts with terms or conditions of this permit, the terms and conditions of this permit shall control.
18. The applicant/contractor shall limit unnecessary removal of vegetation within riparian areas during road construction and areas cleared of vegetation shall be re-vegetated as quickly as possible after construction to minimize erosion and restore wildlife habitat.
19. Land clearing in jurisdictional areas during construction is to be kept to a minimum to reduce impacts on wildlife habitat.
20. Standard precautions shall be taken not to import or transport soil or seed stock from nuisance, invading species such as purple loosestrife or Phragmites.
21. There shall be no further alteration of wetlands or surface waters without amendment of this permit.
22. At least 48 hours prior to the start of each construction contract, a pre-construction meeting shall be held with NHDES Wetlands Bureau and / or other Land Resources Management Program staff at the project site or at the NHDES Office in Portsmouth, N.H. to review the conditions of this wetlands permit and any environmental commitments stated in the approved documents.
23. It shall be the responsibility of the permittee to schedule and coordinate the pre-construction meeting providing at least 5-day notice to the NHDES Wetlands Bureau and / or other Land Resources Management Program staff, and the meeting shall be attended by the permittee, wetlands scientist(s), erosion control monitor, and the contractor(s) responsible for performing the work.
24. All activity shall be in accordance with the Comprehensive Shoreland Protection Act, RSA 483-B.
25. Any temporary impacts shall be regraded to original contours and replanted with similar vegetation.

GENERAL CONDITIONS THAT APPLY TO ALL DES WETLANDS PERMITS:

1. A copy of this permit shall be posted on site during construction in a prominent location visible to inspecting personnel;
2. This permit does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others;
3. The Wetlands Bureau shall be notified upon completion of work;
4. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits, and/or consult with other agencies as may be required (including US EPA, US Army Corps of Engineers, NH Department of Transportation, NH Division of Historical Resources (NH Department of Cultural Resources), NHDES-Alteration of Terrain, etc.);
5. Transfer of this permit to a new owner shall require notification to and approval by DES;
6. This permit shall not be extended beyond the current expiration date.
7. This project has been screened for potential impacts to **known** occurrences of rare species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or have received only cursory inventories, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species.
8. Review enclosed sheet for status of the US Army Corps of Engineers' federal wetlands permit.

APPROVED: _____


Collis G. Adams

DES Wetlands Bureau

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)



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

October 6, 2011

Regulatory Division
CENAE-R-PEC
Permit Number: NAE-2011-00422

City of Portsmouth
Department of Public Works
Attn: Mr. Steven F. Parkinson
680 Peverly Hill Road
Portsmouth, New Hampshire 03801

Dear Mr. Parkinson:

We have reviewed your application to perform work described in the enclosed New Hampshire Department of Environmental Services (NHDES) Wetlands Bureau Permit Approval No. 2011-00200, which the Wetlands Bureau approved on September 19, 2011. The approved work involves the discharge of fill material in a total area of approximately 1,134 square feet of waters of the United States for work associated with the replacement of the Sagamore Avenue (Route 1A) Bridge over Sagamore Creek in Portsmouth, New Hampshire. Of the total area of fill 1,049 square feet will be permanent and 85 square feet will be temporary. The work is further described on the plans referenced in the Wetlands Bureau approval and on the enclosed ten undated drawings entitled "Site Plan," "Wetland Impact Plans" and "Erosion Control Plan."

Based on our review of the information you provided to the NHDES Wetlands Bureau, we have determined that your project, which includes a discharge of dredged or fill material into waters or wetlands, will have only minimal individual or cumulative environmental impacts on waters of the United States, including wetlands. **We hereby conditionally authorize your project under the attached Federal permit known as the New Hampshire State Programmatic General Permit (NHSPGP) pending final concurrence with the Wetlands Bureau approval by the Governor & Executive Council (G&C).** This work must be performed in accordance with the terms and conditions of the NHSPGP.

You are responsible for complying with all of the PGP's requirements. Please review the attached PGP carefully to familiarize yourself with its contents. You should ensure that whoever does the work fully understands the requirements and that a copy of the permit document is at the project site throughout the time the work is underway.

This authorization expires on September 19, 2016 unless the PGP is modified, suspended, or revoked before that. You must complete the work authorized herein by that date. If you do not, you must contact this office to determine the need for further authorization before continuing the activity. We recommend that you contact us *before* this authorization expires to discuss a time extension or reissuance of the authorization.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Please note that if your proposal is vetoed or modified by the G&C, making it different from that which the NHDES Wetlands Bureau approved on the date stated in the first paragraph of this letter, you must re-submit a complete application to this office for review and processing in accordance with the terms and conditions of the then-current NHSPGP.


This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to this office.

This permit does not obviate the need to obtain other Federal, state or local authorizations required by law, including those listed in the PGP. Performing work not specifically authorized by this determination or failing to comply with all the terms and conditions of the PGP may subject you to the enforcement provisions of Corps regulations.

We continually strive to improve our customer service. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://www.nae.usace.army.mil/reg/Customer_Service_Survey.pdf.

If you have questions concerning this, please contact Paul F. Howard, P.E. of my staff at (978) 318-8674, (978) 318-8335/8338, (800) 343-4789, or, if calling from within Massachusetts, (800) 362-4367.

Sincerely,


Frank J. DelGiudice
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosures

Copies Furnished:

New Hampshire Department of Environmental Services, Wetlands Bureau, Attn: Mr. Collis Adams, P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095
U.S. Environmental Protection Agency, Region 1, ATTN: Mr. Mark Kern, Mail Code: OES-05-2, 5 Post Office Square, Suite 100, Boston, Massachusetts 02109-3912
Normandeau Associates, Inc., Attn: Ms. Lee E. Carbonneau, 25 Nashua Road, Bedford, New Hampshire 03110



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

SHORELAND IMPACT PERMIT 2011-00863

Permittee: City of Portsmouth, 680 Peverly Hill Road, Portsmouth, NH 03801
Project Location: US Route 1A, Portsmouth
Portsmouth Tax Map/Lot No. 223 / ROW
Waterbody: Sagamore Creek

**NOTE--
CONDITIONS**

Page 1 of 2

APPROVAL DATE: 05/10/2011

EXPIRATION DATE: 05/10/2016

Based upon review of the above referenced application, in accordance with RSA 483-B, a Shoreland Impact Permit was issued. This permit shall not be considered valid unless signed as specified below.

PERMIT DESCRIPTION: Impact 2,150 sq ft for the purpose of creating new approach necessary for new bridge construction.

THIS APPROVAL IS SUBJECT TO THE FOLLOWING PROJECT SPECIFIC CONDITIONS:

1. All work shall be in accordance with plans by Normandeau Associates last revised March, 2011 and received by the Department of Environmental Services ("DES") on April 15, 2011.
2. There shall be no impacts within wetlands, surface waters, or their banks until any permit as may be required under RSA 482-A has been obtained.
3. This permit is contingent upon receiving all necessary approvals from the NH DES Alteration of Terrain Bureau.
4. All activities conducted in association with the completion of this project shall be conducted in a manner that complies with applicable criteria of Administrative Rules Chapter Env-Wq 1400 and RSA 483-B during and after construction.
5. Erosion and siltation control measures shall be installed prior to the start of work, be maintained throughout the project, and remain in place until all disturbed surfaces are stabilized.
6. Erosion and siltation controls shall be appropriate to the size and nature of the project and to the physical characteristics of the site, including slope, soil type, vegetative cover, and proximity to wetlands or surface waters.
7. No person undertaking any activity in the protected shoreland shall cause or contribute to, or allow the activity to cause or contribute to, any violations of the surface water quality standards established in Env-Ws 1700 or successor rules in Env-Wq 1700.
8. Any fill used shall be clean sand, gravel, rock, or other suitable material.
9. The contractor responsible for completion of the work shall utilize techniques described in the New Hampshire Stormwater Manual, Volume 3, Erosion and Sediment Controls During Construction (December 2008).
10. Within three days of final grading or temporary suspension of work in an area that is in or adjacent to wetlands or surface waters, all exposed soil areas shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 3:1.
11. Silt fencing must be removed once the area is stabilized.

DES Web site: www.des.nh.gov

P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095

Telephone: (603) 271-2147 • Fax: (603) 271-6588 • TDD Access: Relay NH 1-800-735-2964

GENERAL CONDITIONS THAT APPLY TO ALL DES SHORELAND IMPACT PERMITS:

1. A copy of this permit shall be posted on site during construction in a prominent location visible to inspecting personnel;
2. This permit does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others;
3. The Wetlands Bureau shall be notified upon completion of work;
4. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits, and/or consult with other agencies as may be required (including US EPA, US Army Corps of Engineers, NH Department of Transportation, NH Division of Historical Resources (NH Department of Cultural Resources), NHDES-Alteration of Terrain, etc.);
5. Transfer of this permit to a new owner shall require notification to and approval by the Department;
6. This permit shall not be extended beyond the current expiration date.
7. This project has been screened for potential impacts to known occurrences of rare species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or have received only cursory inventories, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species.

APPROVED: _____

Jason Arbe

DES Wetlands Bureau

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)



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

November 14, 2011

Steve Parkinson, Director
Department of Public Works
City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

RE: File No. 2011-p-3; Replacement of the Route 1A Bridge Over Sagamore Creek

Dear Mr. Parkinson:

The New Hampshire Coastal Program has received your federal consistency certification proposing to remove and replace the structurally deficient Route 1A Bridge over Sagamore Creek in Portsmouth, pursuant to Section 307(c)(3)(A) of the Coastal Zone Management Act, 16 U.S.C. § 1456(c)(3)(A). Based upon review of the federal consistency certification, we find that the proposed activity complies with the enforceable policies of New Hampshire's federally approved coastal management program.

Should you have any questions, please feel free to contact me at (603) 559-0025.

Sincerely,

Christian Williams
Federal Consistency Coordinator
New Hampshire Coastal Program

cc: Christopher Bisignano, U.S. Coast Guard



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Thomas S. Burack, Commissioner

June 20, 2013

City of Portsmouth, Dept. of Public Works
Attn: Peter Rice
680 Peverly Hill Road
Portsmouth, New Hampshire 03801

Re: Sagamore Bridge Replacement
Sagamore Avenue
Tax Map 223, Portsmouth, NH

Permit: AoT-0587

Dear Applicant:

Based upon the revised plans and application, approved on June 20, 2013, we are hereby issuing RSA 485-A:17 Alteration of Terrain Permit AoT-0587. The permit is subject to the following conditions:

1. Activities shall not cause or contribute to any violations of the surface water quality standards established in Administrative Rule Env-Wq 1700.
2. You must submit revised plans for permit amendment prior to any changes in construction details or sequences. You must notify the Department in writing within ten days of a change in ownership.
3. You must notify the Department in writing prior to the start of construction and upon completion of construction. Forms are available at:
<http://des.nh.gov/organization/divisions/water/aot/categories/forms.htm>
4. The plans and supporting documentation in the permit file are a part of this approval.
5. **This permit expires on June 20, 2018.** No earth moving activities shall occur on the project after this expiration date unless the permit has been extended by the Department. If requesting an extension, the request must be received by the department before the permit expires. The Amendment Request form is available at: <http://des.nh.gov/organization/divisions/water/aot/categories/forms.htm>.
6. This permit does not relieve the applicant from the obligation to obtain other local, state or federal permits that may be required (e.g., from US EPA, US Army Corps of Engineers, etc.). Projects disturbing over 1 acre may require a federal stormwater permit from EPA. Information regarding this permitting process can be obtained at: <http://des.nh.gov/organization/divisions/water/stormwater/construction.htm>.
7. No activity shall occur in wetland areas until a Wetlands Permit is obtained from the Department. Issuance of this permit does not obligate the Department to approve a wetlands permit for this project.

Sincerely,

Ridgely Matuck, P.E.
Alteration of Terrain Bureau

cc: Portsmouth Planning Board
Portsmouth Conservation Commission

ec: Fay, Spofford & Thorndike.

APPENDIX B

CONTRACT PROVISIONS FOR FEDERAL-AID CONSTRUCTION CONTRACTS

The Contract Provisions, Notices, Special Attentions, Special Provisions, and all other documents included in this Attachment are hereby bound as part of the Contract between the Owner and the Contractor for this project.

The Contractor States and Acknowledges, by submittal of a Bid Proposal, that; the Bidder and all subcontractors as required, are in conformance with and will fulfill all requirements as set forth in the attached REQUIRED CONTRACT PROVISIONS FOR FEDERAL-AID CONSTRUCTION CONTRACTS.

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06/24/08

Supersedes: 9/11/06, 12/5/90

WAGE RATES**FEDERAL AID PROJECTS**

This proposal contains minimum wage determinations as specified by the U.S. Secretary of Labor. Copies of the attached wage determination(s) shall be posted on the bulletin board at the work site and furnished to employees upon request. Furthermore, the wage determination(s) shall be incorporated into all subcontract agreements.

If the Contractor, any subcontractor or lower-tier contractor intends to employ a classification of labor not listed in the attached determination(s), it shall submit a Request for Additional Work Classification(s) to the New Hampshire Department of Transportation, Labor Compliance Office at (603) 271-2467. The Contractor is responsible for ensuring that a Request is submitted for any additional classification of work to be employed by itself, any subcontractor or lower-tier contractor 3-4 weeks before the classification is utilized.

This contract is subject to the Work Hours Act of 1962, P.L. 87-581 and implementing regulations.

NOTICE TO ALL BIDDERS

In accordance with the section "NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)", the New Hampshire Department of Transportation has the authority and responsibility to notify the Office of Federal Contract Compliance Programs of the United States Department of Labor if they become aware of any possible violations of Executive Order 11246 and 41 Code of Federal Regulation Chapter 60.

The Office of Federal Contract Compliance Programs is the sole authority for determining compliance with Executive Order 11246 and 41 Code of Federal Regulation Chapter 60 and the Contractor should contact them regarding related compliance issues.

Source 41 CFR 60-4 Affirmative Action Requirements

Source: 41 CFR 60-4.2 Solicitations

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

	Goals for minority participation for each trade	Goals for female participation in each trade
<u>STANDARD METROPOLITAN STATISTICAL AREAS (SMSA)</u>		
SALEM-PLAISTOW:	4.0	6.9
MANCHESTER-NASHUA	0.7	6.9
<u>NON-SMSA COUNTIES</u>		
COOS, GRAFTON, SULLIVAN:	0.8	6.9
BELKNAP, MERRIMACK, CARROLL, STRAFFORD:	3.6	6.9
CHESHIRE:	5.9	6.9
ROCKINGHAM:	4.0	6.9
HILLSBOROUGH:	0.7	6.9

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation addressed as follows:

Director
Federal Contract Compliance Program
US Department of Labor
JFK Building, Room 1612-C
Boston, MA 02203

The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed **as noted within the Contract Special Provisions** for Affirmative Action to ensure Equal Employment Opportunity..

Source 41 CFR 60-4 Affirmative Action Requirements

Source 41 CFR 60-4.3 Equal Opportunity Clauses

Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

[1]. As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

[2]. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

[3]. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

[4]. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed

as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

[5]. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

[6]. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

[7]. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have

Source 41 CFR 60-4 Affirmative Action Requirements

employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's

recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals

and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take

Source 41 CFR 60-4 Affirmative Action Requirements

affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

(b) The notice set forth in 41 CFR 60-4.2 and the specifications set forth in 41 CFR 60-4.3 replace the New Form for Federal Equal Employment Opportunity Bid Conditions for Federal and Federally Assisted Construction published at 41 FR 32482 and commonly known as the Model Federal EEO Bid Conditions, and the New Form shall not be used after the regulations in 41 CFR Part 60-4 become effective.

[43 FR 49254, Oct. 20, 1978; 43 FR 51401, Nov. 3, 1978, as amended at 45

FR 65978, Oct. 3, 1980]

**REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar

with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions

of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually worked therein, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-

Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly

rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is

evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this

covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See Reverse for public burden disclosure.)

1. Type of Federal Action: <input type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. Report Type: <input type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change For Material Change Only: year _____ quarter _____ date of last report _____
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known:	5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime:	
6. Federal Department/Agency:	7. Federal Program Name/Description: CFDA Number, if applicable:	
8. Federal Action Number, if known:	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(If individual, last name, first name, MI):</i>	b. Individuals Performing Services <i>(Including address if different from No. 10a)</i> <i>(last name, first name, MI):</i>	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less that \$10,000 and not more than \$100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____	
Federal Use Only:		Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred, Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be a prime or subaward receipt. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (Item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in Item 1 (e.g., Request for Proposal (RFP) number; Invitation for bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g. "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in Item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in Item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name and Middle Initial (MI).
11. Certifying official shall sign and date the form, print his/her name, title and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503.

04/01/09

SA

SSD: 06/28/04

ALL FA PROJECTS

SPECIAL ATTENTION

DISADVANTAGED BUSINESS ENTERPRISE (DBE) DIRECTORY

The current New Hampshire Unified Disadvantaged Business Enterprise (DBE) Directory is available on the NHDOT website at <http://www.nh.gov/dot/business/contractors.htm>. If you have questions or do not have access to the Internet, the directory may be obtained from DBE Coordinator, located at 7 Hazen Drive, Concord, NH 03302, Tel: (603) 271-6612.

SPECIAL ATTENTION

Disadvantaged Business Enterprise (DBE)

Disadvantaged Business Enterprise (DBE) Policy. It shall be the policy of the New Hampshire Department of Transportation (NHDOT) to ensure nondiscriminatory opportunity for Disadvantaged Business Enterprises (DBE's) to participate in the performance of all contracts and subcontracts financed with Federal funds as specified by the regulations of the United States Department of Transportation (USDOT), Federal Highway Administration and as set forth below.

1. Policy. It is the policy of the United States Department of Transportation to ensure nondiscriminatory opportunity for disadvantaged business enterprises, as defined in 49 Code of Federal Regulation (CFR) Part 26, to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds. Consequently, the DBE requirements of 49 CFR Part 26 applies to this contract.

2. Disadvantaged Business Enterprise (DBE) Obligation. The State and its Contractors agree to ensure nondiscriminatory opportunity for disadvantaged business enterprises, as defined in 49 CFR Part 26, to participate in the performance of contracts and subcontracts financed in whole or in part with Federal funds. **All Contractors must include this assurance in every subcontract:** *The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of USDOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the NHDOT deems appropriate.*

3. Sanctions of Non-Compliance. The Contractor is hereby advised that failure of the Contractor, or any Subcontractor performing work under this contract, to carry out the requirements set forth in paragraphs 1 and 2 above shall constitute a breach of contract and, after notification of the United States Department of Transportation, may result in termination of this contract or such remedy as the State deems appropriate.

Overall Statewide DBE Goals. The NHDOT currently employs a race/gender neutral DBE policy to attain its overall statewide DBE goals. This means that unless otherwise stated in the contract, the NHDOT relies on the voluntary cooperation of all contractors to utilize DBE's on every project, sufficient to meet or exceed the current statewide DBE goal. Although the majority of statewide DBE goals are currently voluntary, failure of the NHDOT to meet or exceed the overall statewide DBE goal as required by the Federal Highway Administration (FHWA), could necessitate placement of mandatory DBE participation requirements on all future statewide projects.

Disadvantaged Business Enterprise (DBE) Program Goals. The New Hampshire Department of Transportation is required to set an overall DBE goal for participation in all transportation related Federal-aid projects. The goal is determined following guidelines set forth in 49 CFR 26.45, and based on the availability of ready, willing and able DBE's who submitted bids for transportation related projects, compared as a percentage of all available contractors who submitted bids for transportation related projects during the same time period. The DBE goal may be adjusted to take into account other factors impacting DBE utilization, in an effort to narrowly tailor the overall DBE goal. The detailed goal setting methodology and current overall DBE goal may be viewed on the NHDOT website at www.nh.gov/dot.

SA 7/2/2013

Disadvantaged Business Enterprise (DBE) Definition. A DBE is defined as a business that is owned and controlled by one or more socially and economically disadvantaged person(s). For the purpose of this definition:

- A. "Socially and economically disadvantaged person" means an individual who is a citizen or lawful permanent resident of the United States and who is a Woman, Black, Hispanic, Portuguese, Native American, Asian American, or a member of another group, or an individual found to be disadvantaged by an individual determination of social disadvantage as described in 49 CFR 26 appendix E, determinations of social and economic disadvantage.
- B. "Owned and controlled" means a business which is:
 - (1) A sole proprietorship legitimately owned and controlled by an individual who is a disadvantaged person.
 - (2) A partnership, joint venture or limited liability Company in which at least 51% of the beneficial ownership interests is legitimately held by a disadvantaged person(s).
 - (3) A corporation or other entity in which at least 51% of the voting interest and 51% of the beneficial ownership interests are legitimately held by a disadvantaged person(s).

The disadvantaged group owner(s) or stockholder(s) must possess control over management, interest in capital, and interest in earnings commensurate with the percentage of ownership. Disadvantaged participation in a joint venture must also be based on the sharing of real economic interest and must include proportionate control over management, capital, and earnings, as above. If the disadvantaged group ownership interests are real, substantial and continuing and not created solely to meet the requirements of this program, a firm is considered a bona fide DBE.

Certified DBE Directory. The current New Hampshire Unified Disadvantaged Business Enterprise (DBE) Directory is available online at www.nh.gov/dot. This directory contains all currently certified DBE's available for work in New Hampshire, and is updated monthly. Only firm's listed in this directory are eligible for DBE credit on NH Federal-aid projects. If you have questions about DBE certification, or do not have access to the Internet, please call the DBE Coordinator at (603) 271-6612 for assistance.

Counting DBE Participation For Project Goals. In order for payments made to DBE contractors to be counted toward DBE goals, the DBE contractors must perform a commercially useful function (CUF). The DBE must be responsible for execution of the work of the contract and must carry out its responsibilities by actually performing, managing, and supervising the work involved, consistent with standard industry practices. This means that:

- A. The DBE must also be responsible for ordering its own materials and supplies, determining quantity and quality, negotiating price, installing (where applicable) and paying for the material itself;
- B. The DBE must perform work commensurate with the amount of its contract;
- C. The DBE's contribution cannot be that of an extra participant or a conduit through which funds are passed in order to obtain the appearance of DBE participation;
- D. The DBE must exercise responsibility for at least fifty percent of the total cost of its contract with its own work force;
- E. None of the DBE's work can be subcontracted back to the prime contractor, nor can the DBE employ the prime's, or other subcontractor's supervisors currently working on the project;
- F. The DBE's labor force must be separate and apart from that of the prime contractor or other subcontractors on the project. Transferring crews between primes, subcontractors, and DBE contractors is not acceptable;
- G. The DBE owner must hold a Public Works license and any other professional or craft licenses required for the type of work he/she performs on the project;

SA 7/2/2013

H. The DBE may rent or lease, at competitive rates, equipment needed on the project from customary leasing sources or from other subcontractors on the project.

Allowable credit for payments made to DBEs for work performed. A contractor may take credit for payments made to a certified DBE that satisfies (CUF) requirements at the following rate.

- A. A DBE Prime Contractor; count 100% of the value of work performed by own forces, equipment and materials count towards DBE goals.
- B. An approved DBE subcontractor; count 100% of the value of work performed by the DBE's own forces, equipment and materials, excluding the following:
 - The cost of materials/supplies purchased from a non-DBE Prime Contractor.
 - The value of work provided by non-DBE lower tier subcontractors, including non-DBE trucking to deliver asphalt to a DBE contractor.
- C. A DBE owner-operator of construction equipment; count 100% of expenditures committed.
- D. A DBE manufacturer; count 100% of expenditures committed. The manufacturer must be a firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the Contractor.
- E. A regular DBE dealer/supplier; count 60% of expenditures committed.
A regular dealer/supplier is defined as a firm that owns, operates, or maintains a store, warehouse or other establishment, in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. A person may be a dealer in such bulk items as petroleum products, steel, cement, gravel, stone or asphalt without owning, operating or maintaining a place of business, if the person both owns and operates distribution equipment for the products, by the means of a long term agreement, and not by a contract by contract basis.
- F. A DBE Broker; count for DBE credit only the fees or commissions charged for assistance in the procurement, and, fees and transportation charges for the delivery of materials or supplies required at the job site, but not the cost of materials procured. A broker is defined as any person(s) or firm who arranges or expedites transactions for materials or supplies, and does not take physical possession of the materials or supplies at their place of business for resale.
- G. A DBE renter of construction equipment to a contractor; count 20% of expenditures committed, with or without operator.
- H. A bona fide DBE service provider; count 100% of reasonable fees or commissions.
Eligible services include professional, technical, consultant, or managerial, services and assistance in the procurement of essential personnel, facilities, equipment, materials or supplies required for the performance of the contract. Eligible services also include agencies providing bonding and insurance specifically required for the performance of the contract.
- I. A trucking, hauling or delivery operation, count 100% of payments when trucks are owned, operated, licensed and insured by the DBE and used on the contract and, if applicable, includes the cost of the materials and supplies. 100% of payments when the DBE leases trucks from another DBE firm including an owner-operator. 100% of reasonable fees, or commissions, the DBE receives as a result of a lease arrangement for trucks from a non-DBE, including an owner-operator.
- J. Any combination of the above.

Reporting Requirements for Payments Made To DBE's: On all Federal-aid projects, the Prime Contractor is required to report payments made to DBE's during the life of the contract, on a quarterly basis, for the periods covering January 1st-March 31st, April 1st-June 30th, July 1st-September 30th and October 1st-December 31st, The NHDOT will provide the Contractor with a quarterly DBE payments report, detailing all DBE's subcontracted by the Contractor, per project. The Contractor shall report any payments made to DBE's during the requested reporting period. This documentation shall be submitted to the Office of Federal Compliance within the time period stated on the NHDOT quarterly request. Failure of the Contractor to submit this information may result in the Department withholding progress payments.

SA 7/2/2013

Removal of Approved DBE From Transportation Related Project: Contractors may not terminate for convenience, any approved DBE subcontractor and perform the work with their own forces, without prior written consent from the NHDOT.

MUNICIPAL PROJECTS ONLY: Timely submission of invoices to Municipalities: Prime contractors must submit all invoices received for satisfactorily completed work, from any subcontractor/lower-tier subcontractor/material supplier, to Municipalities for payment within 30 days of receipt.

ALL FA PROJECTS (STEEL & IRON PRODUCTS)

SPECIAL ATTENTION

BUY AMERICA

In accordance with the **BUY AMERICA** requirements of the Federal regulations, all manufacturing processes for steel and iron materials furnished for permanent incorporation into the work on this project shall occur in the United States. The only exception to this requirement is the production of pig iron and the processing, pelletizing and reduction of iron ore, which may occur in another country. Other than these exceptions, all melting, rolling, extruding, machining, bending, grinding, drilling, coating, etc. must occur in the United States.

Products of steel include, but are not limited to, such products as structural steel, piles, reinforcing steel, structural plate, steel culverts, guardrail and steel supports for signs, signals and luminaires. Products of iron include, but are not limited to, such products as cast iron frames and grates. Coatings include, but are not limited to, the applications of epoxy, galvanizing and paint. The coating material is not subject to this clause, only the application process.

A Certificate of Compliance, conforming to the requirements of Section 106.04, shall be furnished for steel and iron materials. Records to be maintained by the contractor for this certification shall include a signed mill test report and a signed certification by each supplier, distributor, fabricator, and manufacturer that has handled the steel or iron product affirming that every process, including the application of a coating, performed on the steel or iron product has been carried out in the United States of America, except as allowed by this Special Attention. The lack of these certifications will be justification for rejection of the steel or iron product.

The requirements of said law and regulations do not prevent a minimal use of foreign steel and iron materials if the cost of such materials used does not exceed one-tenth of one percent (0.1%) of the total contract price or \$2,500.00, whichever is greater.

Upon completion of the project, the Contractor shall certify in writing as to compliance with this Special Attention and also provide the total project delivered cost of all foreign steel and/or iron permanently incorporated into the project. The form for this certification is entitled "Buy America Certificate of Compliance" and can be found at www.NHDOT.com.

December 24, 1998
Supersedes Spec. Attn. dated 3/29/88 & 12/5/90

FHWA Projects

SPECIAL ATTENTION

**CONTRACT AFFIDAVIT - CERTIFICATION REGARDING DEBARMENT
SUSPENSION**

The separate form entitled, CONTRACT AFFIDAVIT (As Required by Section 112(c) of Title 23 USC) has been deleted from this proposal.

Bidders are advised that the last page of the bidding proposal has been revised to include the same reference, **IN BOLD PRINT**, relative to the non-collusion statement included on the discontinued form.

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The Contractor is advised that 49 CFR 29.510, Appendix A, requires that the Contractor, including all principals, certify that they are not currently under debarment or suspension or have not been under debarment or suspension within the past three years. (For certification instructions see next page).

The certification has been added, **IN BOLD PRINT**, onto the next to the last page of the bidding proposal.

The Contractor is further advised that Appendix B of 49 CFR 29.510 regarding certification of lower tier transactions has been added to Form FHWA-1273.

Appendix A - Certification regarding Debarment, Suspension, and other Responsibility Matters - Primary Covered Transactions.

Instruction for Certification

1. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

2. The inability of a person to provide the certification required below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such person from participation in this transaction.

3. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

4. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if at any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

5. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is being submitted for assistance in obtaining a copy of these regulations.

6. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

7. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification" Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

8. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

10. Except for transactions authorized under paragraph 6 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

1/2001
Supersedes 3/90
ALL FA PROJECTS

SPECIAL ATTENTION

LOBBYING

UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SUBJECT: LIMITATION ON USE OF GRANT OR CONTRACT FUNDS FOR LOBBYING

The lobbying restrictions were established by Section 319 of Public Law 101-121 (Department of the Interior and Related Agencies Appropriations Act for Fiscal Year 1990).

The law prohibits Federal funds from being expended by the recipient or any lower tier subrecipients of a Federal contract, grant, loan, or cooperative agreement to pay any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal contract, the making of any Federal grant or loan, or the entering into of any cooperative agreement. The extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement is also covered.

Federal-aid contractors, and consultants, as well as lower tier subcontractors and subconsultants are also subject to the lobbying prohibition. To assure compliance, a certification provision is included in all Federal-aid construction solicitations and contracts, and consultant agreements exceeding \$100,000 in Federal funds.

The Contractor shall be aware that by signing and submitting this proposal, he or she is attesting to the requirements of the certification provisions.

During the period of performance of a grant or contract, recipients and subrecipients must file disclosure form (Standard Form LLL) at the end of each calendar year quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any previously filed disclosure form.

Lower tier certifications should be maintained by the next tier above (i.e., prime contractors will keep the subcontractors' certification on file, etc.). Copies of Standard Form LLL will be included in the subcontract package for distribution to successful bidders.

03/26/10

ALL FHWA & FA PROJECTS

Special Attention

SUMMARY OF REQUIREMENTS FOR FEDERAL-AID PROJECTS ON MUNICIPALLY MANAGED PROJECTS

OFFICE OF FEDERAL COMPLIANCE

1. Subletting On Federal-aid Contracts.

a. On Federal-Aid projects, it is a requirement that the following documents be incorporated in and made a part of every subcontract agreement (including lower-tier subcontract agreements):

- NH DOT Policy on Subcontracting
- Required Contract Provisions (FHWA-1273)
- Disadvantaged Business Enterprise (DBE) Policy (SPECIAL ATTENTION item)
- DBE Program Requirements (Standard Spec 103.06)
- *41 CFR 60-4.2 – Solicitations
- *41 CFR 60-4.3 – Equal Opportunity Clauses
- Payroll/Wage Requirements Summary
- **U.S. Department of Labor wage rates entitled “GENERAL WAGE DECISION” (as contained in the contract)
- This Special Attention

*Applicable only to contracts or subcontracts in excess of \$10,000

**Does not apply to Material Suppliers, unless performing work on site

- b. Contractors shall not be approved/authorized to work until the Department’s Annual Assurances requirements have been fulfilled.
- c. In accordance with FHWA Form 1273, Required Contract Provisions and RSA 228:4-b, **NO PORTION** of the contract shall be sublet, assigned or otherwise disposed of without the written consent of the NH DOT. Subcontractors and/or lower-tier subcontractors cannot work on site until they have the approval paperwork in hand. Violations could result in a civil penalty of up to \$2,500, assessment of \$100 per employee per day of noncompliance and debarment for up to 5 years.
- d. Prime Contractors shall submit consent to sublet packages ensuring it is received by the Office of Federal Compliance **at least 5 working days prior** to said subcontractor (or lower-tier subcontractor) performing work on site. Primes shall provide a courtesy copy to the Town, and/or Consultant, if applicable, on all submissions.

- e. Prior to performing work on any state project or any work on any highway, bridge or other construction, reconstruction, alteration or maintenance project, each contractor, subcontractor and independent contractor shall complete and sign a Work Certificate and otherwise comply with Certification Requirements of RSA 21-I:80 and RSA 228:4-b. Work Certificates shall be provided to the NHDOT Office of Federal Compliance as part of each subcontractor/lower-tier subcontractor approval package. **IMPORTANT: Any person directly performing work on a project, or who is actively engaged in on-site work on any construction site, cannot elect exclusion from Workers' Compensation coverage under RSA 281-A:18-a.**
- f. NH DOT Office of Federal Compliance is the sole approval authority for all Municipally managed construction projects. Consents to sublet shall be submitted to the Office of Federal Compliance.

2. **FHWA Form 1273, Required Contract Provisions.**

- a. The Prime Contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case.
- b. In accordance with Form FHWA 1273, Required Contract Provisions, Section I, Paragraph 2, the Prime Contractor shall be responsible for compliance by any subcontractor or lower-tier subcontractor. This shall include any unpaid wages found to be owed that is not paid by a subcontractor or lower-tier subcontractor.
- c. A breach of any of the stipulations contained in the Form FHWA 1273, Required Contract Provisions, shall be sufficient grounds for termination of the contract.

3. **Sign In Sheets.** Use of daily sign-in sheets is **mandatory** on all Municipally managed construction projects. Every person must sign in, on a daily basis, prior to performing work on site. As a minimum, sign-in sheets shall identify the project name and number and will indicate the date, time, printed name and signature of each worker signing in, name of company he/she works for, and his/her work classification that work is actually performed in. The Prime Contractor is responsible to ensure sign-in sheet requirements are met and will review and initial sign-in sheets, on a daily basis, certifying a subcontractor's employees are authorized to be on site (approved subcontractor). Sign-in sheets shall be located in a centralized location. A 3-ring binder shall be used with newest sign-in sheets on top. Sign-in sheets are an inspection item.

4. **OFC Form 1, Monthly Employment Utilization Report.** Contractors performing \$10,000 or more work on Federal-aid construction projects are required to submit a completed Monthly Employment Utilization Report, OFC Form 1, on a monthly basis. Reports will be sent directly to the NHDOT Office of Federal Compliance no later than the 15th of each month for any such month work is performed. When the 15th falls on a weekend or a holiday, the completed report is due no later than the next business day. Prime Contractors are responsible for the collection and submission of monthly utilization reports for all subcontractors and lower-tier subcontractors.

5. **Temporary Suspensions.**

- a. Any Contractor, Subcontractor, or Lower-tier Subcontractor found to be in violation of FHWA Form 1273, Required Contract Provisions, made part of its contract, or has failed to comply with OFC Field Audit requirements, shall be required to take corrective action before participating in future projects funded by the Department. Corrective action shall include, but is not limited to, the submission of certified payrolls or other records and reports necessary to verify compliance with the Provisions.
- b. Any Contractor, Subcontractor or Lower-tier Subcontractor found to have repeatedly violated the FHWA Form 1273, Required Contract Provisions, may be required to complete 4-hours of Federal Contract Compliance Training conducted by the NH DOT Office of Federal Compliance. When mandated, a principal owner and/or company executive and his/her payroll accountant shall attend. Federal Contract Compliance Training must be completed before participation on future projects is authorized. This requirement does not relieve the Contractor of its obligations under the prime contract, nor does it prevent the Department from seeking other remedies or enforcement action, as provided by the governing Rules, Laws, and Federal Regulations.
- c. Companies are notified of suspensions in writing. Actions the company must take to have participation privileges restored will be clearly indicated. Companies will also be advised that if a satisfactory response is not received within 30 days of receipt of the suspension notice, the company will be considered "non-responsive." In cases where companies are non-responsive, and unpaid wages on the part of the subcontractor or lower-tier subcontractor are involved, the matter will then be deferred to the Prime Contractor for payment of wages as provided in Form FHWA 1273, Required Contract Provisions, Section I, Paragraph 2.

6. **Right To Withhold Payments.** The Town shall withhold funds claimed by the Contractor, as directed by the NHDOT Office of Federal Compliance, for any of the following:

- a. Failure of the Contractor to make payments to Subcontractors for Materials or labor
- b. Regulatory non-compliance or enforcement
- c. Failure to comply with NH DOT Office of Federal Compliance Field Audit Report requirements
- d. Failure to comply with monthly reporting requirements, as applicable
- e. Failure to submit OJT 1, On-The-Job Training Acknowledgement and Statement of Intent within 30 days of the project start date
- f. Failure to submit closeout documentation
- g. All other causes that the Department reasonably determines negatively affect the State's interest

7. **Final Payment Release.** Once final project records are transferred to the NH DOT Office of Federal Compliance, a final review shall be performed to determine compliance with the Federal provisions. Release of any final payment shall not be made to the Contractor until the Office of Federal Compliance issues a payment release letter (ok to pay) certifying:

- a. All required payrolls, labor, and EEO documentation have been received and deemed complete and correct.

b. DBE requirements stipulated in the Contract and/or the Required Contract Provisions have been fulfilled.

6. **Deposits and Escrows**: Every attempt is made to complete compliance actions and resolve any disputes before the project is completed and final payments are made. Sometimes, however, corrective actions or disputes continue after completion and provisions must be made to ensure that funds are available to pay any wage restitution that is ultimately found due. In these cases, the project can proceed to final closing provided the Prime Contractor, from payments already provided him/her, provides written evidence a deposit of an amount equal to the potential liability for wage restitution and liquidated damages, if applicable, has been deposited in a *escrow account*. When a final decision is rendered, the Prime Contractor makes disbursements from the account in accordance with the decision. Deposit/escrow accounts are established for one or more of the following reasons:

- a) Where the parties have agreed to amounts of wage restitution that are due but the employer has not yet furnished evidence that all the underpaid workers have received their back wages. The deposit is equal to the amount of restitution due to workers lacking payment evidence. As proper documentation is received, an amount corresponding to the documentation is returned to the depositor. Amounts for any workers who cannot be located are held in the escrow account for three (3) years. Amounts remaining in the account not disbursed by the end of this three-year period shall be returned to the Prime Contractor.
- b) Where underpayments are suspected or alleged and an investigation has not yet been completed. The deposit is equal to the amount of wage restitution and liquidated damages, if applicable, that is estimated to be due. If the final determination of wages due is less than the amount estimated and placed in the escrow account, the escrow will be reduced to the final amount and the difference will be returned to the depositor. If the parties agree to the investigative findings, the amounts due to workers will be disbursed from the escrow account in accordance with the schedule of wages due. Amounts for unfound workers will be retained for a period of three (3) years and subsequently disbursed to the depositor as described above in Paragraph 7a.
- c) Where the parties are waiting for the outcome of an administrative hearing that has been or will be filed contesting a final determination of wages due. The deposit shall be equal to the amount of wage restitution and liquidated dates, if applicable, that have been determined to be due. Once the final decision is rendered, disbursements from the escrow account are made in accordance with the decision.

S U P P L E M E N T A L S P E C I F I C A T I O N

AMENDMENT TO SECTION 109 -- MEASUREMENT AND PAYMENT

AMENDMENT TO SUBSECTION 109.09 -- PAYMENTS TO SUBCONTRACTORS

109.09 Prompt Payment to Subcontractors.

The Prime Contractor shall pay all Subcontractors for the work performed no later than 21 calendar days from the date the Prime Contractor received payment from the Department for said work, including materials in accordance with 109.07 and/or 109.08 paid for in the progress payments. Subcontractors are required to pay their Subcontractors and/or material suppliers, within 21 calendar days from the date they receive payment for satisfactory work performed or supplies received. This Prompt Pay requirement shall be made part of all subcontracts and agreements.

If the Prime Contractor believes that any portion of the payment should be withheld from the Subcontractor, the Prime Contractor shall notify the NHDOT Contract Administrator in writing, prior to the estimate being processed. The NHDOT Office of Federal Compliance shall be made part of this notification. The NHDOT may withhold payment for the portion of work in dispute pending resolution.

This prompt payment provision is a requirement of 49 CFR 26.29 and does not confer third-party beneficiary right or other direct right to a Subcontractor against the Department. This provision applies to both DBE and non-DBE Subcontractors.

Satisfactory Work Performed. Satisfactory work performed shall be defined for purposes of this prompt payment provision as:

1. Upon review, the Engineer finds the work completed in accordance with the contract, plans and specifications, and;
2. Required paperwork, for Progress and Partial payments, including material certifications and payrolls, has been received.

The determination of whether work meets the standards set forth above is the responsibility of the Engineer. If the Subcontractor becomes insolvent after it satisfactorily performs work as defined above but before payment is due, the obligation to pay is not extinguished. (Payment may have to be made to the bankruptcy trustee or to an escrow account for the benefit of creditors.)

The Prime Contractor must include, in all subcontract agreements, notices to Subcontractors of their right to prompt payment, and of the Department's policy prohibiting Prime Contractor's from holding retainage from Subcontractors under 49 CFR 26.29.

Failure of a Prime Contractor or a Subcontractor to comply with these prompt payment provisions may result in sanctions.

Non-Payment Claims. All notifications of failure to meet prompt payment provisions shall be referred by Subcontractors, in writing, to the NHDOT Office of Federal Compliance with a copy supplied to the respective Contract Administrator.

Payment Certifications. The Prime Contractor or any Subcontractor who receives payment for work and/or materials (specifically supplied to the project in excess of \$10,000) shall submit a "Monthly Prompt Pay Certification," OFC Form 18, to the NHDOT Office of Federal Compliance no later than the 10th calendar day of each month.

TE/CMAQ Program
Construction Proposal

It is proposed:

To execute the Contract and begin work within 10 days from the date specified in the "Notice to Proceed" and to prosecute said work so as to complete the _____ and its appurtenances on or before _____.

To furnish a Contract Bond in the amount of 100 per cent of the Contract award, as security for the construction and completion of the _____ and its appurtenances in accordance with the Plans, Specifications and Contract. The Contractor's attention is called to Section 103.05 of the NHDOT Standard Specifications for road and bridge construction which provides the following guidance: unless specifically waived in the Proposal, upon execution of the Contract, the successful Bidder shall furnish the Agency a surety bond or bonds equal to the sum of the Contract amount. The form of the bond(s) shall be acceptable to the Agency and the bonding Company issuing the bond(s) shall be licensed to transact business in the State of New Hampshire, and....

To certified that the Bidder, in accordance with the requirements of 103.06 and 108.01, intends to sublet, assign, sell, transfer or otherwise dispose of one or more portions of the work and (1) has contacted the appropriate listed disadvantaged businesses and afforded such disadvantaged businesses equal consideration with non-disadvantaged business for all work the Bidder currently proposes to sublet, assign, sell, transfer or otherwise dispose of, (2) may contact additional appropriate disadvantage businesses and will afford such businesses equal consideration with non-disadvantaged businesses for all work the Bidder in the future proposes to sublet, assign, sell, transfer or otherwise dispose of, and (3) will complete enclosed "DISADVANTAGED BUSINESS ENTERPRISE COMMITMENT FORM" and Letters of Intent for each disadvantaged business. The name of the person in the Bidder's organization who has been designated as the liaison officer to administer the disadvantaged business enterprise program is:

(To be completed by the Bidder)

To guarantee all of the work performed under this Contract to be done in accordance with the Specifications and in good and workmanlike manner, and to renew or repair any work which may be rejected, due to defective materials or workmanship, prior to final completion and acceptance of the project.

Enclosed herewith find certified check or bid bond in the amount of _____ dollars (\$ _____), made payable to the Agency as a proposal guarantee which it is understood will be forfeited in the event the Contract is not executed, if awarded by the Agency to the undersigned.

Certification Regarding Debarment, Suspension, and Other Responsibility Matters – Primary Covered Transactions.

(1). The prospective primary participant certifies to the best of its knowledge and belief, that it and all its principals: (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency; (b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property; (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) with commission of any of the offenses enumerated in Paragraph (1) (b) of this certification and (d) Have not within a three-year period preceeding this application/proposal had one or more public transactions (Federal, State or Local) terminated for cause or default. (2). Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Contract Affidavit

I/We declare under penalty of perjury under the laws of the United States and the State of New Hampshire that, in accordance with the provisions of Title 23 USC, Section 112(c), have not either directly or indirectly entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this Proposal.

Dated: _____

(If a firm or individual)

Signature of Bidder _____

By _____

Address of Bidder _____

Names and Addresses of Members of the Firm:

(If a Corporation)

Signature of Bidder _____

Title _____

By _____

Business Address _____

Incorporated under the laws of the State of _____

Names of Officers:

President _____
Name Address

Secretary _____
Name Address

Treasurer _____
Name Address

11/07/12

Page 1 of 2

SUPPLEMENTAL SPECIFICATION**SECTION 107 -- LEGAL RELATIONS AND RESPONSIBILITIES TO PUBLIC****SUBSECTION 107.01 – LAWS TO BE OBSERVED**

The intent of this Supplemental Specification is to clarify Bulletin Board requirements.

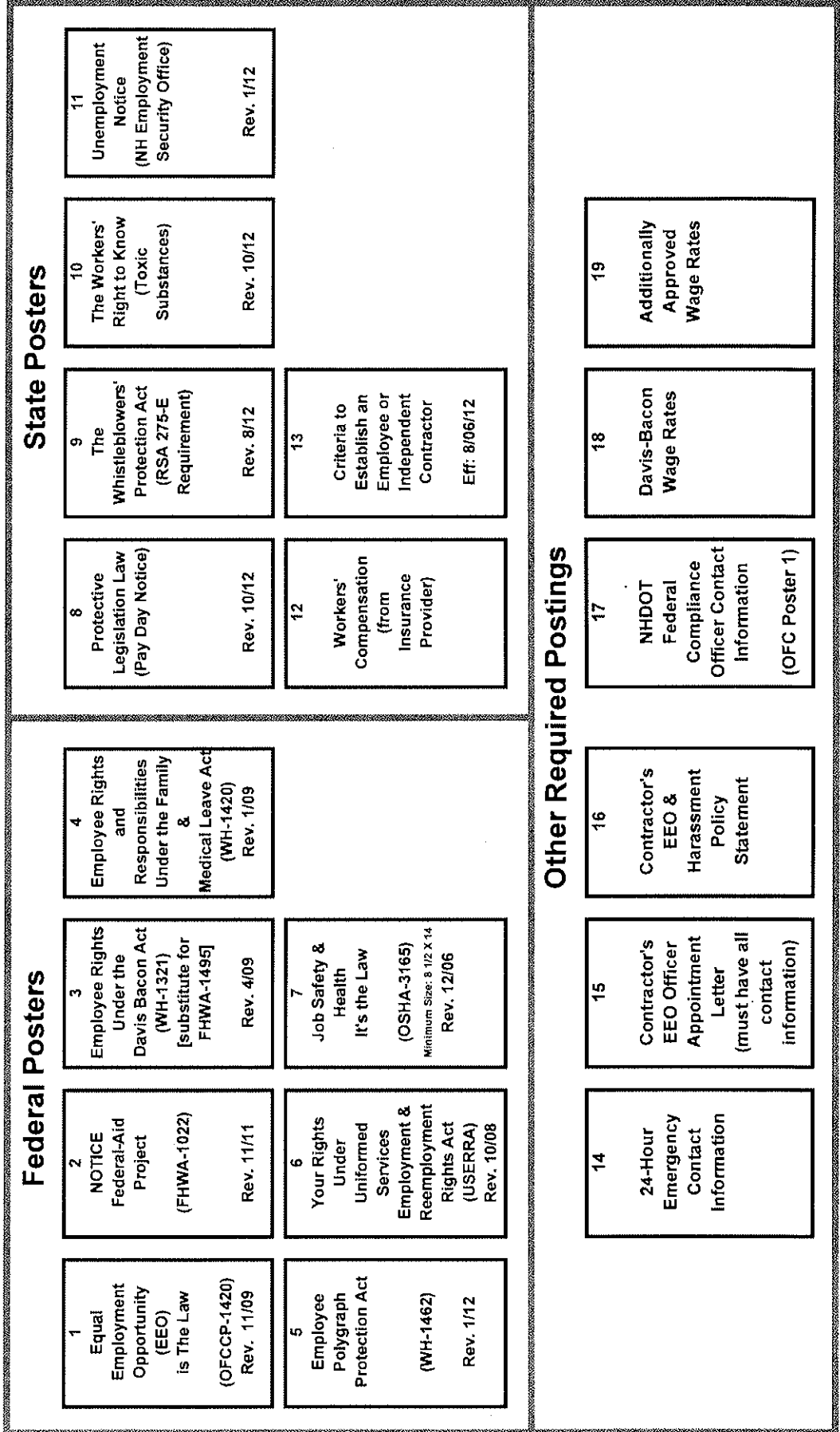
Replace 107.01's third paragraph titled *Bulletin Board Requirements* with the following:

Bulletin Board Requirements: The Contractor shall erect and maintain a bulletin board on which to post the notices, rates, and related items that are required to be posted. The board shall be a **minimum of 4 foot by 8 foot in order to** allow sufficient space, without overlapping, for both State and Federal poster/information, as required. Additional work classifications and their rates, requested by the Contractor and subsequently approved by the USDOL, shall also be posted. Bulletin boards shall be an enclosure and the posted documents shall be protected from the elements by glass or Plexiglas. Boards shall be erected on the site of work, be placed in a conspicuous and accessible location where it can be easily seen by all workers. **If placing the bulletin board on the site of work is not feasible, either for safety reasons or due to the work taking place, the Contractor may recommend placing it in an adjacent location subject to NHDOT approval. If the NHDOT deems the alternate location as unsuitable (the location is too distant or will not be utilized by all subcontractors, etc.), the NHDOT may instead require the use of employee bulletin board handouts in accordance with FHWA policy. Contractors have two options for posters: Option 1 - Using "all-in-one" Federal and State posters; or Option 2 - Arranging posters in a predetermined manner (see attached) as provided by the NHDOT. The bulletin board shall remain the property of the Contractor and shall be removed upon completion of the Work.**

New Hampshire Department of Transportation Bulletin Board Diagram

(Revision 11-8-12)

NHDOT PROJECT: (NAME) (NUMBER)



SPECIAL ATTENTION**CONVICT PRODUCED MATERIAL**

In accordance with the requirements of the Federal regulations (23 U.S.C. 114(b)(2), 23 CFR 635.417), essentially all convict produced material is prohibited from Federal-aid highway construction projects. More specifically, materials produced after July 1, 1991, by convict labor, may only be incorporated in a Federal-aid construction projects if: 1) such materials have been produced by convicts who are on parole, supervised release, or probation from a prison; or 2) such material has been produced in a qualified prison facility, e.g., prison industry, with the amount produced during any 12-month period, for use in Federal-aid projects, not exceeding the amount produced, for such use, during the 12-month period ending July 1, 1987*.

* Because the Department, Federal Highway Administration, nor New Hampshire Correctional Industries can produce documents to meet condition 2 above, this condition cannot be met for New Hampshire convict produced material.

APPENDIX C

On The Job Training Provisions

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Appendix B to Subpart A of Part 230

TRAINING SPECIAL PROVISIONS

This Training Special Provision supersedes subparagraph 7b of the Special Provision entitled "Specific Equal Employment Opportunity Responsibilities," and is in implementation of 23 U.S.C. 140(a).

As part of the Contractor's specific Equal Employment Opportunity Affirmative Action Program, training shall be provided as follows:

The Contractor shall provide on-the-job training aimed at developing full journeymen in the type of trade or job classification involved.

The number of trainees to be trained under the special provision will be _____ (amount to be filled in by State Highway Department).

In the event that a Contractor subcontracts a portion of the contract work, it shall determine how many, if any, of the trainees are to be trained by the Subcontractor, provided, however, that the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The Contractor shall also insure that this training special provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the Contractor's needs and availability of journeymen in the various classifications within a reasonable area of recruitment. Prior to commencing construction, the Contractor shall submit to the NHDOT Labor Compliance Office for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the Contractor shall specify the starting time for training in each of the classifications. The Contractor will be credited for each trainee employed on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Special Provision. Accordingly the Contractor shall make every effort to enroll minority and women trainees (e.g. by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent that such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that have been taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of minority group or not.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journey worker status or in which they have been employed as a journeyman. The Contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used, the Contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the Contractor and approved by the New Hampshire Department of Transportation and the Federal

Highway Administration. The New Hampshire Department of Transportation and the Federal Highway Administration shall approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the Contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the NHDOT Labor Compliance Office prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the division office. Some off-site training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the Contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the engineer, reimbursement will be made for training persons in excess of the number specified herein. This reimbursement will be made even though the Contractor received additional training program funds from other sources, provided such other source does not specifically prohibit the Contractor from receiving other reimbursement. Reimbursement for off-site training indicated above may only be made to the Contractor where they do one or more of the following and the trainees are concurrently employed on a Federal-aid project: contributes to the cost of the training, provides the instruction to the trainee or pays the trainee's wages during the off-site training period.

No payment shall be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the Contractor and evidences a lack of good faith on the part of the Contractor in meeting the requirements of this Training Special Provision. It is normally expected that a trainee will begin training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in this work classification or until the training program is completed. It is not required that all trainees be on board for the entire length of the contract. A Contractor will have fulfilled their responsibilities under this Training Special Provision if they have provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid at least 60 percent of the appropriate minimum journeymen's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provision.

The Contractor shall furnish the trainee a copy of the program to be followed in providing the training. The Contractor shall provide each trainee with a certification showing the type and length of training satisfactorily completed.

The Contractor will provide for the maintenance of records and furnish weekly reports documenting performance under this Training Special Provision.

APPENDIX D

Davis Bacon Wage Information – Rockingham County – Highway Projects

The Contract Provisions, Notices, Special Attentions, Special Provisions, and all other documents included in this Attachment are hereby bound as part of the Contract between the Owner and the Contractor for this project.

The Contractor States and Acknowledges, by submittal of a Bid Proposal, that; the Bidder and all subcontractors as required, are in conformance with and will fulfill all requirements as set forth in the attached documents.

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State: New Hampshire

Construction Type: Highway

County: Rockingham County in New Hampshire.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel Arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Modification Number 0 Publication Date 01/04/2013

* SUNH2011-029 08/15/2011

	Rates	Fringes
CARPENTER (Excluding Form Work).....	\$ 23.13	2.51
CARPENTER (Form Work Only).....	\$ 20.57	1.06
ELECTRICIAN.....	\$ 23.22	2.78
INSTALLER - GUARDRAIL.....	\$ 22.29	11.84
IRONWORKER, REINFORCING.....	\$ 18.00	0.00
IRONWORKER, STRUCTURAL.....	\$ 34.45	17.20
LABORER: BLASTER, ROCK.....	\$ 28.38	9.46
LABORER: Common or General.....	\$ 16.99	2.60
LABORER: Flagger.....	\$ 10.42	1.37
LABORER: Highway/Parking Lot Striping.....	\$ 16.77	0.00
LABORER: Landscape.....	\$ 14.65	0.00
LABORER: Pipelayer.....	\$ 18.29	4.33
OPERATOR: Auger.....	\$ 26.07	0.00
OPERATOR: Backhoe.....	\$ 27.72	4.17
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	\$ 19.25	0.00
OPERATOR: Bucket.....	\$ 30.00	0.00
OPERATOR: Bulldozer.....	\$ 24.99	6.11
OPERATOR: Crane.....	\$ 23.95	3.29
OPERATOR: Drill Rig Caissons.....	\$ 36.86	19.78
OPERATOR: Excavator.....	\$ 24.72	5.58
OPERATOR: Grader/Blade.....	\$ 25.16	6.97
OPERATOR: Loader.....	\$ 24.10	5.72
OPERATOR: Mechanic.....	\$ 16.92	3.44
OPERATOR: Oiler.....	\$ 29.54	16.15
OPERATOR: Paver.....	\$ 23.43	0.00
OPERATOR: Roller.....	\$ 22.27	6.57
OPERATOR: Post Driver/Pounder.....	\$ 27.24	7.90
TRUCK DRIVER, Includes all axles including Dump Trucks.....	\$ 17.51	3.03
TRUCK DRIVER: Low Bed Truck.....	\$ 21.43	6.30

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters, PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SHLA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

APPENDIX E

Right of Way Certificate / Right of Entry / Quit Claim Deeds

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NHDOT Bureau of ROW approval _____

RIGHT-OF-WAY CERTIFICATE

For

Municipally Managed Projects

Project Name: Portsmouth

State Project No. 14493

Federal Project No: X-A 000 (417)

All work within existing rights-of-way and no additional acquisitions were necessary for this project or;

All acquisitions and easements acquired as part of this project are listed below:

Total number of parcels impacted: 2

Number of acquisitions acquired by donation: _____

Number of acquisitions acquired by permanent/temporary easement: 2

Number of Acquisitions acquired by fee: _____

Number of Acquisitions acquired via condemnation: _____

Total Cost of property rights acquired \$ 650

Were relocation claims paid as part of this project: YES NO

If yes, complete relocation information on Page 2.

The ~~City~~ Town of Portsmouth, State of New Hampshire hereby certifies the right to occupy and use all the right-of-way necessary for the above-referenced project has been acquired in accordance with the Uniform Act.

[Signature]
 Town/City Manager
DPW Director

Date

[] Chairman of Selectmen
j:\m\selectmen\m\selectmen2.doc

Relocation Information

Residential

	<u>Owners</u>	+	<u>Tenants</u>	=	<u>Total</u>
Number of Displacees	_____		_____		_____
Number of Relocation Housing Payments	_____		Total Spent \$ _____		
Number of Rent Supplement Payments	_____		Total Spent \$ _____		
Number of Moving Payments	Actual _____		Scheduled _____		Total Spent \$ _____

Business

	<u>Owners</u>	+	<u>Tenants</u>	=	<u>Total</u>
Number of Displacees	_____		_____		_____
Number of Moving Payments	_____		Total Spent \$ _____		
Number of RE-establish Payments	_____		Total Spent \$ _____		
Number of In Lieu of	_____		Total Spent \$ _____		
Number of Misc. Monies (i.e. fences, lights, signs, etc.)	_____		Total Spent \$ _____		

CITY OF PORTSMOUTH, NEW HAMPSHIRE
Sagamore Creek Bridge Replacement Project
Portsmouth, New Hampshire

AGREEMENT for Temporary Right of Entry & Construction – Without Prejudice

Property OWNER(s) of Record: Seacoast Mental Health Center

Address: 1145 Sagamore Avenue, Portsmouth, NH 03801

Stations: 114 +50 to 119+00 Right

Parcel(s): Map 223; Lot 25 and 25A

We, Seacoast Mental Health Center, hereby acknowledge that we are aware of the Sagamore Creek Bridge Replacement Project, being constructed by the City of Portsmouth through cooperative efforts with the New Hampshire Department of Transportation (NHDOT) State Aid Bridge Program, also identified as State Project #14493 and Federal Project # X-A000(417), and that a segment of the proposed work will take place on and/or adjacent to our property. Plans and specifications for this project are available for review and are located at the Portsmouth Department of Public Works. The purpose of this AGREEMENT is to grant permission and easement to the City of Portsmouth or its duly authorized agents to enter upon our property for the purposes of planning & constructing the associated work for the aforementioned project on our property as shown on the project plans and as outlined below and as shown on the attached PROPERTY IMPACTS PLANS for this parcel(s).

The proposed work to be performed includes the installation of a new sidewalk, grading, road and driveway paving, loaming and seeding within the roadway Right of Way. Modifications to the roadway and the addition of the sidewalk will result in impacts to the northerly and southerly site driveways, as shown on the attached plans. The driveways will provide a benefit to the property by flattening the approaches and improving surface drainage flow on the driveway.

As just compensation for the temporary access easement, the City shall construct 16 feet of 6" plastic drainage pipe, providing a connection to an existing sump pump outlet on the subject parcel into the City's closed drainage system, as shown on the attached plans.

All disturbed areas will be restored in-kind. This work will be performed as required to interface the project's work within the roadway Right of Way with the nearby features residing on private property. The contractor will coordinate the dates/times of his work with the property OWNER, and the property OWNER shall have unencumbered use of the impacted areas at all other times.

This AGREEMENT shall authorize entry and construction on the property from the date Granted until the expiration of the contractor's work warranty period, which shall be approximately 1 year after formal completion of the entire construction project.

This AGREEMENT is made without prejudice to our rights in settlement of any claims for damages that may hereafter appear.

Granted by: Jay Couture, Executive Director
Property OWNER(s) or Authorized Representative
Date: 06-28-2013

Executed by: [Signature] 7/2/13
Town Official – Title
Date

CITY OF PORTSMOUTH, NEW HAMPSHIRE
Sagamore Creek Bridge Replacement Project
Portsmouth, New Hampshire

AGREEMENT for Temporary Right of Entry & Construction – Without Prejudice

Property OWNER(s) of Record: John Pallozola

Address: 7 Shaw Road, Portsmouth, NH 03801

Stations: 105+35 to 106+75 Left

Parcel(s): Map 223; Lot 16

I, John Pallozola, hereby acknowledge that I am aware of the Sagamore Creek Bridge Replacement Project, being constructed by the City of Portsmouth through cooperative efforts with the New Hampshire Department of Transportation (NHDOT) Municipal Off-system Bridge Program, also identified as State Project #14493 and Federal Project # X-A000(417), and that a segment of the proposed work will take place on and/or adjacent to my property. Plans and specifications for this project are available for review and are located at the Portsmouth Department of Public Works. The purpose of this AGREEMENT is to grant permission and easement to the City of Portsmouth or its duly authorized agents to enter upon our property for the purposes of planning & constructing the associated work for the aforementioned project on our property as shown on the project plans and as outlined below and as shown on the attached PROPERTY IMPACTS PLANS for this parcel(s).

The proposed work to be performed includes the installation of a new sidewalk, grading, road and driveway paving, loaming and seeding within the roadway Right of Way. The project proposes the installation of new straight granite curbing along the Sagamore Ave. frontage of 7 Shaw Road. The installation of new curbing requires work within the property of 7 Shaw Road to remove existing wood curbing and match the existing ground to the new curbing. The new granite curbing will be gray in appearance. Landscaping stone to match the existing stone will be used to connect the existing ground to the curbing

As just compensation for the temporary construction easement, the City shall pay the Owner of 7 Shaw Road \$250. This sum reflects the minor property impact (approximately 318 square feet) and benefits of the installation of new more durable curbing within the City's ROW. The landscaping behind the new curbing will remain in place, and the stone area extended to the new curbline.

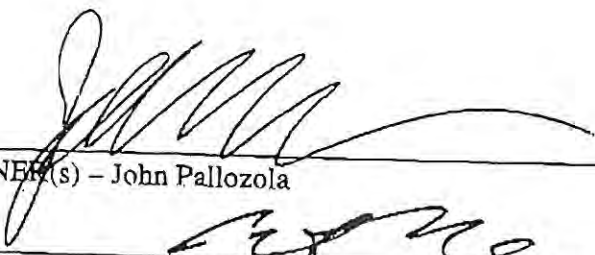
All disturbed areas will be restored in-kind. This work will be performed as required to interface the project's work within the roadway Right of Way with the nearby features residing on private property. The contractor will coordinate the dates/times of his work with the property OWNER, and the property OWNER shall have unencumbered use of the impacted areas at all other times.

This AGREEMENT shall authorize entry and construction on the property from the date Granted until the expiration of the contractor's work warranty period, which shall be approximately 1 year after formal completion of the entire construction project.

This AGREEMENT is made without prejudice to our rights in settlement of any claims for damages that may hereafter appear.

Granted

by:



Property OWNER(s) - John Pallozola

Date

Executed by:



Peter Rice, PE - Director, Public Works Department

6/28/13
Date

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APPENDIX F

Utility Agreement

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APPENDIX G

Subsurface Explorations

- **Site Specific Soil Mapping**
- **Geotechnical Report**

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MEMORANDUM

TO: Mr. Tom Densford, P.E., Mr. Paul Harrington, P.E.
Fay, Spofford & Thorndike

FROM: Christopher L. Snow, P.E., Senior Project Manager
James V. Errico, P.E., Senior Principal
GZA GeoEnvironmental, Inc. (GZA)

DATE: November 23, 2010

FILE NO.: 09.0025631.00

RE: Design and Constructability Considerations
Drilled Shaft Foundation Alternative for Abutment Foundations
Bridge 198/03 Route 1A over Sagamore Creek
Portsmouth, New Hampshire



4 Free Street
Portland, Maine
04101
207-879-9190
207-879-0099 fax
www.gza.com

GZA completed a geotechnical evaluation for the proposed bridge replacement and provided the results in a September 15, 2010 geotechnical report. At the time the report was prepared, Fay, Spofford & Thorndike (FST) had indicated that spread footing foundations were the preferred alternative for the abutments, and drilled shafts were preferred at the piers. Subsequent to issuing the geotechnical report, FST requested that GZA provide recommendations and construction considerations for a drilled shaft foundation alternative at the abutments. Our assessment of design and constructability aspects of the drilled shaft alternative is described below. Our work was completed in accordance with the Limitations included in Appendix A.

DRILLED SHAFT DESIGN CONSIDERATIONS

Recommendations for the drilled shaft foundation alternative at the proposed abutments are consistent with those for the pier foundations, as described in Section 5.4 of GZA's September 15, 2010 geotechnical report, as summarized below.

- Rock-socketed drilled shafts are a suitable alternative for support of the proposed abutments. The design values herein are based on a minimum rock socket diameter of 42 inches.
- Rock-socketed shafts should be assumed to gain support through skin friction in competent GNEISS bedrock. Contribution from end bearing has been neglected because of the significant deflection required to mobilize end bearing resistance and the required preparation and inspection to confirm suitable bearing. Contribution from skin friction in overburden soil has also been neglected.
- It is anticipated that drilled shafts would be installed by advancing permanent casing down to bedrock.

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- The nominal unit skin friction resistance was calculated using the O'Neill and Reese (1999) method. The calculated nominal unit skin friction resistance for a rock socket in competent GNEISS bedrock is 25.4 ksf. Because of the high strength of the bedrock, the nominal skin friction is controlled by the unconfined compressive strength of the concrete, which was assumed to be 5,000 psi.
- The number of foundation elements per abutment, and load per shaft have not been finalized at this time. However, for consistency with the tooling required for the river shafts, 42-inch minimum diameter rock sockets should be considered for the abutment shafts. The rock socket length may be calculated based on a nominal unit skin friction resistance of 25.4 ksf, and a resistance factor of 0.55 in accordance with LRFD Table 10.5.5.2.4-1.
- Uplift loads should be resisted by skin friction along the sides of the rock socket and the self-weight of the shaft. Per LRFD Table 10.5.5.2.4-1, resistance factors for uplift resistance in bedrock are 80 percent of the axial compression values. It is anticipated that the design uplift loading will be significantly smaller than this value.

ABUTMENT CONSTRUCTABILITY CONSIDERATIONS

Constructability of the spread footing abutment foundations at the Sagamore Creek site would pose several challenges, including, deep excavations, potential obstructions, and dewatering. Excavation depths were expected to range from 16 to 31 feet below grade. Given the depth of excavation, it was anticipated that braced sheeting would be required to support the excavations. The cobbles and boulders within the soil represent potential obstructions to sheet pile installation and might need to be removed before sheets could be installed. Once the sheet pile system was in place, the groundwater would need to be lowered and maintained as much as 15 feet below river level. Although construction would involve these challenges, it is GZA's opinion that a spread footing foundation system could be constructed at the abutments using conventional techniques.

Alternatively, drilled shafts could be installed at the abutments by advancing permanent casing to the top of bedrock and drilling the rock sockets with an air percussion hammer. Once the casings are in place, the shafts can be constructed with a significantly reduced excavation volume and without the need for a temporary braced sheeting system or large area dewatering. Consequently, it is our opinion that constructability of the shafts should be on par with or less difficult than construction of conventional spread footing foundations.

The greatest challenge of the drilled shaft installation is anticipated to be advancing the casing through the potential cobbles and boulders in the overburden soil. In our opinion, some of the cobbles and boulders at this site could be penetrated and or removed using typical drilling techniques, and in some cases additional means would be needed to clear an obstruction. In response to GZA's request, NH DOT provided a Special Provision for Drilled Shaft Installation that was used on the Little Bay Bridge Project in Dover, New Hampshire. The Special provision was forwarded to FST for use on the Sagamore Creek project. It has language alerting the contractor of potential obstructions and carries unit pricing for obstruction removal. It would allow the drilled shaft contractor to rely on their experience in developing the means and methods to complete the installation through these obstructions, and would help to control the potential overrun for obstruction removal.

The contractor should provide a drilled shaft construction submittal that includes a plan to remove obstructions based on the size and location of the obstruction.

Crosshole Sonic Logging (CSL) tests are recommended for each drilled shaft at the abutments. Refer to section 8.3.1 of GZA's September 15, 2010 report for details.

CONSTRUCTION-PHASE TEST BORINGS



The design phase GZA subsurface exploration program described in our September 15, 2010 report provided data for use in design of the replacement bridge foundations. Since the foundation type and depth of rock-socket were not known at the time the program was developed, bedrock coring was limited to 5 feet per location. In order to comply with current AASHTO Standards, it will be necessary to gather additional subsurface data for use in validating the drilled shaft design assumptions. The focus of the additional exploration program will be to drill borings with additional depths of rock coring.

AASHTO LRFD Table 10.4.2-1 provides minimum rock core depths for shafts supported on or in rock. The minimum required penetration below the bottom of the shaft is the greater of 10 feet or 3 times the shaft diameter. To meet the AASHTO requirements, four additional borings should be drilled, one at each abutment and pier, with rock core depths meeting or exceeding the AASHTO requirements. The additional borings could be drilled prior to bid tender, or included as part of the contractor's bid package. For the Dover Point bridge project currently under construction, the drawings and special provision for drilled shaft construction specified the number and depth of borings to be performed by the contractor.

CLOSURE

We trust this memorandum meets current project needs. If you have any questions or require additional information, please feel free to contact Christopher Snow at (207) 358-5118, or by e-mail at *christopher.snow@gza.com*.



**APPENDIX A
LIMITATIONS**

LIMITATIONS



Subsurface Conditions

1. The generalized soil profile(s) provided in our Report and on our subsurface exploration logs are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs.
2. Water level readings have been made in test holes and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. However, fluctuations in the level of the groundwater occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The observed water table may be other than indicated in the Report.
3. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

Compliance with Codes and Regulations

4. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

Cost Estimates

5. Unless otherwise stated, our cost estimates are for comparative, or general planning purposes. These estimates may involve approximate quantity evaluations. Note that these quantity estimates may not be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over the labor and material costs required to plan and execute the anticipated work, our estimates were made using our experience and readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

Additional Services

6. We recommend that we be retained to provide services during any future: investigations, design, implementation activities, construction and/or property development/redevelopment. This will allow us the opportunity to: 1) observe conditions and compliance with our design concepts and opinions; 2) allow for changes in the event that conditions are other than anticipated; 3) provide modifications to our design; and 4) assess the consequences of changes in technologies and/or regulations.

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VIA EMAIL

May 8, 2013
File No: 09.0025631.02



Mr. David McNamara, PE
Fay, Spofford & Thorndike
3 Burlington Woods
Burlington, Massachusetts 01803

Re: Site-Specific Soil Mapping Report
Bridge 198/03 Route 1A
Sagamore Creek
Portsmouth, New Hampshire

380 Harvey Road
Manchester
New Hampshire
03103-3347
603-623-3600
FAX 603-624-9463
www.gza.com

Dear Mr. McNamara:

This letter report presents the findings of a Site-Specific Soil Mapping survey conducted on the referenced property by GZA GeoEnvironmental, Inc. (GZA) on April 26, 2013. The subject property is located on the east side of Route 1A and the north side of Sagamore Grove. Site-Specific Soil Mapping and two associated test pit evaluations (**Appendix A**) were conducted on approximately 1 acre as depicted on the base plan prepared by GZA entitled "*Bridge 198/03 Route 1A Sagamore Creek Portsmouth, NH*" dated March 2013 (Base Plan). The site is the proposed stormwater infiltration area in accordance with Env-Wq 1504.13 (f) for the Sagamore Bridge. Soils are mapped within 100 feet of the practice area.

The Site-Specific Soil Mapping survey was conducted by New Hampshire Certified Soil Scientist, James H. Long, (CSS No. 15) in accordance with the *New Hampshire Supplement of the Site-Specific Soil Mapping Standard for New Hampshire and Vermont*, Version 4.0, February 2011, published by the Society of Soil Scientists of Northern New England. Soil map units identified on the Site were classified using the *New Hampshire State-Wide Numerical Soils Legend*, United States Department of Agriculture (USDA) Natural Resource Conservation Service, Issue No. 10, January 2011. The Site-Specific Standards are based on a universally recognized taxonomic system of soil classification and are supported by national soil mapping standards established by the USDA National Cooperative Soil Survey. This map has been prepared to comply with soil mapping requirements of NHRSA 485 A:17 and New Hampshire Department of Environmental Services (DES) Env-Wq 1500, Alteration of Terrain (AoT) rules.



This report and the attached soil series map (**Appendix B**) provide soil information such as soil drainage classification, physical characteristics, and depth to bedrock (if encountered). Soil characteristics on the property were evaluated through the evaluation of the test pits as well as tile spade and hand-auger probe observations conducted throughout the survey area. Previously collected boring data was also used. Slope phases were measured through the use of a clinometer and augmented by the topography shown on the Base Plan, which depicted the area of the site at a scale of 1 inch = 30 feet and provided topographic information at a contour interval of 1 foot. The accompanying *Site-Specific Soil Map* developed by GZA in April 2013 was developed using the Base Plan as the mapping base.

Soil parent materials encountered consist of anthropogenic materials, and anthropogenic material over dense till. The Soil Map Units identified during the soil survey are briefly described below. Soil characteristics for each Soil Map Unit comply with the Range in Characteristics described in the Official Series Descriptions for each Soil Map Unit (**Appendix C**).

The conditions that exist within the disturbed areas are the result of anthropogenic processes and consist of filled areas. The disturbed areas have been identified using the *Disturbed Soil Mapping Unit Supplement for DES AOT Site Specific Soil Maps* section of the standards (**Appendix D**).

Soil under the pavement and buildings will be considered similar to the surrounding soils. Test pit 1 is fill material over soil series Scituate. A description of the soil series Scituate is attached.

MAP UNIT NO.	SOIL TAXONOMIC NAME	DESCRIPTION
448	Scituate	Moderately well drained soils formed in loamy eolian influenced mantle of till underlain by sandy lodgement till. The soils are very deep to bedrock and moderately deep to a densic contact. They are nearly level through moderately steep soils on glaciated uplands. Saturated hydraulic conductivity is moderately high or high in the solum and moderately low or moderately high in the substratum.
299A/ccabc	Udorthents (smoothed) 0-3%	This map unit represents areas that have been filled. The drainage class is well drained. The parent material is glacial till deposits. There are no restrictive areas. The Ksat value is moderate and the hydrogeologic soil group is C.
299A/aaaaa	Udorthents (smoothed) 0-3% slope	This map unit represents areas that have been filled. The drainage class is excessively drained. There is no natural soil within 60 inches. There are no impervious or restrictive layers within the control section. The Ksat value is high and the hydrologic soil group is A.
299F/aaaaa	Udorthents (smoothed) >50% slope	This map unit represents areas that have been filled. The drainage class is excessively drained. There is no natural soil within 60 inches. There are no impervious or restrictive layers within the control section. The Ksat value is high and the hydrologic soil group is A.

GZA trusts that this report and the soil survey meet your current planning needs. Once you have reviewed the report and soils information, please let us know if you will require any additional information.




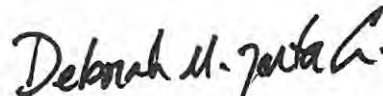
Please do not hesitate to contact Mr. James Long at 603-232-8756 if you have any questions.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.


James H. Long, CSS, CWS
Senior Technical Specialist


Christopher L. Snow, PE
Associate Principal


Deborah M. Zarta Gier
Consultant / Reviewer

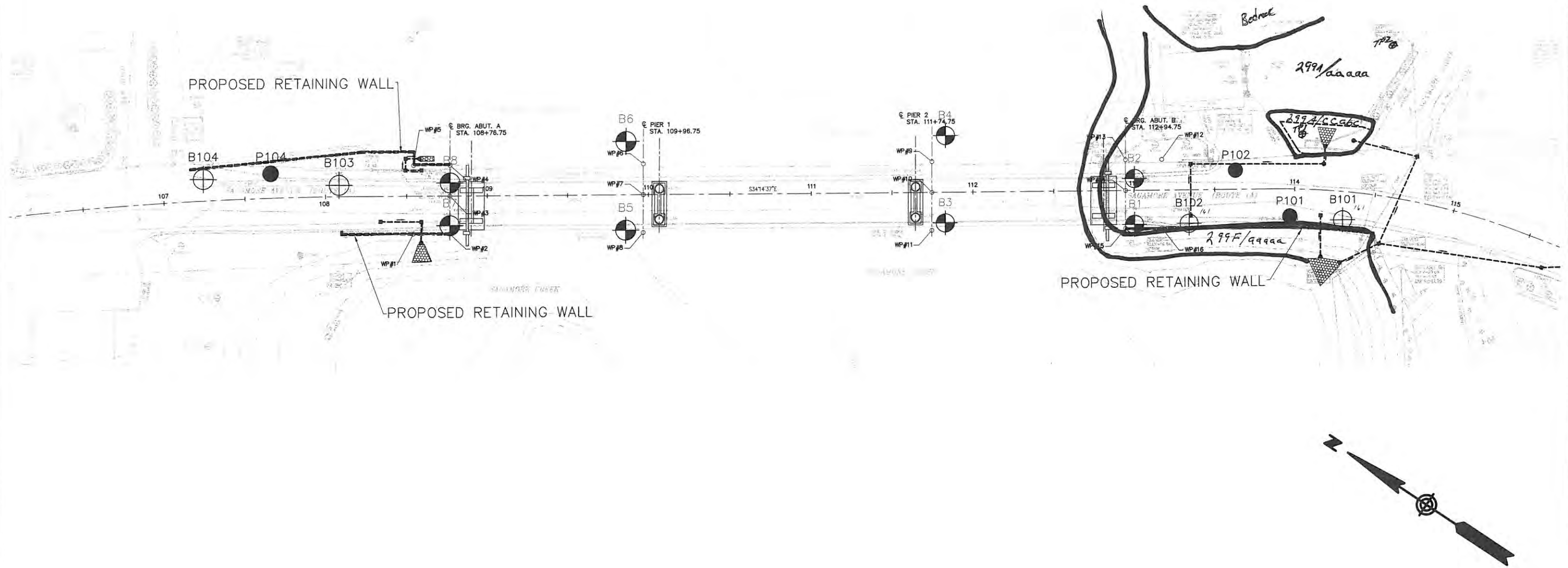
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

Attachments: Appendix A – Test Pit Logs
Appendix B – Site-Specific Soil Map
Appendix C - Official Series Descriptions
Appendix D – Disturbed Soil Mapping Unit Supplement

APPENDIX A
TEST PIT LOGS

APPENDIX B
SITE SPECIFIC SOIL MAP




LEGEND:

- 
DESIGNATION AND LOCATION OF BORING PERFORMED IN 2010
- 
DESIGNATION AND LOCATION OF BORING PERFORMED IN 2013
- 
DESIGNATION AND LOCATION OF PROBE PERFORMED IN 2013

NOTES:

- 1) BASE MAP DEVELOPED FROM ELECTRONIC DRAWING FILE "05 SITE PLAN.DWG" PROVIDED BY FST INC VIA E-MAIL ON MARCH 20, 2013.
- 2) THE LOCATION OF TEST BORINGS HAVE BEEN ESTIMATED BY MEASURING TIES TO AS-DRILLED LOCATIONS DURING DRILLING. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.
- 3) TEST BORINGS B1 THROUGH B8 WERE PERFORMED BY NEW HAMPSHIRE BORING OF LONDONDERRY, NH BETWEEN MAY 5 AND 21, 2010 AND OBSERVED BY GZA PERSONNEL. TEST BORINGS B101 THROUGH B104 AND PROBES P101 THROUGH P104 WERE PERFORMED BY NEW HAMPSHIRE BORING BETWEEN MARCH 4 AND 6, 2013 AND OBSERVED BY GZA PERSONNEL.
- 4) UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOTECHNICAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

NO.	ISSUE/DESCRIPTION	BY	DATE
BRIDGE 198/03 ROUTE 1A OVER SAGAMORE CREEK			
PORTSMOUTH, NH			
BORING LOCATION PLAN			
PREPARED BY:  GZA GeoEnvironmental, Inc. Engineers and Scientists 477 CONGRESS STREET, SUITE 700 PORTLAND, MAINE 04101		PREPARED FOR: FAY, SPOFFORD & THORNDIKE	
PROJ MGR: ARB	REVIEWED BY: ARB	CHECKED BY: CLS	FIGURE 2 SHEET NO.
DESIGNED BY: ETL	DRAWN BY: ETL	SCALE: AS SHOWN	
DATE: MARCH 2013	PROJECT NO.: 09.0025770.00	REVISION NO.:	

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APPENDIX C
OFFICIAL SERIES DESCRIPTION

LOCATION SCITUATE MA+NH

Established Series
Rev. WHT-DAS
01/2013

SCITUATE SERIES

The Scituate series consists of moderately well drained soils formed in a loamy eolian influenced mantle of till underlain by sandy lodgement till. The soils are very deep to bedrock and moderately deep to a densic contact. They are nearly level through moderately steep soils on glaciated uplands. Saturated hydraulic conductivity is moderately high or high in the solum and moderately low or moderately high in the substratum. Mean annual precipitation is about 43 inches (1092 millimeters) and the mean annual temperature is about 48 degrees F. (9 degrees C.)

TAXONOMIC CLASS: Coarse-loamy, mixed, active, mesic Oxyaquic Dystrudepts

TYPICAL PEDON: Scituate fine sandy loam - woodland, in a stony area. (Colors are for moist soil unless otherwise indicated).

A -- 0 to 5 inches (0 to 13 centimeters); black (10YR 2/1) fine sandy loam, dark gray (10YR 4/1) dry; weak and moderate fine granular structure; very friable; many fine roots; 10 percent gravel; extremely acid; abrupt wavy boundary. (1 to 6 inches (3 to 15 centimeters) thick.)

Bw1 -- 5 to 21 inches (13 to 53 centimeters); strong brown (7.5YR 5/6) fine sandy loam; massive; very friable; common fine roots; 10 percent gravel; strongly acid; clear wavy boundary.

Bw2 -- 21 to 27 inches (53 to 69 centimeters); yellowish brown (10YR 5/6) sandy loam; massive; very friable; few fine roots; 10 percent gravel; common fine and medium distinct yellowish red (5YR 5/6) masses of iron accumulation; strongly acid; clear wavy boundary. (Combined thickness of the Bw horizons is 6 to 40 inches (15 to 102 centimeters) thick.)

2Cd -- 27 to 65 inches (69 to 165 centimeters); yellowish brown (10YR 5/4) very gravelly loamy sand; massive; firm; 30 percent gravel and 5 percent cobbles; common medium distinct light brownish gray (2.5Y 6/2) iron depletions; moderately acid.

TYPE LOCATION: Hampshire County, Massachusetts; Town of Pelham, 3600 feet northwest of the junction of Shutesbury Road and Daniel Shays Highway, 50 feet west of Shutesbury Road, in woods. USGS Shutesbury, MA topographic quadrangle; Latitude 42 degrees, 24 minutes, 15 seconds N. and longitude 72 degrees, 24 minutes, 43 seconds W., NAD 1927.

RANGE IN CHARACTERISTICS: The loamy mantle is 18 through 34 inches (46 through 90 centimeters) thick and corresponds closely the depth to the dense substratum. Rock fragments are dominantly granite and gneiss. Gravel content ranges from 5 through 25 percent by volume in the solum and from 10 through 35 percent in the 2Cd horizon. Cobbles range from 0 through 15 percent throughout. The surface horizon has 0 through 20 percent stones and the B and 2C horizons have 0 through 10 percent stones. Boulders range from 0 through 5 percent throughout. Reaction ranges from extremely acid through moderately acid in the surface horizon and from very strongly acid through moderately acid in the subsoil and substratum.

Some pedons have an O horizon.

The A horizon has hue of 10YR or 7.5YR, value of 2 or 3, and chroma of 1 or 2. In cultivated areas the Ap horizon has hue of 10YR, value of 2 through 4, and chroma of 1 through 4. Dry value of the Ap horizon is 6 or more. Texture is fine sandy loam, sandy loam, or loam in the fine-earth fraction. Some pedons have an incipient E horizon immediately below the A horizon.

The upper part of the Bw horizon has hue of 7.5YR through 2.5Y, value of 3 through 6, and chroma of 4 through 6. Texture is fine sandy loam, sandy loam, or loam in the fine-earth fraction.

The lower part of the Bw horizon has hue of 10YR through 5Y, value and chroma of 4 through 6. Redox features are few through many and are distinct or prominent. Texture is fine sandy loam, sandy loam, or loam in the fine-earth fraction.

Some pedons have a thin BC horizon that ranges from loamy sand through sandy loam. Color range is the same as the lower part of the Bw horizon but the range includes value of 7 in some pedons.

The 2Cd horizon has hue of 10YR through 5Y, value of 4 through 6, and chroma of 2 through 4. Redox features are common or many, medium and coarse, and are distinct or prominent. Texture is loamy sand, loamy fine sand, or loamy coarse sand in the fine-earth fraction. Some pedons have subhorizons of sandy loam or fine sandy loam below a depth of 40 inches. Consistence is firm or very firm.

COMPETING SERIES: These are the Amostown, Bernardston, Broadbrook, Horseneck, Nantucket, Paxton, and Wethersfield series. Amostown soils formed in lacustrine sediments that are silt or very fine sand the lower solum and substratum. Bernardston and Broadbrook soils have sola with more than 65 percent silt plus very fine sand. Horseneck soils are formed in glaciofluvial deposits. Paxton soils are well drained and have loamy substrata. Nantucket soils have a lithologic discontinuity and have loamy substrata. Wethersfield soils have 5YR or redder hue in the B and C horizons.

GEOGRAPHIC SETTING: Scituate soils are nearly level through moderately steep and are on glaciated uplands. Slope ranges from 0 through 25 percent. The soils are on nearly level to gently sloping tops of broad ridges and drumlins, and on gently sloping to moderately steep foot slopes and toe slopes. They formed in eolian influenced Wisconsin age loamy till underlain by dense sandy lodgement till. The mean annual temperature ranges from 45 through 50 degrees F. (7 through 10 degrees C.) The mean annual precipitation ranges from 40 through 45 inches (1016 through 1143 millimeters). The frost free season ranges from 100 through 120 days.

GEOGRAPHICALLY ASSOCIATED SOILS: The well drained Montauk, somewhat poorly and poorly drained Ridgebury, and the poorly drained Norwell soils, along with the very poorly drained Whitman and Brockton soils are in a drainage sequence with Scituate. Deerfield, Hinckley, Merrimac, Scarboro, Sudbury, Walpole, and Wareham soils are on nearby glacial outwash plains, kames, deltas, and eskers. Hollis, Paxton, and Woodbridge soils are on nearby loamy glacial till uplands.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Moderately well drained. Saturated hydraulic conductivity is moderately high or high in the loamy surface and subsoil and moderately low or moderately high in the dense sandy substratum.

USE AND VEGETATION: Mostly forested. Some areas are used for hay, pasture, and silage corn. Common tree species in woodlands are northern red, white, and scarlet oak, gray, black, and yellow birch, white ash, red maple, elm, eastern white pine, and eastern hemlock. Many areas are used for urban

development.

DISTRIBUTION AND EXTENT: Massachusetts and New Hampshire. MLRA's 144A and 145. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts.

SERIES ESTABLISHED: Providence County, Rhode Island; 1937.

REMARKS: This revision reflects changes to the range in characteristics as well as general updating to metric units.

Diagnostic horizons and features recognized in this pedon include:

- 1) Ochric epipedon - the zone from 0 to 5 inches (0 to 13 centimeters) (A horizon).
- 2) Cambic horizon - the zone from 5 to 27 inches (13 to 69 centimeters) (Bw horizons).
- 3) Densic material - the zone from 27 to 65 inches (69 to 165 centimeters) (2Cd horizon).
- d. Oxyaquic subgroup - redoximorphic features within 40 inches (100 centimeters) of the mineral surface.
- 4) Particle-size control section - the zone from 10 through 27 inches (25 through 69 centimeters) (Bw horizons).
- 5) Lithologic discontinuity - at a depth of 27 inches (69 centimeters).

ADDITIONAL DATA: SSIR20 New England states, contains some laboratory data for Scituate soils.

National Cooperative Soil Survey
U.S.A.

APPENDIX D

DISTURBED SOIL MAPPING UNIT SUPPLEMENT

Disturbed Soil Mapping Unit Supplement for New Hampshire DES AoT Site Specific Soil Maps

Introduction

The NRCS NH State-Wide Legend, as amended, contains a number of distinct map units used for identifying areas of soils altered or disturbed by human influence. However, in preparing the required Site Specific Soils Maps for compliance with NH Department of Environmental Services Alteration of Terrain (AoT) rules, additional information is often needed and desired. This supplement provides a means to supply the user a more detailed soil mapping unit description to meet this need.

Purpose

To provide soil scientists with additional soil mapping tools for disturbed sites and miscellaneous areas to enhance site specific soil maps and interpretations to reflect new requirements under the revised NH Alteration of Terrain regulations. This supplement is intended to allow the creation of soil maps with mapping units that can be expanded beyond those of the NRCS NH State-Wide Numerical Legend and the standards of the National Cooperative Soil Survey for disturbed units in order to provide specific information useful in preparation of site specific soils maps and reports to comply with NHDES Env-Wq 1500-Alteration of Terrain.

Note that the disturbed soil supplement has been created by SSSNNE and is not a product of the NRCS or the National Cooperative Soil Survey. Additionally, the supplemental legend can only be used in conjunction with the Site Specific Soil Mapping standards and cannot be used to create a stand-alone soils map.

For the purposes of this supplement, the definition of disturbed land, including excavate and fill, is as defined by RSA 485-A: 6, VIII; RSA 485-A: 17, and NHDES Env-Wq 1500.

Map Notation

Notation on the Site Specific Soil Map completed to comply with the NH AoT rules should include the following disclaimer:

Site-Specific Soil Map

1. This detailed Site-Specific Soil Map conforms to the standards of SSSNNE Publication No. 3, as amended, "Site-Specific Soil Mapping Standards for NH and VT".
2. This map has been prepared to comply with soil mapping requirements of RSA 485 A: 17 and NHDES Env-Wq 1500, Alteration of Terrain.
3. See accompanying narrative report for methodology, map symbol legend, and interpretations.

Map Symbol Denominators for Disturbed Unit Supplements

The map symbols for Site-Specific Soil Mapping of disturbed soils in New Hampshire is a two part symbol with parts separated by a forward slash (/).

The first part consists of the USDA-NRCS Disturbed Map Unit symbol from the NH State-Wide Numerical Soil Legend. The map symbol is composed of 1 to 3 digits followed by a capital letter designating slope.

The second part consists of symbols of the SSSNNE NH Disturbed Soil Supplement to the Site Specific Soil Survey Standards, as detailed below. The disturbed map symbol is composed of 5 lower case letters.

Thus a Site Specific map symbol for a map prepared for an AoT application would be formatted as follows:

400A/aaaaa

These SSSNNE NH Disturbed Soil Supplemental symbols can only be used in conjunction with the USDA-NRCS Disturbed Map Unit symbols for the NH Statewide Numerical Soil Legend.

Supplemental Symbols

The five components of the Disturbed Soil Mapping Unit Supplement are as follows:

Symbol 1: Drainage Class

- a-Excessively Drained
- b-Somewhat Excessively Drained
- c-Well Drained
- d-Moderately Well Drained
- e-Somewhat Poorly Drained
- f-Poorly Drained
- g-Very Poorly Drained
- h-Not Determined

Symbol 2: Parent Material (of naturally formed soil only, if present)

- a-No natural soil within 60"
- b-Glaciofluvial Deposits (outwash/terraces of sand or sand and gravel)
- c-Glacial Till Material (active ice)
- d-Glaciolacustrine very fine sand and silt deposits (glacial lakes)
- e-Loamy/sandy over Silt/Clay deposits
- f-Marine Silt and Clay deposits (ocean waters)
- g-Alluvial Deposits (floodplains)
- h-Organic Materials-Fresh water Bogs, etc
- i- Organic Materials-Tidal Marsh

Symbol 3: Restrictive/Impervious Layers

- a-None
- b-Bouldery surface with more than 15% of the surface covered with boulders
- c-Mineral restrictive layer(s) are present in the soil profile less than 40 inches below the soil surface such as hard pan, platy structure or clayey texture with consistence of at least firm (i.e. more than 20 newtons). For other examples of soil characteristics that qualify for restrictive layers, see "Soil Manual for Site evaluations in NH" 2nd Ed., (page 3-17, figure 3-14)
- d-Bedrock in the soil profile; 0-20 inches
- e-Bedrock in the soil profile; 20-60 inches
- f-Areas where depth to bedrock is so variable that a single soil type cannot be applied, will be mapped as a complex of soil types
- g-Subject to Flooding
- h-Man-made impervious surface including pavement, concrete, or built-up surfaces (i.e. buildings) with no morphological restrictive layer within control section

Symbol 4: Estimated Ksat* (most limiting layer excluding symbol 3h above).

a- High.

b-Moderate

c-Low

d-Not determined

*See "Guidelines for Ksat Class Placement" in Chapter 3 of the Soil Survey Manual, USDA

Symbol 5: Hydrologic Soil Group*

a-Group A

b-Group B

c-Group C

d-Group D

e-Not determined

*excluding man-made surface impervious/restrictive layers



**GEOTECHNICAL DESIGN REPORT
BRIDGE 198/03
ROUTE 1A OVER SAGAMORE CREEK
PORTSMOUTH, NEW HAMPSHIRE**

PREPARED FOR:
Fay, Spofford & Thorndike, LLC
Burlington, MA

PREPARED BY:
GZA GeoEnvironmental, Inc.
Portland, Maine

September 2010
File No. 09.0025631.00

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September 15, 2010
File No. 09.0025631.00

Mr. Paul Harrington, P.E.
Fay, Spofford & Thorndike, LLC
5 Burlington Road
Burlington, Massachusetts 01803

Re: Geotechnical Design Report
Bridge 198/03 Route 1A over Sagamore Creek
Portsmouth, New Hampshire

Dear Paul:

GZA GeoEnvironmental, Inc. (GZA) is pleased to provide you with this Geotechnical Design Report prepared for the Sagamore Creek Bridge project. Our work was completed in accordance with the Subconsultant Agreement dated January 20, 2010, GZA's Work Plan dated August 6, 2009, and the attached Limitations contained in **Appendix A** of the report.

The attached Report provides the geotechnical design recommendations for the proposed Sagamore Creek Bridge substructures based on foundation type and load information provided by Fay, Spofford & Thorndike, LLC (FST).

It has been a pleasure serving you on this project. If you have any questions regarding the report, or if we can provide further assistance, please do not hesitate to contact the undersigned.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.



Andrew R. Blaisdell
Project Manager



James V. Errico, P.E.
Senior Principal



Christopher L. Snow, P.E.
Senior Project Manager



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1.0 INTRODUCTION



This report presents the results of GZA's subsurface exploration and geotechnical evaluation for the replacement of the Route 1A Sagamore Creek Bridge in Portsmouth, New Hampshire. Our services were provided in accordance the Subconsultant Agreement dated January 20, 2010, GZA's Work Plan dated August 6, 2009, and the attached Limitations contained in **Appendix A** of the report.

1.1 BACKGROUND

Bridge 198/034 carries State Route 1A over Sagamore Creek in Portsmouth, New Hampshire, as shown in **Figure 1, Locus Plan**. The current bridge was constructed in 1941 and rehabilitated in 1984. A previous bridge structure was located adjacent to the east side of the existing structure. The prior structure was removed; however, remnants of the original foundations may remain below grade.

The existing bridge is about 390 feet long and 31 feet wide; it carries two-way traffic with a 12-foot travel lane and a 2-1/2-foot wide walkway and railing in each direction. The bridge is a steel girder, open steel grid deck structure supported on two piers and two full-height abutments.

The proposed replacement bridge will be 395 feet long and 43 feet wide, with two abutments and two central piers at similar general plan locations as the existing abutments and piers. FST provided superstructure and substructure loads and typical pier sections for the proposed replacement bridge by electronic mail on August 25 and September 2, 2010. It is our understanding that the superstructure will consist of variable depth plate girder construction. The pier substructures are planned to consist of bent piers with elevated pier caps directly below the girders, and the abutments will be full-height reinforced concrete.

The AASHTO LRFD factored loads considered are presented in the following table.

DESIGN FACTORED LOADS			
Superstructure Type	Pier Substructure Type	Pier Reaction (Superstructure plus Substructure)	Abutment Superstructure Reaction
Variable Depth Plate Girder	Bent Pier	3,085 kips	739 kips

Abutment substructure loads (self-weight and soil loads) and design lateral and uplift loads were not provided.

It is planned to close the bridge and detour traffic during construction.

1.2 OBJECTIVES AND SCOPE OF SERVICES

The focus of the work was to complete a subsurface exploration program, make geotechnical engineering recommendations for the bridge substructures and temporary cofferdams, and coordinate these geotechnical activities with the FST design team. To meet these objectives, GZA completed the following Scope of Services:



- Conducted a site visit to observe soil, bedrock, and water conditions visible at the ground surface; and reviewed existing bridge plans, test boring data, and mapped surficial and bedrock geology of the site;
- Coordinated and observed a subsurface exploration program consisting of eight test borings, including four completed behind the existing abutments and four completed at proposed pier locations;
- Conducted a laboratory testing program to evaluate engineering properties of the site soils and bedrock;
- Conducted geotechnical engineering analyses to evaluate foundations for the replacement bridge;
- Developed geotechnical engineering recommendations including foundation alternatives and foundation design recommendations for the preferred foundation type(s); and
- Prepared this report summarizing our findings and design recommendations.

2.0 SUBSURFACE EXPLORATIONS

2.1 PREVIOUS SUBSURFACE INVESTIGATION

A subsurface exploration program consisting of 20 borings was completed in 1940 in support of the design of the existing Route 1A Sagamore Creek Bridge. The results of the borings were reviewed by GZA for general subsurface information but were not used to develop our geotechnical recommendations.

2.2 RECENT SUBSURFACE INVESTIGATION

GZA completed a subsurface exploration program consisting of eight test borings. Two borings were completed behind each existing abutment (designated as B-1, B-2, B-7, and B-8) and two were completed near each proposed pier location (designated as B-3 through B-6). FST personnel determined the as-drilled locations for the land-borings by taping from existing bridge features shown on bridge plans. As-drilled locations of the pier borings were determined by GZA using a handheld GPS unit. The boring locations are shown on **Figure 2, Boring Location Plan**.

To estimate the approximate ground surface elevations for the land borings, GZA interpolated between contours on the existing conditions survey provided by FST. Approximate mud-line elevations at the pier borings were surveyed by GZA using a level survey. Elevations referenced in this report are in feet and refer to North American Vertical Datum of 1988 (NAVD 1988). Boring locations and ground surface elevations at the borings are approximate and are considered accurate only to the degree implied by the methods used to determine them.

The borings were drilled to depths of 26 to 50 feet below ground surface and were terminated in bedrock. New Hampshire Boring, Inc. of Londonderry, New Hampshire coordinated utility clearance and provided drilling services. Drilling was completed between May 6 and May 25, 2010. GZA personnel monitored the drilling work and prepared logs of each boring that are included in **Appendix B**.

The abutment borings were drilled using ODEX drilling techniques. Standard penetration testing (SPT) and split-spoon sampling were performed at nominal 5-foot intervals in the borings using a



24-inch sampler, a spooling-winch, and a safety hammer. Pier borings were drilled using 4-inch casing and drive-and-wash drilling techniques. At boring location B-6, 3-inch casing was telescoped through the 4-inch to advance the borehole through a boulder. A 24-inch sampler, a rope and cathead, and a safety hammer were used to perform SPT and split-spoon sampling at 5-foot typical intervals in the borings.

Field vane shear tests were performed with a 45-degree tapered vane (D = 2.5-in; H = 4.5-in.) in two of the four pier boring locations approximately 10 feet below the mudline in fine-grained soils. Raw torque readings measured with the vane were converted to undrained shear strengths based on ASTM D 2573.

Two-inch diameter bedrock cores were obtained at each boring location. Core lengths of 4 to 10 feet were drilled to assess the nature and strength of the bedrock.

3.0 LABORATORY TESTING

GZA completed a laboratory testing program to confirm visual soil classification and estimate engineering properties of the soils and rock. The program included six gradation analyses, two sets of Atterberg Limits, and two unconfined compressive strength and elastic modulus tests on bedrock cores collected during the subsurface exploration program. Results of the testing are included in **Appendix C**.

4.0 SUBSURFACE CONDITIONS

4.1 SURFICIAL AND BEDROCK GEOLOGY

Based on available literature and previous subsurface explorations for the existing bridge, surficial geologic units documented in the Route 1A Sagamore Creek Bridge area prior to the construction of the existing bridge include riprap, River Bottom deposits, Presumpscot formation marine clay, and glacial till deposits. According to the Bedrock Geology of the Kittery 1:100,000 Quadrangle, Maine, and New Hampshire (2008), bedrock in the vicinity of the site consists of quartz-plagioclase-biotite gneiss, calc-silicate gneiss, biotite gneiss, and quartzofeldspathic gneiss and is mapped as the Rye Complex.

4.2 SUBSURFACE SOIL PROFILE

Six soil units were encountered above bedrock in the explorations: Fill, Rock Fill, Outwash, River Bottom Deposit, Marine Clay, and Glacial Till. The encountered thicknesses and generalized descriptions of the units, in descending order from ground surface, are summarized in the following table. Detailed descriptions of the materials encountered at specific locations are provided in the boring logs included in **Appendix B**. The soil units are also shown in relation to the bridge alignment on **Figure 3, Interpretive Subsurface Profile**.



Strata Designation	Encountered Thickness, ft	Generalized Description
Asphalt	0.6 to 0.9	Asphalt Pavement. (<i>encountered at B-1, B-2, B-7, and B-8</i>)
Fill	4.2 to 19.9	Loose to medium dense, brown, fine to coarse SAND, varying amounts of Gravel, little to trace Silt, occasional mottling. Occasional boulders/cobbles encountered during drilling. (A-1-b, A-2) (<i>encountered at B-1, B-2, B-7, and B-8</i>)
Rock Fill	12.7 to 20.3	Medium dense, gray/brown to gray, GRAVEL, with little to trace fine to medium Sand, and little to trace Silt. Angular gravel pieces commonly observed. (<i>encountered at B-7 and B-8</i>)
Outwash	8.7 to 10.2	Loose to medium dense, dark brown to brown, fine to coarse SAND, some to little Gravel, and little to trace Silt. (A-3) (<i>encountered at B-1 and B-2</i>)
River Bottom Deposit	0.5 to 2.0	Very loose, black to gray, fine to coarse SAND, with some Silt, and trace shells and organics. (<i>encountered at B-3, B-4 and B-6</i>)
Marine Clay	6.3 to 13.4	Soft to stiff, gray to brown, CLAY and Clayey SILT, with little to trace fine to coarse Sand. (A-6) (<i>encountered at B-3, B-4, B-5, and B-6</i>)
Glacial Till	5.0 to 27.0	Medium dense to very dense, brown and brown/gray, fine to coarse SAND, with varying amounts of Gravel and Silt. Boulders/cobbles encountered during drilling in four of the eight explorations. (A-1-b) (<i>encountered in all explorations</i>)
Top of Rock	El. -10.5 to -43.7	

4.2.1 Bedrock

Gneiss was encountered in all of the borings and was generally described as very hard, fresh, fine-grained, and gray. Joints were generally close to moderately spaced, low angle to moderately dipping, undulating, rough, partially open, and fresh to slightly weathered. A secondary joint set was observed in some of the core samples. Joints in this secondary set were similar to the primary joint set but were generally moderately spaced and high angle to vertical. Occasional iron staining was noted in the joints of some of the core samples. The Rock Quality Designation (RQD) ranged from 0 to 100 percent, with an average of 62 percent. Laboratory unconfined compressive strength/Elastic modulus tests were conducted on two representative core samples (B-4 and B-7). The testing yielded unconfined compressive strengths ranging from 16.4 to 23.1 ksi and Young's modulus values ranging from 4,700 to 6,200 ksi.

4.2.2 Groundwater

All of the test borings were drilled in or within about 50 feet of Sagamore Creek. Therefore, groundwater likely fluctuates with the tidal level in the creek. Considering the granular nature of the embankment fill, groundwater levels will likely be within about 5 feet of the river level.

Groundwater levels fluctuate due to season, tides, precipitation, infiltration and construction activity in the area. Therefore, groundwater levels during and after construction are likely to vary from those encountered at the time of the test borings.



5.0 GENERAL FOUNDATION DESIGN RECOMMENDATIONS

5.1 SEISMIC DESIGN CONSIDERATIONS

Evaluation of the seismic site class was based on the approach outlined in the AASHTO LRFD Bridge Design Specification, 4th Edition, 2007 with 2009 Interims (herein referred to as LRFD) Table C3.10.3.1-1. Evaluation of the seismic site class was based on the N-bar approach for the upper 100 feet of soil and bedrock below existing grade. The average N-bar for the proposed bridge substructures is between 15 and 50 blows per foot (bpf). Therefore, the site should be assigned to Site Class D.

The United States Geological Survey software Seismic Design Parameters Version 2.10 was provided with LRFD and was used to develop parameters for bridge design. Based on the site coordinates, the software provided the recommended AASHTO Response Spectrum (Site Class D) for a 7 percent probability of exceedance in 75 years. These results are summarized as follows:

SEISMIC DESIGN – SITE CLASS D	
Parameter	Design Value
F _{pga}	1.60
F _a	1.60
F _v	2.40
A _s (Period = 0.0 sec)	0.157 g
S _{Ds} (Period = 0.2 sec)	0.301 g
S _{D1} (Period = 1.0 sec)	0.106 g

The available subsurface data indicates that the granular soil encountered is sufficiently silty and dense that the potential for liquefaction is low.

5.2 FOUNDATION TYPE ASSESSMENT

Several foundation alternatives were considered for support of the proposed bridge. GZA evaluated the feasibility of different foundation alternatives and presented the results to FST in our preliminary foundation assessment memorandum dated September 7, 2010.

Foundation support alternatives considered for the bridge piers included rock-socketed drilled shafts, spread footings bearing on glacial till and bedrock, and driven piles bearing on or in bedrock. Based on evaluation of the alternatives, rock-socketed drilled shafts were selected by FST as the preferred foundation type. The bridge pier substructures will be constructed as bent piers supported by three pier shafts. The above-grade portion of the drilled shaft will extend to the raised concrete pier cap that supports the bridge girders.

Foundation support alternatives considered for the abutments included spread footings bearing on glacial till and driven H-piles bearing on or near bedrock. Based on evaluation of the alternatives, FST selected spread footings as the preferred foundation type.

5.3 GENERAL RECOMMENDATIONS FOR SHALLOW FOUNDATIONS

Recommendations that are generally applicable to the spread footing foundation alternative are summarized below. Specific spread footing foundation recommendations for the abutments are presented in **Section 6.1** of this report.



- Spread footing foundations supporting the abutments should bear on dense glacial till or Structural Fill placed and compacted after removal of unsuitable soil.
- The fill, outwash deposit, river bottom deposit and marine clay are considered unsuitable for support of spread footing foundations. These unsuitable materials should be removed and if necessary, replaced with compacted Structural Fill placed directly on dense glacial till or over a crushed stone working mat.
- A range of spread footing dimensions was used to evaluate the allowable bearing pressure. Abutment footing dimensions in the range from 9 to 16 feet wide and 45 feet long were used in our evaluations, representing footing contact loads ranging from 2,000 to 3,600 kips for service loads.
- Spread footings should be designed for the following maximum contact pressures:

ABUTMENT FOOTING BEARING PRESSURES	
Footing Bearing Material	Maximum Contact Pressure
Undisturbed Glacial Till	8 ksf
Compacted Structural Fill	5 ksf

- Acceptable footing contact pressure is judged to be settlement-controlled for these granular subgrade materials. Therefore, the LRFD service limit state controls the design. Total footing settlements on the order of 1 inch or less are anticipated for the contact pressures, footing dimensions and loads stated above. GZA should be notified if the actual footing dimensions or loads exceed the values noted above to allow us to review our evaluations based on the new data.
- Footings should be checked for overturning. In accordance with LRFD Section 10.6.3.3, the resultant reaction on the base of the footing should be no further than 1/4 L from the centerline of the footing, where L is the principal dimension of the footing perpendicular to the axis of rotation.
- For shallow foundations, lateral loads may be resisted by friction between the footing bottoms and subgrade. The ultimate coefficient of friction values for use in calculating sliding resistance between the cast-in-place concrete and properly prepared subgrades (glacial till or Structural Fill) is 0.45.
- Resistance of uplift loads is provided by the weight of the gravity loads of the structure and soil overlying the footing. A soil unit weight of 120 pcf should be used above El. 0 and 56 pcf should be used below El. 0.
- In accordance with the NHDOT Bridge Design Manual, dated October 2000 (BDG), passive earth pressure should not be considered for lateral resistance.
- Spread footing foundations should be founded a minimum of 5 feet below the lowest adjacent ground surface to provide frost protection in accordance with the BDG.

5.4 GENERAL RECOMMENDATIONS FOR DEEP FOUNDATIONS

Recommendations that are generally applicable to the drilled shaft foundation alternative are summarized below. Specific drilled shaft foundation recommendations for the piers are presented in **Section 6.2** of this report.



- Rock-socketed drilled shafts are recommended for construction of the proposed bent piers. The design values herein are based on a minimum rock socket diameter of 42 inches.
- Rock-socketed shafts should be assumed to gain support through skin friction in competent GNEISS bedrock. Contribution from end bearing has been neglected because of the significant deflection required to mobilize end bearing resistance and the required preparation and inspection to confirm suitable bearing. Contribution from skin friction in overburden soil has also been neglected.
- It is anticipated that drilled shafts would be installed by advancing permanent casing down to bedrock.
- The nominal unit skin friction resistance was calculated using the O'Neill and Reese (1999) method. The calculated nominal unit skin friction resistance for a rock socket in competent GNEISS bedrock is 25.4 ksf. Because of the high strength of the bedrock, the nominal skin friction is controlled by the unconfined compressive strength of the concrete, which was assumed to be 5,000 psi.
- The calculated factored axial load per shaft is 1,028 kips for a bent pier supported by three shafts based on the information provided by FST. GZA recommends that 42-inch diameter rock sockets be designed to extend 7 feet below the top of competent bedrock. A resistance factor of 0.55 was applied to the nominal friction resistance in accordance with LRFD Table 10.5.5.2.4-1 to determine the required socket lengths.
- Uplift loads should be resisted by skin friction along the sides of the rock socket and the self-weight of the shaft. Per LRFD Table 10.5.5.2.4-1, resistance factors for uplift resistance in bedrock are 80 percent of the axial compression values. It is anticipated that the design uplift loading will be significantly smaller than this value.

6.0 FOUNDATION RECOMMENDATIONS FOR SUBSTRUCTURES

Specific design recommendations for the proposed abutments and piers are provided below.

6.1 ABUTMENTS

- Spread footing foundations are recommended for the abutments. Suitable bearing soils (top of glacial till) are anticipated to be encountered at approximately El. -2 to El. -5 at the northern abutment (borings B-7 and B-8) and at approximately El. -6 to El. -8 at the southern abutment (borings B-1 and B-2). Spread footings should be supported either directly on undisturbed glacial till subgrade (protected by a layer of crushed stone or a mudmat) or compacted Structural Fill (NHDOT Standard Specifications Item 508) placed and compacted within the support zone of the footing.
- The support zone is considered to extend downward and outward on a 1 horizontal to 1 vertical (1H:1V) slope from a point two feet beyond the outside edge of the proposed footing.



- The bearing level of spread footings bearing on Structural Fill placed after removal of unsuitable soil should be controlled by frost and scour considerations and should be at least 5 feet below finish grades (exclusive of rip rap). Based on the glacial till elevations provided above and assuming that the abutment footings bear on Structural Fill at El. 7, the required removal of unsuitable soil within the support zone would extend up to 17 feet laterally beyond the outside edges of the footings.
- Placement of Structural Fill beneath footings should be performed in horizontal lifts and compacted with vibratory equipment to at least 95 percent of the maximum dry density as determined by AASHTO T180. The maximum loose lift thickness should be 12 inches for large vibratory rollers and 6 inches for hand-operated equipment. If the glacial till bearing surface is sloping, it should be leveled or benched prior to placing Structural Fill.
- The total excavation depth is anticipated to be on the order of 25 to 31 feet below the existing roadway and 16 to 22 feet below grade at the base of the existing abutment. In our opinion, a braced cofferdam system may be used to support the excavation and resist lateral soil and hydrostatic pressures.
- Footing excavations would extend a few feet below low tide levels, approximately 2 to 8 feet below mean sea level, and 9 to 15 feet below extreme high water (El. 7). Foundations should be constructed in-the-dry without a tremie seal. Therefore, a temporary dewatering system will be required.

6.2 BENT PIERS

- Drilled shafts with 42-inch diameter rock sockets are recommended for the bent piers. Top of competent bedrock (top of rock socket) is anticipated to be encountered at approximately El. -26 to El. -31 at the northern pier (borings B-5 and B-6) and at approximately El. -34 to El. -44 at the southern pier (borings B-3 and B-4).
- The thickness of overburden soils is anticipated to range from about 20 to 25 feet at the northern pier and from about 25 to 34 feet at the southern pier. The lower 9 to 27 feet of overburden consists of medium dense to very dense glacial till. Cobbles and boulders up to 3 feet in diameter were encountered in the glacial till.
- We anticipate that the structural design of the shafts will be completed by FST and will consider shaft head deflection and combined stresses resulting from axial and lateral loads. GZA can provide geotechnical input design parameters based on the soil and rock conditions at each pier and assist FST in performing these evaluations if requested.

7.0 GENERAL ABUTMENT DESIGN RECOMMENDATIONS

The design calls for new reinforced concrete abutment and wing wall structures to be constructed. Backfill for new structures should meet the gradation requirements of the NHDOT Standard Specifications, Item No. 304.1 (Base Coarse Sand), 304.2 (Base Coarse Gravel), or 508 (Structural Fill). Recommended soil properties for abutment backfill material for use in foundation design are as follows:

- Internal Angle of Friction of Soil = 32°
- Soil Total Unit Weight = 125 pcf above El. 0 and 62 pcf below El. 0
- Coefficient of Friction, $\tan \delta$ (Concrete to Soil) = 0.45



- Interface Friction Angle (Concrete to Soil) = 24°
- Coefficient of Active Earth Pressure, $K_a = 0.31$

Base Coarse Sand and Gravel should be placed to a distance equal to 0.6 times the wall height behind the back face of abutments, retaining walls and wing walls.

Foundation drainage should be provided to mitigate unbalanced hydrostatic forces behind abutments and wingwalls. We recommend the use of French drains or prefabricated drainage board on the uphill side of abutments and wing walls. The drains should outlet through a series of 4-inch diameter weep holes, spaced approximately 10-foot center-to-center.

8.0 CONSTRUCTION CONSIDERATIONS

Construction considerations are intended to provide a basis for design development and to identify geotechnical-related issues that are anticipated to impact bridge construction. These items are provided in the paragraphs that follow.

8.1 EXCAVATION, TEMPORARY LATERAL SUPPORT AND DEWATERING

Excavation depths are anticipated to range from 16 to 31 feet below grade for construction of the abutment foundations. It is anticipated that temporary lateral support systems such as braced sheeting cofferdams will be needed to support external soil and water loads.

Excavation for the northern abutment will extend through rock fill extending up to 25 feet below the existing roadway (see boring logs for B-7 and B-8 for additional details). Excavation may be slowed by the presence of significant oversized material. These materials are also likely to present obstructions that may require removal prior to sheet pile installation.

Groundwater within the cofferdams will be tidally influenced and could vary from 0 to 15 feet above the required excavation levels. Temporary construction dewatering will be required to control groundwater in excavations. It is anticipated that the inflow of groundwater and infiltration to excavations can be handled by open pumping from sumps installed at the bottom of excavations. The use of braced sheeting systems may also serve as a cut-off to help reduce groundwater inflow.

The contractor should be responsible for design of all temporary cofferdam structures. Design should be completed by a professional engineer registered in the state of New Hampshire. The contractor should also be responsible for controlling groundwater, surface runoff, infiltration and water from all other sources by methods that preserve the undisturbed condition of the subgrade and permit foundation construction in-the-dry. Discharge of pumped groundwater should comply with all local, state, and federal regulations. Sumps, wells, and trenches should not be located within the bearing area of foundations.

8.2 FOOTING SUBGRADE PREPARATION

Foundation excavations should remove all unsuitable soils (all overburden soil above glacial till) within the support zone of the footing. Over-excavated areas should be restored to the proposed bearing elevation with compacted Structural Fill (NHDOT Item 508) placed and compacted as specified in Section 508. Alternately, lean concrete or crushed stone may be used in lieu of



Structural Fill. Crushed stone should consist of NHDOT Item 304.6 (Very Coarse). It should be placed in lifts and densified with at least four passes of a walk-behind vibratory roller.

The contractor should divert surface water runoff away from excavations so that fill and sensitive glacial till subgrades are not saturated. Precipitation that results in standing water in the excavation should be removed immediately.

Final excavations to the bearing level should be completed with a smooth edge bucket to reduce disturbance of the subgrade. Footing subgrade preparation should be observed by a qualified geotechnical engineer. If subgrades are disturbed by water or excavation, the disturbed material should be excavated and replaced with crushed stone or lean concrete.

Depending on cofferdam and dewatering design, it may be necessary to plan foundation construction work around tides to allow use of a passive dewatering system (sumps and trenches). A mud slab poured in the dry during low tide may provide a stable base for footing construction. If it is planned to support footings on Structural Fill placed after removal of unsuitable soil, it may be necessary to place filter fabric and a layer of crushed stone at the base of the excavation to allow dewatering for fill placement to be performed in-the-dry.

8.3 DRILLED SHAFT CONSTRUCTION

It should be noted that during drilled shaft installation boulder obstructions will likely be encountered. The contractor should be aware of these potential obstructions during the bidding process. Drilled shaft installation should be observed by a qualified geotechnical engineer to confirm the depth, diameter, shaft alignment, and socket length for each shaft prior to placement of concrete. Special care must be taken to ensure that the sidewalls of the rock sockets are clean so that side resistance within the rock socket can be fully mobilized. Because end bearing is not considered in the design, it is not necessary to inspect the base of the shaft prior to concrete placement.

Based on the anticipated overburden thickness and the hard nature of the rock, it is our opinion that the drilled shafts can most effectively be installed by advancing permanent casing to the top of bedrock and drilling the rock sockets with an air percussion hammer. The casing may serve as the form for the column extension above mudline to the raised pier cap.

Depending on the capacity of the existing bridge and location of drilled shaft elements, it may be feasible to install the new foundation elements from the existing bridge. It is likely that the mobilization cost would be reduced if this were feasible.

8.3.1 Drilled Shaft Instrumentation

Crosshole Sonic Logging (CSL) tests are recommended for each drilled shaft. CSL testing can identify voids or discontinuities in the shaft concrete and is used for quality assurance and quality control purposes. Four vertical CSL test conduits should be installed at equal intervals around the perimeter of the reinforcing cage within the drilled shaft. The drilled shafts should be logged using approved sonic logging equipment within two weeks of installation of each shaft. Two conduits are used at a time during logging. Each CSL test should include testing of all six possible conduit combinations for the full depth of each drilled shaft.

The contractor should provide a drilled shaft construction submittal that includes a plan to correct faulty shafts if CSL tests reveal discontinuities in the shaft concrete.

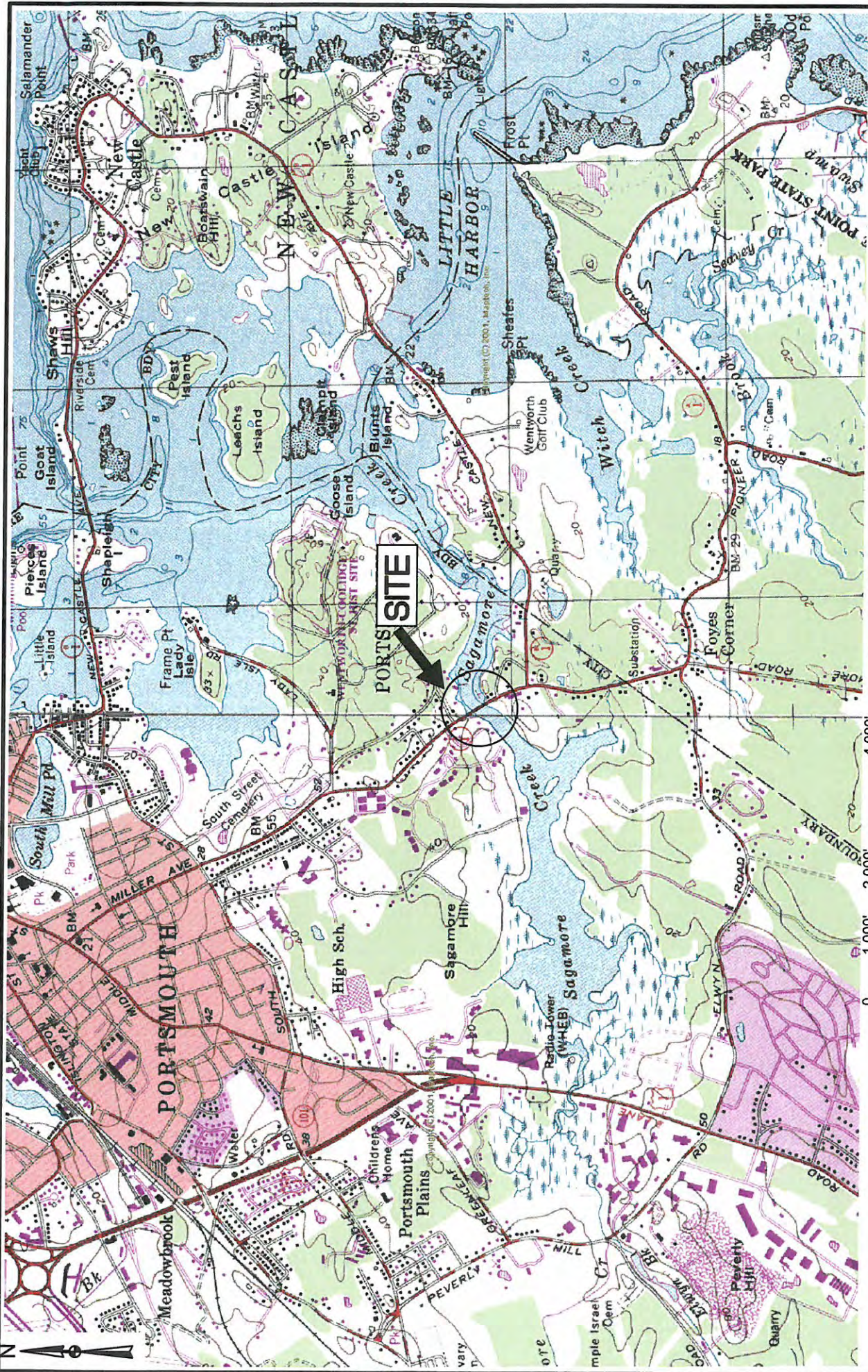
8.4 REUSE OF EXISTING EMBANKMENT FILL



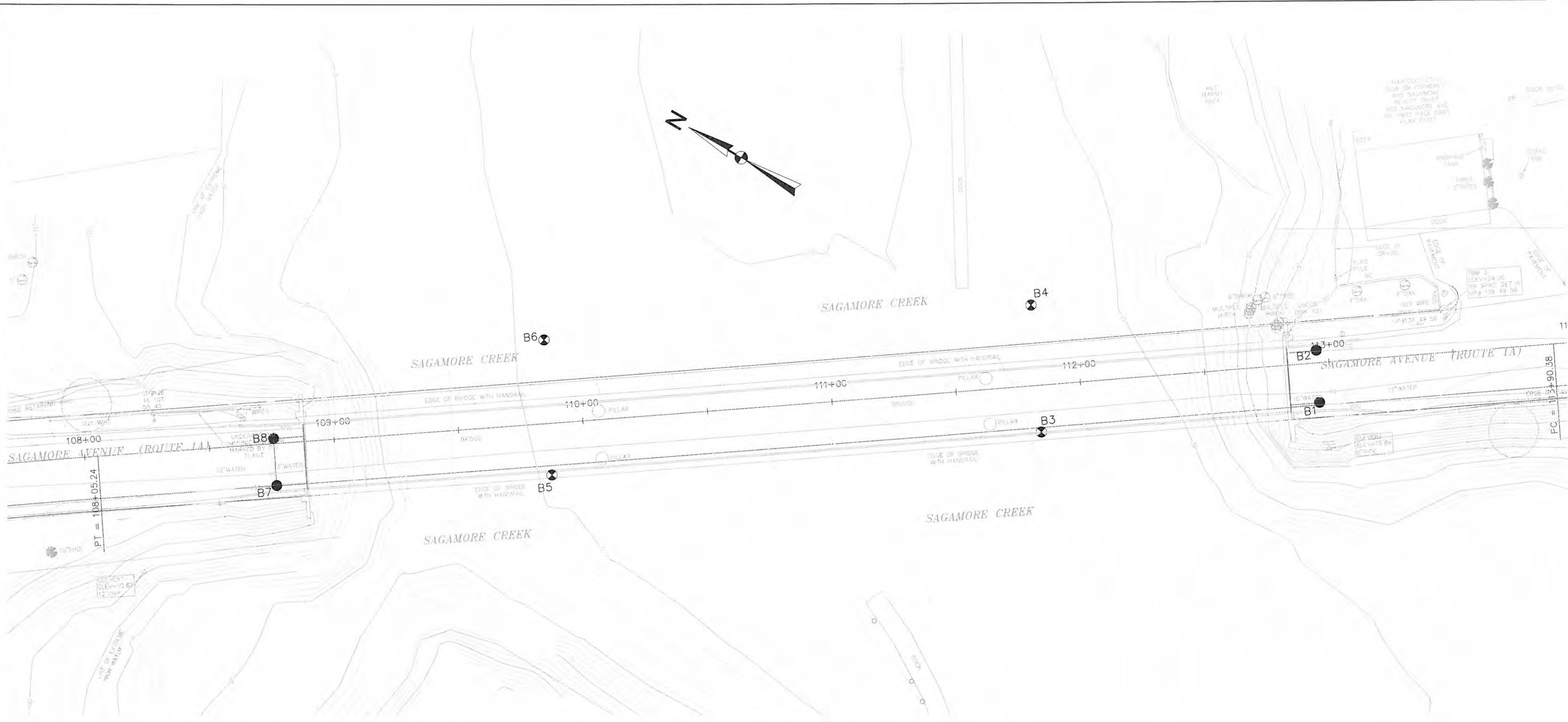
Based on the test boring results and gradation analyses, the existing approach fill is heterogeneous and varies significantly in grain size distribution. If the contractor wishes to reuse excavated material as embankment fill or structural backfill, we recommend that the proposed material be stockpiled and tested for grain size distribution. Stockpiled materials meeting the appropriate NHDOT specifications may be reused on the project.



FIGURES



NO.		ISSUE/DESCRIPTION		BY	DATE
NO.		PROJ. MGR.	CLS	DATE	FIGURE
NO.		DESIGNED BY:	ART	SEPTEMBER 2010	1
NO.		REVIEWED BY:	JFE	PROJECT NO.	
NO.		DRAWN BY:	ART	09.0025631.00	
NO.		CHECKED BY:	CLS	REVISION NO.	
NO.		SCALE:	1" = 2000'	1	
SCALE IN FEET					
BRIDGE 198/03 ROUTE 1A OVER SAGAMORE CREEK					
PORTSMOUTH, NEW HAMPSHIRE					
PREPARED BY:		GZA GeoEnvironmental, Inc. Engineers and Scientists 4 FREE STREET PORTSMOUTH, MAINE 04101 (207) 253-2355			
PREPARED FOR:		FAY, SPOFFORD & THORNDIKE			



- NOTES:**
1. BASE MAP DEVELOPED FROM ELECTRONIC DRAWING FILE "BASE_PLAN.DWG" PROVIDED BY FST INC VIA E-MAIL ON JUNE 22, 2010.
 2. THE LOCATION OF TEST BORINGS HAVE BEEN ESTIMATED BY MEASURING TIES TO AS-DRILLED LOCATIONS DURING DRILLING. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.
 3. TEST BORINGS WERE PERFORMED BY NEW HAMPSHIRE BORING OF LONDONDERRY, NEW HAMPSHIRE BETWEEN MAY 5 AND 21, 2010 AND OBSERVED BY GZA PERSONNEL.

- LEGEND:**
- B6 DESIGNATION AND LOCATION OF WATER BORING
 - B8 DESIGNATION AND LOCATION OF LAND BORING



NO.	ISSUE/DESCRIPTION	BY	DATE
BRIDGE 198/03 ROUTE 1A OVER SAGAMORE CREEK			
PORTSMOUTH, NEW HAMPSHIRE			
BORING LOCATION PLAN			
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists 4 FREE STREET PORTLAND, MAINE 04101 (207) 878-8190		PREPARED FOR: FAY, SPOFFORD & THORNDIKE	
PROJ MGR: CLS	REVIEWED BY: ARB	CHECKED BY: JVE	FIGURE
DESIGNED BY: MJD	DRAWN BY: MJD	SCALE: AS SHOWN	2
DATE SEPTEMBER 2010	PROJECT NO. 09.0025631.00	REVISION NO.	SHEET NO.

© 2009 - GZA GeoEnvironmental, Inc. C:\Users\joh\Documents\090925631.00\090925631.dwg [Figure 1] September 25, 2010 - 17:28pm eac:ben



APPENDIX A
LIMITATIONS



LIMITATIONS

Subsurface Conditions

1. The generalized soil profile(s) provided in our Report and on our subsurface exploration logs are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs.
2. Water level readings have been made in test holes and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. However, fluctuations in the level of the groundwater occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The observed water table may be other than indicated in the Report.
3. Our services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.
4. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

Compliance with Codes and Regulations

5. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

Cost Estimates

6. Unless otherwise stated, our cost estimates are for comparative, or general planning purposes. These estimates may involve approximate quantity evaluations. Note that these quantity estimates may not be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over the labor and material costs required to plan and execute the anticipated work, our estimates were made using our experience and readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

Additional Services

7. We recommend that we be retained to provide services during any future: investigations, design, implementation activities, construction and/or property development/redevelopment. This will allow us the opportunity to: 1) observe conditions and compliance with our design concepts and opinions; 2) allow for changes in the event that conditions are other than anticipated; 3) provide modifications to our design; and 4) assess the consequences of changes in technologies and/or regulations.



APPENDIX B
RECENT TEST BORING LOGS

TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-1

PROJECT NAME **SAGAMORE CREEK 09.0025631.00** BRIDGE NO. N/A
DESCRIPTION _____

SHEET NO. 1 OF 2
STA. 112+95 OFF. RT 16
BASELINE Sagamore Avenue
ELEVATION (ft) 23.0
START/END 5/10/10 / 5/11/10
DRILLER K. Smith (NHB)
INSPECTOR Eric Baron
CLASSIFIER Eric Baron
EAST/NORTH (ft) 1229614/203335

GROUNDWATER						EQUIPMENT	SAMPLER	CASING	CORE
DATE	TIME	DEPTH (ft)	ELEV. (ft)	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE:	S	HW	
						SIZE I.D. (in):	1.375	4	
						HAMMER WT. (lb):	140		
						HAMMER FALL (in):	30		
						HAMMER TYPE:	Automatic		
						DRILL RIG Mobile B-59			

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
0	0.6	22.4					Asphalt.	
			12			1.0		
			11	S-1	1.0 [50]		Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt. (Moist.)	
			8			3.0		
			7					
5			100/0				S-2, 5' - 5', No Recovery. Drilled through Boulder from 5' to 9.5'. -FILL-	
10			3			10.0		
			2	S-3	1.2 [60]		Loose, brown, fine to medium SAND, trace Gravel, trace Silt. (Dry.)	
			5			12.0		
			6				Drilling indicates Cobbles and Boulders.	
15			5			15.0		
			10	S-4	1.0 [50]		Medium dense, brown, fine to medium SAND, little Gravel, little Silt. (Dry.) (A-2)	
			9			17.0		
			12					
20	20.3	2.7	7			20.0	Top 0.3': Medium dense, brown, fine to medium SAND, little Gravel. (Moist.)	
			6	S-5	1.2 [60]		Bottom 0.9': Medium dense, dark brown, fine to coarse SAND, some Gravel, little Silt. (Wet.)	
			7			22.0		
			11					
							-OUTWASH-	
25			5			25.0		
			6	S-6	0.3 [15]		Medium dense, brown, fine to coarse SAND, little Gravel, little Silt. (Wet.)	
			8			27.0		
			7					

TB-06 Q:\GINT PROJECT DATABASES\09 0025631.00 SAGAMORE CREEK.GPJ 9/1/2010 1:22:02 PM TB-06

Sampler	Identification	COHESIVE SOILS		NON-COHESIVE SOILS		Soil Descriptions	Proportion
		Blows/foot	Consistency	Blows/foot	Density		
S	Standard Split Spoon	0 - 1	Very Soft	0 - 4	Very Loose	Capitalized Soil Name	Major Component
SL	Large Spoon (O.D.= 3 in)	2 - 4	Soft	5 - 10	Loose	Lower Case Adjective	35% - 50%
T	Thin Wall Tube	5 - 8	Medium Stiff	11 - 24	Medium Dense	Some	20% - 35%
U	Undisturbed Piston	9 - 15	Stiff	25 - 50	Dense	Little	10% - 20%
O	Open End Rod	16 - 30	Very Stiff	> 50	Very Dense	Trace	1% - 10%
A	Auger Flight	31 - 60	Hard				
C	Core Barrel	> 60	Very Hard				
NR	Not Recorded						

ENGLISH

TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-1

SHEET NO. 2 OF 2

STA. 112+95 OFF. RT 16

BASELINE Sagamore Avenue

ELEVATION (ft) 23.0

PROJECT NAME **SAGAMORE CREEK 09.0025631.00**

BRIDGE NO. N/A

DESCRIPTION _____

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
30	29.0	-6.0	100/0.3	S-7	0.0 [0]	30.0 30.3	Drill cutting indicated brown Sand and Gravel. Increased resistance at approximately 29' below ground surface. -GLACIAL TILL-	
35			20 21 26 55	S-8	1.2 [60]	35.0	Dense, brown, fine to coarse SAND, some Gravel, some Silt. (Wet.)	
						37.0		
40	41.6	-18.6	56 79 56 100/0.1	S-9	1.2 [75]	40.0	Very dense, brown, fine to coarse SAND, some Silt, some Gravel. (Wet.)	
45				C-1	4.5 [90]	43.0	Drill to 43' to set casing. Very hard, fresh, fine grained, gray, GNEISS. Joints are close to wide, low angle, undulating, rough, partially open, fresh. C-1 Core Times (mins): 43-44 (8) 44-45 (9) 45-46 (8) 46-47 (7) 47-48 (10) RQD= 4.4/5.0= 88%	
						48.0		
50							Bottom of Exploration at 48' below ground surface. (El. -25.0)	
55								
60								
65								

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TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-2

PROJECT NAME **SAGAMORE CREEK 09.0025631.00** BRIDGE NO. **N/A**
DESCRIPTION _____

SHEET NO. 1 OF 2
STA. 112+95 OFF. LT 05
BASELINE Sagamore Avenue
ELEVATION (ft) 23.0
START/END 5/10/10 / 5/10/10
DRILLER K. Smith (NHB)
INSPECTOR Eric Baron
CLASSIFIER Eric Baron
EAST/NORTH (ft) 1229632/203347

GROUNDWATER						EQUIPMENT	SAMPLER	CASING	CORE
DATE	TIME	DEPTH (ft)	ELEV. (ft)	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE:	S	HW	
						SIZE I.D. (in):	1.375	4	
						HAMMER WT. (lb):	140		
						HAMMER FALL (in):	30		
						HAMMER TYPE:	Automatic		
						DRILL RIG Mobile B-59			

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
0	0.6	22.4					Asphalt.	
			22			1.0		
			26 20	S-1	0.8 [40]		Dense, brown, fine to coarse SAND, some Gravel, trace Silt. (Moist.)	
			14			3.0	Drilling indicates brown Sand and Cobbles/Boulders.	
5			10			5.0		
			14 46	S-2	0.1 [5]		Gravel pieces, Bent spoon. (Dry.) Drilling indicates cobbles/boulders to approximately 9' below ground surface with brown sand below.	
			21			7.0	-FILL-	
10			1			10.0		
			3 4	S-3	0.3 [15]		Loose, brown, gravelly fine to medium SAND, trace Silt. (Dry.)	
			9			12.0		
15			5			15.0		
			4 3	S-4	1.1 [55]		Loose, brown, fine to medium SAND, little Gravel, trace Silt. (Damp.)	
			3			17.0		
20	20.5	2.5	7			20.0	Top 0.5': Medium dense, brown, fine to medium SAND, trace Gravel. Piece Asphalt. (Moist.) Bottom 0.5': Dark brown, fine to coarse SAND, some Gravel, trace Silt. (Wet.)	
			8 5	S-5	1.0 [50]		-OUTWASH-	
			4			22.0		
25			3			25.0		
			4 6	S-6	0.9 [45]		Loose, brown, fine to coarse SAND, some Gravel, little Silt. (Wet.)	
			14			27.0		

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Sampler Identification	COHESIVE SOILS		NON-COHESIVE SOILS		Soil Descriptions	Proportion
	Blows/foot	Consistency	Blows/foot	Density	Capitalized Soil Name	Major Component
S Standard Split Spoon	0 - 1	Very Soft	0 - 4	Very Loose	Lower Case Adjective	35% - 50%
SL Large Spoon (O.D.= 3 in)	2 - 4	Soft	5 - 10	Loose	Some	20% - 35%
T Thin Wall Tube	5 - 8	Medium Stiff	11 - 24	Medium Dense	Little	10% - 20%
U Undisturbed Piston	9 - 15	Stiff	25 - 50	Dense	Trace	1% - 10%
O Open End Rod	16 - 30	Very Stiff	> 50	Very Dense		
A Auger Flight	31 - 60	Hard				
C Core Barrel	> 60	Very Hard				
NR Not Recorded						

ENGLISH

TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-2

SHEET NO. 2 OF 2

STA. 112+95 OFF. LT 05

BASELINE Sagamore Avenue

ELEVATION (ft) 23.0

PROJECT NAME **SAGAMORE CREEK 09.0025631.00**

BRIDGE NO. N/A

DESCRIPTION _____

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
30	30.7	-7.7	9 27 35 21	S-7	1.4 [70]	30.0 32.0	Top 0.7': Dense, brown, fine to medium SAND, trace Silt, trace Gravel. (A-3) Bottom 0.7': Very dense, brown, fine to coarse, sandy GRAVEL, some Silt. (Wet.) <p style="text-align: center;">-GLACIAL TILL-</p>	
35	35.7	-12.7	75/100/0/2	S-8	0.0 [0]	35.0 35.7	No Recovery. <p style="text-align: center;">-BEDROCK-</p>	
40				C-1	4.7 [94]	38.0 43.0	Drill to 38' to seat casing for core. Very hard, fresh, fine grained, gray, GNEISS. Primary joints are close to moderate, moderately dipping to high angle, undulating, rough, fresh to slightly weathered, partially open, iron staining. C-1 Core Times (mins): 38-39 (8) 39-40 (12) 40-41 (9) 41-42 (10) 42-43 (12) RQD= 4.3/5.0= 86% Bottom of Exploration at 43' below ground surface. (El. -20.0)	
45								
50								
55								
60								
65								

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TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-3

PROJECT NAME **SAGAMORE CREEK 09.0025631.00** BRIDGE NO. N/A
DESCRIPTION _____

SHEET NO. 1 OF 2
STA. 111+83 OFF. RT 19
BASELINE Sagamore Avenue
ELEVATION (ft) -9.7
START/END 5/25/10 / 5/26/10
DRILLER S. Cooley (NHB)
INSPECTOR Mirsad A./Mike D.
CLASSIFIER Mirsad A./Mike D.
EAST/NORTH (ft) 1229549/203426

GROUNDWATER						EQUIPMENT	SAMPLER	CASING	CORE
DATE	TIME	DEPTH (ft)	ELEV. (ft)	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE:	S	HW	
						SIZE I.D. (in):	1.375	4	
						HAMMER WT. (lb):	140		DRILL RIG CME-45
						HAMMER FALL (in):	30		
						HAMMER TYPE:	Automatic		

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
0	0.5	-10.2	1			0.0	-RIVER BOTTOM DEPOSITS- Very loose, black to gray, fine to coarse SAND, some Silt.	[Symbol]
			2	S-1	0.5 [25]	2.0		
			2				-CLAY-	
5			2			5.0	Very soft, gray, CLAY, little coarse Sand. (Wet.)	[Symbol]
	7.0	-16.7	1 1/12"	S-2	2.0 [100]	7.0		
							Field Vane refusal at 7'. Drilling indicated that gravel was encountered.	
10			6			10.0	Dense, gray, GRAVEL, some Silt, little Sand. (Wet.)	[Symbol]
			17 14	S-3	0.8 [40]	12.0		
							-GLACIAL TILL-	
15			14			15.0	No Recovery. Wash spoils only. Probable Cobble.	[Symbol]
			25 19	S-4	0.0 [0]	17.0		
20			21			19.0	Very dense, gray/brown, GRAVEL, little Silt, trace fine to coarse Sand. (Wet.)	[Symbol]
			26 37	S-5	0.4 [20]	21.0		
25			43			24.0	Very dense, gray, SILT, some fine to coarse Sand, little Gravel. (Wet.)	[Symbol]
			31 36	S-6	0.8 [40]	26.0		

TB-06 Q:\GINT PROJECT DATABASES\09.0025631.00 SAGAMORE CREEK.GPJ 9/1/2010 1:22:07 PM TB-06

Sampler	Identification	COHESIVE SOILS		NON-COHESIVE SOILS		Soil Descriptions	Proportion
S	Standard Split Spoon	Blows/foot	Consistency	Blows/foot	Density	Capitalized Soil Name	Major Component
SL	Large Spoon (O.D.= 3 in)	0 - 1	Very Soft	0 - 4	Very Loose	Lower Case Adjective	35% - 50%
T	Thin Wall Tube	2 - 4	Soft	5 - 10	Loose	Some	20% - 35%
U	Undisturbed Piston	5 - 8	Medium Stiff	11 - 24	Medium Dense	Little	10% - 20%
O	Open End Rod	9 - 15	Stiff	25 - 50	Dense	Trace	1% - 10%
A	Auger Flight	16 - 30	Very Stiff	> 50	Very Dense		
C	Core Barrel	31 - 60	Hard				
NR	Not Recorded	> 60	Very Hard				
				WOR - Weight of Rod		ENGLISH	
				WOH - Weight of Hammer			

TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-3

SHEET NO. 2 OF 2

STA. 111+83 OFF. RT 19

BASELINE Sagamore Avenue

ELEVATION (ft) - 9.7

PROJECT NAME **SAGAMORE CREEK 09.0025631.00** BRIDGE NO. N/A

DESCRIPTION _____

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
30			33			29.7	Very dense, gray, SILT, little fine to coarse Sand, trace Gravel. (Wet.)	
			57 51 140/0.4	S-7	1.4 [74]	31.6		
	34.0	-43.7					-GLACIAL TILL-	
35				C-1	0.0 [0]	34.9	Very hard, fresh, fine grained, gray, GNEISS. Joints are very close to close, moderate angle, planar, rough, partially open to open. C-1 Core Times (min): 34.9-35.7 (14/0.8')	
				C-2	0.9 [90]	35.7		
						36.7		
				C-3	2.1 [111]	37.0	Very hard, fresh, fine grained, gray, GNEISS. Joints are very close to close, moderate angle, planar, rough, partially open to open. C-2 Core Times (min): 35.7-36.7 (18) RQD= 0.4/1.0= 40% Set casing harder. Clean out hole to 37.0' with roller bit. Very hard, fresh, fine grained, gray, GNEISS. Joints are very close to close, moderate angle, planar, rough, partially open to open. C-3 Core Time (min): 37.0-38.0 (18) 38.0-38.9 (22/0.9') RQD= 1.5/1.9= 79%	
						38.9		
40							Bottom of Exploration at 38.9' below ground surface. (El. -48.6)	
45								
50								
55								
60								
65								

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TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-4

SHEET NO. 2 OF 2

STA. 111+83 OFF. LT 32

BASELINE Sagamore Avenue

ELEVATION (ft) - 9.4

PROJECT NAME **SAGAMORE CREEK 09.0025631.00** BRIDGE NO. N/A
DESCRIPTION _____

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
30						30.5	28.5-29.5 (15) 29.5-30.5 (26) RQD= 4.3/5.0= 86% Bottom of Exploration at 30.5' below ground surface. (El. -39.9)	
35								
40								
45								
50								
55								
60								
65								

TB-06 Q:\GINT PROJECT DATABASES\09.0025631.00 SAGAMORE CREEK.GPJ 9/1/2010 1:22:08 PM TB-06

TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-5

PROJECT NAME **SAGAMORE CREEK 09.0025631.00** BRIDGE NO. N/A
DESCRIPTION _____

SHEET NO. 1 OF 1
STA. 109+87 OFF. RT 33
BASELINE Sagamore Avenue
ELEVATION (ft) -6.3
START/END 5/24/10 / 5/24/10
DRILLER S. Cooley (NHB)
INSPECTOR Mirsad A./Mike D.
CLASSIFIER Mirsad A./Mike D.
EAST/NORTH (ft) 1229437/203588

GROUNDWATER						EQUIPMENT	SAMPLER	CASING	CORE
DATE	TIME	DEPTH (ft)	ELEV. (ft)	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE:	S	HW	
						SIZE I.D. (in):	1.375	4	
						HAMMER WT. (lb):	140		
						HAMMER FALL (in):	30		
						HAMMER TYPE:	Automatic		
						DRILL RIG CME-45			

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
0			WOH/18 3	S-1	0.0 [0]	0.0 2.0	No Recovery. -CLAY-	
5			4 4 2 3	S-2	1.5 [75]	5.0 7.0	Very soft, gray to brown, Clayey SILT. (Wet.)	
10	10.9	-17.2	2 10 12 20	S-3	1.7 [85]	10.0 12.0	Top 0.9': Gray to brown, Silty CLAY, trace fine Sand. (Wet.) Bottom 1.1': Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. (Wet.) Field Vane from 10.5 to 11.0'. $T_{raw}=620/200$ in-lbs. ($S_u=1470/470$ psf) Field Vane refusal at 11.5'.	
15			28 19 17 21	S-4	0.8 [40]	15.0 17.0	Dense, brown, fine to coarse Gravelly SAND, little Silt. (Wet.) -GLACIAL TILL-	
20	20.0	-26.3				21.0	-BEDROCK-	
25				C-1	4.1 [103]	25.0 26.0	Very hard, fresh, fine grained, gray, GNEISS. Primary joints are close to moderately spaced, moderately dipping to low angle, undulating, rough, fresh to slightly weathered, partially open, iron staining. C-1 Core Times (min): 21.0-22.0 (19) 22.0-23.0 (10) 23.0-24.0 (8) 24.0-25.0 (10) RQD= 3.1/4.0= 78% Very hard, fresh, fine grained, gray, GNEISS. Primary joints are close to moderately spaced, moderately dipping to low angle, undulating, rough, fresh to slightly weathered, partially open. C-2 Core Times (min): 25.0-26.0 (11) RQD= 0.7/1.0= 70% Bottom of Exploration at 26.0' below ground surface. (El. -32.3)	

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Sampler Identification		COHESIVE SOILS		NON-COHESIVE SOILS		Soil Descriptions		Proportion	
S	Standard Split Spoon	Blows/foot	Consistency	Blows/foot	Density	Capitalized Soil Name	Major Component		
SL	Large Spoon (O.D.= 3 in)	0 - 1	Very Soft	0 - 4	Very Loose	Lower Case Adjective	35% - 50%		
T	Thin Wall Tube	2 - 4	Soft	5 - 10	Loose	Some	20% - 35%		
U	Undisturbed Piston	5 - 8	Medium Stiff	11 - 24	Medium Dense	Little	10% - 20%		
O	Open End Rod	9 - 15	Stiff	25 - 50	Dense	Trace	1% - 10%		
A	Auger Flight	16 - 30	Very Stiff	> 50	Very Dense				
C	Core Barrel	31 - 60	Hard						
NR	Not Recorded	> 60	Very Hard						
				WOR - Weight of Rod		ENGLISH			
				WOH - Weight of Hammer					

TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-6

PROJECT NAME **SAGAMORE CREEK 09.0025631.00** BRIDGE NO. N/A
DESCRIPTION _____

SHEET NO. 1 OF 2
STA. 109+87 OFF. LT 34
BASELINE Sagamore Avenue
ELEVATION (ft) - 5.3
START/END 5/20/10 / 5/21/10
DRILLER S. Cooley (NHB)
INSPECTOR Mirsad A./Mike D.
CLASSIFIER Mirsad A./Mike D.
EAST/NORTH (ft) 1229482/203618

GROUNDWATER						EQUIPMENT	SAMPLER	CASING	CORE
DATE	TIME	DEPTH (ft)	ELEV. (ft)	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE:	S	HW	
						SIZE I.D. (in):	1.375	4	
						HAMMER WT. (lb):	140		
						HAMMER FALL (in):	30		
						HAMMER TYPE:	Automatic		

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
0						0.0	Top 1.5': Very loose, black to gray, fine to medium SAND, some Silt. -RIVER BOTTOM DEPOSITS-	
	1.5	-6.8	2 2 4	S-1	1.4 [70]	2.0	Bottom 0.5': Soft, gray, Silty CLAY. little Silt.	
5			WOH WOH WOH WOH	S-2	2.0 [100]	5.0 7.0	Very soft, gray, CLAY. (Wet.) -CLAY-	
10			WOH WOH WOH	S-3	2.0 [100]	10.0 12.0	Very soft, gray, CLAY. (Wet.) (A-6) Field Vane from 10.5 to 11.0'. $T_{raw} = 200/4$ in-lbs. ($S_u = 470/10$ psf) Field Vane from 11.5 to 12.0'. $T_{raw} = 210/4$ in-lbs. ($S_u = 500/10$ psf)	
15	14.9	-20.2					Drilling indicates boulder at 14.9 to 15.5' with brown sand above.	
			11 14 14 36	S-4	1.6 [80]	16.0 18.0	Dense, brown, fine to coarse SAND, some Silt, trace Gravel. Drilling indicates boulder at 18.9 to 22'. -GLACIAL TILL-	
20			30 50 50/0.1	S-5	1.6 [145]	22.0 23.1	Very dense, brown, fine to coarse SAND, little Gravel, little Silt.	
25	25.0	-30.3					Drill to 26' to seat casing. -BEDROCK- Very hard, fresh, fine grained, gray, GNEISS. Primary joints are close to moderately spaced, moderately dipping to low angle, undulating, rough, fresh to slightly weathered, partially open, iron staining. C-1 Core Times (min): 26.0-27.0 (8)	

Sampler	Identification	COHESIVE SOILS		NON-COHESIVE SOILS		Soil Descriptions	Proportion
S	Standard Split Spoon	Blows/foot	Consistency	Blows/foot	Density	Capitalized Soil Name	Major Component
SL	Large Spoon (O.D.= 3 in)	0 - 1	Very Soft	0 - 4	Very Loose	Lower Case Adjective	35% - 50%
T	Thin Wall Tube	2 - 4	Soft	5 - 10	Loose	Some	20% - 35%
U	Undisturbed Piston	5 - 8	Medium Stiff	11 - 24	Medium Dense	Little	10% - 20%
O	Open End Rod	9 - 15	Stiff	25 - 50	Dense	Trace	1% - 10%
A	Auger Flight	16 - 30	Very Stiff	> 50	Very Dense		
C	Core Barrel	31 - 60	Hard				
NR	Not Recorded	> 60	Very Hard				

ENGLISH

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TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-6

SHEET NO. 2 OF 2

STA. 109+87 OFF. LT 34

BASELINE Sagamore Avenue

ELEVATION (ft) - 5.3

PROJECT NAME **SAGAMORE CREEK 09.0025631.00** BRIDGE NO. N/A
DESCRIPTION _____

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
30						31.0	27.0-28.0 (9) 28.0-29.0 (10) 29.0-30.0 (9) 30.0-31.0 (12) RQD= 4.2/5.0= 84% Bottom of Exploration at 31.0' below ground surface. (El. -36.3)	
35								
40								
45								
50								
55								
60								
65								

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TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-7

PROJECT NAME **SAGAMORE CREEK 09.0025631.00** BRIDGE NO. N/A
DESCRIPTION _____

SHEET NO. 1 OF 2
STA. 108+76 OFF. RT 17
BASELINE Sagamore Avenue
ELEVATION (ft) 23.0
START/END 5/6/10 / 5/6/10
DRILLER K. Smith (NHB)
INSPECTOR Eric Baron
CLASSIFIER Eric Baron
EAST/NORTH (ft) 1229378/203681

GROUNDWATER						EQUIPMENT	SAMPLER	CASING	CORE
DATE	TIME	DEPTH (ft)	ELEV. (ft)	BOTTOM OF CASING	BOTTOM OF HOLE	TYPE:	S	HW	
						SIZE I.D. (in):	1.375	4	
						HAMMER WT. (lb):	140	DRILL RIG Mobile B-59	
						HAMMER FALL (in):	30		
						HAMMER TYPE:	Automatic		

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
0							Asphalt	
	0.9	22.1	15			1.0	Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt. (Dry.)	-FILL-
	3.0	20.0	10	S-1	1.2 [60]	3.0		
5			9			5.0	Gray/brown, GRAVEL, little Sand, trace Silt, angular. (Dry.)	-ROCK FILL-
			8	S-2	0.2 [15]	6.3	Drill cuttings indicate presence of brown sand.	
10			12			10.0	Gray/brown, GRAVEL, trace Sand, angular. Tip plugged with piece of gravel. (Moist.)	-FILL-
			7	S-3	0.3 [15]	12.0	Drill cutting indicate presence of brown sand.	
15	15.7	7.3	7			16.0	Drilled to 16' to penetrate boulder/cobble.	-FILL-
			7	S-4	1.2 [60]	18.0	Medium dense, brown, fine to coarse SAND, some Gravel, little Silt. (Moist.) (A-1-b)	
20			8			20.0	Dense, brown, fine to coarse SAND, some Gravel, little Silt, mottled. (Wet.)	-FILL-
			14	S-5	0.4 [20]	22.0		
25			7			25.0	Medium dense, brown/gray, Sandy SILT, little Gravel. Sulfur odor. (Wet.)	-FILL-
			10	S-6	0.8 [40]	27.0		
	28.0	-5.0					Change in drilling resistance and wash color.	

Sampler Identification		COHESIVE SOILS		NON-COHESIVE SOILS		Soil Descriptions	Proportion
S	Standard Split Spoon	Blows/foot	Consistency	Blows/foot	Density	Capitalized Soil Name	Major Component
SL	Large Spoon (O.D. = 3 in)	0 - 1	Very Soft	0 - 4	Very Loose	Lower Case Adjective	35% - 50%
T	Thin Wall Tube	2 - 4	Soft	5 - 10	Loose	Some	20% - 35%
U	Undisturbed Piston	5 - 8	Medium Stiff	11 - 24	Medium Dense	Little	10% - 20%
O	Open End Rod	9 - 15	Stiff	25 - 50	Dense	Trace	1% - 10%
A	Auger Flight	16 - 30	Very Stiff	> 50	Very Dense		
C	Core Barrel	31 - 60	Hard				
NR	Not Recorded	> 60	Very Hard				
				WOR - Weight of Rod		ENGLISH	
				WOH - Weight of Hammer			

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TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-7

PROJECT NAME **SAGAMORE CREEK 09.0025631.00** BRIDGE NO. N/A
DESCRIPTION

SHEET NO. 2 OF 2
STA. 108+76 OFF. RT 17
BASELINE Sagamore Avenue
ELEVATION (ft) 23.0

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
30			24 22 28 51	S-7	0.2 [10]	30.0 32.0	Very dense, brown, fine to coarse SAND, some Silt, some Gravel, mottled. -GLACIAL TILL-	
35			43 53 50 78	S-8	1.2 [60]	36.0 38.0	Drill to 36' to penetrate cobble/boulder. Very dense, brown/gray, fine to coarse SAND and GRAVEL, little Silt. (A-1-b)	
40	39.5	-16.5				40.0	Very hard, slightly weathered, fine grained, gray, GNEISS. Joints are close to very close, moderately dipping to high angle, undulating, rough, slightly weathered, partially open, iron staining. Core Times (mins): 40-41 (7) 41-42 (6.5) 42-43 (8) 43-44 (5) 44-45 (6) RQD= 0/5.0= 0%	
45				C-1	2.5 [50]	45.0	-BEDROCK-	
50				C-2	5.0 [100]	50.0	Very hard, fresh, fine grained, gray, GNEISS. Primary joints are very close to moderate, low angle, undulating to stepped, rough, fresh to slightly weathered, partially open, iron staining. Secondary joints are similar but high angle. RQD= 1.4/5.0 =28%	
55							Bottom of Exploration at 50' below ground surface. (El. -27.0)	
60								
65								

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TEST BORING REPORT

STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
MATERIALS & RESEARCH BUREAU - GEOTECHNICAL SECTION



BORING NO. B-8

SHEET NO. 2 OF 2

STA. 108+76 OFF. LT 02

BASELINE Sagamore Avenue

ELEVATION (ft) 23.0

PROJECT NAME SAGAMORE CREEK 09.0025631.00 BRIDGE NO. N/A

DESCRIPTION _____

DEPTH (ft)	STRATUM CHANGE (ft)		BLOWS PER 0.5 ft	SAMPLE NUMBER	SAMPLER RECOVERY (ft) [%]	DEPTH RANGE (ft)	FIELD CLASSIFICATION AND REMARKS	STRATUM SYMBOL
	DEPTH	ELEVATION						
30			8 12 100/0.3	S-7	1.2 [92]	30.0 31.3	Brown, fine to coarse SAND, some Gravel, little Silt. -GLACIAL TILL-	
	33.5	-10.5						
35				C-1	1.0 [100]	34.0 35.0	Very hard, fresh, fine grained, gray, GNEISS. Joint is low angle, undulating, fresh, partially open, rough, iron staining. Core Time (mins) 34-35 (9) RQD= 1.0/1.0= 100%	
				C-2	4.0 [100]	39.0	-BEDROCK- Very hard, fresh, fine grained, gray, GNEISS. Primary joints are close to moderate, low angle to moderately dipping, undulating, rough, fresh to slightly weathered, tight to partially open, iron staining. Secondary joints are similar, moderate, high angle to vertical. RQD= 2.6/4.0= 65%	
40							Bottom of Exploration at 39' below ground surface. (El. -16.0)	
45								
50								
55								
60								
65								

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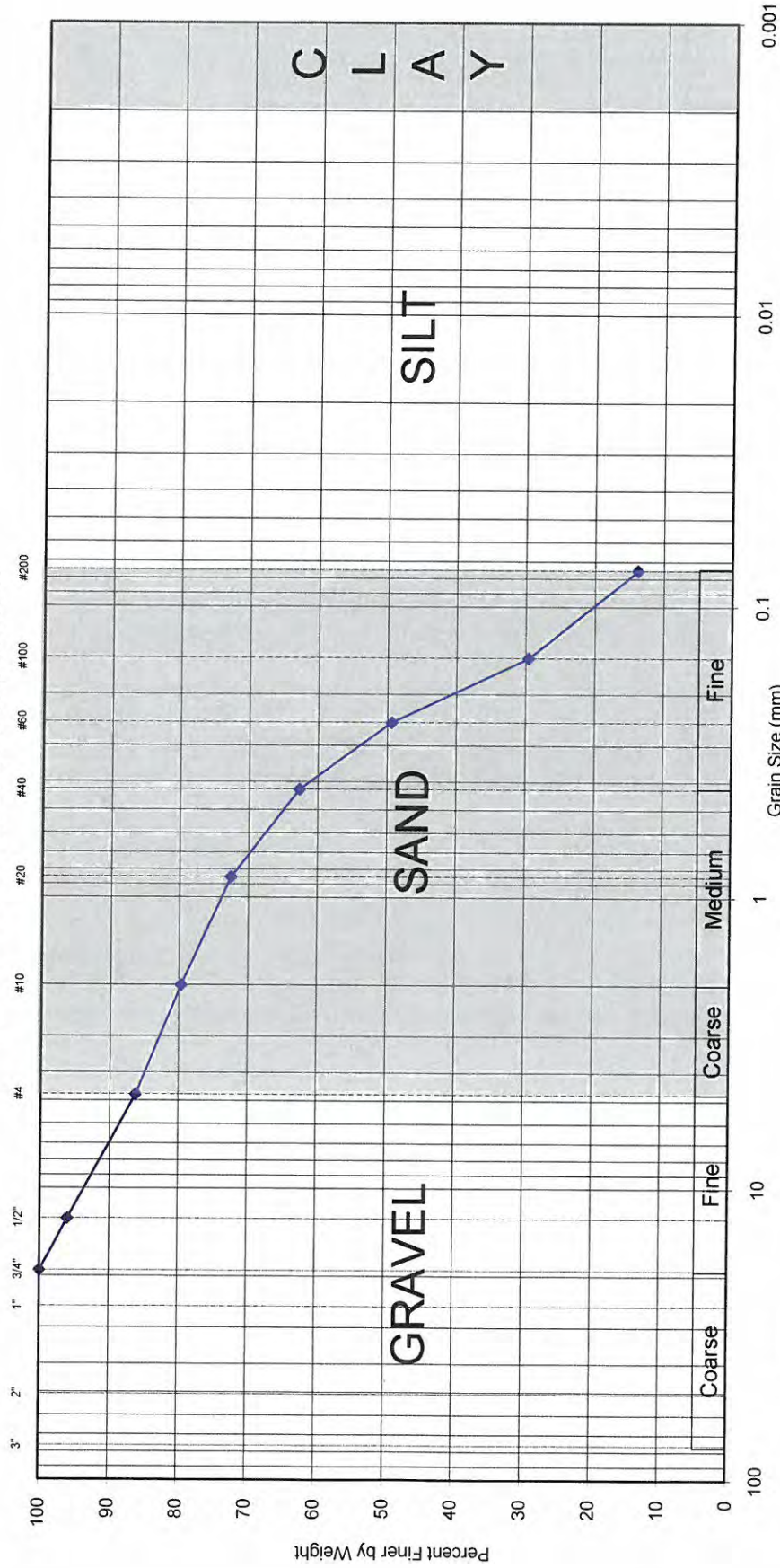
APPENDIX C
LABORATORY TEST RESULTS

LABORATORY TESTING DATA SHEET

Project Name Sagamore Creek Bridge Project Location Portsmouth, NH
 Project No. 09.0025631.00 Assigned By J. Tooley
 Project Engineer J. Tooley Report Date 6/16/2010
 Reviewed By *J. Tooley* Date Reviewed 6/16/2010

Boring/ Test Pit No.	Sample No.	Depth ft.	Lab No.	Identification Tests						Laboratory Log and Soil Description
				Water Content %	LL %	PL %	Sieve -200 %	Hyd -2μ %	ORG %	
B-1	S-4	15-17	1	7.6			14			Brown f-m SAND little fine Gravel, little Silt
B-7	S-4	16-18	2	9.1			16			Brown f-c SAND some fine Gravel, little Silt
B-8	S-1	1.8-2.6	3	14.0			16			Brown f-m SAND little Silt, little fine Gravel
B-2	S-7	30-30.7	4	19.2			8			Brown f-m SAND trace Silt, trace fine Gravel
B-4	S-4	15-17	5	7.0			17			Gray f-c SAND and f-c GRAVEL, little Silt
B-7	S-8	36-38	6	9.1			19			Brown f-c SAND some f-c Gravel, little Silt
B-6	S-3	10-12	7	24.4	21	16				Gray Clayey SILT
B-4	S-2	5-7	8	22.0	28	18				Gray SILT & CLAY

U.S. STANDARD SIEVE AND HYDROMETER



Gravel
13.8%

Sand
72.4%

Fines
13.8%

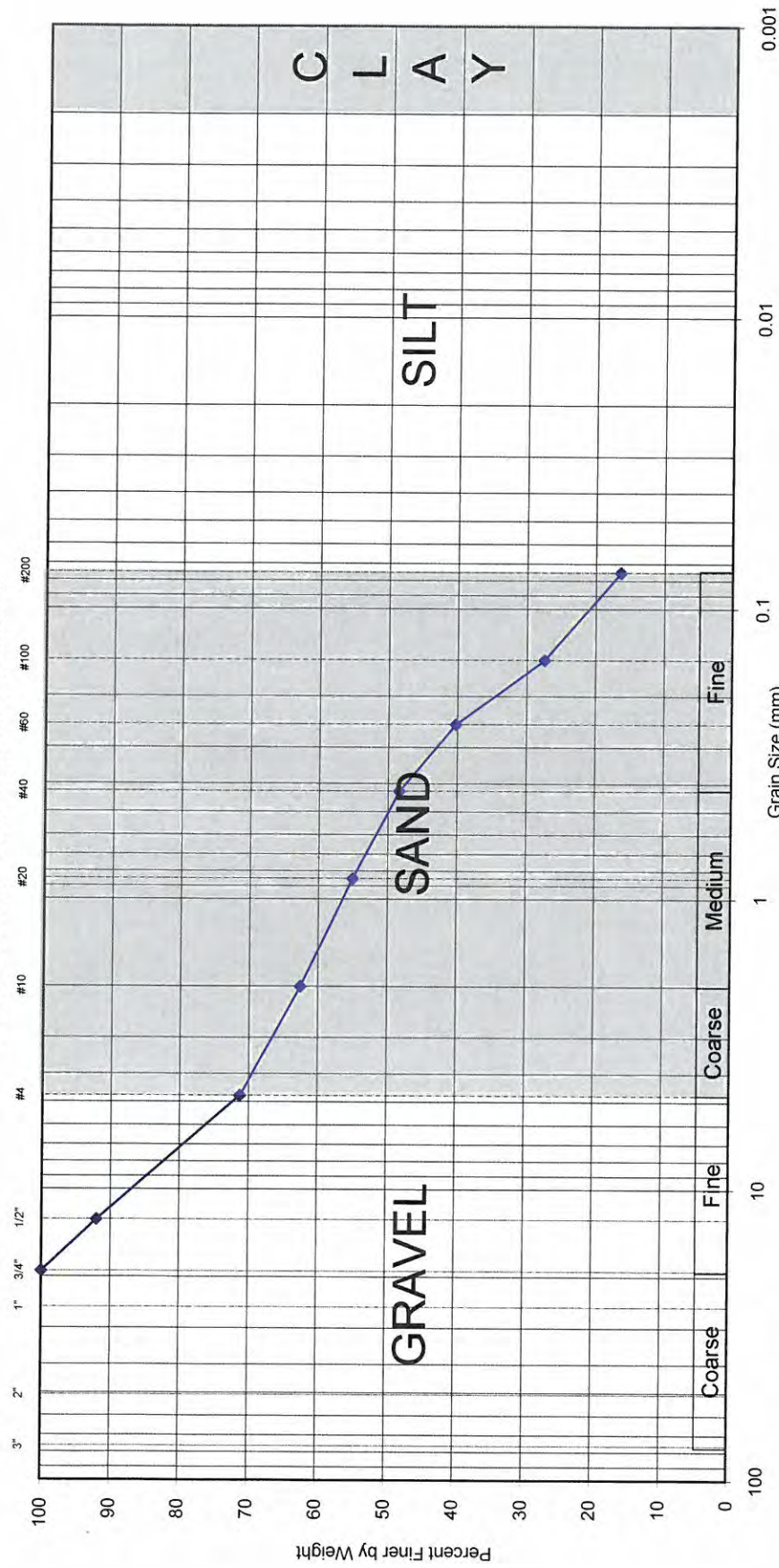
Lab #	Exploration	Sample	Depth (ft)	Description	WC	LL	PL	PI
1	B-1	S-4	15-17'	Brown f-m SAND, little fine Gravel, little Silt	7.6			



Sagamore Creek Bridge
Portsmouth, NH
GZA File # 09.0025631.00

Tested by: JAZ Date: 6/14/10
Reviewed by: MBP Date: 6/16/10

U.S. STANDARD SIEVE AND HYDROMETER



Gravel
28.8%

Sand
54.9%

Fines
16.3%

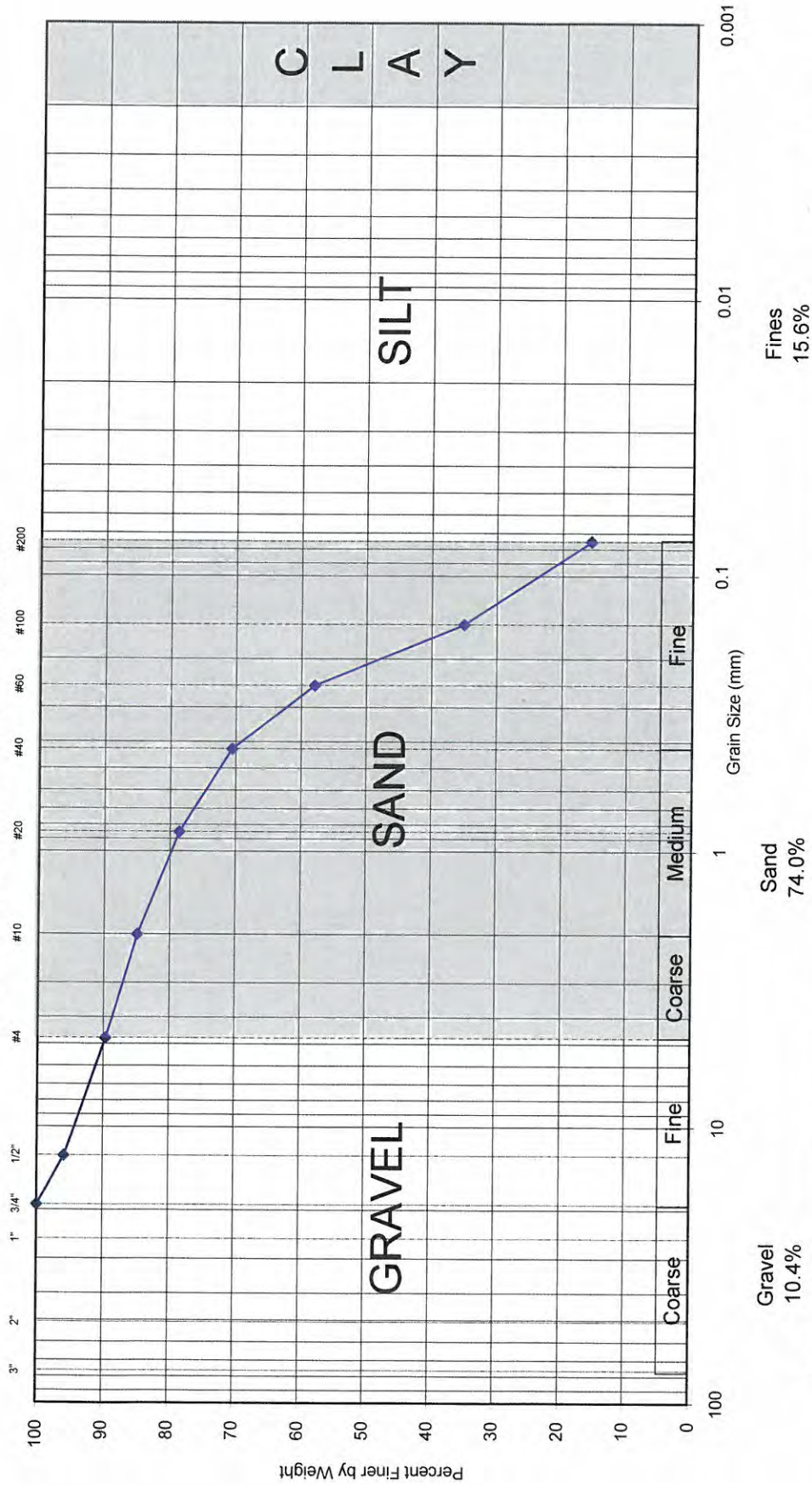
Lab #	Exploration	Sample	Depth (ft)	Description	WC	LL	PL	PI
2	B-7	S-4	16-18'	Brown f-c SAND, some fine Gravel, little Silt	9.1			



Sagamore Creek Bridge
Portsmouth, NH
GZA File # 09.0025631.00

Tested by: JAZ Date: 6/14/10
Reviewed by: MBP Date: 6/16/10

U.S. STANDARD SIEVE AND HYDROMETER



Lab #	Exploration	Sample	Depth (ft)	Description	WC	LL	PL	PI
3	B-8	S-1	1.8-2.6'	Brown f-m SAND, little Silt, little fine Gravel	14.0			

Fines
15.6%

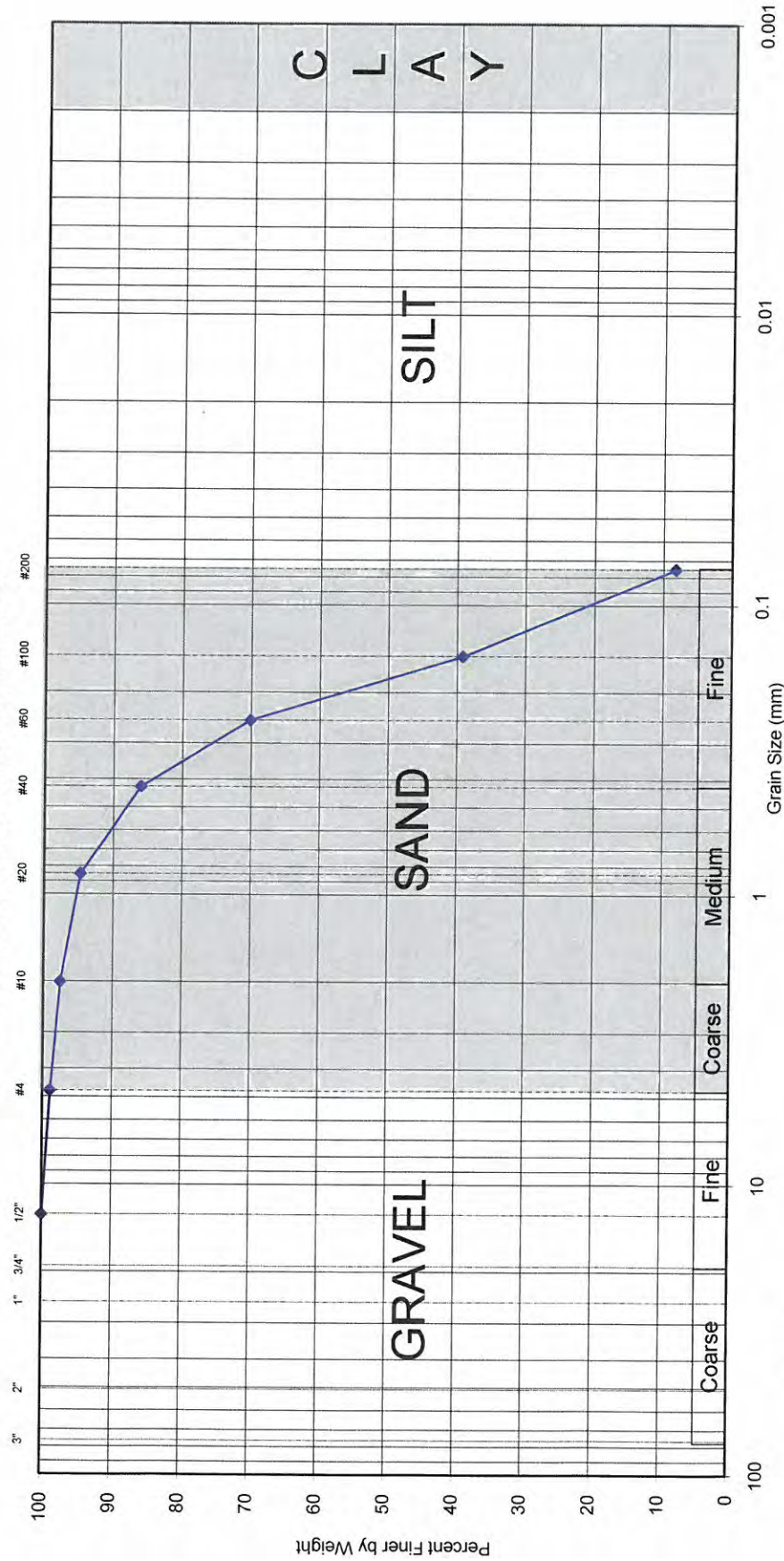
Sand
74.0%

Gravel
10.4%

Sagamore Creek Bridge
Portsmouth, NH
GZA File # 09.0025631.00
Tested by: JAZ Date: 6/14/10
Reviewed by: MBP Date: 6/16/10



U.S. STANDARD SIEVE AND HYDROMETER



Fines
8.2%

Sand
90.7%

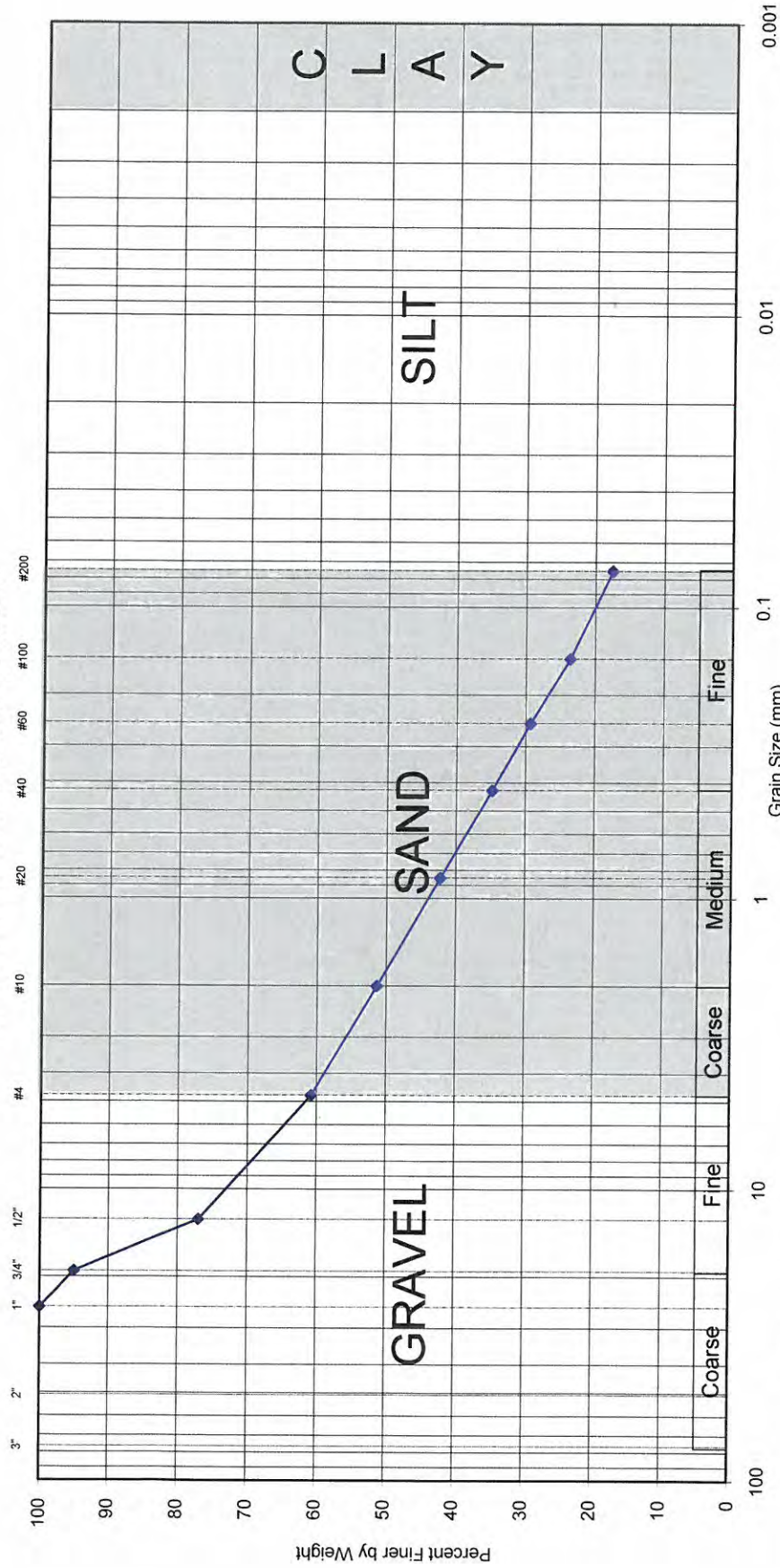
Gravel
1.1%

Lab #	Exploration	Sample	Depth (ft)	Description	WC	LL	PL	PI
4	B-2	S-7	30-30.7'	Brown f-m SAND, trace Silt, trace fine Gravel	19.2			

Sagamore Creek Bridge
Portsmouth, NH
GZA File # 09.0025631.00
Tested by: JAZ Date: 6/14/10
Reviewed by: MBP Date: 6/16/10



U.S. STANDARD SIEVE AND HYDROMETER



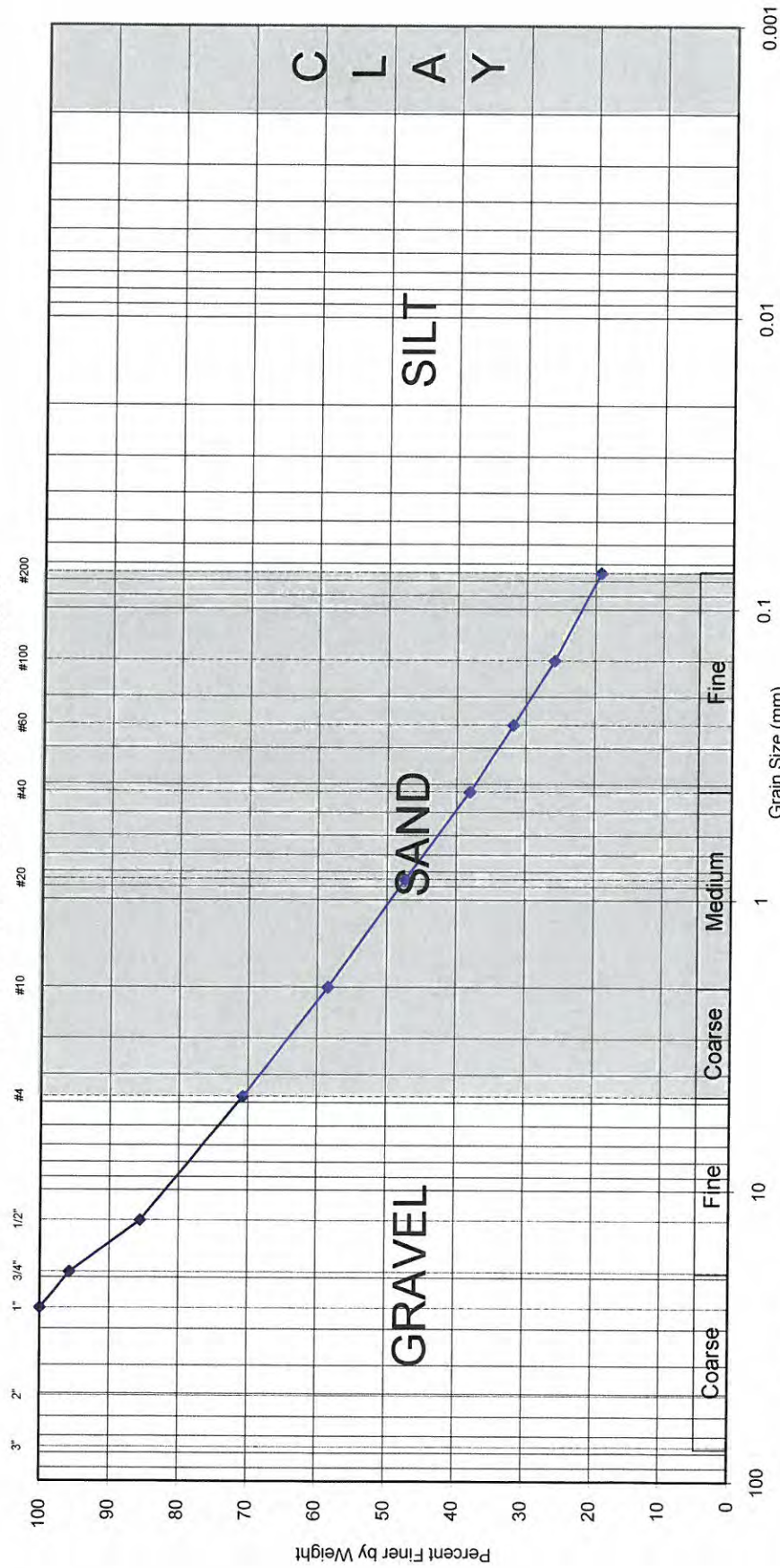
Gravel 39.2% Sand 43.3% Fines 17.5%

Lab #	Exploration	Sample	Depth (ft)	Description	WC	LL	PL	PI
5	B-4	S-4	15-17'	Gray f-c SAND and f-c GRAVEL, little Silt	7.0			



Sagamore Creek Bridge
 Portsmouth, NH
 GZA File # 09.0025631.00
 Tested by: JAZ Date: 6/14/10
 Reviewed by: MBP Date: 6/16/10

U.S. STANDARD SIEVE AND HYDROMETER



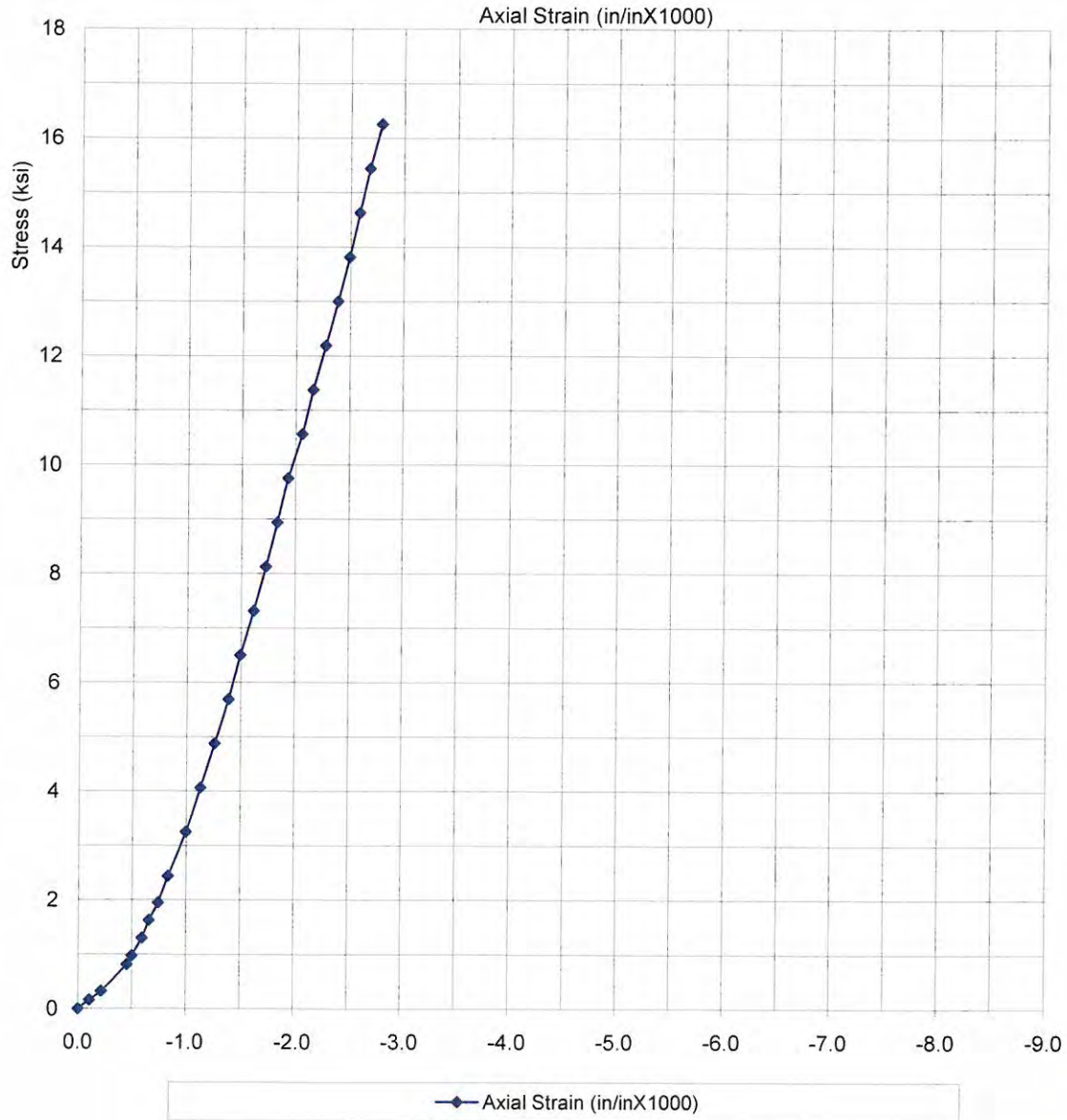
Gravel 29.3%
 Sand 51.5%
 Fines 19.2%

Lab #	Exploration	Sample	Depth (ft)	Description	WC	LL	PL	PI
6	B-7	S-8	36-38'	Gray f-c SAND, some f-c Gravel, little Silt	9.1			



Sagamore Creek Bridge
 Portsmouth, NH
 GZA File # 09.0025631.00
 Tested by: JAZ Date: 6/14/10
 Reviewed by: MBP Date: 6/16/10

**Sagamore Creek Bridge
Portsmouth, NH**

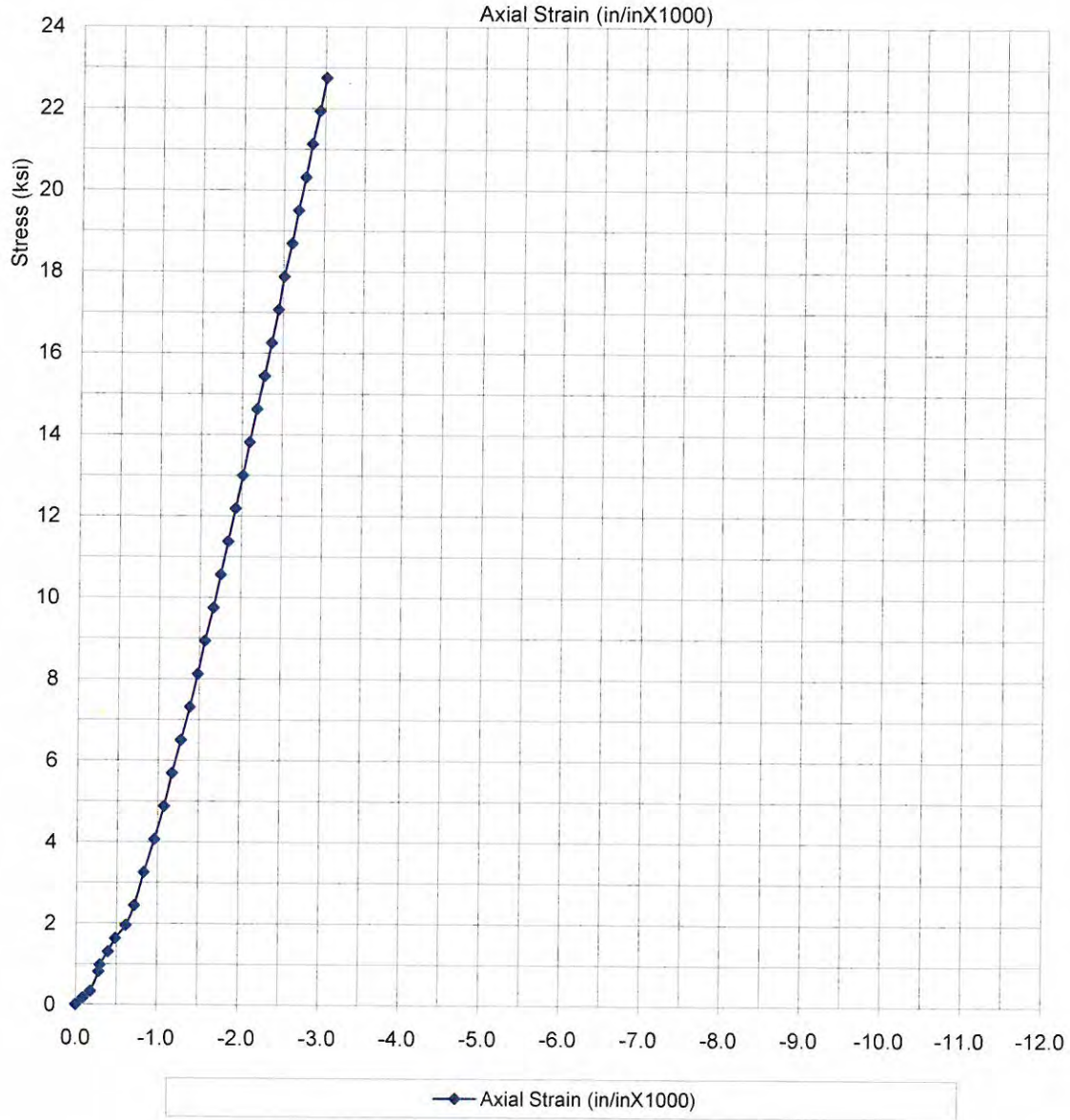


Rock Testing

Boring No. B-7
Sample No. C-2
Depth: 49.2-49.7'

File No. 09.0025631.00
Date: 6/17/2010
Test No. U 9

**Sagamore Creek Bridge
Portsmouth, NH**



Rock Testing

Boring No. B-4
Sample No. C-1
Depth: 27.0-27.4'

File No. 09.0025631.00
Date: 6/17/2010
Test No. U 10

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APPENDIX H

Contaminated Soils Report

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VIA E-MAIL

MEMORANDUM

TO: Paul Harrington, P.E., Fay, Spofford, and Thorndike, LLC

FROM: Maia K. Additon, GZA GeoEnvironmental, Inc.
Timothy W. Kipp, CHMM, GZA GeoEnvironmental, Inc.
James V. Errico, GZA GeoEnvironmental, Inc.

DATE: September 15, 2010

RE: Limited Environmental Review
Route 1A Bridge over Sagamore Creek, Portsmouth, New Hampshire



4 Free Street
Portland, Maine
04101
207-879-9190
207-879-0099 fax
www.gza.com

INTRODUCTION

In accordance with our agreement dated February 5, 2010, GZA GeoEnvironmental, Inc. (GZA) is pleased to present this memorandum to Fay, Spofford, and Thorndike, LLC, presenting the findings of our limited environmental review of the right-of-way and immediate area extending approximately 500 feet north and south along Route 1A from the Sagamore Creek Bridge in Portsmouth, New Hampshire. It should be noted that our limited review did not include environmental subsurface explorations with soil and/or groundwater analyses.

SITE DESCRIPTION

The site for the limited environmental review consists of the right-of-way and immediate area extending along Route 1A, approximately 500 feet north and south of the Route 1A Bridge (Sagamore Creek Bridge) which spans Sagamore Creek in Portsmouth, New Hampshire. Properties adjacent to the Site are identified on the City of Portsmouth Tax Map 201 as Lots 1, 2, 9, and 22 and Map 223 as Lots 16, 24, 25, 31, and 34. The area surrounding the site is primarily residential with some commercial properties including a restaurant and a former gasoline station.

SCOPE OF SERVICES

GZA's scope of services consisted of the following activities:

- Performing an environmental database search (FirstSearch) of Federal and State regulatory agency databases for the Site and selected radii around the Site;
- Conducting a New Hampshire Department of Environmental Services (NHDES) online file review of properties of concern;

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- Performing a site and vicinity reconnaissance; and
- Contacting local environmental regulatory agencies to inquire about environmental conditions at the site and in its vicinity.

REGULATORY DATABASE REVIEW



This section is based on public information obtained from various Federal, State, and local agencies that maintain environmental regulatory databases. These databases provide information about the regulatory status of a property and incidents involving use, storage, spillage, or transportation of oil or hazardous materials. Information was provided by our subcontractor, FirstSearch Technology Corporation (FirstSearch). The complete FirstSearch report, including Federal, State, and local regulatory information is presented in **Attachment A**. A discussion of the reviewed information is presented in the following sections.

FEDERAL AGENCY DATABASES

Ten federal databases were provided by FirstSearch and reviewed by GZA. These reports and the search distances used to review these databases are presented in **Table 1**.

Table 1 FEDERAL DATABASE	DATE	RADIUS SEARCHED	PROPERTIES IDENTIFIED WITHIN RADIUS
National Priorities List (NPL)	February 23, 2010	1 mile	0
NPL De-listed Sites	February 23, 2010	½ mile	0
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) and CERCLIS Archived Sites (NFRAP)	January 29, 2010	½ mile	0
Resource Conservation and Recovery Act (RCRA) Treatment Storage and Disposal Facilities	January 13, 2010	½ mile	0
RCRA Corrective Actions Facilities	January 13, 2010	1 mile	0
RCRA Generators List	December 11, 2009	Property and adjoining properties	2
Emergency Response Notification	February 8, 2010	Property only	0
Federal Institutional/Engineering Controls Registries	March 12, 2010	Property only	0
Tribal Lands	December 1, 2005	1 mile	0

The review of the 10 federal databases indicates that the Site was not specifically included within any of the databases searched. The vicinity properties that were identified within the Federal databases searched within their respective radii are noted in the specific subsections below.

RCRA Generators List

The RCRA Generators List is a compilation by the EPA of reporting facilities that generate hazardous waste.



A review of the December 11, 2009 RCRA Generator List database indicated two properties within the search radius. The first property listed is located at 692 Sagamore Avenue, situated 0.23 miles northwest of the Site. The property is described as AD Cetera Graphics and is listed as a large-quantity generator. The second property listed is located at 187 Wentworth Road, situated 0.23 miles southeast of the Site. The property is described as Wentworth Lido Service Center and is listed as a small-quantity generator. There was no record of RCRA violations indicated for this facility.

STATE AGENCY DATABASE REVIEW

Information from eight State databases maintained by the New Hampshire Department of Environmental Services (NHDES) was provided by FirstSearch and reviewed by GZA. The information obtained from these reports and the search distances used to review these databases are presented in **Table 2**.

Table 2 STATE DATABASE	DATE	RADIUS SEARCH DISTANCE	PROPERTIES IDENTIFIED WITHIN RADIUS
State and Tribal Hazardous Waste Sites List including Equivalent NPL and CERCLIS	February 1, 2010	1 mile – NPL 0.5 - CERCLIS	7
State and Tribal Leaking Underground Storage Tanks	February 1, 2010	½ mile	1
State and Tribal Registered USTs/ASTs List	February 1, 2010	Property and adjoining properties	2
State Spills (post 1990) List	February 1, 2010	1 mile	0
State and Tribal Landfill or Solid Waste Disposal Site List	June 1, 2007	½ mile	0
State and Tribal Institutional Control/Engineering Control Registries	N/A	Property only	0
State and Tribal Voluntary Cleanup Sites	N/A	½ mile	0
State and Tribal Brownfield Sites	March 12, 2010	½ mile	0

Of the eight State databases searched, information provided to GZA indicates that the Site was not specifically included within any of the databases searched. The vicinity properties that were identified within the State databases searched within their respective radii are noted in the subsections below.

State and Tribal Hazardous Waste Sites

State and Tribal hazardous waste Site records are the state's equivalent to CERCLIS. These sites may or may not be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The Site and adjoining properties were not listed on the February 1, 2010 State and Tribal Hazardous Waste Site List. The following properties were listed as State and Tribal Hazardous Waste Sites:



Name	Address	Description
Jeanne Hopkins Residence	209 Walker Bungalo Road, Portsmouth, NH	0.14 miles northeast of the Site; status listed as closed
Michael Clark	325 Little Harbor Road, Portsmouth, NH	0.53 miles northeast of the Site; status listed as closed
Wentworth Scrap Metal Property	246 Jones Avenue, Portsmouth, NH	0.61 miles northwest of the Site; status listed as Groundwater Hazardous Investigation
Foye Corner Market and Vacant Parcel	5 Pioneer Road, Rye, NH	0.66 miles southeast of the Site; status listed as Groundwater Hazardous Investigation
Thomas Buchanan	1511 Elwyn Road, Portsmouth, NH	0.78 miles southwest of the Site; status listed as closed
Portsmouth Swimming Pool	50 Andrews Jarvis Drive, Portsmouth, NH	0.94 miles northwest of the Site; status listed as closed
Rowe Property	139 Sagamore Road, Rye, NH	0.97 miles southeast of the Site; status listed as closed

State and Tribal Leaking Underground Storage Tanks

A review of the February 1, 2010 State and Tribal Leaking Underground Storage Tanks (LUST) list indicated one LUST site within a ½-mile radius of the subject site. This LUST site is located at 1150 Sagamore Avenue (Wentworth Mobil Service Center), situated 0.23 miles southeast of the Site.

State and Tribal Registered AST/UST List

GZA's review of the February 1, 2010 Registered AST/UST list indicated two sites within ¼-mile of the Site. The Site and the adjoining properties were not included in the registered AST/UST list.

The first AST/UST property (Mike's Marina Inc) is located at 187 Wentworth Road, situated 0.22 miles southeast of the Site. NHDES records indicate that the four USTs at this property have been removed. It should be noted that this is the same address that was previously identified as Wentworth Lido Service Center and listed as a hazardous waste small-quantity generator in the federal RCRA Generators database.

The second AST/UST property is located at 1150 Sagamore Avenue (Wentworth Mobil Service Center) is situated 0.23 miles southeast of the Site. NHDES records indicate that four of the six USTs at this property have been removed.

CITY DIRECTORIES REVIEW

City Directories were provided by FirstSearch, for years available between 1903 and 2009 for addresses located between 930 Sagamore Avenue and 1150 Sagamore Avenue (Wentworth Mobil Service Center), refer to **Attachment A**. Most of the addresses in the area surrounding the site were listed as residential, with a few addresses listed as commercial use. The following addresses were listed as properties with the potential to utilize petroleum products:



Address	Year/Source	Description
No address numbers (between the intersection of Wentworth Road (1063 Sagamore Avenue) and 1150 Sagamore Avenue)	1967	Glidden's Auto Service
	1961 and 1963	Ray's Auto Service
	1903, 1905, 1914, 1918, 1923, and 1928	Mark's Harry B Filling Station
1150 Sagamore Avenue (Wentworth Mobil Service Center)	1992, 1997, and 1999	Wentworth Mobil Services
No address numbers (between the intersection of Cliff Road (766 Sagamore Avenue) and 781 Sagamore Avenue)	1941	Shaw Alice B Mrs. Gas Station
	1928, 1933-34	Shaw Wilbur gas station

AERIAL PHOTOGRAPH REVIEW

GZA reviewed aerial photographs dated 1940, 1952, 1974, 1986, and 2004 that were provided by FirstSearch. The 1940 and 1952 aerial photographs depict the Sagamore Creek Bridge and the surrounding area similar to current conditions with no apparent waterfront development. The 1974, 1986, and 2004 aerial photographs depict the Sagamore Creek Bridge and surrounding area consistent with the current conditions.

HISTORIC ATLAS REVIEW

GZA requested Sanborn Fire Insurance Maps of the Site from FirstSearch. FirstSearch indicated that there was no Fire Insurance Map coverage available for the Site.

NHDES ONLINE FILE REVIEW

GZA conducted an online NHDES file review of the Site and surrounding properties using NHDES' One Stop Data and Information retrieval system. The following property located in the vicinity of the Site was reviewed during GZA's file review. No other files for vicinity properties were available for online review:

WENTWORTH MOBIL SERVICE CENTER, 1150 SAGAMORE STREET,
PORTSMOUTH, NH

This property is located 0.23 miles southeast of the site. The property is included in the following NHDES programs:



- Site Remediation
- Underground Storage Tanks
- Groundwater Permits
- Hazardous Waste Generator
- Vapor Recovery

The following subsections describe the documents found pertaining to the Wentworth Mobil Service Center property under each NHDES program.

Site Remediation

Documents included in the Site Remediation Program online files included:

- Groundwater Monitoring Reports dated from July 2004 through October 2009.
- Groundwater Management Permit issued September 7, 2006, revised June 10, 2008, and expires September 6, 2011.
- Supplemental Geohydrologic Investigation dated June 30, 2004
- Various Correspondences regarding the Groundwater Monitoring Reports, the Groundwater Management Permit, and the Supplemental Geohydrologic Investigation

Underground Storage Tanks

Documents included in the Underground Storage Tank Program files included:

- Permit to Operate issued July 29, 2009 and expires April 30, 2013.
- Photographs of the property dated October 2, 2003.
- Various correspondences regarding permit to operate and a notice of Substantial Non-compliance.

Groundwater Permits

No documents were included in the Groundwater Permit Program files. However, the following information was included:

- Project Type: Underground Injection Control
- Workload Priority: Low
- Risk Level: No Sources/No Ambient Groundwater Quality Standards VIO'S From Onsite

- Wellhead Protection Area: Unknown
- Assigned To: Closed
- Project Start Date: 9/2/1994

Hazardous Waste Generator

Based on the NHDES online files, the Wentworth Mobil Service Center is listed as an inactive Small Quantity Generator. Documents included in the Hazardous Waste Generator Program Files included manifests and correspondences regarding the manifests.

Vapor Recovery

No documents were included in the Vapor Recovery Program files. Information regarding vapor recovery activities at the property such as dates of compliance inspections, Vapor Recovery fees paid, Vapor Recovery notifications, and file reviews were included.

SITE AND VICINITY RECONNAISSANCE

GZA conducted a site and vicinity reconnaissance on March 19, 2010.

The north end of the site (north of the Route 1A Bridge) is adjoined primarily by residential properties to the east of Sagamore Avenue. Portsmouth Scuba and a marine repair shop are located along the west side of Sagamore Avenue. GZA observed small quantities of petroleum products stored in a shed outside the marine repair shop. No other evidence of hazardous material use or storage was observed at the north end of the site.

The south end of the Site (south of the Route 1A Bridge) is adjoined by the Freedom Boat Club and The Golden Egg Restaurant to the east of Sagamore Avenue. A mental health center and residential properties are located to the west of Sagamore Avenue. A non-operational Mobil gas station (Wentworth Mobil Service Center) is located to the east of Sagamore Avenue after the intersection with Wentworth Road. Gasoline pumps and evidence of USTs were observed at the Mobil gas station. No other evidence of hazardous material use or storage was observed at any other properties located at the south end of the site.

LOCAL AGENCY FILE REVIEW

To obtain information concerning the possible release of petroleum products or hazardous substances at or near the site, GZA contacted City departments including the Assessor's, Inspections, Planning, and Fire Department. Information obtained from these departments is described in the following subsections.

TAX ASSESSOR'S DEPARTMENT

GZA interviewed Ms. Karyn Newton, Assessing Assistant, and she confirmed that the property located at 920 Sagamore Avenue (renamed 7 Shaw Road) had been a gasoline service station in the 1940s or 1950s prior to being a residential building. The property tax card also indicated that the property had previously been a gasoline filling station. Other files obtained from the City Assessor's Office were limited to real estate and property valuation information.



INSPECTIONS DEPARTMENT

Files obtained from the City Inspections Department included building permits, septic/leachfield permits, and NHDES UST permits. Files reviewed with pertinent environmental information included:

Wentworth Mobil Service Center - 1150 Sagamore Avenue

The files reviewed for the Wentworth Mobil Service Center at 1150 Sagamore Avenue included a NHDES UST permit dated May 2, 1990. The permit indicated that three USTs were removed and three USTs were installed in the Spring of 1990.

The Golden Egg Restaurant - 960 Sagamore Avenue

The files reviewed for 960 Sagamore Avenue indicated that a septic system failure and leachfield repair occurred in 1989. A new septic system was installed in 1995.

920 Sagamore Avenue

GZA interviewed Ms. Cheryl Newton in the Inspections Department. Ms. Newton confirmed that the property located at 920 Sagamore Avenue (renamed 7 Shaw Road) was a gasoline filling station in the 1940s to 1950s prior to being a residential building. No records on file referenced the gasoline station or indicated any history of spills or contamination at the site.

PLANNING DEPARTMENT

Files obtained from the Planning Department were limited to Conservation Commission files such as wetland permits. No pertinent information of an environmental nature was available for review.

FIRE DEPARTMENT

GZA interviewed Fire Chief Christopher LaClaire on March 19, 2010. Chief LaClaire confirmed that the property located at 920 Sagamore Avenue (renamed 7 Shaw Road) had been a gasoline station in the 1940s and 1950s. A file for 1150 Sagamore Avenue (Wentworth Mobil Service Center) indicated that three USTs were removed May 7, 1990 and that there were no signs of contamination. No other pertinent information of an environmental nature was available for review.

SUMMARY, FINDINGS, AND CONCLUSIONS

SUMMARY OF ACTIVITIES

GZA performed a limited environmental review of the right-of-way and immediate area extending along Route 1A, encompassing an area approximately 500 feet north and south of the Sagamore Creek Bridge. The purpose of the limited environmental review was to determine whether there were any properties within the study area had potential contamination or areas of potential environmental concern that could impact bridge and road re-construction activities.

To perform the limited environmental review, GZA conducted the following activities:

- An environmental database search (FirstSearch) of Federal and State regulatory agency databases for the site and selected radii around the site;
- An NHDES online file review of properties of concern;



- A site and vicinity reconnaissance; and
- Interviews with local environmental regulatory agencies to inquire about environmental conditions at the site and its vicinity.

FINDINGS

Based upon GZA's limited environmental review, the only properties of potential concern within the study area are identified as:

Wentworth Mobil Gasoline Station - 1150 Sagamore Avenue

This property has a history of soil and groundwater contamination and currently has an active NHDES remediation site number (198706025). A summary of the site history is described below:

- In 1990, during UST removal and upgrades, remediation in the form of source removal was performed at the property. The USTs removed in 1990 were reported to be in good condition.
- In 2001 and 2002, in an investigation related to a real estate transfer, gasoline-contaminated soil and groundwater were encountered on the northwest side of the property. The primary contaminant source was suspected to be residual petroleum contamination from long-term use as a gasoline station, including overfilling and spills from the USTs and pump island area.
- Based on the 2001 and 2002 investigation, the site was assigned a NHDES spill number (198706025) and was required to obtain a Groundwater Management Permit. Under this permit, triannual groundwater monitoring has been required at the site by NHDES as an alternative to active remediation.

The site is still active in the NHDES remediation program. An updated Groundwater Management Permit for the site was issued July 10, 2010, requiring semiannual monitoring of three wells at the site for the duration of the permit (expires September 2011). However, the number of wells that are required to be monitored has been reduced from five to three in this most recent permit, and NHDES email correspondence indicates that the site may be considered for closure (no further action) if two consecutive rounds of monitoring data indicate attainment of NH ambient groundwater quality standards (AGQS).

This property is located southeast of and sidegradient to the site.

920 Sagamore Avenue (Renumbered 7 Shaw Road)

Based on multiple interviews with City employees, this property was formerly a gasoline filling station approximately 50-60 years ago. However, since that time, the station has been decommissioned and demolished. A new house and septic system were constructed in 2003-2004 on this property and there were no records indicating any contamination was encountered during this new construction. This property is located upgradient (approximately 300 feet northwest) of the subject site.



CONCLUSION – POTENTIAL IMPACT OF ENVIRONMENTAL CONDITIONS ON
PROPOSED BRIDGE REPLACEMENT

GZA concludes that neither of the properties of potential concern noted above are likely to have an impact on the Route 1A Sagamore Creek Bridge replacement project. Although both properties have a history of hazardous materials use and storage, the following factors suggest that neither property is likely to impact construction activities at the site:

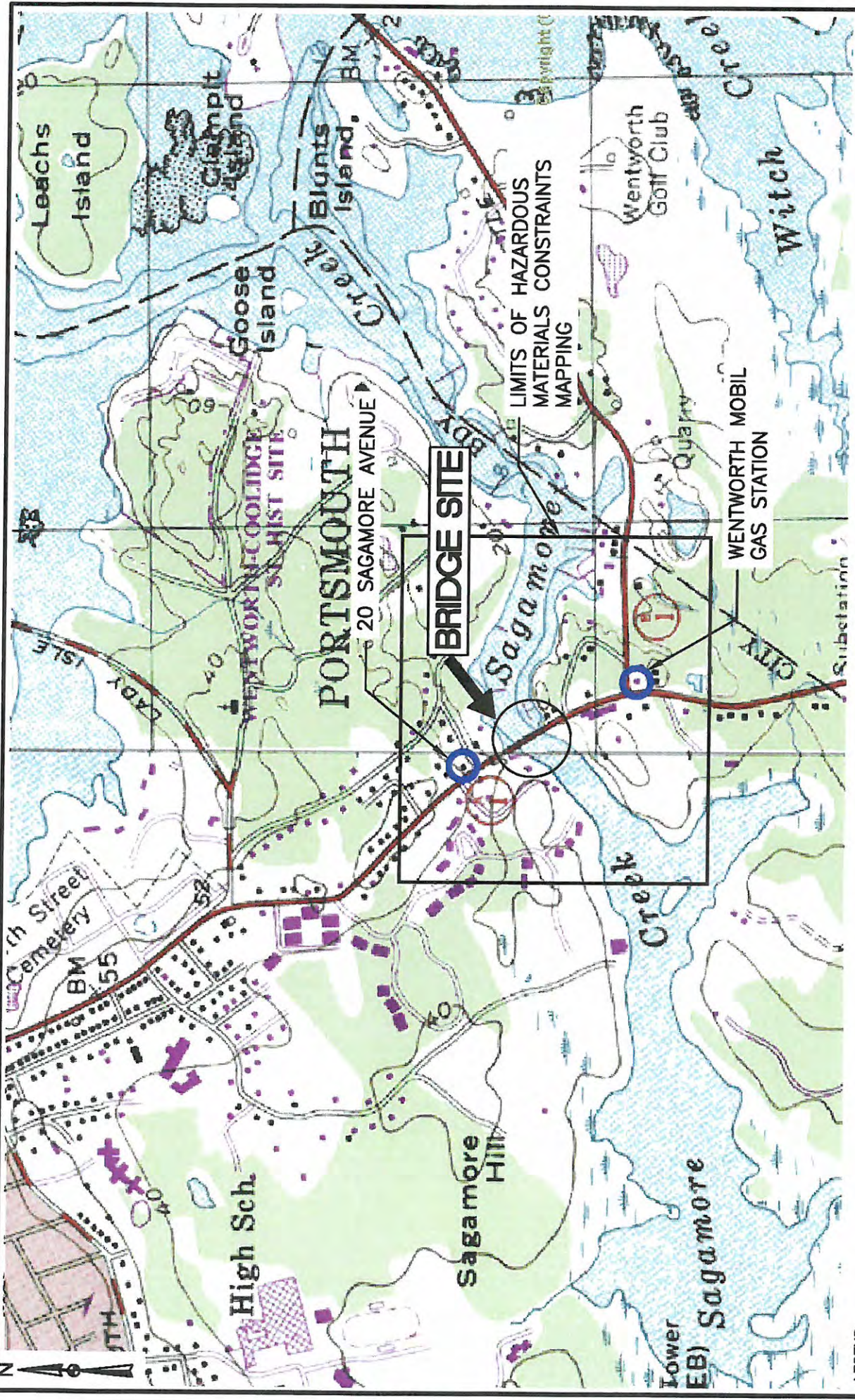


- **Historical Hazardous Materials Use:** Hazardous materials use at both properties was historical, and there is no current known hazardous material use or storage at either site. The former gasoline service station at the 920 Sagamore Avenue property (7 Shaw Road) has been closed and demolished, and the property has been re-developed as a single-family residence. The former Wentworth Mobil Service Center has also been closed.
- **Contaminant Levels:** Available information indicates that gross levels of contamination that could result in off-site impacts are not present on either property. At the Wentworth Mobil Service Center, remediation appears to be nearing closure, indicating that gross levels of contamination are not being observed. The 920 Sagamore Avenue property was re-developed as a residential use property, suggesting that significant contamination was either not observed at this site during demolition, or had dissipated sufficiently over time, allowing this site to be re-developed for residential use with no environmental deed restrictions.
- **Location:** The Wentworth Mobil Service Center is located sidegradient and approximately 1000 feet from the subject site, and thus would not be expected to have significant impact on the bridge replacement area and sections of the Route 1A right-of-way that will be disturbed for this project. The 920 Sagamore Avenue property is within the site area, but has been completely re-developed as a residential property with no evidence of ongoing hazardous materials use or contamination.

It should also be noted that the bridge replacement project will require excavation of existing fill and pavement in the immediate area of the existing bridge during construction of new abutments. Separately from this limited environmental review, GZA personnel observed and evaluated soil samples collected during test borings for the abutments. While the intent of these explorations was not to evaluate potential environmental impacts, these soil samples did not reveal visual evidence of soil staining, sheen-producing solids, or any petroleum, chemical, or other unusual odors.



**ATTACHMENT A
SITE LOCUS**



LIMITS OF HAZARDOUS MATERIALS CONSTRAINTS MAPPING



PROPERTY OF POTENTIAL ENVIRONMENTAL CONCERN



PREPARED FOR:
NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

ROUTE 1A SAGAMORE CREEK BRIDGE

PORTSMOUTH, NEW HAMPSHIRE

OIL AND HAZARDOUS MATERIALS CONSTRAINTS MAP

REV#	DESCRIPTION	DATE	BY	DATE
1		JUNE 2010		

FIGURE	1
PROJECT NO.	09.0025631.00
REVISION NO.	1
SHEET NO.	



**ATTACHMENT B
LIMITATIONS**

LIMITATIONS

1. The observations described in this report were made under the conditions stated therein. The conclusions presented in the report were based solely upon the services described therein and not on tasks or procedures beyond the scope of contractual services with Fay, Spofford, & Thorndike. The work described in this report was carried out in accordance with the Terms and Conditions attached to our contract for consulting services.
2. In preparing this report, GZA GeoEnvironmental, Inc. (GZA) has relied on certain information provided by State and local officials and other parties referenced therein, and on information contained in the files of State and/or local agencies available to GZA at the time of the Site evaluation. Although there may have been some degree of overlap in the information provided by these various sources, GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this Site evaluation.
3. In the event that bank counsel or title examiner for Fay, Spofford, & Thorndike obtains information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.
4. Observations were made of the Site and of structures on the Site as indicated within the report. Where access to portions of the Site or to structures on the Site was unavailable or limited, GZA renders no opinion as to the presence of hazardous material or oil, or to the presence of indirect evidence relating to hazardous material or oil, in that portion of the Site or structure. In addition, GZA renders no opinion as to the presence of hazardous material or oil, or to the presence of indirect evidence relating to hazardous material or oil, where direct observation of the interior walls, floor, or ceiling of a structure on a Site was obstructed by objects or coverings on or over these surfaces.
5. The purpose of this report was to assess the physical characteristics of the subject Site with respect to the presence in the environment of hazardous material or oil. No specific attempt was made to check on the compliance of present or past owners or operators of the Site with federal, State, or local laws and regulations, environmental or otherwise.



**ATTACHMENT C
FIRST SEARCH REPORT**

FirstSearch Technology Corporation

Environmental FirstSearch™ Report

Target Property: SAGAMORE BRIDGE

PORTSMOUTH NH 03801

Job Number: 09.0025631.00

PREPARED FOR:

GZA GeoEnvironmental, Inc.

Four Free Street

Portland, ME 04101

03-15-10



Tel: (781) 551-0470

Fax: (781) 551-0471

Environmental FirstSearch Search Summary Report

Target Site:

PORTSMOUTH NH 03801

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	02-23-10	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	02-23-10	0.50	0	0	0	0	-	0	0
CERCLIS	Y	01-29-10	0.50	0	0	0	0	-	0	0
NFRAP	Y	01-29-10	0.50	0	0	0	0	-	1	1
RCRA COR ACT	Y	01-13-10	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	01-13-10	0.50	0	0	0	0	-	0	0
RCRA GEN	Y	12-11-09	0.25	0	0	2	-	-	0	2
Federal Brownfield	Y	01-19-10	0.50	0	0	0	0	-	0	0
ERNS	Y	02-08-10	0.12	0	0	-	-	-	0	0
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	2	2
State/Tribal Sites	Y	02-01-10	1.00	0	0	1	0	6	9	16
State Spills 90	Y	02-01-10	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	06-01-07	0.50	0	0	0	0	-	4	4
State/Tribal IUST	Y	02-01-10	0.50	0	0	1	0	-	4	5
State/Tribal UST/AST	Y	02-01-10	0.25	0	0	2	-	-	0	2
State/Tribal EC	Y	NA	0.50	0	0	0	0	-	0	0
State/Tribal IC	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal VCP	Y	NA	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	02-01-06	0.50	0	0	0	0	-	0	0
Federal IC/EC	Y	03-12-10	0.50	0	0	0	0	-	0	0
- TOTALS -				0	0	6	0	6	20	32

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to FirstSearch Technology Corp., certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in FirstSearch Technology Corp.'s databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although FirstSearch Technology Corp. uses its best efforts to research the actual location of each site, FirstSearch Technology Corp. does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of FirstSearch Technology Corp.'s services proceeding are signifying an understanding of FirstSearch Technology Corp.'s searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

**Environmental FirstSearch
Site Information Report**

Request Date: 03-15-10
Requestor Name: Maia Additon
Standard: AAI

Search Type: COORD
Job Number: 09.0025631.00
Filtered Report

Target Site:

PORTSMOUTH NH 03801

Demographics

Sites: 32	Non-Geocoded: 20	Population: NA
Radon: NA		

Site Location

	<u>Degrees (Decimal)</u>	<u>Degrees (Min/Sec)</u>	<u>UTMs</u>
Longitude:	-70.749515	-70:44:58	Easting: 357521.813
Latitude:	43.055089	43:3:18	Northing: 4768202.615
Elevation:	1		Zone: 19

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 1 Mile(s)					Services:		
<u>ZIP Code</u>	<u>City Name</u>	<u>ST</u>	<u>Dist/Dir</u>	<u>Sel</u>		<u>Requested?</u>	<u>Date</u>
03854	NEW CASTLE	NH	0.87 NE	Y	Fire Insurance Maps	Yes	03-15-10
03870	RYE	NH	0.18 SE	N	Aerial Photographs	Yes	03-15-10
					Historical Topos	No	
					City Directories	Yes	03-15-10
					Title Search/Env Liens	No	
					Municipal Reports	No	
					Online Topos	No	

Environmental FirstSearch Sites Summary Report

Target Property:

PORTSMOUTH NH 03801

JOB: 09.0025631.00

TOTAL: 32 **GEOCODED:** 12 **NON GEOCODED:** 20 **SELECTED:** 0

<u>Map ID</u>	<u>DB Type</u>	<u>Site Name/ID/Status</u>	<u>Address</u>	<u>Dist/Dir</u>	<u>ElevDiff</u>	<u>Page No.</u>
1	STATE	JEANNE HOPKINS RESIDENCE 199509012/GW HAZ INV - CLOSED	209 WALKER BUNGALOW RD PORTSMOUTH NH 03801	0.14 NE	+ 34	1
2	UST	MIKE'S MARINA INC 0110825/UST	187 WENTWORTH RD PORTSMOUTH NH 03801	0.22 SE	+ 16	2
3	RCRAGN	AD CETERA GRAPHICS NHD986485985/VGN	692 SAGAMORE AVE PORTSMOUTH NH 03801	0.23 NW	+ 56	4
4	RCRAGN	WENTWORTH LIDO SERVICE CENTER NHD072025869/SGN	RTE 1A RYE NH 03870	0.23 SE	+ 27	4
4	LUST	MOBIL 198706025/ESTABROOK	1150 SAGAMORE RD RYE NH 03870	0.23 SE	+ 27	5
4	UST	MOBIL 0110246/UST	1150 SAGAMORE AVE RYE NH 03870	0.23 SE	+ 27	8
5	STATE	MICHAEL CLARK 200409050/GW HAZ INV - CLOSED	325 LITTLE HARBOR RD PORTSMOUTH NH 03801	0.53 NE	+ 72	12
6	STATE	WENTWORTH SCRAP METAL PROPERTY 200512019/GW HAZ INV	246 JONES AVE PORTSMOUTH NH 03801	0.61 NW	+ 36	12
7	STATE	FOYE'S CORNER MARKET and VACANT PA 200101009/GW HAZ INV	5 PIONEER RD RYE NH 03870	0.66 SE	+ 19	12
8	STATE	THOMAS BUCHANAN 200311054/GW HAZ INV - CLOSED	1511 ELWYN RD PORTSMOUTH NH 03801	0.78 SW	+ 24	12
9	STATE	PORTSMOUTH SWIMMING POOL 199901001/GW HAZ INV - CLOSED	50 ANDREW JARVIS DR PORTSMOUTH NH 03801	0.94 NW	+ 29	12
10	STATE	ROWE PROPERTY 200710035/GW HAZ INV - CLOSED	139 SAGAMORE RD RYE NH 03870	0.97 SE	+ 38	12

Environmental FirstSearch Sites Summary Report

Target Property: PORTSMOUTH NH 03801

JOB: 09.0025631.00

TOTAL: 32 **GEOCODED:** 12 **NON GEOCODED:** 20 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Page No.
	STATE	GRIFFIN PARK LOT 1-4 200205014/GW HAZ INV - CLOSED	GRIFFIN RD PORTSMOUTH NH	NON GC	N/A	N/A
	STATE	GOODWIN RESIDENCE 200911077/GW HAZ INV	87 MASON AVE PORTSMOUTH NH	NON GC	N/A	N/A
	NFRAP	WELSCH COVE (SHORELINE) (B00-401) NHN000103077/NFRAP-N	GREAT BAY PORTSMOUTH NH 03801	NON GC	N/A	N/A
	STATE	139 FRAMES 200909055/GW HAZ INV - CLOSED	159 DEER ST PORTSMOUTH NH 03801	NON GC	N/A	N/A
	LUST	BOURNIVAL, INC. 201001063/MUZZEY-WORTHEN	LAFAYETTE ROAD PORTSMOUTH NH	NON GC	N/A	N/A
	SWL	NHSW-TRAN-154/TRANSFER STATIONS	680 PEVERLY HILL ROAD PORTSMOUTH NH 03801	NON GC	N/A	N/A
	SWL	NHSW-TRAN-132/TRANSFER STATIONS	LITTLE BAY ROAD NEWINGTON NH 03801	NON GC	N/A	N/A
	SWL	NHSW-TRAN-131/TRANSFER STATIONS	14 PATTRSON LANE NEWINGTON NH 03801	NON GC	N/A	N/A
	TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTACT I BIA-03854	UNKNOWN NH 03854	NON GC	N/A	N/A
	TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTACT I BIA-03801	UNKNOWN NH 03801	NON GC	N/A	N/A
	STATE	FMR PORTSMOUTH GUN CLUB 200812028/GW HAZ INV - CLOSED	STATE ROUTE 33 PORTSMOUTH NH 03801	NON GC	N/A	N/A
	LUST	FORMER PIER II RESTAURANT 200906007/DOMKE	10 STATE ST PORTSMOUTH NH 03801	NON GC	N/A	N/A
	SWL	NHSW-0106-012/TRANSFER STATIONS	14 PATTERSON LANE NEWINGTON NH 03801	NON GC	N/A	N/A
	LUST	BOURNIVAL, INC. 199907019/MUZZEY-WORTHEN	LAFAYETTE ROAD PORTSMOUTH NH	NON GC	N/A	N/A
	STATE	WORSTER RESIDENCE 200906032/GW HAZ INV - CLOSED	61 SUZANNE DR PORTSMOUTH NH 03801	NON GC	N/A	N/A
	STATE	SHAW RESIDENCE 200812033/GW HAZ INV	154 CODFISH CORNER BLVD PORTSMOUTH NH 03801	NON GC	N/A	N/A
	STATE	O BRIEN RESIDENCE 200905035/GW HAZ INV - CLOSED	195 CASS ST PORTSMOUTH NH 03801	NON GC	N/A	N/A
	STATE	LAGO and SONS INC. (HOOD DAIRY PRO) 199102005/GW HAZ INV	2299 LAFAYETTE ROAD PORTSMOUTH NH	NON GC	N/A	N/A
	STATE	MILL CREST MOBILE HOME PARK 199502011/GW HAZ INV - CLOSED	LOT 303 PORTSMOUTH NH 03801	NON GC	N/A	N/A
	LUST	PAFB FLRS - PLUME 34 200204088/CLOSED	PEASE AIR FORCE BASE PORTSMOUTH NH	NON GC	N/A	N/A

*Environmental FirstSearch
Site Detail Report*

Target Property: PORTSMOUTH NH 03801

JOB: 09.0025631.00

STATE

SEARCH ID: 4 **DIST/DIR:** 0.14 NE **ELEVATION:** 35 **MAP ID:** 1

NAME: JEANNE HOPKINS RESIDENCE
ADDRESS: 209 WALKER BUNGALOW RD
PORTSMOUTH NH
ROCKINGHAM

REV: 2/1/10
ID1: 199509012
ID2:
STATUS: GW HAZ INV - CLOSED
PHONE:

CONTACT:
SOURCE: NH DES

PERMITS: 0
PROJECT TYPE: ON PREM US
PROJECT MANAGER: CLOSED

**Environmental FirstSearch
Site Detail Report**

Target Property: PORTSMOUTH NH 03801

JOB: 09.0025631.00

UST

SEARCH ID: 10 **DIST/DIR:** 0.22 SE **ELEVATION:** 17 **MAP ID:** 2

NAME: MIKES MARINA INC	REV: 2/1/10
ADDRESS: 187 WENTWORTH RD PORTSMOUTH NH	ID1: 0110825
	ID2:
CONTACT:	STATUS: UST
SOURCE: NH DES	PHONE:

TOTAL NUMBER OF TANKS: 4

OWNER INFORMATION

OWNER NAME: MIKES MARINA INC
OWNER ADDRESS: 187 WENTWORTH ROAD
PORTSMOUTH NH 03801

SITE TRACKING NUMBER: 198604143

TANK INFORMATION

TANK NUMBER: 1		
STORAGE CAPACITY: 4000 GALLONS	SUBSTANCE STORED: GASOLINE	
TANK TYPE:	PIPE TYPE: STEEL	
DOUBLE WALL TANK: N		
DATE INSTALLED:		
EMERG SPILL ENCLOSURE INSTALLED:		
EMERG OVERFILL ENCLOSURE INSTALLED:		
LAST TIGHTNESS TEST DATE:		
LINE LEAK DETECTION TEST DATE: 06/30/1985		
DATE PERMANENTLY CLOSED: R		
PERM CLOSURE ANALYSIS PERFORMED:		
DATE TEMPORARILY CLOSED:	CLOSURE TYPE: REMOVED	

TANK NUMBER: 2		
STORAGE CAPACITY: 4000 GALLONS	SUBSTANCE STORED: GASOLINE	
TANK TYPE:	PIPE TYPE: STEEL	
DOUBLE WALL TANK: N		
DATE INSTALLED:		
EMERG SPILL ENCLOSURE INSTALLED:		
EMERG OVERFILL ENCLOSURE INSTALLED:		
LAST TIGHTNESS TEST DATE:		
LINE LEAK DETECTION TEST DATE: 12/31/1985		
DATE PERMANENTLY CLOSED: R		
PERM CLOSURE ANALYSIS PERFORMED:		
DATE TEMPORARILY CLOSED:	CLOSURE TYPE: REMOVED	

TANK NUMBER: 3		
STORAGE CAPACITY: 2000 GALLONS	SUBSTANCE STORED: GASOLINE	
TANK TYPE:	PIPE TYPE: STEEL	
DOUBLE WALL TANK: N		
DATE INSTALLED:		
EMERG SPILL ENCLOSURE INSTALLED:		
EMERG OVERFILL ENCLOSURE INSTALLED:		
LAST TIGHTNESS TEST DATE:		
LINE LEAK DETECTION TEST DATE: 12/31/1978		
DATE PERMANENTLY CLOSED: R		

- Continued on next page -

**Environmental FirstSearch
Site Detail Report**

Target Property: PORTSMOUTH NH 03801

JOB: 09.0025631.00

UST

SEARCH ID: 10 **DIST/DIR:** 0.22 SE **ELEVATION:** 17 **MAP ID:** 2

NAME: MIKES MARINA INC
ADDRESS: 187 WENTWORTH RD
PORTSMOUTH NH

REV: 2/1/10
ID1: 0110825
ID2:
STATUS: UST
PHONE:

CONTACT:
SOURCE: NH DES

PERM CLOSURE ANALYSIS PERFORMED:

DATE TEMPORARILY CLOSED: **CLOSURE TYPE:** REMOVED

TANK NUMBER: 4
STORAGE CAPACITY: 2000 GALLONS
TANK TYPE:
DOUBLE WALL TANK: N

SUBSTANCE STORED: GASOLINE
PIPE TYPE: STEEL

DATE INSTALLED:
EMERG SPILL ENCLOSURE INSTALLED:
EMERG OVERFILL ENCLOSURE INSTALLED:
LAST TIGHTNESS TEST DATE:
LINE LEAK DETECTION TEST DATE: 12/31/1970

DATE PERMANENTLY CLOSED: R
PERM CLOSURE ANALYSIS PERFORMED:
DATE TEMPORARILY CLOSED:

CLOSURE TYPE: REMOVED

**Environmental FirstSearch
Site Detail Report**

Target Property:

PORTSMOUTH NH 03801

JOB: 09.0025631.00

RCRAGN					
SEARCH ID: 1	DIST/DIR: 0.23 NW	ELEVATION: 57	MAP ID: 3		
NAME: AD CETERA GRAPHICS		REV: 1/13/10			
ADDRESS: 692 SAGAMORE AVE		ID1: NIID986485985			
PORTSMOUTH NH 03801		ID2:			
CONTACT:		STATUS: VGN			
SOURCE: EPA		PHONE:			
 <u>CT MANIFEST INFORMATION</u>					
<u>MANIFEST ID</u>	<u>SHIPPED</u>	<u>TSD ID</u>	<u>TRANS ID</u>	<u>QTY</u>	<u>MATERIAL</u>
MAH124080	03/01/1995	MAD982755639	ILD984908202	0015 G	HAZARDOUS WASTE LIQUID

RCRAGN					
SEARCH ID: 2	DIST/DIR: 0.23 SE	ELEVATION: 28	MAP ID: 4		
NAME: WENTWORTH LIDO SERVICE CENTER		REV: 6/8/02			
ADDRESS: RTE 1A		ID1: NHD072025869			
RYE NH 03870		ID2:			
ROCKINGHAM		STATUS: SGN			
CONTACT: CHRIS MOORE		PHONE: 6034369728			
SOURCE: EPA					
 <u>CT MANIFEST INFORMATION</u>					
<u>MANIFEST ID</u>	<u>SHIPPED</u>	<u>TSD ID</u>	<u>TRANS ID</u>	<u>QTY</u>	<u>MATERIAL</u>
CTC0307839	05/07/1990	CTD072138969	NIID980521843	0350 G	WASTE FLAMMABLE LIQUID, NOS
CTC0307752	05/15/1990	CTD072138969	NIID980521843	3500 G	WASTE FLAMMABLE LIQUID, NOS

**Environmental FirstSearch
Site Detail Report**

Target Property:

PORTSMOUTH NH 03801

JOB: 09.0025631.00

LUST

SEARCH ID: 12 **DIST/DIR:** 0.23 SE **ELEVATION:** 28 **MAP ID:** 4

NAME: MOBIL
ADDRESS: 1150 SAGAMORE RD
PORTSMOUTH NH
ROCKINGHAM

REV: 2/1/10
ID1: 198706025
ID2:
STATUS: ESTABROOK
PHONE:

CONTACT:
SOURCE: NIIDES

SITE INFORMATION

PERMITS: 1
WORKLOAD PRIORITY:
RISK LEVEL: RISK LEVEL: 6 HIGH CONCENTRATION, ALTERNATIVE WASTE
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 1
WORKLOAD PRIORITY:
RISK LEVEL: RISK LEVEL: 6 HIGH CONCENTRATION, ALTERNATIVE WASTE
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 1
WORKLOAD PRIORITY:
RISK LEVEL: RISK LEVEL: 6 HIGH CONCENTRATION, ALTERNATIVE WASTE
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 1
WORKLOAD PRIORITY:
RISK LEVEL: RISK LEVEL: 6 HIGH CONCENTRATION, ALTERNATIVE WASTE
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 1
WORKLOAD PRIORITY:
RISK LEVEL: RISK LEVEL: 6 HIGH CONCENTRATION, ALTERNATIVE WASTE
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 1
WORKLOAD PRIORITY:
RISK LEVEL: RISK LEVEL: 6 HIGH CONCENTRATION, ALTERNATIVE WASTE
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

- Continued on next page -

**Environmental FirstSearch
Site Detail Report**

Target Property: PORTSMOUTH NH 03801

JOB: 09.0025631.00

LUST

SEARCH ID: 12 **DIST/DIR:** 0.23 SE **ELEVATION:** 28 **MAP ID:** 4

NAME: MOBII	REV: 2/1/10
ADDRESS: 1150 SAGAMORE RD	ID1: 198706025
PORTSMOUTH NH	ID2:
ROCKINGHAM	STATUS: ESTABROOK
CONTACT:	PHONE:
SOURCE: NHDES	

PERMITS: 1
WORKLOAD PRIORITY:
RISK LEVEL: RISK LEVEL: 6 HIGH CONCENTRATION, ALTERNATIVE WATER
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 1
WORKLOAD PRIORITY:
RISK LEVEL: RISK LEVEL: 6 HIGH CONCENTRATION, ALTERNATIVE WATER
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 1
WORKLOAD PRIORITY:
RISK LEVEL: RISK LEVEL: 6 HIGH CONCENTRATION, ALTERNATIVE WATER
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 0
WORKLOAD PRIORITY:
RISK LEVEL:
PROJECT MANAGER: UNASSIGNED
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 0
WORKLOAD PRIORITY: WLP: 2
RISK LEVEL: RISK LEVEL: 6 HIGH CONCENTRATION, ALTERNATIVE WATER IS AVAILABLE
PROJECT MANAGER: UNASSIGNED
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 0
WORKLOAD PRIORITY:
RISK LEVEL:
PROJECT MANAGER: UNASSIGNED
PROJECT TYPE: LUST

- Continued on next page -

**Environmental FirstSearch
Site Detail Report**

Target Property: PORTSMOUTH NH 03801

JOB: 09.0025631.00

LUST

SEARCH ID: 12 **DIST/DIR:** 0.23 SE **ELEVATION:** 28 **MAP ID:** 4

NAME: MOBIL
ADDRESS: 1150 SAGAMORE RD
PORTSMOUTH NH
ROCKINGHAM

REV: 2/1/10
IDI: 198706025
ID2:
STATUS: ESTABROOK
PHONE:

CONTACT:
SOURCE: NHDES

SITE INFORMATION

PERMITS: 0
WORKLOAD PRIORITY: WLP: 3
RISK LEVEL: 6
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 0
WORKLOAD PRIORITY:
RISK LEVEL:
PROJECT MANAGER: UNASSIGNED
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 0
WORKLOAD PRIORITY: 3
RISK LEVEL: 6
PROJECT MANAGER: UNASSIGNED
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 1
WORKLOAD PRIORITY:
RISK LEVEL:
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 0
WORKLOAD PRIORITY: WLP: 3
RISK LEVEL: 6
PROJECT MANAGER: ESTABROOK
PROJECT TYPE: LUST

SITE INFORMATION

PERMITS: 1
WORKLOAD PRIORITY: WLP: 3
RISK LEVEL: 6
PROJECT MANAGER: ESTABROOK

- More Details Exist For This Site; Max Page Limit Reached -

**Environmental FirstSearch
Site Detail Report**

Target Property:

PORTSMOUTH NH 03801

JOB: 09.0025631.00

UST

SEARCH ID: 11 **DIST/DIR:** 0.23 SE **ELEVATION:** 28 **MAP ID:** 4

NAME: MOBIL	REV: 2/1/10
ADDRESS: 1150 SAGAMORE AVE	ID1: 0110246
PORTSMOUTH NH	ID2:
ROCKINGHAM	STATUS: UST
CONTACT:	PHONE:
SOURCE: NH DES	

TOTAL NUMBER OF TANKS: 6

OWNER INFORMATION

OWNER NAME: RYE CORNER GAS LLC
OWNER ADDRESS: 1000 MARKET ST BLDG 1 STE 300
 PORTSMOUTH NH 03801

SITE TRACKING NUMBER: 198706025

TANK INFORMATION

TANK NUMBER: 1			
STORAGE CAPACITY: 4000 GALLONS		SUBSTANCE STORED: GASOLINE	
TANK TYPE:		PIPE TYPE: STEEL	
DOUBLE WALL TANK: N			
DATE INSTALLED:			
EMERG SPILL ENCLOSURE INSTALLED:			
EMERG OVERFILL ENCLOSURE INSTALLED:			
LAST TIGHTNESS TEST DATE:			
LINE LEAK DETECTION TEST DATE: 05/01/1990			
DATE PERMANENTLY CLOSED: R			
PERM CLOSURE ANALYSIS PERFORMED:			
DATE TEMPORARILY CLOSED:		CLOSURE TYPE: REMOVED	

TANK NUMBER: 2			
STORAGE CAPACITY: 3000 GALLONS		SUBSTANCE STORED: GASOLINE	
TANK TYPE:		PIPE TYPE: STEEL	
DOUBLE WALL TANK: N			
DATE INSTALLED:			
EMERG SPILL ENCLOSURE INSTALLED:			
EMERG OVERFILL ENCLOSURE INSTALLED:			
LAST TIGHTNESS TEST DATE:			
LINE LEAK DETECTION TEST DATE: 05/01/1990			
DATE PERMANENTLY CLOSED: R			
PERM CLOSURE ANALYSIS PERFORMED:			
DATE TEMPORARILY CLOSED:		CLOSURE TYPE: REMOVED	

TANK NUMBER: 3			
STORAGE CAPACITY: 3000 GALLONS		SUBSTANCE STORED: GASOLINE	
TANK TYPE:		PIPE TYPE: UNKNOWN	
DOUBLE WALL TANK: N			
DATE INSTALLED:			
EMERG SPILL ENCLOSURE INSTALLED:			
EMERG OVERFILL ENCLOSURE INSTALLED:			
LAST TIGHTNESS TEST DATE:			
LINE LEAK DETECTION TEST DATE: 05/01/1990			
DATE PERMANENTLY CLOSED: R			

- Continued on next page -

**Environmental FirstSearch
Site Detail Report**

Target Property: PORTSMOUTH NH 03801

JOB: 09.0025631.00

UST

SEARCH ID: 11 **DIST/DIR:** 0.23 SE **ELEVATION:** 28 **MAP ID:** 4

NAME: MOBIL	REV: 2/1/10
ADDRESS: 1150 SAGAMORE AVE	ID1: 0110246
PORTSMOUTH NH	ID2:
ROCKINGHAM	STATUS: UST
CONTACT:	PHONE:
SOURCE: NIDES	

PERM CLOSURE ANALYSIS PERFORMED:
DATE TEMPORARILY CLOSED: **CLOSURE TYPE:** REMOVED

TANK NUMBER: 4	SUBSTANCE STORED: GASOLINE
STORAGE CAPACITY: 6000 GALLONS	PIPE TYPE: FIBERGLASS
TANK TYPE:	
DOUBLE WALL TANK: Y	
DATE INSTALLED: 05/01/1990	
EMERG SPILL ENCLOSURE INSTALLED:	03/29/1994
EMERG OVERFILL ENCLOSURE INSTALLED:	12/20/2001
LAST TIGHTNESS TEST DATE: 05/01/1990	
LINE LEAK DETECTION TEST DATE:	
DATE PERMANENTLY CLOSED:	
PERM CLOSURE ANALYSIS PERFORMED:	
DATE TEMPORARILY CLOSED:	CLOSURE TYPE:

TANK NUMBER: 5	SUBSTANCE STORED: GASOLINE
STORAGE CAPACITY: 8000 GALLONS	PIPE TYPE: FIBERGLASS
TANK TYPE:	
DOUBLE WALL TANK: Y	
DATE INSTALLED: 05/01/1990	
EMERG SPILL ENCLOSURE INSTALLED:	03/29/1994
EMERG OVERFILL ENCLOSURE INSTALLED:	12/20/2001
LAST TIGHTNESS TEST DATE: 05/01/1990	
LINE LEAK DETECTION TEST DATE:	
DATE PERMANENTLY CLOSED:	
PERM CLOSURE ANALYSIS PERFORMED:	
DATE TEMPORARILY CLOSED:	CLOSURE TYPE:

TANK NUMBER: 6	SUBSTANCE STORED: GASOLINE
STORAGE CAPACITY: 4000 GALLONS	PIPE TYPE: FIBERGLASS
TANK TYPE:	
DOUBLE WALL TANK: Y	
DATE INSTALLED: 05/01/1990	
EMERG SPILL ENCLOSURE INSTALLED:	03/29/1994
EMERG OVERFILL ENCLOSURE INSTALLED:	12/20/2001
LAST TIGHTNESS TEST DATE: 05/01/1990	
LINE LEAK DETECTION TEST DATE:	
DATE PERMANENTLY CLOSED:	
PERM CLOSURE ANALYSIS PERFORMED:	
DATE TEMPORARILY CLOSED:	CLOSURE TYPE:

**Environmental FirstSearch
Site Detail Report**

Target Property: PORTSMOUTH NH 03801

JOB: 09.0025631.00

STATE			
SEARCH ID: 5	DIST/DIR: 0.53 NE	ELEVATION: 73	MAP ID: 5
NAME: MICHAEL CLARK		REV: 2/1/10	
ADDRESS: 325 LITTLE HARBOR RD PORTSMOUTH NH ROCKINGHAM		ID1: 200409050	
CONTACT:		ID2:	
SOURCE: NH DES		STATUS: GW HAZ INV - CLOSED	
		PHONE:	
PERMITS: 0			
PROJECT TYPE: ON PREM US			
PROJECT MANAGER: CLOSED			

STATE			
SEARCH ID: 9	DIST/DIR: 0.61 NW	ELEVATION: 37	MAP ID: 6
NAME: WENTWORTH SCRAP METAL PROPERTY		REV: 2/1/10	
ADDRESS: 246 JONES AVE PORTSMOUTH NH ROCKINGHAM		ID1: 200512019	
CONTACT:		ID2:	
SOURCE: NH DES		STATUS: GW HAZ INV	
		PHONE:	
PERMITS: 0			
PROJECT TYPE: HAZARDOUS			
PROJECT MANAGER: DUBOIS			

STATE			
SEARCH ID: 3	DIST/DIR: 0.66 SE	ELEVATION: 20	MAP ID: 7
NAME: FOYE S CORNER MARKET and VACANT PARCEL		REV: 2/1/10	
ADDRESS: 5 PIONEER RD RYE NH ROCKINGHAM		ID1: 200101009	
CONTACT:		ID2:	
SOURCE: NH DES		STATUS: GW HAZ INV	
		PHONE:	

**Environmental FirstSearch
Site Detail Report**

Target Property: PORTSMOUTH NH 03801

JOB: 09.0025631.00

STATE

SEARCH ID: 3 **DIST/DIR:** 0.66 SE **ELEVATION:** 20 **MAP ID:** 7

NAME: FOYE S CORNER MARKET and VACANT PARCEL
ADDRESS: 5 PIONEER RD
 RYE NH
 ROCKINGHAM
CONTACT:
SOURCE: NH DES

REV: 2/1/10
ID1: 200101009
ID2:
STATUS: GW HAZ INV
PHONE:

PERMITS: 0
PROJECT TYPE: HAZARDOUS
PROJECT MANAGER: UNASSIGNED

STATE

SEARCH ID: 8 **DIST/DIR:** 0.78 SW **ELEVATION:** 25 **MAP ID:** 8

NAME: THOMAS BUCHANAN
ADDRESS: 1511 ELWYN RD
 PORTSMOUTH NH
 ROCKINGHAM
CONTACT:
SOURCE: NH DES

REV: 2/1/10
ID1: 200311054
ID2:
STATUS: GW HAZ INV - CLOSED
PHONE:

PERMITS: 0
PROJECT TYPE: ON PREM US
PROJECT MANAGER: CLOSED

STATE

SEARCH ID: 6 **DIST/DIR:** 0.94 NW **ELEVATION:** 30 **MAP ID:** 9

NAME: PORTSMOUTH SWIMMING POOL
ADDRESS: 50 ANDREW JARVIS DR
 PORTSMOUTH NH
 ROCKINGHAM
CONTACT:
SOURCE: NH DES

REV: 2/1/10
ID1: 199901001
ID2:
STATUS: GW HAZ INV - CLOSED
PHONE:

**Environmental FirstSearch
Site Detail Report**

Target Property:

PORTSMOUTH NH 03801

JOB: 09.0025631.00

STATE			
SEARCH ID: 6	DIST/DIR: 0.94 NW	ELEVATION: 30	MAP ID: 9
NAME: PORTSMOUTH SWIMMING POOL		REV: 2/1/10	
ADDRESS: 50 ANDREW JARVIS DR PORTSMOUTH NH ROCKINGHAM		ID1: 199901001	
CONTACT:		ID2:	
SOURCE: NH DES		STATUS: GW HAZ INV - CLOSED	
		PHONE:	
PERMITS: 0			
PROJECT TYPE: ON PREM US			
PROJECT MANAGER: CLOSED			

STATE			
SEARCH ID: 7	DIST/DIR: 0.97 SE	ELEVATION: 39	MAP ID: 10
NAME: ROWE PROPERTY		REV: 2/1/10	
ADDRESS: 139 SAGAMORE RD RYE NH ROCKINGHAM		ID1: 200710035	
CONTACT:		ID2:	
SOURCE: NH DES		STATUS: GW HAZ INV - CLOSED	
		PHONE:	
PERMITS: 0			
PROJECT TYPE: ON PREM US			
PROJECT MANAGER: CLOSED			

Environmental FirstSearch
Street Name Report for Streets within .25 Mile(s) of Target Property

Target Property: PORTSMOUTH NH 03801

JOB: 09.0025631.00

<u>Street Name</u>	<u>Dist/Dir</u>	<u>Street Name</u>	<u>Dist/Dir</u>
Cliff Rd	0.14 NE		
Sagamore Ave	0.03 NE		
Sagamore Grove	0.12 SE		
Sagamore Landing	0.22 NE		
Shaw Rd	0.05 NE		
State Route 1A	0.03 NE		
State Route 1B	0.19 SE		
Tidewatch Condominiu	0.09 NW		
Walker Bungalow Rd	0.15 NE		
Wentworth Rd	0.19 SE		

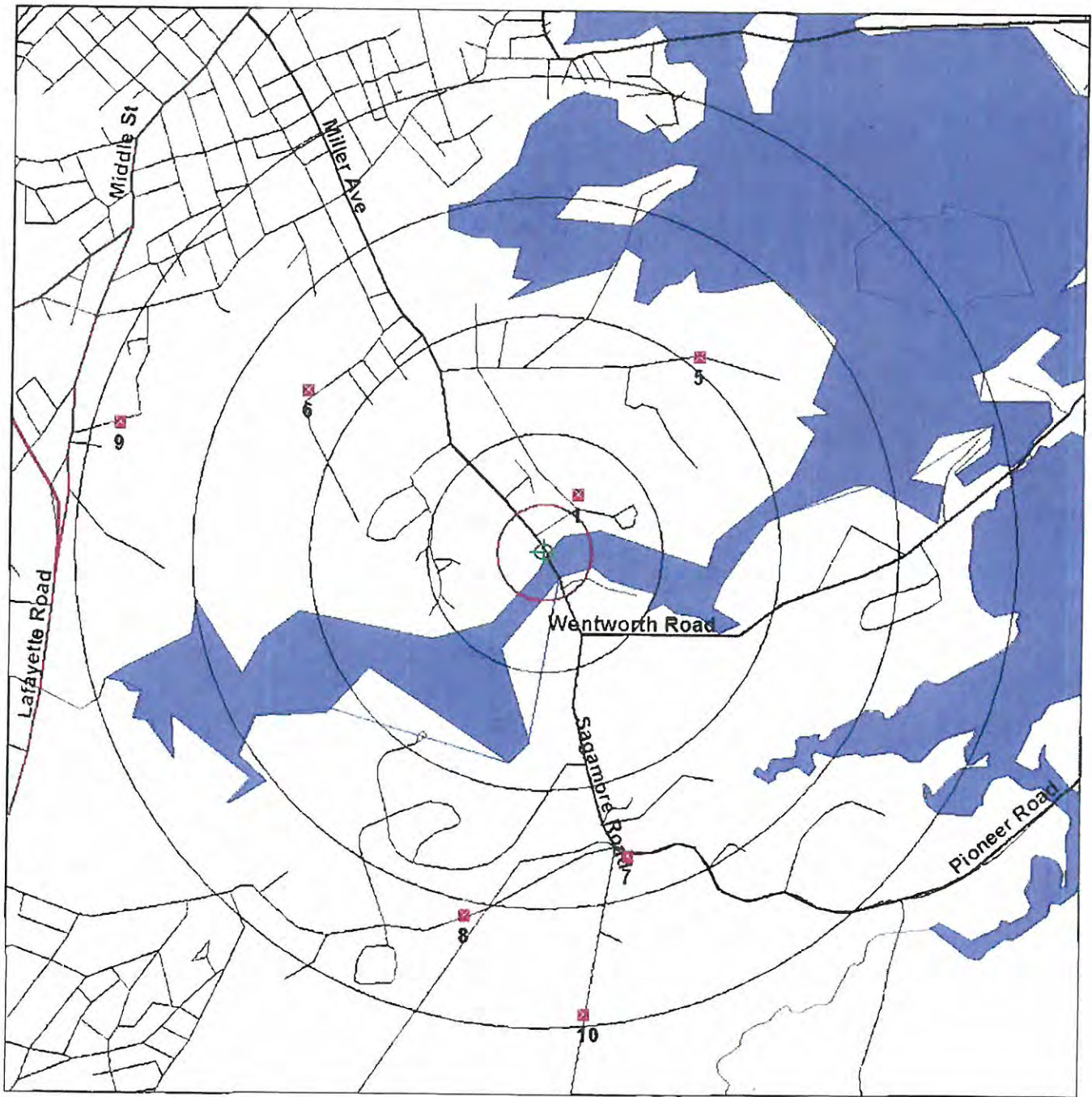


Environmental FirstSearch








1 Mile Radius
ASTM Map: NPL, RCRACOR, STATE Sites



, PORTSMOUTH NH 03801



Source: 2005 U.S. Census TIGER Files

- Target Site (Latitude: 43.055089 Longitude: -70.749515) 
- Identified Site, Multiple Sites, Receptor   
- NPL, DELNPI., Brownfield, Solid Waste Landfill (SWL), Hazardous Waste 
- Triballand 
- Railroads 
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft Radius

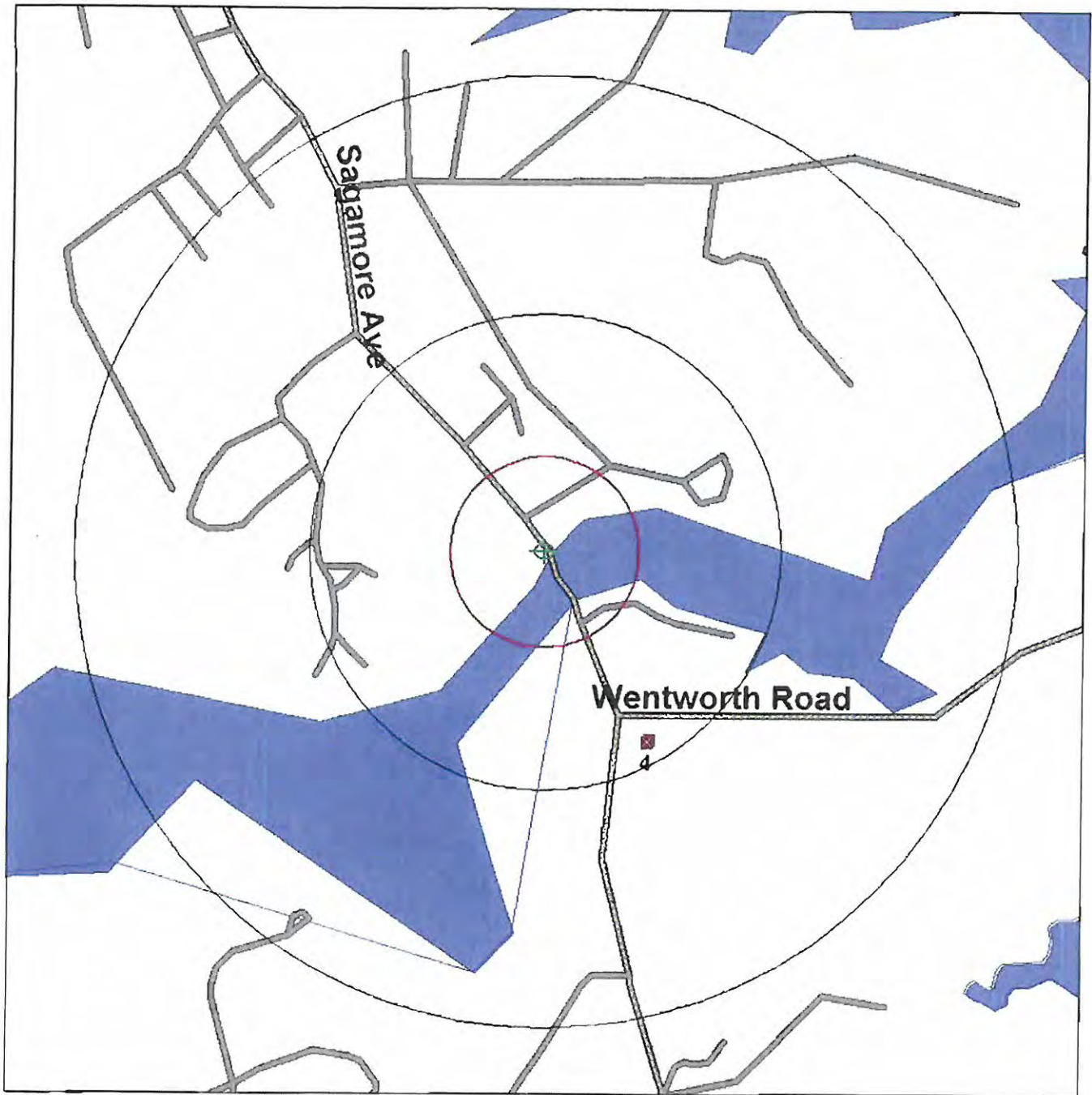


Environmental FirstSearch








.5 Mile Radius
ASTM Map: CERCLIS, RCRATSD, LUST, SWL



, PORTSMOUTH NH 03801



Source: 2005 U.S. Census TIGER Files

- Target Site (Latitude: 43.055089 Longitude: -70.749515) 
- Identified Site, Multiple Sites, Receptor   
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste 
- Trballand 
- Railroads 
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius



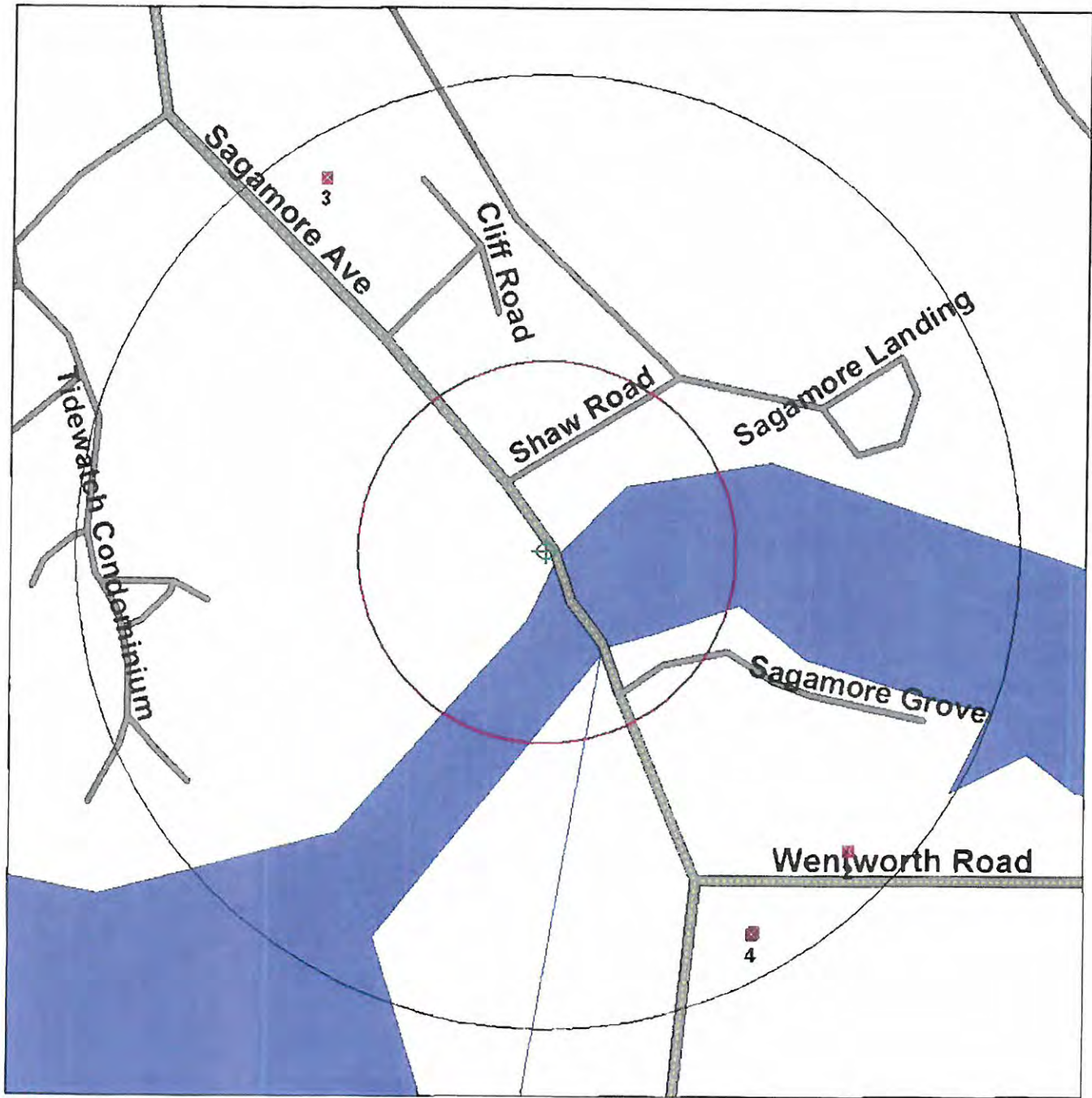
Environmental FirstSearch

.25 Mile Radius

ASTM Map: RC RAGEN, ERNS, UST, FED IC/EC, METH LABS



, PORTSMOUTH NH 03801



Source: 2005 U.S. Census TIGER Files

- Target Site (Latitude: 43.055089 Longitude: -70.749515)
 - Identified Site, Multiple Sites, Receptor
 - NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste
 - Triballand
 - Railroads
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius



Environmental FirstSearch

.25 Mile Radius










Non-ASTM Map: No Sites Found



, PORTSMOUTH NH 03801



Source: 2005 U.S. Census TIGER Files

- Target Site (Latitude: 43.055089 Longitude: -70.749515) 
- Identified Site, Multiple Sites, Receptor   
- NPL, DFI, NPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste 
- Trirballand 
- National Historic Sites and Landmark Sites  
- Railroads 
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft Radius



Environmental FirstSearch

Aerial : 0.75 Mile Radius

Site Locus Map

, PORTSMOUTH NH 03801



Source:

Target Site (Latitude: 43.055089 Longitude: -70.749515)

Identified Site, Multiple Sites, Receptor

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL) or Hazardous Waste

Tribal Land

Map Name: KITTERY SW Date Created: 1998-04-29 Date Revised: 1998-04-29 Elevation:

Map Reference Code: 43070-A6-04-PIIT

Black Rings Represent 1/4 Mile Radii; Red Ring Represents 500 ft. Radius

CITY DIRECTORY REVIEW

Report Date: March 19, 2010
 Client Job Number: 09.0025631.00
 FirstSearch Index Number: 226048
 Site Address (es): 930-1150 Sagamore Avenue
 Portsmouth, NH 03801

A search was conducted for the subject area noted above to identify any Historical City Directory coverage/tenant information maintained at national repositories, local city/town libraries and/or various public sources.

The following information is the result of the search:

YEAR / SOURCE	CLOSEST LOWER ADDRESS LISTINGS	SUBJECT ADDRESS (ES)	CLOSEST UPPER ADDRESS LISTINGS
2009/Polk Directory	913 Sagamore Avenue Multiple Residential Listings 915 Sagamore Avenue Portsmouth Scuba divers- equip/supl 919 Sagamore Avenue No Current Listing (Hse) 929 Sagamore Avenue No Current Listing (Hse) Shaw Road Begins No Lower Listings Sagamore Avenue Intersects 7 Shaw Road Residential Listing 14 Shaw Road Residential Listing	930 Sagamore Avenue Not Listed 960 Sagamore Avenue Wallace Commercial Indl Assoc real estate 967 Sagamore Avenue Golden Egg restaurants Sagamore Grove Intersects Wentworth Road Intersects 1145 Sagamore Avenue Addiction Recovery Svc PLLC alcoholism info/treatment ctrs Seacoast Mental Health mental health serv 1149 Sagamore Avenue Center-Learning Attention psychologists 1150 Sagamore Avenue Not Listed No Lower Listings 1 Sagamore Grove Residential Listing Sagamore Avenue Continues 2 Sagamore Grove Residential Listing 3 Sagamore Grove No Current Listing No Lower Listings Sagamore Avenue Continues 2 Wentworth Road No Current Listing 6 Wentworth Road Residential Listing	1151 Sagamore Avenue Multiple Residential Listings 1155 Sagamore Avenue Residential Listing 1163 Sagamore Avenue Loyal Order of Moose fraternal org 1167 Sagamore Avenue Residential Listing

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<p>2009/Polk Directory (Continued)</p>		<p>68 Odiorne Point Road Residential Listing 75 Odiorne Point Road Residential Listing Sagamore Avenue Intersects 94 Odiorne Point Road Residential Listing 101 Odiorne Point Road Residential Listing</p>	
<p>2004/Polk Directory</p>	<p>912 Sagamore Avenue Residential Listing 913 Sagamore Avenue Residential Listing 915 Sagamore Avenue Portsmouth Scuba divers- equip/supl 920 Sagamore Avenue No Current Listing Shaw Road Begins No Lower Listings Sagamore Avenue Intersects 14 Shaw Road Residential Listing 15 Shaw Road Residential Listing</p>	<p>930 Sagamore Avenue Not Listed 955 Sagamore Avenue Sagamore Creek General Store lobster 960 Sagamore Avenue Bear Paw Custom Design boat covers tops & upholstery Wallace Commercial Ind Assoc real estate 967 Sagamore Avenue Golden Egg restaurants Sagamore Grove Begins Wentworth Road Intersects Odiorne Point Road Begins 1145 Sagamore Avenue Seacoast Mental Health mental health serv 1149 Sagamore Avenue Center-Learning Attention psychologists 1150 Sagamore Avenue Not Listed No Lower Listings Sagamore Avenue Continues 1 Sagamore Grove Residential Listing 2 Sagamore Grove No Current Listing No Lower Listings Sagamore Avenue Continues 2 Wentworth Road No Current Listing 16 Wentworth Road Residential Listing No Lower Listings Sagamore Avenue Intersects Odiorne Drive Begins 163 Odiorne Point Road Residential Listing 175 Odiorne Point Road Residential Listing</p>	<p>1155 Sagamore Avenue Leap Into Learning Preschool child care serv 1163 Sagamore Avenue Loyal Order of Moose fraternal org 1167 Sagamore Avenue Residential Listing 1169 Sagamore Avenue Residential Listing</p>

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<p>1999/Polk Directory</p>	<p>912 Sagamore Avenue Residential Listing 913 Sagamore Avenue Multiple Residential Listings 915 Sagamore Avenue Residential Listing 920 Sagamore Avenue Residential Listing</p> <p>No Lower Listings Sagamore Avenue Intersects 14 Shaw Road Residential Listing 17 Shaw Road Residential Listing</p>	<p>930 Sagamore Avenue Not Listed 955 Sagamore Avenue Rays Takeout eating places 960 Sagamore Avenue Bear Paw Custom Design canvas rtd prdcts Golden Egg the eating places Wentworth Road Intersects 1145 Sagamore Avenue Seacoast Substance Abuse spty otpnt clns Seacoast Substance Abuse Association spty otpnt clns 1149 Sagamore Avenue Center for Learning Attention Disorders ofcs hlth prnrs 1150 Sagamore Avenue Center Wentworth Mobile Service gas stations</p> <p>No Lower Listings Sagamore Avenue Continues 2 Sagamore Grove Residential Listing 3 Sagamore Grove Residential Listing Mops In Motion help supply svcs</p> <p>No Lower Listings Sagamore Avenue Continues 2 Wentworth Road Residential Listing 74 Wentworth Road Residential Listing</p>	<p>1151 Sagamore Avenue Sattva Institute indivl famly svcs 1154 Sagamore Avenue Residential Listing 1155 Sagamore Avenue Multiple Residential Listings 1167 Sagamore Avenue Residential Listing</p>
<p>1997/Polk Directory</p>	<p>912 Sagamore Avenue Residential Listing 913 Sagamore Avenue Multiple Residential Listings 915 Sagamore Avenue Al's TV Five Star Seafoods Inc 920 Sagamore Avenue Residential Listing</p> <p>No Lower Listings Sagamore Avenue Intersects 14 Shaw Road Residential Listing 17 Shaw Road Residential Listing</p>	<p>930 Sagamore Avenue Not Listed 960 Sagamore Avenue Bodypeace 967 Sagamore Avenue Golden Egg 1145 Sagamore Avenue Seacoast Mental Health Cnsmr Seacoast Mental Health Ctr 1149 Sagamore Avenue Job Store 1150 Sagamore Avenue Wentworth Mobile</p>	<p>1151 Sagamore Avenue Residential Listing 1154 Sagamore Avenue Leap Into Learning Preschool 1167 Sagamore Avenue Residential Listing 1169 Sagamore Avenue Residential Listing</p>

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<p>1997/Polk Directory</p>		<p>No Lower Listings Sagamore Avenue Continues (No Address Numbers) Sagamore Grove Residential Listing Residential Listing 3 Sagamore Grove Residential Listing Mops In Motion</p> <p>No Lower Listings Sagamore Avenue Continues (No Address Numbers) Wentworth Road Multiple Residential Listings 2 Wentworth Road Residential Listing 47 Wentworth Road Residential Listing</p>	
<p>1992/Cole Directory</p>	<p>912 Sagamore Avenue Multiple Residential Listings 913 Sagamore Avenue Multiple Residential Listings 915 Sagamore Avenue Al's TV Stone Signs Inc 920 Sagamore Avenue Residential Listing</p>	<p>960 Sagamore Avenue Gosselin Fran Little Goose The 967 Sagamore Avenue Golden Egg The 1145 Sagamore Avenue Mental Health Consumer Support Center Seacoast Mental Health Center- Main Ofc Job Store The Portsmouth Community Health Services Seacoast Mental Health Center- Community Support Program 1150 Sagamore Avenue Nepsco Inc Wentworth Mobil Service Center</p>	<p>1155 Sagamore Avenue Desmarais Chiropractic Offices- Main Ofc 1167 Sagamore Avenue Simone's Clock Repair 1169 Sagamore Avenue Residential Listing 1171 Sagamore Avenue Multiple Residential Listings</p>
<p>1967/Manning Directory</p>	<p>808 Sagamore Avenue Multiple Residential Listings 898 Sagamore Avenue Residential Listing 900 Sagamore Avenue Residential Listing (No Address Numbers) Residential Listing Residential Listing 915 Sagamore Avenue Al's TV Shop</p>	<p>Unknown (Street Not Numbered) (Numbering Irregular) 930 Sagamore Avenue Not Listed 950 rear Sagamore Avenue Residential Listing 950 Sagamore Avenue Terrio Leroy B oil dlr Walker Bungalow Road Begins Sagamore Creek Bridge Overpass (No Address Numbers) Burke's Sagamore Fish Market Residential Listing Sagamore Grove Begins</p>	<p>Unknown (Street Not Numbered)</p>

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<p>1967/Manning Directory (Continued)</p>		<p>970 Sagamore Avenue Vacant Ladd's Restaurant Ladd's ice cream 1149 Sagamore Avenue Residential Listing Vacant (No Address Number) Sagamore Grove Fresh Fruit & Product Co Wentworth Road Begins 1063 Sagamore Avenue Residential Listing (No Address Numbers) Glidden's Auto Service Cooper Richd basket mfrs Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing 1150 Sagamore Avenue Not Listed No Lower Listings Sagamore Road Intersects (No Address Number) Walker Bungalow Road Residential Listing 7 Walker Bungalow Road Multiple Residential Listings No Lower Listings Sagamore Avenue Continues (No Address Numbers) Sagamore Grove Residential Listing Residential Listing No Lower Listings Sagamore Avenue Continues (No Address Number) Wentworth Road Residential Listing Sagamore Grove Ends (No Address Number) Residential Listing</p>	
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<p>1963/Manning Directory</p>	<p>796 Sagamore Avenue Residential Listing 808 Sagamore Avenue Multiple Residential Listings 898 Sagamore Avenue Residential Listing 900 Sagamore Avenue Residential Listing (No Address Numbers) Residential Listing Residential Listing</p>	<p>Unknown (Street Not Numbered) (Numbering Irregular) 930 Sagamore Avenue Not Listed 950 rear Sagamore Avenue Residential Listing 950 Sagamore Avenue Residential Listing Walker Bungalow Road Begins Sagamore Creek Bridge Overpass (No Address Numbers) Lobster Claw The Residential Listing Sagamore Grove Begins (No Address Numbers) Residential Listing Grover Grocery Ladd's Potato Chip Co rstr Ladd's ice cream Residential Listing Vacant Wentworth Road Begins 1063 Sagamore Avenue Residential Listing (No Address Numbers) Vacant Ray's Auto Service Cooper Richd basket mfrs Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing 1150 Sagamore Avenue Not Listed Rye Line No Lower Listings Sagamore Road Intersects (No Address Number) Walker Bungalow Road Residential Listing 7 Walker Bungalow Road Multiple Residential Listings</p>	<p>Unknown (Street Not Numbered)</p>
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<p>1961/Manning Directory (Continued)</p>		<p>No Lower Listings Sagamore Road Intersects (No Address Numbers) Walker Bungalow Road Residential Listing Multiple Residential Listings</p> <p>No Lower Listings Sagamore Avenue Continues (No Address Numbers) Sagamore Grove Residential Listing Residential Listing</p> <p>No Lower Listings Sagamore Avenue Continues (No Address Number) Wentworth Road Residential Listing Sagamore Grove Ends (No Address Number) Residential Listing</p>	
<p>1941/Manning Directory</p>	<p>(Numbering Irregular) 794 Sagamore Avenue Multiple Residential Listings 766 Sagamore Avenue Multiple Residential Listings Cliff Road Begins (No Address Numbers) Residential Listing Shaw Alice B Mrs gas sta Residential Listing Vacant 781 Sagamore Avenue Residential Listing</p>	<p>Unknown (Street Not Numbered) (Numbering Irregular) 930 Sagamore Avenue Not Listed 1005 Sagamore Avenue Residential Listing (No Address Numbers) Portsmouth Potato Chip Co Residential Listing Wentworth Road Begins (No Address Numbers) Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing 1150 Sagamore Avenue Not Listed Rye Line</p> <p>No Lower Listings Sagamore Road Intersects (No Address Numbers) Walker Bungalow Road Residential Listing Residential Listing</p> <p>No Lower Listings Sagamore Avenue Continues (No Address Numbers) Sagamore Grove Residential Listing Residential Listing</p>	<p>Unknown (Street Not Numbered)</p>

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<p>1941/Manning Directory (Continued)</p>		<p>No Lower Listings Sagamore Avenue Continues (No Address Numbers) Wentworth Road Residential Listing Residential Listing</p>	
<p>1933-34/ Greenough Directory</p>	<p>Unknown (Street Not Numbered) 713 Sagamore Avenue Residential Listing 714 Sagamore Avenue Residential Listing 794 Sagamore Avenue Residential Listing 796 Sagamore Avenue Residential Listing Residential Listing Residential Listing Patterson Wm Q elect Residential Listing Shaw Wilbur B gas sta Residential Listing Residential Listing Residential Listing Residential Listing Wentworth Road Begins (No Address Numbers) Residential Listing Residential Listing Residential Listing 1150 Sagamore Avenue Not Listed Rye Line</p>	<p>Unknown (Street Not Numbered) No Lower Listings Sagamore Avenue Continues (No Address Numbers) Wentworth Road Residential Listing Rye Line Crosses No Higher Listings</p>	<p>Unknown (Street Not Numbered)</p>
<p>1928/ Greenough Directory</p>	<p>Unknown (Street Not Numbered) (Numbering Irregular) 697 Sagamore Avenue Residential Listing 697r Sagamore Avenue Residential Listing 689 Sagamore Avenue Residential Listing 713 Sagamore Avenue Residential Listing 714 Sagamore Avenue Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Shaw Wilbur B gas sta</p>	<p>Unknown (Street Not Numbered) No Lower Listings Sagamore Avenue Continues (No Address Numbers) Wentworth Road Bruce Josephine tea rm Residential Listing Rye Line Crosses</p>	<p>Unknown (Street Not Numbered)</p>

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<p>1928/ Greenough Directory (Continued)</p>	<p>Residential Listing Residential Listing Residential Listing Residential Listing Wentworth Road Begins (No Address Number) Marks Harry B filling sta 1150 Sagamore Avenue Not Listed Rye Line</p>		
<p>1923/ Greenough Directory</p>	<p>Unknown (Street Not Numbered) 576 Sagamore Avenue Trefethen Frank pntr 692 Sagamore Avenue Multiple Residential Listings 697 Sagamore Avenue Multiple Residential Listings 713 Sagamore Avenue Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Wentworth Road Begins (No Address Number) Marks Harry B filling sta 1150 Sagamore Avenue Not Listed Rye Line</p>	<p>Unknown (Street Not Numbered) No Lower Listings Sagamore Avenue Continues (No Address Numbers) Wentworth Road Residential Listing Rye Line Crosses No Higher Listings</p>	<p>Unknown (Street Not Numbered)</p>
<p>1918/ Greenough Directory</p>	<p>Unknown (Street Not Numbered) (No Address Number) Sagamore Avenue Frank Trefethen h and sh 679 Sagamore Avenue Multiple Residential Listings 692 Sagamore Avenue Multiple Residential Listings 697 Sagamore Avenue Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Wentworth Road Begins 1063 Sagamore Avenue Not Listed (No Address Number) Marks Harry B filling sta 1150 Sagamore Avenue Not Listed Rye Line</p>	<p>Unknown (Street Not Numbered)</p>	<p>Unknown (Street Not Numbered)</p>

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<p>1914/ Greenough Directory</p>	<p>Unknown (Street Not Numbered) Sagamore Avenue Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Jones Avenue Begins Residential Listing Residential Listing Residential Listing Residential Listing Little Harbor Road Begins Joseph R Holmes h and sh Frank Trefethen h and sh Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Wentworth Road Begins Marks Harry B filling sta Rye Line</p>	<p>Unknown (Street Not Numbered)</p>	<p>Unknown (Street Not Numbered)</p>
<p>1905/ Greenough Directory</p>	<p>Unknown (Street Not Numbered) Sagamore Avenue Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Jones Avenue Begins Residential Listing Residential Listing Residential Listing Little Harbor Road Begins Joseph R Holmes h and sh Frank Trefethen h and sh Residential Listing Residential Listing Vacant Residential Listing Wentworth Road Begins Marks Harry B filling sta 1150 Sagamore Avenue Not Listed Rye Line</p>	<p>Unknown (Street Not Numbered)</p>	<p>Unknown (Street Not Numbered)</p>

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<p>1903/ Greenough Directory</p>	<p>Unknown (Street Not Numbered) Sagamore Avenue Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Residential Listing Jones Avenue Begins Residential Listing Residential Listing Residential Listing Little Harbor Road Begins Joseph R Holmes h and sh Frank Trefethen h and sh Residential Listing Residential Listing Residential Listing Wentworth Road Begins Marks Harry B filling sta 1150 Sagamore Avenue Not Listed Rye Line</p>	<p>Unknown (Street Not Numbered)</p>	<p>Unknown (Street Not Numbered)</p>
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Notes: All higher listings observed for Sagamore Avenue shown above for 1967
 Odiorne Point Road not listed between 1999 and 1903
 Shaw Road not listed between 1967 and 1903
 Sagamore Grove not listed between 1933 and 1903
 Walker Bungalow not listed in 1933-34
 Wentworth Road not listed between 1918 and 1903
 No further coverage available

GLOSSARY OF TERMS

“No Listing/Not Listed” - address not listed in the directory

“Vacant” or “No Current Listing” - status of address in directory

“Residential Listing” - one residential listing located at address

“Multiple Residential Listings” - more than one residential listing located at address

“Multiple Retail Listings” - more than one retail facility located at address

“Multiple Business Listings” - more than one business listing at address

“Multiple Government Offices” - more than one federal listing at an address

“Multiple Municipal Listings” - more than one municipal listing at an address

“Multiple Military Listings” - more than one military listing at an address

“Street Not Listed” - street not listed in directory

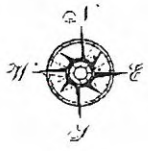
When multiple tenants/facilities are observed for one address, the information may be summarized as shown in the following examples:

- An apartment building will be represented by “Multiple Residential Listings”
- A retail shopping center will be represented by “Multiple Retail Listings” followed by a separate listing of sites, if present, which may contain the use of regulated/chemical/hazardous materials such as dry cleaners, photo finishers, hair salons, auto repair shops, etc.
- An office building consisting of attorneys, insurance, firms, or other facilities which do not indicate the use of regulated/chemical/hazardous materials will be represented by “Multiple Business Listings”

Residential addresses, including individual houses and apartment buildings, are listed as residential. Names of tenants can be provided if needed.

Unless otherwise noted, the subject address (es) plus four adjacent addresses up from the subject property and four addresses down from the subject property are included in the report, if available.

Although great care has been taken by FirstSearch Technology Corporation in compiling and verifying the information contained in this report to insure that it is accurate, FirstSearch Technology Corporation disclaims any and all liability for any errors, omissions, or inaccuracies in such information and data.



Environmental FirstSearch

Historical Aerial

1940

, PORTSMOUTH NH 03801



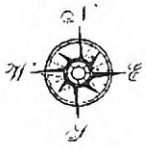
Source:

Target Site (Latitude: 43 055089 Longitude: -70 749515)

Quad Name Kittery

Date: 1940

Approximate Scale: 1 inch equals 1,125 feet

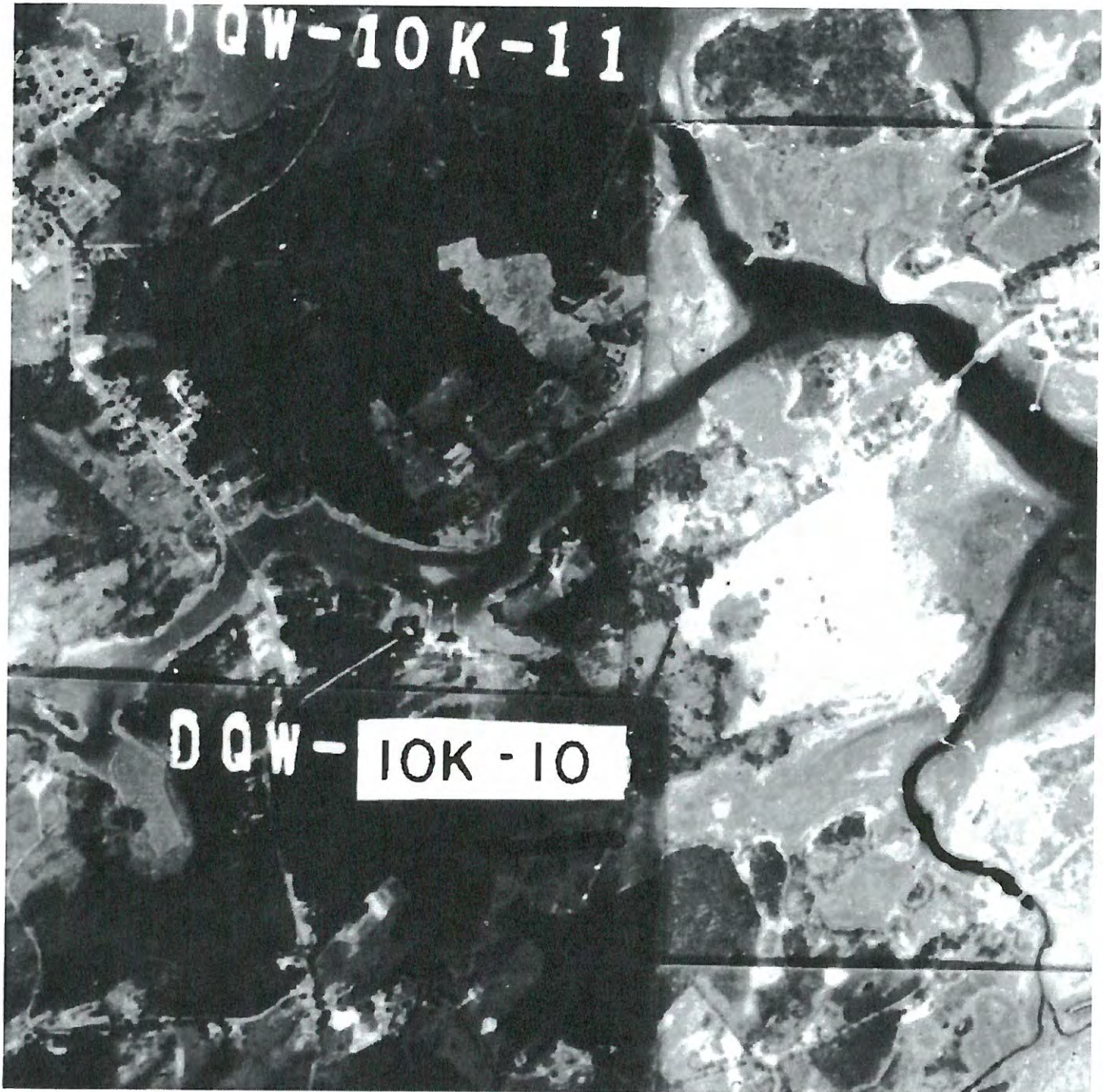


Environmental FirstSearch

Historical Aerial

1952

, PORTSMOUTH NH 03801



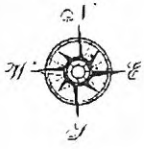
Source:

Target Site (Latitude: 43 055089 Longitude: -70 749515)

Quad Name Kittery

Date: 1952

Approximate Scale: 1 inch equals 1,125 feet

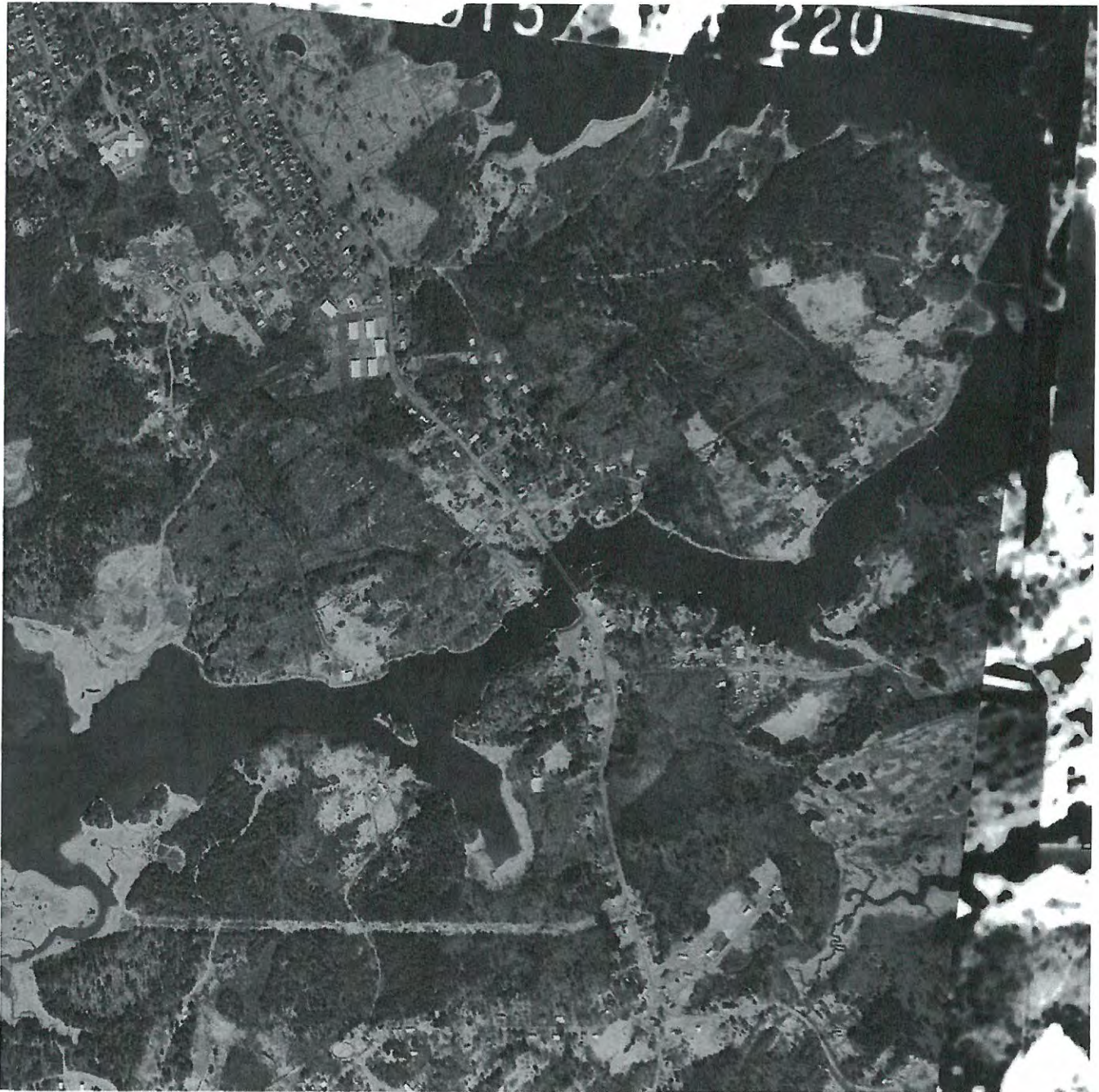


Environmental FirstSearch

Historical Aerial

1974

, PORTSMOUTH NH 03801



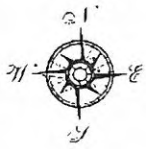
Source:

Target Site (Latitude: 43.055089 Longitude: -70.749515)

Quad Name Kittery

Date: 1974

Approximate Scale: 1 inch equals 1,125 feet



Environmental FirstSearch

Historical Aerial

1986

, PORTSMOUTH NH 03801



Source:

Target Site (Latitude: 43 055089 Longitude: -70 749515)

Quad Name Kittery

Date: 1986

Approximate Scale: 1 inch equals 1,125 feet



Environmental FirstSearch

Historical Aerial

2004

, PORTSMOUTH NH 03801



Source:

Target Site (Latitude: 43.055089 Longitude: -70.749515)

Quad Name Kittery

Date: 2004

Approximate Scale: 1 inch equals 1,125 feet



HISTORICAL FIRE INSURANCE MAPS

NO MAPS AVAILABLE

3/16/2010

09.0025631.00

PORTSMOUTH, NH 03801

A search of FirstSearch Technology Corporation's proprietary database of historical fire insurance map availability confirmed that there are NO MAPS AVAILABLE for the Subject Location as shown above.

FirstSearch Technology Corporation's proprietary database of historical fire insurance map availability represents abstracted information from the Sanborn® Map Company LLC obtained through online access to the Library of Congress as well as the result of a review of the other fire insurance map microfilm collections available via various local libraries.

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FirstSearch Technology Corporation

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Tel: 781-551-0470 Fax: 781-551-0471*

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APPENDIX I

NHDOT POLICY – FLAGGER AND UNIFORMED OFFICER USE IN WORKZONES

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NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION POLICY		NUMBER 402.06
TITLE Flagger and Uniformed Officer Use in Work Zones	DATE 05/29/2009	
SUBJECT Flagger and Uniformed Officer Use for Temporary Traffic Control and Safety	RESPONSIBLE BUREAU	

Authority: The State Legislature has delegated the Commissioner of the Department of Transportation with full authority to control traffic in highway/bridge construction work zones on Class I, II, III highways; RSA 228:21, 236:1, and 228:37.

Definitions:
Flagger: A person trained in flagger operations who actively controls the flow of vehicular traffic into and/or through a temporary traffic control zone using hand-signaling devices or an Automated Flagger Assistance Device. (MUTCD 6E.01)
Uniformed Officer: A certified law enforcement officer who has the legal authority to enforce traffic laws on the roadways within the work zone.
Dynamic Traffic Control is traffic control that can be continuously adjusted to meet changing work zone needs and traffic demands. Dynamic Traffic Control can be at a fixed location or mobile and requires either human intervention or automated/intelligent electronic devices. Dynamic Traffic Control is typically implemented using flaggers and/or uniformed officers.

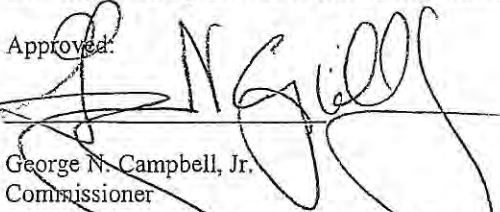
Purpose: The purpose of this policy is to provide a safe work zone through the prudent and consistent use of flaggers and/or uniformed officers in dynamic traffic control operations and traffic law enforcement. This policy provides guidance and consistency statewide with regards to the use of flaggers and uniformed officers, while ensuring efficient use of construction funding. This policy was initiated to comply with the requirements of the Federal Highway Administration, 23 CFR Part 630, Subpart K, 630.1106(c) Uniformed Law Enforcement Policy.

Policy: It is the policy of the Department of Transportation to take appropriate measures to reduce the likelihood of injuries and fatalities to workers and road users in NHDOT work zones. The use of appropriately trained flaggers and uniformed officers for the purpose of dynamic traffic control, presence, enforcement, and emergency assistance will be part of the safety measures taken.

Flaggers will be the primary means for providing dynamic temporary traffic control operations in work zones. Uniformed officers will be utilized for their specific authority for operations beyond that of a flagger, such as assistance in speed control and traffic law enforcement as necessary. The use of flaggers and uniformed officers in work zones is to be consistent with the *NHDOT Flagger and Uniformed Officer Use in Work Zones Guidelines*.

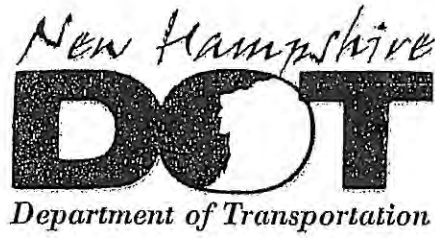
A Municipal Work Zone Agreement (MWZA) outlining the Department of Transportation's authority and responsibility for controlling traffic within the work zone is to be signed by each municipality as detailed in the *NHDOT Flagger and Uniformed Officer Use in Work Zones Guidelines* prior to construction of applicable project.

Responsibility: The Chief Engineer is responsible for the development, oversight and updating of the *NHDOT Flagger and Uniformed Officer Use in Work Zones Guidelines*.

Approved: 
George N. Campbell, Jr.
Commissioner

Date: 6/5/09

References: 23 CFR Part 630 Subpart K, RSA 228:21, RSA 236:1, RSA 228:37, RSA 188-F:23, RSA 265:3-b, RSA 265:4, MUTCD



**FLAGGER AND UNIFORMED
OFFICER USE IN WORK ZONES**

GUIDELINES

Approved:

A handwritten signature in black ink, appearing to read "David J. Brillhart", written over a horizontal line.

David J. Brillhart, P.E.
Chief Engineer

Date: 6/5/09

(Written in support of NHDOT policy: Flagger and Uniformed Officer Use in Work Zones)

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I. GENERAL GUIDANCE:

The following guidelines for the use of flaggers and uniformed officers were developed by the NHDOT in cooperation with FHWA. The goal of these guidelines is to reduce the likelihood of injuries and fatalities to workers and road users in NHDOT Work Zones, while maintaining a fiscally responsible approach in their use. These guidelines provide parameters to identify the appropriate need and consistent use of flaggers and uniformed officers addressed by the following categories:

- A. **Traffic control** (guiding and directing traffic in, through, and around a work zone).
- B. **Presence** (deter speeding and aggressive driving, encourage drivers to cautiously proceed through the work zone)
- C. **Enforcement** (actively enforce traffic laws within the work zone on an as needed basis to gain driver awareness rather than as a full-time operation).
- D. **Emergency assistance** (assist and coordinate activities at accident sites within the work zone, report accidents)

- A. **TRAFFIC CONTROL OPERATIONS:** Flaggers shall be used to the greatest extent possible for "dynamic" traffic control operations. However, the use of uniformed officers may be necessary in some instances.

Examples of dynamic traffic control operations where **flaggers** should be used include:

1. Alternating 1-way traffic (stop/slow paddles must be used).
2. Directing traffic through low volume intersections.
3. Assisting trucks and equipment in and out of work areas.
4. Providing coverage at side roads and driveways during mobile operations (i.e. paving, striping, etc.).
5. Directing pedestrians and bicyclists through the work zone.
6. Providing detour guidance beyond work zone limits.

Examples of dynamic traffic control operations where **uniformed officers** may be used include:

1. Directing traffic through complex intersections, especially where signals are being overridden.
2. Assisting construction vehicles and equipment in and out of work areas on high speed, high volume facilities. Note: If an access area is anticipated to be in place for an extended period of time and it is determined that assistance is required for the safe exit and entry of construction vehicles, then a cost analysis should be completed to determine if stationary measures (i.e. signals) would be more cost effective than officers or flaggers.
3. Rolling roadblock operations on interstate and turnpike facilities and other multi-lane L.A.R.O.W. highways.

4. If a uniformed officer is already on site for other needs (**enforcement or presence**), then the officer may be asked to supplement these duties by providing limited duration traffic control that would otherwise be covered by a flagger. However, the officer must be adequately trained for the flagger operation to be performed and must use appropriate equipment and techniques (which may include the use of stop/slow paddles).

B. PRESENCE: The use of flaggers or uniformed officers for **presence** should only be used when there is an added safety risk to the workers and road users due to speeding, other aggressive driving behaviors, and/or high traffic crash/incident rates attributed to other features such as poor highway geometrics.

Uniformed officers should be used for **presence** on high-speed facilities when workers are unprotected and in close proximity to high volume traffic for extended periods of time or where unique work zone conditions require a higher level of driver awareness to ensure safety. Facilities where this application may be appropriate include, but are not necessarily limited to:

1. Interstate facilities
2. F.E. Everett Turnpike
3. Spaulding Turnpike (Middleton (Exit 18) south)
4. NH 101 corridor (Manchester East)
5. Roads with a posted speed of 45 mph or higher **and** an average daily traffic (ADT) volume of 15,000 vpd or greater.

Flaggers may be used for **presence** on projects involving roads with a posted speed of less than 45 mph or ADT volumes less than 15,000 vpd to alert and slow traffic with the use of hand signals and hand-signaling devices as described in Chapter 6E of the MUTCD.

If all work is behind barrier, neither officers nor flaggers are typically necessary.

The use of police vehicles should be considered for nighttime operations in most instances as the use of flashing blue lights, visible from 360 degrees, has been proven to deter aggressive driving behavior. However, the manner of their use during nighttime operations should be carefully considered as police vehicle lights provide no positive direction to motorists traveling through the work zone and are often overpowering and distracting. Excessive use of police vehicles with lights at night, or the inappropriate positioning of these vehicles, may actually detract from the positive guidance the work zone traffic control devices (TCDs) provide. When used for nighttime work, flashing blue lights shall be dimmed if capable.

Though typically not necessary, **uniformed officers** may also be used for **presence** on roads with posted speeds of less than 45 mph or ADT volumes less than 15,000

vpd if the NHDOT determines that a **police presence** is needed to address a specific safety issue. Examples of traffic control safety issues where a uniformed officer may be needed include:

1. A work zone with a high rate of crashes.
2. A work zone with vehicles traveling at excessive speeds.
3. A work zone with poor highway geometrics.
4. A work zone with excessive East-West sun glare.

NOTE: Using the flashing blue lights from a police vehicle to slow traffic approaching a work zone with poor visibility (i.e. East-West sun glare) or poor sight distance due to geometric features should be considered only after other measures have been determined to be ineffective.

- C. **ENFORCEMENT:** The following guidelines are recommended to reduce the likelihood of injuries and fatalities to workers and road users by enforcing traffic laws within work zones. **Enforcement** can only be performed by uniformed officers.

Enforcement may be used during work zone operations where excessive speed and/or other aggressive driving behaviors are likely to jeopardize the safety of the workers and other road users.

Enforcement may be used on an as needed basis within a work zone where another officer is being used for **presence** to improve that officer's effectiveness.

Uniformed officers being used for **presence** should typically not be used for **enforcement** except for flagrant violations of traffic law.

If an arrest is necessary, the work-zone detail uniformed officer shall call in, and turn the arrest over to, an on-duty officer.

- D. **EMERGENCY ASSISTANCE** While on site, work-zone detail uniformed officers may offer immediate assistance in emergency situations, such as a motor vehicle accident within the limits of the work-zone. The detail officer may investigate minor property damage crashes that occur within the work-zone if the time required to complete the investigation is minimal and the detail officer is not actively engaged in directing traffic. The detail officer should limit investigation of minor property damage crashes to assurance that no injuries are involved. Crashes involving injury should be investigated by the appropriate personnel once other emergency personnel arrive at the scene, not the detail officer.

During development of the project within the Design Bureaus, these guidelines should be used as a first step in identifying initial need, to be further developed and refined through coordination with the Bureau of Construction and the Traffic Control Committee. This

will ensure consistency and conformity over all projects. These guidelines should also be used in the development of the contract documents. The Contract Administrator with the District Construction Engineer should be involved in the development of the contract plans, Prosecution of Work (POW), and Traffic Control Plan (TCP) narrative as much as possible, such that an appropriate cost for flaggers and uniformed officers is provided in the contract.

II. MUNICIPAL WORK ZONE AGREEMENT (MWZA) AND EARLY COORDINATION GUIDANCE:

Prior to the construction of a project, the municipality in which the work is being performed shall be notified of the NHDOT's intentions regarding the use of flaggers and/or uniformed officers within the work zone. A Municipal Work Zone Agreement (MWZA) is required on all projects, except for those done exclusively on Class I roads (interstate) or the NH Turnpike system; nor are they required for short-term routine maintenance operations. The MWZA specifically addresses jurisdiction related to class I, II, and III roads. If work is to be done on class IV urban compact roads or class V town roads, then a general Municipal Agreement shall be written that delegates the town's authority to the NHDOT to control traffic. Except where otherwise stated, the remainder of this section refers to the MWZA, but the same guidelines apply to a general Municipal Agreement if one is written in lieu of using the MWZA.

In order for work (final design, construction, etc.) to progress, the municipality will be required to sign a MWZA. The MWZA shall be the primary means of communicating to the municipalities the NHDOT's commitment and jurisdiction to control traffic on an upcoming construction project. The NHDOT shall present the MWZA to town or city officials for signature following the Public Hearing process. Signature of the MWZA should be obtained prior to commencement of the Final Design phase. For those projects that do not go through a formal public participation process, a MWZA shall be presented to the affected municipalities and signed as soon as practicable and appropriate. A signed copy of the MWZA is to be included in the contract documents. No project shall be advertised for bids until the MWZA has been signed. See part VII of this document for a sample MWZA.

Early on in the public participation process, the NHDOT shall ask the police, fire, and other appropriate town officials for their input regarding current or past experiences related to traffic control issues within the vicinity of the proposed project limits. Topics of discussion may include, but are not limited to the following:

1. Accident history
2. Commuter traffic patterns
3. Traffic volume increases at certain times of day (i.e. school or factory letting out)
4. Traffic volume increases at certain times of year (tourist season)
5. Special town events (fairs, Old Home Days, etc.)

Advance notice of the meeting agenda or a follow-up meeting with public officials may be necessary to allow officials to give thoughtful feedback to these questions.

Near the end of the design phase and prior to advertising, the Project Manager shall meet with municipal officials to communicate the NHDOT's proposed traffic control plan. Elements of this discussion shall address earlier concerns raised by the municipalities during the public participation process and spell out the NHDOT's intentions regarding the use of flaggers and/or uniformed officers.

On District Resurfacing contracts, the District Engineer may elect to use a standard notification letter in lieu of a MWZA if the anticipated project impacts on the municipality are negligible. The standard notification letter will include the following paragraph:

Please be aware that the State Legislature has delegated the Commissioner of the Department with the full authority to control traffic in highway/bridge construction work zones on Class I, II and III highways. Prior to commencement of the work, the Department will send notice of a preconstruction meeting. You are invited to attend this meeting as project schedule and anticipated traffic control measures are among the topics discussed.

See section VIII of this document for a sample district resurfacing letter.

If Bridge or Highway Maintenance operations are likely to require work in an area for an extended period of time (i.e. one month or more), then a notice is to be sent to the town similar to the District Resurfacing letter outlining the NHDOT's intent. Executing a MWZA with the affected municipality should also be considered if the project's anticipated impacts warrant one.

If the NHDOT is overseeing work on a class IV urban compact road or class V town road, a separate municipal agreement will need to be written for signature by the municipality and language should be included in that agreement to address the NHDOT's traffic control authority and intentions during the life of that project. An example of this added language may be:

The DEPARTMENT will be responsible for the management and operation of these facilities throughout the duration of the construction of the project. The TOWN delegates to the DEPARTMENT the authority to control traffic within the TOWN road construction zones of this project.

III. FIELD USE GUIDANCE:

If the NHDOT determines that a uniformed officer is needed within the work zone, the following guidelines should also be followed:

1. Use State Police Troopers on interstate and turnpike facilities. County Sheriffs or local police should only be used on interstate or turnpike facilities if they have jurisdictional authority and State Police Troopers are unavailable.
2. Use local police on non-interstate and non-turnpike facilities. County Sheriffs and State Police Troopers may be used if local police are unavailable.
3. If the work zone extends into multiple towns on non-interstate or non-turnpike facilities and there is no mutual aid or other agreement between the neighboring police departments granting them authority to enforce traffic laws throughout the entire work zone, then County Sheriffs or State Police* Troopers should be used. The use of multiple officers, or the payment of minimum show-up times due to the use of multiple officers with limited shift work, will not be reimbursed if few officers with sufficient jurisdiction could otherwise sufficiently conduct the work without extra cost. *(Per RSA 106-B:15, the use of State Police may be limited in any city or town greater than 3,000 in population).
4. If a police vehicle is required and the local police department is unable to provide a vehicle meeting the requirements of NHDOT specification 618.2.1, then the County Sheriffs or State Police Troopers are to be used. Private vehicles are not acceptable. Special duty vehicles, such as D.A.R.E. and animal control are also not acceptable.
5. If a uniformed officer is on site for **traffic control** or **presence** and work zone operations are unexpectedly suspended due to weather or other unforeseen reasons, then the uniformed officer may be used for **enforcement** of traffic laws within the work zone until the minimum payment time is reached.
6. If a police department chooses to split one contractor's work shift into two, only one minimum show up time per shift will be paid.
7. The Contractor shall be aware of minimum cancellation notice requirements of the police department being used for detail work. No minimum show-up time payments, that resulted from the contractor's failure to provide the minimum cancellation notice required, will be paid.
8. Flaggers and/or uniformed officers are not to use cell phones except for official business associated with the traffic control detail.
9. All traffic control personnel shall wear high-visibility safety apparel meeting the requirements of the most current MUTCD edition or Federal regulation 23 CFR 634, as appropriate.
10. STOP/SLOW paddles shall be used by all traffic control personnel, whether a uniformed officer or a flagger, when directing road users through the work zone, unless otherwise approved by the Contract Administrator.

IV: UNIFORMED OFFICER TRAINING:

Uniformed officers working on all NHDOT projects shall have successfully completed a course on *The Safe and Effective Use of Law Enforcement Personnel in Work Zones*. This course shall be taken once every four years. Proof of successful course completion shall be supplied upon request.

(Further Action is required to create and implement this training)

V: FLAGGER TRAINING:

NHDOT flaggers working on NHDOT maintenance or Operations' projects shall have been trained by an ATSSA (American Traffic Safety Services Association) certified trainer or equivalent (e.g. NHDOT Program 32: Flagging Control Program) at least once every four years and a record of course completion shall be entered on the NHDOT employee training database.

Non-NHDOT flaggers working on contract work for the NHDOT are required to meet the specifications under Section 618 of the NHDOT Standard Specifications for Road and Bridge Construction.

VI. UNIFORMED OFFICER REIMBURSEMENT AGREEMENTS/PAYMENT:

Reimbursement of uniformed officers are to be as outlined under Section 618 of the NHDOT Standard Specifications for Road and Bridge Construction.

(Further Action is required to address deficiencies of current specification)

VII. SAMPLE MUNICIPAL WORK ZONE AGREEMENT (MWZA):

See next page for sample MWZA.

MUNICIPAL WORK ZONE AGREEMENT
FOR
(CITY / TOWN)

STATE PROJECT: _____
FEDERAL PROJECT: _____

THIS AGREEMENT, executed in *triplicate*, made and entered into this _____ day of (month) (year), between the New Hampshire Department of Transportation, hereinafter called the "DEPARTMENT" and the City / Town of (City / Town), hereinafter called the "CITY / TOWN".

WITNESSETH that,

WHEREAS, the DEPARTMENT will be (description of project);

WHEREAS, The State Legislature has delegated the Commissioner of the DEPARTMENT with full authority to control traffic in highway/bridge construction work zones on Class I, II, and III highways; RSA 228:21, 236:1, and 228:37;

WHEREAS, The Department intends to use a combination of flaggers and/or uniformed officers, as appropriate, to control traffic and ensure public and worker safety.

NOW, THEREFORE, in consideration of the above premises, it is mutually agreed as follows:

- A. The DEPARTMENT shall construct project (project name, number and description).
- B. The DEPARTMENT will be responsible for the management and operation of the highway throughout the duration of the construction of the project. This includes the authority to determine the most appropriate way to control traffic within the construction work zone limits of the project.

IN WITNESS WHEREOF, the parties here have affixed their signatures, the (City / Town) of _____, New Hampshire, on this _____ day of _____, _____, and the Department of Transportation on this _____ day of _____, _____.

NEW HAMPSHIRE DEPARTMENT OF CITY / TOWN OF
TRANSPORTATION

By: _____
COMMISSIONER

By: _____
(Mayor / Chairman of the Selectmen)

City Councilor / Selectmen

City Councilor / Selectmen

City Councilor / Selectmen

cc: Police Chief

VIII. SAMPLE DISTRICT RESURFACING LETTER:

April 21, 2009

«TownName»
«Address1»
«City», «State» «PostalCode»

RE: Highway Maintenance District « # »
Proposed Resurfacing Program CY 2009

For your planning information, the New Hampshire Department of Transportation has tentatively programmed the state road(s) on the attached list in your town for paving during the coming season. I hope this information will assist you in coordinating maintenance activities such as crosswalk striping, underground utility projects, trenching, and curb or sidewalk work. This is particularly important for manholes and other structures within the paving limits as significant depressions can develop if they are not set to the proper grade. If appropriate, please advise local utilities to prepare for the proposed resurfacing since it will be their responsibility to make adjustments as required to accommodate the paving.

Please be aware that the State Legislature has delegated the Commissioner of the Department with the full authority to control traffic in highway/bridge construction work zones on Class I, II and III highways. Prior to commencement of the work, the Department will send notice of a preconstruction meeting. You are invited to attend this meeting as project schedule and anticipated traffic control measures are among the topics discussed.

Should the program be changed due to funding considerations or pavement conditions, I will contact you. Once a contract and schedule of work has been approved, the Contractor is required to provide written notice to your town between 7 and 14 work days in advance of the final paving.

In addition to this work, District maintenance forces will grader-shim various sections of the secondary highway system as part of our routine maintenance program.

Should you have any questions, please feel free to call at the number listed below.

Sincerely,

«D.E. Name», P.E.
District Engineer

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