Updated 1/19/10

STATE PROJECT

Effective January 20, 2010
Supersedes December 1, 2008

BIDDING INSTRUCTIONS

FOR ALL PROJECTS:

1. Use pen and ink to complete all paper Bids.
2. As a minimum, the following must be received prior to the time of Bid opening:

For a Paper Bid:

a) a copy of the Notice to Contractors, b) the completed Acknowledgement of Bid Amendments form, c) the completed Schedule of Items, d) two copies of the completed and signed Contract Offer, Agreement & Award form, e) a Bid Guaranty, and f) any other certifications or Bid requirements listed in the Bid Documents as due by Bid opening.

For an Electronic Bid:

a) a completed Bid using Expedite® software and submitted via the Bid Express™ webbased service, b) a Bid Guaranty (as described below) or a faxed copy of a Bid Bond (with original to be delivered within 72 hours), and c) any other certifications or Bid requirements listed in the Bid Documents as due by Bid opening.

3. Include prices for all items in the Schedule of Items.
4. Include a Bid Guaranty. Acceptable forms are:
   a) a properly completed and signed Bid Bond on the Department's prescribed form (or on a form that does not contain any significant variations from the Department's form as determined by the Department) for 5% of the Bid Amount or
   b) an Official Bank Check, Cashier's Check, Certified Check, U.S. Postal Money Order or Negotiable Certificate of Deposit in the amount stated in the Notice to Contractors.
5. If a paper Bid is to be sent, Federal Express overnight delivery is suggested as the package is delivered directly to the DOT Headquarters Building located at 16 Child Street in Augusta.
6. Other means, such as U.S. Postal Service's Express Mail has proven not to be reliable.

IN ADDITION, FOR FEDERAL AID PROJECTS:

7. Complete the DBE Proposed Utilization form in the proper amounts, and submit with your bid on bid opening day. If you are submitting your bid electronically, you must FAX your DBE Utilization Form to (207) 624-3431.

If you need further information regarding Bid preparation, call the DOT Contracts Section at (207) 624-3410.

For complete bidding requirements, refer to Section 102 of the Maine Department of Transportation, Standard Specifications, Revision of December 2002.

January 30, 2004
Supercedes February 11, 2003

NOTICE

The Maine Department of Transportation is attempting to improve the way Bid Amendments/Addendums are handled, and allow for an electronic downloading of bid packages from our website, while continuing to maintain a planholders list.

Prospective bidders, subcontractors or suppliers who wish to download a copy of the bid package and receive a courtesy notification of project specific bid amendments, must provide an email address to Diane Barnes or David Venner at the MDOT Contracts mailbox at: MDOT.contracts@maine.gov. Each bid package will require a separate request.

Additionally, interested parties will be responsible for reviewing and retrieving the Bid Amendments from our web site, and acknowledging receipt and incorporating those Bid Amendments in their bids using the Acknowledgement of Bid Amendment Form.

The downloading of bid packages from the MDOT website is not the same as providing an electronic bid to the Department. Electronic bids must be submitted via http://www.BIDX.com. For information on electronic bidding contact Larry Childs at Larry.Childs@maine.gov.

NOTICE

For security and other reasons, all Bid Packages which are mailed, shall be provided in double (one envelope inside the other) envelopes. The *Inner Envelope* shall have the following information provided on it:

Bid Enclosed - Do Not Open
PIN:
Town:
Date of Bid Opening:
Name of Contractor with mailing address and telephone number:

In Addition to the usual address information, the *Outer Envelope* should have written or typed on it:

Double Envelope: Bid Enclosed
PIN:
Town:
Date of Bid Opening:
Name of Contractor:
This should not be much of a change for those of you who use Federal Express or similar services.

Hand-carried Bids may be in one envelope as before, and should be marked with the following infrormation:

Bid Enclosed: Do Not Open
PIN:
Town:
Name of Contractor:

STATE OF MAINE DEPARTMENT OF TRANSPORTATION

Bid Guaranty-Bid Bond Form

KNOW ALL MEN BY THESE PRESENTS THAT_____

_____, of the City/Town of _____and State of_____

as Principal, and _____as Surety, a

Corporation duly organized under the laws of the State of_____and having a usual place of

Business in _____and hereby held and firmly bound unto the Treasurer of

the State of Maine in the sum of_____,for payment which Principal and Surety bind

themselves, their heirs, executers, administrators, successors and assigns, jointly and severally.

The condition of this obligation is that the Principal has submitted to the Maine Department of Transportation, hereafter Department, a certain bid, attached hereto and incorporated as a part herein, to enter into a written contract for the construction of _____

_____

_____and if the Department shall accept said bid and the Principal shall execute and deliver a contract in the form attached hereto (properly completed in accordance with said bid) and shall furnish bonds for this faithful performance of said contract, and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be null and void; otherwise it shall remain in full force, and effect.

Signed and sealed this_____day of _____20_____

WITNESS:

_____

_____

_____

WITNESS

_____

_____

_____

PRINCIPAL:

By_____

By:_____

By:_____

SURETY:

By_____

By:_____

Name of Local Agency: _____

NOTICE

Bidders:

Please use the attached “Request for Information” form when faxing questions and comments concerning specific Contracts that have been Advertised for Bid. Include additional numbered pages as required. Questions are to be faxed to the number listed in the Notice to Contractors. This is the only allowable mechanism for answering Project specific questions. Maine DOT will not be bound to any answers to Project specific questions received during the Bidding phase through other processes.

State of Maine
Department of Transportation

REQUEST FOR INFORMATION

Date _____ Time _____

Information Requested: **PIN: _____** **Town(s): _____**

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Request by: _____ **Phone: (_____)_____**
Bid Date: _____ **Fax: (_____)_____**

Complete top portion of form and transmit to the number listed in the Notice to Contractors

RFI No: _____ **RFI received: _____**

Response:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Response By:_____ Date: _____

September 14, 2007

Vendor Registration

Prospective Bidders must register as a vendor with the Department of Administrative & Financial Services if the vendor is awarded a contract. Vendors will not be able to receive payment without first being registered. Vendors/Contractors will find information and register through the following link –
http://www.maine.gov/purchases/vendorinfo/vss.htm .

STATE OF MAINE DEPARTMENT OF TRANSPORTATION
NOTICE TO CONTRACTORS

Sealed Bids addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper "Bids for Knickerbocker Bridge Replacement in the town of **BOOTHBAY**" will be received from contractors at the Reception Desk, Maine DOT Building, Child Street, Augusta, Maine, until 11:00 o'clock A.M. (prevailing time) on February 17, 2010 and at that time and place publicly opened and read. The lowest responsive bidder must have completed, or successfully complete, a bridge, or project specific prequalification to be considered for the award of this contract. **We now accept electronic bids for those bid packages posted on the bidx.com website. Electronic bids do not have to be accompanied by paper bids. Please note: the Department will accept a facsimile of the bid bond; however, the original bid bond must then be received at the MDOT Contract Section within 72 hours of the bid opening. Until further notice, dual bids (one paper, one electronic) will be accepted, with the paper copy taking precedence.**

Description: State Project No. 012630.00

Location: In Lincoln County, Knickerbocker bridge is located on Barters Island road over Back River approximately 1.7 miles east of the town line.

Scope of Work: Knickerbocker Bridge replacement and other incidental work.

For general information regarding Bidding and Contracting procedures, contact Scott Bickford at (207)624-3410. Our webpage at http://www.maine.gov/mdot/contractor-consultant-information/contractor_cons.php contains a copy of the schedule of items, Plan Holders List, written portions of bid amendments (not drawings), and bid results. For Project-specific information fax all questions to **Project Manager Nate Benoit** at (207)624-3431. Questions received after 12:00 noon of **Friday** prior to bid date will not be answered. Bidders shall not contact any other Departmental staff for clarification of Contract provisions, and the Department will not be responsible for any interpretations so obtained. Hearing impaired persons may call the Telecommunication Device for the Deaf at 888-516-9364.

Plans, specifications and bid forms may be seen at the Maine DOT Building in Augusta, Maine. They may be purchased from the Department between the hours of 8:00 a.m. to 4:30 p.m. by cash, credit card (Visa/Mastercard) or check payable to Treasurer, State of Maine sent to Maine Department of Transportation, Attn.: Mailroom, 16 State House Station, Augusta, Maine 04333-0016. They also may be purchased by telephone at (207) 624-3536 between the hours of 8:00 a.m. to 4:30 p.m. Full size plans $51.00 ($56.50 by mail). Half size plans $25.50 ($28.75 by mail), Bid Book $10 ($13 by mail), Single Sheets $2, payment in advance, all non-refundable.

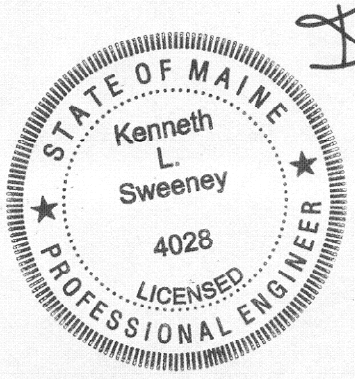
Each Bid must be made upon blank forms provided by the Department and must be accompanied by a bid bond at 5% of the bid amount or an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order in the amount of $115,000.00 payable to Treasurer, State of Maine as a Bid guarantee. A Contract Performance Surety Bond and a Contract Payment Surety Bond, each in the amount of 100 percent of the Contract price, will be required of the successful Bidder.

This Contract is subject to all applicable Federal Laws.

All work shall be governed by "State of Maine, Department of Transportation, Standard Specifications, Revision of December 2002", price $10 [$13 by mail], and Standard Details, Revision of December 2002, price $20 [$25 by mail]. Standard Detail updates can be found at http://www.maine.gov/mdot/contractor-consultant-information/contractor_cons.php

The right is hereby reserved to the MDOT to reject any or all bids.

Augusta, Maine
January 27, 2010



KENNETH L. SWEENEY P.E.
CHIEF ENGINEER

SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS

With this form, the Bidder acknowledges its responsibility to check for all Amendments to the Bid Package. For each Project under Advertisement, Amendments are located at http://www.maine.gov/mdot/comprehensive-list-projects/project-information.php It is the responsibility of the Bidder to determine if there are Amendments to the Project, to download them, to incorporate them into their Bid Package, and to reference the Amendment number and the date on the form below. The Maine DOT will not post Bid Amendments any later than noon the day before Bid opening without individually notifying all the planholders.

Amendment Number	Date

The Contractor, for itself, its successors and assigns, hereby acknowledges that it has received all of the above referenced Amendments to the Bid Package.

CONTRACTOR

Date

Signature of authorized representative

(Name and Title Printed)

March 14, 2007
Supersedes March 3, 1966

Non-federal Projects Only

NOTICE TO CONTRACTORS - PREFERRED EMPLOYEES

Sec. 1303. Public Works; minimum wage

In the employment of laborers in the construction of public works, including state highways, by the State or by persons contracting for the construction, preference must first be given to citizens of the State who are qualified to perform the work to which the employment relates and, if they can not be obtained in sufficient numbers, then to citizens of the United States. Every contract for public works construction must contain a provision for employing citizens of this State or the United States. The hourly wage and benefit rate paid to laborers employed in the construction of public works, including state highways, may not be less than the fair minimum rate as determined in accordance with section 1308. Any contractor who knowingly and willfully violates this section is subject to a fine of not less than $250 per employee violation. Each day that any contractor employs a laborer at less than the wage and benefit minimum stipulated in this section constitutes a separate violation of this section. [1997, c. 757, §1 (amd).]

CONTRACT ID: 012630.00 PROJECT(S): 012630.00

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 PROJECT ITEMS					
0010	202.19 REMOVING EXISTING BRIDGE	LUMP	LUMP			
0020	203.20 COMMON EXCAVATION	3000.000 CY				
0030	203.21 ROCK EXCAVATION	90.000 CY				
0040	203.2318 DISPOSAL OF SPECIAL WASTE	2.000 T				
0050	203.24 COMMON BORROW	1400.000 CY				
0060	203.25 GRANULAR BORROW	210.000 CY				
0070	206.082 STRUCTURAL EARTH EXCAVATION - MAJOR STRUCTURES	50.000 CY				
0080	206.092 STRUCTURAL ROCK EXCAVATION - MAJOR STRUCTURES	90.000 CY				
0090	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	3810.000 CY				
0100	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS)	20.000 T				

CONTRACT ID: 012630.00 PROJECT(S): 012630.00

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0110	403.210 HOT MIX ASPHALT 9.5 MM	1500.000 T				
0120	409.15 BITUMINOUS TACK COAT - APPLIED	270.000 G				
0130	501.231 DYNAMIC LOADING TEST	7.000 EA				
0140	501.70 STEEL PIPE PILES, DELIVERED 24" DIAMETER	1500.000 LF				
0150	501.70 STEEL PIPE PILES, DELIVERED 26" DIAMETER	1000.000 LF				
0160	501.701 STEEL PIPE PILES, IN PLACE 24" DIAMETER	1500.000 LF				
0170	501.701 STEEL PIPE PILES, IN PLACE 26" DIAMETER	1000.000 LF				
0180	501.803 EXPLORATORY DRILLING	270.000 LF				
0190	501.90 PILE TIPS	40.000 EA				
0200	501.91 PILE SPLICES	40.000 EA				
0210	501.92 PILE DRIVING EQUIPMENT MOBILIZATION	LUMP	LUMP			

CONTRACT ID: 012630.00 PROJECT(S): 012630.00

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0220	502.21 STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS	130.000 CY				
0230	502.22 STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS (PLACED U NDER WATER)	120.000 CY				
0240	502.239 STRUCTURAL CONCRETE PIERS	LUMP	LUMP			
0250	502.25 STRUCTURAL CONCRETE SUPERSTRUCTURE SLABS	LUMP	LUMP			
0260	502.31 STRUCTURAL CONCRETE APPROACH SLABS	LUMP	LUMP			
0270	502.49 STRUCTURAL CONCRETE CURBS AND SIDEWALK	LUMP	LUMP			
0280	502.56 CONCRETE FILL	50.000 CY				
0290	503.14 EPOXY COATED REINFORCING STEEL, FABRICATED AND DELIVERED	34400.000 LB				
0300	503.15 EPOXY COATED REINFORCING STEEL PLACING	34400.000 LB				
0310	504.905 ROCK ANCHORS	LUMP	LUMP			

CONTRACT ID: 012630.00 PROJECT(S): 012630.00

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0320	506.9106 FUSION BONDED EPOXY COATING	LUMP	LUMP			
0330	507.0831 STEEL BRIDGE RAILING, 4 BAR	LUMP	LUMP			
0340	508.13 MEMBRANE WATERPROOFING	LUMP	LUMP			
0350	509.72 COMPOSITE BEAM - INSTALLATION ONLY	LUMP	LUMP			
0360	511.07 COFFERDAM: ABUTMENT NO.2	LUMP	LUMP			
0370	512.081 FRENCH DRAINS	LUMP	LUMP			
0380	514.06 CURING BOX FOR CONCRETE CYLINDERS	1.000 EA				
0390	515.21 PROTECTIVE COATING FOR CONCRETE SURFACES	LUMP	LUMP			
0400	520.21 EXPANSION DEVICE - GLAND SEAL	1.000 EA				
0410	520.22 EXPANSION DEVICE - COMPRESSION SEAL	1.000 EA				
0420	523.52 BEARING INSTALLATION	128.000 EA				

CONTRACT ID: 012630.00 PROJECT(S): 012630.00

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0430	523.5402 LAMINATED ELASTOMERIC BEARINGS, EXPANSION	128.000 EA				
0440	526.301 TEMPORARY CONCRETE BARRIER TYPE I	LUMP	LUMP			
0450	526.34 PERMANENT CONCRETE TRANSITION BARRIER	4.000 EA				
0460	606.1721 BRIDGE TRANSITION - TYPE 1	4.000 EA				
0470	606.23 GUARDRAIL TYPE 3C - SINGLE RAIL	725.000 LF				
0480	606.231 GUARDRAIL TYPE 3C - 15 FOOT RADIUS AND LESS	25.000 LF				
0490	606.265 TERMINAL END - SINGLE RAIL - GALVANIZED STEEL	1.000 EA				
0500	606.353 REFLECTORIZED FLEXIBLE GUARDRAIL MARKER	16.000 EA				
0510	606.79 GUARDRAIL 350 FLARED TERMINAL	7.000 EA				
0520	609.31 CURB TYPE 3	670.000 LF				
0530	609.34 CURB TYPE 5	185.000 LF				

CONTRACT ID: 012630.00 PROJECT(S): 012630.00

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0540	609.35 CURB TYPE 5 - CIRCULAR	50.000 LF				
0550	610.08 PLAIN RIPRAP	220.000 CY				
0560	610.16 HEAVY RIPRAP	840.000 CY				
0570	613.319 EROSION CONTROL BLANKET	500.000 SY				
0580	615.07 LOAM	140.000 CY				
0590	618.1401 SEEDING METHOD NUMBER 2 - PLAN QUANTITY	22.000 UN				
0600	619.1201 MULCH - PLAN QUANTITY	22.000 UN				
0610	619.1401 EROSION CONTROL MIX	270.000 CY				
0620	627.733 4" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	4800.000 LF				
0630	629.05 HAND LABOR, STRAIGHT TIME	40.000 HR				
0640	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	20.000 HR				

CONTRACT ID: 012630.00 PROJECT(S): 012630.00

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0650	631.15 ROLLER, EARTH AND BASE COURSE (INCLUDING OPERATOR)	20.000 HR				
0660	631.171 TRUCK - SMALL (INCLUDING OPERATOR)	20.000 HR				
0670	635.31 PREFAB CONCRETE BLOCK GRAVITY WALL	2400.000 SF				
0680	635.40 PRECAST AGGREGATE FILLED CONCRETE BLOCK GRAVITY WALL	2400.000 SF				
0690	639.18 FIELD OFFICE TYPE A	1.000 EA				
0700	652.35 CONSTRUCTION SIGNS	300.000 SF				
0710	652.39 WORK ZONE TRAFFIC CONTROL	LUMP	LUMP			
0720	655.50 CATHODIC PROTECTION SYSTEM	LUMP	LUMP			
0730	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP	LUMP			
0740	659.10 MOBILIZATION	LUMP	LUMP			
0750	853.16 BOAT RAMP PLANKS	30.000 EA				

CONTRACT ID: 012630.00 PROJECT(S): 012630.00

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0760	890.01 SPECIAL WORK #1 UTILITY CONDUIT	LUMP	LUMP			
	SECTION 0001 TOTAL					
	TOTAL BID					

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

_____

a corporation or other legal entity organized under the laws of the State of _____, with its principal place of business located at _____

_____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN **012630.00** for the **Knickerbocker Bridge Replacement** in the town of **Boothbay**, County of **Lincoln**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **June 15, 2012.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the State of Maine Department of Transportation Standard Specifications, Revision of December 2002 and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is _____

_____

$_____ Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Contract are still complete and accurate as of the date of this Agreement.

2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.

3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of: **PIN 012630.00 Knickerbocker Bridge Replacement**, State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items".

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items", which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the Standard Specifications Revision of December 2002 and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Fifth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

_____	_____
Date	(Signature of Legally Authorized Representative of the Contractor)
_____	_____
Witness	(Name and Title Printed)

G. Award.

Your offer is hereby accepted. This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

_____	_____
Date	By: David A. Cole, Commissioner
_____	
Witness	

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

_____

a corporation or other legal entity organized under the laws of the State of _____, with its principal place of business located at _____

_____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN **012630.00** for the **Knickerbocker Bridge Replacement** in the town of **Boothbay**, County of **Lincoln**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **June 15, 2012.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the State of Maine Department of Transportation Standard Specifications, Revision of December 2002 and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is _____

_____

$_____ Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Contract are still complete and accurate as of the date of this Agreement.

2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.

3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications Revision of December 2002, Standard Details Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of: **PIN 012630.00 Knickerbocker Bridge Replacement**, State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items".

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items", which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the Standard Specifications Revision of December 2002 and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Fifth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

_____	_____
Date	(Signature of Legally Authorized Representative of the Contractor)
_____	_____
Witness	(Name and Title Printed)

G. Award.

Your offer is hereby accepted. This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

_____	_____
Date	By: David A. Cole, Commissioner
_____	
Witness	

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and **(Name of the firm bidding the job)** a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at **(address of the firm bidding the job)**

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN No.**1224.00**, for the **Hot Mix Asphalt Overlay** in the town/city of **South Nowhere,** County of **Washington**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **November 15, 2006.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the State of Maine Department of Transportation Standard Specifications, Revision of December 2002 and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is **____(Place bid here in alphabetical form such as One Hundred and Two dollars and 10 cents)_____ $_ (repeat bid here in numerical terms, such as $102.10)_____** Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in Appendix A to Division 100 of the Standard Specifications Revision of December 2002 (Federal Contract Provisions Supplement), and the Contract are still complete and accurate as of the date of this Agreement.

2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.

3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

PIN 1234.00 South Nowhere, Hot Mix Asphalt Overlay ,

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items".

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items", which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the Standard Specifications Revision of 2002 and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan with their bid.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

_____	**(Sign Here)**
Date	(Signature of Legally Authorized Representative of the Contractor)
____(**Witness Sign Here)**	**(Print Name Here)**
Witness	(Name and Title Printed)

G. Award.

Your offer is hereby accepted. This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

Date	By: David A. Cole, Commissioner
(Witness)	

BOND # _____

CONTRACT PERFORMANCE BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____ _____ **in the State of** _____, as principal, and……....., a corporation duly organized under the laws of the State of ..... and having a usual place of business ...., as Surety, are held and firmly bound unto the Treasurer of the State of Maine in the sum of _____ **and 00/100 Dollars ($),** to be paid said Treasurer of the State of Maine or his successors in office, for which payment well and truly to be made, Principal and Surety bind themselves, their heirs, executors and administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in the Contract to construct Project Number _____ in the Municipality of _____ promptly and faithfully performs the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the State of Maine.

Signed and sealed this ..... day of ....., 20….. .

WITNESSES:	SIGNATURES:
	CONTRACTOR:
Signature.....	.....….....
Print Name Legibly	Print Name Legibly ...……....
	SURETY:
Signature	....……....
Print Name Legibly	Print Name Legibly .....
SURETY ADDRESS:	NAME OF LOCAL AGENCY:
.....	ADDRESS .....
.....	...……....
.....	.....……....
TELEPHONE.....	.....……....

BOND # _____

CONTRACT PAYMENT BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____ _____ **in the State of** _____, as principal, and.....…..... a corporation duly organized under the laws of the State of ..... and having a usual place of business in .....……., as Surety, are held and firmly bound unto the Treasurer of the State of Maine for the use and benefit of claimants as herein below defined, in the sum of _____ **and 00/100 Dollars ($)** for the payment whereof Principal and Surety bind themselves, their heirs, executors and administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in the Contract to construct Project Number _____ in the Municipality of _____ promptly satisfies all claims and demands incurred for all labor and material, used or required by him in connection with the work contemplated by said Contract, and fully reimburses the obligee for all outlay and expense which the obligee may incur in making good any default of said Principal, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material or both, used or reasonably required for use in the performance of the contract.

Signed and sealed this ..... day of ...…….....…., 20 ... .

WITNESS:	SIGNATURES:
	CONTRACTOR:
Signature…….....	.....….....
Print Name Legibly .....……..	Print Name Legibly ….....….....
	SURETY:
Signature.....	...….....….....
Print Name Legibly	Print Name Legibly ….....….....
SURETY ADDRESS:	NAME OF LOCAL AGENCY:
...….....….....	ADDRESS ….....….....
.....	…….....….....
TELEPHONE	…….....….....

SPECIAL PROVISION
SECTION 102.3
EXAMINATION OF DOCUMENTS, SITE, AND OTHER INFORMATION
(Geotechnical Information)

Add the following to Section 102.3, Examination of Documents, Site and Other Information:

102.3.1 Geotechnical Information In most cases, Geotechnical Information pertaining to the project has been collected and assembled. Bidders and Contractors are obligated to examine and, if necessary, obtain geotechnical information. If one is available, the project geotechnical report may be accessed at the following web address:

http://www.maine.gov/mdot/comprehensive-list-projects/project-information.php.

The Department shall not be responsible for the Bidders' and Contractors' interpretations of or estimates or conclusions drawn from the Geotechnical Information. Data provided may not be representative of the subsurface conditions between the boring locations.

This section does not diminish the duties imposed upon parties in Section 102 or in any other sections.

Town: Boothbay
Project: 12630.00
PIN: 12630.00
Date: November 10, 2009
(2nd revision)

SPECIAL PROVISIONS
SECTION 104
Utilities

MEETING

A Preconstruction Utility Conference, as defined in Subsection 104.4.6 of the Standard Specifications is thereby called for.

GENERAL INFORMATION

These Special Provisions outline the arrangements that have been made by the Department for coordination of the work and for utility and/or railroad adjustments as defined in Subsection 104.4.6 and 104.4.8 of the Standard Specifications. The following list identifies all known utilities or railroads having facilities presently located within the limits of this project or intending to install facilities during project construction, unless otherwise provided.

Overview

Utility/Railroad	Aerial	Underground	Railroad
Central Maine Power Company	X	None	None
Fairpoint	X	None	None
Time Warner Cable	X	None	None
Boothbay Water District	X	X	None

Temporary utility adjustments are not contemplated unless herein provided for.

The approximate locations of major items of existing and proposed (permanent and temporary) utility plant are shown on the highway construction plans.

All utility crossings over highways will provide not less than 20 feet vertical clearance over existing ground in cut or over finished grade in fill, during construction of this project.

Manholes, valve boxes, service connections, and similar incidental utility plant are to be adjusted in cooperation with work being done by the Contractor**.**

Unless otherwise provided, utilities will not be required to make underground installations in frozen ground.

Any times and dates mentioned are estimates only and are dependent upon favorable weather, working conditions, and freedom from emergencies. The Contractors shall have no claim against the Department if they are exceeded.

Utility working days are Monday through Friday, conditions permitting. Times are estimated on the basis of a single crew for each utility.

In all cases, the utilities shall be advised well in advance (generally three weeks) before work, dependent upon other work to be done by the Contractor, in any particular area, is to be commenced by them.

Unless otherwise specified, any underground utility facilities shown on the project plans represent approximate locations gathered from available information. The Department cannot certify the level of accuracy of this data. Underground facilities indicated on the topographic sheets (plan views) have been collected from historical records and/or on-site designations provided by the respective utility companies. Underground facilities indicated on the cross-sections have been carried over from the plan view data and may also include further approximations of the elevations (depths) based upon straight-line interpolation from the nearest manholes, gate valves, or test pits.

All clearing and tree removal which is a part of this contract in areas where utilities are involved must be completed by the Contractor before the utilities can relocate their facilities. The Contractor shall be prepared to clear trees up to the Right of Way line in the vicinity of proposed new poles and utility lines. No clearing shall begin until after the preconstruction utility meeting. Also see General Construction Note #6 in regards to clearing.

AERIAL

Temporary Pole Line

Central Maine Power Company plans to install three new temporary poles (two on the West Approach and one on the East Approach), run new conductors on the temporary poles, including the two H piles (pipe or H piles are to be installed by the Contractor). Their estimated time is five working days.

The Contractor is to install the two temporary pipes or H piles prior to Central Maine Power Company running their new conductor. This work is to be incidental to Item #702.19 removal of existing bridge. These two temporary pipe or H piles shall remain the property of the contractor. This shall be discussed in greater detail at the pre-construction utility meeting.

Time Warner Cable and **Fairpoint Communications** have very little temporary work to do at this time. They plan to remain on the existing poles, but may if need be, adjust their existing cable up or down the existing poles. Their estimated time for **Time Warner Cable** is five working days; and **Fairpoint Communications** is five working days. This shall be discussed in greater detail at the pre-construction utility meeting.

Temporary Pole and Pipe Locations

Station	Offset	Remark
7+10	39 Feet Left	
8+63	48 Feet Left	
11+13	48 Feet Left	Pile
13+63	48 Feet Left	Pile
15+70	48 Feet Left	

Permanent Pole Lines

Central Maine Power Company plans to set four new poles, run new conductors on the new poles; their estimated time is ten working days.

Time Warner Cable plans to run new cable on the new poles; their estimated time is five working days.

Fairpoint Communications plan to run new cable on the new poles; their estimated time is twenty working days.

Permanent Pole Locations

Station	Offset	Remark
4+69	20 Feet Right	
6+50	25 Feet Right	
8+05	17 Feet Right	
15+82	25 Feet Right	
16+50	20 Feet Right	

UNDERGROUND

Central Maine Power Company plan to run the new conductors in the new six inch conduit from Station 8+05 to Station 16+50. At these stations they shall transition from underground to aerial; their estimated time is included in their aerial estimate of working days.

Time Warner Cable and **Fairpoint Communications** plan to run their new cables in the new six inch conduit from the new riser poles at Station 8+05 to Station 16+50. At these stations they shall transition from underground to aerial; their estimated time is included in their aerial estimate of working days.

Boothbay Region Water District's existing seasonal four inch water main on the existing bridge, has to remain active until the new seasonal four inch water main has been installed and has become operational. The new seasonal water main cannot be installed until the tubular steel hanger support and the concrete deck has been installed from abutment to abutment. Their estimated time is twenty working days. The time frame for when the new water main can be installed and the old water main deactivated, is to be discussed in greater detail at the pre-construction utility meeting. The Boothbay Region Water District must relocate the seasonal water main within the right-of-way of the bridge approaches to accommodate the new water main location on the new bridge. The relocation work will require excavation in the right-of-way, and all relocation work shall be the responsibility of the Boothbay Region Water District. Scheduling of the relocation work must be coordinated between the Contractor and Boothbay Region Water District.

CONTRACTOR

1. The Contractor shall be responsible for the installation of the six inch conduit from the riser poles at Station 8+05 Right to Station 16+50 Right. This six inch conduit shall be PVC schedule 80.
2. Central Maine Power Company shall provide to the Contractor two 4'x4'x6' concrete vaults; one to be installed at Station 8+45 and the other at Station 16+35, both on the Right, as shown on the plans. These two vaults bedded on one foot thick bedding of pea stone.

3. The Contractor shall encase the conduit system in concrete with a strength not to exceed 2000 PSI sand mix.

4. At the riser poles the elbows shall be made of six inch galvanized rigid steel with a 90 degree bend or sweep, and a radius of 3' to 5'. These shall be installed at both riser poles for **Time Warner Cable** and **Fairpoint Communications**. **Central Maine Power** may not need this. This shall be discussed in greater detail at the pre-construction utility meeting.
5. The support steel for the six inch PVC conduit and the water main shall be the tubular steel that is space as size as shown on the plans.
6. Where the new utility facilities pass through the bridge abutment, these requirements are as shown on the bridge plans.
7. The Contractor shall provide shop drawings for the tubular steel hanger supports to the Boothbay Region Water District to verify details, prior to fabrication, associated with the holes for the water main hangers supplied and installed by the District.
8. The Water District shall supply to the Contractor the galvanized sleeves to be installed in the abutments. This shall be discussed in greater detail at the pre-construction utility meeting.

UTILITY SPECIFIC ISSUES

Any tree removal or tree trimming required within ten feet of the electrical conductors must be done by a qualified contractor. A list if tree removal contractors qualified to remove trees or limbs within ten feet of the electrical conductors may be obtained from the power company.

DIG SAFE

The Contractor shall be responsible for determining the presence of underground utility facilities prior to commencing any excavating work and shall notify utilities of proposed excavation in accordance with M.R.S.A. Title 23 §3360-A, Maine "Dig Safe" System.

SAFE PRACTICES AROUND UTILITY FACILITIES

The Contractor shall be responsible for complying with M.R.S.A. Title 35-A, Chapter 7-A - Sections 751 - 761 Overhead High-Voltage Line Safety Act. Prior to commencing any work that may come within ten (10) feet of any aerial electrical line, the Contractor shall notify the aerial utilities as per Section 757 of the above act.

BLASTING

In addition to any other notice which may be required, the Contractor shall notify an authorized representative of each utility having plant close to the site not later than 3:00 P.M. on the working day (Monday through Friday) before he intends to blast. Notice shall state the approximate time of the blast.

THE CONTRACTOR SHALL PLAN AND CONDUCT HIS WORK ACCORDINGLY.

jq
CC: Nate Benoit, Project Manager

Town: Boothbay
PIN #: 12630.00
Date: 1/25/09

SPECIAL PROVISION
SECTION 105
General Scope of Work
(Environmental Requirements)

In-Water work consists of any activity conducted below the normal high water mark of a river, steam, brook, lake, pond or "Coastal Wetland" areas that are subject to tidal action during the highest tide level for the year which an activity is proposed as identified in the tide tables published by the National Ocean Service. http://www.oceanservice.noaa.gov/ For the full definition of "Coastal Wetlands", please refer to 38 MRSA 480-B(2)

I. In-Water Work shall not be allowed between the dates of 4/10 and 11/7.
(In-Water work is allowed from 11/8 to 4/9.)
***Driving and removing of piles can occur any time of the year.**
***Can work below the mean water line under dry conditions any time.**

II. In-Water work window applies to the following water bodies at the following station #'s:
1. Back River

III. Special Conditions:
1. All exposed soils resulting from the construction will be promptly seeded and mulched in order to achieve vegetative stabilization.
2. Must review and adhere to the letter dated Dec. 22, 2009 from the United States Department of Commerce (National Oceanic and Atmospheric Administration) to Gary Kassof of the United State Coast Guard, which is attached to this document.

IV. Approvals:
1. Temporary Soil Erosion and Water Pollution Control Plan

V. All activities are prohibited (including placement and removal of cofferdams unless otherwise permitted by Regulatory Agencies) below the normal high water mark if outside the prescribed in-water work window, except for the following:

1. Work within a cofferdam constructed according to MaineDOT's Standard Specifications and in adherence with the contractors approved "Soil Erosion and Water Pollution Control Plan".

VI. No work is allowed that completely blocks a river, stream, or brook without providing downstream flow.

SPECIAL PROVISION
SECTION 105
LEGAL RELATIONS WITH AND RESPONSIBILITY TO PUBLIC
(NPDES)

105.8.2 Permit Requirements This Section is revised by the addition of the following paragraph:

"The Contractor is advised that the Environmental Protection Agency has issued a final National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges from construction sites disturbing more than 2 ha [5 acres]. This permit requires:

- Storm Water Pollution Prevention Plan
- Submission of a Notification of Intent (NOI) at least 48 hours before construction commences
- Submission of a Notification of Termination (NOT) when a site has been finally stabilized and all storm water discharges from construction activities are eliminated.

If the project's land disturbances is 2 ha [5 acres] or more, the Department will prepare the plan and submit the NOI (and NOT). The Contractor shall prepare plans and submit NOI's (and NOT's) for regulated construction activities beyond the project limits (e.g., borrow pits).

The Contractor shall be familiar with and comply with these regulations."

SPECIAL PROVISION 105
CONSTRUCTION AREA

A Construction Area located in the **Town of Boothbay** has been established by the Maine Department of Transportation (MDOT) in accordance with provisions of 29-A § 2382 Maine Revised Statutes Annotated (MRSA).

(a) The section of highway under construction in the town of Boothbay, Lincoln County, on Barter Island road. Bridge No. 2438 is located approximately 1.7 miles east of the town line.

(b) (Barter Island Road) over the Back River, beginning at station 4+00.00 and ending at station 20+00.00 plus approaches.

Per 29-A § 2382 (7) MRSA, the MDOT may "*issue permits for stated periods of time for loads and equipment employed on public way construction projects, United States Government projects or construction of private ways, when within construction areas established by the Department of Transportation. The permit:*

A. Must be procured from the municipal officers for a construction area within that municipality;

B. May require the contractor to be responsible for damage to ways used in the construction areas and may provide for:

(1) Withholding by the agency contracting the work of final payment under contract; or

(2) The furnishing of a bond by the contractor to guarantee suitable repair or payment of damages.

The suitability of repairs or the amount of damage is to be determined by the Department of Transportation on state-maintained ways and bridges, otherwise by the municipal officers;

C. May be granted by the Department of Transportation or by the state engineer in charge of the construction contract; and

D. For construction areas, carries no fee and does not come within the scope of this section."

The Municipal Officers for the **Town of Boothbay** agreed that an Overlimit Permit will be issued to the Contractor for the purpose of using loads and equipment on municipal ways in excess of the limits as specified in 29-A MRSA, on the municipal ways as described in the "Construction Area".

As noted above, a bond may be required by the municipality, the exact amount of said bond to be determined prior to use of any municipal way. The MDOT will assist in determining the bond amount if requested by the municipality.

The maximum speed limits for trucks on any town way will be 25 mph (40 km per hour) unless a higher legal limit is specifically agreed upon in writing by the Municipal Officers concerned.

SPECIAL PROVISION 105
OVERLIMIT PERMITS

Title 29-A § 2382 MRSA Overlimit Movement Permits.

1. Overlimit movement permits issued by State. The Secretary of State, acting under guidelines and advice of the Commissioner of Transportation, may grant permits to move nondivisible objects having a length, width, height or weight greater than specified in this Title over a way or bridge maintained by the Department of Transportation

2. Permit fee. The Secretary of State, with the advice of the Commissioner of Transportation, may set the fee for single trip permits, at not less than $6, nor more than $30, based on weight, height, length and width. The Secretary of State may, by rule, implement fees that have been set by the Commissioner of Transportation for multiple trip, long-term overweight movement permits. Rules established pursuant to this section are routine technical rules pursuant to Title 5, chapter 375, subchapter II-A.

3. County and municipal permits. A county commissioner or municipal officer may grant a permit, for a reasonable fee, for travel over a way or bridge maintained by that county or municipality

4. Permits for weight. A vehicle granted a permit for excess weight must first be registered for the maximum gross vehicle weight allowed for that vehicle.

5. Special mobile equipment. The Secretary of State may grant a permit, for no more than one year, to move pneumatic-tire equipment under its own power, including Class A and Class B special mobile equipment, over ways and bridges maintained by the Department of Transportation. The fee for that permit is $15 for each 30-day period.

6. Scope of permit. A permit is limited to the particular vehicle or object to be moved, the trailer or semitrailer hauling the overlimit object and particular ways and bridges.

7. Construction permits. A permit for a stated period of time may be issued for loads and equipment employed on public way construction projects, United States Government projects or construction of private ways, when within construction areas established by the Department of Transportation. The permit:

A. Must be procured from the municipal officers for a construction area within that municipality;

B. May require the contractor to be responsible for damage to ways used in the construction areas and may provide for:

(1) Withholding by the agency contracting the work of final payment under contract; or

(2) The furnishing of a bond by the contractor to guarantee suitable repair or payment of damages.

The suitability of repairs or the amount of damage is to be determined by the Department of Transportation on state-maintained ways and bridges, otherwise by the municipal officers;

C. May be granted by the Department of Transportation or by the state engineer in charge of the construction contract; and

D. For construction areas, carries no fee and does not come within the scope of this section.

8. Gross vehicle weight permits. The following may grant permits to operate a vehicle having a gross vehicle weight exceeding the prescribed limit:

A. The Secretary of State, with the consent of the Department of Transportation, for state and state aid highways and bridges within city or compact village limits;

B. Municipal officers, for all other ways and bridges within that city and compact village limits; and

C. The county commissioners, for county roads and bridges located in unorganized territory.

9. Pilot vehicles. The following restrictions apply to pilot vehicles.

A. Pilot vehicles required by a permit must be equipped with warning lights and signs as required by the Secretary of State with the advice of the Department of Transportation.

B. Warning lights may be operated and lettering on the signs may be visible on a pilot vehicle only while it is escorting a vehicle with a permit on a public way.

With the advice of the Commissioner of Transportation and the Chief of the State Police, the Secretary of State shall establish rules for the operation of pilot vehicles.

9-A. Police escort. A person may not operate a single vehicle or a combination of vehicles of 125 feet or more in length or 16 feet or more in width on a public way unless the vehicle or combination of vehicles is accompanied by a police escort. The Secretary of State, with the advice of the Commissioner of Transportation, may require a police escort for vehicles of lesser dimensions.

A. The Bureau of State Police shall establish a fee for state police escorts to defray the costs of providing a police escort. A county sheriff or municipal police department may establish a fee to defray the costs of providing police escorts.

B. The Bureau of State Police shall provide a police escort if a request is made by a permittee. A county sheriff or municipal police department may refuse a permittee's request for a police escort.

C. A vehicle or combination of vehicles for which a police escort is required must be accompanied by a state police escort when operating on the interstate highway system.

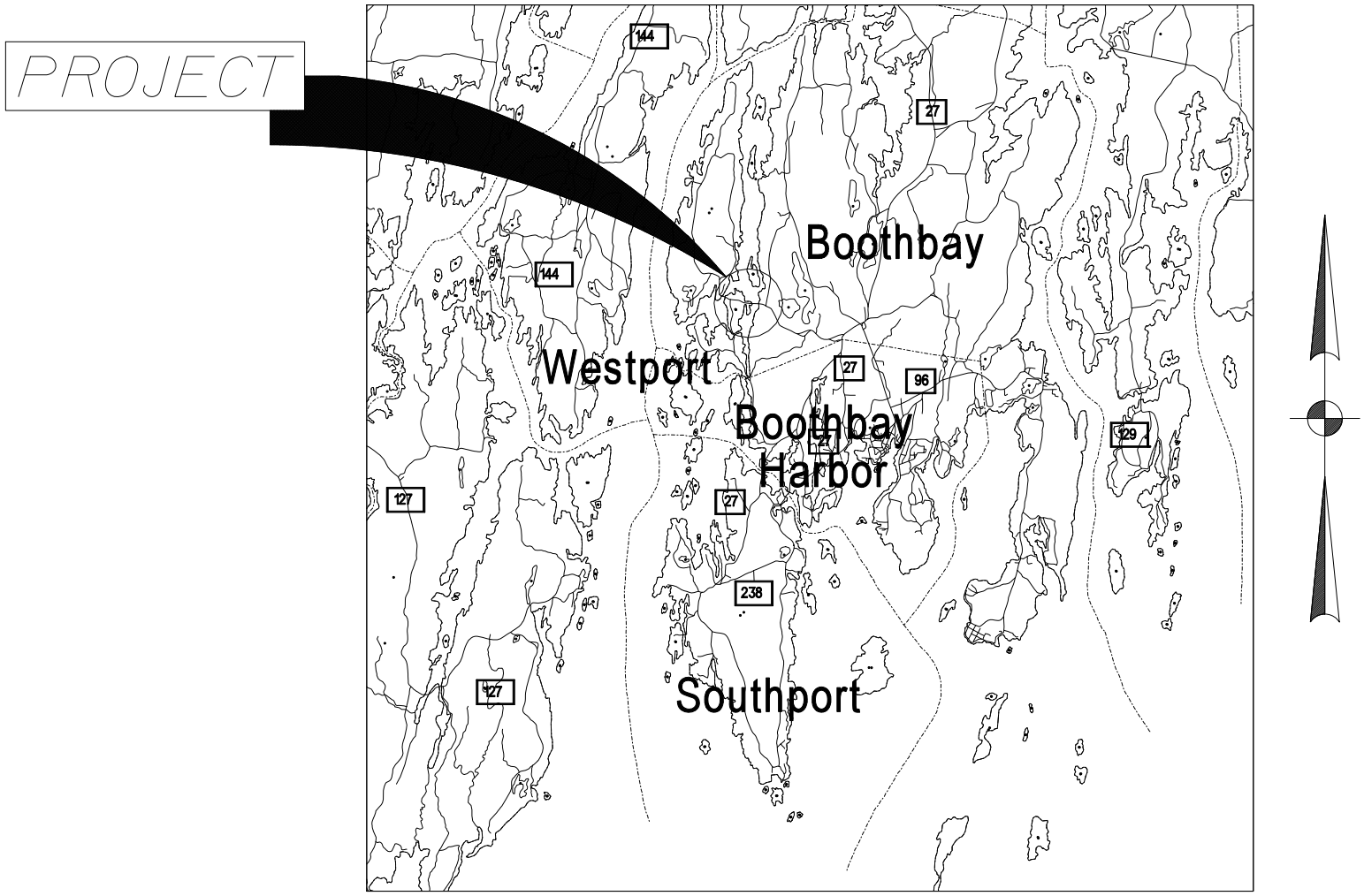
10. Taxes paid. A permit for a mobile home may not be granted unless the applicant provides reasonable assurance that all property taxes, sewage disposal charges and drain and sewer assessments applicable to the mobile home, including those for the current tax year, have been paid or that the mobile home is exempt from those taxes. A municipality may waive the requirement that those taxes be paid before the issuance of a permit if the mobile home is to be moved from one location in the municipality to another location in the same municipality for purposes not related to the sale of the mobile home.

11. Violation. A person who moves an object over the public way in violation of this section commits a traffic infraction.

Section History:
PL 1993, Ch. 683, §A2 (NEW).
PL 1993, Ch. 683, §B5 (AFF).
PL 1997, Ch. 144, §1,2 (AMD).
PL 1999, Ch. 117, §2 (AMD).
PL 1999, Ch. 125, §1 (AMD).
PL 1999, Ch. 580, §13 (AMD).
PL 2001, Ch. 671, §30 (AMD).
PL 2003, Ch. 166, §13 (AMD).
PL 2003, Ch. 452, §Q73,74 (AMD).
PL 2003, Ch. 452, §X2 (AFF).

BRIDGE REPLACEMENT

BRIDGE NO. 2438



LOCATION MAP

State of Maine
Department of Labor
Bureau of Labor Standards
Technical Services Division
Augusta, Maine 04333-0045
Telephone (207) 623-7906

Wage Determination - In accordance with 26 MRSA §1301 et. seq., this is a determination by the Bureau of Labor Standards, of the fair minimum wage rate to be paid laborers and workers employed on the below titled project.

Title of Project -------- Knickerbocker Bridge Replacement, PIN 012630.00

Location of Project -- Boothbay, Maine in Lincoln County

2010 Fair Minimum Wage Rates
Heavy & Bridge Lincoln County

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Asbestos/Lead Removal	$17.00	$0.85	$17.85	Ironworker - Structural	$22.00	$8.95	$30.95
Backhoe Loader Operator	$28.88	$4.13	$33.01	Laborers/Helper/Tender	$13.92	$1.34	$15.26
Blaster	$14.50	$1.91	$16.41	Laborer - Skilled	$16.38	$3.37	$19.75
Boilermaker	$30.19	$16.99	$47.18	Line Erector, Power	$21.94	$4.14	$26.08
Boom Truck Operator	$17.00	$3.13	$20.13	Loader Op, Front-End	$14.00	$1.44	$15.44
Bulldozer Operator	$17.35	$2.64	$19.99	Mechanic - Maintenance	$19.57	$5.41	$24.98
Carpenter	$19.00	$5.02	$24.02	Millwright	$22.50	$7.12	$29.62
Carpenter - Rough	$17.00	$4.42	$21.42	Painter	$14.00	$0.54	$14.54
Cement Mason/Finisher	$17.00	$1.30	$18.30	Pile Driver Operator	$23.91	$3.99	$27.90
Commun Equip Installer	$13.80	$1.11	$14.91	Pipe/Stm/Sprkler Fitter	$24.00	$9.66	$33.66
Commun Trans Erectr	$18.00	$6.76	$24.76	Pipelayer	$21.50	$9.37	$30.87
Crane Op =>15 Tons	$19.50	$5.40	$24.90	Plumber - Licensed	$21.50	$3.77	$25.27
Driller - Rock	$16.00	$9.13	$25.13	Plumber Helper - Lic	$16.00	$3.06	$19.06
Electrician, Licensed	$23.50	$5.31	$28.81	Rigger	$23.00	$2.87	$25.87
Electrician Hlpr (Licensed)	$15.25	$1.72	$16.97	Roller Operator - Earth	$12.80	$2.35	$15.15
Excavator Operator	$15.00	$3.18	$18.18	Sheet Metal Worker	$23.38	$16.12	$39.50
Fence Setter	$13.00	$1.33	$14.33	Truck Driver - Light	$15.75	$2.17	$17.92
Flagger	$13.40	$2.05	$15.45	Truck Driver - Medium	$14.70	$5.84	$20.54
Grader/Scraper Operator	$17.39	$3.67	$21.06	Truck Driver, Heavy	$12.75	$1.44	$14.19
Insulation Installer	$16.00	$6.19	$22.19	Truck Driver, Tractor Trlr	$17.97	$5.07	$23.04
Ironworker - Reinforcing	$21.15	$17.05	$38.20				

The Laborer classifications include a wide range of work duties. Therefore, if any specific occupation to be employed on this project is not listed in this determination, call the Bureau of Labor Standards at the above number for further clarification.

Welders are classified in the trade to which the welding is incidental.

Apprentices - The minimum wage rate for registered apprentices are those set forth in the standards and policies of the Maine State Apprenticeship and Training Council for approved apprenticeship programs.

Posting of Schedule - Posting of this schedule is required in accordance with 26 MRSA §1301 et. seq., by any contractor holding a State contract for construction valued at $50,000 or more and any subcontractors to such a contractor.

Appeal - Any person affected by the determination of these rates may appeal to the Commissioner of Labor by filing a written notice with the Commissioner stating the specific grounds of the objection within ten (10) days from the filing of these rates with the Secretary of State.

Determination No: HB-001-2010

Filing Date: December 31, 2009

Expiration Date: 12-31-2010

A true copy

Attest: _____
William A. Peabody
Director
Bureau of Labor Standards

BLS 424HB (R2010) (Heavy & Bridge Lincoln)

SPECIAL PROVISION
SECTION 106
QUALITY
(Quality Level Analysis- Structural Concrete)

106.7.1 Standard Deviation Method Under H. Replace the Method A payfactor with the following;

"Method A: PF = [32.5 + (Quality Level * 0.75)] * 0.01"

SPECIAL PROVISION
SECTION 107
PROSECUTION AND PROGRESS
(Contract Time)

The specified contract completion date is June 15, 2012.

SPECIAL PROVISION
SECTION 107
TIME
(Open to Traffic)
(Bridge Closure, Boat Ramps/Parking Lots)
(Limitation of Operations, & Supplemental Liquidated Damages)

Open To Traffic:
The Contractor shall plan and conduct his operations in such a manner that the bridge and roadway shall be open to traffic by October 7, 2011. Prior to opening to traffic, the bridge rail and guardrail shall be installed, base/binder course paved on the bridge and roadway and pavement markings placed. If the bridge and roadway remain closed to traffic beyond October 2, 2010, the Contractor shall be assessed supplemental liquidated damages at the rate of Five Hundred Dollars ($500.00) per Day, for each Day the roadway remains closed to traffic. This assessment of supplemental liquidated damages will be in addition to the liquidated damages specified in Section 107 of the Standard Specifications.

Bridge Closures:
Knickerbocker Bridge may be closed to traffic for a maximum of 12 (twelve) Calendar Days. The bridge closures shall be limited to the hours of 8:30 AM through 3:30 PM and shall meet the guidelines specified in Special Provision 652, Maintenance of Traffic. If Knickerbocker Bridge remains closed to traffic outside of the core hours listed above, The Contractor shall be assessed a lane rental fee at the rate of Five Hundred Dollars ($500.00) per hour, for each additional hour that the bridge remains closed to traffic. Lane Rental for the first and subsequent hours is assessed when the bridge closure extends at least 10 (ten) minutes outside of the closure hours indicated above. The Contractor shall coordinate the Bridge Closure Notification in accordance with Standard Specification 104.4.10.

Boat Ramp/Parking Area Closures:
Re-construction of the boat ramps/parking areas other than required fill shall not commence until September 12, 2011. The boat ramps/parking areas shall be closed for one 5 (five) day period for re-construction between September 12, 2011 and October 28, 2011. Reconstruction shall occur during the closure and shall include all required work except wearing course paving. If the closure extends beyond the 5 (five) days allotted above, the Contractor shall be assessed supplemental liquidated damages at the rate of Three Hundred Dollars ($300.00) per Day, for each Day the boat ramp/parking lot re-construction remains incomplete. The Contractor shall coordinate the Boat Ramp/Parking Lot Closure by Notification to the Towns of Boothbay and Boothbay Harbor and all local boat yards and marinas at least 10 days prior to the closure.

Once the Contractor commences work on this project the work shall be continuous through completion unless the work stoppage is allowed by the Resident.

SPECIAL PROVISION
SECTION 107
TIME

107.4.2 Schedule of Work Required. This Section is amended by the following:

In addition to the Contractors initial CPM Schedule, the Department will require the Contractor to update the schedule monthly to show current progress. The submittal date for monthly updates shall be determined by the Resident.

SPECIAL PROVISION
SECTION 107
TIME
(Scheduling of Work – Projected Payment Schedule)

Description The Contractor shall also provide the Department with a Quarterly Projected Payment Schedule that estimates the value of the Work as scheduled, including requests for payment of Delivered Materials. The Projected Payment Schedule must be in accordance with the Contractor's Schedule of Work and prices submitted by the Contractor's Bid. The Contractor shall submit the Projected Payment Schedule as a condition of Award.

SPECIAL PROVISION
SECTION 108
PAYMENT
(Asphalt Escalator)

108.4.1 Price Adjustment for Hot Mix Asphalt: For all contracts with hot mix asphalt in excess of 500 tons total, a price adjustment for performance graded binder will be made for the following pay items:

Item 403.206 Hot Mix Asphalt - 25 mm
Item 403.207 Hot Mix Asphalt - 19 mm
Item 403.208 Hot Mix Asphalt - 12.5 mm
Item 403.2081 Hot Mix Asphalt - 12.5 mm (PG 70-28)
Item 403.209 Hot Mix Asphalt - 9.5 mm (sidewalks, drives, & incidentals)
Item 403.210 Hot Mix Asphalt - 9.5 mm
Item 403.2102 Hot Mix Asphalt - 9.5 mm
Item 403.211 Hot Mix Asphalt - Shim
Item 403.212 Hot Mix Asphalt - 4.75 mm
Item 403.213 Hot Mix Asphalt - 12.5 mm (base and intermediate course)
Item 403.2131 Hot Mix Asphalt - 12.5 mm (base and intermediate course PG 70-28)
Item 403.2132 Hot Mix Asphalt - 12.5 mm (Asphalt Rich Base and intermediate course)
Item 461.13 Maintenance Surface Treatment

Price adjustments will be based on the variance in costs for the performance graded binder component of hot mix asphalt. They will be determined as follows:

The quantity of hot mix asphalt for each pay item will be multiplied by the performance graded binder percentages given in the table below times the difference in price between the base price and the period price of asphalt cement. Adjustments will be made upward or downward, as prices increase or decrease.

Item 403.206: 4.8%	Item 403.2102: 6.2%
Item 403.207: 5.2%	Item 403.211: 6.2%
Item 403.208: 5.6%	Item 403.212: 6.8%
Item 403.2081: 5.6%	Item 403.213: 5.6%
Item 403.209: 6.2%	Item 403.2131: 5.6%
Item 403.210: 6.2%	Item 403.2132: 5.6%
Item 461.13: 6.4%	

Hot Mix Asphalt**:** The quantity of hot mix asphalt will be determined from the quantity shown on the progress estimate for each pay period.

Base Price: The base price of performance graded binder to be used is the price per standard ton current with the bid opening date. This price is determined by using the average New England Selling Price, as listed in the Asphalt Weekly Monitor.

Period Price: The period price of performance graded binder will be determined by the Department by using the average New England Selling Price, listed in the Asphalt Weekly Monitor current with the paving date. The maximum Period Price for paving after the adjusted Contract Completion Date will be the Period Price on the adjusted Contract Completion Date.

SPECIAL PROVISION
SECTION 203
EXCAVATION AND EMBANKMENT
(Dredge Materials)

Description: Dredge Material (See MaineDOT Standard Specifications § 101.2) is regulated as a Special Waste.

Work associated with the Knickerbocker Bridge Project will require the excavation of select Dredge Materials from the Back River. In accordance with Maine Department of Environmental Protection Regulations (CMR 418), 100-cubic yards or less of Dredge Material can be Beneficially Used in the area adjacent to and draining into the dredged water body without the need for a Beneficial Use Permit. There is onsite Beneficial Use for 100-cubic yards of the excavated Dredge Material. The remaining dredge material associated with this project shall be dispose of at an appropriately licensed landfill.

It is acknowledged that the excavation of Dredge may include some boulders. The Maine Department of Environmental Protection has determined that sound boulders (rock 12-inches or more in diameter), that are free of adhering sediment or other contaminants, shall be deemed to be Inert Fill material and shall not be included in the Dredge Material Quantities.

CONSTRUCTION REQUIREMENTS

Management and Disposal: The contractor shall Beneficially Use 100-cubic yards of the Dredge Material excavated from the Back River in areas adjacent to and draining into the dredged water body.

The Contractor shall dispose of all Dredge Material from the Knickerbocker Bridge Project that is not Beneficially Used on site at a landfill licensed for the disposal of Special Waste. The Contractor shall be responsible for making all necessary arrangements for dewatering and proper disposal of the Dredge Material, including any laboratory testing, in accordance with the landfill's license. The Contractor shall provide documentation to the Resident that the Dredge Material was disposed of as specified. The submitted documentation shall consist of truck manifests, waybills, or such documentation as may be acceptable to the Resident and shall clearly document the disposal site location and the quantity of Dredge Material.

Method of Measurement: Dredge Material will be measured by the cubic yard of material removed. Special Waste properly disposed of will be measured by the ton.

Basis of Payment: Payment for the Beneficial Use of Dredge Material will be incidental to the project.

The accepted quantity of Dredge Material properly disposed of, as Special Waste, will be paid for at the contract unit price bid for Disposal of Special Waste.

Payment shall be full compensation for excavation, dewatering, testing, managing, transporting, disposal or placement, and all associated fees.

Payment will be made under:

Pay Item		Pay Unit
203.2318	Disposal of Special Waste	Ton

SPECIAL PROVISION
DIVISION 400
PAVEMENTS

SECTION 401 - HOT MIX ASPHALT PAVEMENT

401.01 Description The Contractor shall furnish and place one or more courses of Hot Mix Asphalt Pavement (HMA) on an approved base in accordance with the contract documents and in reasonably close conformity with the lines, grades, thickness, and typical cross sections shown on the plans or established by the Resident. The Department will accept this work under Quality Assurance provisions, in accordance with these specifications and the requirements of Section 106 – Quality, the provisions of AASHTO M 323 except where otherwise noted in sections 401 and 703 of these specifications, and the Maine DOT Policies and Procedures for HMA Sampling and Testing.

401.02 Materials Materials shall meet the requirements specified in Section 700 - Materials:

Asphalt Cement	702.01
Aggregates for HMA Pavement	703.07
HMA Mixture Composition	703.09

401.021 Recycled Asphalt Materials Recycled Asphalt Pavement (RAP) may be introduced into the mixture at percentages approved by the Department. If approved by the Department, the Contractor shall provide documentation stating the source, test results for average residual asphalt content, and stockpile gradations showing RAP materials have been sized to meet the maximum aggregate size requirements of each mix designation. The Department will obtain samples for verification and approval prior to its use.

In the event that RAP source or properties change, the Contractor shall notify the Department of the change and submit new documentation stating the new source or properties a minimum of 72 hours prior to the change to allow for obtaining new samples and approval.

401.03 Composition of Mixtures The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), and mineral filler if required. HMA shall be designed and tested according to AASHTO R35 and the volumetric criteria in Table 1. The Contractor shall size, uniformly grade, and combine the aggregate fractions in proportions that provide a mixture meeting the grading requirements of the Job Mix Formula (JMF). The Contractor may use a maximum of 15% reclaimed asphalt pavement (RAP) in any base, binder, surface, or shim course. The Contractor may be allowed to use more than 15% RAP, up to a maximum of 25% RAP, in a base, binder, or shim course provided that PG 58-34 asphalt binder is used in the mixture.

The Contractor shall submit for Department approval a JMF to the Central Laboratory in Bangor for each mixture to be supplied. The Department may approve 1 active design per nominal maximum size, per traffic level, per plant, plus a 9.5mm “fine” mix for shimming and where required, a non-RAP design for bridge decks. The Department shall then have 15 calendar days in which to process a new design before approval. The JMF shall establish a single percentage of aggregate passing each sieve size within the limits shown in section 703.09. The mixture shall be designed and produced, including all production tolerances, to comply with the allowable control points for the particular type of mixture as outlined in 703.09. The JMF shall state the original source, gradation, and percentage to be used of each portion of the aggregate including RAP when utilized, and mineral filler if required. It shall also state the proposed PGAB content, the name and location of the refiner, the supplier, the source of PGAB submitted for approval, the type of PGAB modification if applicable, and the location of the terminal if applicable.

In addition, the Contractor shall provide the following information with the proposed JMF:

Properly completed JMF indicating all mix properties (Gmm, VMA, VFB, etc.)
Stockpile Gradation Summary
Design Aggregate Structure Consensus Property Summary
Design Aggregate Structure Trial Blend Gradation Plots (0.45 power chart)
Trial Blend Test Results for at least three different asphalt contents
Design Aggregate Structure for at least three trial blends
Test results for the selected aggregate blend at a minimum of three binder contents
Specific Gravity and temperature/viscosity charts for the PGAB to be used
Recommended mixing and compaction temperatures from the PGAB supplier
Material Safety Data Sheets (MSDS) For PGAB
Asphalt Content vs. Air Voids trial blend curve
Test report for Contractor's Verification sample
Test reports for PG binder content and gradation of RAP when used in the JMF

At the time of JMF submittal, the Contractor shall identify and make available the stockpiles of all proposed aggregates at the plant site. There must be a minimum of 135 Mg [150 ton] for stone stockpiles, 70 Mg [75 ton] for sand stockpiles, and 45 Mg [50 ton] of blend sand before the Department will sample. The Department shall obtain samples for laboratory testing. The Contractor shall also make available to the Department the PGAB proposed for use in the mix in sufficient quantity to test the properties of the asphalt and to produce samples for testing of the mixture. Before the start of paving, the Contractor and the Department shall split a production sample for evaluation. The Contractor shall test its split of the sample and determine if the results meet the requirements of the Department's written policy for mix design verification (See Maine DOT Policies and Procedures for HMA Sampling and Testing available at the Central Laboratory in Bangor). If the results are found to be acceptable, the Contractor will forward their results to the Department's Lab, which will test the Department's split of the sample. The results of the two split samples will be compared and shared between the Department and the Contractor. If the Department finds the mixture acceptable, an approved JMF will be forwarded to the Contractor and paving may commence. The first day's production shall be monitored, and the approval may be withdrawn if the mixture exhibits undesirable characteristics such as checking, shoving or displacement. The Contractor shall be allowed to submit aim changes within 24 hours of receipt of the first Acceptance test result. Adjustments will be allowed of up to 2% on the percent passing the 2.36 mm sieve through the 0.075 mm and 3% on the percent passing the 4.75 mm or larger sieves. Adjustments will be allowed on the %PGAB of up to 0.2%. Adjustments will be allowed on GMM of up to 0.010.

The Contractor shall submit a new JMF for approval each time a change in material source or materials properties is proposed. The same approval process shall be followed. The cold feed percentage of any aggregate may be adjusted up to 10 percentage points from the amount listed on the JMF, however no aggregate listed on the JMF shall be eliminated. The cold feed percentage for RAP may be adjusted up to 5 percentage points from the amount listed on the JMF but shall not exceed the maximum allowable percentage for RAP for the specific application.

TABLE 1: VOLUMETRIC DESIGN CRITERIA

Design ESAL's (Millions)	Required Density (Percent of G_{mm})			Voids in the Mineral Aggregate (VMA)(Minimum Percent)					Voids Filled with Binder (VFB) (Minimum %)	Fines/Eff. Binder Ratio
				Nominal Maximum Aggregate Size (mm)						
	$N_{initial}$	N_{design}	N_{max}	25	19	12.5	9.5	4.75		
<0.3	≤91.5	96.0	≤98.0	13.0	14.0	15.0	16.0	16.0	70-80	0.6-1.2
0.3 to <3	≤90.5								65-80	
3 to <10	≤89.0								65-80*	
10 to <30										
≥ 30										

*For 9.5 mm nominal maximum aggregate size mixtures, the maximum VFB is 82.
*For 4.75 mm nominal maximum aggregate size mixtures, the maximum VFB is 84.

401.04 Temperature Requirements After the JMF is established, the temperatures of the mixture shall conform to the following tolerances:

In the truck at the mixing plant – allowable range 135° to 163°C [275 to 325°F]
At the Paver – allowable range 135° to 163°C [275 to 325°F]

The JMF and the mix subsequently produced shall meet the requirements of Tables 1 and Section 703.07.

401.05 Performance Graded Asphalt Binder Unless otherwise noted in Special Provision 403 - Hot Mix Asphalt Pavement, the PGAB shall be 64-28, except that for mixtures containing greater than 15% but no more than 25% RAP the PGAB shall be PG 58-34. The PGAB shall meet the applicable requirements of AASHTO M320 - Standard Specification for PGAB. The Contractor shall provide the Department with an approved copy of the Quality Control Plan for PGAB in accordance with AASHTO R 26 Certifying Suppliers of PGAB. The Contractor shall request approval from the Department for a change in PGAB supplier or source by submitting documentation stating the new supplier or source a minimum of 24 hours prior to the change. In the event that the PGAB supplier or source is changed, the Contractor shall make efforts to minimize the occurrence of PGAB co-mingling.

401.06 Weather and Seasonal Limitations The State is divided into two paving zones as follows:

a. Zone 1 Areas north of US Route 2 from Gilead to Bangor and north of Route 9 from Bangor to Calais.
b. Zone 2 Areas south of Zone 1 including the US Route 2 and Route 9 boundaries.

The Contractor may place Hot Mix Asphalt Pavement for use other than a traveled way wearing course in either Zone between the dates of April 15th and November 15th, provided that the air temperature as determined by an approved thermometer (placed in the shade at the paving location) is 4°C [40°F] or higher and the area to be paved is not frozen. The Contractor may place Hot Mix Asphalt Pavement as traveled way wearing course in Zone 1 between the dates of May 1st and the Saturday following October 1st and in Zone 2 between the dates of April 15th and the Saturday following October 15th, provided the air temperature determined as above is 10°C [50°F] or higher. For the purposes of this Section, the traveled way includes truck lanes, ramps, approach roads and auxiliary lanes. The atmospheric temperature for all courses on bridge decks shall be 10°C [50°F] or higher.

Hot Mix Asphalt Pavement used for curb, driveways, sidewalks, islands, or other incidentals is not subject to seasonal limitations, except that conditions shall be satisfactory for proper handling and finishing of the mixture. All mixtures used for curb, driveways, sidewalks, islands, or other incidentals shall conform to section 401.04 - Temperature Requirements. Unless otherwise specified, the Contractor shall not place Hot Mix Asphalt Pavement on a wet or frozen surface and the air temperature shall be 4°C [40°F] or higher.

On all sections of overlay with wearing courses less than 25 mm [1 in] thick, the wearing course for the travelway and adjacent shoulders shall be placed between the dates of May 15th and the Saturday following September 15th.

On all sections of overlay with wearing courses less than 1 inch thick, the wearing course for the travelway and adjacent shoulders shall be placed between the dates of June 1st and the Saturday following September 1st if the work is to be performed, either by contract requirement, or Contractor option, during conditions defined as “night work”.

401.07 Hot Mix Asphalt Plant

401.071 General Requirements HMA plants shall conform to AASHTO M156.

a. Truck Scales When the hot mix asphalt is to be weighed on scales meeting the requirements of Section 108 - Payment, the scales shall be inspected and sealed by the State Sealer as often as the Department deems necessary to verify their accuracy.

Plant scales shall be checked prior to the start of the paving season, and each time a plant is moved to a new location. Subsequent checks will be made as determined by the Resident. The Contractor will have at least ten 20 Kg [50 pound] masses for scale testing.

401.072 Automation of Batching Batch plants shall be automated for weighing, recycling, and monitoring the system. In the case of a malfunction of the printing system, the requirements of Section 401.074 c. of this specification will apply.

The batch plant shall accurately proportion the various materials in the proper order by weight. The entire batching and mixing cycle shall be continuous and shall not require any manual operations. The batch plant shall use auxiliary interlock circuits to trigger an audible alarm whenever an error exceeding the acceptable tolerance occurs. Along with the alarm, the printer shall print an asterisk on the delivery slip in the same row containing the out-of-tolerance weight. The automatic proportioning system shall be capable of consistently delivering material within the full range of batch sizes. When RAP is being used, the plant must be capable of automatically compensating for the moisture content of the RAP.

All plants shall be equipped with an approved digital recording device. The delivery slip load ticket shall contain information required under Section 108.1.3 - Provisions Relating to Certain Measurements, Mass and paragraphs a, b, and c of Section 401.073

401.073 Automatic Ticket Printer System on Automatic HMA Plant An approved automatic ticket printer system shall be used with all approved automatic HMA plants. The requirements for delivery slips for payment of materials measured by weight, as given in the following Sections, shall be waived: 108.1.3 a., 108.1.3 b., 108.1.3 c., and 108.1.3 d. The automatic printed ticket will be considered as the Weight Certificate.

The requirements of Section 108.1.3 f. - Delivery Slips, shall be met by the weigh slip or ticket, printed by the automatic system, which accompanies each truckload, except for the following changes:

a. The quantity information required shall be individual weights of each batch or total net weight of each truckload.
b. Signatures (legible initials acceptable) of Weighmaster (required only in the event of a malfunction as described in 401.074 c.).
c. The MDOT designation for the JMF.

401.074 Weight Checks on Automatic HMA Plant At least twice during each 5 days of production either of the following checks will be performed:

a. A loaded truck may be intercepted and weighed on a platform scale that has been sealed by the State Sealer of Weights and Measures within the past 12 months. Whenever the discrepancy in net weights is greater than 1.0%, but does not exceed 1.5%, the plant inspector will notify the producer to take corrective action; payment will still be governed by the printed ticket.

The producer will be allowed a period of two days to make any needed repairs to the plant and/or platform scales so that the discrepancy in net weights between the two is less than 1.0%. If the discrepancy exceeds 1.5%, the plant will be allowed to operate as long as payment is determined by truck platform scale net weight. Effective corrective action shall be taken within two working days.

b. Where platform scales are not readily available, a check will be made to verify the accuracy and sensitivity of each scale within the normal weighing range and to assure that the interlocking devices and automatic printer system are functioning properly.

c. In the event of a malfunction of the automatic printer system, production may be continued without the use of platform truck scales for a period not to exceed the next two working days, providing total weights of each batch are recorded on weight tickets and certified by a Licensed Public Weighmaster.

401.08 Hauling Equipment Trucks for hauling Hot Mix Asphalt Pavement shall have tight, clean, and smooth metal dump bodies, which have been thinly coated with a small amount of approved release agent to prevent the mixture from adhering to the bodies. Solvent based agents developed to strip asphalts from aggregates will not be allowed as release agents.

All truck dump bodies shall have a cover of canvas or other water repellent material capable of heat retention, which completely covers the mixture. The cover shall be securely fastened on the truck, unless unloading.

All truck bodies shall have an opening on both sides, which will accommodate a thermometer stem. The opening shall be located near the midpoint of the body, at least 300 mm [12 in] above the bed.

401.09 Pavers Pavers shall be self-contained, self-propelled units with an activated screed (heated if necessary) capable of placing courses of Hot Mix Asphalt Pavement in full lane widths specified in the contract on the main line, shoulder, or similar construction.

On projects with no price adjustment for smoothness, pavers shall be of sufficient class and size to place Hot Mix Asphalt Pavement over the full width of the mainline travel way with a 3 m [10 ft] minimum main screed with activated extensions.

The Contractor shall place Hot Mix Asphalt Pavement on the main line with a paver using an automatic grade and slope controlled screed, unless otherwise authorized by the Department. The controls shall automatically adjust the screed and increase or decrease the layer thickness to compensate for irregularities in the preceding course. The controls shall maintain the proper transverse slope and be readily adjustable so that transitions and superelevated curves can be properly paved. The controls shall operate from a fixed or moving reference such as a grade wire or ski type device (floating beam) with a minimum length of 10 m [30 ft], a non-contact grade control with a minimum span of 7.3 m [24 ft], except that a 12 m [40 ft] reference shall be used on Expressway projects.

The Contractor shall operate the paver in such a manner as to produce a visually uniform surface texture and a thickness within the requirements of Section 401.101 - Surface Tolerances. The paver shall have a receiving hopper with sufficient capacity for a uniform spreading operation and a distribution system to place the mixture uniformly, without segregation in front of the screed. The screed assembly shall produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture. Pavers with extendible screeds shall have auger extensions and tunnel extenders as per the manufacturer's recommendations, a copy of which shall be available if requested.

The Contractor shall have the paver at the project site sufficiently before the start of paving operations to be inspected and approved by the Department. The Contractor shall repair or replace any paver found worn or defective, either before or during placement, to the satisfaction of the Department. Pavers that produce an unevenly textured or non-uniform mat will be repaired or replaced before continuing to place HMA on MaineDOT projects.
On a daily basis, the Contractor shall perform nuclear density testing across the mat being placed, prior to being compacted by equipment., at 300 mm [12 in] intervals, If the density values vary by more than 2.0% from the mean, the Contractor shall make adjustments to the screed until the inconsistencies are remedied.

Failure to replace or repair defective placement equipment may result in a letter of suspension of work and notification of a quality control violation resulting in possible monetary penalties as governed by Section 106 - Quality

401.10 Rollers Rollers shall be static steel, pneumatic tire, or approved vibrator type. Rollers shall be in good mechanical condition, capable of starting and stopping smoothly, and be free from backlash when reversing direction. Rollers shall be equipped and operated in such a way as to prevent the picking up of hot mixed material by the roller surface. The use of rollers, which result in crushing of the aggregate or in displacement of the HMA will not be permitted. Any Hot Mix Asphalt Pavement that becomes loose, broken, contaminated, shows an excess or deficiency of Performance Graded Asphalt Binder, or is in any other way defective shall be removed and replaced at no additional cost with fresh Hot Mix Asphalt Pavement, which shall be immediately compacted to conform to the adjacent area.

The Contractor shall repair or replace any roller found to be worn or defective, either before or during placement, to the satisfaction of the Department. Rollers that produce grooved, unevenly textured or non-uniform mat will be repaired or replaced before continuing to place HMA on MaineDOT projects.

The type of rollers to be used and their relative position in the compaction sequence shall generally be the Contractor's option, provided specification densities are attained and with the following requirements:

a. On variable-depth courses, the first lift of pavement over gravel, reclaimed pavement, an irregular surface, or on bridges, at least one roller shall be 14.5 Mg [16 ton] pneumatic-tired. Unless otherwise allowed by the Resident, pneumatic-tired rollers shall be equipped with skirting to minimize the pickup of HMA materials from the paved surface. When required by the Resident, the roller shall be ballasted to 18.1 Mg [20 ton].

b. Compaction with a vibratory or steel wheel roller shall precede pneumatic-tired rolling, unless otherwise authorized by the Department.

c. Vibratory rollers shall not be operated in the vibratory mode when checking or cracking of the mat occurs, or on bridge decks.

d. Any method, which results in cracking or checking of the mat, will be discontinued and corrective action taken.

The maximum operating speed for a steel wheel or pneumatic roller shall not exceed the manufacturer's recommendations, a copy of which shall be available if requested.

401.101 Surface Tolerances The Department will check surface tolerance utilizing the following methods :

a.) A 5 m [16 ft] straightedge or string line placed directly on the surface, parallel to the centerline of pavement.
b.) A 3 m [10 ft] straightedge or string line placed directly on the surface, transverse to the centerline of pavement.

The Contractor shall correct variations exceeding 6 mm [¼ in] by removing defective work and replacing it with new material as directed by the Department. The Contractor shall furnish a 10 foot straightedge for the Departments use.

401.11 Preparation of Existing Surface The Contractor shall thoroughly clean the surface upon which Hot Mix Asphalt Pavement is to be placed of all objectionable material. When the surface of the existing base or pavement is irregular, the Contractor shall bring it to uniform grade and cross section. All surfaces shall have a tack coat applied prior to placing any new HMA course. Tack coat shall conform to the requirements of Section 409 – Bituminous Tack Coat, Section 702 – Bituminous Material, and all applicable sections of the contract.

401.12 Hot Mix Asphalt Documentation The Contractor and the Department shall agree on the amount of Hot Mix Asphalt Pavement that has been placed each day.

401.13 Preparation of Aggregates The Contractor shall dry and heat the aggregates for the HMA to the required temperature. The Contractor shall properly adjust flames to avoid physical damage to the aggregate and to avoid depositing soot on the aggregate.

401.14 Mixing The Contractor shall combine the dried aggregate in the mixer in the amount of each fraction of aggregate required to meet the JMF. The Contractor shall measure the amount of PGAB and introduce it into the mixer in the amount specified by the JMF.

The Contractor shall produce the HMA at the temperature established by the JMF.

The Contractor shall dry the aggregate sufficiently so that the HMA will not flush, foam excessively, or displace excessively under the action of the rollers. The Contractor shall introduce the aggregate into the mixer at a temperature of not more than 14°C [25°F] above the temperature at which the viscosity of the PGAB being used is 0.150 Pa•s.

The Contractor shall store and introduce into the mixer the Performance Graded Asphalt Binder at a uniformly maintained temperature at which the viscosity of the PGAB is between 0.150 Pa•s and 0.300 Pa•s. The aggregate shall be coated completely and uniformly with a thorough distribution of the PGAB. The Contractor shall determine the wet mixing time for each plant and for each type of aggregate used.

401.15 Spreading and Finishing On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the Contractor shall spread, rake, and lute the HMA with hand tools to provide the required compacted thickness. Solvent based agents developed to strip asphalts from aggregates will not be allowed as release agents.

On roadways with adjoining lanes carrying traffic, the Contractor shall place each course over the full width of the traveled way section being paved that day, unless otherwise noted by the Department in Section 403 - Hot Bituminous Pavement.

401.16 Compaction Immediately after the Hot Mix Asphalt Pavement has been spread, struck off, and any surface irregularities adjusted, the Contractor shall thoroughly and uniformly compact the HMA by rolling.

The Contractor shall roll the surface when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking, or shoving. The Contractor shall prevent adhesion of the HMA to the rollers or vibrating compactors without the use of fuel oil or other petroleum based release agents. Solvents designed to strip asphalt binders from aggregates will not be permitted as release agents on equipment, tools, or pavement surfaces.
The Contractor shall immediately correct any displacement occurring as a result of the reversing of the direction of a roller or from other causes to the satisfaction of the Department. Any operation other than placement of variable depth shim course that results in breakdown of the aggregate shall be discontinued. Any new pavement that shows obvious cracking, checking, or displacement shall be removed and replaced for the full lane width as directed by the Resident at no cost to the Department.

Along forms, curbs, headers, walls, and other places not accessible to the rollers, the Contractor shall thoroughly compact the HMA with mechanical vibrating compactors. The Contractor shall only use hand tamping in areas inaccessible to all other compaction equipment. On depressed areas, the Contractor may use a trench roller or cleated compression strips under a roller to transmit compression to the depressed area.

Any HMA that becomes unacceptable due to cooling, cracking, checking, segregation or deformation as a result of an interruption in mix delivery shall be removed and replaced, with material that meets contract specifications at no cost to the Department.

401.17 Joints The Contractor shall construct wearing course transverse joints in such a manner that minimum tolerances shown in Section 401.101 - Surface Tolerances are met when measured with a straightedge.

The paver shall maintain a uniform head of HMA during transverse and longitudinal joint construction.

The HMA shall be free of segregation and meet temperature requirements outlined in section 401.04. Transverse joints of the wearing course shall be straight and neatly trimmed. The Contractor may form a vertical face exposing the full depth of the course by inserting a header, by breaking the bond with the underlying course, or by cutting back with hand tools. The Department may allow feathered or "lap" joints on lower base courses or when matching existing base type pavements.

Longitudinal joints shall be generally straight to the line of travel, and constructed in a manner that best ensure joint integrity. Methods or activities that prove detrimental to the construction of straight, sound longitudinal joints will be discontinued.

The Contractor shall apply a coating of emulsified asphalt immediately before paving all joints to the vertical face and 75 mm [3 in] of the adjacent portion of any pavement being overlaid except those formed by pavers operating in echelon. The Contractor shall use an approved spray apparatus designed for covering a narrow surface. The Department may approve application by a brush for small surfaces, or in the event of a malfunction of the spray apparatus, but for a period of not more than one working day.

Where pavement under this contract joins an existing pavement, or when the Department directs, the Contractor shall cut the existing pavement along a smooth line, producing a neat, even, vertical joint. The Department will not permit broken or raveled edges. The cost of all work necessary for the preparation of joints is incidental to related contract pay items.

401.18 Quality Control Method A, B & C The Contractor shall operate in accordance with the approved Quality Control Plan (QCP) to assure a product meeting the contract requirements. The QCP shall meet the requirements of Section 106.6 - Acceptance and this Section. The Contractor shall not begin paving operations until the Department approves the QCP in writing.

Prior to placing any mix, the Department and the Contractor shall hold a Pre-paving conference to discuss the paving schedule, source of mix, type and amount of equipment to be used, sequence of paving pattern, rate of mix supply, random sampling, project lots and sublots and traffic control. A copy of the QC random numbers to be used on the project shall be provided to The Resident. The Departments' random numbers for Acceptance testing shall be generated and on file with the Resident and the Project Manager. All field and plant supervisors including the responsible onsite paving supervisor shall attend this meeting.

The QCP shall address any items that affect the quality of the Hot Mix Asphalt Pavement including, but not limited to, the following:

a. JMF(s)
b. Hot mix asphalt plant details
c. Stockpile Management (to include provisions for a minimum 2 day stockpile)
d. Make and type of paver(s)
e. Make and type of rollers including weight, weight per inch of steel wheels, and average contact pressure for pneumatic tired rollers
f. Name of QCP Administrator, and certification number
g. Name of Process Control Technician(s) and certification number(s)
h. Name of Quality Control Technicians(s) and certification number(s)
i. Mixing & transportation including process for ensuring that truck bodies are clean and free of debris or contamination that could adversely affect the finished pavement
j. Testing Plan
k. Laydown operations including longitudinal joint construction, procedures for avoiding paving in inclement weather, type of release agent to be used on trucks tools and rollers, compaction of shoulders, tacking of all joints, methods to ensure that segregation is minimized, procedures to determine the maximum rolling and paving speeds based on best engineering practices as well as past experience in achieving the best possible smoothness of the pavement. Solvent based agents developed to strip asphalts from aggregates will not be allowed as release agents.
l. Examples of Quality Control forms including a daily plant report and a daily paving report
m. Silo management and details (can show storage for use on project of up to 36 hours)
n. Provisions for varying mix temperature due to extraordinary conditions
o. Name and responsibilities of the Responsible onsite Paving Supervisor
p. Method for calibration/verification of Density Gauge
q. A note that all testing will be done in accordance with AASHTO and the Maine DOT Policies and Procedures for HMA Sampling and Testing.
r. A note detailing conditions under which the percent of RAP will vary from that specified on the JMF.
s. A detailed procedure outlining when production will be halted due to QC or Acceptance testing results.
t. A plan to address the change in PGAB source or supplier and the potential co-mingling of differing PGAB's.
u. A procedure to take immediate possession of acceptance samples once released by MaineDOT and deliver said samples to the designated acceptance laboratory.

The QCP shall include the following technicians together with following minimum requirements:

a. QCP Administrator - A qualified individual shall administer the QCP. The QCP Administrator must be a full-time employee of or a consultant engaged by the Contractor or paving subcontractor. The QCP Administrator shall have full authority to institute any and all actions necessary for the successful operation of the QCP. The QCP Administrator (or its designee in the QCP Administrator's absence) shall be available to communicate with the Department at all times. The QCP Administrator shall be certified as a Quality Assurance Technologist certified by the New England Transportation Technician Certification Program (NETTCP).

b. Process Control Technician(s) (PCT) shall utilize test results and other quality control practices to assure the quality of aggregates and other mix components and control proportioning to meet the JMF(s). The PCT shall inspect all equipment used in mixing to assure it is operating properly and that mixing conforms to the mix design(s) and other Contract requirements. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one PCT is required. The Plan shall include the criteria to be utilized by the PCT to correct or reject unsatisfactory materials. The PCT shall be certified as a Plant Technician by the NETTCP.

c. Quality Control Technician(s) (QCT) shall perform and utilize quality control tests at the job site to assure that delivered materials meet the requirements of the JMF(s). The QCT shall inspect all equipment utilized in transporting, laydown, and compacting to assure it is operating properly and that all laydown and compaction conform to the Contract requirements. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one QCT is required. The QCP shall include the criteria utilized by the QCT to correct or reject unsatisfactory materials. The QCT shall be certified as a Paving Inspector by the NETTCP.

The QCP shall detail the coordination of the activities of the Plan Administrator, the PCT and the QCT. The Project Superintendent shall be named in the QCP, and the responsibilities for successful implementation of the QCP shall be outlined.

The Contractor shall sample, test, and evaluate Hot Mix Asphalt Pavement in accordance with the following minimum frequencies:

TABLE 2 : MINIMUM QUALITY CONTROL FREQUENCIES

Test or Action	Frequency	Test Method
Temperature of mix	6 per day at street and plant	-
Temperature of mat	4 per day	-
%TMD (Surface)	1 per 125 Mg [125 ton] (As noted in QC Plan)	ASTM D2950
%TMD (Base)	1 per 250 Mg [250 ton] (As noted in QC Plan)	AASHTO T269
Fines / Effective Binder	1 per 500 Mg [500 ton]	AASHTO T 312*
Gradation	1 per 500 Mg [500 ton]	AASHTO T30
PGAB content	1 per 500 Mg [500 ton]	AASHTO T164 or T308
Voids at N_{design}	1 per 500 Mg [500 ton]	AASHTO T 312*
Voids in Mineral Aggregate at N_{design}	1 per 500 Mg [500 ton]	AASHTO T 312*
Rice Specific Gravity	1 per 500 Mg [500 ton]	AASHTO T209
Coarse Aggregate Angularity	1 per 5000 Mg [5000 ton]	ASTM D5821
Flat and Elongated Particles	1 Per 5000 Mg [5000 ton]	ASTM D4791
Fine Aggregate Angularity	1 Per 5000 Mg [5000 ton]	AASHTO T304

. *Method A and B only

The Contractor may utilize innovative equipment or techniques not addressed by the Contract documents to produce or monitor the production of the mix, subject to approval by the Department.

The Contractor shall submit all Hot Mix Asphalt Pavement plant test reports, inspection reports and updated pay factors in writing, signed by the appropriate technician and present them to the Department by 1:00 P.M. on the next working day, except when otherwise noted in the QCP due to local restrictions. The Contractor shall also retain splits of the previous 5 QC tests, with QC results enclosed for random selection and testing by The Department during QA inspections of the HMA production facility. Test results of splits that do not meet the Dispute Resolution Variance Limits in Table 10 shall trigger an investigation by the MDOT Independent Assurance Unit, and may result in that lab losing NETTCP certification and the ability to request a dispute [Section 401.223 - Process for Dispute Resolution (Methods A , B and C only)].

The Contractor shall make density test results, including randomly sampled densities, available to the Department onsite. Summaries of each day's results, including a daily paving report, shall be recorded and signed by the QCT and presented to the Department by 1:00 p.m. the next working day.

The Contractor shall have a testing lab at the plant site, equipped with all testing equipment necessary to complete the tests in Table 2. The Contractor shall locate an approved Gyratory Compactor at the plant testing lab or within 30 minutes of the plant site.

The Contractor shall fill all holes in the pavement resulting from cutting cores by the Contractor or the Department with a properly compacted, acceptable mixture no later than the following working day. Before filling, the Contractor shall carefully clean the holes and apply a coating of emulsified asphalt. On surface courses, cores shall not be cut except for Verification of the Nuclear Density Gauge, at a rate not to exceed 3 per day or 2 per 900 Mg [1000 ton] placed.
The Contractor shall monitor plant production using running average of three control charts as specified in Section 106 - Quality. Control limits shall be as noted in Table 3 below. The UCL and LCL, shall not exceed the allowable control points for the particular type of mixture as outlined in Table 1 of section 703.09

TABLE 3: Control Limits

Property	UCL and LCL
Passing 4.75 mm and larger sieves	Target +/-4.0
Passing 2.36 mm sieve	Target +/-2.5
Passing .075 mm sieve	Target +/-1.2
PGAB Content*	Target +/-0.3
Voids in the Mineral Aggregate	LCL = LSL + 0.2
% Voids at N_{design}	JMF Target +/-1.3

*Based on AASHTO T 308

The Contractor shall cease paving operations whenever one of the following occurs on a lot in progress:

a. Method A: The Pay Factor for VMA, Voids @ N_d, Percent PGAB, composite gradation, VFB, fines to effective binder or density using all Acceptance or all Quality Control tests for the current lot is less than 0.85.
b. Method B:The Pay Factor for VMA, Voids @ N_d, Percent PGAB, composite gradation, VFB, fines to effective binder or density using all Acceptance or all Quality Control tests for the current lot is less than 0.90.

c. Method C: The Pay Factor for VMA, Voids @ $N_{d,}$ Percent PGAB, percent passing the nominal maximum sieve, percent passing 2.36 mm sieve, percent passing 0.300 mm sieve or percent passing 0.075 mm sieve using all Acceptance or all available Quality Control tests for the current lot is less than 0.85.
d. The Coarse Aggregate Angularity or Fine Aggregate Angularity value falls below the requirements of Table 3: Aggregate Consensus Properties Criteria in Section 703.07 for the design traffic level.

e. Each of the first 2 control tests for a Method A or B lot fall outside the upper or lower limits for VMA, Voids @ Nd, or Percent PGAB; or under Method C, each of the first 2 control tests for the lot fall outside the upper or lower limits for the nominal maximum, 2.36 mm, 0.300 mm or 0.075 mm sieves, or percent PGAB.

f. The Flat and Elongated Particles value exceeds 10% by ASTM D4791.

g. There is any visible damage to the aggregate due to over-densification other than on variable depth shim courses.

h. The Contractor fails to follow the approved QCP.

i. The Contractor's control chart shows the process to be out of control (defined as a single point outside of the control limits on the running average of three chart.) on any property listed in Table 3: Control Limits.

The Contractor shall immediately notify the Resident in writing as to the reason for shutdown, as well as the proposed corrective action. Failure to do so will be treated as a second incident under 106.4.6 QCP Non-compliance. The Department will consider corrective action acceptable if the pay factor for the failing property increases, based on samples already in transit, or a verification sample is tested and the property falls within the specification limits.

In cases where the corrective action can be accomplished immediately, such as batch weight or cold feed changes, the Contractor may elect to resume production once the corrective action is completed. Additional QC testing shall be performed to verify the effectiveness of the corrective action. Subsequent occurrences of shutdown for the same property in a Lot in progress will require paving operations to cease. Paving operations shall not resume until the Contactor and the Department determines that material meeting the Contract requirements will be produced. The Department may allow the Contractor to resume production based upon a passing QC sample, with a split of the sample being sent to the Department for verification testing. If the submitted verification sample test results fall outside the specification limits, the Contractor shall cease production until a verification sample is submitted to the Department has been tested by the Department and found to be within specification limits.

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The Department retains the exclusive right, with the exception of the first day's production of a new JMF, to determine whether the resumption of production involves a significant change to the production process. If the Department so determines, then the current lot will be terminated, a pay factor established, and a new lot will begin.

401.19 Quality Control Method D For Items covered under Method D, the Contractor shall submit a modified QC Plan detailing, how the mix is to be placed, what equipment is to be used, and what HMA plant is to be used. All mix designs (JMF) shall be approved and verified by MDOT prior to use. Certified QC personnel shall not be required. The Contractor shall certify the mix and the test results for each item by a Certificate of Compliance.

401.20 Acceptance Method A, B & C These methods utilizes Quality Level Analysis and pay factor specifications.

For Hot Mix Asphalt Pavement designated for acceptance under Quality Assurance provisions, the Department will sample once per sublot on a statistically random basis, test, and evaluate in accordance with the following Acceptance Criteria:

TABLE 4: ACCEPTANCE CRITERIA

PROPERTIES	POINT OF SAMPLING	TEST METHOD
Gradation	Paver Hopper	AASHTO T30
PGAB Content	Paver Hopper	AASHTO T308
%TMD (Surface)	Mat behind all Rollers	AASHTO T269
%TMD (Base or Binder)	Mat behind all Rollers	AASHTO T269
Air Voids at N_d	Paver Hopper	AASHTO T 312
%VMA at N_d	Paver Hopper	AASHTO T 312
Fines to Effective Binder	Paver Hopper	AASHTO T 312
%VFB	Paver Hopper	AASHTO T 312

On the first day of production of a JMF the Department will take three random samples, which will be used to calculate the quality level of the in-place material in the event the lot is terminated prematurely. Only one of the three will be tested, the other two will be held onsite until at least three random samples have been taken, at which time the other two will be discarded.

Lot Size For purposes of evaluating all acceptance test properties, a lot shall consist of the total quantity represented by each item listed under the lot size heading.

If the Department terminates a Lot prematurely, the samples from the first day's production will be used to calculate a volumetric pay factor, and a minimum of three cores will be used for a density pay factor, if applicable, for quantities placed to date.

Sublot size - Refer to section 401.201, 401.202, and 401.203 for minimum size and number of sublots. The quantity represented by each sample will constitute a sublot.

If there is less than one-half of a sublot remaining at the end, then it shall be combined with the previous sublot. If there is more than one-half sublot remaining at the end, then it shall constitute the last sublot and shall be represented by test results. If it becomes apparent partway through a Lot that, due to an underrun, there will be insufficient mix quantity to obtain the minimum number of sublots needed, the Resident may adjust the size of the remaining sublots and select new sample locations based on the estimated quantity of material remaining in the Lot.

Acceptance Testing The Department will obtain samples of Hot Mix Asphalt Pavement in conformance with AASHTO T168 Sampling Bituminous Paving Mixtures, and the Maine DOT Policies and Procedures for HMA Sampling and Testing, which will then be transported by the Contractor to the designated MDOT Laboratory within 48 hours (except when otherwise noted in the project specific QCP due to local restrictions), as directed by MDOT in approved transport containers to be provided by the Department, unless otherwise directed by the Resident. Failure to deliver an acceptance sample to the designated acceptance laboratory will be considered the second incident under 106.4.6–QCP Non-Compliance.

The Department will take the sample randomly within each sublot. Target values shall be as specified in the JMF. The Department will use Table 5 for calculating pay factors for gradation, PGAB Content, Air Voids at N_{design}, VMA, Fines to Effective Binder and VFB. The Department will withhold reporting of the test results for the Acceptance sample until 7:00 AM, on the second working day of receipt of the sample, or after receipt of the Contractors results of the Acceptance sample split. Upon conclusion of each lot, where there is a minimum of four sublots, results shall be examined for statistical outliers, as stated in Section 106.7.2 - Statistical Outliers.

Isolated Areas During the course of inspection, should it appear that there is an isolated area that is not representative of the lot based on a lack of observed compactive effort, excessive segregation or any other questionable practice, that area may be isolated and tested separately. An area so isolated that has a calculated pay factor below 0.80, based on three random tests shall be removed and replaced at the expense of the Contractor for the full lane width and a length not to be less than 50 m [150 ft].

Pavement Density The Department will measure pavement density using core samples tested according to AASHTO T-166. The Department will randomly determine core locations. The Contractor shall cut 6 inch diameter cores at no additional cost to the Department by the end of the working day following the day the pavement is placed, and immediately give them to the Department. The cores will be placed in a transport container provided by the Department and transported by the Contractor to the designated MDOT Lab as directed by the Department. Pre-testing of the cores will not be allowed. At the time of sampling, the Contractor and the Department shall mutually determine if a core is damaged. If it is determined that the core(s) is damaged, the Contractor shall cut new core(s) at the same offset and within 1 m [3 ft] of the initial sample. At the time the core is cut, the Contractor and the Department will mutually determine if saw cutting of the core is needed, and will mark the core at the point where sawing is needed. The core may be saw cut by the Contractor in the Department's presence onsite, or in an MDOT Lab by The Department, without disturbing the layer being tested to remove lower layers of Hot Mix Asphalt Pavement, gravel, or RAP. No recuts are allowed at a test location after the core has been tested. Upon conclusion of each lot, density results shall be examined for statistical outliers as stated in Section 106.7.2.

On all sections of overlay with wearing courses designed to be 19 mm [3/4 in] or less in thickness, there shall be no pay adjustment for density otherwise noted in Section 403 - Hot Bituminous Pavement. For overlays designed to be 19 mm [3/4 in] or less in thickness, density shall be obtained by the same rolling train and methods as used on mainline travelway surface courses with a pay adjustments for density, unless otherwise directed by the Department.

There shall be no pay adjustment for density on shoulders unless otherwise noted in Section 403 - Hot Bituminous Pavement. Density for shoulders shall be obtained by the same rolling train and methods as used on mainline travelway, unless otherwise directed by the Department. Efforts to obtain optimum compaction will not be waived by the Department unless it is apparent during construction that local conditions make densification to this point detrimental to the finished pavement surface course.

401.201 Method A Lot Size will be the entire production per JMF for the project, or if so agreed at the Pre-paving Conference, equal lots of up to 4500 Mg [4500 tons], with unanticipated over-runs of up to 1500 Mg [1500 ton] rolled into the last lot. Sublot sizes shall be 750 Mg [750 ton] for mixture properties, 500 Mg [500 ton] for base or binder densities and 250 Mg [250 ton] for surface densities. The minimum number of sublots for mixture properties shall be 4, and the minimum number of sublots for density shall be five.

TABLE 5: METHOD A ACCEPTANCE LIMITS

Property	USL and LSL
Passing 4.75 mm and larger sieves	Target +/-7%
Passing 2.36 mm to 1.18 mm sieves	Target +/-4%
Passing 0.60 mm	Target +/-3%
Passing 0.30 mm to 0.075 mm sieve	Target +/-2%
PGAB Content	Target +/-0.4%
Air Voids	4.0% +/-1.5%
Fines to Effective Binder	0.6 to 1.2
Voids in the Mineral Aggregate	LSL Only from Table 1
Voids Filled with Binder	Table 1 values plus a 4% production tolerance for USL only
% TMD (In place density)	95.0% +/- 2.5%

401.202 Method B Lot Size will be the entire production per JMF for the project and shall be divided into 3 equal sublots for Mixture Properties and 3 equal sublots for density.

TABLE 6: METHOD B ACCEPTANCE LIMITS

Property	USL and LSL
Percent Passing 4.75 mm and larger sieves	Target +/-7
Percent Passing 2.36 mm to 1.18 mm sieves	Target +/-5
Percent Passing 0.60 mm	Target +/-4
Percent Passing 0.30 mm to 0.075 mm sieve	Target +/-3
PGAB Content	Target +/-0.5
Air Voids	4.0% +/-2.0
Fines to Effective Binder	0.6 to 1.4
Voids in the Mineral Aggregate	LSL from Table 1
Voids Filled with Binder	Table1 plus a 4% production tolerance for USL.
% TMD (In-place Density)	95.0% +/- 2.5%

401.203 Testing Method C Lot Size will be the entire production per JMF for the project, or if so agreed at the Pre-paving Conference, equal lots of up to 4500 Mg [4500 tons], with unanticipated over-runs of up to 1500 Mg [1500 ton] rolled into the last lot. Sublot sizes shall be 750 Mg [750 ton] for mixture properties, 500 Mg [500 ton] for base or binder densities and 250 Mg [250 ton] for surface densities. The minimum number of sublots for mixture properties shall be 4, and the minimum number of sublots for density shall be five.

TABLE 7: METHOD C ACCEPTANCE LIMITS

Property	USL and LSL
Passing 4.75 mm and larger sieves	Target +/-7%
Passing 2.36 mm to 1.18 mm sieves	Target +/-5%
Passing 0.60 mm	Target +/-4%
Passing 0.30 mm to 0.075 mm sieve	Target +/-2%
PGAB Content	Target +/-0.4%
Air Voids	4.0% +/-1.5%
Fines to Effective Binder	0.6 to 1.2
Voids in the Mineral Aggregate	LSL Only from Table 1
Voids Filled with Binder	Table 1 values plus a 4% production tolerance for USL only
% TMD (In place density)	95.0% +/- 2.5%

401.204 Testing Method D For hot mix asphalt items designated as Method D in Section 403 - Hot Bituminous Pavement, one sample will be taken from the paver hopper or the truck body per 250 Mg [250 ton] per pay item. The mix will be tested for gradation and PGAB content. Disputes will not be allowed. If the mix is within the tolerances listed in Table 8: Method D Acceptance Limits, the Department will pay the contract unit price. If the test results for each 250 Mg [250 ton] increment are outside these limits, the following deductions (Table 8b) shall apply to the HMA quantity represented by the test.

TABLE 8: METHOD D ACCEPTANCE LIMITS

Property	USL and LSL
Percent Passing 4.75 mm and larger sieves	Target +/-7
Percent Passing 2.36 mm to 1.18 mm sieves	Target +/-5
Percent Passing 0.60 mm	Target +/-4
Percent Passing 0.30 mm to 0.075 mm sieve	Target +/-3
PGAB Content	Target +/-0.5
% TMD (In-place Density)	95.0% +/- 2.5%

TABLE 8b Method "D" Price Adjustments

PGAB Content	-5%
2.36 mm sieve	-2%
0.30 mm sieve	-1%
0.075 mm sieve	-2%
Density	-10%*

*Only applies when called for in Section 403 - Hot Bituminous Pavement. Contractor shall cut two 150 mm [6 in] cores, which shall be tested for percent TMD per AASHTO T-269. If the average for the two tests falls below 92.5% the disincentive shall apply.

401.21 Method of Measurement The Department will measure Hot Mix Asphalt Pavement by the Mg [ton] in accordance with Section 108.1 - Measurement of Quantities for Payment.

401.22 Basis of Payment The Department will pay for the work, in place and accepted, in accordance with the applicable sections of this Section, for each type of HMA specified.

The Department will pay for the work specified in Section 401.11, for the HMA used, except that cleaning objectionable material from the pavement and furnishing and applying bituminous material to joints and contact surfaces is incidental.

Payment for this work under the appropriate pay items shall be full compensation for all labor, equipment, materials, and incidentals necessary to meet all related contract requirements, including design of the JMF, implementation of the QCP, obtaining core samples, transporting cores and samples, filling core holes, applying emulsified asphalt to joints, and providing testing facilities and equipment.

The Department will make a pay adjustment for quality as specified below.

401.221 Pay Adjustment The Department will sample, test, and evaluate Hot Mix Asphalt Pavement in accordance with Section 106 - Quality and Section 401.20 - Acceptance, of this Specification.

401.222 Pay Factor (PF) The Department will use the following criteria for pay adjustment using the pay adjustment factors under Section 106.7 - Quality Level Analysis:

Density If the pay factor for Density falls below 0.80 for Method A or C or 0.86 for Method B, all of the cores will be randomly recut by Sublot. A new pay factor will be calculated that combines all initial and retest results. If the resulting pay factor is below 0.80 for Method A or C or below 0.86 for Method B, the entire Lot shall be removed and replaced with material meeting the specifications at no additional cost to the Department, except that the Department may, when it appears that there is a distinct pattern of defective material, isolate any defective material by investigating each mix sample sublot and require removal of defective mix sample sublots only, leaving any acceptable material in place if it is found to be free of defective material. Pay factors equal to or greater than the reject level will be paid accordingly.

Gradation For HMA evaluated under Acceptance Method A or B, the Department will determine a composite pay factor (CPF) using applicable price adjustment factors "f" from Table 9: Table of Gradation Composite "f" Factors, and Acceptance limits from Table 5: Method A Acceptance Limits, for Method A or Table 6: Method B Acceptance Limits, for Method B. The Department will not make price adjustments for gradation on Methods A and B, but will monitor them as shutdown criteria.

TABLE 9: TABLE OF GRADATION COMPOSITE " f " FACTORS
(Methods A and B)

Constituent		"f" Factor			
		19 mm	12.5 mm	9.5 mm	4.75 mm
Gradation	25 mm	-	-	-	-
	19 mm	4	-	-	-
	12.5 mm		4	4	-
	9.50 mm				4
	2.36 mm	6	6	6	8
	1.18 mm				
	0.60 mm	2	2	2	2
	0.30 mm	2	2	2	2
	0.075 mm	6	6	6	8

For HMA evaluated under Acceptance Method C, the Department will determine a pay factor using acceptance limits from Table 7: Method C Acceptance Limits.

VMA, Air Voids, VFB and Fines to Effective Binder The Department will determine a pay factor (PF) using the applicable Acceptance Limits.

The following variables will be used for pay adjustment:

PA = Pay Adjustment
Q = Quantity represented by PF in Mg [ton]
P = Contract price per Mg [ton]
PF = Pay Factor

Pay Adjustment Method A

The Department will use the following criteria for pay adjustment: density, Performance Graded Asphalt Binder content, voids @$N_{d,}$ VMA, VFB, F/B_{eff}, and the screen sizes listed in Table 9 for the type of HMA represented in the JMF. If any single pay factor for PGAB Content, VMA, or Air Voids falls below 0.80, then the composite pay factor for PGAB Content, VMA, and Air Voids shall be 0.55.

Density: For mixes having a density requirement, the Department will determine a pay factor using Table 5: Method A Acceptance Limits:

PA = (density PF- 1.0)(Q)(P)x0.50

PGAB Content, VMA and Air Voids: The Department will determine a pay adjustment using Table 5: Method A Acceptance Limits as follows:

PA = (voids @ N_d PF- 1.0)(Q)(P)x0.20 + (VMA @ N_d PF- 1.0)(Q)(P)x0.20 + (PGAB PF- 1.0)(Q)(P)x0.10

VFB and Fines to Effective Binder The Department will determine a pay factor (PF) using Table 5: Method A Acceptance Limits. The Department will not make price adjustments for VFB or Fines to Effective Binder, but will monitor them as shutdown criteria.

Pay Adjustment Method B

The Department will use the following criteria for pay adjustment: density, Performance Graded Asphalt Binder content, voids @N_d, VMA, VFB, F/B_{eff}, and the screen sizes listed in Table 9 for the type of HMA represented in the JMF. If any single pay factor for PGAB Content, VMA, or Air Voids falls below 0.86, then the composite pay factor for PGAB Content, VMA, and Air Voids shall be 0.70.

Density: For mixes having a density requirement, the Department will determine a pay factor using Table 6: Method B Acceptance Limits:

PA = (density PF- 1.0)(Q)(P)x0.50

PGAB Content, VMA and Air Voids: The Department will determine a pay adjustment using Table 6: Method B Acceptance Limits as follows:

PA = (voids @ N_d PF- 1.0)(Q)(P)x0.20 + (VMA @ N_d PF- 1.0)(Q)(P)x0.20 + (PGAB PF- 1.0)(Q)(P)x0.10

VFB and Fines to Effective Binder The Department will determine a pay factor (PF) using Table 6: Method B Acceptance Limits. The Department will not make price adjustments for VFB or Fines to Effective Binder, but will monitor them as shutdown criteria.

Pay Adjustment Method C

The Department will use density, Performance Graded Asphalt Binder content, and the percent passing the nominal maximum, 2.36 mm, 0.300 mm and 0.075 mm sieves for the type of HMA represented in the JMF. If the PGAB content falls below 0.80, then the PGAB pay factor shall be 0.55.

Density: For mixes having a density requirement, the Department will determine a pay factor using Table 7: Method C Acceptance Limits:

PA = (density PF- 1.0)(Q)(P)x0.50

PGAB Content and Gradation The Department will determine a pay factor using Table **7**: Method C Acceptance Limits. The Department will calculate the price adjustment for Mixture Properties as follows:

PA = (% Passing Nom. Max PF-1.0)(Q)(P)X0.05+(% passing 2.36 mm PF-1.0)(Q)(P)X0.05+(%passing 0.30 mm PF-1.0)(Q)(P)X0.05+(%passing 0.075 mm PF-1.0)(Q)(P)X0.10+(PGAB PF-1.0)(Q)(P)X0.25

VMA, Air Voids, VFB and Fines to Effective Binder The Department will determine a pay factor (PF) using Table 7: Method C Acceptance Limits. The Department will not make price adjustments for VMA, Air Voids, VFB or Fines to Effective Binder, but will monitor them as shutdown criteria.

Pay Adjustment Method D

The Department will use density, Performance Graded Asphalt Binder content, and the screen sizes listed in Table 8b for the type of HMA represented in the JMF. If test results do not meet the Table 8 requirements, deducts as shown in Table 8b shall be applied to the quantity of mix represented by the test.

401.223 Process for Dispute Resolution (Methods A B & C only)

a. Dispute Resolution sampling At the time of Hot-Mix Asphalt sampling, the Department will obtain a split sample of each Acceptance test random sample for possible dispute resolution testing. The Contractor shall also obtain a split sample of the HMA at this same time. If the Contractor wishes to retain the option of requesting dispute testing of the initial Acceptance sample, the Contractor will test their split of the

Acceptance sample and shall report their results to the Resident, with a copy to the QA Engineer at the Central Laboratory in Bangor by 7:00 AM, on the second working day from time of QA sampling, otherwise dispute resolution will not be initiated. The Department's dispute resolution split sample will be properly labeled and stored for a period of not more than two weeks, or until the sample is tested.

b. Disputing Acceptance results The Contractor may dispute the Department's Acceptance results and request (Methods A, B, & C) that the dispute resolution split sample be tested by notifying the Department's Resident and the QA Engineer at the Central Laboratory in Bangor in writing within two working days after receiving the results of the Acceptance test. The following shall be provided in the request:

- Acceptance sample reference number
- The specific test result(s) or property(ies) being disputed, and
- The complete, signed report of the Contractor's testing (In a lab certified by the NETTCP and MDOT) of their split of the Acceptance sample indicating that the variances in Table10: Dispute Resolution Variance Limits, for the specific test result(s) or property(ies) were exceeded.

c. Disputable items The Contractor may dispute any or all of the following Method A or B test results when the difference between the Department's value and the Contractor's value for that test equals or exceeds the corresponding allowable variation in Table 10: Dispute Resolution Variance Limits, PGAB content, G_{mb}, and G_{mm}. In addition, if the allowable variation for these tests is not met or exceeded, the Contractor may dispute either or both of the following material properties provided the difference between results for them equals or exceeds the corresponding allowable variation in Table 10: Voids at N_{design}, and VMA.
For Method C only: The results for PGAB content and the screen sizes used for pay adjustment may be disputed.

d. Outcome The value of any disputed result or property reported for the initial Acceptance sample shall stand if the value reported for the dispute resolution sample is not closer to the value the Contractor reported for their split sample than to the value reported for the initial Acceptance sample. If the value reported for the dispute resolution falls precisely half-way between the other two values the value reported for the dispute resolution will replace the original acceptance value. Otherwise, the value reported for the dispute resolution sample will replace the value reported for the initial Acceptance sample, and will be used to re-calculate any other affected results or properties.

TABLE 10: DISPUTE RESOLUTION VARIANCE LIMITS

PGAB Content	+/-0.4%
G_{mb}	+/-0.030
G_{mm}	+/-0.020
Voids @ N_d	+/-0.8%
VMA	+/-0.8%
Passing 4.75 mm and larger sieves	+/- 4.0%
Passing 2.36 mm to 0.60 mm sieves	+/- 3.0%
Passing 0.30 mm to 0.15	+/- 2.0 %
0.075 mm sieve	+/- 1.0%

SECTION 402 - PAVEMENT SMOOTHNESS

402.00 Smoothness Projects Projects to have their pavement smoothness analyzed in accordance with this Specification will be so noted in Special Provision 403 - Bituminous Box

402.01 Pavement Smoothness The final pavement surface shall be evaluated for smoothness using a Class I or Class II profiler as defined by ASTM E950 (94). Smoothness measurements will be expressed in terms of the International Roughness Index (IRI) as defined by the World Bank, in units of inches/mile.

402.02 Lot Size Lot size for smoothness will be 1000 lane-meters [3000 lane-feet]. A sublot will consist of 20 lane-meters [50 lane-feet]. Partial lots will be included in the previous lot if less than one-half the size of a normal lot. If equal to or greater than one-half the normal lot size, it will be tested as a separate lot.

402.03 Acceptance Testing The Department will conduct Acceptance testing following completion of the surface course. Sections to be excluded from testing include the following:

Bridge decks and joints (no smoothness measurements will be taken within 30 m [100 ft] of bridge joints)
Acceleration and deceleration lanes
Shoulders and ramps
Side streets and roads
Within 30 m [100 ft] of transverse joints at the beginning and end of the project
Within 30 m [100 ft] of railroad crossings
Urban areas with speed limits of 50 kph [30 mph] or lower

Each lot shall have 2 measurements made in each wheel path. The average of the 4 measurements will determine the smoothness for that lot.

The smoothness measurements will be statistically evaluated for pay factors as described in Subsection 106.7 - Quality Level Analysis, using the specification limits shown below.

ACCEPTANCE LIMITS

Level	USL
I	0.95 m/km [60 in/mile]
II	1.10 m/km [70 in/mile]
III	1.25 m/km [80 in/mile]

Computation of Smoothness Pay Adjustment:

PA = (PF-1.0)(Q)(P)
where:
Q = Quantity of surface course in the Lot (excluding shoulders, side streets, bridge decks, ramps, acceleration and deceleration lanes)
PF = smoothness pay factor for the Lot
P = Contract unit price for surface pavement
PA = pay adjustment

402.04 Unacceptable Work In the event that any Lot is found to have a pay factor less than 0.80, the Contractor shall take whatever remedial action is required to correct the pavement surface in that Lot at no additional expense to the Department. Such remedial action may include but is not limited to removal and replacement of the unacceptable pavement. In the event remedial action is necessary, the Contractor shall

submit a written plan to the Resident outlining the scope of the remedial work. The Resident must approve this plan before the remedial work can begin. Following remedial work, the Lot shall be retested, and will be subject to the specification limits listed above. The resulting pay factor, if within the acceptable range, will be used in the final pay adjustment. The Contractor shall pay the cost of retesting the pavement following corrective action.

Localized surface tolerance defects will be subject to the provisions outlined in Section 401.101 Surface Tolerances.

Payment will be made under:

Pay Item	Pay Unit
402.10 Incentive/Disincentive - Pavement Smoothness	Lump Sum

SECTION 403 - HOT BITUMINOUS PAVEMENT

403.01 Description This work shall consist of constructing one or more courses of bituminous pavement on an approved base in accordance with these specifications, and in reasonably close conformity with the lines, grades, thickness and typical cross sections shown on the plans or established.

The bituminous pavement shall be composed of a mixture of aggregate, filler if required, and bituminous material.

403.02 General The materials and their use shall conform to the requirements of Section 401 - Hot Mix Asphalt Pavement.

403.03 Construction The construction requirements shall be as specified in Section 401 - Hot Mix Asphalt Pavement.

In addition, hot bituminous pavement placed on bridges shall also conform to the following requirements.

a. The mixture shall be composed of aggregate, PGAB and mineral filler but no recycled asphalt pavement and placed in courses as specified in the Special Provisions.

b. The bottom course shall be placed with an approved rubber mounted bituminous paver of such type and operated in such a manner that the membrane waterproofing will not be damaged in any way.

c. The top course shall not be placed until the bottom course has cooled sufficiently to provide stability.

d. The Contractor will not be required to cut sample cores from the compacted pavement on the bridge deck.

e. After the top course has been placed, the shoulder areas shall be sealed 1 meter [3 ft] wide with two applications of an emulsified bituminous sealer meeting the requirements of Section 702.12 - Emulsified Bituminous Sealing Compound. The first application shall be pre-mixed with fine, sharp sand, similar to mortar sand, as needed to fill all voids in the mix in the area being sealed. The second application may be applied without sand. The sealer shall be carried to the curb at the gutter line in sufficient quantity to leave a bead or fillet of material at the face of the curb. The area to be sealed shall be clean, dry and the surface shall be at ambient temperature.

f. The furnishing and applying of the required quantity of sealer for the bridge shoulder areas shall be incidental to placing the hot bituminous pavement.

g. The atmospheric temperature for all courses on bridge decks shall be 10°C [50°F] or higher.

403.04 Method of Measurement Hot bituminous pavement will be measured as specified in Section 401.21- Method of Measurement.

403.05 Basis of Payment The accepted quantities of hot bituminous pavement will be paid for at the contract unit price per Megagram [ton] for the bituminous mixtures, including bituminous material complete in place.

Method A, Method B, Method C and Method D shall be used for acceptance as specified in Section 401 - Hot Mix Asphalt Pavements. (See Complementary Notes, Section 403 - Hot Bituminous Pavement, for Method location).

Payment will be made under:

Pay Item		Pay Unit
403.102	Hot Mix Asphalt Pavement for Special Areas	MG [Ton]
403.206	Hot Mix Asphalt, 25 mm Nominal Maximum Size	MG [Ton]
403.207	Hot Mix Asphalt, 19.0 mm Nominal Maximum Size	MG [Ton]
403.208	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size	MG [Ton]
403.209	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals)	MG [Ton]
403.210	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size	MG [Ton]
403.211	Hot Mix Asphalt (shimming)	MG [Ton]
403.212	Hot Mix Asphalt, 4.75 mm Nominal Maximum Size	MG [Ton]
403.213	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size, Base	MG [Ton]

SPECIAL PROVISION
SECTION 403
HOT MIX ASPHALT

Desc. Of Course	Grad Design.	Item Number	Bit Cont. % of Mix	Total Thick	No. Of Layers	Comp. Notes
Bridge Deck						
Wearing	9.5 mm	403.210	N/A	1.5 in	1	1,2,4,8
Base	9.5 mm	403.210	N/A	1.5 in	1	1,2,4,8
Travel Way and Shoulder Approach Areas						
Wearing	9.5 mm	403.210	N/A	1.5 in	1	4,8,12
Base	9.5 mm	403.210	N/A	1.5 in	1	4,8,12
Parking Areas						
Wearing	9.5 mm	403.210	N/A	1.5 in	1	4,8,12
Base	9.5 mm	403.210	N/A	1.5 in	1	4,8,12
Sidewalks, Drives, Islands & Incidentals						
Wearing	9.5 mm	403.209	N/A	2 in	2/more	2,3,10,13

COMPLEMENTARY NOTES

1. The use of Recycled Asphalt Pavement (RAP) will not be permitted.
2. The density requirements are waived.
3. The design traffic level for mix placed shall be <0.3 million ESALS.
4. The design traffic level for mix placed shall be 0.3 to <3 million ESALS. The design, verification, Quality Control, and Acceptance tests for this mix will be performed at **50 gyrations.**
8. Section 106.6 Acceptance, (2) Method B.
10. Section 106.6 Acceptance, (2) Method D.
12. A mixture meeting the gradation of 12.5 mm hot mix asphalt may be used at the option of the contractor.
13. A mixture meeting the requirements of section 703.09 Grading 'D', with a minimum PGAB content of 6%, and the limits of Special Provision 401, Table 9 (Drives and Sidewalks) for PGAB content and gradation may be substituted for this item. A job mix formula shall be submitted to the department for approval.

Tack Coat

A tack coat of emulsified asphalt, RS-1, Item 409.15 shall be applied to any existing pavement at a rate of approximately 0.025 gal/yd², and on milled pavement approximately 0.05 gal/yd², prior to placing a new course. A fog coat of emulsified asphalt shall be applied between shim / intermediate course and the surface course, at a rate not to exceed 0.025 gal/yd².

Tack used between layers of pavement will be paid for at the contract unit price for Item 409.15 Bituminous Tack Coat.

SPECIAL PROVISION
SECTION 501
EXPLORATORY DRILLING

Add the following to 501.01:

Description. This work shall consist of mobilization of drill rigs over-water, advancing cased-hole wash borings, coring bedrock samples and logging borings at locations specified on the Plans.

Add the following to 501.03:

Exploratory Drilling. To determine the elevation and character of the bedrock surface directly below and at the center of each pier, the Contractor shall drill cased borings and bedrock cores where indicated on the Plan. The rock cores shall be cut with a 2-inch diameter, double or triple tube core barrel to a minimum of 5 feet below the top of bedrock. The samples shall be placed in suitable containers, identified by boring number, elevation, project number and delivered with the field log to resident within 24 hours after the exploration is completed. Two copies of the typed final boring log shall be furnished to the Resident within 7 days of completion.

Add the following to 501.11:

Method of Measurement. The contact unit price per linear foot shall include the cost for furnishing all labor, materials and equipment necessary for conducting borings authorized by the Resident. There will be no separate payment for mobilization of equipment and barges; mobilization will be considered incidental. The quantity to be paid for will be the depth of cased wash borings below the ground surface plus the length of bedrock core.

Add the following to 501. 12:

Basis of Payment. Exploratory drilling authorized by the Resident will be paid for at the contract unit price per linear foot of cased borings and bedrock coring. Such payment shall be full compensation for mobilization of drill rigs, barges, rafts, equipment, drilling, coring, extracting and packaging the cores, keeping field logs, delivering them, and all other expenses necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
501.803	Exploratory Drilling	Linear Foot

January 6, 2009

SPECIAL PROVISION
SECTION 501
FOUNDATION PILES

501.02 Materials.

Add the following paragraph:

Pipe pile material shall meet the requirements of the Section 711.01 of Special Provision Section 711 – Miscellaneous Bridge Material.

501.05 Special Requirements for Steel Pipe Piles and Steel Casings.

Add the following paragraph:

The fusion-bonded epoxy coating and top-coat surfaces on pipe piles will be protected from damage in the pile driver leads. Steel driving templates shall be lined with wood framing, recycled fire hoses or other suitable material, to protect the pile coatings from damage during driving. Any damage to the pile protective top-coat shall be field repaired in accordance with the coating manufacturer's recommendations. Any damage to the fusion-bonded epoxy coating shall be field repaired in accordance with Special Provision Section 506.

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(QC/QA Acceptance Methods)

CLASS OF CONCRETE	ITEM NUMBER	DESCRIPTION	P	METHOD
A	501.701	Concrete for Filling Pipe Pile	$300	B
A	502.21	Structural Concrete, Abutments and Retaining Walls	$400	A
S	502.22	Structural Concrete, Abutments and Retaining Wall (Placed Underwater)	$400	C
A	502.239	Structural Concrete Piers	$400	A
A	502.25	Structural Concrete Superstructure Slab	$400	A
A	502.31	Structural Concrete Approach Slabs		C
LP	502.49	Structural Concrete Curbs and Sidewalks	$425	A
LP	526.34	Permanent Concrete Transition Barrier	$425	A
Fill	502.56	Concrete Fill		C
Per Special Provision	509.72	Composite Beam (Compression Reinforcement)		C

P values listed above reflect the price per cubic yard (yd^3) for all pay adjustment purposes.

SPECIAL PROVISION
SECTION 502
CALCIUM NITRITE

Table 1 under Subsection 502.05 Composition and Proportioning in Special Provision 502 Structural Concrete is revised as follows:

502.05 Compositioning and Proportioning Table 1 is revised by making Note 3 of the table applicable only to Class *A* Concrete for Pay Items:

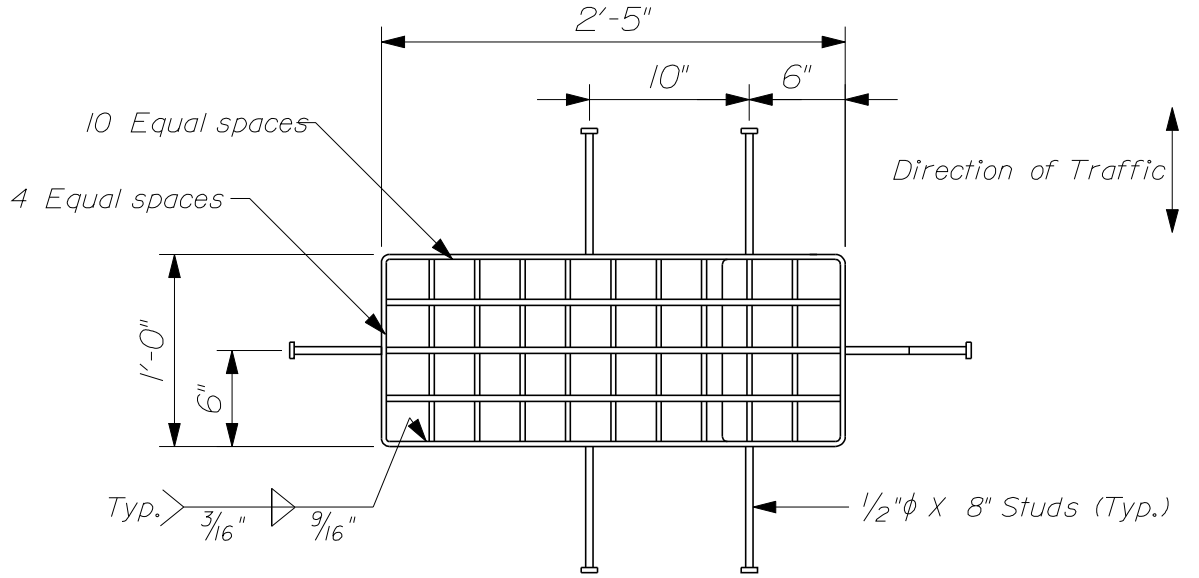
502.219 Structural Concrete Abutments and Retaining Walls
502.239 Structural Concrete Piers

The Contractor shall also provide materials and equipment and perform field testing to verify presence of Calcium Nitrite in the Class A concrete at the project site. All costs for Calcium Nitrite verification testing shall be incidental to related Contract items.

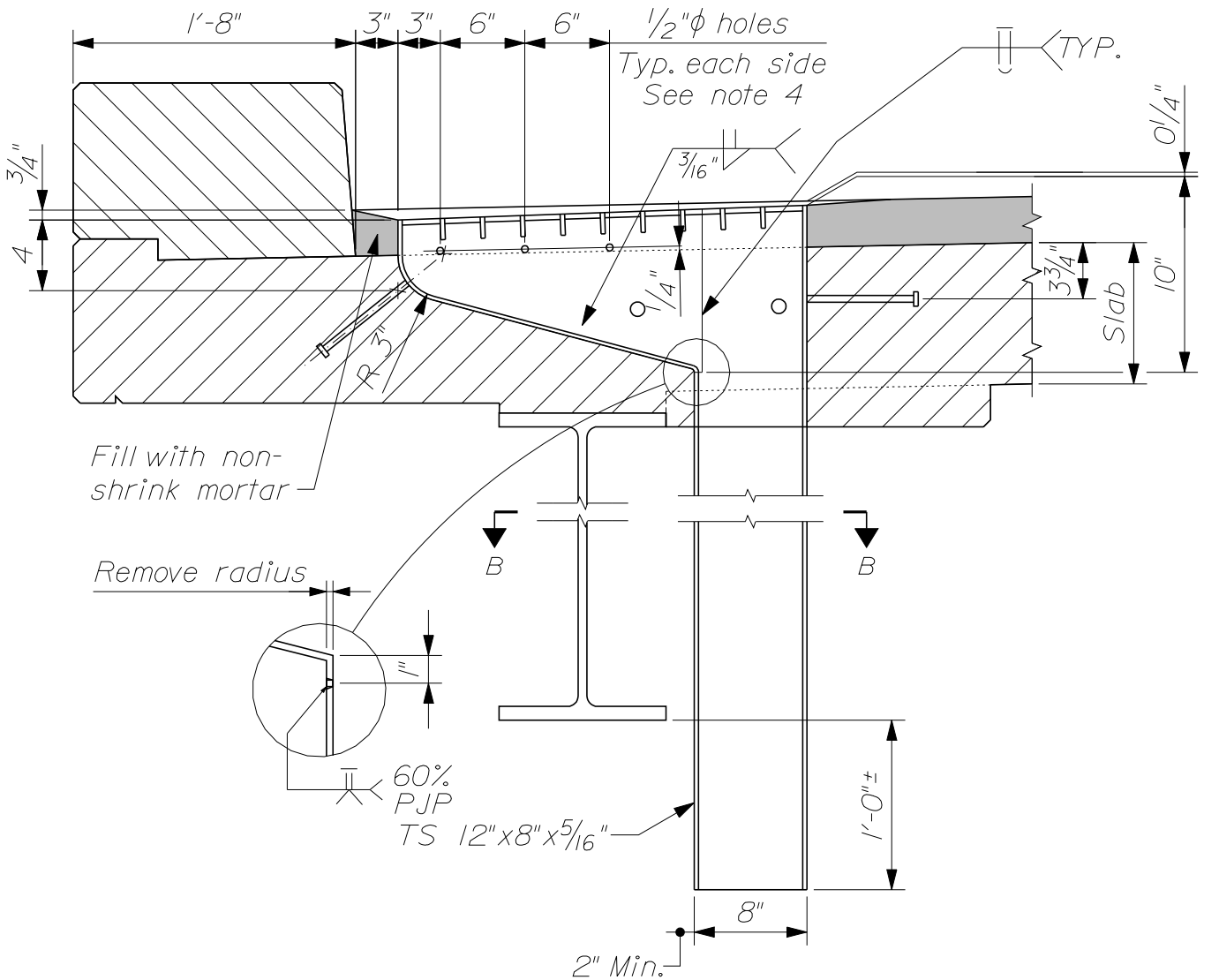
SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Bridge Drains)

The following shall be added to the 502.17, Bridge Drains and Incidental Drainage, of the 2002 Revision of the Standard Specifications:

The attached bridge drain drawing shall be used on the project.

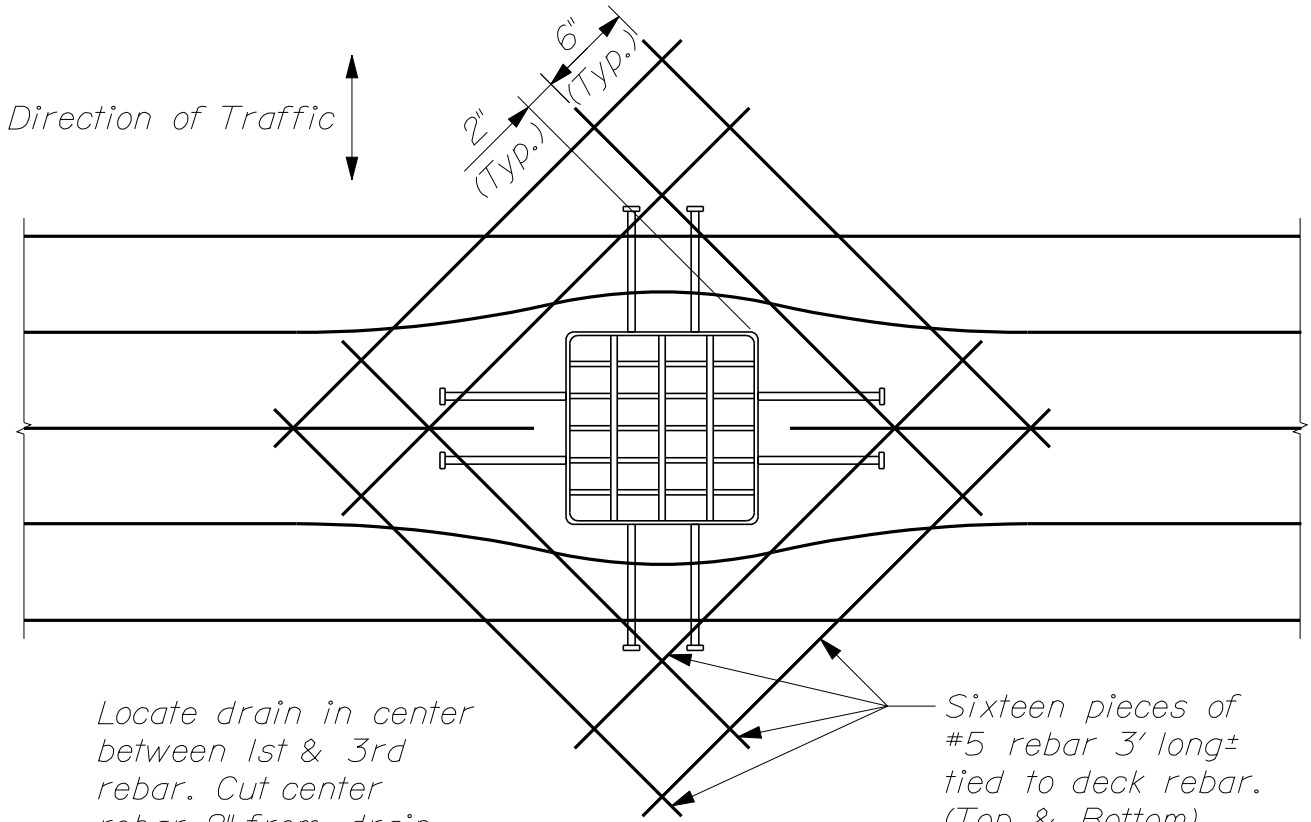


-- PLAN --



-- SECTION --

BRIDGE DRAIN TYPE A



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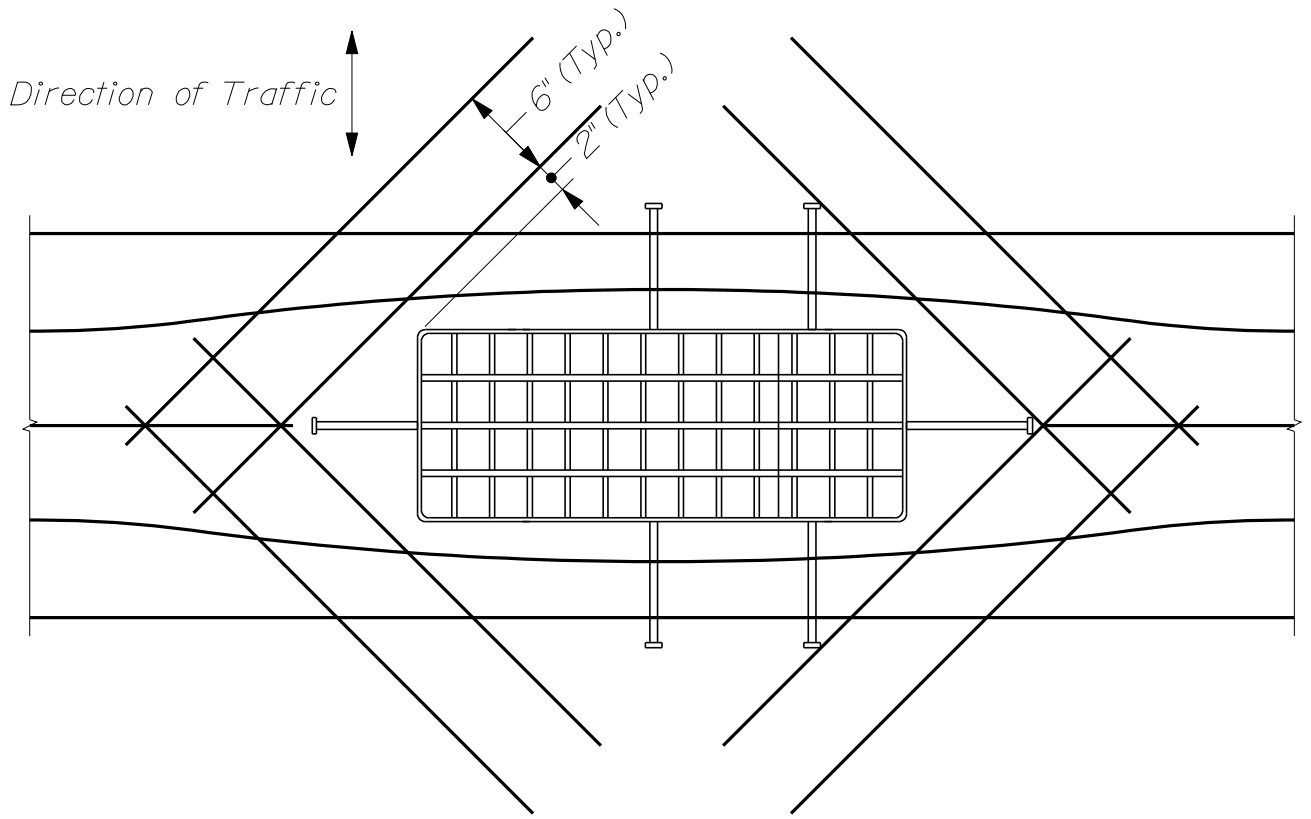


-- PLAN --

ADDITIONAL REINFORCING STEEL AROUND BRIDGE DRAINS

502(00)

NOTES:

1. All plates, if any, shall be 5/16" thick and shall conform to ASTM A 36.

2. The downspout shall conform to ASTM A500.

3. Grating shall be a commercial heavy - duty grating with 1 1/2" x 5/16" bearing bars and 3/8" ϕ cross bars.

4. The 1/2" ϕ holes are not required when a concrete wearing surface is specified.

5. If the minimum thickness of concrete below the drain is 2" or less, the concrete haunch shall be extended as shown.

6. Shear connectors welded to top flange of beam may need to be bent out of the way should an interference with the bridge drain occur.

7. Drains and shall be blast cleaned to the requirements of SSPC-SP6/NACE 3 and hot-dipped galvanized in accordance with ASTM A 123. Steel beam attachment: WT 6 x 13 and associated fasteners shall meet the same material specification and protective coating requirements as the structural steel.

8. Payment for bridge drains will be as specified under Subsection 502.19 of the Standard Specifications.

9. The additional reinforcing steel around each bridge drain will not be paid for directly. Payment will be considered incidental to related contract items.

STANDARD BRIDGE DRAIN NOTES

May 4, 2006
Supersedes September 29, 2004

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Quality Level Analysis)

502.01 Description In second sentence, replace "…METHOD B Small Qunatity Product Verification…" with "…METHOD B Statistical Acceptance…"

502.05 Composition and Proportioning Delete Table 1 and replace with the following;

TABLE 1- Methods A and B

Concrete CLASS	Compressive Strength (PSI)		Permeability (COULOMBS)		Entrained Air (%)		Notes
	LSL	USL	LSL	USL	LSL	USL	
S	2,900	N/A	N/A	N/A	6.0	8.5	1, 5
A	4,350	-----	-----	2,400	6.0	8.5	1,2,5,6
P	-----	-----	-----	-----	5 ½	7 ½	1,2,3,4,5
LP	5,075	-----	-----	2,000	6.0	8.5	1,2,5,6
Fill	2,900	N/A	N/A	N/A	N/A	N/A	6

502.503 Delete and replace with the following;

"502.0503 Quality Assurance METHOD B The Department will determine the acceptability of the concrete through a quality assurance program.

The Department will take Quality Assurance samples a minimum of once per sublot on a statistically random basis. Quality Assurance tests will include compressive strength, air content and permeability.

Concrete sampling for quality assurance tests will be taken at the discharge point, with pumped concrete sampling taken at the discharge end of the pump line.

Lot Size A lot size shall consist of the total quantity represented by each class of concrete in the Contract, except in the case when the same class of concrete is paid for under both lump sum items and unit price items in the Contract; in this case, the lump sum item quantities shall comprise 1 lot and the unit price item quantities shall comprise a separate lot. A lot shall consist of a minimum of 3 and a maximum of 10 sublots. If a lot is comprised of more than 10 sublots, sized in accordance with Table #3, then this quantity shall be divided equally into 2, or more, lots such that there is a minimum of 3 and a maximum of 10 sublots per lot. If there is insufficient quantity in a lot to meet the recommended minimum sublot size, then the lot shall be divided into 3 equal sublots.

Sublot Size, General The size of each sublot shall be determined in accordance with Table #3. The Resident may vary sublot sizes based on placement sizes and sequence.

Sublot Size, Unit Price Items Sublot sizes will initially be determined from estimated quantities. When the actual final quantity of concrete is determined: If there is less than one-half the estimated sublot quantity in the remaining quantity, then this quantity shall be combined with the previous sublot, and no further Acceptance testing will be performed; if there is more than one-half the estimated sublot quantity in the remaining quantity, then this quantity shall constitute the last sublot and shall be represented by Acceptance test results. If it becomes apparent part way through a lot that, due to an underrun in quantity, there will be an insufficient quantity of concrete to comprise three sublots, then the Resident may adjust the sizes of the remaining sublots and select new sample locations based on the revised estimated quantity of concrete remaining in the lot.

Sublot Size, Lump Sum Items Each lot shall be divided into sublots of equal size, based on the estimated quantity of concrete.

TABLE 3

Quantity m^3 [cy]	Recommended Sublot Size m^3 [cy]
0-400 [0-500]	40 [50]
401-800 [501-1000]	60 [75]
801-1600 [1001-2000]	80 [100]
1601 [2001]or greater	200 [250]

Determination of the concrete cover over reinforcing steel for structural concrete shall be made prior to concrete being placed in the forms. Bar supports, chairs, slab bolsters, and side form spacers shall meet the requirements of Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice, Chapter 3 Section 2.5 Class 1, Section 2.6 Class 1A, or Section 4. All supports shall meet the requirements for type and spacing as stated in the CRSI Manual of Standard Practice, Chapter 3. Concrete will not be placed until the placing of the reinforcing steel and supports have been approved by the Resident. If the Contractor fails to secure Department approval prior to placement, the Contractor's failure shall be cause for removal and replacement at the Contractor's expense. The Contractor shall notify the Resident, at least 48 hours prior to the placement, when the reinforcing steel will be ready for checking. Sufficient time must be allowed for the checking process and any needed repairs.

Evaluation of materials will be made using the specification limits in Table 1.

Compressive strength tests will be completed by the Department in accordance with AASHTO-T22 at ≥ 28 days, except that no slump will be taken. The average of two concrete cylinders per sublot will constitute a test result and this average will be used to determine the compressive strength for pay adjustment computations.

Testing for Entrained Air in concrete, at the rate of one test per sublot, shall be in accordance with AASHTO T152.

Rapid Chloride Permeability test specimens will be completed by the Resident in accordance with AASHTO T-277 at an age ≥ 56 days. Two 100 mm x 200 mm [4 in x 8 in] cylinders will be taken per sublot placed.

Surface Tolerance, Alignment and Trueness, Plumb and Batter, and Finish will be measured as described in Section 502.0502.

Rejection by Resident For an individual sublot with a calculated pay factor of less than 0.80, the Department will, at its sole discretion:

A. Require the Contractor to remove and replace the entire affected placement with concrete meeting the Contract requirements at no additional expense to the Department, or

B. Accept the material, at a reduced payment as determined by the Department. (See also Section 502.191)

For a lot in progress, the Contractor shall discontinue operations whenever one or more of the following occurs:

A. The pay factor for any property drops below 1.00 and the Contractor is taking no corrective action

B. The pay factor for any property is less than 0.90

C. The Contractor fails to follow the QC Plan"

502.18 Method of Measurement Under Section E. make the following change from "….Method A, and under Section 502.19…" to "…Method A, Section 502.0503- Quality Assurance Method B, and under Section 502.19…"

502.19 Basis of Payment Modify the first sentence of the seventh paragraph from "…accepted under Method A." to "…accepted under Method A and Method B."

502.191 Pay Adjustment for Compressive Strength Add the following as the second sentence to the first paragraph; "Pay factors (PF) for pay adjustments for compressive strength will be determined using the Quality Level Analysis as specified in Section 106."

502.192 Pay Adjustment for Chloride Permeability Delete and replace with the following;

"Pay factors (PF) for pay adjustments for Chloride Permeability will be determined using the Quality Level Analysis as specified in Section 106.

Values greater than 4000 coulombs shall be subject to rejection and replacement at no additional cost to the Department."

502.193 Pay Adjustment for Air Content Delete and replace with the following;

"Pay factors (PF) for pay adjustments for air content will be determined using the Quality Level Analysis as specified in Section 106."

Add the following Section;

"502.195 Pay Adjustments for Compressive Strength, Chloride Permeability and Air Content The Composite Pay Factor (CPF) for each lot of concrete shall be computed as follows:

CPF = [(Compressive Strength PF-1)(0.20)] + [(Air Content PF-1)(0.40)]
+ [(Chloride Permeability PF-1)(0.40)]

The pay adjustment for each lot of concrete shall be computed as follows:

Lot Pay Adjustment = P x CPF x Lot Size

There will be no positive pay adjustments for Method B Concrete."

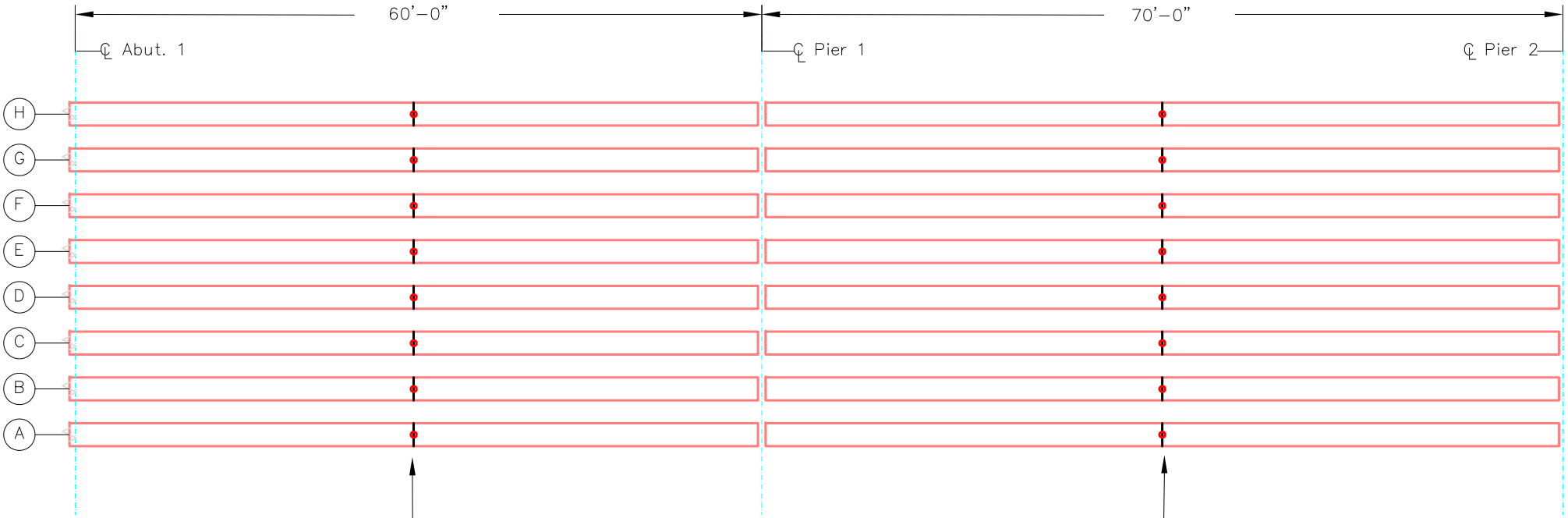
SPECIAL PROVISION
Research Equipment Installation

504.01 Description. The Boothbay Knickerbocker Bridge will be load tested and monitored by the AEWC at the University of Maine. The AEWC will install 6 strain gages on the rebar in the deck and in the diaphragm over Pier1. LVDTs will be placed by the AEWC under 2 girders adjacent to pier 1.

The Contractor shall conduct a meeting with AEWC personnel and Resident prior to construction of the superstructure. The AEWC shall be given a two week notice prior to any construction that will impact installation of research equipment. The AEWC shall have a minimum of three days to install their equipment. The Contractor shall install the 16 PK nails as directed by the Resident. The Contractor shall provide access under pier 1 to install LVDTs, which will not be installed until bridge paving is complete. The contact at the AEWC is Olivia Sanchez.

Olivia Sanchez
Research Engineer
AEWC - Advanced Structures and Composites Center
The University of Maine
Orono, ME 04469-5793
phone: (207) 581-2052
fax: (207) 581-2074
www.aewc.umaine.edu

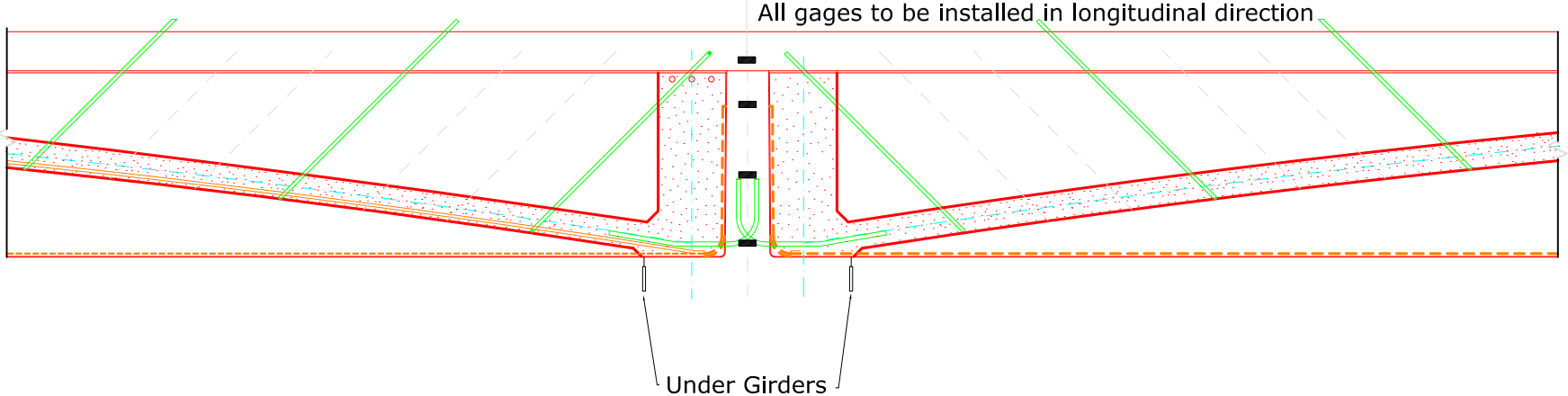
504.08 Basis of Payment. This work shall be incidental to related contract items.



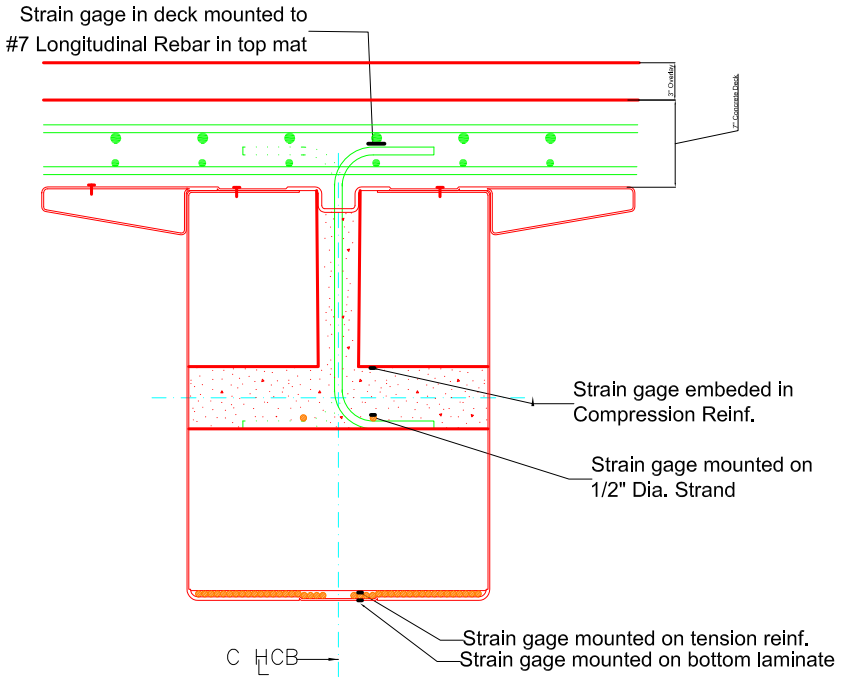
Span 1 and 2

PK nails placed at mid-span, top of deck over center line of all girders to measure deflection

Over Pier 1
3 Strain gages in deck - mounted on #7 bars in top mat
Strain gage embedded in diaphragm-3 locations through depth
All gages to be installed in longitudinal direction



Under Girders
LVDT under girder adjacent to bearing
installed day of load tests to measure rotation at bearing.



SECTION A–A – Stain Gage Location at Midspan

SPECIAL PROVISION
SECTION 504
ROCK ANCHORS

504.01 Description. This work shall consist of furnishing, installing, testing and tensioning rock anchors at the locations shown on the plans and specified herein.

Filling the steel pipe piles with concrete is included under Section 501-Foundation Piles.

The Contractor shall submit evidence of at least three previous successful installations within the last three years of work comparable to that shown in the Contract Documents and specified herein. This evidence shall include the owners, names and phone numbers related to the installations. The Contractor shall employ labor and supervisory personnel who are experienced in this type of work. The drilling operator and foremen shall have a minimum of 1 year experience with installing permanent rock anchors of highway quality. The Contractor shall submit information supporting the personnel experience.

504.02 Submittals. The following shall be submitted for review and approval not less than 30 days prior to the start of the work. The Contractor will not be allowed to begin work until all related submittal requirements are satisfied and found acceptable to the Resident:

(a) Shop drawings and material certifications of the complete rock anchor assembly. The drawings shall provide details and dimensions of the threadbar, double corrosion protection systems, anchor head, bond breaker, PVC sleeve, grout sleeve, couplings, lengths of smooth and corrugated sheathing and their relations to the steel pipe pile, length of unbonded zone, total anchor length, design, test and lock-off loads, grout type, grout admixture, and grouting procedures. Shop drawings detailing the monitoring system for measuring movements during performance and proof load tests; detailed procedures for testing and load transfer to anchors including method for verifying lock-off loads; detail procedures for installation of anchors, including method of drilling, threadbar installation, and grouting of anchors; and certified copies of chemical analyses and tensile strength.

(b) List and description of proposed equipment to be used for rock anchor installation, including drilling rock anchor holes, cleaning, checking cleanliness of drill holes, centralizing anchors, installing anchors, tremie grouting, tensioning, testing and load transfer. Details of methods for the above mentioned rock anchor installation activities.

(c) Sequence of installation of pipe piles, rock anchors, concreting, grouting, testing, tensioning, load transfer, and method to verify that piles are seated on bedrock.

(d) Plan for controlling and mitigating overbreakage of bedrock surface; methods to ensure seal of pipe pile/bedrock interface is maintained during rock anchor installation.

(e) Calibration for jacks and pressure gages or other equipment to be used in stressing and testing.

(f) Within one week of installation of the rock anchor systems, provide as-built information of data for each unit, to include: identification, location, dates and depths of initial drilling, grouting, tensioning, testing, and final lock-off loads, observed loads and tendons elongation, grouting pressures, bonded and unbonded anchor lengths and any unusual events.

(g) Drawing showing layout and location of remote reference beam for monitoring of anchor deformation during load tests.

(h) Certificate of Compliance of Conformance for anchor threadbar and plastic sheathing:

504.03 Inspection.

(a) Field inspection shall be provided as follows:

(1) The Contractor shall provide personnel, qualified by training and experience, to perform the required rock anchor installation and tests and to monitor, record and plot the data.

(2) The Resident shall be allowed unrestricted access.

(3) The Contractor's qualified rock anchor installation personnel shall keep a daily construction record during rock anchor installation. The daily record shall be submitted to the Resident.

(4) The Contractor shall be responsible for making prompt evaluations of the test data and, whenever necessary, taking immediate steps to correct any deficiencies in the capacities of individual members or to provide other corrective measures at no additional cost to the Department.

(b) During installation of rock anchors, conduct performance tests and proof tests as specified.

(c) All pressure gages and jacks employed in the tensioning of anchors shall be calibrated by a certified and approved testing laboratory which shall submit a certificate of calibration which was performed within one month of the start of testing. Tensioning will not be permitted until the calibration certificates are submitted. All jacks and gages shall be recalibrated monthly.

MATERIALS

504.04 Materials. Rock anchors shall consist of continuously threaded bar with double corrosion protection provided a grout-filled corrugated sheathing (minimum thickness 0.05

inch) over the bar for its entire length plus an additional smooth sheathing over the unbonded length. The rock anchor assembly shall be assembled by the rock anchor manufacturer. The size of the threaded bars shall be as shown on the contract drawings.

(a) Anchors. The prestressing steel tendons shall be threaded bars; Grade 150 ksi conforming to ASTM A722, Type II, cold stretched and stress relieved after the threading process, as manufactured by Dywidag Systems International, or approved equal.

(b) Corrosion Protection. Threadbar anchors and all exposed steel components including anchor head assembly (nuts, bar, bearing plates, wedge plates, sealing cap, exposed bar etc.) shall have factory-applied epoxy coating in accordance with AASHTO 284, to a minimum thickness of 12 mils. Rock anchors shall have double corrosion protection consisting of a grout-filled corrugated sheathing (minimum thickness 0.05 inch) over the bar for its entire length plus an additional smooth sheathing over the unbonded length. The rock anchor assembly shall be assembled by the rock anchor manufacturer.

(c) Nuts. Anchor nuts shall be hexagonal head, heavy duty type, conforming to ASTM A325 or to bar manufacturers special specifications.

(d) Anchor plate, sealing cap and sealing nut shall conform to threadbar manufacturer's recommendation. Anchor heads shall be installed with mastic corrosion inhibitor in accordance with manufacturer's specifications.

(e) Bond Breaker. Sheathing shall be polyvinylchloride material with a minimum compressive strength of 7,000 psi and a minimum tensile strength of 7,000 psi. Material shall be free of water-soluble chlorides and other ingredients which might enhance corrosion, hydrogen embrittlement or stress corrosion on the prestressing steel. The plastic shall be non-reactive with the grout and its ingredients. The plastic sheathing shall be gas and watertight, and resistant against chemical attacks and aging.

(f) Couplings shall be capable of developing 100% of the threadbar capacity and shall be fully protected within the corrosion protection system.

(g) PVC sleeve shall be Schedule 40 Polyvinyl Chloride plastic pipe conforming to ASTM D1785.

(h) Cement grout for grouting the rock anchors and filling the PVC sleeve shall be neat cement with a non-shrink additive, with a water-cement ratio no-more than 0.45 by weight. Expansion agent shall not be used. Minimum unconfined compressive strength of grout shall be 4,000 psi at time of anchor stressing, or 28 days. Admixtures shall be submitted to the Resident for approval. Materials for cement grout shall be in accordance with Section 502.

Rock anchors shall be factory grouted within the PVC sheath, meeting the grout requirements in the paragraph above.

(i) Welding shall conform to the American Welding Society Standard AWS D1.1.

(j) Bearing Plates. Steel bearing plates shall conform to ASTM A36.

(k) Other materials shall be those recommended by the threadbar manufacturer for the intended use.

CONSTRUCTION REQUIREMENTS

504.05 Rock Anchors.

(a) The rock anchor drilling equipment shall have adequate capacity. The Contractor shall provide drilling equipment including but not limited to rock core barrels, rock tools, air tool, grout pumps and other equipment necessary to install rock anchors to the size and depth shown on the plans.

(b) The Contractor shall provide sufficient length of pressure grouted anchor such that the anchor will develop the test load capacity indicated on the plans, but in no case shall the length of anchor be less than the minimum bonded length indicated on the plans. Each rock anchor shall be verified by performance or proof tests. Anchors shall consist of a pressure grouted anchor zone (bonded length) in drill hole in bedrock, and a bond-free zone (unbonded length where the threadbar is prevented from bonding to rock or pile) and an anchor head assembly. Rock anchors shall consist of a grouted anchor zone (in drill hole in bedrock) and a grouted bond length in the pile.

(c) Pipe Pile Encasement: The rock anchor shall be installed within an open-ended pipe pile encasement.

The rock anchors shall be installed below the bottom of the pile encasement as shown on the plans. If, after cleaning, it is determined by the Resident that the pile is not to bedrock, the pile shall be redriven to bedrock to the penetration resistance determined by the wave equation and PDA and cleaned again, at no-additional cost.

Piles shall be cleaned of soil to the rock surface prior to drilling the holes for receiving the rock anchors. A grout plug shall be installed, at no additional cost, if the pipe pile-bedrock seal is uncertain.

(d) Drill Holes: After piles are driven to bedrock and cleaned, install steel drill casing by spinning centering the casing using internal pile guides (centralizers). Then, drill the holes for the rock anchors. All drill holes shall be made with steel drill casing spun into the bedrock before coring

Drill holes for installation of rock anchors shall not be less than the dimension shown on the drawings. Anchors shall be drilled and fully grouted in drill holes that extend not less than 12 inches below the bottom of the anchor tendon.

Drill holes shall have the same vertical tolerance as the piles. Drill holes shall be true to permit installation of rock anchor without bending the anchors in any direction. Drill holes shall be cleaned of all drill cuttings, sludge and debris before the rock anchor is inserted into the hole.

(e) Cleaning drill hole and testing: Drilled holes shall be cleaned of all drill cuttings, sludge and debris before the rock anchor is inserted into the hole. The drill hole shall be tested prior to rock anchor installation. The PVC sleeve shall be filled with water to the top of the pile. If the water level drops, the drill hole shall be grouted and redrilled. Static water testing and grouting shall continue until the water level drop is no greater than 3 inches per hour.

(f) Anchor Placement and Grouting: The anchor assembly shall be completely ready for immediate installation prior to beginning the grout operation. Rock anchors shall be centered in the drill holes with centralizers.

The grout for the anchor shall be tremied placed by injection at the lowest point of the anchor. The discharge end shall be completely submerged in grout at all times. Grout volume shall be sufficient to return neat grout to the top of pile once the anchor is installed.

(g) Grouting tubes shall be connected to and lowered with the rock anchor. All equipment used for placing shall be such that it will not damage the corrugated sheathing or casing. Grout shall be installed to the calculated depth plus fifty percent extra prior to the installation of the anchor.

(h) Rock anchor bond lengths shall be tremie grouted by injecting grout approximately 6 inches above the lowest point of the anchor. Grouting shall continue within the drill casing until the grout level inside the casing is 12 inches above the top of bedrock and at least 120 percent of the calculated annular volume of the bore hole is installed. Retract the temporary drill casing to approximately 12 inches above the top of bedrock. Pump an additional volume of grout sufficient to create a 6 inches average thickness grout plug on top of the bedrock.

(i) Grouting shall be performed with sufficient pressure and volume flow to produce a grouted anchor zone of the rock anchor capable of developing the load capacity indicated on the plans. Approved materials and continuous mixing and pumping equipment shall be able to produce a homogeneous in-place cement grout of the desired consistency. All oil and other rust inhibitors shall be removed from the mixing drums and pumps. Once started, grouting shall be continuous until the rock anchor and PVC sleeves are completely grouted, unless approved by the Resident. Grout not placed within one hour of mixing shall be wasted in an approved manner.

(j) Grout Testing: 2-inch test cubes shall be made of each grout mix design used. Six cubes shall be made of each mix design for every 4 anchors installed or per day of grout placement, whichever results in more cubes. Three cubes shall be tested at 7 days and three cubes shall be tested at 28 days. Testing shall be done in accordance with ASTM C 109.

(k) The anchor head assembly shall be installed with mastic corrosion inhibitor in accordance with the manufacturer's recommendations. All exposed surfaces of the anchor and head assembly shall be protected with corrosion inhibitor at all times after installation.

(l) Each anchor head assembly shall be fully encased by the concrete pile cap in accordance with the plans.

(m) If rock anchor thread bars must be cut, no torch cutting is permitted. Anchor bars shall be sawcut, if necessary, with an abrasive wheel saw, in accordance with manufacturer's recommendations. Torch cutting of anchors before or after installation shall be grounds for rejection of the anchor and replacement by the Contractor at no additional cost to the Department.

(n) During tensioning, if called for on the Plans, the anchor shall be free to move relative to the pile encasement. At no time during tensioning shall the pile compressive load exceed 90 tons, except during testing at which time the pile compressive load shall not exceed 1.5 times the design load or 0.80 times the Guaranteed Ultimate Tensile Strength, whichever is smaller.

(o) Any voids occurring in the top portion of pile shall be filled with dry pack mortar.

504.06 Rock Anchor Testing Procedures and Criteria.

(a) Each anchor installed shall be tested, as called for on the plans, to verify and establish its capacity. The Contractor shall be responsible for maintaining the structures during testing, and shall provide adequate shoring and bracing as required.

(b) Performance and Proof Test shall be conducted in accordance with the project plans and the Post Tensioning Manual of the Post Tensioning Institute except as modified herein:

(1) The maximum test load shall be 1.5 times the design load shown on the plans.

(2) Deformation measurements shall be made to the nearest 0.001 inch using a dial indicator mounted independent of the stressing system and referenced to a remotely supported reference beam. Vertical movement of the pile encasement and batter piles with respect to the reference beam shall be similarly monitored.

(3) An Ames dial shall be used to record the movement of the anchor. The-dial shall be capable of reading movement to 0.001 inch accuracy.

(4) In order for proper execution of the test the hydraulic system should be equipped with needle valve control.

(5) The Contractor shall submit a tabulation of loads, elongations and rebound reading, indicating times involved, to the Resident.

(6) Acceptance of anchors shall be at the discretion of the Resident. Each anchor which is rejected shall be removed and replaced. Removal and replacement of anchors which are rejected shall be at no additional cost. Removal and replacement of anchors shall consist of all work necessary to remove concrete, reinforcement, and additional bedrock as required to complete the work.

(c) The proof/performance tests shall be started only after installation and filling of all the bearing piles and the grout obtaining sufficient strength. Do not tension rock anchors until the concrete and dry pack grout in the pile has attained a minimum compressive strength of 4,000 psi, as shown by cube samples taken during filling operations.

(d) If at any time during testing a failure of any element (jack, rock anchor, bearing pile, etc.) occurs which results in a non-symmetrical loading condition, the load in the jacks shall be reduced to zero as soon as practicable. The cause of the failure shall be rectified by the Contractor prior to restarting the load test.

(e) No performance or proof test shall be conducted unless the Resident is present. Resident shall be given a minimum of one day's notice of anchor testing.

504.07 Method of Measurement. Rock anchors will be measured by each anchor satisfactorily placed and remaining in the completed structure. Additional length required for tensioning or for replacement of unacceptable anchorage shall be provided at the Contractor's expense.

504.08 Basis of Payment. Unit bid price shall include cost of furnishing all labor, materials and equipment necessary to complete the work, including but not limited to furnishing equipment for drilling ledge, cleaning of drilled holes, grouting and testing. Payment items 504.905 shall include full compensation for any temporary casings, augers, grouting operations, drilling equipment, or specialty tools needed to install anchors and to maintain pipe pile end bearing capacity.

Payment will be made under:

Pay Item:	Pay Unit
504.905 Rock Anchor	Each

Special Provision
SECTION 506
Steel Coatings

506.01 Description of Work

This work shall consist of the surface preparation, application of a protective coating to steel substrate, and the containment and disposal of hazardous wastes in accordance with the Plans and this Specification.

506.02 Materials Requirements

506.02.1 General Material Requirements The Contractor shall supply the Resident (for work performed in shops, away from the job site, Resident refers to the Fabrication Engineer) with the applicable current product data sheets and material safety data sheets (MSDS) before any coating work is performed.

506.02.2 Paint Material Requirements: Paint systems shall be from the Northeast Protective Coating Committee (NEPCOAT) Qualified Products List (QPL), (http://www.nepcoat.org) The primer, intermediate and topcoat shall be contrasting colors. The topcoat color shall be green, Federal Standard 595B, color No. 14272 unless otherwise specified.

The Contractor shall provide the paint batch description, lot number, date of manufacture, shelf life and the manufacturer's published storage requirements to The Department's authorized representative. The Contractor shall provide the manufacturer's published data sheet for application of each coat of the coating system including equipment, surface cleanliness, anchor profile, mixing, thinning, application, cure time for the entire range of allowable environmental conditions and dry film thickness (DFT).

506.02.3 Galvanizing Material Requirements: Hot-dip galvanizing shall meet the requirements of AASHTO M 111M/M 111 (ASTM A 123/A 123M) including any applicable requirements from AASHTO M 111M/M 111 (ASTM A 123/A 123M) Section2-Referenced Documents. The minimum average coating thickness grade shall conform to Table 1. The Quality Assurance Inspector shall verify Quality Control thickness test results using the same test method used by the Quality Control Inspector.

Certification of compliance and written test results shall be provided to The Department in accordance with AASHTO M 111M/M 111 (ASTM A 123/A 123M).

506.02.4 Thermal Spray Coating (TSC) Material Requirements: Feedstock shall meet the requirements of ASTM B 833, 85/15 Zinc-Aluminum (W-ZnAl-2). The Contractor shall submit a certified analysis of the feedstock to the Resident.

Seal coat and topcoat shall meet the following requirements:

Seal Coat	As recommended by the Topcoat Manufacturer
Topcoat	A listed topcoat product from the NEPCOAT QPL System A, B or C

The seal coat shall contain pigmentation to indicate uniformity of application.

506.02.5 Fusion Bonded Epoxy (FBE) Material Requirements: The FBE coating shall be a one-part, powder coating meeting the following requirements:

Property	**Test Method**	**Value**
Impact Resistance	ASTM G 14 3 lb. @ 40° F	80 inch-lb Min.
Abrasion Resistance	ASTM D 4060 (CS 10 wheel, 1000 gr. Load)	<70 mg/ 1000 cycles
Chemical Resistance	ASTM G 20 Modified (30 day immersion)	10 % CaCl no effect 10 % NaOH no effect
Cathodic Disbondment	ASTM G 8, Method A	3/8 in disbondment radius

The Contractor shall supply certified copies of all test results to the Resident. The test results shall include the lot number tested, date, test method and testing agency. The tests shall have been performed within 12 months of the beginning of work.

The Contractor shall provide to the Resident a Certified Mill Test Reports for the material to be coated prior to beginning the coating process.
Prior to shipment, the applicator shall furnish written certification that the coated pieces meet the requirements of this Specification.

506.02.6 Dry Powder (Polyester) Coating Material Requirements VACANT

506.03 Construction Requirements

506.03.1 General Construction Requirements: Unless specified elsewhere in the Contract, the Contractor shall have the option of determining which coats are applied prior to and after steel erection or installation. Each coat shall be applied in accordance with the manufacturer's published data sheet and this Specification. In the event of a conflict between the published data sheet and this Specification, the more stringent requirement will prevail.

When bridge beams or pipe piles are coated, the following information shall be stenciled over the top coat: paint system used, including coating manufacturer, number of coats and coat description, month and year coated. The stenciling material shall be identical to touch up material recommended by the top coat manufacturer and the color shall contrast with the top coat. Stenciling shall be on the inside face of the fascia beam, near abutment 1 for beams; for piles, stenciling shall be on the downstream side of the upstream pile near the pile cap of each pier unit. Information shall be in block characters three to five inches high. All top coated systems shall be stenciled, including one, two or three coat systems, top coated galvanized systems and dry powder systems.

Submittals: The Contractor shall submit for review by the Department the following as applicable 2 weeks prior to the Pre-work Conference:

- The manufacturers' published data sheet(s) for the specified protective coating system.
- Quality Control Plan.
- Containment Plan.
- The Contractor's qualifications.
- Material Safety Data Sheets.
- Environment Protection Plan
- Waste Management Plan
- All other documentation specified herein.

Pre-Work Conference: Two weeks prior to the beginning of work, the Contractor shall have a pre job work conference. 2 weeks notice shall be given to the Resident prior to the meeting. The Resident and the Contractor shall agree on the agenda, which may include the following as applicable:

- Status of submittals and review
- Procedures for lead abatement
- Coating application
- Inspection hold points
- Responsibilities and documentation methods of all parties
- Safety
- Progress Payments
- Schedule

Quality Control/Quality Assurance: The Contractor shall develop, submit, and implement a Quality Control Plan for all work done under Section 506 in accordance with Section 106.4 Quality Control. The Department will conduct Quality Assurance as outlined in 106.5 Quality Assurance. The QC plan shall include the names of all the Contractor's representatives on site, including the certified coating inspector who shall be responsible for the inspection and the acceptance of the Contractor's work prior to the Department's inspection. The plan shall also define hold points from surface preparation inspection to final inspection, frequency of inspections, frequency of tests, submittal of daily work reports, coating/DFT reports and the process for rework. For non-compliance with the QC Plan see Standard Specification Section 106.4.6 QCP Non-Compliance.

Inspection: Quality Control (QC) is the responsibility of the Contractor. The Quality Control Inspector (Q.C.I.), the Contractor's authorized representative, shall inspect all aspects of the work and shall supervise required testing. The Q.C.I. shall record measurements and test results in a Job Control Record (JCR). The Q.C.I. shall reject materials and workmanship that do not meet contract requirements. The results of all testing shall be documented and a copy made available to the Department's Quality Assurance Inspector (Q.A.I.) on a daily basis or as requested by the Q.A.I.

Quality Assurance (QA) is the prerogative of The Department. The Q.A.I. will ensure that the QC role is functioning properly; verify documentation, periodically inspect workmanship and witness testing. QA testing deemed necessary by the Resident in addition to the minimum test requirements will be scheduled to minimize interference with the production schedule.

The JCR shall include the following, as applicable:

- Type of containment, when required.
- Surface preparation - cleanliness and anchor profile.
- Environmental conditions – ambient temperature, surface temperature, relative humidity, dew point.
- Coating batch and/or lot number, date of manufacture and shelf life.
- Manufacturer's certification of conformance.
- Dry Film Thickness (DFT) required/DFT measured.
- Cure data-time/temperature/relative humidity.
- Final inspection by the Q.C.I. and acceptance by the Resident.
- Disposition of non-conforming items.

Quality Assurance Inspector's Authority: The Q.A.I. has the authority to reject material or workmanship that does not meet the contract requirements.

Facilities for Inspection: For projects that have protective coating application in the shop or off-site, the Contractor shall provide a private office at the coating site for inspection personnel authorized by the Department. The office shall have an area not less than 100 ft^2 and shall be in close proximity to the work. The office shall be climate controlled to maintain the temperature between 65° F and 80° F. All exit(s) to the office shall have door(s) equipped with a lock and two keys, which shall be furnished to the Inspector(s). The office shall be equipped with a desk or table having a minimum size of 48 in. by 30 in, two chairs, a telephone, telephone answering machine, separate high speed internet line, plan rack and 2-drawer letter size file cabinet with a lock and two keys that shall be furnished to the Inspector(s).

The facilities and all furnishings shall remain the property of the Contractor upon completion of the work. Payment for the facilities, climate control, lighting, telephone installation, basic monthly telephone charges and all furnishings shall be incidental to the contract.

506.03.2 Painting Construction Requirements: The following documents are incorporated into the Contract by reference and the Contractor shall provide the latest copies on site:

- SSPC Structures Painting Manual, Volumes 1 and 2 (Good Painting Practice and Systems and Specifications).
- SSPC Vis 1, Visual Standard for Abrasive Blast Cleaned Steel
- SSPC Guide 6-Guide for Containing Debris Generated During Paint Removal.

- SSPC Guide 7, Guide for the Disposal of Lead-Contaminated Surface Preparation Debris.

The manufacturer's printed product data sheets at the time of bid shall be those used during the duration of the project. New printed product data sheets may be substituted with the Resident's approval. The Contractor shall obtain in writing from the coating manufacturer, and provide to the Resident, a chart or table listing minimum and maximum recoat times for the primer and intermediate coat over the expected range of temperatures, relative humidity, and range of acceptable primer thickness.

The Contractor shall sample each batch of coating. Paint shall be sent to an independent lab to be "fingerprinted" by IR (infrared spectroscopy) to check the formulation and determine unit weight compared to that on the NEPCOAT list at the Contractor's expense. This sampling will be witnessed by the Department's Q.A.I.

All Contractors and subcontractors involved with the field application and touch up of the paint shall have SSPC-QP1 certification prior to bid opening and shall maintain this certification current throughout the duration of the Contract until final acceptance of the work.

Shop-applied coating systems shall be applied by applicators that hold a current AISC Sophisticated Paint Endorsement (SPE) or are qualified in accordance with SSPC QP3-*Standard Procedure for Evaluating Qualifications of Shop Painting Applicators.*

Limits of work: All surfaces exposed in the assembled product shall be coated. Surfaces to be embedded in concrete shall receive a mist coat 0.5 to 1.0 mils of primer only.

Faying surfaces of bolted connections shall be primed with a product that complies with a class B slip coefficient in accordance with the *"Specification for Structural Joints Using ASTM A325 or A 490 Bolts"* by the Research Council of Structural Connections (RCSC).

Personnel: The Contractor shall provide Quality Control personnel in accordance with the requirements of AISC SPE or SSPC QP-3 or have successfully completed SSPC BCI training and are so certified.

Surface Preparation: Chloride and ferrous salts should be expected to be present, on existing coated steel, especially at corrosion sites. Before any existing coating can be removed, these salts must be reduced to acceptable levels.

The Contractor must verify that residual soluble salts are at a surface cleanliness condition of NV-2, or better, in accordance with SSPC-SP12, as determined by the Bresle Test, Chlor-Rid Test or approved equal. The Contractor shall test for soluble salts at a minimum of five locations per area of containment enclosure used for each day's blast production area. Test locations are to be determined and witnessed by the Resident.

Surface preparation shall be a minimum of SSPC SP-10 unless a higher standard of surface cleanliness is required by the manufacturer's published data sheet. SSPC VIS. 1 shall be used to determine acceptable surface cleanliness.

Pre-Production Surface Preparation Test Section: The Contractor shall prepare a test section at least 1 square meter in size to the specified degree of cleaning (SSPC-SP10), using the same equipment, materials and procedures that will be used for the length of the project. This test section shall be used as a reference for the balance of the work.

The Resident will take site-specific photographs of the approved SSPC SP-10 test section for use on the project. Use the site-specific photographs of the approved test sections together with SSPC-Vis 1 and the written surface preparation specifications as the standards of cleaning for the project. If all parties agree, the site-specific photographs may be used in place of SSPC-Vis 1. In the event of a conflict between the site-specific photographs, SSPC-Vis 1, and the written definitions, the written definitions will prevail.

Prior to abrasive blast cleaning *new* steel, all corners exposed in the assembled product shall be rounded to approximately a 1/8 inch radius. A series of tangents to the approximate radius will be considered as a rounded. The Contractor shall prepare a plate approximately 3 inches by 12 inches with the appropriate rounded corner. The plate shall become the Job Standard for corner preparation. The plate shall remain the property of the Contractor. In lieu of rounding the corners, the Contractor may provide an application process that ensures minimum coating thickness build-up on the corners. The process must be demonstrated in advance of application and during production.

After abrasive blast cleaning, the surface shall be visually inspected by the Q.C.I. and Q.A.I. for fins, tears, delaminations and other unacceptable discontinuities. Unacceptable discontinuities shall be removed with a grinder or other suitable power tool and the area shall be blended at a slope of approximately 1:20. The affected area(s) shall be abrasive blast cleaned to develop an acceptable anchor profile.

The Contractor may propose an alternative method of developing an acceptable anchor profile on the substrate. The Contractor shall demonstrate the effectiveness of the proposed method by preparing a 12 inch by 12 inch plate using the proposed method and coating the plate with primer in a manner that duplicates production application technique. The plate shall be divided into four equal quadrants. After the primer has cured, an adhesion test shall be performed in the center of each quadrant in accordance with ASTM D 4541. The minimum tensile bond shall be 725-psi unless a higher tensile bond is required in the manufacturer’s published literature. If all four adhesion tests meet or exceed the specified requirements, the proposed method will be acceptable. The proposed alternative method of developing an acceptable anchor profile shall be limited to areas no greater than 6 in.$^{2.}$

The anchor profile shall meet the requirements of the manufacturer's published data sheet. The anchor profile shall be measured in accordance with ASTM D 4417 Method C. If the anchor profile fails to meet the minimum requirements, the Contractor shall re-

blast the substrate until the minimum required anchor profile is achieved. If the anchor profile exceeds the maximum allowed in the manufacturer's published data sheet, the substrate may be coated only with the prior approval of the Resident.

The Q.C.I. shall measure the anchor profile of the substrate on each plane of the first piece and each additional piece with a significant change in size or geometry. The Q.A.I. will witness the testing. After it has been established to the satisfaction of the Resident that the abrasive blast equipment is capable of providing uniform, acceptable surface preparation, a diminished degree of testing shall be agreed upon by the Q.C.I. and Q.A.I. but shall not be less than one set of tests per shift.

Material that has been contaminated after blasting by handling, storage or other means shall be solvent cleaned and re-blasted prior to primer application.

If compressed air is used for abrasive blast cleaning, a blotter test shall be performed in accordance with ASTM D 4285 at the beginning of each shift. The Q.A.I. shall be present to witness the blotter test.

The allowable time between abrasive blast cleaning and primer application shall not exceed the manufacturer’s published recommendations or eight hours, whichever is less.

Application: Coating shall only be applied to clean surfaces that comply with the coating manufacturer’s published recommendations and this specification. The Q.A.I. shall witness the mixing and thinning of the coatings. Failure to notify the Q.A.I. shall result in the coating being rejected.

Thinning and mixing of coatings shall be in conformance with the manufacturer's published data sheet. Thinner shall be measured using a graduated cup or other container that clearly indicates the amount of thinner being added. Mixing shall be done using the method, equipment, and time recommended by the coating manufacturer.

The Q.C.I. shall record the batch and lot numbers of the coating, the type and amount of thinner used, the time and pot life of the coating. The Q.A.I. shall confirm that the record is correct.

Coating equipment including mixers, hoses, tip size and guns shall meet the recommendations of the manufacturer's published data sheet.

The environmental conditions in the immediate vicinity of the steel to be coated shall be within the ranges in the manufacturer's published data sheet during the coating operation and during the cure period. Ambient temperature, surface temperature, relative humidity and dew point shall be measured and recorded by the Q.C.I. The Q.A.I. may perform environmental testing in addition to the testing performed by the Q.C.I. If there are differences between the test results, the differences shall be resolved or explained to the satisfaction of the Resident prior to coating application. The results of the environmental testing shall be recorded in the JCR.

Corners, fasteners, welds, and inaccessible locations shall be striped in accordance with SSPC PA 1. The striping shall extend a minimum of 1 inch from each edge. Striping will not be required for inorganic zinc primers, on intermediate and topcoat; however, the Contractor shall meet the minimum DFT requirements on all surfaces.

Caulking is required to seal all gaps between abutting surfaces over 1/8 inch wide and areas of pack rust that cannot be removed, as directed by the Resident. When the use of caulking is required the Contractor shall provide the name, generic type, technical data sheets, and application instructions for the material to the Resident, and shall receive concurrence from the coating supplier that the caulking is compatible for use with the coating.

Cure and recoat time shall be in accordance with the manufacturer's published data sheet for the environmental conditions at the time of application and cure. The Contractor shall provide the cure and recoat times for the environmental conditions in the immediate vicinity of the coated product. The cure and recoat times shall be provided on the coating manufacturer’s letterhead and shall be authorized by a technical representative of the company.

The Contractor shall provide digital data recorders that measure and record temperature and relative humidity. The Contractor shall provide the software necessary to download the recorded data. The Contractor shall provide a minimum of two data recorders which shall be placed in the immediate vicinity of the application operation. The data recorders shall measure and record the temperature and relative humidity during the entire curing cycle. No subsequent coating shall be applied until the Contractor demonstrates that the curing cycle meets the requirements of the manufacturer's product data sheet. This requirement shall apply to both shop and field application.

The Q.A.I. shall be given ample notice in order to inspect the product prior to coating. Substrates that are coated without notification of the Q.A.I. will be rejected.

Dry Film Thickness: DFT shall be measured in accordance with SSPC PA 2. The results shall be documented in the JCR. The JCR documentation shall include the actual gage readings, spot average and the location(s). Each piece or area presented for acceptance, regardless of size shall be considered a separate structure for purposes of determining the number of spot measurements to be taken except that large quantities of small parts and/or secondary framing members coated at the same time may be measured at a lesser frequency as directed by the Resident. When random DFT testing of a large quantity of small parts and/or secondary framing members results in unacceptable DFTs, the Contractor shall have the option of measuring and documenting the DFT of each piece or removing the coating and/or recoating all pieces represented in the production lot.

Touch-up and Repairs: Touch-up shall be done in accordance with the manufacturer's published data sheet and this Specification. Areas to be touched up shall be prepared to

assure proper adhesion of each coat. Each existing coat shall be feathered back to assure that each touch-up coat is continuous with each corresponding existing coat. The top-coat shall be smooth and uniform in appearance.

Damaged or unacceptable shop coating shall be repaired before the piece is removed from the paint area. Damaged areas shall be prepared in accordance with the manufacturer's published instructions or as directed by the Resident. Damaged or unacceptable coatings shall be repaired using the same coating system. Environmental conditions cure times and DFTs shall be in accordance with manufacturer's published data sheet for the coating being applied. Repairs to topcoat shall result in a uniform gloss and color match. The Resident shall have final authority concerning acceptable appearance.

If repairs larger than 6 $in.^2$ are made to the top coat of fascia beam, the entire beam shall be re-coated after repairs are completed.

Handling and Storage: The coating shall be adequately cured before handling but under no circumstances shall the product be handled before the coating has achieved the manufacturer's published minimum cure and/or handling time. Coated members shall be handled in a manner to avoid damage to the coating. Members shall be lifted and moved using non-metallic slings, padded chains and beam clamps, softeners, or by other non-injurious methods. Material shall be stored in a manner that prevents damage to the coating.

Damage to the coating that is discovered after the product is loaded for shipment to the job site shall be documented by the Q.C.I. Minor damage as a result of handling shall be considered field repair unless, in the opinion of the Resident the damage is the result of negligence or poor handling methods. Damage that is deemed to be the result of negligence or poor handling methods shall be repaired as directed by the Resident.

506.03.3 Galvanizing Construction Requirements

Surface Preparation: Steel substrate shall be abrasive blast cleaned to a minimum of SSPC SP 6/NACE 3-Commercial Blast Cleaning prior to galvanizing.

Repairs: Repairs to galvanizing shall be in accordance with Annex A1 or A3 of ASTM A 780. Zinc-rich paints for repairs may only be used with approval of the Engineer.

Top-coating Galvanized Surfaces: Areas of galvanized surfaces to be top-coated will be described on the plans or in the Special Provisions.

Chromate quenching and other types of quenching after galvanizing are not permitted.

Hot Dip Galvanized surfaces to be painted shall be smooth and have a uniform zinc thickness that is free of runs, sags and heavy buildup.

Surfaces to be top-coated shall be cleaned in accordance with SSPC-SP1 using either solvent or steam cleaning alternatives; an alkali alternative may be used provided the pH is 11 or less. After solvent cleaning, all surfaces shall be prepared in accordance with SSPC-SP7/NACE No.4-Brush-Off Blast Cleaning. The surface shall have an anchor profile that corresponds with the manufacturer's published data sheet. The blast media shall be a mineral or mineral slag that meets the requirements of SSPC AB-1-Mineral and Slag Abrasives. Steel shot or grit is not allowed.

Coatings for topcoat shall be from the current NEPCOAT QPL-list A, B or C. The topcoat color shall be green, Federal Standard 595B, color No. 14272 unless otherwise specified.

Surfaces to be top-coated shall be prepared and coated in an enclosed facility. Paint shall be stored and handled in accordance with the manufacturer's published data sheet and SSPC-PA 1. DFT shall be in accordance with the coating manufacturer's published recommendations for the type service intended. Primer shall be an epoxy coating as recommended by the topcoat manufacturer. Touch-up shall be in accordance with the coating manufacturer's recommendations. If the repair area of the topcoat is greater than six in.^{2}, the entire piece shall be re-coated.

506.03.4 Thermal Spray Coating Construction Requirements: The following document is incorporated into the Contract by reference and the Contractor shall provide the latest copy on site: **Joint Standard** *SSPC-CS 23.00/AWS C2.23M/NACE No. 12, Specification for the Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel.*

Thermal Spray Coating (TSC), including sealers and top coating, fusion bonded coatings and hot-dip galvanizing shall be applied in facilities with a minimum of five years documented experience of satisfactory performance. The applicator shall provide documentation (including Quality Control records) and references of successful application that are acceptable to the Resident.

Surface Preparation: Prior to abrasive blast cleaning, all corners exposed in the assembled product shall be rounded to approximately a 1/16 inch radius. A series of tangents to the approximate radius will be considered as a rounded edge. The Contractor shall prepare a plate approximately 3 inches x 12 inches with the appropriate rounded corner and the plate shall become the Job Standard. The plate shall remain the property of the Contractor.

Surfaces to be coated shall be abrasive blast cleaned to the requirements of SSPC SP 5/NACE No. 1, White Metal Blast Cleaning. SSPC VIS. 1 shall be used to determine acceptable cleanliness. If more than one method of abrasive blast cleaning is used (e.g. centrifugal blast and compressed air), the acceptable Job Standard for each process shall be established.

The anchor profile shall be 2.0-4.0 mils. The anchor profile shall be measured in accordance with ASTM D 4417 Method C. If the anchor profile fails to meet the minimum required profile, the Contractor shall re-blast the substrate until the minimum required anchor profile is achieved.

The Q.C.I. shall measure the anchor profile of the substrate on the first piece blasted at the beginning of each shift and at a frequency not to exceed 4 hours thereafter. A measurement shall consist of one measurement on each plane of structural shapes or at approximately 120° intervals on pipes and round tubes. The Q.A.I. will witness the testing. If there is a significant change in the depth of the anchor profile due to blast media degradation or other cause, the Contractor shall take corrective action before continuing to abrasive blast clean the substrate.

If compressed air is used for abrasive blast cleaning, a blotter test shall be performed in accordance with ASTM D 4285 at the beginning of each shift. The Q.A.I. shall be present to witness the blotter test.

DFT Requirements: The coating thickness shall be between 14 mils and 17 mils. The DFT on faying surfaces shall not exceed the thickness tested for Class B slip coefficient rating.

The TSC shall have a minimum tensile bond of 725 psi. The tensile bond shall be tested in accordance with ASTM D 4541-02. The frequency of testing shall be one test every 500 ft^2 or once per shift, whichever is less. The test location will be as directed by the Q.A.I. The specified tensile force shall be applied to the TSC and removed. If the test does not reveal a failure of the TSC, the tensile bond shall be considered acceptable. If the test reveals a failure of the TSC, the coating shall be rejected.

A bend test as described in SSPC-CS 23.OO/AWS C2.23M/NACE No. 12. Section 6 shall be conducted at the beginning of each shift. If the bend test fails, the Contractor shall take corrective action and perform another test.

The results of the tensile bond test and bend test shall be documented in the JCR.

The TSC shall have a uniform appearance, free from blistering, cracks, loose particles, or exposed steel substrate when examined with 10-X magnification.

Application: The TSC shall be applied by the arc spray process. Thermal spray equipment shall be set up, calibrated, and operated per the manufacturer's instructions and technical manuals or the Thermal Spray Coating Applicator's (TSCA) refinement thereof and as validated by the Job Reference Standard (JRS).

The Q.C.I. shall measure and record in the JCR the ambient temperature, surface temperature, relative humidity and dew point near the pieces being coated immediately prior to application. The substrate shall be 5° F above the dew point at the time of

application. The Q.A.I. shall be given adequate notice in order to witness the measurement of the environmental conditions.

The substrate shall be coated with a 1 mil to 2 mil flash/primer coat followed by several thin, overlapping passes to build the required DFT. Top flanges of beams requiring shear connectors shall receive a flash/primer coat only. If shear connectors are shop applied, they shall be applied prior to the TSC.

Seal Coat and Top Coat Application: The seal coat shall be applied within eight hours of the TSC application. The topcoat shall be applied after the seal coat has cured. The surfaces shall be free from contaminants immediately prior to application of the seal coat and topcoat.

The seal coat and topcoat shall be applied in accordance with SSPC-PA 1, "Shop, Field and Maintenance Painting", and the coating manufacturer's published recommendations.

Areas to be top coated will be designated on the plans or specifications.

Coating thickness shall be measured in accordance with SSPC-PA 2. The DFT shall conform to the requirements of the manufacturer's published data sheet. For the measurement of coating thickness, each piece coated will be considered a separate structure.

Repairs: Damage to TSC shall be repaired by re-blasting the damaged area and re-applying TSC in accordance with this Specification.

506.03.5 Fusion Bonded Epoxy Construction Requirements: The FBE shall be applied to all surface areas indicated on the plans. Steel pipe pile shall be coated in accordance with ASTM A 972/A 972M as amended herein. Steel H piles and sheet piling shall be coated in accordance with ASTM A 950/A 950M as amended herein. Epoxy-coated steel reinforcing bars shall be coated in accordance with AASHTO M 284M/M 284 (ASTM A 775/A 775M). All other steel products shall be coated in accordance with the plans and/or the direction of the Resident.

Fusion bonded coatings shall be applied in facilities with a minimum of five years documented experience of satisfactory performance. The applicator shall provide documentation (including Quality Control records) and references of successful application that are acceptable to the Resident.

Surface Preparation: All butt welds shall be ground flush prior to abrasive blast cleaning. The steel shall be abrasive blast cleaned to the requirements of SSPC SP10/NACE No.2, Near White Metal Blast. SSPC VIS. 1 shall be used to determine acceptable cleanliness. The Q.C.I. and Q.A.I. shall evaluate the first piece using VIS 1 as a comparator. No further blast cleaning shall be done until the Q.C.I. and Q.A.I. agree upon the acceptable Job Standard for cleanliness. If more than one method of abrasive

blast cleaning is used (e.g. centrifugal blast and compressed air), the acceptable Job Standard shall be established for each method.

Application: The FBE powder shall be applied and cured in accordance with the applicable ASTM Standard and the manufacturer's published data sheet.

The DFT of the coating shall average between 10 mils and 18 mils for embedded work or coating exposed to atmosphere. A minimum thickness of 18 mils is required for piles or other items that will be subjected immersion service. The DFT shall be measured in accordance with SSPC PA 2 except that three spots shall be measured on each piece. If the average of three measurements per spot is less than the specified minimum, the piece shall be measured at one meter (3 feet) intervals along the length of the piece.

Inspection: The DFT shall be measured using a fixed-probe or magnetic pull-off gauge that is calibrated and operated in accordance with SSPC PA 2. The testing procedure and reporting shall be in accordance with ASTM G 12. The frequency of testing shall be each piece coated unless a lesser frequency of testing is directed by the Resident.

Holiday detection shall be performed in accordance with the applicable AASHTO or ASTM Standard.

Holiday repairs shall be done in accordance with the applicable AASHTO or ASTM Standards and the manufacturer's published data sheet. If there is a conflict between the Standard and manufacturer's published data sheet, the Resident shall determine which shall apply.

506.03.6 Dry Powder (Polyester) Coating Construction Requirements: The requirements for dry powder (polyester) coating shall be the same as for FBE.

506.03.7 Hazardous Material Containment Construction Requirements: All Contractors and subcontractors who shall be involved with the containment of hazardous material shall have SSPC-QP2 certification prior to bid opening and shall keep this certification current throughout the duration of the Contract until final acceptance of the work.

The Contractor shall prepare an Environmental Protection Plan that shall include the following:

- *Regulated Area Monitoring and Maintenance.* A written program for establishing and maintaining regulated areas around activities which could generate airborne emissions of lead or other toxic metals.

- *High Volume Ambient Air Monitoring.* The Contractor shall contract with an independent environmental monitoring firm to conduct high volume ambient air monitoring to assure compliance with National Ambient Air Quality Standards (NAAQS). The Contractor shall have the monitoring begin at least 24 hours prior to initial abrasive blasting, for a baseline. Procedures for the monitoring which

confirm that the monitoring equipment is properly calibrated, sited, and operated; filters are properly handled and transported; the laboratory analysis is performed correctly; and that all monitoring, calculations, documentation, and forms will be provided directly to the Department by the monitoring firm, with copies to the Contractor. Prior to any sampling, the Contractor shall clearly identify proposed monitor locations, including what corrective action will be implemented immediately in the event of unacceptable results.

- *Ground (Soil) Evaluations.* A written program for inspection of the ground and soil prior to commencement of the project and upon completion to assure that the ground is not impacted by project activities. This shall be carried out at the bridge site and at the area(s) used to store equipment and waste. The Contractor shall contract with an independent environmental monitoring firm, staffed with a Maine Certified Geologist, to conduct sampling and analysis of the soil to determine whether it has been impacted by project activities. All monitoring, calculations, documentation, and forms will be provided directly to the Resident by the monitoring firm, with copies to the Contractor. Clearly identify proposed sampling locations. Identify the corrective action that will be taken in the event of unacceptable results.

- *Remediation of Ground (Soil).* Include provisions in the Plan that in the event post-project inspection, sampling or analysis show unacceptable results, the Contractor will undertake the necessary clean up or remediation of the ground (soil), as appropriate as to satisfy all necessary regulatory agencies. Cleanup is incidental to related contract items. There will be no additional payment made by the Department.

- *Final Cleaning/Clearance Evaluations.* A written program identifying the procedures and methods that will be used to conduct and document final project clean up, and final visual cleanliness inspections and evaluations. This process is to assure that the project area and surrounding equipment, structures, soil, water, and sediment along the resource have not been negatively impacted by project activities.

- *Laboratory Qualifications.* Provide the name of the laboratory and/or firm that will be used for regulated area exposure monitoring, worker protection, high volume ambient air monitoring and/or soils sampling and analysis, as required. Provide documentation that this firm is American Industrial Hygiene Association (AIHA) accredited for metals analysis, and has successfully participated (previous 12 months at a minimum) in the AIHA ELPAT program.

- *Worker Protection Compliance Program.* A written project-specific compliance program, prepared under the direction of, and signed and sealed by, a Certified Industrial Hygienist (CIH), for the protection of workers from lead, in accordance with 29 CFR 1926.62, and other toxic metals in the paint. Include the name, experience, and qualifications of the competent person who will be making

routine inspections of project activities to ensure compliance with the program. If Subcontractors are operating under a separate program, include the program with the submittals.

The Contractor shall provide a Containment Plan designed, signed and sealed by a Professional Engineer, licensed in the State of Maine. All surface preparation and painting shall be performed in an approved containment system, conforming to the latest SSPC Technology Guide 6, *Guide for Containing Debris Generated During Paint Removal Operations, for Blast Cleaning, Table A, Class 1A.* The floor of the containment shall meet A1-Rigid and as a minimum, the walls shall meet A2-Flexible. a Containment Plan designed, signed and sealed by a. The containment shall be inspected by the same Professional Engineer, who stamped the containment drawings, for the proper installation of the containment prior to the start of blasting.

506.03.8 Hazardous Material Disposal Construction Requirements: The Contractor shall collect; store and dispose of all lead paint and related waste in compliance will all Federal and State laws and requirements. The following documents are incorporated into the Contract by reference and the Contractor shall provide the latest copies on site:

- SSPC-Guide 7, *Guide for the Disposal of Lead-Contaminated Surface Preparation Debris*.
- Maine Department of Environmental Protection's (DEP's)*Handbook for Hazardous Waste Generators*
- State of Maine Hazardous Waste Management Rules, 06-096 CMR Chapters 850-857

506.4 Method of Measurement

Steel coating shall be measured by the lump sum method, complete, and accepted. The limits shall be as shown on the plans or as described within the respective subsection.

Containment and pollution control measures will be measured for payment as one lump sum unit, consisting of all work previously described, completed, and accepted.

Disposal of hazardous or toxic materials will be measured for payment as one lump sum unit, consisting of all material satisfactorily disposed of in conformance with these specifications.

506.5 Basis of Payment

All work for Steel Coating will be paid for at the lump sum price for the respective item. Payment will be full compensation for all work and materials needed to complete the item; coating and cleaning materials, staging or accessing, testing, labor, surface preparation, cleaning, application, curing and repairs to coating.

Containment and pollution control will be paid for at the contract lump sum price, which price shall be full compensation for furnishing all materials, labor, equipment, and incidentals necessary for the satisfactory performance of the above work.

Disposal of hazardous or toxic materials will be paid at the contract lump sum price, which price shall be full compensation for all permits, tests, transportation, tipping fees, and incidentals necessary for the satisfactory performance of the above work.

Pay Item	Description	Pay Unit
506.9106	Fusion Bonded Epoxy (FBE) Material	Lump Sum

SUPPLEMENTAL SPECIFICATION
SECTION 506
PROTECTIVE COATING - STEEL

506.01 Description This work shall consist of applying protective coating to steel substrate in accordance with the Plans and this Specification.

506.02 Materials Materials shall comply with the requirements of the respective Subsections of this Specification.

506.03 Submittals The Contractor shall submit for review by the Department the following:

- The manufacturers' published data sheet(s) for the specified protective coating system.
- The Quality Control Plan.
- Containment details/design.
- The Contractor's qualifications.
- Material Safety Data Sheets.
- All other documentation specified herein.

506.04 General Requirements Requirements for the protective coating/protective coating system or containment system are:

Galvanizing (and top coating)	Subsections 506.10 through 506.19
Zinc Rich Coating System	Subsections 506.20 through 506.29
Thermal Spray Coating	Subsections 506.30 through 506.39
Fusion Bonded Epoxy	Subsections 506.40 through 506.49
Dry Powder (Polyester) Coating	Subsections 506.50 through 506.59
Containment System	Subsections 506.60 through 506.69

506.05 Inspection. For the purpose of this specification, the following definitions apply:

Engineer – The Resident for coating that is applied in the field, at the job site.
The Fabrication Engineer for coating that is applied in a facility away from the job site.

Quality Control (QC) is the responsibility of the Contractor. The Quality Control Inspector (Q.C.I.), the Contractor's authorized representative, shall inspect all aspects of the work and shall supervise required testing. The Q.C.I. shall record measurements and test results in a Job Control Record (JCR). The Q.C.I. shall reject materials and workmanship that do not meet contract requirements. The results of all testing shall be documented and a copy made available to the Department's Quality Assurance Inspector (Q.A.I.) on a daily basis or as requested by the Q.A.I.

Typical results will include, but not be limited to:

- Cleanliness and anchor profile-before application of the first or primer coat.
- Corner preparation-before application of the first or primer coat.

- Environmental conditions-prior to the application of each coat.
- Dry film thickness (DFT)-after the coating has cured and before the application of subsequent coating.
- Type of equipment, model, serial number and calibration data, if applicable.

Other job-specific test requirements specified on the plans or by The Department shall be included in the JCR.

Quality Assurance (QA) is the prerogative of The Department. The Q.A.I. will ensure that the QC department is being performed properly, verify documentation, periodically inspect workmanship and witness testing. QA testing deemed necessary by the Engineer in addition to the minimum test requirements shall be scheduled to minimize interference with the production schedule.

The JCR shall include the following, as applicable:

- Type of application equipment.
- Type of containment, when required.
- Surface preparation - cleanliness and anchor profile.
- Environmental conditions – ambient temperature, surface temperature, relative humidity, dew point.
- Coating batch and/or lot number, date of manufacture and shelf life.
- Manufacturer's certification of conformance.
- Name(s) of applicator(s).
- Dry Film Thickness (DFT) required/DFT measured.
- Cure data-time/temperature/relative humidity.
- Final inspection by the Q.C.I. and acceptance by The Department's authorized representative.

506.06 Quality Assurance Inspector's Authority The Q.A.I. will have the authority to reject material or workmanship that does not meet the contract requirements. The acceptance of material or workmanship by the Q.A.I. will not preclude subsequent rejection, if found unacceptable by other authorized representatives of The Department.

506.07 Rejections Rejected material or workmanship, as described above, shall be corrected or replaced by the Contractor at no additional cost to The Department.

506.08 Facilities for Inspection For projects that have protective coating application in the shop or off-site, the Contractor shall provide a private office at the coating site for inspection personnel authorized by the Department. The office shall have an area not less than 100 ft^2 and shall be in close proximity to the work. The office shall be climate controlled to maintain the temperature between 70° F and 80° F. All exit(s) to the office shall have door(s) equipped with a lock and two keys, which shall be furnished to the Inspector(s). The office shall be equipped with a desk or table having a minimum size of 48 in. by 30 in, two chairs, a telephone, telephone answering machine, separate line data port, plan rack and 2-drawer letter size file cabinet with a lock and two keys that shall be furnished to the Inspector(s). When applying protective coating

in the field, the field office shall meet the requirements of the pay item as described in the Standard Specifications.

The facilities and all furnishings shall remain the property of the Contractor upon completion of the work. Payment for the facilities, climate control, lighting, telephone installation, basic monthly telephone charges and all furnishings shall be incidental to the contract.

506.09 Applicator Qualification Shop-applied coating systems shall be applied by applicators that hold a current AISC Sophisticated Paint Endorsement (SPE) or are qualified in accordance with SSPC QP3-*Standard Procedure for Evaluating Qualifications of Shop Painting Applicators.* For specialty items, the Engineer may accept other shop qualifications based on experience and/or an audit by The Department.

Field applicators shall be qualified in accordance with SSPC QP 1 and SSPC QP 2 as applicable.

Thermal Spray Coating (TSC), including sealers and top coating, fusion bonded coatings and hot-dip galvanizing shall be applied in facilities with a minimum of five years documented experience of satisfactory performance. The applicator shall provide documentation (including Quality Control records) and references of successful application that are acceptable to the Engineer.

HOT-DIP GALVANIZING

506.10 Description Hot-dip galvanizing shall meet the requirements of AASHTO M 111M/M 111 (ASTM A 123/A 123M) including any applicable requirements from AASHTO M 111M/M 111 (ASTM A 123/A 123M) Section2-Referenced Documents. The minimum average coating thickness grade shall conform to Table 1. The Quality Assurance Inspector shall verify Quality Control thickness test results using the same test method used by the Quality Control Inspector.

Certification of compliance and written test results shall be provided to The Department in accordance with AASHTO M 111M/M 111 (ASTM A 123/A 123M).

506.11 Surface Preparation Steel substrate shall be abrasive blast cleaned to a minimum of SSPC SP 6/NACE 3-Commercial Blast Cleaning prior to galvanizing.

506.12 Repairs Repairs to galvanizing shall be in accordance with Annex A1 or A3 of ASTM A 780. Zinc-rich paints for repairs may only be used with approval of the Engineer.

506.13 Top-coating Galvanized Surfaces Areas of galvanized surfaces to be top-coated will be described on the plans or in the Special Provisions.

Chromate quenching and other types of quenching after galvanizing are not permitted.

Hot Dip Galvanized surfaces to be painted shall be smooth and have a uniform zinc thickness that is free of runs, sags and heavy buildup.

Surfaces to be top-coated shall be cleaned in accordance with SSPC-Special Provision 1 (SP-1) using either solvent or steam cleaning alternatives; an alkali alternative may be used provided the PH is 11 or less. After solvent cleaning, all surfaces shall be prepared in accordance with SSPC-Special Provision 7/NACE No.4-Brush-Off Blast Cleaning. The surface shall have an anchor profile that corresponds with the manufacturer's published data sheet. The blast media shall be a mineral or mineral slag that meets the requirements of SSPC AB-1-Mineral and Slag Abrasives. Steel shot or grit is not allowed.

Coatings for topcoat shall be from the current NEPCOAT QPL-list A, B or C. The topcoat color shall be green, Federal Standard 595B, color No. 14272 unless otherwise specified.

Surfaces to be top-coated shall be prepared and coated in an enclosed facility. Paint shall be stored and handled in accordance with the manufacturer's published data sheet and SSPC-PA 1. Primer shall be an epoxy coating as recommended by the topcoat manufacturer. Touch-up shall be in accordance with the coating manufacturer's recommendations. If the repair area of the topcoat is greater than six in.^{2}, the entire piece shall be re-coated.

506.14 Thru 506.19 Vacant

COATING SYSTEMS-PAINT

506.20 Description Work shall consist of the application of coating systems in accordance with the Plans and this Specification. When a coating system is applied in a shop or off site, the Contractor shall have the option of determining which coats are applied prior to and after steel erection. Each coat, whether shop-applied or field-applied shall be applied in accordance with the manufacturer's published data sheet and this Specification.

506.21 Materials Coatings systems shall be from the Northeast Protective Coating Committee (NEPCOAT) Qualified Products List (QPL), list A or B. The list may be found through NEPCOAT's Web page: http://www.nepcoat.org.

The Contractor shall provide the paint batch description, lot number, date of manufacture, shelf life and the manufacturer's published storage requirements to The Department's authorized representative.. The Contractor shall provide the manufacturer's published data sheet for application of each coat of the coating system including equipment, surface cleanliness, anchor profile, mixing, thinning, application, cure time for the entire range of allowable environmental conditions and dry film thickness (DFT).

506.22 Limits of work All surfaces exposed in the assembled product shall be coated. Surfaces to be embedded in concrete shall receive a mist coat 0.5 to 1.0 mils of primer only.

Faying surfaces of bolted connections shall be primed only and develop a class B slip coefficient in accordance with the *"Specification for Structural Joints Using ASTM A325 or A 490 Bolts"* by the Research Council of Structural Connections (RCSC). The Contractor shall provide documentation to demonstrate that the coating was tested and all requirements were met. The documentation shall indicate the maximum DFT allowable to meet the class B slip coefficient.

Documentation does not need to be submitted for NEPCOAT systems that comply with class B slip coefficient.

506.23 Surface Preparation Surface preparation shall be a minimum of SSPC SP-10 unless a higher standard of surface cleanliness is required by the manufacturer's published data sheet. SSPC VIS. 1 shall be used to determine acceptable surface cleanliness.

Prior to abrasive blast cleaning new steel, all corners exposed in the assembled product shall be rounded to approximately a 1/8 inch radius. A series of tangents to the approximate radius will be considered as a rounded. The Contractor shall prepare a plate approximately 3 inches by 12 inches with the appropriate rounded corner. The plate shall become the Job Standard for corner preparation. The plate shall remain the property of the Contractor. In lieu of rounding the corners, the Contractor may provide an application process that ensures minimum coating thickness build-up on the corners. The process must be demonstrated in advance of application and during production.

After abrasive blast cleaning, the surface shall be visually inspected by the Q.C.I. and Q.A.I. for fins, tears, delaminations and other unacceptable discontinuities. Unacceptable discontinuities shall be removed with a grinder or other suitable power tool and the area shall be blended at a slope of approximately 1:20. The affected area(s) shall be abrasive blast cleaned to develop an acceptable anchor profile.

The Contractor may propose an alternative method of developing an acceptable anchor profile on the substrate. The Contractor shall demonstrate the effectiveness of the proposed method by preparing a 12 inch by 12 inch plate using the proposed method and coating the plate with primer in a manner that duplicates production application technique. The plate shall be divided into four equal quadrants. After the primer has cured, an adhesion test shall be performed in the center of each quadrant in accordance with ASTM D 4541. The minimum tensile bond shall be 725-psi unless a higher tensile bond is required in the manufacturer’s published literature. If all four adhesion tests meet or exceed the specified requirements, the proposed method will be acceptable. The proposed alternative method of developing an acceptable anchor profile shall be limited to areas no greater than 6 in.^{2}.

The anchor profile shall meet the requirements of the manufacturer's published data sheet. The anchor profile shall be measured in accordance with ASTM D 4417 Method C. If the anchor profile fails to meet the minimum requirements, the Contractor shall re-blast the substrate until the minimum required anchor profile is achieved. If the anchor profile exceeds the maximum allowed in the manufacturer's published data sheet, the substrate may be coated only with the prior approval of the Engineer.

The Q.C.I. shall measure the anchor profile of the substrate on each plane of the first piece and each additional piece with a significant change in size or geometry. The Q.A.I. will witness the testing. After it has been established to the satisfaction of the Engineer that the abrasive blast equipment is capable of providing uniform, acceptable surface preparation, a diminished degree of testing shall be agreed upon by the Q.C.I. and Q.A.I. but shall not be less than one set of tests per shift.

Material that has been contaminated after blasting by handling, storage or other means shall be solvent cleaned and re-blasted prior to primer application.

If compressed air is used for abrasive blast cleaning, a blotter test shall be performed in accordance with ASTM D 4285 at the beginning of each shift. The Q.A.I. shall be present to witness the blotter test.

The allowable time between abrasive blast cleaning and primer application shall not exceed the manufacturer's published recommendations or eight hours, whichever is less.

506.24 Application

The Q.A.I. shall witness the mixing and thinning of the coatings. Failure to notify the Q.A.I. shall result in the coating being rejected.

Thinning and mixing of coatings shall be in conformance with the manufacturer's published data sheet. Thinner shall be measured using a graduated cup or other container that clearly indicates the amount of thinner being added. Mixing shall be done using the method, equipment, and time recommended by the coating manufacturer.

The Q.C.I. shall record the batch and lot numbers of the coating, the type and amount of thinner used, the time and pot life of the coating. The Q.A.I. shall confirm that the record is correct.

Coating equipment including mixers, hoses, tip size and guns shall meet the recommendations of the manufacturer's published data sheet.

The environmental conditions in the immediate vicinity of the steel to be coated shall be within the ranges in the manufacturer's published data sheet during the coating operation and during the cure period. Ambient temperature, surface temperature, relative humidity and dew point shall be measured and recorded by the Q.C.I.. The Q.A.I. may perform environmental testing in addition to the testing performed by the Q.C.I... If there are differences between the test results, the differences shall be resolved or explained to the satisfaction of the Engineer prior to coating application. The results of the environmental testing shall be recorded in the JCR.

Corners, fasteners, welds, and inaccessible locations shall be striped in accordance with SSPC PA 1. The striping shall extend a minimum of 1 inch from each edge. Striping will not be required on intermediate and topcoat; however, the Contractor shall meet the minimum DFT requirements on all surfaces.

Cure and recoat time shall be in accordance with the manufacturer's published data sheet for the environmental conditions at the time of application and cure. The Contractor shall provide the cure and recoat times for the environmental conditions in the immediate vicinity of the coated product. The cure and recoat times shall be provided on the coating manufacturer's letterhead and shall be authorized by a technical representative of the company.

If the coating is contaminated with dust, debris, over spray, or other deleterious material, the surface shall be solvent cleaned in accordance with SSPC SP 1 prior to recoating. Other methods of cleaning may be used if approved by the Engineer.

The Q.A.I. shall be given ample notice in order to inspect the product prior to coating, recoating or removal of paint from unacceptable areas. Substrates that are primed or surfaces that are recoated without notification of the Q.A.I. shall be rejected and no further coating shall be done on the piece. Coating applied without notification of the Q.A.I. will be investigated by destructive and non-destructive testing as directed by the Engineer and by a review of the JCR. The Engineer may reject, conditionally accept, or accept the coating based on documentation and test results. Rejected coating shall be removed and re-applied. Conditionally accepted coatings shall be made acceptable as directed by the Engineer. The cost of additional testing and repairs shall be borne by the Contractor.

506.25 Dry Film Thickness DFT shall be measured in accordance with SSPC PA 2. The results shall be documented in the JCR. The JCR documentation shall include the actual gage readings, spot average and the location(s). Each piece or area presented for acceptance, regardless of size shall be considered a separate structure for purposes of determining the number of spot measurements to be taken except that large quantities of small parts and/or secondary framing members coated at the same time may be measured at a lesser frequency as directed by the Engineer. When random DFT testing of a large quantity of small parts and/or secondary framing members results in unacceptable DFTs, the Contractor shall have the option of measuring and documenting the DFT of each piece or removing the coating and/or recoating all pieces represented in the production lot.

506.26 Touch-up and Repairs Touch-up shall be done in accordance with the manufacturer's published data sheet and this Specification. Areas to be touched up shall be prepared to assure proper adhesion of each coat. Each existing coat shall be feathered back to assure that each touch-up coat is continuous with each corresponding existing coat. The top-coat shall be smooth and uniform in appearance.

Damaged or unacceptable shop coating shall be repaired before the piece is removed from the paint area. Damaged areas shall be prepared in accordance with the manufacturer’s published instructions or as directed by the Engineer. Damaged or unacceptable coatings shall be repaired using the same coating system. Environmental conditions cure times and DFTs shall be in accordance with manufacturer's published data sheet for the coating being applied. Repairs to topcoat shall result in a uniform gloss and color match. The Engineer shall have final authority concerning acceptable appearance.

If repairs larger than 6 $in.^2$ are made to the top coat of fascia beam, the entire beam shall be re-coated after repairs are completed.

506.27 Handling and Storage The coating shall be adequately cured before handling but under no circumstances shall the product be handled before the coating has achieved the manufacturer’s published minimum cure and/or handling time. Coated members shall be handled in a manner to avoid damage to the coating. Members shall be lifted and moved using

non-metallic slings, padded chains and beam clamps, softeners, or by other non-injurious methods. Material shall be stored, both at the coating facility and in the field, in a manner that prevents damage to the coating.

Damage to the coating that is discovered after the product is loaded for shipment to the job site shall be documented by the Q.C.I. Minor damage as a result of handling shall be considered field repair unless, in the opinion of the Engineer the damage is the result of negligence or poor handling methods. Damage that is deemed to be the result of negligence or poor handling methods shall be repaired as directed by the Engineer.

THERMAL SPRAY COATING

506.30 Description This work consists of application of Thermal Spray Coatings (TSC) to steel substrate in accordance with the Plans and this Specification. Requirements that are not stated in this specification shall be performed in accordance with Joint Standard ***SSPC-CS 23.00/AWS C2.23M/NACE No. 12, Specification for the Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel.***

506.31 Materials Feedstock shall meet the requirements of ASTM B 833, 85/15 Zinc-Aluminum (W-ZnAl-2). The Contractor shall submit a certified analysis of the feedstock to the Engineer.

Seal coat and topcoat shall meet the following requirements:

Seal Coat	As recommended by the Topcoat Manufacturer
Topcoat	A listed topcoat product from the NEPCOAT QPL System A, B or C

The seal coat shall contain pigmentation to indicate uniformity of application.

506.32 Surface Preparation Prior to abrasive blast cleaning, all corners exposed in the assembled product shall be rounded to approximately a 1/16 inch radius. A series of tangents to the approximate radius will be considered as a rounded edge. The Contractor shall prepare a plate approximately 3 inches x 12 inches with the appropriate rounded corner and the plate shall become the Job Standard. The plate shall remain the property of the Contractor.

Surfaces to be coated shall be abrasive blast cleaned to the requirements of SSPC SP 5/NACE No. 1, White Metal Blast Cleaning. SSPC VIS. 1 shall be used to determine acceptable cleanliness. If more than one method of abrasive blast cleaning is used (e.g. centrifugal blast and compressed air), the acceptable Job Standard for each process shall be established.

The anchor profile shall be 2.0-4.0 mils. The anchor profile shall be measured in accordance with ASTM D 4417 Method C. If the anchor profile fails to meet the minimum required profile, the Contractor shall re-blast the substrate until the minimum required anchor profile is achieved.

The Q.C.I. shall measure the anchor profile of the substrate on the first piece blasted at the beginning of each shift and at a frequency not to exceed 4 hours thereafter. A measurement shall consist of one measurement on each plane of structural shapes or at approximately 120° intervals on pipes and round tubes. The Q.A.I. will witness the testing. If there is a significant change in the depth of the anchor profile due to blast media degradation or other cause, the Contractor shall take corrective action before continuing to abrasive blast clean the substrate.

If compressed air is used for abrasive blast cleaning, a blotter test shall be performed in accordance with ASTM D 4285 at the beginning of each shift. The Q.A.I. shall be present to witness the blotter test.

506.33 TSC Requirements The coating thickness shall be between 14 mils and 17 mils. The DFT on faying surfaces shall not exceed the thickness tested for Class B slip coefficient rating.

The TSC shall have a minimum tensile bond of 725 psi. The tensile bond shall be tested in accordance with ASTM D 4541-02. The frequency of testing shall be one test every 500 ft^2 or once per shift, whichever is less. The test location will be as directed by the Q.A.I. The specified tensile force shall be applied to the TSC and removed. If the test does not reveal a failure of the TSC, the tensile bond shall be considered acceptable. If the test reveals a failure of the TSC, the coating shall be rejected.

A bend test as described in SSPC-CS 23.OO/AWS C2.23M/NACE No. 12. Section 6 shall be conducted at the beginning of each shift. If the bend test fails, the Contractor shall take corrective action and perform another test.

The results of the tensile bond test and bend test shall be documented in the JCR.

The TSC shall have a uniform appearance, free from blistering, cracks, loose particles, or exposed steel substrate when examined with 10-X magnification.

506.34 TSC Application The TSC shall be applied by the arc spray process. Thermal spray equipment shall be set up, calibrated, and operated per the manufacturer's instructions and technical manuals or the Thermal Spray Coating Applicator's (TSCA) refinement thereof and as validated by the Job Reference Standard (JRS).

The Q.C.I. shall measure and record in the JCR the ambient temperature, surface temperature, relative humidity and dew point near the pieces being coated immediately prior to application. The substrate shall be 5° F above the dew point at the time of application. The Q.A.I. shall be given adequate notice in order to witness the measurement of the environmental conditions.

The substrate shall be coated with a 1 mil to 2 mil flash/primer coat followed by several thin, overlapping passes to build the required DFT. Top flanges of beams requiring shear connectors shall receive a flash/primer coat only. If shear connectors are shop applied, they shall be applied prior to the TSC.

506.35 Seal Coat and Top Coat Application. The seal coat shall be applied within eight hours of the TSC application. The topcoat shall be applied after the seal coat has cured. The surfaces shall be free from contaminants immediately prior to application of the seal coat and topcoat.

The seal coat and topcoat shall be applied in accordance with SSPC-PA 1, "Shop, Field and Maintenance Painting", and the coating manufacturer's published recommendations.

Unless otherwise specified, the topcoat shall be applied to the outside surfaces and bottom flanges of bridge fascia beams. The color shall be as specified on the Plans.

Coating thickness shall be measured in accordance with SSPC-PA 2. The DFT shall conform to the requirements of the manufacturer's published data sheet. For the measurement of coating thickness, each piece coated will be considered a separate structure.

506.36 Repairs Damage to TSC shall be repaired by re-blasting the damaged area and re-applying TSC in accordance with this Specification.

FUSION BONDED EPOXY

506.40 Description The work shall consist of applying fusion-bonded epoxy (FBE) to a steel substrate. The FBE shall be applied to all surface areas indicated on the plans.

Steel pipe pile shall be coated in accordance with ASTM A 972/A 972M as amended herein. Steel H piles and sheet piling shall be coated in accordance with ASTM A 950/A 950M as amended herein. Epoxy-coated steel reinforcing bars shall be coated in accordance with AASHTO M 284M/M 284 (ASTM A 775/A 775M). All other steel products shall be coated in accordance with the plans and/or the direction of the Engineer.

506.41 Materials The FBE coating shall be a one-part, powder coating meeting the following requirements:

Property	Test Method	Value
Impact Resistance	ASTM G 14 3 lb. @ 40° F	80 inch-lb Min.
Abrasion Resistance	ASTM D 4060 (CS 10 wheel, 1000 gr. Load)	<70 mg/ 1000 cycles
Chemical Resistance	ASTM G 20 Modified (30 day immersion)	10 % CaCl no effect 10 % NaOH no effect
Cathodic Disbondment	ASTM G 8, Method A	3/8 in disbondment radius

The Contractor shall supply certified copies of all test results to the Engineer. The test results shall include the lot number tested, date, test method and testing agency. The tests shall have been performed within 12 months of the beginning of work.

The Contractor shall provide to the Engineer Certified Mill Test Reports for the material to be coated prior to beginning the coating process.

Prior to shipment, the applicator shall furnish written certification that the coated pieces meet the requirements of this Specification.

506.42 Notice The Contractor shall notify the Engineer at least ten days prior to beginning coating. Steel coated without the Q.A.I. being present shall be subject to rejection.

506.43 Surface Preparation. All butt welds shall be ground flush prior to abrasive blast cleaning. The steel shall be abrasive blast cleaned to the requirements of SSPC SP10/NACE No.2, Near White Metal Blast. SSPC VIS. 1 shall be used to determine acceptable cleanliness. The Q.C.I. and Q.A.I. shall evaluate the first piece using VIS 1 as a comparator. No further blast cleaning shall be done until the Q.C.I. and Q.A.I. agree upon the acceptable Job Standard for cleanliness. If more than one method of abrasive blast cleaning is used (e.g. centrifugal blast and compressed air), the acceptable Job Standard shall be established for each method.

506.44 Application The FBE powder shall be applied and cured in accordance with the applicable ASTM Standard and the manufacturer's published data sheet.

The DFT of the coating shall average between 10 mils and 18 mils for embedded work or coating exposed to atmosphere. A minimum thickness of 18 mils is required for piles or other items that will be subjected immersion service. The DFT shall be measured in accordance with SSPC PA 2 except that three spots shall be measured on each piece. If the average of three measurements per spot is less than the specified minimum, the piece shall be measured at one meter (3 feet) intervals along the length of the piece.

506.45 Inspection The DFT shall be measured using a fixed-probe or magnetic pull-off gauge that is calibrated and operated in accordance with SSPC PA 2. The testing procedure and reporting shall be in accordance with ASTM G 12. The frequency of testing shall be each piece coated unless a lesser frequency of testing is directed by the Engineer.

Holiday detection shall be performed in accordance with the applicable AASHTO or ASTM Standard.

Holiday repairs shall be done in accordance with the applicable AASHTO or ASTM Standards and the manufacturer's published data sheet. If a conflict between the Standard and manufacturer's published data sheet, the Engineer shall determine which shall apply.

506.46 through 506.49 Vacant

DRY POWDER (POLYESTER) COATING

506.50 Application Requirements The requirements for polyester coating shall be the same as for FBE.

506.51 Through 506.59 vacant

CONTAINMENT SYSTEM

506.70 Protective Measures The Contractor shall use all necessary means to prevent new pollution of the environment (air, soil, and water) in the project area and the areas immediately adjacent to the project area and to prevent exacerbating any pre-existing pollution that may be present in the above areas. The Contractor shall comply with all applicable Federal, State, and local laws, ordinances, rules, and regulations relating to the prevention of and/or abatement of pollution. The Contractor will not be held responsible for the abatement of any pre-existing conditions unless specified otherwise.

Potential pollutants such as fresh paint, old paint chips, blast cleaning debris, chemicals, fuels, lubricants, bitumen, and any other harmful or toxic material shall be contained and disposed of in such manner and in such place as will conform with all applicable regulations governing the disposal of such materials.

It shall be the Contractor's responsibility to provide documentation to the Engineer that all hazardous or toxic materials were disposed of in an acceptable manner. The documentation shall consist of truck manifests, weigh-bills, or such other documentation that may be acceptable to the Engineer. The documentation shall show the method and site used and the quantity of material disposed of.

Prior to starting the surface preparation and/or painting of structures, the Contractor shall submit his proposed containment and pollution control measures for the Engineer's review. The proposal shall be sufficiently detailed to show that conformance with the requirements specified herein or elsewhere in the contract will be achieved.

Draped tarpaulins without any structural supports will not be considered acceptable as a containment system. The minimum containment system that will be considered for review shall consist of platforms and side curtains fully enclosing the work area.

The Contractor's choice of equipment or system used for the collection of the paint removal and cleaning debris will be reviewed by the Engineer to determine its suitability for the intended purpose and its probable environmental impact.

Personnel working in a containment structure may be exposed to health hazards. The Contractor shall be responsible for supplying adequate protection for all personnel required to be in the containment structure.

506.73 through 506.89 Vacant

MEASUREMENT and PAYMENT

506.90 Method of Measurement Protective coating shall be measured by the lump sum method, complete, and accepted. The limits shall be as shown on the plans or as described within the respective subsection.

Containment and pollution control measures will be measured for payment as one lump sum unit, consisting of all work previously described, completed, and accepted.

Disposal of hazardous or toxic materials will be measured for payment as one lump sum unit, consisting of all material satisfactorily disposed of in conformance with these specifications.

506.91 Basis of Payment All work for Protective Coating will be paid for at the lump sum price for the respective item. Payment will be full compensation for all work and materials needed to complete the item; coating and cleaning materials, staging or accessing, testing, labor, surface preparation, cleaning, application, curing and repairs to coating.

Containment and pollution control will be paid for at the contract lump sum price, which price shall be full compensation for furnishing all materials, labor, equipment, and incidentals necessary for the satisfactory performance of the above work.

Disposal of hazardous or toxic materials will be paid at the contract lump sum price, which price shall be full compensation for all permits, tests, transportation, tipping fees, and incidentals necessary for the satisfactory performance of the above work.

Pay Items		Pay Unit
506.9101	Galvanizing (and top coating)	Lump Sum
506.9102	Zinc Rich Coating System (Shop Applied)	Lump Sum
506.9103	Zinc Rich Coating System (Field Applied)	Lump Sum
506.9104	Thermal Spray Coating (Shop Applied)	Lump Sum
506.9105	Thermal Spray Coating (Field Applied)	Lump Sum
506.9106	Fusion Bonded Epoxy Coating	Lump Sum
506.9107	Dry Powder (Polyester) Coating	Lump Sum
506.9108	Containment System and Pollution Control	Lump Sum
506.9109	Disposal of Hazardous or Toxic Material	Lump Sum

SPECIAL PROVISION
SECTION 509.72
ERECTING HYBRID-COMPOSITE BEAMS

Description: This work shall consist of all labor, materials, tools and equipment necessary for the erection of Hybrid-Composite Beams (HCB's) as per the details included in the plans, including placement of the compression reinforcement in the HCB's. Materials, work, inspection and documentation not specifically addressed by this Specification shall be done in accordance with Section 502 of the Standard Specifications. The installation of neoprene pads and retainers for bearings shall be included in the costs for other items.

Demonstration Project: The Contractor's attention is called to the fact that the HCB's represent an experimental element to be used in this project. Therefore no substitutions or value engineering will be allowed on this item. This item shall include assistance and cooperation with Federal, State officials and their representatives in the installation, maintenance and monitoring of the superstructure before, during and after installation. HCB's will be fabricated and furnished by Harbor Technologies, Inc., 8 Business Parkway, Brunswick, ME 04011 and will be available for erection by July 1, 2010 The Erection Contractor shall plan and conduct his work accordingly.

It is anticipated that following installation of the HCB's and prior to opening the bridge to traffic, strain and deflection measurements will be taken on at least one of the interior girders erected on the bridge for correlation to the measured response of the prototype beam tested for certification. To facilitate this assistance, the Erection Contractor shall provide access to the first two spans of the bridge and supply up to two (2) 110V outlets and a man-lift, or boat capable of reaching the underside of the superstructure with operator for a period of time not to exceed four (4) weeks.

Materials: Materials shall be in accordance with the following:

A. SCC: Self-Consolidating Concrete shall be used for the compression reinforcement in the HCB's. SCC shall be in conformity with the applicable provisions of Section 502 - Structural Concrete, except as follows:

1. The minimum compressive strength at 28 days shall be 6,000 psi.
2. The minimum cementitious content shall be no less than 800 lbs per cubic yard.
3. The maximum water/cementitious material ratio shall be 0.42 which is to include pozzolans as cementitious material.
4. Target air content shall be 4% ± 3%.
5. The mix design shall contain either:
   Minimum 15% Fly ash by weight of total cementitious material, or
   Minimum 30% Slag by weight of total cementitious material.
6. Coarse aggregate shall be composed of 3/8 inch rounded pea-stone gravel. Crushed ledge will not be allowed.
7. Minimum fine aggregate shall be not less than 45% of the total aggregate.

8. The mix shall contain a viscosity modifying admixture at a dosage to be determined by the Contractor's admixture representative.
9. The mix shall contain a hydration stabilizer dosed at a rate to ensure no hydration beginning for a minimum of five hours from batching.
10. The slump flow range shall be within the range of 26 inch minimum and 30 inch maximum.
11. Permeability requirements of Section 502 of the Standard Specifications will be waived for SCC.

Equipment: Equipment shall be according to the following:

A. Concrete Pump: For placement of the SCC, a boom type concrete pump truck will be the only method allowed. The pump truck shall be capable of reaching all HCB's to be filled with one truck load of concrete, without moving from its initial location. Aluminum pipe or conduit will not be permitted in pumping or placing concrete. The Erection Contractor shall also have a backup method in place for placing SCC, in the event of a pump truck failure. The backup method for placing the SCC shall be approved by the Resident, and in place and capable of completing the SSC placement within ten minutes of the pump truck failure.

Fabrication: Hybrid-Composite Beams shall be fabricated and delivered to the construction site in Boothbay by others in accordance with the Special Provisions for Furnishing Hybrid-Composite Beams. The HCB's as delivered will consist of the FRP shell, Tension Reinforcement, longitudinal strand placed inside the profiled conduit and Shear Connectors that may be installed prior to shipping or subsequent to erection. Four (4) steel fittings, compatible with a four inch concrete pump quick connect fitting will also be supplied for use during placement of the compression reinforcement. These fittings shall be returned to Harbor Technologies, Inc. at 8 Business Parkway, Brunswick, ME 04011 following completion of the placement of the compression reinforcement. The Contractor may elect to procure additional fittings at no additional cost to the Department.

Handling, Storing and Transportation:
The HCB's shall be maintained in upright position at all times, and shall not come in contact with seawater. The Fabrication Contractor will be responsible for sealing the HCB's against any infiltration of water prior to shipment to the jobsite. Upon delivery to the jobsite, the Erection Contractor shall be responsible for maintaining the watertight seal of the beams until April 1, 2011 or until the compression reinforcement is placed. , The Erection Contractor shall be responsible for removal of any standing water within the FRP shell prior to placement of the compression reinforcement.

The Fabrication Contractor shall indicate on the shop drawings the desired pick points and lift angle for handling and shipping of the FRP Shell. The FRP Shells may be double or triple stacked. When stacking, the HCB's shall be maintained in the upright position at all times and each beam shall be supported with cribbing supporting the upper beam in the same location as the HCB below.

If the HCB's are damaged by the Erection Contractor during handling, storing, erection, placing of compression reinforcement, or any other activity, the damaged HCB's shall be repaired or replaced at the Department's discretion and at the Erection Contractor's expense.

Erection: The Hybrid-Composite Beams shall be erected to the lines and grades as indicated in the plans and in accordance with the requirements of these Special Provisions. Thirty days prior to erection, the Contractor shall submit an Erection Plan indicating lifting methods, erection sequence, construction inserts and other pertinent information. Penetrations in the HCB Shells for construction purposes shall not be permitted unless approved by the Resident.

A. Beams shall be placed on clean bridge seats and tops of bearing devices. Any shifting of beams shall be done while they are held free of the supports.

B. HCB's shall be handled with a suitable hoisting device or crane provided with spreader sling of sufficient capacity to handle the members. Nylon slings shall be used to prevent damage to the surface of the HCB's. If the Contractor elects to precast the compression reinforcement prior to erection of the HCB's, then steel slings shall be used connected to lifting loops, provided by the Contractor and cast into the ends of the beams during placement of the compression reinforcement. The two prefilled beam have been fabricated with an embedded prestressing steel lifting loop at each end for handling and erection.

C. The Contractor shall provide sufficient bracing of the beams to prevent rotation or instability during forming and casting of the end diaphragms and placement of the compression reinforcement. Bracing shall also provide for a tie-down force to prevent displacement of the beams resulting from climatic events such as high winds or wave impact.

D. The shear connectors will be installed by others and must be in place prior to placing the compression reinforcement. The Erection Contractor shall make final adjustments to shear connectors to assure proper location prior to placement of compression reinforcement The compression reinforcement shall be placed prior to placing the deck concrete. The Contractor shall place the diaphragm concrete in one simultaneous operation with the deck concrete.

E. Subsequent to placing the compression reinforcement in the HCB's and prior to placing the reinforcing steel for the deck, the longitudinal space between adjacent beams shall be filled by the Contractor by suitable means to prevent leakage of mortar or other debris before or during casting of the bridge deck, also lifting sling cutouts, if any, shall be covered. All materials used to seal the space shall be non-corrosive. The materials and methods for sealing the joints between the beams and covering lifting sling cutouts shall be submitted to the Resident for approval prior to initiating this work. After filling the longitudinal space, the joint between HCB's shall be covered with 3 inch min. width rubberized tape for the full length of the HCB's, as approved by the Resident.

F.

Placement of Compression Reinforcement:
As part of the Fabrication contract two of the 69'-4" Beams have been filled with concrete by the Fabrication Contractor. The Erection Contractor shall handle, move, and store the two beams

that have been prefilled with the compression reinforcement. Twelve mechanical couplers per beam will need to be installed for the #6 bars that run perpendicular to the beams at each pier. This additional work shall be incidental; there will be no additional payment for mechanical couplers or for adjusting rebar that is affected by prefilling beams with compression reinforcement. The two filled HCB's and other fabricated HCB's are available for inspection at Harbor Technologies.

The Erection Contractor will have the option of either placing the compression reinforcement subsequent to erection of the HCB shells, or alternately, precasting of the compression reinforcement will be permitted. The Contractor's Quality Control Technician (QCT) shall be present for all compression reinforcement concrete placements. In the event that the Contractor elects to precast the compression reinforcement prior to erection of the HCB's, the Contractor shall include, at no additional cost, a method for lifting the beams. This method shall be submitted to the Department prior to placing the compression reinforcement and shall be included in the Contractor's Erection Plan. In either case the Contractor shall be responsible for ensuring that all requisite reinforcing bars, dowel bars and other inserts have been properly installed in the HCB shell prior to placing of the compression reinforcement. If mechanical couplers are needed, The Contractor will not receive additional payment. If the Erection Contractor elects to precast the HCB compression reinforcement, support at the bearing areas as shown on the Plans shall meet the requirements of Std. Spec. 523 Bearings. Also, if the Erection Contractor elects to precast the HCB compression reinforcement offsite, the Fabrication Contractor shall deliver the HCB's to the Erection Contractor's precast yard. The Erection Contractor shall be responsible for unloading, reloading after placing and curing compression reinforcement, and transporting HCB's to the project site in Boothbay. Placement of the compression reinforcement in the shells shall be performed according to the following:

A. Written Placement Plan:
   A written placement plan shall be submitted at least 30 days prior to the first placement of concrete compression reinforcement. The written placement plan shall provide as a minimum the following information:
   1) List all equipment to be used. Manufacturer performance data will be required for all pumping equipment.
   2) The concrete mix design to be used.
   3) The intended method and sequence of placing the concrete. This shall include a written narrative and diagrams and/or photographs as necessary so that the process will be clearly defined.
   4) The name(s) of the responsible person in charge for the contractor
   5) The proposed method for monitoring the deflection before, during and after the placement of the compression reinforcement for each HCB in the final structure.
   6) A description of the inspection procedure for checking the beams after the pumping of SCC concrete to ensure the compression reinforcement cavity has been completely filled. The description should outline the method of inspection and materials to be used to fill any remaining voids.

B. Pre-Placement Meeting:
   Upon approval of the Placement Plan, a pre-placement meeting shall be scheduled no sooner than three days prior to the initial placement of compression reinforcement in the first HCB

to be incorporated into the final structure. The meeting shall include the Contractor's Superintendent and responsible person in charge, the QCT, a representative from the pumping subcontractor a representative from the concrete supplier, admixture representative, the Resident, as well as representatives from the Department and Harbor Technologies.

C. Demonstration Placement:

If the Contractor elects to place the compression reinforcement subsequent to erection, a demonstration procedure shall be conducted comprising a maximum of only one complete span of eight beams to be placed in a single day. If the Contractor elects to precast the compression reinforcement prior to erecting the beams, then the demonstration placement shall be conducted on no less than two beams to be filled sequentially in a single operation. Subsequent to the demonstration placement, a post-placement meeting shall be conducted with the same representatives present at the pre-placement meeting to assess any adjustments required to the Placement Procedure. A minimum of two working days shall elapse following the demonstration procedure before placing the compression reinforcement in the remaining beams in the bridge. As a minimum, the Placement Manual shall be revised to indicate the Contractor's proposed sequence and schedule for completion of all placement of compression reinforcement. An admixture representative from the manufacturer of the concrete admixtures shall be present for the demonstration placement.

D. Placing Compression Reinforcement:

Concrete shall not be placed until the HCB's and shear connectors have been checked and approved by the Resident. The forms shall be clean of all debris and the HCB shell purged of any standing water.

The only acceptable method shall be that approved in the placement plan. The SCC for the compression reinforcement shall be pumped into the HCB using the 5 injection ports, located at the two ends, mid-span, and two intermediate locations for each of the beams. The concrete pressure at the discharge end of the pump shall be no more than 10 psi during pumping of the concrete. The pumping shall continue until there is sufficient evidence at vent ports at the ends of the beams that the conduit for the compression reinforcement is completely filled. Once pumping has been initiated for any given HCB, the beam must be completely filled without delay. Cold joints in compression reinforcement will not be allowed. If the Contractor elects to use the same truck load of concrete to fill another beam, prior to filling the subsequent HCB, the SCC concrete shall be tested for and shall meet the slump flow range specified.

Although SCC is a flowable concrete that is designed for placement with no vibration, the Contractor may find it necessary or may be directed to use vibrators to ensure that the HCB shell is completely filled with the compression reinforcement and free of any air voids. For this purpose, four 2-inch diameter holes will be provided in the HCB shell at four foot intervals along the top flange in the end quarter of each end to accommodate a conventional concrete vibrator. The Contractor shall have on site, a drill and 2-inch diameter drill-bit or hole saw capable of drilling additional holes as needed for placement of the compression

reinforcement. The location of any additional holes necessary during placement of the concrete must be approved by the Resident.

Hand placement of concrete may be required to completely fill the final few inches of the beam. For the two beams that were filled with concrete at Harbor Technologies in January, 2010 hand placement was needed. The top inch of concrete for a section about 20 feet in length was placed using buckets, tamping rods, and trowels. It is the Contractors responsibility to completely fill each beam. Due to the nature of SCC Concrete, the contractor may have to remove some foam or excessive bleed water by placing additional concrete by hand in the injection or vibration openings after pumping is complete until such time as concrete appears to the tops of these openings.

Care shall be taken to prevent mortar from spattering on the HCB shell and, reinforcing steel and forms. Concrete or mortar that becomes dried on the HCB, reinforcing steel or forms shall be thoroughly cleaned off before the final covering with concrete. Upon completion of the bridge structure, the HCB's shall be cleaned of all concrete, mortar or other materials present on the HCB shells in a manner that does not damage the HCB's and as approved by the Resident.

No less than 24 hours after the placement of the compression reinforcement, but prior to placing the deck reinforcement, the Erection Contractor, in accordance with his approved written plan, shall inspect the beam(s) with cast compression reinforcement for voids. The inspection shall consist of a minimum of the following:

- Visual Inspection of all openings including around the shear connectors and embedded items for voids;
- Sounding along the top flange for voids using a hammer
- Drilling through the FRP top flange where voids are suspected by either of the two methods above to ensure complete filling of the beams.

If the inspection indicates the presence of voids, they shall be filled using either the same SCC concrete mix, an approved Maine DOT prepackaged grout with the same 28 day compressive strength as the SCC mix or the deck concrete placement when the void is completely exposed to the deck and the opening is not less than 1" across in any direction. Voids not filled with the deck concrete placement shall be re-inspected to ensure the void has been filled.

E. Delivery:

Delivery and discharge of the concrete from the mixer shall be completed within a maximum of 2½ hours from the time that the cement is added. Placement of concrete in any given HCB shall not be initiated until the Contractor has demonstrated that there is sufficient concrete located adjacent to the concrete pump truck and accepted by the Resident for placement in the final structure. The concrete contained in any single concrete mixer shall not be dispensed into any more than two HCB's. Any concrete remaining subsequent to the placement of two HCB's shall no longer be deemed acceptable for placement. The Contractor may request permission from the Resident to add water to the mixture before or after discharge has been initiated from the mixer as long as the amount of additional water does not exceed the maximum water/cement ratio for the approved mix design. Concrete that is allowed to stand in the pump line for a period of more than ten minutes shall be

purged from the line and shall not be utilized for compression reinforcement and a slump flow range test shall be required before continuing pumping operations.

F. Temperature Restrictions: Concrete Temperature when pumped into the HCB's shall not exceed 75ºF. Placement shall not be initiated unless the ambient temperature is at least 40ºF and below 80 degrees F. Conversely, placement shall not be initiated if the temperature of the HCB shell is in excess of 80 ºF. Concrete, which has been rejected for any reason, shall be removed immediately from the job site and disposed of properly at the Contractor's expense.

Work Under Separate Contracts: When the fabrication, erection of HCB's, construction of concrete decks, and other collateral work on a structure are accomplished under separate contracts, the following shall apply:

a) Storing and Protection of HCB's: When the fabrication and erection of HCB's is accomplished under separate contracts, the Fabrication Contractor shall be responsible for storing and protecting all fabricated HCB's up to July 1, 2010. All storage costs incurred by the Fabrication Contractor during this period shall be borne by the Fabrication Contractor.

b) Shipping of HCB's to Jobsite: The Erection Contractor shall provide the Resident with a schedule for shipping the HCB's to the jobsite a minimum of 30 calendar days prior to the first installation of the HCB's. This schedule shall specify the order items are to be received and their orientation for delivery, and must meet the approval of the Resident. The Erection Contractor will be responsible for receiving, unloading, storing and protecting the HCB's in accordance with this schedule. If the Erection Contractor elects to change this schedule, the Erection Contractor shall be responsible for coordinating the change with the Resident and the Fabrications Contractor, and for all costs and time delays associated with such changes. The Erection Contractor shall take delivery of all HCB's on the project no later than July 1, 2010. All storage costs incurred after this date shall be borne by the Erection Contractor.

   Delivery of the HCB's to the jobsite shall be the responsibility of the Fabrication Contractor. The mode of delivery shall be the option of the Fabrication Contractor. Delivery shall be limited to the hours between 8:00 a.m. and 4:00 p.m. on weekdays only, excluding any observed holidays, unless otherwise approved by the Resident or directed by any required hauling permits. The Erection Contractor shall be responsible for coordination of movement of the HCB's within the contract limits and shall be responsible for all demurrage charges. At the Erection Contractor's option and expense, HCB's may be requested at times other than the stated time.

c) Field Installation of HCB Components: Components of fabricated HCB's that cannot be completely installed until the HCB's are delivered, such as the compression reinforcement and any reinforcement extending from the FRP shells into the cast-in-place diaphragms shall be furnished and installed as required by the Erection Contractor. The shear connectors shall be delivered and installed by the Fabrication Contractor. The compression reinforcement shall be provided, placed, cured and inspected for voids by the Erection Contractor. Prior to placing and curing compression reinforcement, no loading other than workmen will be allowed on the HCB shells. After compression reinforcement has been placed and cured and

reaches 4,200 psi min. compressive strength as indicated by field cured test cylinders, the structural concrete superstructure slab may be placed or transportation of HCB's may take place if compression reinforcement is precast. Vehicles of any type shall not be placed or driven onto the HCB's until after the structural concrete superstructure has been placed and reached its design compressive strength as determined by field cured test cylinders.

The Erection Contractor is alerted to the fact that due to weather restrictions, the Fabrication Contractor may elect to install the shear connectors subsequent to erection of the HCB's. The Erection Contractor shall plan and conduct his work accordingly. In this case, the Erection Contractor shall coordinate with the Fabrication Contractor and provide access during the staging of erection to facilitate installation of the shear connectors. The Erection Contractor shall provide crane service for unloading shear connectors at each span, and also provide a 110 volt power source @ each span to assist the Fabrication Contractor. The Erection Contractor shall anticipate that installation of the shear connectors may take as long as two days per span, up to a total of 16 working days for the entire bridge. Placement of shear connectors in one span will not preclude the Erection Contractor from proceeding with HCB erection in the adjacent spans.

Basis of Payment and Method of Measurement: Hybrid-Composite Beams erected in place will be paid for at the lump sum price. Payment shall be compensation for handling and erecting the HCB's. Related materials and work includes, storing beams, sealing of joints between adjacent beams, placement of all reinforcing steel and any other inserts that are cast into the compression reinforcement with the exception of the shear connectors, placement of compression reinforcement including grouting voids, installation of mechanical couplers for prefilled beams, providing access for strain, deflection and any other testing requirements, all submittals required for approval prior to execution of this work and any other work specified in this Special Provision or in Section 502 of the Standard Specifications.

Payment will be made under:

Pay Item:	Pay Unit
509.72 Composite Beam – Installation Only	LS

May 13, 2008
Supercedes June 24, 2004

SPECIAL PROVISION
SECTION 526
CONCRETE BARRIER
(Temporary Concrete Barrier)

Materials

Temporary concrete barriers must be connected in accordance with Standard Detail 526(02) except as indicated below:

The top of the rod may be hooked over the top connector instead of using the hex nut and washer.

SPECIAL PROVISION
SECTION 606
GUARDRAIL

606.01 Description This work shall consist of furnishing and installing guardrail components in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or as established. The types of guardrail are designated as follows:

Type 3-Galvanized steel "w" beam, wood posts or galvanized steel posts.
Type 3a-Galvanized steel "w" beam, wood posts, wood or composite offset blocks.
Type 3aa-Corrosion resistant steel "w" beam, wood posts, wood or composite offset blocks.
Type 3b-Galvanized steel "w" beam, galvanized steel posts, galvanized steel offset blocks.
Type 3c-Galvanized steel "w" beam, wood posts or galvanized steel posts, wood or composite offset blocks.
Type 3d-Galvanized steel "w" beam, galvanized steel posts, wood or composite offset blocks.
Thrie Beam-Galvanized steel thrie beam, wood posts or galvanized steel posts, wood or composite offset blocks.

Median barriers shall consist of two beams of the above types, mounted on single posts. Except for thrie beam, median barriers may include rub rails when called for.

Bridge mounted guardrail shall consist of furnishing all labor, materials, and equipment necessary to install guardrail as shown on the plans. This work shall also include drilling for and installation of offset blocks if specified, and incidental hardware necessary for satisfactory completion of the work.

Remove and Reset and Remove, Modify, and Reset guardrail shall consist of removing the existing designated guardrail and resetting in a new location as shown on the plans or directed by the Resident. Remove, Modify, and Reset guardrail and Modify guardrail include the following guardrail modifications: Removing plate washers at all posts, except at anchorage assemblies as noted on the Standard Details, Adding offset blocks, and other modifications as listed in the Construction Notes or General Notes. Modifications shall conform to the guardrail Standard Details.

Bridge Connection shall consist of the installation and attachment of beam guardrail to the existing bridge. This work shall consist of constructing a concrete end post or modifying an existing endpost as required, furnishing, and installing a terminal connector, necessary hardware, and incidentals required to complete the work as shown on the plans. Bridge Transition shall consist of a bridge connection and furnishing and installing guardrail components as shown in the Standard Details.

606.02 Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Timber Preservative	708.05
Metal Beam Rail	710.04
Guardrail Posts	710.07
Guardrail Hardware	710.08

Guardrail components shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report.

Posts for underdrain delineators shall be “U” channel steel, 2.44m [8 ft] long, 3.72 kg/m [2 ½ lb/ft] minimum and have 9.5 mm [3/8 in] round holes, 25 mm [1 in] center to center for a minimum distance of 610 mm [2 ft] from the top of the post.

Reflectorized Flexible Guardrail Markers shall be mounted on all guardrails. A marker shall be mounted onto guardrail posts at the flared end treatment’s terminal and its tangent point, both at the leading and trailing ends of each run of guardrail. The marker’s flexible posts shall be grey with either silver-white or yellow reflectors (to match the edge line striping) at the tangents, red at leading ends, and green at trailing ends. Whenever the end treatment is not flared, markers will only be required at the end treatment’s terminal. These shall be red or green as appropriate. Markers shall be installed on the protected side of guardrail posts unless otherwise approved by the Resident. Reflectorized flexible guardrail markers shall be from the Maine DOT’s Approved Product List of Guardrail Material. The marker shall be grey, flexible, durable, and of a non-discoloring material to which 75 mm [3 in] by 225 mm [9 in] reflectors shall be applied, and capable of recovering from repeated impacts. Reflective material shall meet the requirements of Section 719.01 for ASTM D 4956 Type III reflective sheeting. The marker shall be secured to the guardrail post with two fasteners, as shown in the Standard Details.

Reflectorized beam guardrail (“butterfly”-type) delineators shall be mounted on all “w”-beam guardrail. The delineators shall be mounted within the guardrail beam at guardrail posts. Delineators shall be fabricated from high-impact, ultraviolet & weather resistant thermoplastic. Reflectorized beam guardrail delineators shall be placed at approximately 20 m [62.5 ft] intervals or every tenth post on tangents and at approximately 10 m [31.25 ft] intervals or every fifth post on curves. Exact locations of the delineators shall be as directed by the Resident. On divided highways, the left hand delineators shall be yellow and the right hand delineators shall be silver/white. On two directional highways, the right hand side shall be silver/white and no reflectorized delineator used on the left. All reflectors shall have reflective sheeting applied to only one side of the delineator facing the direction of traffic as shown in the Standard Detail 606(07). Reflectorized sheeting for guardrail delineators shall meet the requirements of Section 719.01.

Single wood post shall be of cedar, white oak, or tamarack, well seasoned, straight, and sound and have been cut from live trees. The outer and inner bark shall be removed and all knots trimmed flush with the surface of the post. Posts shall be uniform taper and free of kinks and bends.

Single steel post shall conform to the requirements of Section 710.07 b.

Single steel pipe post shall be galvanized, seamless steel pipe conforming to the requirements of ASTM A120, Schedule No. 40, Standard Weight.

Acceptable multiple mailbox assemblies shall be listed on the Department’s Approved Products List and shall be NCHRP 350 tested and approved.

The Guardrail 350 Flared Terminal shall be a terminal with a 1.2 m [4 ft] offset as shown in the Manufacturer's installation instructions.

Existing materials damaged or lost during adjusting, removing and resetting, or removing, modifying, and resetting, shall be replaced by the Contractor without additional compensation. Existing guardrail posts and guardrail beams found to be unfit for reuse shall be replaced when directed by the Resident.

606.03 Posts Posts for guardrail shall be set plumb in holes or they may be driven if suitable driving equipment is used to prevent battering and distorting the post. When posts are driven through pavement, the damaged area around the post shall be repaired with approved bituminous patching. Damage to lighting and signal conduit and conductors shall be repaired by the Contractor.

When set in holes, posts shall be on a stable foundation and the space around the posts, backfilled in layers with suitable material, thoroughly tamped.

The reflectorized flexible guardrail markers shall be set plumb with the reflective surface facing the oncoming traffic. Markers shall be installed on the protected side of guardrail posts. Markers, which become bent or otherwise damaged, shall be removed and replaced with new markers.

Single wood posts shall be set plumb in holes and backfilled in layers with suitable material, thoroughly tamped. The Resident will designate the elevation and shape of the top. The posts, that are not pressure treated, shall be painted two coats of good quality oil base exterior house paint.

Single steel posts shall be set plumb in holes as specified for single wood posts or they may be driven if suitable driving equipment is used to prevent battering and distorting the post.

Additional bolt holes required in existing posts shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.04 Rails Brackets and fittings shall be placed and fastened as shown on the plans. Rail beams shall be erected and aligned to provide a smooth, continuous barrier. Beams shall be lapped with the exposed end away from approaching traffic.

End assemblies shall be installed as shown on the plans and shall be securely attached to the rail section and end post.

All bolts shall be of sufficient length to extend beyond the nuts but not more than 13 mm [½ in]. Nuts shall be drawn tight.

Additional bolt holes required in existing beams shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.045 Offset Blocks The same offset block material is to be provided for the entire project unless otherwise specified.

606.05 Shoulder Widening At designated locations the existing shoulder of the roadway shall be widened as shown on the plans. All grading, paving, seeding, and other necessary work shall be in accordance with the Specifications for the type work being done.

606.06 Mail Box Post Single wood post shall be installed at the designated location for the support of the mailbox. The multiple mailbox assemblies shall be installed at the designated location in accordance with the Standard Details and as recommended by the Manufacturer. Attachment of the mailbox to the post will be the responsibility of the home or business owner.

606.07 Abraded Surfaces All galvanized surfaces of new guardrail and posts, which have been abraded so that the base metal is exposed, and the threaded portions of all fittings and fasteners and cut ends of bolts shall be cleaned and painted with two coats of approved rust resistant paint.

606.08 Method of Measurement Guardrail will be measured by the meter [linear foot] from center to center of end posts along the gradient of the rail except where end connections are made to masonry or steel structures, in which case measurement will be as shown on the plans.

Terminal section, low volume end, NCHRP 350 end treatments, reflectorized flexible guardrail marker, terminal end, bridge transition, bridge connection, multiple mailbox post, and single post will be measured by each unit of the kind specified and installed.

Widened shoulder will be measured as a unit of grading within the limits shown on the plans.

Excavation in solid rock for placement of posts will be measured by the cubic meter [cubic yard] determined from the actual depth of the hole and a hypothetical circle diameter of 600 mm [2 ft].

606.09 Basis of Payment The accepted quantities of guardrail will be paid for at the contract unit price per meter [linear foot] for the type specified, complete in place. Reflectorized beam guardrail (“butterfly”-type) delineators will not be paid for directly, but will be considered incidental to guardrail items. Terminal section, buffer end, NCHRP 350 end treatment, bridge connection, single post and reflectorized flexible guardrail markers will be paid for at the contract unit price each for the kind specified complete in place.

NCHRP 350 end treatments and low volume guardrail ends will be paid for at the contract price each, complete in place which price shall be full payment for furnishing and installing all components including the terminal section, posts, offset blocks, "w" beam, cable foundation posts, plates and for all incidentals necessary to complete the installation within the limits as shown on the Standard Details or the Manufacturer’s installation instructions. Each end treatment will be clearly marked with the manufacturers name and model number to facilitate any future needed repair. Such payment shall also be full compensation for furnishing all material, excavating, backfilling holes, assembling, and all incidentals necessary to complete the work, except that for excavation for posts or anchorages in solid ledge rock, payment will be made under Pay Item 206.07. Type III Retroreflective Adhesive Sheeting

shall be applied to the approach buffer end sections and sized to substantially cover the end section. On all roadways, the ends shall be marked with alternating black and retroreflective yellow stripes. The stripes shall be 75 mm [3 in] wide and sloped down at an angle of 45 degrees toward the side on which traffic is to pass the end section. Guardrail 350 flared terminal shall also include a set of installation drawings supplied to the Resident.

Anchorages to bridge end posts will be part of the bridge work. Connections thereto will be considered included in the unit bid price for guardrail.

Guardrail to be placed on a radius of curvature of 45 m [150 ft] or less will be paid for under the designated radius pay item for the type guardrail being placed.

Widened shoulder will be paid for at the contract unit price each complete in place and will be full compensation for furnishing and placing, grading and compaction of aggregate subbase and any required fill material.

Adjust guardrail will be paid for at the contract unit price per meter and will be full compensation for adjusting to grade. Payment shall also include adjusting terminal end treatments where required.

Modify guardrail will be paid for at the contract unit price per meter and will be full compensation for furnishing and installing offset blocks, additional posts, and other specified modifications; removing, modifying, installing, and adjusting to grade existing posts and beams; removing plate washers and backup plates, and all incidentals necessary to complete the work. Payment shall also include removing and resetting terminal ends where required.

Remove and Reset guardrail will be paid for at the contract unit price per meter and will be full compensation for removing, transporting, storing, reassembling all parts, necessary cutting, furnishing new parts when necessary, reinstalling at the new location, and all other incidentals necessary to complete the work. Payment shall also include removing and resetting terminal ends when required. No payment will be made for guardrail removed, but not reset and all costs for such removal shall be considered incidental to the various contract pay items.

Remove, Modify, and Reset guardrail will be paid for at the contract unit price per meter and will be full compensation for the requirements listed in Modify guardrail and Remove and Reset guardrail.

Bridge Connections will be paid for at the contract unit price each. Payment shall include, attaching the connection to the endpost including furnishing and placing concrete and reinforcing steel necessary to construct new endposts if required, furnishing and installing the terminal connector, and all miscellaneous hardware, labor, equipment, and incidentals necessary to complete the work.

Bridge Transitions will be paid for at the contract unit price each. Payment shall include furnishing and installing the thrie beam or “w”-beam terminal connector, doubled beam section, and transition section, where called for, posts, hardware, precast concrete transition curb, and any other necessary materials and labor, including the bridge connection as stated in the previous paragraph.

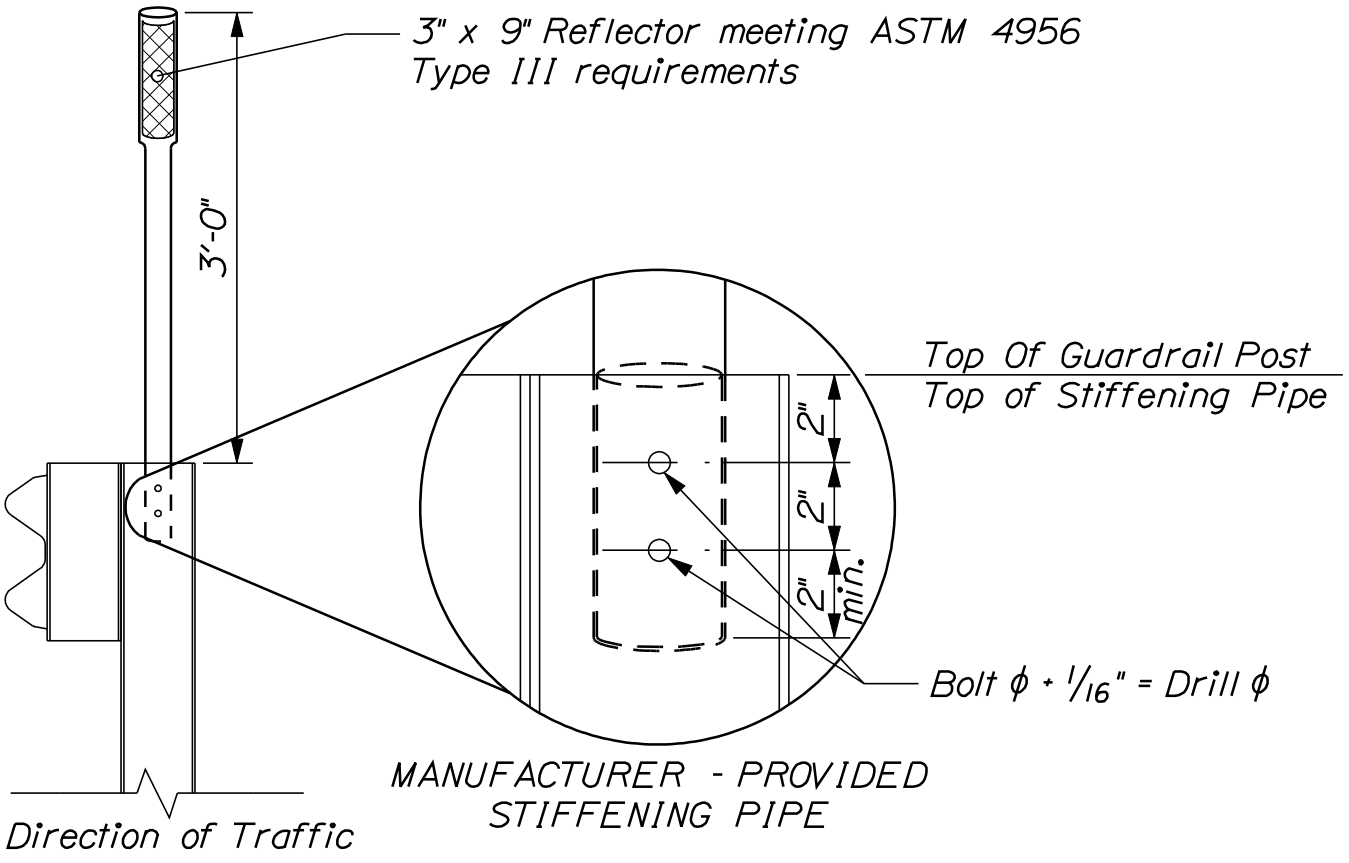
Payment will be made under:

	Pay Item	Pay Unit
606.15	Guardrail Type 3a-Single Rail	meter [Linear Foot]
606.151	Guardrail Type 3aa-Single Rail	meter [Linear Foot]
606.17	Guardrail Type 3b-Single Rail	meter [Linear Foot]
606.1721	Bridge Transition - Type I	Each
606.1722	Bridge Transition - Type II	Each
606.1731	Bridge Connection - Type I	Each
606.1732	Bridge Connection - Type II	Each
606.178	Guardrail Beam	meter [Linear foot]
606.18	Guardrail Type 3b - Double Rail	meter [Linear foot]
606.19	Guardrail Type 3a - 4.5 m [15 ft] radius and less	meter [Linear Foot]
606.191	Guardrail Type 3aa - 4.5 m [15 ft] radius and less	meter [Linear Foot]
606.20	Guardrail Type 3a - over 4.5 m [15 ft] radius	meter [Linear Foot]
606.201	Guardrail Type 3aa - over 4.5 m [15 ft] radius	meter [Linear Foot]
606.21	Guardrail Type 3b - 4.5 m [15 ft] radius and less	meter [Linear Foot]
606.22	Guardrail Type 3b - over 4.5 m [15 ft] radius	meter [Linear Foot]
606.23	Guardrail Type 3c - Single Rail	meter [Linear Foot]
606.2301	Guardrail Type 3c - Double Rail	meter [Linear Foot]
606.231	Guardrail Type 3c - 4.5 m [15 ft] radius and less	meter [Linear Foot]
606.232	Guardrail Type 3c - over 4.5 m [15 ft] radius	meter [Linear Foot]
606.24	Guardrail Type 3d - Single Rail	meter [Linear Foot]
606.2401	Guardrail Type 3d - Double Rail	meter [Linear Foot]
606.241	Guardrail Type 3d - 4.5 m [15 ft] radius and less	meter [Linear Foot]
606.242	Guardrail Type 3d - over 4.5 m [15 feet] radius	meter [Linear Foot]
606.25	Terminal Connector	Each
606.257	Terminal Connector - Thrie Beam	Each
606.265	Terminal End-Single Rail - Galvanized Steel	Each
606.266	Terminal End-Single Rail - Corrosion Resistant Steel	Each
606.275	Terminal End-Double Rail - Galvanized Steel	Each
606.276	Terminal End-Double Rail - Corrosion Resistant Steel	Each
606.353	Reflectorized Flexible Guardrail Marker	Each
606.354	Remove and Reset Reflectorized Flexible Guardrail Marker	Each
606.356	Underdrain Delineator Post	Each
606.358	Guardrail, Modify, Type 3b to 3c	meter [Linear Foot]
606.3581	Guardrail, Modify Existing to Type 3d	meter [Linear Foot]
606.362	Guardrail, Adjust	meter [Linear Foot]
606.365	Guardrail, Remove, Modify, and Reset, Type 3b to 3c	meter [Linear Foot]
606.3651	Guardrail, Remove, Modify, and Reset Existing to Type 3d	meter [Linear Foot]
606.366	Guardrail, Removed and Reset, Type 3c	meter [Linear Foot]
606.367	Replace Unusable Existing Guardrail Posts	Each
606.47	Single Wood Post	Each
606.48	Single Galvanized Steel Post	Each
606.50	Single Steel Pipe Post	Each

606.51	Multiple Mailbox Support	Each
606.55	Guardrail Type 3 - Single Rail	meter [Linear Foot]
606.551	Guardrail Type 3 - Single Rail with Rub Rail	meter [Linear Foot]
606.56	Guardrail Type 3 - Double Rail	meter [Linear Foot]
606.561	Guardrail Type 3 - Double Rail with Rub Rail	meter [Linear Foot]
606.568	Guardrail, Modify Type 3c -Double Rail	meter [Linear Foot]
606.59	Guardrail Type 3 - 4.5 m [15 ft] radius and less	meter [Linear Foot]
606.60	Guardrail Type 3 - over 4.5 m [15 ft] radius	meter [Linear Foot]
606.63	Thrie Beam Rail Beam	meter [Linear Foot]
606.64	Guardrail Thrie Beam - Double Rail	meter [Linear Foot]
606.65	Guardrail Thrie Beam - Single Rail	meter [Linear Foot]
606.66	Terminal End Thrie Beam	Each
606.70	Transition Section - Thrie Beam	Each
606.71	Guardrail Thrie Beam - 4.5 m [15 ft] radius and less	meter [Linear Foot]
606.72	Guardrail Thrie Beam - over 4.5 m [15 ft] radius	meter [Linear Foot]
606.73	Guardrail Thrie Beam - Single Rail Bridge Mounted	meter [Linear Foot]
606.74	Guardrail Type 3 - Single Rail Bridge Mounted	meter [Linear Foot]
606.753	Widen Shoulder for Low Volume Guardrail End - Type 3	Each
606.754	Widen Shoulder for Guardrail 350 Flared Terminal	Each
606.78	Low Volume Guardrail End - Type 3	Each
606.79	Guardrail 350 Flared Terminal	Each

1. Reflectorized Flexible Guardrail Markers shall be from Maine DOT's Approved Product List of Guardrail Material.

2. Installation:
   a. Each bolt-hole diameter shall be the bolt diameter + 1/16".
   b. Wood post attachment - attach marker with 2, 5/16" diameter zinc-coated lag bolts, having 2" of embedment into wood post.
   c. Steel post attachment - attach marker with 2, 1/4" diameter zinc-coated bolt, washer and nut assemblies, having 1/2" of bolt extension behind steel post.
   d. When provided by the marker manufacturer, a stiffening pipe shall be inserted into the base of the marker prior to drilling bolt holes and shall remain in-place.



REFLECTORIZED FLEXIBLE GUARDRAIL MARKER DETAILS

606(34)

SPECIAL PROVISION
SECTION 635
PREFABRICATED BIN TYPE RETAINING WALL
(Prefabricated Concrete Modular Gravity Wall)

The following replaces Section 635 in the Standard Specifications in its entirety:

635.01 Description This work shall consist of the construction of a prefabricated modular reinforced concrete gravity wall in accordance with these specifications and in reasonably close conformance with the lines and grades shown on the plans, or established by the Resident.

Included in the scope of the Prefabricated Concrete Modular Gravity Wall construction are**:** all grading necessary for wall construction, excavation, compaction of the wall foundation, backfill, construction of leveling pads, placement of geotextile, segmental unit erection, and all incidentals necessity to complete the work.

The Prefabricated Concrete Modular Gravity Wall design shall follow the general dimensions of the wall envelope shown in the contract plans. The top of the leveling pad shall be located at or below the theoretical leveling pad elevation. The minimum wall embedment shall be at or below the elevation shown on the plans. The top of the face panels shall be at or above the top of the panel elevation shown on the plans.

The Contractor shall require the design-supplier to supply an on-site, qualified experienced technical representative to advise the Contractor concerning proper installation procedures. The technical representative shall be on-site during initial stages of installation and thereafter shall remain available for consultation as necessary for the Contractor or as required by the Resident. The work done by this representative is incidental.

635.02 Materials Materials shall meet the requirements of the following subsections of Division 700 - Materials:

Gravel Borrow	703.20
Preformed Expansion Joint Material	705.01
Reinforcing Steel	709.01
Structural Precast Concrete Units	712.061
Drainage Geotextile	722.02

The Contractor is cautioned that all of the materials listed are not required for every Prefabricated Concrete Modular Gravity Wall. The Contractor shall furnish the Resident a Certificate of Compliance certifying that the applicable materials comply with this section of the specifications. Materials shall meet the following additional requirements:

Concrete Units:

Tolerances In addition to meeting the requirements of 712.061, all prefabricated units shall be manufactured with the following tolerances. All units not meeting the listed tolerances will be rejected.

1. All dimensions shall be within (edge to edge of concrete) ±3/16 in.
2. Squareness. The length differences between the two diagonals shall not exceed 5/16 in.

3. Surface Tolerances. For steel formed surfaces, and other formed surface, any surface defects in excess of 0.08 in. in 4 ft will be rejected. For textured surfaces, any surface defects in excess of 5/16 in. in 5 ft shall be rejected.

Joint Filler (where applicable) Joints shall be filled with material approved by the Resident and supplied by the approved Prefabricated Concrete Modular Gravity Wall supplier. 4 in. wide, by 0.5 in. preformed expansion joint filler shall be placed in all horizontal joints between facing units. In all vertical joints, a space of 0.25 in. shall be provided. All Preformed Expansion Joint Material shall meet the requirements of subsection 502.03.

Woven Drainage Geotextile Woven drainage geotextile 12 in. wide shall be bonded with an approved adhesive compound to the back face, covering all joints between units, including joints abutting concrete structures. Geotextile seam laps shall be 6 in., minimum. The fabric shall be secured to the concrete with an adhesive satisfactory to the Resident. Dimensions may be modified per the wall supplier's recommendations, with written approval of the Resident.

Concrete Shear Keys (where applicable) Shear keys shall have a thickness at least equal to the pre-cast concrete stem.

Concrete Leveling Pad Cast-in-place concrete shall be Class A concrete conforming to the requirements of Section 502 Structural Concrete. The horizontal tolerance on the surface of the pad shall be 0.25 in. in 10 ft. Dimensions may be modified per the wall supplier's recommendations, with written approval of the Resident.

Backfill and Bedding Material Bedding and backfill material placed behind and within the reinforced concrete modules shall be gravel borrow conforming to the requirements of Subsection 703.20. The backfill materials shall conform to the following additional requirements: backfill and bedding material shall only contain particles that will pass the 3-inch square mesh sieve and the plasticity index (PI) as determined by AASHTO T90 shall not exceed 6. Compliance with the gradation and plasticity requirements shall be the responsibility of the Contractor, who shall furnish a copy of the backfill test results prior to construction.

The backfilling of the interior of the wall units and behind the wall shall progress simultaneously. The material shall be placed in layers not over 8 in. in depth, loose measure, and thoroughly compacted by mechanical or vibratory compactors. Puddling for compaction will not be allowed.

Materials Certificate Letter The Contractor, or the supplier as their agent, shall furnish the Resident a Materials Certificate Letter for the above materials, including the backfill material, in accordance with Section 700 of the Standard Specifications. A copy of all test results performed by the Contractor or their supplier necessary to assure contract compliance shall also be furnished to the Resident. Acceptance will be based upon the materials Certificate Letter, accompanying test reports, and visual inspection by the Resident.

635.03 Design Requirements The Prefabricated Concrete Modular Gravity Wall shall be designed and sealed by a Professional Engineer registered in accordance with the laws of the State of Maine. The design to be performed by the wall system supplier shall be in accordance with AASHTO LRFD Bridge Design Specifications, current edition, except as required herein.

Design shall consider Strength, Service and Extreme Limit States. Thirty days prior to beginning construction of the wall, the design computations shall be submitted to the Resident for review by the Department. Design calculations that consist of computer generated output shall be supplemented with at least one hand calculation and graphic demonstrating the design methodology used. Design calculations shall provide thorough documentation of the sources of equations used and material properties. The design by the wall system supplier shall consider the stability of the wall as outlined below:

A. Stability Analysis:
   1. Overturning: For foundations on soil, the location of the resultant of the reaction forces shall be within the middle one-half of the base width.
   2. Sliding: $R_R \geq \gamma_{p(max)} \cdot (EH+ES)$
      Where: R_R = Factored Sliding Resistance
      $\gamma_{p(max)}$ = Maximum Load Factor
      EH = Horizontal Earth Pressure
      ES = Earth Surcharge (as applicable)
   3. Bearing Pressure: $q_R \geq$ Factored Bearing Pressure
      Where: q_R = Factored Bearing Resistance, as shown on the plans
      Factored Bearing Pressure = Determined considering the applicable loads and load factors which result in the maximum calculated bearing pressure.
   4. Pullout Resistance: Pullout resistance shall be determined using nominal resistances and forces. The ratio of the sum of the nominal resistances to the sum of the nominal forces shall be greater than, or equal to, 1.5.

      Traffic surcharge loads transmitted to the wall through guardrail posts shall be calculated and applied in compliance with LRFD Article 3.11.6.4 and Section 11. Traffic impact loads transmitted to the wall through guardrail posts shall be calculated and applied in compliance with LRFD Article 11, where 11.10.10.2 is modified such that the upper 3.5 ft of concrete modular units shall be designed for an additional horizontal load of γP_{H1}, where γP_{H1}=300 lbs per linear ft of wall.

B. Backfill and Wall Unit Soil Parameters. For overturning and sliding stability calculations, earth pressure shall be assumed acting on a vertical plane rising from the back of the lowest wall stem. For eccentricity (overturning), the unit weight of the backfill within the wall units shall be limited to 96 pcf. For sliding analyses, the unit weight of the backfill within the wall units can be assumed to be 120 pcf. Both analyses may assume a friction angle of 34 degrees for backfill within the wall units.

   These unit weights and friction angles are based on a wall unit backfill meeting the requirements for select backfill in this specification. Backfill behind the wall units shall be assumed to have a unit weight of 120 pcf and a friction angle of 30 degrees. The friction angle of the foundation soils shall be assumed to be 30 degrees unless otherwise noted on the plans.

C. Internal Stability. Internal stability of the wall shall be demonstrated using accepted methods, such as Elias' Method, 1991. Shear keys shall not contribute to pullout resistance. Soil-to-soil frictional component along stem shall not contribute to pullout

resistance. The failure plane used to determine pullout resistance shall be found by the Rankine theory only for vertical walls with level backfills. When walls are battered or with backslopes > 0 degrees are considered, the angle of the failure plane shall be per Jumikus Method. For computation of pullout force, the width of the backface of each unit shall be no greater than 4.5 ft. A unit weight of the soil inside the units shall be assumed no greater than 120 pcf when computing pullout. Coulomb theory may be used.

D. Safety against Structural Failure. Prefabricated units shall be designed for all strength and reinforcement requirements in accordance with LRFD Section 5 and LRFD Article 11.11.5.

E. External loads which affect the internal stability such as those applied through piling, bridge footings, traffic, slope surcharge, hydrostatic and seismic loads shall be accounted for in the design.

F. The maximum calculated factored bearing pressure under the Prefabricated Concrete Modular Gravity Wall shall be clearly indicated on the design drawings.

G. Stability During Construction. Stability during construction shall be considered during design, and shall meet the requirements of the AASHTO LRFD Bridge Design Specifications, Extreme Limit State.

H. Hydrostatic forces. Unless specified otherwise, when a design high water surface is shown on the plans at the face of the wall, the design stresses calculated from that elevation to the bottom of wall must include a 3 ft minimum differential head of saturated backfill. In addition, the buoyant weight of saturated soil shall be used in the calculation of pullout resistance.

I. Design Life. Design life shall be in accordance with AASHTO requirements, or 75 years; the more stringent requirements apply.

J. Not more than two vertically consecutive units shall have the same stem length, or the same unit depth. Walls with units with extended height curbs shall be designed for the added earth pressure. A separate computation for pullout of each unit with extended height curbs, or extended height coping, shall be prepared and submitted in the design package described above.

635.04 Submittals The Contractor shall supply wall design computations, wall details, dimensions, quantities, and cross sections necessary to construct the wall. Thirty (30) days prior to beginning construction of the wall, the design computations and wall details shall be submitted to the Resident for review. The fully detailed plans shall be prepared in conformance with Subsection 105.7 of the Standard Specifications and shall include, but not be limited to the following items:

A. A plan and elevation sheet or sheets for each wall, containing the following: elevations at the top of leveling pads, the distance along the face of the wall to all steps in the leveling pads, the designation as to the type of prefabricated module, the distance along the face of the wall to where changes in length of the units occur, the location of the original and final ground line.

B. All details, including reinforcing bar bending details, shall be provided. Bar bending details shall be in accordance with Department standards.

C. All details for foundations and leveling pads, including details for steps in the leveling pads, as well as allowable and actual maximum bearing pressures shall be provided.

D. All prefabricated modules shall be detailed. The details shall show all dimensions necessary to construct the element, and all reinforcing steel in the element.

E. The wall plans shall be prepared and stamped by a Professional Engineer. Four sets of design drawings and detail design computations shall be submitted to the Resident.

F. Four weeks prior to the beginning of construction, the contractor shall supply the Resident with two copies of the design-supplier's Installation Manual. In addition, the Contractor shall have two copies of the Installation Manual on the project site.

635.05 Construction Requirements

Excavation The excavation and use as fill disposal of all excavated material shall meet the requirements of Section 203 -- Excavation and Embankment, except as modified herein.

Foundation The area upon which the modular gravity wall structure is to rest, and within the limits shown on the submitted plans, shall be graded for a width equal to, or exceeding, the length of the module. Prior to wall and leveling pad construction, this foundation material shall be compacted to at least 95 percent of maximum laboratory dry density, determined using AASHTO T180, Method C or D. Frozen soils and soils unsuitable or incapable of sustaining the required compaction, shall be removed and replaced.

A concrete leveling pad shall be constructed as indicated on the plans. The leveling pad shall be cast to the design elevations as shown on the plans, or as required by the wall supplier upon written approval of the Resident. Allowable elevation tolerances are +0.01 ft and -0.02 ft from the design elevations. Leveling pads which do not meet this requirements shall be repaired or replaced as directed by the Resident at no additional cost to the Department. Placement of wall units may begin after 24 hours curing time of the concrete leveling pad.

Method and Equipment Prior to erection of the Prefabricated Concrete Modular Gravity Wall, the Contractor shall furnish the Resident with detailed information concerning the proposed construction method and equipment to be used. The erection procedure shall be in accordance with the manufacturer's instructions. Any pre-cast units that are damaged due to handling will be replaced at the Contractor's expense.

Installation of Wall Units A field representative from the wall system being used shall be available, as needed, during the erection of the wall. The services of the representative shall be at no additional cost to the Department. Vertical and horizontal joint fillers shall be installed as shown on the plans.

The maximum offset in any unit joint shall be 3/4 in. The overall vertical tolerance of the wall, plumb from top to bottom, shall not exceed 1/2 in per 10 ft of wall height. The prefabricated wall units shall be installed to a tolerance of plus or minus 3/4 inch in 10 ft in vertical alignment and horizontal alignment.

Select Backfill Placement Backfill placement shall closely follow the erection of each row of prefabricated wall units. The Contractor shall decrease the lift thickness if necessary to obtain the specified density. The maximum lift thickness shall be 8 in. (loose). Gravel borrow backfill shall be compacted in accordance with Subsection 203.12 except that the minimum required compaction shall be 92 percent of maximum density as determined by AASHTO T180 Method C or D. Backfill compaction shall be accomplished without disturbance or displacement of the wall units. Sheepsfoot rollers will not be allowed. Whenever a compaction test fails, no additional backfill shall be placed over the area until the lift is recompacted and a passing test achieved.

The moisture content of the backfill material prior to and during compaction shall be uniform throughout each layer. Backfill material shall have a placement moisture content less than or equal to the optimum moisture content. Backfill material with a placement moisture content in excess of the optimum moisture content shall be removed and reworked until the moisture content is uniform and acceptable throughout the entire lift. The optimum moisture content shall be determined in accordance with AASHTO T180, Method C or D. At the end of the day's operations, the Contractor shall shape the last level of backfill so as to direct runoff of rain water away from the wall face.

635.06 Method of Measurement Prefabricated Concrete Modular Gravity Wall will be measured by the square meter of front surface not to exceed the dimensions shown on the contract plans or authorized by the Resident. Vertical and horizontal dimensions will be from the edges of the facing units. No field measurements for computations will be made unless the Resident specifies, in writing, a change in the limits indicated on the plans.

635.07 Basis of Payment The accepted quantity of Prefabricated Concrete Modular Gravity Retaining Wall will be paid for at the contract unit price per square foot complete in place. Payment shall be full compensation for furnishing all labor, equipment and materials including excavation, foundation material, backfill material, pre-cast concrete units hardware, joint fillers, woven drainage geotextile, cast-in-place coping or traffic barrier and technical field representative. Cost of cast-in-place concrete for leveling pad will not be paid for separately, but will be considered incidental to the Prefabricated Concrete Modular Gravity Wall.

There will be no allowance for excavating and backfilling for the Prefabricated Concrete Modular Gravity Wall beyond the limits shown on the approved submitted plans, except for excavation required to remove unsuitable subsoil in preparation for the foundation, as approved by the Resident. Payment for excavating unsuitable material shall be full compensation for all costs of pumping, drainage, sheeting, bracing and incidentals for proper execution of the work.

Payment will be made under:

Pay Item	Pay Unit
635.14 Prefabricated Concrete Modular Gravity Wall	Square Foot

SPECIAL PROVISION
SECTION 635
PRECAST AGGREGATE-FILLED, CONCRETE BLOCK GRAVITY WALL

The following replaces Section 635 in the Standard Specifications in its entirety:

635.01 Description The work under this item shall consist of the design, fabrication, furnishing and construction of a Precast Aggregate-filled Concrete Block Gravity Wall in accordance with these specifications and in conformance with the lines and grades shown on the Plans, or established by the Resident. The Precast Aggregate-filled Concrete Block Gravity Wall shall consist of blocks made of Structural Precast concrete made from Portland cement, water, chemical admixtures, and aggregates, supported on concrete leveling pads, and if required, geosynthetic reinforced backfill.

Included in the scope of the precast gravity wall construction are**:** geotechnical design of any wall with an exposed height greater than 4.5 ft or as specified on the Plans, all grading necessary for wall construction, compaction of the wall foundation soil, backfill, piped drainage, construction of leveling pads, and concrete wall unit installation. The top of the upper row of concrete wall units shall be at or above the top of the face elevation shown on the Plans.

635.02 Quality Assurance The wall system shall be one of the approved combinations of facing block and soil reinforcement systems noted in the Plans or on the Department's Qualified Products List (QPL). Alternate wall systems will not be considered for this Item.

All design calculations and Shop Drawings shall be signed and sealed by a Professional Engineer licensed in the State of Maine.

The Contractor shall require the wall design-supplier to provide an on-site, qualified experienced technical representative to advise the Contractor concerning proper installation procedures. The technical representative shall be on-site during initial stages of installation and thereafter shall remain available for consultation as necessary for the Contractor or as required by the Resident.

635.03 Materials Materials for walls shall meet the requirements of the following sections of Division 700:

Gravel Borrow	703.20
Underdrain Backfill Type C	703.22
Underdrain Pipe	706.06 or 706.09
Reinforcing Steel	709.01
Structural Precast Concrete Units	712.061
Reinforcement Geotextile	722.01
Drainage Geosynthetic	722.02

The Contractor is cautioned that all of the materials listed are not required for every Precast Aggregate-filled Concrete Block Gravity Wall. The Contractor shall furnish the Resident a Materials Certification Letter certifying that the applicable materials comply with this section of the specifications. Materials shall meet the following additional requirements:

635.031 Concrete Units The Materials Certification Letter described above shall contain the date of concrete casting, a lot identification number, compressive strength results, and entrained

air results. All prefabricated concrete units shall conform to the requirements of 712.061 with the following exceptions:

A. Materials. Materials are modified as follows: the maximum water cement ratio shall be 0.42, use of calcium nitrite is not required, and the minimum 28 day compressive strength shall be 4600 psi.

B. Quality Control and Quality Assurance. Quality Control and Quality Assurance is modified as follows: delete the second and third paragraphs.

C. Construction. Construction requirements are modified as follows:

Delete the second paragraph and replace it with the following:
All units for a designated wall system, including end blocks, steps, caps and other wall units shall be manufactured from the same material sources of aggregates, brand and type of cement and color pigment.

Replace the first sentence in the paragraph which begins "The forms shall remain …" with the following:
The forms shall remain in place until the concrete has gained sufficient strength such that removal of the forms and subsequent handling will not damage the units.

Replace the paragraph which begins "A minimum of 8 …." With the following:
The Contractor shall make and test at least one set of cylinders for every 50 yd^3 of production concrete used to cast the concrete units.

Replace the paragraph which begins "At least once …" with the following:
The Contractor shall make four cylinders for use by the Department for every 200 yd^3.

Add the following paragraph at the end of the Construction section:
Face texture of the units shall be a formed finish on all exposed surfaces. Pigment shall be added during the casting process of the concrete unit to achieve a consistent shade of gray or other color as determined by the Resident.

D. Tolerances. Maximum dimensional deviation of formed unit dimensions shall not vary more than ½-inch or 2 percent of the unit dimension or the manufacturer's published tolerances, whichever is less. All units not meeting the specified tolerances will be rejected.

635.032 Geosynthetic Reinforcement Geosynthetic Reinforcement shall be as required by the proprietary wall system manufacturer or wall designer. Geosynthetic reinforcement shall consist of a geotextile or geogrid approved by the Geotechnical Engineer. Substitution of a geosynthetic other than that required by the proprietary wall system manufacturer shall not be allowed unless approved by the Geotechnical Engineer after submittal of shop drawings and pullout and interface friction test data.

A. Geotextiles and Thread for Sewing. Woven or nonwoven geotextiles shall consist of long chain polymeric filaments or yarns formed into a stable network such that the filaments or yarns retain their position relative to each other during handling, placement, and design life. At least 95 percent by weight of the long chain polymer shall be polyolefin or polyester. The material shall be free of defects and tears. Geotextiles used for reinforcement shall conform as a minimum to the properties indicated for 722.01,

Stabilization/Reinforcement Geotextile and shall meet the requirements of part D and E below. Geotextiles shall have a minimum permeability greater or equal to that shown on the Shop Drawings and the reinforced soil permeability.

B. Geogrids. The geogrid shall be a regular network of integrally connected polymer tensile elements with aperture geometry sufficient to permit significant mechanical interlock with the surrounding soil or rock. The geogrid structure shall be dimensionally stable and able to retain its geometry under manufacture, transport and installation. Geogrids shall conform as a minimum to the criteria specified in part D and E below.

C. Required Properties. The specific geosynthetic materials shall be preapproved and shall the have the ultimate tensile strength (T_{ult}) shown on the approved Shop Drawings for the geosynthetic specified and for the fill type shown. T_{ult} shall be determined from wide width tests specified in ASTM D 4595 for geotextiles and ASTM D 6637 or GRI:GG1 for geogrids. The ultimate tensile strength value is based on the minimum average roll values (MARV) for the product.

D. The geosynthetic shall conform to the following criteria:
   1. PP and HDPE: Min. retained strength of 70 percent after 150 hours, per ASTM D-4355.
   2. HDPE: Grade = E-4, E-5, E-8, E-9, E-10, E-11, J-3, J-4, or J-5, per ASTM D-1248.
   3. PET: Molecular weight (Mn) > 25,000, per GRI:GG8 and ASTM D-4603.
   4. PET: Carboxyl end group (CEG) ≥ 15 mmol/kg, GRI:GG7.
   5. All polymers: Minimum Weight per Unit Area of 8 oz/yd^2, per ASTM D-5261.
   6. All Polymers: Maximum 0 percent post consumer recycled material by weight.
   7. A default total reduction factor for creep, durability, and installation damage of RF = 7 may be used in design, provided the criteria of 2 through 6 are satisfied and 1 is adjusted to 70 percent after 500 hours is satisfied.

E. Manufacturer Quality Control. The geosynthetic reinforcements shall be manufactured with a high degree of quality control. The Manufacturer is responsible for establishing and maintaining a quality control program to ensure compliance with the requirements of the specification. The purpose of the QC testing program is to verify that the reinforcement geosynthetic being supplied to the project is representative of the material used for performance testing and approval. Conformance testing shall be performed as part of the manufacturing process and may vary for each type of product. As a minimum the following index tests shall be considered as applicable for an acceptable QA/QC program:

	Property	Test Procedure
1.	Specific Gravity (HDPE only)	ASTM D-1505
2.	Ultimate Tensile Strength	ASTM D-4595 GRI:GG1
3.	Melt Flow (HDPE and PP only)	ASTM D-1238
4.	Intrinsic Viscosity (PET only)	ASTM D-4603
5.	Carboxyl End Group (PET only)	ASTM D-2455

F. Sampling Testing and Acceptance. Sampling and conformance testing shall be in accordance with ASTM D-4354. Conformance testing procedures are established above. Geosynthetic product acceptance shall be based on ASTM D-4759. The quality control certificate shall include:

   1. Roll numbers and identification

2. Sampling procedures
3. Results of quality control tests, including a description of test methods used.

G. Certification. The Contractor shall submit a manufacturer's certification that the geosynthetics supplied meet the respective index criteria set when the geosynthetic was approved, measured in full accordance with all test methods and standards specified, or referenced, in this specification.

The manufacturer's certificate shall state that the furnished geosynthetic meets the requirements of these specifications as evaluated by the manufacturer's quality control program. The values submitted shall be certified by a person having legal authority to bond the manufacturer. In case of dispute over validity of values, the Resident can require the Contractor to supply test data from an agency approved laboratory to support the values submitted, at the Contractor's cost.

635.033 Concrete Leveling Pad Concrete for leveling pads shall be Fill Concrete conforming to the requirements of Section 502 Structural Concrete. Unless otherwise specified, concrete for leveling pads shall be accepted under Method "C" requirements.

635.034 Drainage Stone Fill Concrete wall unit voids shall be filled with drainage stone material that conforms to the requirements of 703.22, Underdrain Backfill Material, Type C.

635.035 Backfill Material Backfill material placed behind the concrete wall units shall meet the requirements of Section 703.20 Gravel Borrow, except that the backfill material shall only contain particles that will pass the 3-inch square mesh sieve. The contractor is required to submit a grain size distribution curve (ASTM D 422) and a moisture-density relationship curve (AASHTO T-180) for acceptance of the proposed backfill material and determination of the appropriate installation damage reduction factor (RF_{ID}).

Walls with reinforced backfill also require that the backfill material be subjected to pH testing to determine the appropriate durability reduction factor (RF_D).

635.036 Materials Certificate Letter The Contractor, or the supplier as their agent, shall furnish the Resident a Materials Certificate Letter for the above materials, including the backfill material, in accordance with Section 700 of the Standard Specifications. A copy of all test results performed by the Contractor or their supplier necessary to assure contract compliance shall also be furnished to the Resident. The Resident will base acceptance upon the materials Certificate Letter, accompanying test reports, and visual inspection.

635.04 Design Requirements The wall shall be designed with a service life of not less than 75 years. The Precast Aggregate-filled Concrete Block Gravity Wall shall be designed and sealed by a Professional Engineer licensed in the State of Maine. The wall shall be designed in accordance with the following:

1. AASHTO LRFD Bridge Design Specifications, current edition, herein referred to as LRFD
2. FHWA-NHI-00-043 Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines, 2001
3. FHWA-NHI-00-044 Corrosion/Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Soil Slopes, 2000
4. The Contract Plans
5. The requirements specified herein
6. The manufacturer's requirements

Where conflicting requirements occur, the more stringent requirements shall govern.

Forty-five days prior to beginning construction of the wall, the design computations shall be submitted to the Resident for review by the Geotechnical Engineer. Any additional design or costs arising as a result of rejection of a wall design by the Geotechnical Engineer shall be borne by the Contractor.

Design calculations that consist of computer program generated output shall be supplemented with at least one hand calculation and graphic demonstrating the design methodology used. Design calculations shall provide thorough documentation of the sources of equations used and material properties. The design by the wall system supplier shall consider the stability of the wall as outlined below and in the Contract Documents:

A. Failure Plane The theoretical failure plane within the reinforced soil mass shall be determined in accordance with LRFD Article 11 and be analyzed so that the soil stabilizing components extend sufficiently beyond the failure plane within the reinforced soil mass to stabilize the material.

B. External Loads External loads which affect the internal and external stability such as those applied through traffic loadings, impact on traffic barrier posts, slope surcharge, hydrostatic, and seismic loads shall be accounted for in the design. Traffic surcharge and traffic impact loads shall be calculated and applied in compliance with LRFD Section 11.

C. External Stability Loads and load combinations selected for design shall be consistent with LRFD. Application of load factors shall be taken as specified in LRFD Section 11. Sliding resistance factors and bearing resistance factors shall be consistent with LRFD. Overturning and sliding provisions of LRFD shall apply.

D. Internal Stability Evaluation of reinforcement pullout, reinforcement rupture and reinforcement/block connection pullout or rupture shall be consistent with LRFD Section 11, and checked at each level. Loads, load combinations and load factors shall be as specified in LRFD Section 11. Resistance factors for internal design are specified in LRFD Section 11. Maximum reinforcement loads shall be calculated using the Simplified Method approach. Calculations for factored stresses and resistances shall be based upon assumed conditions at the end of the design life.

a. Geosynthetic Reinforcement Design Tensile Resistance The nominal long term reinforcement design strength (T_{al}) shall be determined by reducing T_{ult} by reduction factors (RF) in accordance with the documents referenced above. The designer shall procure and use the manufacturers tested and certified geosynthetic reinforcement reduction factors for creep (RF_{CR}), durability (RF_D), and installation damage (RF_{ID}) to determine T_{al}. In absence of manufacturers tested and certified reduction factors, a combined default reduction factor RF = 7 shall be used in accordance with the referenced documents. For RF_{ID}, the installation damage reduction factor shall be checked in accordance with LRFD and FHWA-NHI-00-044.

b. Reinforcement/Facing Connection Design Strength The nominal long-term connection strength between the geosynthetic reinforcement and the concrete blocks shall be checked in accordance with LRFD and FHWA-NHI-00-043.

c. Reinforcement Pullout The pullout resistance factor, (F*), and scale effect correction factor (α) used in pullout design, shall be determined from project specific pullout tests using the proposed geosynthetic in the specified project backfill material or equivalent soil. The pullout resistance factors shall be determined in accordance with LRFD and FHWA-NHI-00-043. In the absence of test data, empirical relationships may be used to determine the pullout resistance factors, any empirical relationships used in design shall be referenced in the design calculations.

E. Backfill and Foundation Soils Parameters The friction angle of the backfill used in the reinforced fill zone for internal stability design shall be assumed have a friction angle of 34 degrees unless specific project select backfill is tested for frictional strength. The friction angle of the foundation soils and random backfill shall be assumed to be 30 degrees unless otherwise shown on the plans.

F. Reinforcement Length The soil reinforcement shall be the same length from the bottom to the top of each wall section. The reinforcement length defining the width of the entire reinforced soil mass may vary with wall height. The minimum length of the soil reinforcement shall be 8 ft, but shall not be less than 70 percent of the wall height, H, for walls with level surcharges, or 70 percent of H1 for walls with a sloped surcharge or walls supporting an abutment. The mechanical wall height, H or H1, shall be the vertical difference between the top of the leveling footing and the elevation at which the failure surface, as described above, intercepts the ground surface supported by the wall.

G. Bearing Resistance The factored bearing pressures under the Precast Aggregate-filled Concrete Block Gravity Wall shall be clearly indicated on the Shop Drawings. Walls shall be dimensioned so that the factored bearing resistance of the foundation soils, as noted on the Plans, is not exceeded.

H. Facing Stability Stability calculations for the concrete facing blocks shall be in accordance with LRFD, and shall include an evaluation of the maximum vertical spacing between reinforcement layers.

I. Stability During Construction Walls shall be designed to resist failure by instability of temporary construction slope. Passive pressure in front of the wall mass shall be assumed to be zero for design purposes.

J. Design Life The wall design life shall be a minimum of 75 years.

K. Depth of Embedment The depth of embedment for frost protection and stability shall be at or below the elevation shown on the Plans and the approved Shop Drawings.

L. Drainage System Piped drainage shall be designed to collect and dispose of water from the base of the reinforced soil zone and backfill soil. This shall outlet into surrounding drainage systems or ditches.

635.05 Submittals. The Contractor shall supply wall design computations, wall details, dimensions, quantities, and cross sections necessary to construct the wall. A sample hand calculation including all equations, parameter values used, units, theory, free-body diagram,

comparison to design requirements, etc. shall be provided. Spreadsheet calculations alone are not acceptable.

Forty-five (45) days prior to beginning construction of the wall, four (4) sets of the wall design computations and Shop Drawings shall be submitted to the Resident for review by the Geotechnical Engineer. Mix design information shall be submitted at the same time, including aggregate source, current gradation, aggregate quality information and concrete unit weight.

The contractor shall also submit backfill material test results as part of the wall submittal package. Backfill material test results shall include grain size distribution curve, moisture-density relationship curve, and pH test results required for reinforced backfill only.

If geotechnical design is required, the fully detailed plans shall be prepared in conformance with Section 105 and shall include, but not be limited to the following items:

A. A plan and elevation sheet or sheets for each wall, containing the following: elevations at the top of leveling pads, the distance along the face of the wall to all steps in the leveling pads, the location of the original and final ground line.

B. All details for foundations and leveling pads, including details for steps in the leveling pads, as well as allowable and actual maximum bearing pressures shall be provided.

C. Details for the barriers, posts, curbs and facing as required by the project conditions.

D. Design computations prepared and sealed by a licensed Professional Engineer.

E. Prior to the beginning of construction, the contractor shall supply the Resident with two copies of the design-supplier's Installation Manual. In addition, the Contractor shall have two copies of the Installation Manual on the project site.

635.06 Construction Requirements The Precast Aggregate-Filled Concrete Block Gravity Wall shall have the following construction requirements:

A. Excavation. The excavation and use as fill disposal of all excavated material shall meet the requirements of Section 203 -- Excavation and Embankment, except as modified herein.

B. Foundation. The area upon which the prefabricated, aggregate-filled concrete block gravity wall structure is to rest, and within the limits shown on the submitted plans, shall be graded for a width equal to, or exceeding, the length of the blocks. Prior to wall and leveling pad construction, this foundation material shall be compacted to at least 95 percent of maximum laboratory dry density (AASHTO T-180 Method C or D). Frozen and unsuitable soil shall be removed and replaced with gravel borrow compacted to 95 percent of AASHTO T-180, or as shown on the plans.

   A concrete leveling pad shall be constructed a minimum of 6 inches beyond the front and back of the concrete wall units, or as indicated on the plans. Dimensions may be modified per the wall supplier's recommendations, with written approval of the Geotechnical Engineer. The leveling pad shall be cast to the design elevations as shown on the plans, or as required by the wall supplier upon written approval of the Geotechnical Engineer.

The allowable elevation tolerances from the design elevations are +0.01 ft and -0.02 ft. Leveling pads which do not meet this requirement shall be repaired or replaced as directed by the Resident at no additional cost to the Department. Placement of wall units may begin after the strength of the concrete leveling pad reaches 1000 psi or is adequate to support the proposed loads. Contractor may begin placement of concrete block units after 12 hours at their own risk.

C. Method and Equipment. Prior to erection of the wall, the Contractor shall furnish the Resident with detailed information concerning the proposed construction method and equipment to be used. The erection procedure shall be in accordance with the manufacturer's instructions. Any units that are damaged due to handling will be replaced at the Contractor's expense.

D. Installation of Concrete Wall Units. A field representative from the wall system being used shall be available, as needed, during the erection of the wall. The services of the representative shall be at no additional cost to the project.

The contractor shall place the first course of wall units directly on the leveling pad and check for level and alignment. Adjacent units should be in contact. The prefabricated concrete wall units shall be installed to a tolerance of plus or minus 3/4 inch in 10 ft in vertical and horizontal alignment.

Fill all voids between and within the wall units with drainage stone as described in this specification. The drainage stone fill shall extend a minimum of 6 in behind the tails of the wall units unless a geotextile filter is placed over the inside joint at the back of adjacent wall units. If used, the drainage geotextile shall conform to the requirements of Section 722.02.

E. Backfill Placement. Backfill placement shall closely follow the erection of each row of prefabricated wall units. The maximum lift thickness shall be 8 inches loose. The Contractor shall decrease the lift thickness if necessary to obtain the specified density. The backfill shall be compacted in accordance with Section 203.12 except that the minimum required compaction shall be at least 92 percent of maximum density as determined by AASHTO T-180 Method C or D. Backfill compaction shall be accomplished without disturbance or displacement of the concrete wall units. Sheepsfoot rollers will not be allowed. Whenever a compaction test fails, no additional backfill shall be placed over the area until the lift is recompacted and a passing test achieved.

The moisture content of the backfill material prior to and during compaction shall be uniform throughout each layer. Backfill material shall have a placement moisture content less than or equal to the optimum moisture content. Backfill material with placement moisture content in excess of the optimum moisture content shall be removed and reworked until the moisture content is uniform and acceptable throughout the entire lift. The optimum moisture content shall be determined in accordance with AASHTO T-180, Method C or D. At the end of the day's operations, the Contractor shall shape the last level of backfill so as to direct runoff of rainwater away from the wall face.

635.07 Method of Measurement Precast Aggregate-filled Concrete Block Gravity Wall will be measured by the square foot of front surface not to exceed the dimensions shown on the Contract Plans unless authorized by the Resident. Vertical and horizontal dimensions will be from

the edges of the blocks. No field measurements for computations will be made unless the Resident specifies, in writing, a change in the limits indicated on the Plans.

635.08 Basis of Payment The accepted quantity of Precast Aggregate-Filled Concrete Block Gravity Wall will be paid for at the contract unit price per square foot complete in place. Payment shall be full compensation for furnishing geotechnical design as required, all labor, equipment and materials including all precast concrete units, hardware, joint fillers, geosynthetic, drainage pipe, and technical field representative.

Cost of cast-in-place concrete for leveling pad will not be paid for separately, but will be considered incidental to the Precast Aggregate-Filled Concrete Block Gravity Wall. Excavation, foundation material and backfill material will all be incidental to the Precast Aggregate-Filled Concrete Block Gravity Wall.

There will be no allowance for excavating and backfilling for the Precast Aggregate-Filled Concrete Block Gravity Wall beyond the limits shown on the approved submitted plans, except for excavation required to remove unsuitable subsoil in preparation for the foundation. Payment for excavating unsuitable subsoil shall be full compensation for all costs of pumping, drainage, sheeting, bracing and incidentals for proper execution of the work, and will be paid as common excavation in accordance with Section 203.

Payment will be made under:

Pay Item	Pay Unit
635.40 Precast Aggregate-Filled Concrete Block Gravity Wall	Square Foot

SPECIAL PROVISION
SECTION 635
PRECAST CONCRETE BLOCK GRAVITY WALL

The following replaces Section 635 in the Standard Specifications in its entirety:

635.01 Description The work under this item shall consist of design, fabrication, furnishing and construction of a Precast Concrete Block Gravity Wall in accordance with these specifications and in close conformance with the lines and grades shown on the Plans, or established by the Resident. The Precast Concrete Block Gravity Wall shall consist of facing blocks made of wet cast concrete made from Portland cement, water, chemical admixtures, and aggregates, supported on concrete leveling pads, and if required, geosynthetic-reinforced backfill.

Included in the scope of the precast gravity wall construction are**:** geotechnical design of any wall with a exposed height greater than 4.5 feet or as specified on the Plans, all grading necessary for wall construction, compaction of the wall foundation soil, backfill, piped drainage, construction of leveling pads, and block wall installation. The top of the upper row of blocks shall be at or above the top of the face elevation shown on the Plans.

635.02 Quality Assurance The wall system shall be one of the approved combinations of facing block and soil reinforcement systems noted in the Plans or on the Department's Qualified Products List (QPL). Alternate wall systems will not be considered for this Item.

All design calculations and Shop Drawings shall be signed and sealed by a Professional Engineer licensed in the State of Maine.

The Contractor shall require the wall design-supplier to provide an on-site, qualified experienced technical representative to advise the Contractor concerning proper installation procedures. The technical representative shall be on-site during initial stages of installation and thereafter shall remain available for consultation as necessary for the Contractor or as required by the Resident.

635.03 Materials Materials for walls shall meet the requirements of the following sections of Division 700:

Gravel Borrow	703.20
Underdrain Backfill Type C	703.22
Underdrain Pipe	706.06 or 706.09
Reinforcing Steel	709.01
Structural Precast Concrete Units	712.061
Reinforcement Geotextile	722.01
Drainage Geotextile	722.02

The Contractor is cautioned that all of the materials listed are not required for every Precast Concrete Block Gravity Wall. The Contractor shall furnish the Resident a Materials

Certification Letter certifying that the applicable materials comply with this section of the specifications. Materials shall meet the following additional requirements:

635.031 Concrete Units The Materials Certification Letter described above shall contain the date of concrete casting, a lot identification number, compressive strength results, and entrained air results. All prefabricated concrete units shall conform to the requirements of 712.061 with the following exceptions:

A. Materials. Materials are modified as follows: the maximum water cement ratio shall be 0.42, use of calcium nitrite is not required, and the minimum 28 day compressive strength shall be 4600 psi.

B. Quality Control and Quality Assurance. Quality Control and Quality Assurance is modified as follows: delete the second and third paragraphs.

C. Construction. Construction requirements are modified as follows:

Delete the second paragraph and replace it with the following:
All units for a designated wall system, including end blocks, steps, caps and other wall units shall be manufactured from the same material sources of aggregates, brand and type of cement and color pigment.

Replace the first sentence in the paragraph which begins "The forms shall remain …" with the following:
The forms shall remain in place until the concrete has gained sufficient strength such that removal of the forms and subsequent handling will not damage the units.

Replace the paragraph which begins "A minimum of 8 …." With the following:
The Contractor shall make and test at least one set of cylinders for every 50 yd^3 of production concrete used to cast the concrete units.

Replace the paragraph which begins "At least once …" with the following:
The Contractor shall make four cylinders for use by the Department for every 200 yd^3.

Add the following paragraph at the end of the Construction section:
Face texture of the units shall be a formed finish on all exposed surfaces. Pigment shall be added during the casting process of the concrete unit to achieve a consistent shade of gray or other color as determined by the Resident.

D. Tolerances. Maximum dimensional deviation of formed unit dimensions shall be ½ - inch or 2 percent or the manufacturer's published tolerances, whichever is less. Units not meeting the specified tolerances will be rejected.

635.032 Geosynthetic Reinforcement Geosynthetic reinforcement shall be as required by the proprietary wall system manufacturer or wall designer. Geosynthetic reinforcement shall consist of a geotextile or geogrid approved by the Geotechnical Engineer. Substitution of a

geosynthetic other than that required by the proprietary wall system manufacturer shall not be allowed unless approved by the Geotechnical Engineer after submittal of shop drawings and pullout and interface friction test data.

A. Geotextiles and Thread for Sewing. Woven or nonwoven geotextiles shall consist of long chain polymeric filaments or yarns formed into a stable network such that the filaments or yarns retain their position relative to each other during handling, placement, and design life. At least 95 percent by weight of the long chain polymer shall be polyolefin or polyester. The material shall be free of defects and tears. Geotextiles used for reinforcement shall conform as a minimum to the properties indicated for 722.01, Stabilization/Reinforcement Geotextile and shall meet the requirements of part D and E below. Geotextiles shall have a minimum permeability greater or equal to that shown on the Shop Drawings and the reinforced soil permeability.

B. Geogrids. The geogrid shall be a regular network of integrally connected polymer tensile elements with aperture geometry sufficient to permit significant mechanical interlock with the surrounding soil or rock. The geogrid structure shall be dimensionally stable and able to retain its geometry under manufacture, transport and installation. Geogrids shall conform as a minimum to the criteria specified in part D and E below.

C. Required Properties. The specific geosynthetic materials shall be preapproved and shall the have the ultimate tensile strength (T_{ult}) shown on the approved Shop Drawings for the geosynthetic specified and for the fill type shown. T_{ult} shall be determined from wide width tests specified in ASTM D 4595 for geotextiles and ASTM D 6637 or GRI:GG1 for geogrids. The ultimate tensile strength value is based on the minimum average roll values (MARV) for the product.

D. The geosynthetic shall conform to the following criteria:
    1. PP and HDPE: Min. retained strength of 70 percent after 150 hours, per ASTM D-4355.
    2. HDPE: Grade = E-4, E-5, E-8, E-9, E-10, E-11, J-3, J-4, or J-5, per ASTM D-1248.
    3. PET: Molecular weight (Mn) > 25,000, per GRI:GG8 and ASTM D-4603.
    4. PET: Carboxyl end group (CEG) ≥ 15 mmol/kg, GRI:GG7.
    5. All polymers: Minimum Weight per Unit Area of 8 oz/yd^2, per ASTM D-5261.
    6. All Polymers: Maximum 0 percent post consumer recycled material by weight.
    7. A default total reduction factor for creep, durability, and installation damage of RF = 7 may be used in design, provided the criteria of 2 through 6 are satisfied and 1 is adjusted to 70 percent after 500 hours is satisfied.

E. Manufacturer Quality Control. The geosynthetic reinforcements shall be manufactured with a high degree of quality control. The Manufacturer is responsible for establishing and maintaining a quality control program to ensure compliance with the requirements of the specification. The purpose of the QC testing program is to verify that the reinforcement geosynthetic being supplied to the project is representative of the material used for performance testing and approval. Conformance testing shall be performed as

part of the manufacturing process and may vary for each type of product. As a minimum the following index tests shall be considered as applicable for an acceptable QA/QC program:

Property	Test Procedure
1. Specific Gravity (HDPE only)	ASTM D-1505
2. Ultimate Tensile Strength	ASTM D-4595 GRI:GG1
3. Melt Flow (HDPE and PP only)	ASTM D-1238
4. Intrinsic Viscosity (PET only)	ASTM D-4603
5. Carboxyl End Group (PET only)	ASTM D-2455

F. Sampling Testing and Acceptance. Sampling and conformance testing shall be in accordance with ASTM D-4354. Conformance testing procedures are established above. Geosynthetic product acceptance shall be based on ASTM D-4759. The quality control certificate shall include:

1. Roll numbers and identification
2. Sampling procedures
3. Results of quality control tests, including a description of test methods used.

G. Certification. The Contractor shall submit a manufacturer's certification that the geosynthetics supplied meet the respective index criteria set when the geosynthetic was approved, measured in full accordance with all test methods and standards specified, or referenced, in this specification.

The manufacturer's certificate shall state that the furnished geosynthetic meets the requirements of these specifications as evaluated by the manufacturer's quality control program. The values submitted shall be certified by a person having legal authority to bond the manufacturer. In case of dispute over validity of values, the Resident can require the Contractor to supply test data from an agency approved laboratory to support the values submitted, at the Contractor's cost.

635.033 Geosynthetic Connection Reinforcing bar used in the geosynthetic connection shall be ½-inch diameter epoxy coated reinforcing bar, coated on the ends and meeting the requirements of Section 503, Reinforcing Steel. Installation shall be in accordance with manufacturer's recommendations.

635.034 Concrete Leveling Pad Concrete for leveling pads shall be Fill Concrete conforming to the requirements of Section 502 Structural Concrete. Unless otherwise specified, concrete for leveling pads shall be accepted under Method "C" requirements.

635.035 Backfill Material Backfill material placed behind the concrete units shall meet the requirements of Section 703.20 Gravel Borrow, except that the backfill material shall only contain particles that will pass the 3-inch square mesh sieve. The contractor is required to submit a grain size distribution curve (ASTM D 422) and a moisture-density relationship curve

(AASHTO T-180) for acceptance of the proposed backfill material and determination of the appropriate installation damage reduction factor (RF_{ID}).

Walls with reinforced backfill require that the backfill material be subjected to pH testing to determine the appropriate durability reduction factor (RF_D).

Material between blocks must be Gravel Borrow, or Underdrain Backfill Material meeting the requirements of Section 703.22, Type C.

635.036 Materials Certification Letter The Contractor, or the supplier as his agent, shall furnish the Resident a Materials Certification Letter for the above materials, including the backfill material, in accordance with Section 700 of the Standard Specifications. A copy of all test results performed by the Contractor or his supplier necessary to assure contract compliance shall also be furnished to the Resident. The Resident will base acceptance upon the materials Certificate Letter, accompanying test reports, and visual inspection.

635.04 Design Requirements The wall shall be designed with a service life of not less than 75 years. The Precast Concrete Block Gravity Wall shall be designed and sealed by a Professional Engineer licensed in the State of Maine. The wall shall be designed in accordance with the following:

1. AASHTO LRFD Bridge Design Specifications, current edition, herein referred to as LRFD
2. FHWA-NHI-00-043 Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines, 2001
3. FHWA-NHI-00-044 Corrosion/Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Soil Slopes, 2000
4. The Contract Plans
5. The requirements specified herein
6. The manufacturer's requirements

Where conflicting requirements occur, the more stringent requirements shall govern.

Forty-five days prior to beginning construction of the wall, the design computations shall be submitted to the Resident for review by the Geotechnical Engineer. Any additional design or costs arising as a result of rejection of a wall design by the Geotechnical Engineer shall be borne by the Contractor.

Design calculations that consist of computer program generated output shall be supplemented with at least one hand calculation and graphic demonstrating the design methodology used. Design calculations shall provide thorough documentation of the sources of equations used and material properties. The design by the wall system supplier shall consider the stability of the wall as outlined below and in the Contract Documents:

A. Failure Plane The theoretical failure plane within the reinforced soil mass shall be determined in accordance with LRFD Article 11 and be analyzed so that the soil

stabilizing components extend sufficiently beyond the failure plane within the reinforced soil mass to stabilize the material.

B. External Loads External loads which affect the internal and external stability such as those applied through traffic loadings, impact on traffic barrier posts, slope surcharge, hydrostatic, and seismic loads shall be accounted for in the design. Traffic surcharge and traffic impact loads shall be calculated and applied in compliance with LRFD Section 11.

C. External Stability Loads and load combinations selected for design shall be consistent with LRFD. Application of load factors shall be taken as specified in LRFD Section 11. Sliding resistance factors and bearing resistance factors shall be consistent with LRFD. Overturning and sliding provisions of LRFD shall apply.

D. Internal Stability Evaluation of reinforcement pullout, reinforcement rupture and reinforcement/block connection pullout or rupture shall be consistent with LRFD Section 11, and checked at each level. Loads, load combinations and load factors shall be as specified in LRFD Section 11. Resistance factors for internal design are specified in LRFD Section 11. Maximum reinforcement loads shall be calculated using the Simplified Method approach. Calculations for factored stresses and resistances shall be based upon assumed conditions at the end of the design life.

a. Geosynthetic Reinforcement Design Tensile Resistance The nominal long term reinforcement design strength (T_{al}) shall be determined by reducing T_{ult} by reduction factors (RF) in accordance with the documents referenced above. The designer shall procure and use the manufacturers tested and certified geosynthetic reinforcement reduction factors for creep (RF_{CR}), durability (RF_D), and installation damage (RF_{ID}) to determine T_{al}. In absence of manufacturers tested and certified reduction factors, a combined default reduction factor RF = 7 shall be used in accordance with the referenced documents. For RF_{ID}, the installation damage reduction factor shall be checked in accordance with LRFD and FHWA-NHI-00-044.

b. Reinforcement/Facing Connection Design Strength The nominal long-term connection strength between the geosynthetic reinforcement and the concrete blocks shall be checked in accordance with LRFD and FHWA-NHI-00-043.

c. Reinforcement Pullout The pullout resistance factor, (F*), and scale effect correction factor (α) used in pullout design, shall be determined from project specific pullout tests using the proposed geosynthetic in the specified project backfill material or equivalent soil. The pullout resistance factors shall be determined in accordance with LRFD and FHWA-NHI-00-043. In the absence of test data, empirical relationships may be used to determine the pullout resistance factors, any empirical relationships used in design shall be referenced in the design calculations.

E. Backfill and Foundation Soils Parameters The friction angle of the backfill used in the reinforced fill zone for internal stability design shall be assumed have a friction angle of 34 degrees unless specific project select backfill is tested for frictional strength. The friction angle of the foundation soils and random backfill shall be assumed to be 30 degrees unless otherwise shown on the plans.

F. Reinforcement Length The soil reinforcement shall be the same length from the bottom to the top of each wall section. The reinforcement length defining the width of the entire reinforced soil mass may vary with wall height. The minimum length of the soil reinforcement shall be 8 ft, but shall not be less than 70 percent of the wall height, H, for walls with level surcharges, or 70 percent of H1 for walls with a sloped surcharge or walls supporting an abutment. The mechanical wall height, H or H1, shall be the vertical difference between the top of the leveling footing and the elevation at which the failure surface, as described above, intercepts the ground surface supported by the wall.

G. Bearing Resistance The factored bearing pressures under the Precast Concrete Block Gravity Wall shall be clearly indicated on the Shop Drawings. Walls shall be dimensioned so that the factored bearing resistance of the foundation soils, as noted on the Plans, is not exceeded.

H. Facing Stability Stability calculations for the concrete facing blocks shall be in accordance with LRFD, and shall include an evaluation of the maximum vertical spacing between reinforcement layers.

I. Stability During Construction Walls shall be designed to resist failure by instability of temporary construction slope. Passive pressure in front of the wall mass shall be assumed to be zero for design purposes.

J. Design Life The wall design life shall be a minimum of 75 years.

K. Depth of Embedment The depth of embedment for frost protection and stability shall be at or below the elevation shown on the Plans and the approved Shop Drawings.

L. Drainage System Piped drainage shall be designed to collect and dispose of water from the base of the reinforced soil zone and backfill soil. This shall outlet into surrounding drainage systems or ditches.

635.05 Submittals The Contractor shall supply wall design computations, wall details, dimensions, quantities, and cross sections necessary to construct the wall. A sample hand calculation including all equations, parameter values used, units, theory, free-body diagram, comparison to design requirements, etc. shall be provided. Spread sheet calculations alone are not acceptable.

Forty-five days prior to beginning construction of the wall, four (4) sets of the wall design computations and Shop Drawings shall be submitted to the Resident for review by the

Geotechnical Engineer. Mix design information shall be submitted at the same time, including aggregate source, current gradation, aggregate quality information and concrete unit weight.

The contractor shall also submit backfill material test results as part of the wall submittal package. Backfill material test results shall include grain size distribution curve, moisture-density relationship curve, and pH test results required for reinforced backfill only.

If geotechnical design is required, the fully detailed plans shall be prepared in conformance with Section 105 and shall include, but not be limited to the following items:

A. A plan and elevation sheet or sheets for each wall, containing the following: elevations at the top of leveling pads, the distance along the face of the wall to all steps in the leveling pads, the location of the original and final ground line.

B. All details for foundations and leveling pads, including details for steps in the leveling pads, as well as allowable and actual maximum bearing pressures shall be provided.

C. Details for the barriers, posts, curbs and facing as required by the project conditions.

D. Design computations prepared and sealed by a licensed Professional Engineer.

E. Prior to the beginning of construction, the contractor shall supply the Resident with two copies of the design-supplier's Installation Manual. In addition, the Contractor shall have two copies of the Installation Manual on the project site.

635.06 Construction Requirements The Precast Concrete Block Gravity Wall shall have the following construction requirements:

A. Excavation. The excavation and use as fill disposal of all excavated material shall meet the requirements of Section 203 -- Excavation and Embankment, except as modified herein.

B. Foundation. The area upon which the prefabricated block gravity wall structure is to rest, and within the limits shown on the submitted plans, shall be graded for a width equal to, or exceeding, the length of the blocks. Prior to wall and leveling pad construction, this foundation material shall be compacted to at least 95 percent of maximum laboratory dry density (AASHTO T-180 Method C or D). Frozen and unsuitable soil shall be removed and replaced with gravel borrow compacted to 95 percent of AASHTO T-180.

   A concrete leveling pad shall be constructed as indicated on the plans. Dimensions may be modified per the wall supplier's recommendations, with written approval of the Geotechnical Engineer. The leveling pad shall be cast to the design elevations as shown on the plans, or as required by the wall supplier upon written approval of the Geotechnical Engineer. The allowable elevation tolerances from the design elevations are +0.01 feet and -0.02 feet. Leveling pads which do not meet this requirement shall be

repaired or replaced as directed by the Resident at no additional cost to the Department. Placement of wall units may begin after the strength of the concrete leveling pad reaches 1000 psi or is adequate to support the proposed loads. Contractor may begin placement of concrete block units after 12 hours at his own risk.

C. Method and Equipment. Prior to erection of the prefabricated concrete block wall, the Contractor shall furnish the Resident with detailed information concerning the proposed construction method and equipment to be used. The erection procedure shall be in accordance with the manufacturer's instructions. Any units that are damaged due to handling will be replaced at the Contractor's expense.

D. Installation of Wall Units. A field representative from the wall system being used shall be available, as needed, during the erection of the wall. The services of the representative shall be at no additional cost to the project. Horizontal joint fillers shall be installed as needed.

The maximum offset in any unit horizontal joint shall be 1/4 inch. The prefabricated wall blocks shall be installed to a tolerance of plus or minus 3/4 inch in 10 feet in vertical alignment and horizontal alignment.

E. Backfill Placement. Backfill placement shall closely follow the erection of each row of prefabricated wall units. The Contractor shall decrease the lift thickness if necessary to obtain the specified density. The maximum lift thickness shall be 8 inches loose. Gravel borrow backfill shall be compacted in accordance with Section 203.12 except that the minimum required compaction shall be at least 92 percent of maximum density as determined by AASHTO T-180 Method C or D. Backfill compaction shall be accomplished without disturbance or displacement of the wall blocks. Sheepsfoot rollers will not be allowed. Whenever a compaction test fails, no additional backfill shall be placed over the area until the lift is recompacted and a passing test achieved.

The moisture content of the backfill material prior to and during compaction shall be uniform throughout each layer. Backfill material shall have a placement moisture content less than or equal to the optimum moisture content. Backfill material with a placement moisture content in excess of the optimum moisture content shall be removed and reworked until the moisture content is uniform and acceptable throughout the entire lift. The optimum moisture content shall be determined in accordance with AASHTO T-180, Method C or D. At the end of the day's operations, the Contractor shall shape the last level of backfill so as to direct runoff of rain water away from the wall face.

Material between blocks must be Gravel Borrow or Underdrain Backfill Material meeting the requirements of Section 703.22, Type C. If Gravel Borrow is used between blocks, 722.02 drainage geotextile shall be placed behind vertical joints to prevent loss of granular material between blocks. Compliance with the gradation requirements shall be the responsibility of the Contractor, who shall furnish a copy of the backfill test results prior to construction. If Underdrain Backfill Material is used between blocks, no geotextile is required behind vertical joints.

635.07 Method of Measurement Precast Concrete Block Gravity Wall will be measured by the square foot of front surface not to exceed the dimensions shown on the Contract Plans unless authorized by the Resident. Vertical and horizontal dimensions will be from the edges of the blocks. No field measurements for computations will be made unless the Resident specifies, in writing, a change in the limits indicated on the Plans.

635.08 Basis of Payment The accepted quantity of Precast Concrete Block Gravity Wall will be paid for at the contract unit price per square foot complete in place. Payment shall be full compensation for furnishing geotechnical design as required, all labor, equipment and materials including all precast concrete units, hardware, joint fillers, geosynthetics, reinforcing steel, drainage pipe, backfill materials and technical field representative.

Cost of cast-in-place concrete for leveling pad will not be paid for separately, but will be considered incidental to the Precast Concrete Block Gravity Wall. Excavation, foundation material and backfill material will all be incidental to the Precast Concrete Block Gravity Wall.

There will be no allowance for excavating and backfilling for the Precast Concrete Block Gravity Wall beyond the limits shown on the approved submitted plans, except for excavation required to remove unsuitable subsoil in preparation for the foundation. Payment for excavating unsuitable subsoil shall be full compensation for all costs of pumping, drainage, sheeting, bracing and incidentals for proper execution of the work, and will be paid as Common Excavation in accordance with Section 203.

Payment will be made under:

Pay Item	Pay Unit
635.31 Precast Concrete Block Gravity Wall	square foot

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC
(Traffic Control)

652.1 Description. The following paragraph is added:

The Contractor is required to provide a Traffic Control Plan to the Resident one week prior to the Preconstruction Conference. The Contractor shall provide a Traffic Control Supervisor who will be responsible for providing traffic control management in compliance with the Contract and the Manual of Uniform Traffic Control Devices (MUTCD), including supervision of personnel for the installation, inspection, maintenance, and removal of all traffic control devices on the project. Work under this pay item will also include flaggers, channelizaton devices, temporary pavement markings and removal.

652.2.2 Signs. The following paragraph is added:

All proposed temporary signing shall be shown in the Traffic Control Plan (TCP). Signs, except when tripod mounted, shall be placed on breakaway posts.

652.3.6 Installation of Traffic Control Devices. The following paragraph is added:

Traffic Control Devices include but are not limited to the following:

Type I Barricade
Type II Barricade
Type III Barricade
Drums
Cones
Temporary Concrete Barriers

652.3.6 Traffic Control. The following paragraphs are added:

Existing Bridge:
Prior to subjecting the existing bridge to any construction loads, the Contractor shall employ a Licensed Professional Engineer to inspect the existing condition of the structure and perform an analysis to determine allowable construction loads. The Licensed Professional Engineer shall submit in writing to the Department, verification that the existing bridge is capable of safely supporting the proposed construction loads. If during the course of the project, the Contractor elects to alter construction loads from those initially proposed, prior to subjecting the existing bridge to the altered construction loads, the Contractor shall employ a Licensed Professional Engineer to perform additional analysis and submit in writing to the Department, verification that the existing structure is capable of safely

supporting altered construction loads. Prior to applying any construction loads to the existing bridge, the Contractor shall have all traffic control devices for the detour in place.

Open to Traffic:
If final surface course paving is not in place before opening the bridge to traffic temporary paved ramps shall be paved at butt joints, expansion dam headers and bridge drains. Payment for placing temporary ramps shall be made under item 403.209 9.5 mm HMA. The Contractor shall not be paid for removal of temporary ramps as that cost will be incidental to related contract items.

Bridge Closures:
Knickerbocker Bridge may be closed a maximum of 12 (twelve) calendar days for construction activities. The bridge closure shall be coordinated with the Towns and Resident Engineer so that the closure will not interfere with local activities. Closures shall not take place on any day before or after holiday weekends. Bridge closures shall be limited to the hours of 8:30 AM through 3:30 PM. Bridge closures will not be allowed if snow/ice is present or predicted or detour route is posted for heavy loads. The Contractor is reminded that it must comply with Standard Specification 104.4.10 Coordination of Bridge Closure/Bridge Width Restrictions Notification for each of the five road closures, and any other road closures that may occur. Also, two bridge closure notice signs shall be erected at the bridge site one week prior to each closure. The Contractor shall submit the proposed sign for approval by the Resident Engineer prior to fabrication. Detour traffic control devices shall be in place and approved prior to activating the detour and closing the bridge. The Contractor shall maintain traffic on the detour while activated.

Lane Closures:
Traffic may be reduced to one lane with approval of the Resident Engineer during daylight hours only. A minimum of two flaggers shall be required to maintain one lane traffic. All construction work shall be confined to the lanes closed to traffic. The Contractor shall keep all paved areas of the roadway clear at all times. Flaggers are required whenever construction vehicles are entering or leaving through the traffic stream. The flaggers shall be authorized only to control the Contractor's vehicles when entering traffic or to prevent traffic from following the Contractor's leaving the traffic stream.

Boat Ramps/Parking Lots:
Reconstruction of the boat ramps/parking areas shall be as specified in Special Provision 107, Time. Two ramp closure notice signs shall be erected at the bridge site one week prior to the ramp closure.

Marine Traffic:
The Contractor shall install Bridge Under Construction signs for marine traffic on the existing and new bridge. The Contractor shall keep the main channel open at all times for marine traffic except when erecting HC Beams and removing the existing bridge in the main channel. When the main channel is closed, the Contractor shall install Channel Temporarily

Closed To Passage signs. All sign nomenclature shall be approved by the Traffic Engineer prior to fabrication.

652.7 Method of Measurement. This entire Subsection is revised to read:

Work Zone Traffic Control will be paid for at the contract lump sum price. Payment will be full compensation for the Traffic Control Plan, Traffic Control Supervisor, flaggers, channelization devices including removing and resetting channelization devices (including striping, pavement markings, and pavement markers) and maintenance thereof, all work associated with bridge opening and bridge closing, analyzing the existing bridge and maintaining abutter access. Maintenance of signs includes: replacing devices damaged, lost, or stolen; and cleaning and moving as many times as necessary throughout the life of the contract, regardless whether the work areas are geographically separated or not separated.

The following related work will be paid for under their respective contract bid items:

1. Construction signs
2. Permanent Pavement Markings

Granular materials used to maintain traffic will be paid for as provided in Subsection 105.4.2 - Use of Granular Materials.

652.16 Basis of Payment. This entire Subsection is revised to read:

Work Zone Traffic Control will be paid for at the contract lump sum price. Payment will be full compensation for the Traffic Control Plan; Traffic Control Supervisor; flaggers; traffic control devices; removing and resetting traffic control devices and maintenance thereof; channelization devices; removal of pavement markings, and for signs and maintenance thereof.

Maintenance of signs includes: replacing devices damaged, lost, or stolen, and cleaning and moving as many times as necessary throughout the life of the contract, regardless whether the work areas or projects are geographically separated or not separated.

Partial payments for Work Zone Traffic Control will be made as follows:

a) After the Traffic Control Plan is submitted and approved, 25% of the amount bid for Work Zone Traffic Control will be paid.

b) After the completion 50% of the work, 75% of the amount bid for Work Zone Traffic Control will be paid.

c) Upon completion of the entire project, 100% of the amount bid for Work Zone Traffic Control will be paid.

There will be no payment for work done under this pay item after the expiration of contract time.

Payment will be made under:

Pay Item	Pay Unit
652.39 Work Zone Traffic Control	Lump Sum

April 17, 2007
Supersedes May 10, 2006

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC
Construction Sign Sheeting Material

Super high intensity fluorescent retroreflective sheeting, ASTM D 4956 - Type VII, Type VIII, or Type IX (prismatic), is required for all construction signs.

SPECIAL PROVISION
SECTION 655
ELECTRICAL WORK
(Cathodic Protection)

Description. This work shall consist of providing products and installing aluminum alloy cathodic protection anodes on each pipe pile. The model of anode installed shall be a commercially available unit. The manufacturer must have at least seven years of successful experience in making aluminum alloy cathodic protection anodes.

MATERIALS

Aluminum (Sacrificial) Anodes. Provide flush mounted aluminum alloy anodes, with an aluminum alloy ingot and a steel core. The anode type shown on the Plans uses a steel bar for the core extending above and below the ingot to provide for fastening to the pile at top and bottom. Other anode configurations, of models with equivalent consumption rates and greater anode capacity (ampere years) may be considered for approval by the Resident. However, all costs for any adjustment of Plans or additional installation costs are the sole responsibility of the Contractor.

For the type described herein and shown on the Plans the minimum dimension of the steel core bar are 1.5 inches by 3/16 inches. The aluminum alloy ingot shall have a minimum net weight of 34 pounds.

The material of ingot shall be aluminum alloy with the following composition:

Element	Percent by Weight
Copper	0.004, max.
Silicon	0.05-0.20
Iron	0.05-0.12
Zinc	4.0-6.5
Cadmium	0.002, max
Indium	0.14-.05
Others, each	0.002, max
Others, total	0.010, max
Aluminum	Remainder

CONSTRUCTION REQUIREMENTS

Aluminum (Sacrificial) Anodes. The anodes shall be installed on the inside, more sheltered side of each battered pile, and most sheltered side on vertical piles, or as shown on the Plans. Anodes shall be attached to threaded studs welded onto the pile. A minimum amount of coating will be removed to allow the stud to be welded to the pile. Area for weld shall be ground to a white metal surface. Stud shall be installed for the top and bottom of the anode. Anode shall be fixed to studs with steel nuts. After the stud is welded and the anode attached, the weld area at the base of the stud shall be covered with underwater curable polyamide epoxy coating, troweled or hand applied to 4 mm thickness.

GENERAL REQUIREMENTS

Submittals. The Contractor shall submit the following for approval:

1. Manufacturer's literature, data, and instructions for all materials and equipment specified. Copies of each shall be maintained and readily accessible at the site of the Work.

2. Shop drawings and record drawings indicating the arrangement and dimensional locations of anodes.

COMPENSATION

Method of Measurement. The Cathodic Protection System will be measured for payment by the lump sum.

Basis of Payment. The accepted quantity of Cathodic Protection System will be paid for at the contract lump sum price, which shall be full compensation for furnishing all equipment, materials, labor, and incidentals necessary to provide the full completed system as described in the plans, specifications and in this Special Provision.

Payment will be made under:

Pay Item		Pay Unit
655.50	Cathodic Protection System	Lump Sum

SPECIAL PROVISION
SECTION 656
Temporary Soil Erosion and Water Pollution Control

The following is added to Section 656 regarding Project Specific Information and Requirements. All references to the Maine Department of Transportation Best Management Practices for Erosion and Sedimentation Control (a.k.a. Best Management Practices manual or BMP Manual) are a reference to the latest revision of said manual. The latest version is dated "February 2008" and is available at;

http://www.maine.gov/mdot/environmental-office-homepage/surface-water-resources.php

Procedures specified shall be according to the BMP Manual unless stated otherwise.

Project Specific Information and Requirements

The following information and requirements apply specifically to this Project. The temporary soil erosion and water pollution control measures associated with this work shall be addressed in the Soil Erosion and Water Pollution Control Plan (SEWPCP.)

1. Newly disturbed earth shall be mulched by the end of each workday. Mulch shall be maintained on a daily basis.
2. The SEWPCP shall describe the location and method of temporary erosion and sediment control for existing and proposed catch basins, outlet areas and culvert inlets and outlets.
3. **If water is flowing within the drainage system, the water shall be diverted to a stable area or conduit and work shall be conducted in the dry.** The Contractor's plan shall address when and where the diversions will be necessary.
4. Dust control items other than those under *Standard Specification, Section 637 – Dust Control* , if applicable, shall be included in the plan.
5. Permanent slope stabilization measures shall be applied within one week of the last soil disturbance. Temporary slope stabilization is required on a daily basis.
6. Permanent seeding shall be done in accordance with *Standard Specification, Section 618 - Seeding* unless the Contract states otherwise.
7. Culvert inlet and outlet protection shall be installed within 48 hours of culvert installation, or prior to a storm event, whichever is sooner.
8. Temporary winter stabilization must be used between November 1 and April 1 or outside of said time period if the ground is frozen or snow covered. Temporary winter stabilization involves, at a minimum, covering all disturbed soils and seeded ground that is not Acceptable Work with an approved method. If temporary winter stabilization practices are used, spring procedures for permanent stabilization shall also be described in the SEWPCP. Use of these methods for over-winter temporary erosion control will be incidental to the contract and be paid for as part of Pay Item 656.75.

SPECIAL PROVISION
SECTION 656
Temporary Soil Erosion and Water Pollution Control

9. All disturbed ditches/slopes shall be stabilized by the end of each workday. Stabilization shall be maintained on a daily basis.
10. Erosion control blanket shall be installed in the bottoms of all ditches except where a stone lining is planned. Seed shall be applied prior to the placement of the blanket.
11. If check dams are used, they shall be constructed of stone in accordance with BMP Manual, Section III.E.1. *Hay Bale Temporary Check Dams* **are not allowed**. Delete all reference to them.
12. Demolition debris (including debris from wearing surface removal, saw cut slurry, dust, etc.) shall be contained and shall not be allowed to discharge to any resource. All demolition debris shall be disposed of in accordance with *Standard Specifications, Section 202.03 Removing Existing Superstructure, Structural Concrete, Railings, Curbs, Sidewalks and Bridges*. Containment and disposal of demolition debris shall be addressed in the Contractor's SEWPCP.
13. If a cofferdam sedimentation basin is used, it shall be located in an upland area where the water can settle and sink into the ground or be released slowly to the resource in a manner that will not cause erosion. The location of such a cofferdam sedimentation basin shall be addressed in the SEWPCP.
14. Prior to release to a natural resource, any impounded water that has been in contact with concrete placed during construction must have a pH between 6.0 and 8.5, must be within one pH unit of the background pH level of the resource and shall have turbidity no greater than the receiving resource. This requirement is applicable to concrete that is placed or spilled (including leakage from forms) as well as indirect contact via tools or equipment. Water not meeting release criteria shall be addressed in the SEWPCP. Discharging impounded water to the stream must take place in a manner that does not disturb the stream bottom or cause erosion.
15. The Contractor shall be responsible for monitoring pH with a calibrated meter accurate to 0.1 units. A record of pH measurements shall be kept in the Environmental Coordinator's log (*Standard Specification, Section 656.4.4 Inspection and Record Keeping.*)

SPECIAL PROVISION
SECTION 711
MISCELLANEOUS BRIDGE MATERIAL

Replace 711.01 Steel Pile Piles in its entirety with the following paragraphs:

711.01 Steel Pipe Piles, Splices And Tips Steel pipe piles shall conform to the requirements of ASTM A252, except as modified herein. The steel pipe piles shall be Grade 3, Fy = 45 ksi, with straight butt-welded seams. Lap welded seams are not acceptable. The steel shall be a Prequalified Base Metal from the AWS D1.1 Structural Welded Code - Steel. The first sentence of ASTM A 252 Subsection 13.2 is hereby deleted and replaced with, "Mill welded splices will only be acceptable if tension test specimens cut from sample splices conform to the tensile strength requirements prescribed in Tables 1 and 2."

Pipe pile lengths shall be furnished from the mill conforming the following

Pipe Pile Segment Length at Mill	**Maximum Shop Splices Permitted**
10' Min	0
Over 10' – 20'	1
Over 20' – 30'	2
Over 30' – 40'	3
Over 40' – 50'	4
Over 50' – 60'	5

If pipe piles are designated to be coated the surfaces to be coated shall be suitable for coating. Surfaces shall be free of sharp edges, fins, weld spatter or other condition detrimental to protective coating. Welds shall blend smoothly with the pile material and be free of undercut overlap or other condition injurious to protective coating.

Cast steel points and open end cutting shoes shall conform to the requirements of ASTM A148 Grade 90/60. Pipe pile splice backup ring material shall be any steel listed in AWS Structural Steel Welding Code D1.1, Table 3.1 with the exception of 100 ksi minimum yield strength steels.

SPECIAL PROVISION
SECTION 853
Boat Ramp

Description This work shall consist of the excavation for the boat ramp, placement of geotextile and crushed stone, furnishing and installation of the concrete planks as indicated in the Specifications, Plans, or as directed by the Resident.

Boat Ramp Installation of the concrete planks for the boat ramp shall include all required excavation, concrete, formwork, reinforcing steel fabricated and delivered and placed, placing and curing concrete, cofferdam installation and removal, and fasteners and hardware necessary to complete the boat ramp. The concrete plank plans are from the Department of Conservation, Boating Facilities Division. The access road and ramp shall be installed at constant slope of 12-15% and shall extend from approximately elevation +3.0 to -3.0 ft. or as directed by the Resident. Prior to precasting the concrete planks, the Contractor shall submit and the Department shall review details including plan and cross sectional views indicating the top and bottom elevations of the concrete planks, proposed plank quantity, proposed slope of ramp, rip rap apron and any other pertinent details.

Construction Requirements Concrete planks shall be installed on a 12 inch bedding of ¾ inch clean crushed stone wrapped with a non-woven geotextile. Riprap shall be placed around the boat ramp as indicated on the plans or as directed by the Resident and the planks shall be in-filled with 20 mm crushed stone. The access road shall consist of 18 inch thick of aggregate sub base coarse gravel and 3 inches of bituminous pavement. Stone ditch protection 24 inches wide shall line the edge of access road and concrete planks as shown on plans or as directed by the Resident. The finished grading, and placement of the stone ditch protection, shall be such that water drains away from the access road and shall be graded to present a neat and uniform appearance. Place 2 inches of loam and seed on all slopes not requiring riprap.

Materials All concrete required to construct the boat ramp shall meet the requirements of Class A concrete according to the Standard Specifications Method C. All reinforcing steel shall be epoxy coated ASTM A615 grade 60. All hardware shall be ASTM A36 plain steel.

Method of Measurement Boat ramp shall be measured by each plank, complete and accepted in place.

Basis of Payment Payment for the boat ramp shall be full compensation for all materials, equipment, labor, and hardware necessary to construct and install the concrete planks. Payment shall also include cofferdam, ¾ inch crushed stone, non-woven geotextile, all required excavation, material storage, re-handling and re-grading of earthen material removed to construct the boat access.

Payment for rock excavation, bituminous pavement, aggregate subbase coarse gravel, riprap, stone ditch protection, loam and seed shall be paid for under the appropriate payment item.

Pay Item	Description	Pay Unit
853.16	Boat Ramp Plank	Each

SPECIAL PROVISION
SECTION 890
Special Work Number 1 (Utility Conduit Installation)

Description This work shall consist of furnishing all materials and labor for installation of utility conduits from utility pole near station 8+00 to utility pole near station 16+00. Work shall include furnishing and installing bridge utility support system including brackets and anchor rods, filling support tubes with concrete, furnishing and installing PVC conduits and pull-line for each conduit, installation of utility vaults on each bridge approach, furnishing and installing the concrete encasement, and the required excavation and backfill with granular borrow. Work on riser utility poles shall be done by others. The utility vaults will also be supplied by others. This work shall be in conformance with the Plans, Specifications, and Special Provision 104 Utilities.

Required pre-installation meeting
Prior to beginning installation of this work a utility meeting shall be held with all utilities, the Resident, and MaineDOT utility coordinator (Jerry Quirion).

Method of Measurement Special Work No. 1 shall be measured by the lump sum, complete, and accepted in place.

Basis of Payment Payment for Special Work Number 1 shall be full compensation for all materials, equipment, labor, and hardware necessary to install utility conduits from utility pole near station 8+00 to utility pole near station 16+00. Payment for work shall include furnishing and installing bridge utility support system including brackets and anchor rods, filling support tubes with concrete, furnishing and installing PVC conduits and pull-line for each conduit, installation of utility vaults on each bridge approach, furnishing and installing the concrete encasement, and the required excavation and backfill with granular borrow.

Pay Item	Description	Pay Unit
890.01	Special Work No.1	LS

October 27, 2009
Supersedes February 2, 2009

STANDARD DETAIL UPDATES

Standard Details and Standard Detail updates are available at:
http://www.maine.gov/mdot/contractor-consultant-information/ss_standard_details_updates.php

Detail #	Description	Revision Date
504(15)	Diaphragms	12/30/02
507(04)	Steel Bridge Railing	2/05/03
526(33)	Concrete Transition Barrier	8/18/03
645(06)	H-Beam Posts – Highway Signing	7/21/04
645(09)	Installation of Type II Signs	7/21/04
626(09)	Electrical Junction Box for Traffic Signals and Lighting	2/25/05
604(01)	Catch Basins	11/16/05
604(05)	Type “A” & “B” Catch Basin Tops	11/16/05
604(06)	Type “C” Catch Basin Tops	11/16/05
604(07)	Manhole Top “D”	11/16/05
604(09)	Catch Basin Type “E”	11/16/05
606(02)	Multiple Mailbox Support	11/16/05
606(07)	Reflectorized Beam Guardrail Delineator Details	11/16/05
609(06)	Vertical Bridge Curb	11/16/05
504(23)	Hand-Hold Details	12/08/05
609(03)	Curb Type 3	6/27/06
609(07)	Curb Type 1	6/27/06
535(01)	Precast Superstructure - Shear Key	10/12/06
535(02)	Precast Superstructure - Curb Key & Drip Notch	10/12/06
535(03)	Precast Superstructure - Shear Key	10/12/06

535(04)	Precast Superstructure - Shear Key	10/12/06
535(05)	Precast Superstructure - Post Tensioning	10/12/06
535(06)	Precast Superstructure - Sections	10/12/06
535(07)	Precast Superstructure - Precast Slab & Box	10/12/06
535(08)	Precast Superstructure - Sections	10/12/06
535(09)	Precast Superstructure - Sections	10/12/06
535(10)	Precast Superstructure - Sections	10/12/06
535(11)	Precast Superstructure - Sections	10/12/06
535(12)	Precast Superstructure - Sections	10/12/06
535(13)	Precast Superstructure - Sections	10/12/06
535(14)	Precast Superstructure - Stirrups	10/12/06
535(15)	Precast Superstructure - Plan	10/12/06
535(16)	Precast Superstructure - Reinforcing	10/12/06
535(17)	Precast Superstructure - Notes	10/12/06
801(01)	Drives on Sidewalk Sections	2/06/07
801(02)	Drives on Non-Sidewalk Sections	2/06/07
535(03)	Precast Superstructure - Shear Key	12/5/07
535(04)	Precast Superstructure - Shear Key	12/5/07
535(05)	Precast Superstructure - Post Tensioning	12/5/07
535(17)	Precast Superstructure - Notes	12/5/07
801(01)	Drives on Sidewalk Sections	1/04/08
801(02)	Drives on Non-Sidewalk Sections	1/04/08
203(03)	Backslope Rounding	1/29/08
535(02)	Precast Superstructure - Curb Key & Drip Notch	5/20/08

535(05)	Precast Superstructure - Post Tensioning	5/20/08
502(03)	Concrete Curb - Bituminous Wearing Surface	2/2/09
502(03)A	Concrete Curb - Concrete Wearing Surface	2/2/09
502(07)	Precast Concrete Deck Panels - Layout Plan	2/2/09
502(07)A	Precast Concrete Deck Panels - Layout Plan	2/2/09
502(08)	Precast Concrete Deck Panels - Panel Plan	2/2/09
502(09)	Precast Concrete Deck Panels - Blocking Detail	2/2/09
502(10)	Precast Concrete Deck Panels	2/2/09
502(11)	Precast Concrete Deck Panels	2/2/09
502(12)	Precast Concrete Deck Panels - Notes	2/2/09
502(12)A	Precast Concrete Deck Panels - Notes	2/2/09
526(06)	Permanent Concrete Barrier	2/2/09
526(08)	Permanent Concrete Barrier – Type IIIA	2/2/09
526(08)A	Permanent Concrete Barrier – Type IIIA	2/2/09
526(13)	Permanent Concrete Barrier – Type IIIB	2/2/09
526(14)	Permanent Concrete Barrier – Type IIIB	2/2/09
526(21)	Concrete Transition Barrier	2/2/09
526(39)	Texas Classic Rail – Between Window	2/2/09
526(40)	Texas Classic Rail – Through Window	2/2/09
526(41)	Texas Classic Rail – Through Post	2/2/09
526(42)	Texas Classic Rail – Through Nose	2/2/09
606(20)	Guardrail - Type 3 - Single Rail - Bridge Mounted	2/2/09
606(21)	Guardrail - Type 3 - Single Rail - Bridge Mounted	2/2/09
606(22)	Guardrail - Type 3 - Single Rail - Bridge Mounted	2/2/09

606(23)	Guardrail - Type 3 - Single Rail - Bridge Mounted	2/2/09
609(06)	Vertical Bridge Curb	2/2/09
609(08)	Precast Concrete Transition Curb	2/2/09
502(12)	Precast Concrete Desk Panels	9/09
504(22)	Diaphragm & Crossframe Notes	9/09

SUPPLEMENTAL SPECIFICATION

(Corrections, Additions, & Revisions to Standard Specifications - Revision of December 2002)

SECTION 101
CONTRACT INTERPRETATION

101.2 Definitions

Closeout Documentation Replace the sentence "A letter stating the amount….. DBE goals." with "DBE Goal Attainment Verification Form"

Add "Environmental Information Hazardous waste assessments, dredge material test results, boring logs, geophysical studies, and other records and reports of the environmental conditions. For a related provision, see Section 104.3.14 - Interpretation and Interpolation."

Add "Fabrication Engineer The Department's representative responsible for Quality Assurance of pre-fabricated products that are produced off-site."

Geotechnical Information Replace with the following: "Boring logs, soil reports, geotechnical design reports, ground penetrating radar evaluations, seismic refraction studies, and other records of subsurface conditions. For a related provision, see Section 104.3.14 - Interpretation and Interpolation."

SECTION 102
DELIVERY OF BIDS

102.7.1 Location and Time Add the following sentence "As a minimum, the Bidder will submit a Bid Package consisting of the Notice to Contractors, the completed Acknowledgement of Bid Amendments form, the completed Schedule of Items, 2 copies of the completed Agreement, Offer, & Award form, a Bid Bond or Bid Guarantee, and any other Certifications or Bid Requirements listed in the Bid Book."

102.11.1 Non-curable Bid Defects Replace E. with "E. The unit price and bid amount is not provided or a lump sum price is not provided or is illegible as determined by the Department."

SECTION 103
AWARD AND CONTRACTING

103.3.1 Notice and Information Gathering Change the first paragraph to read as follows: "After Bid Opening and as a condition for Award of a Contract, the Department may require an Apparent Successful Bidder to demonstrate to the Department's satisfaction that the Bidder is responsible and qualified to perform the Work."

SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES

104.3.14 Interpretation and Interpolation In the first sentence, change "…and Geotechnical Information." to "…Environmental Information, and Geotechnical Information."
Delete the entire Section 104.5.9 and replace with the following:

"104.5.9 Landscape Subcontractors The Contractor shall retain only Landscape Subcontractors that are certified by the Department's Environmental Office Landscape Unit."

SECTION 105
GENERAL SCOPE OF WORK

Delete the entire Section 105.6 and replace with the following:

105.6.1 Department Provided Services The Department will provide the Contractor with the description and coordinates of vertical and horizontal control points, set by the Department, within the Project Limits, for full construction Projects and other Projects where survey control is necessary. For Projects of 1,500 feet in length, or less: The Department will provide three points. For Projects between 1,500 and 5,000 feet in length: The Department will provide one set of two points at each end of the Project. For Projects in excess of 5,000 feet in length, the Department will provide one set of two points at each end of the Project, plus one additional set of two points for each mile of Project length. For non-full construction Projects and other Projects where survey control is not necessary, the Department will not set any control points and, therefore, will not provide description and coordinates of any control points. Upon request of the Contractor, the Department will provide the Department's survey data management software and Survey Manual to the Contractor, or its survey Subcontractor, for the exclusive use on the Department's Projects.

105.6.2 Contractor Provided Services Utilizing the survey information and points provided by the Department, described in Subsection 105.6.1, Department Provided Services, the Contractor shall provide all additional survey layout necessary to complete the Work. This may include, but not be limited to, reestablishing all points provided by the Department, establishing additional control points, running axis lines, providing layout and maintenance of all other lines, grades, or points, and survey quality control to ensure conformance with the Contract. The Contractor is also responsible for providing construction centerline, or close reference points, for all Utility Facilities relocations and adjustments as necessary to complete the Work. When the Work is to connect with existing Structures, the Contractor shall verify all dimensions before proceeding with the Work. The Contractor shall employ or retain competent engineering and/or surveying personnel to fulfill these responsibilities.

The Contractor must notify the Department of any errors or inconsistencies regarding the data and layout provided by the Department as provided by Section 104.3.3 - Duty to Notify Department If Ambiguities Discovered.

105.6.2.1 Survey Quality Control The Contractor is responsible for all construction survey quality control. Construction survey quality control is generally defined as, first, performing initial field survey layout of the Work and, second, performing an independent check of the initial layout using independent survey data to assure the accuracy of the initial layout; additional iterations of checks may be required if significant discrepancies are discovered in this process. Construction survey layout quality control also requires written documentation of the layout process such that the process can be followed and repeated, if necessary, by an independent survey crew.

105.6.3 Survey Quality Assurance It is the Department's prerogative to perform construction survey quality assurance. Construction survey quality assurance may, or may not, be performed by the Department. Construction survey quality assurance is generally defined as an independent check of the construction survey quality control. The construction survey quality assurance process may involve physically checking the Contractor's construction survey layout using independent survey data, or may simply involve reviewing the construction survey quality control written documentation. If the Department elects to physically check the Contractor's survey layout, the Contractor's designated surveyor may be required to be present. The Department will provide a minimum notice of 48 hours to the Contractor, whenever possible, if the Contractor's designated surveyor's presence is required. Any errors discovered through the quality assurance process shall be corrected by the Contractor, at no additional cost to the Department.

105.6.4 Boundary Markers The Contractor shall preserve and protect from damage all monuments or other points that mark the boundaries of the Right-of-Way or abutting parcels that are outside the area that must be disturbed to perform the Work. The Contractor indemnifies and holds harmless the Department from all claims to reestablish the former location of all such monuments or points including claims arising from 14 MRSA § 7554-A. For a related provision, see Section 104.3.11 - Responsibility for Property of Others.

SECTION 106
QUALITY

106.4.3 Testing Change the first sentence in paragraph three from "…maintain records of all inspections and tests." to "…maintain original documentation of all inspections, tests, and calculations used to generate reports."

106.6 Acceptance Add the following to paragraph 1 of A: "This includes Sections 401 - Hot Mix Asphalt, 402 - Pavement Smoothness, and 502 - Structural Concrete - Method A - Air Content."

Add the following to the beginning of paragraph 3 of A: "For pay factors based on Quality Level Analysis, and"

106.7.1 Standard Deviation Method Add the following to F: "Note: In cases where the mean of the values is equal to either the USL or the LSL, then the PWL will be 50 regardless of the computed value of s."

Add the following to H: "Method C Hot Mix Asphalt: PF = [55 + (Quality Level *0.5)] * 0.01"

SECTION 107
TIME

107.3.1 General Add the following: "If a Holiday occurs on a Sunday, the following Monday shall be considered a Holiday. Sunday or Holiday work must be approved by the Department, except that the Contractor may work on Martin Luther King Day, President's Day, Patriot's Day, the Friday after Thanksgiving, and Columbus Day without the Department's approval."

107.7.2 Schedule of Liquidated Damages Replace the table of Liquidated Damages as follows:

From More Than	Up to and Including	Amount of Liquidated Damages per Calendar Day
$0	$100,000	$100
$100,000	$300,000	$200
$300,000	$500,000	$400
$500,000	$1,000,000	$575
$1,000,000	$2,000,000	$750
$2,000,000	$4,000,000	$900
$4,000,000	and more	$1,875

SECTION 108
PAYMENT

Remove Section 108.4 and replace with the following:

"108.4 Payment for Materials Obtained and Stored Acting upon a request from the Contractor and accompanied by bills or receipted bills, the Department will pay for all or part of the value of acceptable, non-perishable Materials that are to be incorporated in the Work, including Materials that are to be incorporated into the Work, not delivered on the Work site, and stored at places acceptable to the Department. Examples of such Materials include steel piles, stone masonry, curbing, timber and lumber, metal Culverts, stone and sand, gravel, and other Materials. The Department will not make payment on living or perishable Materials until acceptably planted in their final locations.

If payment for Materials is made to the Contractor based on bills, only, then the Contractor must provide receipted bills to the Department for these Materials within 14 days of the date the Contractor receives payment for the Materials. Failure of the Contractor to provide receipted bills for these Materials within 14 days of the dated the Contractor receives payment will result in the paid amount being withheld from the subsequent progress payment, or payments, until such time the receipted bills are received by the Department.

Materials paid for by the Department are the property of the Department, but the risk of loss shall remain with the Contractor. Payment for Materials does not constitute Acceptance of the Material. If Materials for which the Department has paid are later found to be unacceptable, then the Department may withhold amounts reflecting such unacceptable Materials from payments otherwise due the Contractor.

In the event of Default, the Department may use or cause to be used all paid-for Materials in any manner that is in the best interest of the Department."

SECTION 109
CHANGES

109.1.1 Changes Permitted Add the following to the end of the paragraph: "There will be no adjustment to Contract Time due to an increase or decrease in quantities, compared to those estimated, except as addressed through Contract Modification(s)."

109.1.2 Substantial Changes to Major Items Add the following to the end of the paragraph: "Contract Time adjustments may be made for substantial changes to Major Items when the change affects the Critical Path, as determined by the Department"

109.4.4 Investigation / Adjustment Third sentence, delete the words "subsections (A) - (E)"

109.5.1 Definitions - Types of Delays

B. Compensable Delay Replace (1) with the following; "a weather related Uncontrollable Event of such an unusually severe nature that a Federal Emergency Disaster is declared. The Contractor will only be entitled to an Equitable Adjustment if the Project falls within the geographic boundaries prescribed under the disaster declaration."

109.7.2 Basis of Payment Replace with the following: "Equitable Adjustments will be established by mutual Agreement for compensable items listed in Section 109.7.3- Compensable Items, based upon Unit or Lump Sum Prices. If Agreement cannot be reached, the Contractor shall accept payment on a Force Account basis as provided in Section 109.7.5 - Force Account Work, as full and complete compensation for all Work relating to the Equitable Adjustment."

109.7.3 Compensable Items Replace with the following: "The Contractor is entitled to compensation for the following items, with respect to agreed upon Unit or Lump Sum Prices:

1. Labor expenses for non-salaried Workers and salaried foremen.

2. Costs for Materials.

3. A 15 % markup on the totals of Items 1 and 2 of this subsection 109.7.3 for home office overhead and profit of the Contractor, its Subcontractors and suppliers, and any lower tier Subcontractors or suppliers, with no mark-ups on mark-ups.

4. Cost for Equipment, based on Blue Book Rates or leased rates, as set forth in Section 109.7.5(C), or the Contractor's Actual Costs if determined by the Department to be lower.

5. Time.

6. Subcontractor quoted Work, as set forth below in Section 109.7.5 (F)."

109.7.5 Force Account Work

C. Equipment

Paragraph 2, delete sentence 1 which starts; "Equipment leased…."

Paragraph 6, change sentence 2 from "The Contractor may furnish…" to read "If requested by the Department, the Contractor will produce cost data to assist the Department in the establishment of such rental rate, including all records that are relevant to the Actual Costs including rental Receipts, acquisition costs, financing documents, lease Agreements, and maintenance and operational cost records."
Add the following paragraph; "Equipment leased by the Contractor for Force Account Work and actually used on the Project will be paid for at the actual invoice amount plus 10% markup for administrative costs."

Add the following section;

"F. Subcontractor Work When accomplishing Force Account Work that utilizes Subcontractors, the Contractor will be allowed a maximum markup of 5% for profit and overhead on the Subcontractor's portion of the Force Account Work."

SECTION 110
INDEMNIFICATION, BONDING, AND INSURANCE

Delete the entire Section 110.2.3 and replace with the following:

110.2.3 Bonding for Landscape Establishment Period The Contractor shall provide a signed, valid, and enforceable Performance, Warranty, or Maintenance Bond complying with the Contract, to the Department at Final Acceptance.

The bond shall be in the full amount for all Pay Items for work pursuant to Sec 621, Landscape, payable to the "Treasurer - State of Maine," and on the Department's forms, on exact copies thereof, or on forms that do not contain any significant variations from the Department's forms as solely determined by the Department.

The Contractor shall pay all premiums and take all other actions necessary to keep said bond in effect for the duration of the Landscape Establishment Period described in Special Provision 621.0036 - Establishment Period. If the Surety becomes financially insolvent, ceases to be licensed or approved to do business in the State of Maine, or stops operating in the United States, the Contractor shall file new bonds complying with this Section within 10 Days of the date the Contractor is notified or becomes aware of such change.

All Bonds shall be procured from a company organized and operating in the United States, licensed or approved to do business in the State of Maine by the State of Maine Department of Business Regulation, Bureau of Insurance, and listed on the latest Federal Department of the Treasury listing for "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies."

By issuing a bond, the Surety agrees to be bound by all terms of the Contract, including those related to payment, time for performance, quality, warranties, and the Department's self-

help remedy provided in Section 112.1 - Default to the same extent as if all terms of the Contract are contained in the bond(s).

Regarding claims related to any obligations covered by the bond, the Surety shall provide, within 60 Days of Receipt of written notice thereof, full payment of the entire claim or written notice of all bases upon which it is denying or contesting payment. Failure of the Surety to provide such notice within the 60-day period constitutes the Surety's waiver of any right to deny or contest payment and the Surety's acknowledgment that the claim is valid and undisputed.

SECTION 202
REMOVING STRUCTURES AND OBSTRUCTIONS

202.02 Removing Buildings Make the following change to the last sentence in the final paragraph, change "…Code of Maine Regulations 401." to "…Department of Environmental Protection Maine Solid Waste Management Rules, 06-096 CMR Ch. 401, Landfill Siting, Design and Operation."

SECTION 203
EXCAVATION AND EMBANKMENT

203.01 Description Under b. Rock Excavation; add the following sentence: "The use of perchlorate is not allowed in blasting operations."

Delete the entire Section 203.041 and replace with the following:
"203.041 Salvage of Existing Hot Mix Asphalt Pavement All existing hot mix asphalt pavement designated to be removed under this contract must be salvaged for utilization. Existing hot mix asphalt pavement material shall not be deposited in any waste area or be placed below subgrade in any embankment.

Methods of utilization may be any of the following:

1. Used as a replacement for untreated aggregate surface course on entrances provided the material contains no particles greater than 50 mm [2 in] in any dimension. Payment will be made under Pay Item 411.09, Untreated Aggregate Surface Course or 411.10, Untreated Aggregate Surface Course, Truck Measure. Material shall be placed, shaped, compacted and stabilized as directed by the Resident.

2. Stockpiled at commercial or approved sites for commercial or MaineDOT use.

3. Other approved methods proposed by the Contractor, and approved by the Resident which will assure proper use of the existing hot mix asphalt pavement.

The cost of salvaging hot mix asphalt material will be included for payment under the applicable pay item, with no additional allowances made, which will be full compensation for removing, temporarily stockpiling, and rehandling, if necessary, and utilizing the material in entrances or other approved uses, or stockpiling at an approved site as described above. The

material will also be measured and paid for under the applicable Pay Item if it is reused for aggregate in entrances, or other approved uses."

SECTION 502
STRUCTURAL CONCRETE

502.05 Composition and Proportioning; TABLE #1; NOTE #2; third sentence; Change "…alcohol based saline sealer…" to "alcohol based silane sealer…". Add NOTE #6 to Class S Concrete.

502.0502 Quality Assurance Method A - Rejection by Resident Change the first sentence to read: "For an individual sublot with test results failing to meet the criteria in Table #1, or if the calculated pay factor for Air Content is less than 0.80……"

502.0503 Quality Assurance Method B - Rejection by Resident Change the first sentence to read: "For material represented by a verification test with test results failing to meet the criteria in Table #1, the Department will……"

502.0505 Resolution of Disputed Acceptance Test Results Combine the second and third sentence to read: "Circumstances may arise, however, where the Department may ……"
502.10 Forms and False work

D. Removal of Forms and False work 1., First paragraph; first, second, and third sentence; replace "forms" with "forms and false work"

502.11 Placing Concrete

G. Concrete Wearing Surface and Structural Slabs on Precast Superstructures Last paragraph; third sentence; replace "The temperature of the concrete shall not exceed 24° C [75° F} at the time of placement." with "The temperature of the concrete shall not exceed 24° C [75° F} at the time the concrete is placed in its final position."

502.15 Curing Concrete First paragraph; replace the first sentence with the following; "All concrete surfaces shall be kept wet with clean, fresh water for a curing period of at least 7 days after concrete placing, with the exception of vertical surfaces as provided for in Section 502.10 (D) - Removal of Forms and False work."

Second paragraph; delete the first two sentences.

Third paragraph; delete the entire paragraph which starts "When the ambient temperature…."

Fourth paragraph; delete "approved" to now read "…continuously wet for the entire curing period…"

Fifth paragraph; second sentence; change "…as soon as it is possible to do so without damaging the concrete surface." to "…as soon as possible."

Seventh paragraph; first sentence; change "…until the end of the curing period." to "…until the end of the curing period, except as provided for in Section 502.10(D) - Removal of Forms and False work."

502.19 Basis of Payment First paragraph, second sentence; add "pier nose armor" to the list of items included in the contract price for concrete.

SECTION 503
REINFORCING STEEL

503.06 Placing and Fastening Change the second paragraph, first sentence from: "All tack welding shall be done in accordance with Section 504, Structural Steel." to "All tack welding shall be done in accordance with AWS D1.4 Structural Welding Code - Reinforcing Steel."

SECTION 504
STRUCTURAL STEEL

504.09 Facilities for Inspection Add the follow as the last paragraph: "Failure to comply with the above requirements will be consider to be a denial to allow access to work by the Contractor. The Department will reject any work done when access for inspection is denied."

504.18 Plates for Fabricated Members Change the second paragraph, first sentence from: "…ASTM A 898/A 898 M…" to "…ASTM A 898/A 898 M or ASTM A 435/A 435 M as applicable and…"

504.31 Shop Assembly Add the following as the last sentence: "The minimum assembly length shall include bearing centerlines of at least two substructure units."

504.64 Non Destructive Testing-Ancillary Bridge Products and Support Structures Change the third paragraph, first sentence from "One hundred percent…" to "Twenty five percent…"

SECTION 535
PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE

535.02 Materials Change "Steel Strand for Concrete Reinforcement" to "Steel Strand." Add the following to the beginning of the third paragraph; "Concrete shall be Class P conforming to the requirements in this section. 28 day compressive strength shall be as stated on the plans. Coarse aggregate…."

535.05 Inspection Facilities Add the follow as the last paragraph: "If the above requirements are not met, the Contractor shall be considered to be in violation of Standard Specification 104.2.5 – Right to Inspect Work. All work occurring during a violation of this specification will be rejected."

535.26 Lateral Post-Tensioning Replace the first paragraph; "A final tension…" with "Overstressing strands for setting losses cannot be accomplished for chuck to chuck lengths of 7.6 m [25 ft] and less. In such instances, refer to the Plans for all materials and methods.

Otherwise, post-tensioning shall be in accordance with PCI standards and shall provide the anchorage force noted in the Plans. The applied jacking force shall be no less than 100% of the design jacking force."

SECTION 603
PIPE CULVERTS AND STORM DRAINS

603.0311 Corrugated Polyethylene Pipe for Option III Replace the Minimum Mandrel Diameter Table with the following:

Nominal Size US Customary (in)	Minimum Mandrel Diameter (in)	Nominal Size Metric (mm)	Minimum Mandrel Diameter (mm)
12	11.23	300	280.73
15	14.04	375	350.91
18	16.84	450	421.09
24	22.46	600	561.45
30	28.07	750	701.81
36	33.69	900	842.18
42	39.30	1050	982.54
48	44.92	1200	1122.90

SECTION 604
MANHOLES, INLETS, AND CATCH BASINS

604.02 Materials Add the following:

"Tops and Traps	712.07
Corrugated Metal Units	712.08
Catch Basin and Manhole Steps	712.09"

SECTION 605
UNDERDRAINS

605.05 Underdrain Outlets Make the following change:

In the first paragraph, second sentence, delete the words "metal pipe".

SECTION 606
GUARDRAIL

606.02 Materials Delete the entire paragraph which reads "The sole patented supplier of multiple mailbox…." and replace with "Acceptable multiple mailbox assemblies shall be listed on the Department's Approved Products List and shall be NCHRP 350 tested and approved."
Delete the entire paragraph which reads "Retroreflective beam guardrail delineators…." and replace with "Reflectorized sheeting for Guardrail Delineators shall meet the requirements of Section 719.01 - Reflective Sheeting. Delineators shall be fabricated from high-impact, ultraviolet and weather resistant thermoplastic.

606.09 Basis of Payment First paragraph; delete the second and third sentence in their entirety and replace with "Butterfly-type guardrail reflectorized delineators shall be mounted on all W-beam guardrail at an interval of every 10 posts [62.5 ft] on tangents sections and every 5 posts [31.25 ft] on curved sections as directed by the Resident. On divided highways, the delineators shall be yellow on the left hand side and silver/white on the right hand side. On two-way roadways, the delineators shall be silver/white on the right hand side. All delineators shall have retroreflective sheeting applied to only the traffic facing side. Reflectorized guardrail delineators will not be paid for directly, but will be considered incidental to the guardrail items."

SECTION 609
CURB

609.04 Bituminous Curb f., Delete the requirement "Color Natural (White)"

SECTION 610
STONE FILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION

Add the following paragraph to Section 610.02:
"Materials shall meet the requirements of the following Sections of Special Provision 703:

Stone Fill	703.25
Plain and Hand Laid Riprap	703.26
Stone Blanket	703.27
Heavy Riprap	703.28
Definitions	703.32"

Add the following paragraph to Section 610.032.a.
"Stone fill and stone blanket shall be placed on the slope in a well-knit, compact and uniform layer. The surface stones shall be chinked with smaller stone from the same source."

Add the following paragraph to Section 610.032.b:
"Riprap shall be placed on the slope in a well-knit, compact and uniform layer. The surface stones shall be chinked with smaller stone from the same source."

Add the following to Section 610.032: "Section 610.032.d. The grading of riprap, stone fill, stone blanket and stone ditch protection shall be determined by the Resident by visual inspection of the load before it is dumped into place, or, if ordered by the Resident, by dumping individual loads on a flat surface and sorting and measuring the individual rocks contained in the load. A separate, reference pile of stone with the required gradation will be placed by the Contractor at a convenient location where the Resident can see and judge by eye the suitability of the rock being placed during the duration of the project. The Resident reserves the right to reject stone at the job site or stockpile, and in place. Stone rejected at the job site or in place shall be removed from the site at no additional cost to the Department."

SECTION 615
LOAM

615.02 Materials Make the following change:

Organic Content	Percent by Volume
Humus	"5% - 10%", as determined by Ignition Test

SECTION 618
SEEDING

618.01 Description Change the first sentence to read as follows: "This work shall consist of furnishing and applying seed ….." Also remove ",and cellulose fiber mulch" from 618.01(a).
618.03 Rates of Application In 618.03(a), remove the last sentence and replace with the following: "These rates shall apply to Seeding Method 2, 3, and Crown Vetch."

In 618.03(c) "1.8 kg [4 lb]/unit." to "1.95 kg [4 lb]/unit."

618.09 Construction Method In 618.09(a) 1, sentence two, replace "100 mm [4 in]" with "25 mm [1 in] (Method 1 areas) and 50 mm [2 in] (Method 2 areas)"

618.15 Temporary Seeding Change the Pay Unit from Unit to Kg [lb].

SECTION 620
GEOTEXTILES

620.03 Placement Section (c)

Title: Replace "Non-woven" in title with "Erosion Control".
First Paragraph: Replace first word "Non-woven" with "Woven monofilament".
Second Paragraph: Replace second word "Non-woven" with "Erosion Control".

620.07 Shipment, Storage, Protection and Repair of Fabric Section (a)

Replace the second sentence with the following: "Damaged geotextiles, as identified by the Resident, shall be repaired immediately."

620.09 Basis of Payment

Pay Item 620.58: Replace "Non-woven" with "Erosion Control"
Pay Item 620.59: Replace "Non-woven" with "Erosion Control"

SECTION 621
LANDSCAPING

621.0036 Establishment Period In paragraph 4 and 5, change "time of Final Acceptance" to "end of the period of establishment". In Paragraph 7, change "Final Acceptance date" to ""end of the period of establishment" and change "date of Final Acceptance" to "end of the period of establishment".

SECTION 626
HIGHWAY SIGNING

626.034 Concrete Foundations Add to the following to the end of the second paragraph: "Pre-cast and cast-in-place foundations shall be warranteed against leaning and corrosion for two years after the project is completed. If the lean is greater than 2 degrees from normal or the foundation is spalling within the first two years, the Contractor shall replace the foundation at no extra cost."

SECTION 627
PAVEMENT MARKINGS

627.10 Basis of Payment Add to the following to the end of the third paragraph: "If allowed by Special Provision, the Contractor may utilize Temporary Bi-Directional Yellow and White(As required) Delineators as temporary pavement marking lines and paid for at the contract lump sum price. Such payment will include as many applications as required and removal."

SECTION 637
DUST CONTROL

637.06 Basis of Payment Add the following after the second sentence of the third paragraph: "Failure by the Contractor to follow Standard Specification or Special Provision - Section 637 and/or the Contractor's own Soil Erosion and Pollution Control Plan concerning Dust Control and/or the Contractor's own Traffic Control Plan concerning Dust Control and/or visible evidence of excessive dust problems, as determined by the Resident, will result in a reduction in payment, computed by reducing the Lump Sum Total by 5% per occurrence per day. The Department's Resident or any other representative of the Department reserves the right to suspend the work at any time and request a meeting to discuss violations and remedies. The Department shall not be held responsible for any delay in the work due to any suspension under this item. Additional penalties may also be assessed in accordance with Special Provision 652 - Work Zone Traffic Control and Standard Specification 656 - Temporary Soil Erosion and Water Pollution Control."

SECTION 639
ENGINEERING FACILITIES

639.04 Field Offices Change the forth to last paragraph from: "The Contractor shall provide a fully functional desktop copier…" to "….desktop copier/scanner…"

Description Change "Floor Area" to "Floor Area (Outside Dimension)". Change Type B floor area from "15 (160)" to "20 (217)".

639.09 Telephone Paragraph 1 is amended as follows:
The contractor shall provide **two** telephone lines and two telephones,….

Add- In addition the contractor will supply one computer broadband connection, modem lease and router. The router shall have wireless access and be 802.11n or 802.11g capable and

wireless The type of connection supplied will be contingent upon the availability of services (i.e. DSL or Cable Broadband). It shall be the contractor's option to provide dynamic or static IP addresses through the service. **The selected service will have a minimum downstream connection of 1.5 Mbps and 384 Kbps upstream.** The contractor shall be responsible for the installation charges and all reinstallation charges following suspended periods. Monthly service and maintenance charges shall be billed by the Internet Service Provider (ISP) directly to the contractor.

SECTION 652
MAINTENANCE OF TRAFFIC

652.2.3 Flashing Arrow Board Delete the existing 5 paragraphs and replace with the following: Flashing Arrow Panels (FAP) must be of a type that has been submitted to AASHTO's National Transportation Product Evaluation Program (NTPEP) for evaluation and placed on the Maine Department of Transportations' Approved Products List of Portable Changeable Message Signs & Flashing Arrow Panels.

FAP units shall meet requirements of the current Manual on Uniform Traffic Control Devices (MUTCD) for Type "C" panels as described in Section 6F.56 - Temporary Traffic Control Devices. An FAP shall have matrix of a minimum of 15 low-glare, sealed beam, Par 46 elements capable of either flashing or sequential displays as well as the various operating modes as described in the MUTCD, Chapter 6-F. If an FAP consisting of a bulb matrix is used, each element should be recess-mounted or equipped with an upper hood of not less than 180 degrees. The color presented by the elements shall be yellow.

FAP elements shall be capable of at least a 50 percent dimming from full brilliance. Full brilliance should be used for daytime operation and the dimmed mode shall be used for nighttime operation. FAP shall be at least 2.4 M x 1.2 M [96" x 48"] and finished in non-reflective black. The FAP shall be interpretable for a distance not less than 1.6 km [1 mile].

Operating modes shall include, flashing arrow, sequential arrow, sequential chevron, flashing double arrow, and flashing caution. In the three arrow signals, the second light from the arrow point shall not operate.

The minimum element on-time shall be 50 percent for the flashing mode, with equal intervals of 25 percent for each sequential phase. The flashing rate shall be not less than 25 nor more than 40 flashes per minute. All on-board circuitry shall be solid state.

Primary power source shall be 12 volt solar with a battery back-up to provide continuous operation when failure of the primary power source occurs, up to 30 days with fully charged batteries. Batteries must be capable of being charged from an onboard 110 volt AC power source and the unit shall be equipped with a cable for this purpose.

Controller and battery compartments shall be enclosed in lockable, weather-tight boxes.
The FAP shall be mounted on a pneumatic-tired trailer or other suitable support for hauling to various locations, as directed. The minimum mounting height of an arrow panel should be 2.1 M [7 feet] from the roadway to the bottom of the panel.

The face of the trailer shall be delineated on a permanent basis by affixing retro-reflective material, known as conspicuity material, in a continuous line as seen by oncoming drivers.

A portable changeable message sign may be used to simulate an arrow panel display."

652.2.4 Other Devices Delete the last paragraph and add the following:
"652.2.5 Portable Changeable Message Sign Trailer mounted Portable Changeable Message Signs (PCMS) must be of a type that has been submitted to AASHTO's National Transportation Product Evaluation Program (NTPEP) for evaluation and placed on the Maine Department of Transportations' Approved Products List of Portable Changeable Message Signs & Flashing Arrow Panels. The PCMS unit shall meet or exceed the current specifications of the Manual on Uniform Traffic Control Devices (MUTCD), 6F.55.

The front face of the sign should be covered with a low-glare protective material. The color of the LED elements shall be amber on a black background. The PCMS should be visible from a distance of 0.8 km [0.5 mile] day and night and have a minimum 15º viewing angle. Characters must be legible from a distance of at least 200 M [650 feet].

The message panel should have adjustable display rates (minimum of 3 seconds per phase), so that the entire message can be read at least twice at the posted speed, the off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed. Each message shall consist of either one or two phases. A phase shall consist of up to eight characters per line. The unit must be capable of displaying at least three lines of text with eight characters per line. Each character shall be 457 mm [18"] high. Each character module shall use at least a five wide and seven high pixel matrix. The text of the messages shall not scroll or travel horizontally or vertically across the face of the sign.

Units shall automatically adjust their brightness under varying light conditions to maintain legibility.

The control system shall include a display screen upon which messages can be reviewed before being displayed on the message sign. The control system shall be capable of maintaining memory when power is unavailable. Message must be changeable with either a notebook computer or an on-board keypad. The controller shall have the capability to store a minimum of 200 user-defined and 200 pre-programmed messages. Controller and battery compartments shall be enclosed in lockable, weather-tight boxes.

PCMS units shall have the capability of being made programmable by means of wireless communications. PCMS units shall also be fully capable of having an on-board radar system installed if required for a particular application.

PCMS' primary power source shall be solar with a battery back-up to provide continuous operation when failure of the primary power source occurs. Batteries must be capable of being charged from a 110 volt AC power source. The unit must also be capable of being operated solely from a 110 volt AC power source and be equipped with a cable for this purpose.

The PCMS shall be mounted on a trailer in such a way that the bottom of the message sign panel shall be a minimum of 2.1 M [7 ft] above the roadway in urban areas and 1.5 M [5 ft]

above the roadway in rural areas when it is in the operating mode. PCMS trailers should be of a heavy duty type with a 51 mm [2"] ball hitch and a minimum of four leveling jacks (at each corner). The sign shall be capable of being rotated 360° relative to the trailer. The face of the trailer shall be delineated on a permanent basis by affixing retro-reflective material, known as conspicuity material, in a continuous line as seen by oncoming drivers."

652.3.3 Submittal of Traffic Control Plan In item e. change "A list of all certified flaggers…" to "A list of all the Contractor's certified flaggers…" In the last paragraph add the following as the second sentence: "The Department will review and provide comments to the Contractor within 14 days of receipt of the TCP." Add the following as the last sentence: "The creation and modification of the TCP will be considered incidental to the related 652 items."

652.3.5 Installation of Traffic Control Devices In the first paragraph, first sentence; change "Signs shall be erected…" to "Portable signs shall be erected.." In the third sentence; change "Signs must be erected so that the sign face…" to "Post-mounted signs must also be erected so that the sign face…"

652.4 Flaggers Replace the first paragraph with the following; "The Contractor shall furnish flaggers as required by the TCP or as otherwise specified by the Resident. All flaggers must have successfully completed a flagger test approved by the Department and administered by a Department-approved Flagger-Certifier who is employing that flagger. All flaggers must carry an official certification card with them while flagging that has been issued by their employer. Flaggers shall wear safety apparel meeting ANSI 107-1999 Class 2 risk exposure and clearly identify the wearer as a person, shall be visible at a minimum distance of 300 m [1000 ft], and shall wear a hardhat with retroreflectivity. For nighttime conditions, Class 3 apparel should be considered, retroreflective or flashing SLOW/STOP paddles shall be used, and except in emergency situations the flagger station shall be illuminated to assure visibility."

Second paragraph, first sentence; change "…have sufficient distance to stop before entering the workspace." to "…have sufficient distance to stop at the intended stopping point." Third sentence; change "At a spot obstruction…" to "At a spot obstruction with adequate sight distance,…"

Fourth paragraph, delete and replace with "Flaggers shall be provided as a minimum, a 10 minute break, every 2 hours and a 30 minute or longer lunch period away from the work station. Flaggers may only receive 1 unpaid break per day; all other breaks must be paid. Sufficient certified flaggers shall be available onsite to provide for continuous flagging operations during break periods. Breaker flaggers will not be paid for separately, but shall be considered incidental to the appropriate pay item."

652.8.2 Other Items Replace the last paragraph with the following: "There will be no payment made under any 652 pay items after the expiration of the adjusted total contract time."

SECTION 653
POLYSTYRENE PLASTIC INSULATION

653.05 Placing Backfill In the second sentence; change "…shall be not less than 150 mm [6 in] loose measure." to "…shall be not less than 250 mm [10 in] loose measure." In the third

sentence; change "…crawler type bulldozer of not more than 390 kg/m^2 [80 lb/ft^2] ground contact pressure…" to "…crawler type bulldozer of not more than 4875 kg/m^2 [2000 lb/ft^2] ground contact pressure…"

653.06 Compaction In the last sentence; change "…not more than 390 kg/m^2 [80 lb/ft^2] ground contact…" to "…not more than 4875 kg/m^2 [2000 lb/ft^2] ground contact…"

SECTION 656
TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL

656.5.1 If Pay Item 656.75 Provided Replace the second paragraph with the following: "Failure by the Contractor to follow Standard Specification or Special Provision - Section 656 and/or the Contractor's own Soil Erosion and Pollution Control Plan will result in a reduction in payment, computed by reducing the Lump Sum Total by 5% per occurrence per day. The Department's Resident or any other representative of the Department reserves the right to suspend the work at any time and request a meeting to discuss violations and remedies. The Department shall not be held responsible for any delay in the work due to any suspension under this item."

SECTION 701
STRUCTURAL CONCRETE RELATED MATERIALS

701.10 Fly Ash - Chemical Requirements Change all references from "ASTM C311" to "ASTM C114".

SECTION 703
AGGREGATES

703.05 Aggregate for Sand Leveling Change the percent passing the 9.5 mm [3/8 in] sieve from "85 – 10" to "85 – 100"

703.06 Aggregate for Base and Subbase Delete the first paragraph: "The material shall have…" and replace with "The material shall have a minimum degradation value of 15 as determined by Washington State DOT Test Method T113, Method of Test for Determination of Degradation Value (March 2002 version), except that the reported degradation value will be the result of testing a single specimen from that portion of a sample that passes the 12.5 mm [½ in] sieve and is retained on the 2.00 mm [No. 10] sieve, minus any reclaimed asphalt pavement used."

703.07 Aggregates for HMA Pavements Delete the forth paragraph: "The composite blend shall have…" and replace with "The composite blend, minus any reclaimed asphalt pavement used, shall have a Micro-Deval value of 18.0 or less as determined by AASHTO T 327. In the event the material exceeds the Micro Deval limit, a Washington Degradation test shall be performed. The material shall be acceptable if it has a value of 30 or more as determined by Washington State DOT Test Method T 113, Method of Test for Determination of Degradation Value (March 2002 version) except that the reported degradation value will be the result of testing a single composite specimen from that portion of the sample that passes the 12.5mm

[1/2 inch] sieve and is retained on the 2.00mm [No 10] sieve, minus any reclaimed asphalt pavement used."

703.09 HMA Mixture Composition The coarse and fine aggregate shall meet the requirements of Section 703.07. The several aggregate fractions for mixtures shall be sized, graded, and combined in such proportions that the resulting composite blends will meet the grading requirements of the following table.

AGGREGATE GRADATION CONTROL POINTS

SIEVE SIZE	Nominal Maximum Aggregate Size---Control Points (Percent Passing)				
	TYPE 25 mm	TYPE 19 mm	TYPE 12.5 mm	TYPE 9.5 mm	TYPE 4.75 mm
	PERCENT BY WEIGHT PASSING - COMBINED AGGREGATE				
37.5 mm	100				
25 mm	90-100	100			
19 mm	-90	90-100	100		
12.5 mm		-90	90-100	100	100
9.5 mm		-	-90	90-100	95-100
4.75 mm		-	-	-90	80-100
2.36 mm	19-45	23-49	28-58	32-67	40 - 80
1.18 mm		-	-	-	-
600 µm		-	-	-	-
300 µm		-	-	-	-
75 µm	1-7	2-8	2-10	2-10	2-10

Gradation Classification---- The combined aggregate gradation shall be classified as coarse-graded when it passes below the Primary Control Sieve (PCS) control point as defined in the following table. All other gradations shall be classified as fine-graded.

GRADATION CLASSIFICATION

PCS Control Point for Mixture Nominal Maximum Aggregate Size (% passing)				
Nominal Maximum Aggregate Size	TYPE 25 mm	TYPE 19 mm	TYPE 12.5 mm	TYPE 9.5 mm
Primary Control Sieve	4.75 mm	4.75 mm	2.36 mm	2.36 mm
PCS Control Point (% passing)	40	47	39	47

If a Grading "D" mixture is allowed per Special Provision Section 403, it shall meet the following gradation and the aggregate requirements of Section 703.07.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
½ inch	100
⅜ inch	93-100
No. 4	60-80
No. 8	46-65

No. 16	25-55
No. 30	16-40
No. 50	10-30
No. 100	6-22
No. 200	3.0-8.0

703.18 Common Borrow Replace the first paragraph with the following: "Common borrow shall consist of earth, suitable for embankment construction. It shall be free from frozen material, perishable rubbish, peat, and other unsuitable material including material currently or previously contaminated by chemical, radiological, or biological agents unless the material is from a DOT project and authorized by DEP for use."

703.22 Underdrain Backfill Material Change the first paragraph from "…for Underdrain Type B…" to "…for Underdrain Type B and C…"

Replace subsections 703.25 through 703.28 with the following:
"703.25 Stone Fill Stones for stone fill shall consist of hard, sound, durable rock that will not disintegrate by exposure to water or weather. Stone for stone fill shall be angular and rough. Rounded, subrounded, or long thin stones will not be allowed. Stone for stone fill may be obtained from quarries or by screening oversized rock from earth borrow pits. The maximum allowable length to thickness ratio will be 3:1. The minimum stone size (10 lbs) shall have an average dimension of 5 inches. The maximum stone size (500 lbs) shall have a maximum dimension of approximately 36 inches. Larger stones may be used if approved by the Resident. Fifty percent of the stones by volume shall have an average dimension of 12 inches (200 lbs).

703.26 Plain and Hand Laid Riprap Stone for riprap shall consist of hard, sound durable rock that will not disintegrate by exposure to water or weather. Stone for riprap shall be angular and rough. Rounded, subrounded or long thin stones will not be allowed. The maximum allowable length to width ratio will be 3:1. Stone for riprap may be obtained from quarries or by screening oversized rock from earth borrow pits. The minimum stone size (10 lbs) shall have an average dimension of 5 inches. The maximum stone size (200 lbs) shall have an average dimension of approximately 12 inches. Larger stones may be used if approved by the Resident. Fifty percent of the stones by volume shall have an average dimension greater than 9 inches (50 lbs).

703.27 Stone Blanket Stones for stone blanket shall consist of sound durable rock that will not disintegrate by exposure to water or weather. Stone for stone blanket shall be angular and rough. Rounded or subrounded stones will not be allowed. Stones may be obtained from quarries or by screening oversized rock from earth borrow pits. The minimum stone size (300 lbs) shall have minimum dimension of 14 inches, and the maximum stone size (3000 lbs) shall have a maximum dimension of approximately 66 inches. Fifty percent of the stones by volume shall have average dimension greater than 24 inches (1000 lbs).

703.28 Heavy Riprap Stone for heavy riprap shall consist of hard, sound, durable rock that will not disintegrate by exposure to water or weather. Stone for heavy riprap shall be angular and rough. Rounded, subrounded, or thin, flat stones will not be allowed. The maximum allowable length to width ratio will be 3:1. Stone for heavy riprap may be obtained from quarries or by screening oversized rock from earth borrow pits. The minimum stone size (500

lbs) shall have minimum dimension of 15 inches, and at least fifty percent of the stones by volume shall have an average dimension greater than 24 inches (1000 lbs)."

Add the following paragraph:
"703.32 Definitions (ASTM D 2488, Table 1).
Angular: Particles have sharp edges and relatively plane sides with unpolished surfaces
Subrounded: Particles have nearly plane sides but have well-rounded corners and edges
Rounded: Particles have smoothly curved sides and no edges"

SECTION 706
NON-METALLIC PIPE

706.06 Corrugated Polyethylene Pipe for Underdrain, Option I and Option III Culvert Pipe Change the first sentence from "…300 mm diameters to 900 mm" to "…300 mm diameters to 1200 mm" Delete, in it's entirety, the last sentence which begins "This pipe and resins…" and replace with the following; "The manufacturing plants of polyethylene pipe shall be certified by the Eastern States Consortium. Polyethylene pipe shall be accepted based on third party certification by the AASHTO's National Transportation Product Evaluation Program."

SECTION 709
REINFORCING STEEL AND WELDED STEEL WIRE FABIC

709.03 Steel Strand Change the second paragraph from "…shall be 12mm [½ inch] AASHTO M203M/M203 (ASTM A416/A416M)…" to "…shall be 15.24 mm [0.600 inch] diameter AASHTO M203 (ASTM A416)…"

SECTION 710
FENCE AND GUARDRAIL

710.03 Chain Link Fabric Add the following sentence: "Chain Link fabric for PVC coated shall conform to the requirements of AASHTO M181, Type IV-Class B."

710.04 Metal Beam Rail Replace with the following: "Galvanized steel rail elements shall conform to the requirements of AASHTO M 180, Class A, Type II.

When corrosion resistant steel is specified, rail shall conform to AASHTO M 180, Class A, Type IV. Beams of corrosion resistant steel shall not be painted or galvanized. They shall be so handled and stored that the traffic face of these beams, used in a continuous run of guardrail, shall not show a distinctive color differential.

When metal beam rail is to be installed on a curve having a radius of curvature of 150 ft. or less, the beam sections shall be fabricated on an arc to the required radius and permanently stamped or embossed with the designated radius.

The engineer may take one piece of guardrail, a backup plate, and end or buffer section from each 200 pieces in a lot, or from each lot if less than 200 pieces are included therein for determination of compliance with specification requirements. If one piece fails to conform to

the requirements of this specification, two other pieces shall be tested. If either of these pieces fails to conform to the requirements of this specification, the lot of material represented by these samples shall be rejected. A lot shall be considered that quantity of material offered for inspection at one time that bears the same heat and coating identification."

710.07 Guardrail Posts Section b. change "…AASHTO M183/M183M…" to "…AASHTO M 270M/M 270 Grade 250 (36)…"

SECTION 712
MISCELLANEOUS HIGHWAY MATERIALS

712.04 Stone Curbing and Edging Delete the existing and replace with the following: "Stone for curbing and edging shall be approved granite from acceptable sources. The stone shall be hard and durable, predominantly gray in color, free from seams that would be likely to impair its structural integrity, and of a smooth splitting character. Natural grain size and color variations characteristic of the source deposit will be permitted. Such natural variations may include bands or clusters of mineral crystallization provided they do not impair the structural integrity of the curb stone. The Contractor shall submit for approval the name of the quarry that is the proposed source of the granite for curb materials along with full scale color photos of the granite. Such submission shall be made sufficiently in advance of ordering so that the Resident may have an opportunity to judge the stone, both as to quality and appearance. Samples of curbing shall be submitted for approval only when requested by the Resident. The dimensions, shape, and other details shall be as shown on the plans."

712.06 Precast Concrete Units In the first paragraph, change "…ASTM C478M…" to "…AASHTO M199…" Delete the second paragraph and replace with the following; "Approved structural fibers may be used as a replacement of 6 x 6 #10 gauge welded wire fabric when used at an approved dosage rate for the construction of manhole and catch basin units. The material used shall be one of the products listed on the Maine Department of Transportation's Approved Product List of Structural Fiber Reinforcement." Delete the fifth paragraph and replace with the following; "The concrete mix design shall be approved by the Department. Concrete shall contain 6% air content, plus or minus 1½% tolerance when tested according to AASHTO T152. All concrete shall develop a minimum compressive strength of 28 MPa [4000 psi] in 28 days when tested according to AASHTO T22. The absorption of a specimen, when tested according to AASHTO T280, Test Method "A", shall not exceed nine percent of the dry mass."

Add the following:
"712.07 Tops, and Traps These metal units shall conform to the plan dimensions and to the following specification requirements for the designated materials.

Gray iron or ductile iron castings shall conform to the requirements of AASHTO M306 unless otherwise designated."

712.08 Corrugated Metal Units The units shall conform to plan dimensions and the metal to AASHTO M36/M36M. Bituminous coating, when specified, shall conform to AASHTO M190 Type A.

712.09 Catch Basin and Manhole Steps Steps for catch basins and for manholes shall conform to ASTM C478M [ASTM C478], Section 13 for either of the following material:

(a) Aluminum steps-ASTM B221M, [ASTM B211] Alloy 6061-T6 or 6005-T5.

(b) Reinforced plastic steps Steel reinforcing bar with injection molded plastic coating copolymer polypropylene. Polypropylene shall conform to ASTM D 4101.

712.23 Flashing Lights Flashing Lights shall be power operated or battery operated as specified.

(a) Power operated flashing lights shall consist of housing, adapters, lamps, sockets, reflectors, lens, hoods and other necessary equipment designed to give clearly visible signal indications within an angle of at least 45 degrees and from 3 to 90 m [10 to 300 ft] under all light and atmospheric conditions.

Two circuit flasher controllers with a two-circuit filter capable of providing alternate flashing operations at the rate of not less than 50 nor more than 60 flashes per minute shall be provided.

The lamps shall be 650 lumens, 120 volt traffic signal lamps with sockets constructed to properly focus and hold the lamp firmly in position.
The housing shall have a rotatable sun visor not less than 175 mm [7 in] in length designed to shield the lens.

Reflectors shall be of such design that light from a properly focused lamp will reflect the light rays parallel. Reflectors shall have a maximum diameter at the point of contact with the lens of approximately 200 mm [8 in].

The lens shall consist of a round one-piece convex amber material which, when mounted, shall have a visible diameter of approximately 200 mm [8 in]. They shall distribute light and not diffuse it. The distribution of the light shall be asymmetrical in a downward direction. The light distribution of the lens shall not be uniform, but shall consist of a small high intensity portion with narrow distribution for long distance throw and a larger low intensity portion with wide distribution for short distance throw. Lenses shall be marked to indicate the top and bottom of the lens.

(b) Battery operated flashing lights shall be self- illuminated by an electric lamp behind the lens. These lights shall also be externally illuminated by reflex-reflective elements built into the lens to enable it to be seen by reflex-reflection of the light from the headlights of oncoming traffic. The batteries must be entirely enclosed in a case. A locking device must secure the case. The light shall have a flash rate of not less than 50 nor more than 60 flashes per minute from minus 30 °C [minus 20 °F] to plus 65 °C [plus 150 °F]. The light shall have an on time of not less than 10 percent of the flash cycle. The light beam projected upon a surface perpendicular to the axis of the light beam shall produce a lighted rectangular projection whose minimum horizontal dimension shall be 5 degrees each side of the horizontal axis. The effective intensity shall not have an initial value greater than 15.0 candelas or drop below 4.0 candelas during the first 336 hours of continuous flashing. The illuminated lens shall appear to be uniformly bright over its

entire illuminated surface when viewed from any point within an angle of 9 degrees each side of the vertical axis and 5 degrees each side of the horizontal axis. The lens shall not be less than 175 mm [7 in] in diameter including a reflex-reflector ring of 13 mm [½ in] minimum width around the periphery. The lens shall be yellow in color and have a minimum relative luminous transmittance of 0.440 with a luminance of 2854° Kelvin. The lens shall be one-piece construction. The lens material shall be plastic and meet the luminous transmission requirements of this specification. The case containing the batteries and circuitry shall be constructed of a material capable of withstanding abuse equal to or greater than 1.21 mm thick steel [No. 18 U.S. Standard Gage Steel]. The housing and the lens frame, if of metal shall be properly cleaned, degreased and pretreated to promote adhesion. It shall be given one or more coats of enamel which, when dry shall completely obscure the metal. The enamel coating shall be of such quality that when the coated case is struck a light blow with a sharp tool, the paint will not chip or crack and if scratched with a knife will not powder. The case shall be so constructed and closed as to exclude moisture that would affect the proper operation of light. The case shall have a weep hole to allow the escape of moisture from condensation. Photoelectric controls, if provided, shall keep the light operating whenever the ambient light falls below 215 lx [20 foot candles]. Each light shall be plainly marked as to the manufacturer's name and model number.

If required by the Resident, certification as to conformance to these specifications shall be furnished based on results of tests made by an independent testing laboratory. All lights are subject to random inspection and testing. All necessary random samples shall be provided to the Resident upon request without cost to the Department. All such samples shall be returned to the Contractor upon completion of the tests.

712.32 Copper Tubing Copper tubing and fittings shall conform to the requirements of ASTM B88M Type A [ASTM B88, Type K] or better.

712.33 Non-metallic Pipe, Flexible Non-metallic pipe and pipe fittings shall be acceptable flexible pipe manufactured from virgin polyethylene polymer suitable for transmitting liquids intended for human or animal consumption.

712.34 Non-metallic Pipe, Rigid Non-metallic pipe shall be Schedule 40 polyvinylchloride (PVC) that meets the requirement of ASTM D1785. Fittings shall be of the same material.

712.341 Metallic Pipe Metallic pipe shall be ANSI, Standard B36.10, Schedule 40 steel pipe conforming to the requirements of ASTM A53 Types E or S, Grade B. End plates shall be steel conforming to ASTM A36/A36M.

Both the sleeve and end plates shall be hot dip galvanized. Pipe sleeve splices shall be welded splices with full penetration weld before galvanizing.

712.35 Epoxy Resin Epoxy resin for grouting or sealing shall consist of a mineral filled thixotropic, flexible epoxy resin having a pot life of approximately one hour at 10°C [50°F]. The grout shall be an approved product suitable for cementing steel dowels into the preformed holes of curb inlets and adjacent curbing. The sealant shall be an approved product, light gray in color and suitable for coating the surface.

712.36 Bituminous Curb The asphalt cement for bituminous curb shall be of the grade required for the wearing course, or shall be Viscosity Grade AC-20 meeting the current requirements of Subsection 702.01 Asphalt Cement. The aggregate shall conform to the requirements of Subsection 703.07. The coarse aggregate portion retained on the 2.36 mm [No. 8] sieve may be either crushed rock or crushed gravel.

The mineral constituents of the bituminous mixture shall be sized and graded and combined in a composite blend that will produce a stable durable curbing with an acceptable texture.

Bituminous material for curb shall meet the requirements of Section 403 - Hot Bituminous Pavement.

712.37 Precast Concrete Slab Portland cement concrete for precast slabs shall meet the requirements of Section 502 - Structural Concrete, Class A.

The slabs shall be precast to the dimension shown on the plans and cross section and in accordance with the Standard Detail plans for Concrete Sidewalk Slab. The surface shall be finished with a float finish in accordance with Subsection 502.14(c). Lift devices of sufficient strength to hold the slab while suspended from cables shall be cast into the top or back of the slab.

712.38 Stone Slab Stone slabs shall be of granite from an acceptable source, hard, durable, predominantly gray in color, free from seams which impair the structural integrity and be of smooth splitting character. Natural color variations characteristic of the deposit will be permitted. Exposed surfaces shall be free from drill holes or indications of drill holes. The granite slabs in any one section of backslope must be all the same finish.

The granite slabs shall be scabble dressed or sawed to an approximately true plane having no projections or depressions over 13 mm [½ in] under a 600 mm [2 ft] straightedge or over 25 mm [1 in] under a 1200 mm [4 ft] straightedge. The arris at the intersection of the top surface and exposed front face shall be pitched so that the arris line is uniform throughout the length of the installed slabs. The sides shall be square to the exposed face unless the slabs are to be set on a radius or other special condition which requires that the joints be cut to fit, but in any case shall be so finished that when the stones are placed side by side no space more than 20 mm [3/4 in] shall show in the joint for the full exposed height.

Liftpin holes in all sides will be allowed except on the exposed face.

SECTION 717
ROADSIDE IMPROVEMENT MATERIAL

717.03 C. Method #3 - Roadside Mixture #3 Change the seed proportions to the following:

Crown Vetch	25%
Perennial Lupine	25%
Red Clover	12.5%
Annual Rye	37.5%

717.05 Mulch Binder Change the third sentence to read as follows:

"Paper fiber mulch may be used as a binder at the rate of 2.3 kg/unit [5 lb/unit]."

SECTION 720
STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS

720.08 U-Channel Posts Change the first sentence from "…, U-Channel posts…" to "…, Rib Back U-Channel posts…"

SECTION 722
GEOTEXTILES

722.01 Stabilization/Reinforcement Geotextile Add the following to note #3; "The strengths specified in the columns labeled"<50%" and "≥ 50%" refer to the elongation at which the geotextile material was tested. For example; if a fabric is tested at 15% elongation then it must meet or exceed the minimum strength shown in the "<50%" column. Submittals must include the percent elongation at which the material was tested."

722.02 Drainage Geotextile Add the following to note #3; "The strengths specified in the columns labeled"<50%" and "≥ 50%" refer to the elongation at which the geotextile material was tested. For example; if a fabric is tested at 15% elongation then it must meet or exceed the minimum strength shown in the "<50%" column. Submittals must include the percent elongation at which the material was tested."

722.01 Erosion Control Geotextile Add the following note to Elongation in the Mechanical Property Table; "The strengths specified in the columns labeled"<50%" and "≥ 50%" refer to the elongation at which the geotextile material was tested. For example; if a fabric is tested at 15% elongation then it must meet or exceed the minimum strength shown in the "<50%" column. Submittals must include the percent elongation at which the material was tested."

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO:
ATTENTION OF:

MAINE PROGRAMMATIC GENERAL PERMIT (PGP)
AUTHORIZATION LETTER AND SCREENING SUMMARY

OFFICE OF ENVIRONMENTAL SERVICES
MAINE DEPT. OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333

CORPS PERMIT # NAE-2008-02901
CORPS PGP ID# 08-350
STATE ID# PBR

DESCRIPTION OF WORK:
Place fill below the high tide line in the Back River and in adjacent freshwater and tidal wetlands at Boothbay, Maine in order to replace the existing Barters Island Road bridge. The project will impact approximately 2,353 s.f. (0.05 acres) of freshwater wetland, 385 s.f. (0.008 acres) of tidal wetland, and 2,172 s.f. (0.04 acres) of tidal bottom. This work is shown on the attached plans entitled "BARTERS ISLAND ROAD, BOOTHBAY, LINCOLN COUNTY" in 7 sheets undated.
DOT PIN: 12630.00

LAT/LONG COORDINATES : 43.8799976° N 69.6636301° W USGS QUAD: WESTPORT, ME

I. CORPS DETERMINATION:

Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. **Your work is therefore authorized by the U.S. Army Corps of Engineers under the enclosed Federal Permit, the Maine Programmatic General Permit (PGP).**

You must perform the activity authorized herein in compliance with all the terms and conditions of the PGP [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the enclosed PGP carefully, including the PGP conditions beginning on page 7, to familiarize yourself with its contents. You are responsible for complying with all of the PGP requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

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.

Condition 38 of the PGP (page 15) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the PGP on October 11, 2010. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 11, 2011.

This authorization presumes the work 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 the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.** Also, this permit requires you to notify us before beginning work and allow us to inspect the project. Hence, you must complete and return the attached Work Start Notification Form(s) to this office no later than 2 weeks before the anticipated starting date. (For projects requiring mitigation, be sure to include the MITIGATION WORK START FORM).

II. STATE ACTIONS: PENDING [X] ISSUED [ ] DENIED [ ] DATE

APPLICATION TYPE: PBR: X TIER 1: TIER 2: TIER 3: LURC: DMR LEASE: NA:

III. FEDERAL ACTIONS:

JOINT PROCESSING MEETING: 9/17/08 LEVEL OF REVIEW: CATEGORY 1: CATEGORY 2: X

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10, 404 10/404 X, 103

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA NO, USF&WS NO, NMFS NO

If you have any questions on this matter, please contact my staff at 207-623-8367 at our Manchester, Maine Project Office.

Jay L. Clement
JAY L. CLEMENT
SENIOR PROJECT MANAGER
MAINE PROJECT OFFICE

Jay L. Clement 9/17/08
FOR FRANK J. DEL GIUDICE DATE
CHIEF, PERMITS & ENFORCEMENT BRANCH
REGULATORY DIVISION

US Army Corps
of Engineers ®
New England District

ADDITIONAL CONDITIONS FOR
DEPARTMENT OF THE ARMY
PROGRAMMATIC GENERAL PERMIT
NO. NAE-2008-02901

1. This authorization requires you to 1) notify us before beginning work so we may inspect the project, and 2) submit a Compliance Certification Form. You must complete and return the enclosed Work Start Notification Form(s) to this office at least two weeks before the anticipated starting date. You must complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work and any required mitigation (but not mitigation monitoring, which requires separate submittals).

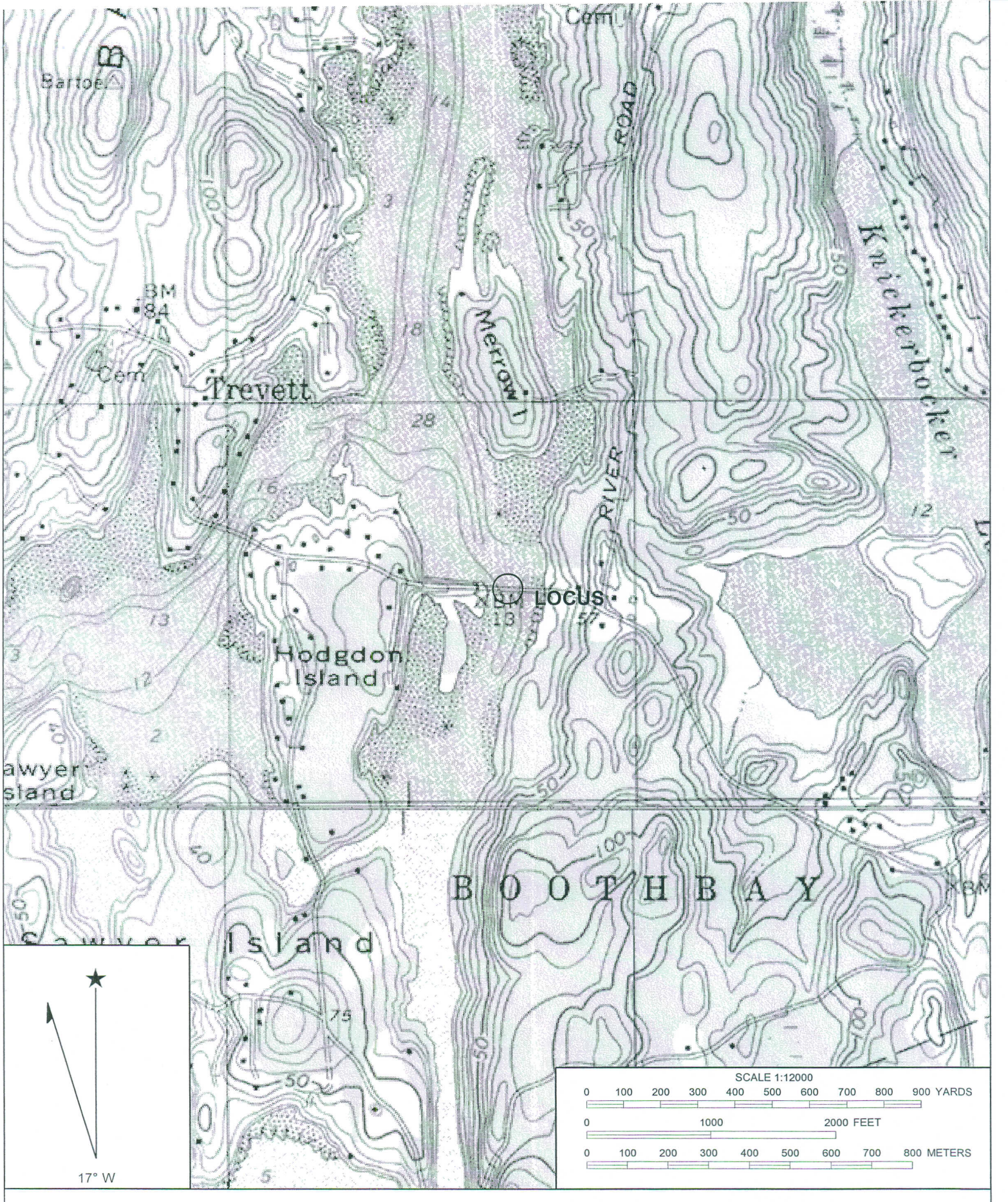
2. The permittee shall assure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers' jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for the work. If the permit is issued after construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps of Engineers jurisdiction.

3. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland.

4. All exposed soils resulting from the construction will be promptly seeded and mulched in order to achieve vegetative stabilization.

5. The permittee must obtain a bridge permit or exemption from the US Coast Guard before beginning construction. For information contact Commander (obr), First Coast Guard District, One South Street - Battery Bldg, New York, NY 10004-5073; phone (212) 668-7021.

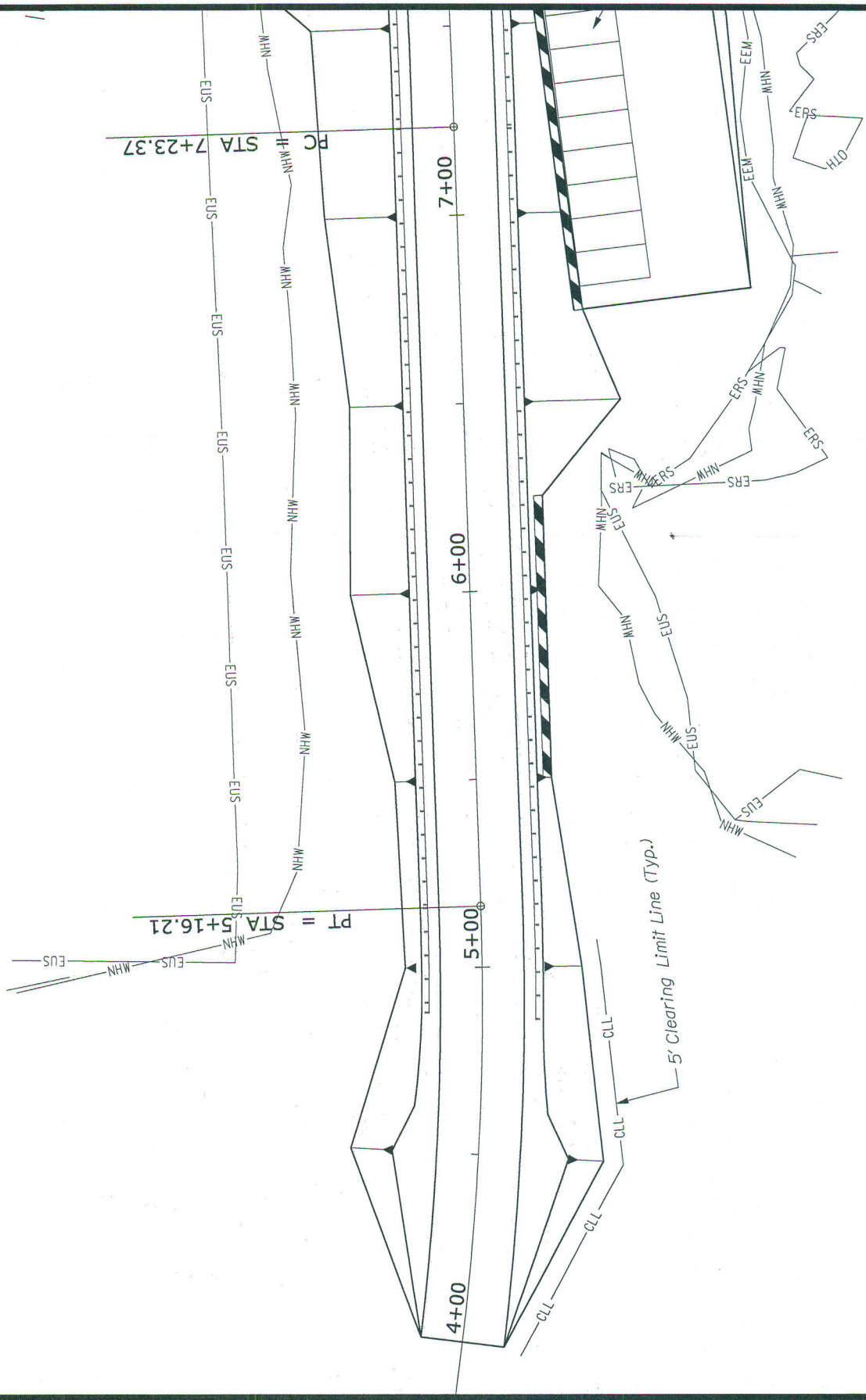
6. Instream work shall be conducted between November 8 and April 9 to minimize potential impacts to Federal endangered Atlantic salmon, other fisheries, and local water quality.



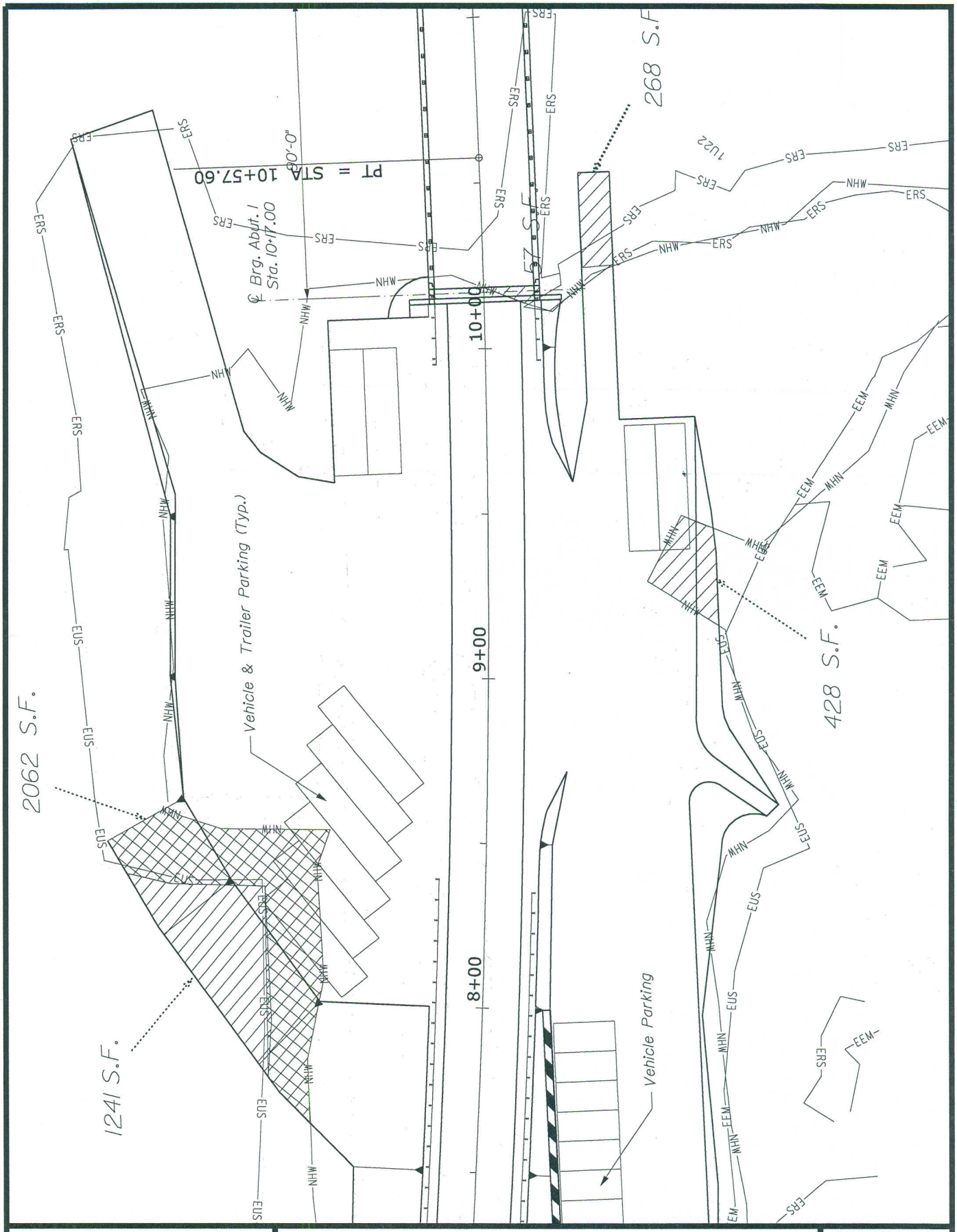
Name: WESTPORT
Date: 9/17/2008
Scale: 1 inch equals 1000 feet

Location: 043° 52' 47.33" N 069° 39' 50.25" W
Caption: BARTERS ISLAND ROAD
BOOTHBAY
LINCOLN COUNTY

43.879976
69.663630



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	BARTERS ISLAND ROAD BOOTHBAY LINCOLN COUNTY	SHEET NUMBER 1
12630.00	PLANS	OF5



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	BARTERS ISLAND ROAD BOOTHBAY LINCOLN COUNTY	SHEET NUMBER 2
12630.00	PLANS	OF5

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

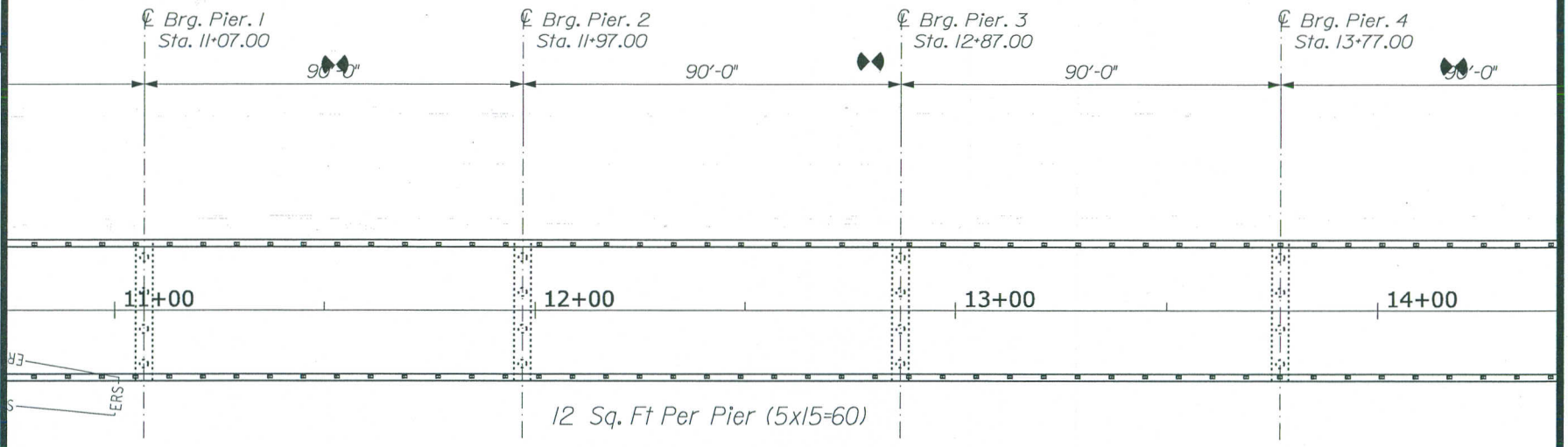
12630.00

BARTERS ISLAND ROAD
LINCOLN COUNTY

PLANS

SHEET NUMBER 3 OF5

211

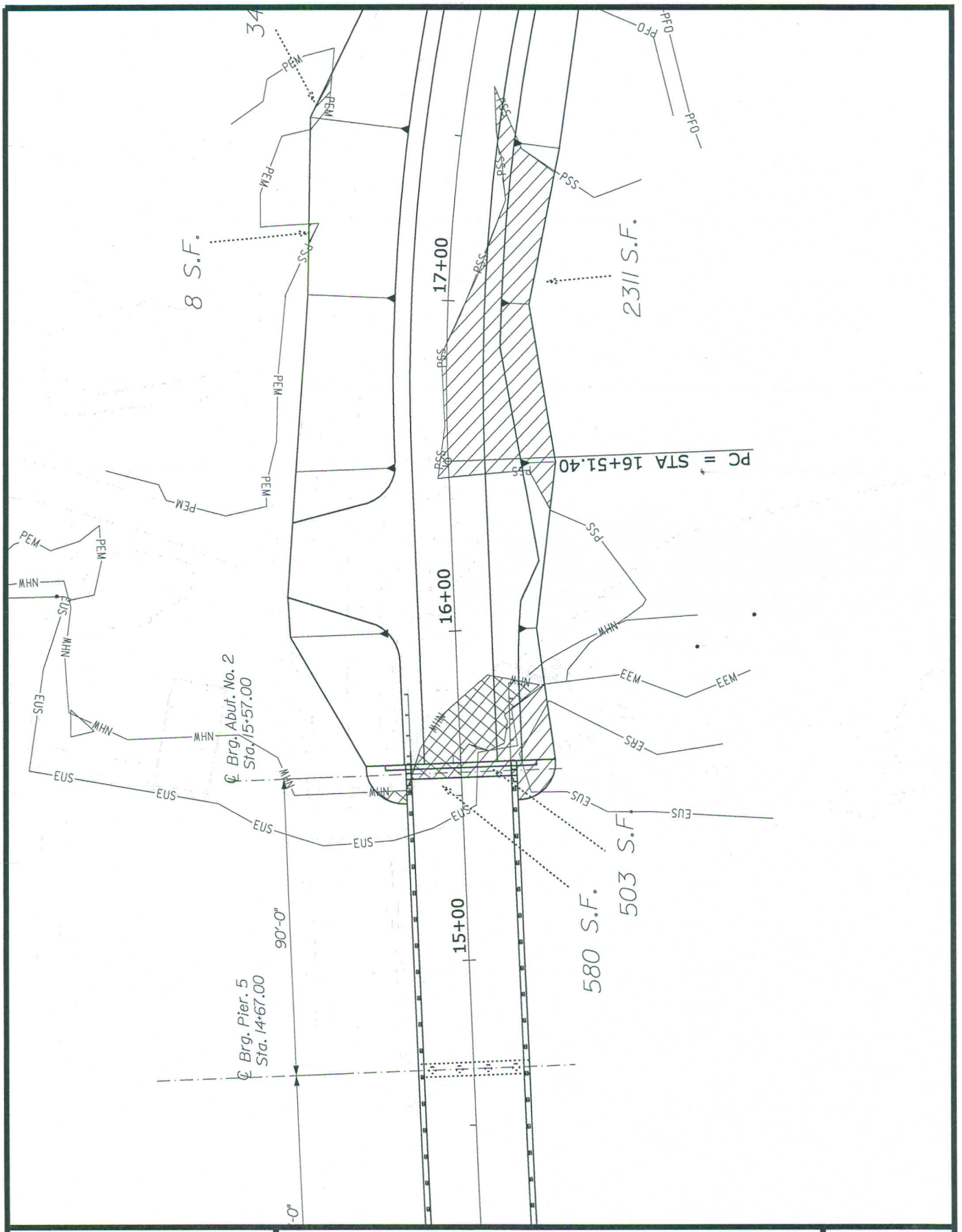


268 S.F.

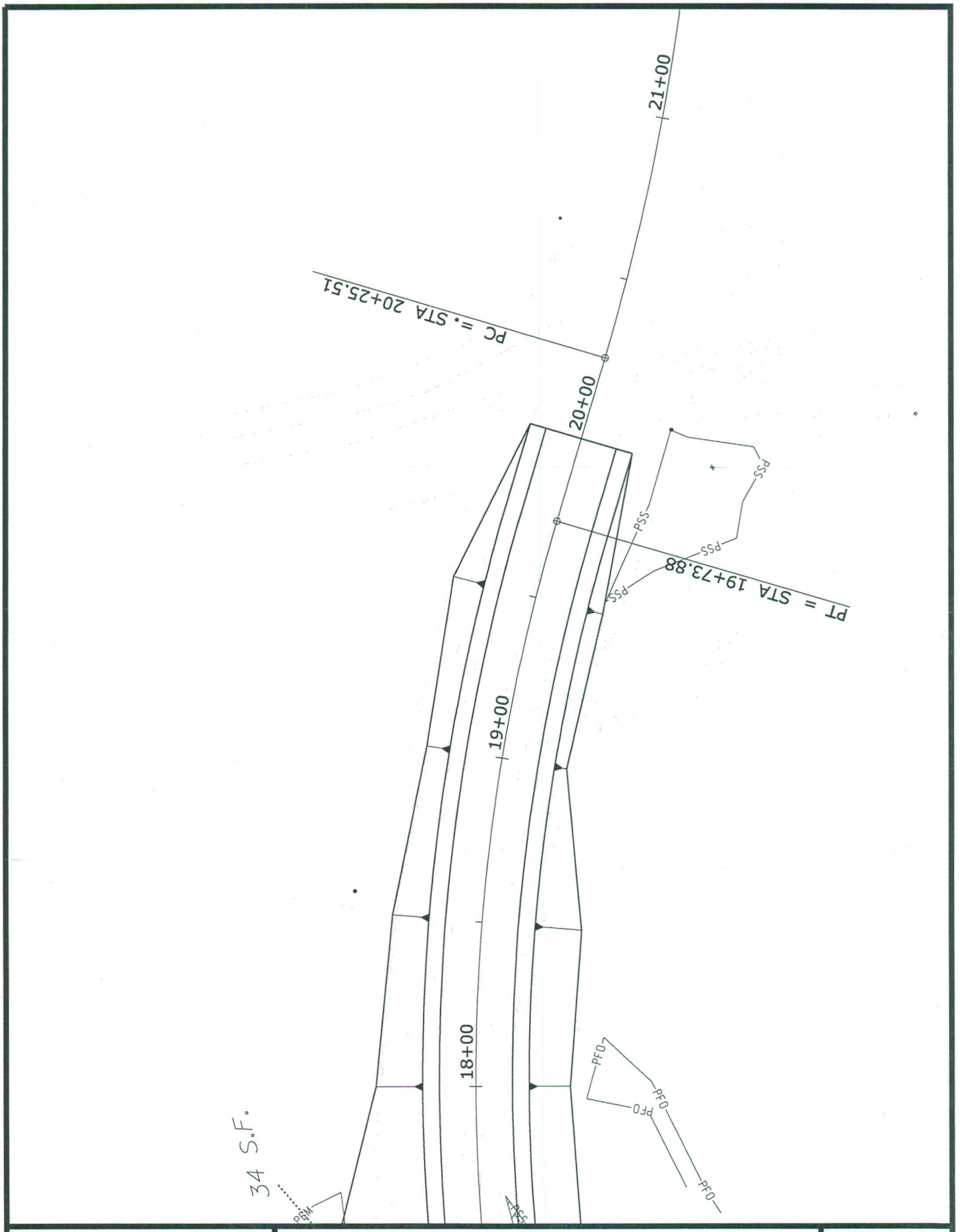
New Fill on Previously Authorized Fill: 2642 Sq. Ft.

New Impacts: 4910 Sq. Ft.

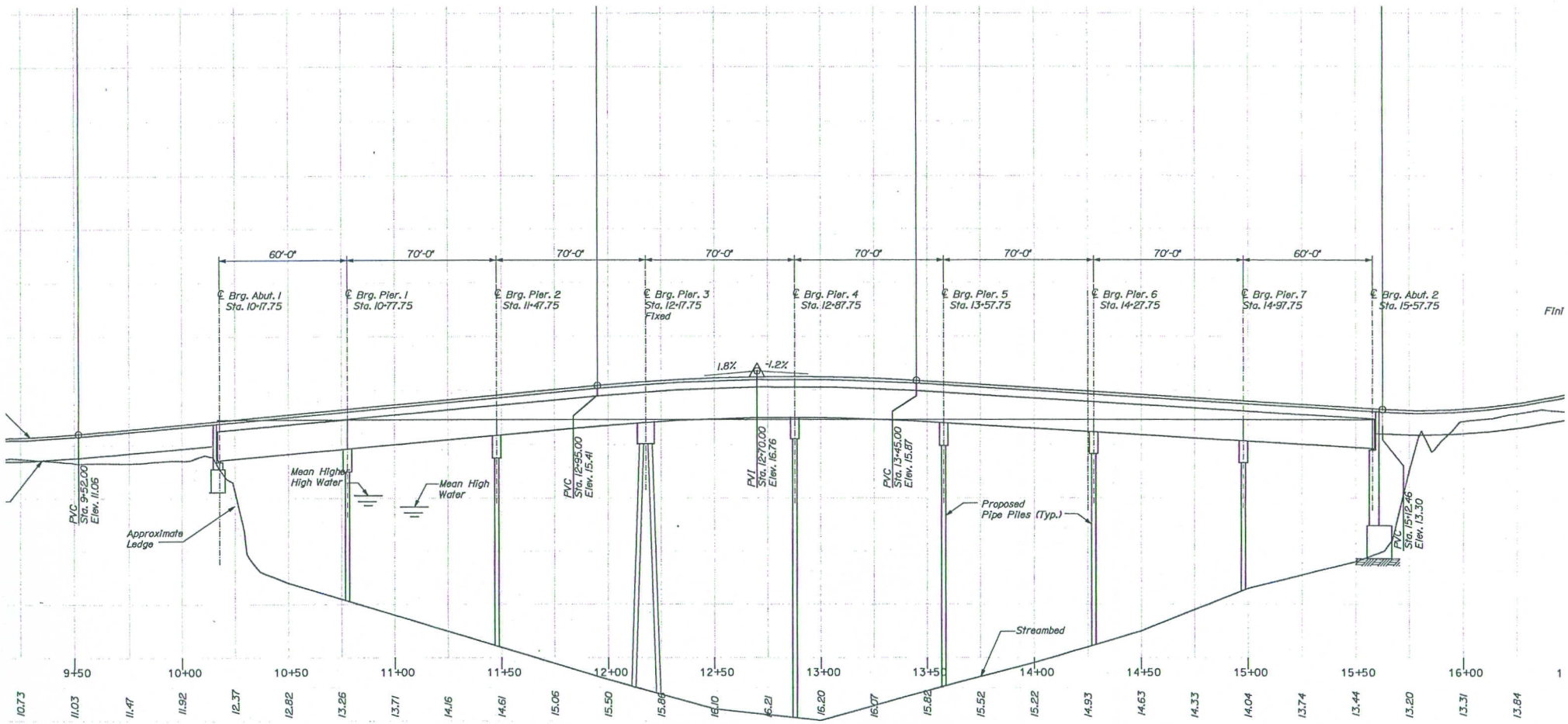
Breakdown of New Impacts: EUS: 1416 Sq. Ft.
ERS: 385 Sq. Ft.
Below MHW: 756 Sq. Ft.
PSS: 2319 Sq. Ft.
PEM: 34 Sq. Ft.



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	BARTERS ISLAND ROAD BOOTHBAY LINCOLN COUNTY	SHEET NUMBER 4
12630.00	PLANS	OF5



STATE OF MAINE DEPARTMENT OF TRANSPORTATION	BARTERS ISLAND ROAD BOOTHBAY LINCOLN COUNTY	SHEET NUMBER 5 OF5
12630.00	PLANS	



PROFILE

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SCALE

BARTERS ISLAND ROAD BOOTHBAY
LINCOLN COUNTY

PLANS

US Army Corps of Engineers®
New England District

PGP
WORK-START NOTIFICATION FORM
(Minimum Notice: Two weeks before work begins)

****
* MAIL TO: U.S. Army Corps of Engineers, New England District *
* Policy Analysis/Technical Support Branch *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *
****

Corps of Engineers Permit No. **NAE-2008-02901** was issued to **MaineDOT**. This work is located in **Back River at the Barters Island Road Bridge in Boothbay, Maine**. The permit authorized the permittee to **place fill below the high tide line of Back River and adjacent freshwater wetlands. Project will impact approximately 2353 s.f. (0.05 acres) of freshwater wetlands, 385 s.f. (0.008 Acres) of tidal wetlands and 2172 s.f. (0.04 acres) of tidal bottom.**

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

_____

_____

_____

Telephone Numbers: (___) _____ (___) _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee's Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

****

FOR USE BY THE CORPS OF ENGINEERS

PM: _____ **Submittals Required:** _____

Inspection Recommendation: _____

_____

_____

US Army Corps of Engineers®
New England District

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

COMPLIANCE CERTIFICATION FORM

USACE Project Number: NAE-2008-02901

Name of Permittee: MaineDOT

Permit Issuance Date: September 17, 2008

Please sign this certification and return it to the following address upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not the mitigation monitoring, which requires separate submittals.

****
* MAIL TO: U.S. Army Corps of Engineers, New England District *
* Policy Analysis/Technical Support Branch, ATTN: Marie Farese *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 01742-2751 *
****

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

_____ _____
Signature of Permittee Date

_____ _____
Printed Name Date of Work Completion

Telephone Number (_____)_____

Applicant: General Public, State of Maine
Permit Number: NAE-2005-2164

Effective Date: October 11, 2005
Expiration Date: October 11, 2010

DEPARTMENT OF THE ARMY
PROGRAMMATIC GENERAL PERMIT
STATE OF MAINE

The New England District of the U.S. Army Corps of Engineers hereby issues a Programmatic General Permit (PGP) that expedites review of minimal impact work in coastal and inland waters and wetlands within the State of Maine.

I. GENERAL CRITERIA

Activities with minimal impacts, as specified by the terms and conditions of this PGP and on the attached Appendix A, Definition of Categories, are either:

Category 1: Non-reporting. Eligible without screening (provided the authorizations are obtained which this permit states are necessary for activities to be eligible for authorization under this non-reporting category), or,

Category 2: Reporting. Require screening and a written determination of eligibility under the PGP by the Corps after coordination with the U.S. Fish and Wildlife Service (U.S. FWS), U.S. Environmental Protection Agency (EPA) and the National Marine Fisheries Service (NMFS).

This PGP does not affect the Corps Individual Permit review process or activities exempt from Corps jurisdiction.

II. ACTIVITIES COVERED:

Work and structures that are located in, or that affect, navigable waters of the United States (U.S.) (Corps regulates under Section 10 of the Rivers and Harbors Act of 1899); the discharge of dredged of fill material into waters of the United States (Corps regulates under Section 404 of the Clean Water Act); and the transportation of dredged material for the purpose of disposal in the ocean (Corps regulates under Section 103 of the Marine Protection, Research and Sanctuaries Act).

III. PROCEDURES:

A. State Approvals

For projects authorized pursuant to this PGP, the following State approvals are also required. The applicable permits must be obtained in order for this PGP authorization to be valid (applicants are responsible for ensuring that all required State permits and approvals have been applied for and obtained):

- Maine Department of Environmental Protection (DEP): Natural Resources Protection Act (NRPA) permit, including permit-by-rule and general permit authorizations (NRPA permit issuance constitutes both the state permit and the WQC); Site Location of Development Act permit; and Maine Waterway Development and Conservation Act permit.
- Maine Department of Conservation: Land Use Regulation Commission (LURC) permit.
- Maine Department of Marine Resources: Lease.
- Maine Department of Conservation, Bureau of Parks and Lands, Submerged Lands: Lease

NOTE: This PGP may authorize projects that are not regulated by the State of Maine (e.g., seasonal floats or moorings).

B. Corps Authorizations

CATEGORY 1 (Non-Reporting)

Eligibility Criteria

Activities in Maine may proceed without application or notification to the Corps if they:

- Are subject to Corps jurisdiction (see General Condition 2, Page 7),
- Meet the definition of Category 1 in Appendix A - Definition of Categories, and
- Meet the General Conditions of the PGP (see Pages 7 - 15).

If the State or the Corps does not contact the applicant for DEP's Tier One permits during the DEP's Tier One 30-day review period, Corps approval may be assumed and the project may proceed. Refer to the Federal Screening Procedures (see Page 4) for additional information regarding screening.

Project proponents seeking Category 1 authorizations are not relieved of the obligation to comply with this PGP's General Conditions (see Page 7) and other Federal laws such as the National Historic Preservation Act, the Endangered Species Act (ESA) and the Wild and Scenic Rivers Act. Therefore, consultation with the Corps and/or outside experts such as the Maine Historic Preservation Commission and the appropriate Indian tribes is recommended when there is a high likelihood of the presence of resources of concern.

Although Category 1 projects are non-reporting, the Corps reserves the right to require screening under Category 2 or Individual Permit review if there are concerns for the aquatic environment or any other factor of the public interest (see General Condition 4, Discretionary Authority, Page 7).

Work that is not regulated by the State of Maine, but is subject to Corps jurisdiction, is eligible for Corps authorization under this PGP in accordance with the review thresholds and conditions contained herein. The Maine DEP and LURC have waived WQC for projects authorized under Categories 1 and 2 of this PGP and not subject to jurisdiction under the NRPA and LURC Land Use Districts and Standards.

Enforcement cases. This PGP does not apply to any existing or proposed activity in Corps jurisdiction associated with an on-going Corps or EPA enforcement action until such time as the enforcement action is resolved or the Corps determines that the activity may proceed independently without compromising the enforcement action. The Corps may choose not to accept applications or issue permits to any applicant with outstanding violations.

CATEGORY 2 (Reporting – Requiring Screening)

Eligibility Criteria

Activities in Maine require written approval from the Corps if they:

- Are subject to Corps jurisdiction (see General Condition 2, Page 7),
- Meet the definition of Category 2 in Appendix A - Definition of Categories, and
- Meet the General Conditions of the PGP (see Pages 7 - 15),

These projects will be reviewed through interagency screening (see Federal Screening Procedures below) to determine whether such activities may be authorized under this PGP. To be eligible and

subsequently authorized, an activity must result in minimal impacts to the aquatic environment as determined by the Corps based on comments from the review team and the criteria listed above. Mitigation may be required to compensate for unavoidable impacts to ensure net effects of a project are minimal.

For Category 2 projects, applicants must obtain a written authorization from the Corps and State approvals as stated on Page 1.

To ensure compliance with the conditions of this PGP, consultation with the Corps and outside experts is required. This includes consultation with the Maine Historic Preservation Commission and the appropriate Native American Indian tribes to ensure compliance with Condition 8. Also, note the review thresholds under Category 2 apply to single and complete projects only (see General Condition 5).

Enforcement cases. See previous section.

Application Procedures

The Corps must review and approve in writing all Category 2 activities. Generally, the State will provide the Corps with a copy of State applications received, but it is ultimately the applicant's responsibility to ensure the Corps receives the application from the State. Therefore, it is recommended that applicants either verify with the Corps receipt of their application from the State (DEP or LURC), or apply directly to the Corps with either a copy of their State application or a Corps application (ENG Form 4345). Applicants must apply directly to the Corps using ENG Form 4345 if the work is not State regulated.

Upon receipt of the application, the Corps will determine if it:
(a) requires additional information (see "information typically required" on the following page);
(b) is appropriate for screening with the Federal resource agencies (see Category 2 Federal Screening Procedures on the following page);
(c) is ineligible under the terms and/or conditions of this PGP; or
(d) will require Individual Permit review, regardless of whether the terms and conditions of this PGP are met, based on concerns for the aquatic environment or any other factor of the public interest (see General Condition 4, Discretionary Authority).

If open water disposal is proposed, the Corps will make a suitability determination, fully coordinated with the Federal resource agencies, before coordinating a project at a joint processing meeting.

All Category 2 applicants shall submit a copy of their application materials to the Maine Historic Preservation Commission and the Indian tribe(s) listed on Page 17, at the same time, or before, they apply to the DEP, LURC, or the Corps, to be reviewed for the presence of historic, archaeological or tribal resources in the permit area that the proposed work may affect. Submittals to the DEP or Corps shall include information to indicate that this has been done (a copy of the applicant's cover letter to Maine Historic Preservation Commission and tribes or a copy of the Historic Preservation Commission and tribal response letters is acceptable).

Information Typically Required

The following information may not be necessary for all projects. Please see www.nae.usace.army.mil for a more comprehensive checklist. Select "Regulatory/Permitting," "Forms" and then "Application and Plan Guideline Checklist." Please check with our Maine office for project-specific requirements.

(a) purpose of project;
(b) 8½"x 11" locus map. 8½"x 11" plan views of the entire property, including property lines, and project limits with existing and proposed conditions;
(c) typical cross-section views of all wetland and waterway fill areas and wetland replication areas;
(d) legible, reproducible plans. Show mean low water (MLW), mean high water (MHW) and high tide line (HTL) elevations in navigable waters;
(e) each plan should show the NGVD 1929 equivalent for the project's vertical datum (MLW, MLLW, MHW, HTL or other tidal datum for tidal projects) with the vertical units. Do not use local datum;
(f) wetland delineation for the site, Corps wetland delineation data sheets (see web site), and calculations of waterway and wetland impact areas (see General Condition 2);
(g) delineation of submerged aquatic vegetation, e.g., eel grass beds, in tidal waters;
(h) volume, type and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below ordinary high water in inland waters and below the high tide line in coastal waters;
(i) limits of any Federal Navigation Project in the vicinity and State Plane Coordinates for the limits of the proposed work closest to the Federal Navigation Project;
(j) on-site alternatives analysis. Please contact Corps for guidance;
(k) identify and describe potential impacts to Essential Fish Habitat. See General Condition 11 and contact Corps for guidance;
(l) photographs of wetland/waterway to be impacted.

Information typically required for dredging projects:
(a) sediment testing, including physical (e.g., grain-size analysis), chemical and biological testing. For projects proposing open water disposal, applicants are encouraged to contact the Corps as early as possible regarding sampling and testing protocols. Sampling and testing of sediments without such contact should not occur and, if done, would be at the applicant's risk.
(b) the area in square feet and volume of material to be dredged below mean high water;
(c) existing and proposed water depths;
(d) type of dredging equipment to be used;
(e) nature of material (e.g., silty sand);
(f) any existing sediment grain size and bulk sediment chemistry data for the proposed or any nearby projects;
(g) information on the location and nature of municipal or industrial discharges and occurrence of any contaminant spills in or near the project area, location of the disposal site (include locus sheet);
(h) shellfish survey;
(i) identify and describe potential impacts to Essential Fish Habitat (see General Condition 11);
(j) delineation of submerged aquatic vegetation (e.g., eelgrass beds).

Federal Screening Procedures
The Corps will review all complete applications for Category 2 projects requiring Corps approval at interagency screening meetings (or "joint processing" meetings) with the Federal resource agencies (U.S. FWS, EPA and NMFS) to determine whether such activities may be authorized under this PGP. The Federal resource agencies will comprise the interagency review team. The meetings are held at the Corps every three weeks, or coordinated as necessary to provide applicants with a timely response. The Corps and Federal resource agencies, at the branch chief or equivalent level, may agree on certain activities that do not need to be coordinated at these meetings.

If the Corps and Federal resource agencies determine that the activity is eligible for the PGP, the Corps will send an authorization letter directly to the applicant. The Corps will generally issue an eligibility determination within the State's review period, not to exceed 60 days. If the Corps determines that the activity is not eligible under the PGP or that additional information is required, the Corps will notify the applicant in writing and will send a copy of this notification to DEP or LURC.

For projects reviewed with the Federal resource agencies, the agencies may recommend, within ten business days, either 1) special conditions for projects to avoid or minimize adverse environmental effects and to ensure the terms and conditions of the PGP are met, or 2) Individual Permit review. The Corps will determine that a project is ineligible under this PGP and will begin its Individual Permit review procedures if any one of the Federal resource agencies, within ten business days of the screening meeting, expresses a concern within their area of expertise, states the resource or species that could be impacted by the project, and describes the impacts that, either individually or cumulatively, will be more than minimal.

This ten-day notice may be spoken and is not required to be fully documented, but must be confirmed with a written response within an additional ten working days from the date of the spoken comment. Written responses must be signed by the Federal resource agency field supervisor or branch chief, as appropriate, and must identify the affected resource within their area of expertise. The intent of the spoken notification is to allow the Corps to give timely notification to the applicant that additional information is needed and/or an Individual Permit may be required. The Corps may reinstate a project's eligibility under the PGP provided the Federal agencies' concerns are satisfied. The Federal resource agencies may request additional information within their area of expertise within ten business days of the screening meeting. This information shall be commensurate to the level of impact and agreed upon by the Corps. The agencies are allowed an additional ten business days after their receipt of additional information to provide special conditions or a written Individual Permit request to the Corps.

If the applicant is unable to resolve the concerns, the Corps, independently or at the request of the Federal resource agencies, will require an Individual Permit for the project. The applicant will be notified of this in writing, along with information about submitting the necessary application materials.

Minerals Management Service (MMS) Review

Projects with construction of solid fill structures or discharge of fill that may extend beyond the coastline or the baseline from which the territorial sea is measured (i.e., mean low water), must be coordinated with Minerals Management Service (MMS), Outer Continental Shelf (OCS) Survey Group, pursuant to the Submerged Lands Act (43 USC, Section 1301-1315, 33 CFR 320.4(f)). The Corps will forward project information to MMS for their review. The MMS will coordinate their determination with the Department of the Interior (DOI) Solicitor's Office. The DOI will have 15 calendar days from the date MMS is in receipt of project information to determine if the baseline will be affected. No notification to the Corps within 15-day review period will constitute a "no effect" determination. Otherwise, the solicitor's notification to the Corps may be spoken but must be followed with a written confirmation within ten business days from the date of the spoken notification. This procedure will be eliminated if the State of Maine provides a written waiver of interest in any increase in submerged lands caused by a change in the baseline resulting from solid fill structures or fills authorized under this PGP.

Emergency Situations Procedures

Emergency situations are limited to sudden, unexpected occurrences that could potentially result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process an application under standard procedures. If an emergency situation requires action in less than 30 days after the occurrence, it qualifies for the amended notification procedures described below.

Notification Procedures for Emergency Situations:

Any project proponent may request emergency authorization from the Corps, however the Corps will determine if a project qualifies for these emergency situation procedures. The Federal resource agencies, the Maine Historic Preservation Commission and the tribes will each designate an emergency contact and an alternate in the event the regular contact is unavailable. When an application for Category 2 work is received that the Corps determines is an "emergency" as defined above, the Corps will fax a copy of the plans and Determination of Eligibility to the agency representatives and their alternates. The resource agencies would then have 16 business hours to notify the Corps if they have any comments on authorization of the project under the PGP. Objections to the Corps determination of an "emergency" situation will not be accepted. If no response is received within 16 business hours, the Corps will proceed with a decision on the application. If the resource agencies have comments on the proposal, they will have 16 business hours to put their comments in writing. If written comments from the Federal agencies are not received within 16 business hours, the Corps will proceed with a decision on the application.

If a Federal agency requests that an Individual Permit be required for a project or requests modifications to the project based on concerns within their area(s) of expertise, the Corps will notify the applicant within one business day of receipt of that request that the project as proposed does not qualify for authorization under this PGP and the emergency Individual Permit procedures may be followed. In any event, the Corps will notify the applicant within 16 business hours of commencement of the screening process as to whether the project may proceed under this PGP.

IV. CORPS AUTHORIZATION: INDIVIDUAL PERMIT

Work that is defined in the Individual Permit category of Appendix A – Definition of Categories, or that does not meet the terms and conditions of this PGP, will require an application for an Individual Permit from the Corps (see 33 CFR Part 325.1). The screening procedures outlined for Category 2 projects will only serve to delay project review in such cases. The applicant should submit the appropriate application materials (including the Corps application form) at the earliest possible date. General information and application forms can be obtained at our web site or by calling us (see Page 16). Individual water quality certification and coastal zone management consistency concurrence are required when applicable from the State of Maine before Corps permit issuance. The Federal resource agencies' comments are due within ten working days after the Public Notice's expiration date, unless the Corps receives and approves a written request for a time extension within ten working days after the notice's expiration.

V. PROGRAMMATIC GENERAL PERMIT CONDITIONS:

The following conditions apply to activities authorized under this Maine PGP, including all Category 1 (non-reporting) and Category 2 (reporting – requiring screening) activities:

General Requirements

1. Other Permits. Authorization under this PGP does not obviate the need to obtain other Federal, State, or local authorizations required by law. This includes, but is not limited to, the project proponent obtaining a Flood Hazard Development Permit issued by the town, if necessary. Inquiries may be directed to the municipality or to the Maine Floodplain Management Coordinator at (207) 287-8063. See http://www.maine.gov.

2. Federal Jurisdictional Boundaries. Applicability of this PGP shall be evaluated with reference to Federal jurisdictional boundaries. Applicants are responsible for ensuring that the boundaries used satisfy the Federal criteria defined at 33 CFR 328-329. These sections prescribe the policy, practice and procedures to be used in determining the extent of jurisdiction of the Corps concerning "waters of the U.S." and "navigable waters of the U.S." Wetland boundaries shall be delineated in accordance with the January 1987 Corps of Engineers Wetlands Delineation Manual, located at http://www.usace.army.mil/inet/functions/cw/cecwo/reg/ wlman87.pdf. The U.S. FWS publishes the National List of Plant Species that Occur in Wetlands, located at http://www.nwi.fws.gov. The Natural Resources Conservation Service (NRCS) develops the hydric soil definition and criteria, and publishes the current hydric soil lists, located at http://soils.usda.gov/use/hydric/.

3. Minimal Effects. Projects authorized by this PGP shall have no more than minimal individual and cumulative adverse environmental impacts as determined by the Corps.

4. Discretionary Authority. Notwithstanding compliance with the terms and conditions of this permit, the Corps retains discretionary authority to require Category 2 or Individual Permit review based on concerns for the aquatic environment or for any other factor of the public interest [33 CFR 320.4(a)]. This authority is invoked on a case-by-case basis whenever the Corps determines that the potential consequences of the proposal warrant Individual Permit review based on the concerns stated above. This authority may be invoked for projects with cumulative environmental impacts that are more than minimal or if there is a special resource or concern associated with a particular project that is not already covered by the remaining conditions of the PGP and that warrants greater review. Whenever the Corps notifies an applicant that an Individual Permit may be required, authorization under this PGP is void and no work may be conducted until the individual Corps permit is obtained or until the Corps notifies the applicant that further review has demonstrated that the work may proceed under this PGP.

5. Single and Complete Projects. This PGP shall not be used for piecemeal work and shall be applied to single and complete projects. All components of a single project shall be treated together as constituting one single and complete project and/or all planned phases of a multi-phased project (e.g., subdivisions should include all work such as roads, utilities, and lot development) unless the Corps determines that a component has independent utility. (The *Independent Utility* test is used to determine what constitutes a single and complete project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.) For linear projects, such as power lines or pipelines with multiple

crossings, the "single and complete project" (i.e., single and complete crossing) will apply to each crossing of a separate water of the U.S. (i.e., single waterbody) at that location; except that for linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project, and may be reviewed for Category 1 eligibility. (However, individual channels in a braided stream or river, or individual arms of a large, irregularly-shaped wetland or lake, etc., are not separate waterbodies.) If any crossing requires a Category 2 activity, then the entire linear project shall be reviewed as one project under Category 2. Also, this PGP shall not be used for any activity that is part of an overall project for which an Individual Permit is required, unless the Corps determines the activity has independent utility.

6. Permit On-Site. For Category 2 projects, the permittee shall ensure that a copy of this PGP and the accompanying authorization letter are at the work site (and the project office) authorized by this PGP whenever work is being performed, and that all personnel with operation control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit authorization shall be made a part of any and all contracts and sub-contracts for work that affects areas of Corps jurisdiction at the site of the work authorized by this PGP. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means this PGP and the authorization letter (including its drawings, plans, appendices and other attachments) and also includes permit modifications. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or sub-contract as a change order. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire PGP authorization, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

National Concerns

7. St. John/St. Croix Rivers. This covers work within the Saint John and Saint Croix River basins that requires approval of the International Joint Commission. This includes any temporary or permanent use, obstruction or diversion of international boundary waters which could affect the natural flow or levels of waters on the Canadian side of the line, as well as any construction or maintenance of remedial works, protective works, dams, or other obstructions in waters downstream from boundary waters when the activity could raise the natural level of water on the Canadian side of the boundary.

8. Historic Properties. Any activity authorized by this PGP shall comply with Section 106 of the National Historic Preservation Act. Information on the location and existence of historic resources can be obtained from the Maine Historic Preservation Commission, the National Register of Historic Places, and the Penobscot, Passamaquoddy, Micmac, and Maliseet Tribal Historic Preservation Officers. See Page 17 for historic properties contacts. If the permittee, either prior to construction or during construction of the work authorized herein, encounters a previously unidentified archaeological or other cultural resource, within the area subject to Department of the Army jurisdiction, that might be eligible for listing in the National Register of Historic Places, he/she shall stop work and immediately notify the District Engineer and the Maine Historic Preservation Commission and/or applicable Tribe(s).

9. National Lands. Activities authorized by this PGP shall not impinge upon the value of any National Wildlife Refuge, National Forest, National Marine Sanctuary, National Park or any other area administered by the National Park Service.

10. Endangered Species. No activity may be authorized under this PGP which:

- is likely to adversely affect a threatened or endangered species, a proposed species, designated critical habitat, or proposed critical habitat as identified under the Federal ESA,
- would result in a "take" of any threatened or endangered species of fish or wildlife, or
- would result in any other violation of Section 9 of the ESA protecting threatened or endangered species of plants.

Applicants shall notify the Corps if any listed species or critical habitat, or proposed species or critical habitat, is in the vicinity of the project and shall not begin work until notified by the District Engineer (DE) that the requirements of the ESA have been satisfied and that the activity is authorized. Information on the location of threatened and endangered species and their critical habitat can be obtained from the U.S. FWS and NMFS (see Page 16 for addresses).

11. Essential Fish Habitat. As part of the PGP screening process, the Corps will coordinate with NMFS in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act to protect and conserve the habitat of marine, estuarine and anadromous finfish, mollusks, and crustaceans. This habitat is termed "Essential Fish Habitat (EFH)", and is broadly defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Applicants may be required to describe and identify potential impacts to EFH. Conservation recommendations made by NMFS will normally be included as a permit requirement by the Corps. For additional information, see the EFH regulations at 50 CFR Part 600 (http://www.nmfs.noaa.gov). Additional information on the location of EFH can be obtained from NMFS (see Page 16 for contact information).

Any work in any aquatic habitat in the following rivers and streams, including all tributaries to the extent that they are currently or were historically accessible for salmon migration, shall not be authorized under Category 1 of the PGP and must be screened for potential impacts to EFH.

Androscoggin River	Hobart Stream	Passagassawaukeag River	Saco River
Aroostook River	Kennebec River	Patten Stream	Sheepscot River
Boyden River	Machias River	Penobscot River	St. Croix River
Dennys River	Narraguagus River	Pleasant River	Tunk Stream
Ducktrap River	Orland River	Presumpscot River	Union River
East Machias River			

12. Wild and Scenic Rivers. Any activity that occurs in a component of, or within 0.25 mile up or downstream of, the main stem or tributaries of a river segment of the National Wild and Scenic River System, must be reviewed by the Corps under the procedures of Category 2 of this PGP regardless of size of impact. This condition applies to both designated Wild and Scenic Rivers and rivers designated by Congress as study rivers for possible inclusion while such rivers are in an official study status. The Corps will consult with the National Park Service (NPS) with regard to potential impacts of the proposed work on the resource values of the Wild and Scenic River. The culmination of this coordination will be a determination by the NPS and the Corps that the work: (1) may proceed as proposed; (2) may proceed with recommended conditions; or (3) could pose a direct and adverse effect on the resource values of the river and an individual permit is required. If

preapplication consultation between the applicant and the NPS has occurred whereby NPS has made a determination that the proposed project is appropriate for authorization under this PGP (with respect to Wild and Scenic River issues), this determination should be furnished to the Corps with submission of the application. (See NPS address on Page 16.) National Wild and Scenic Rivers System segments for Maine as of September 2005 include: Allagash River beginning at Telos Dam continuing to Allagash checkpoint at Eliza Hole Rapids, approximately 3 miles upstream of the confluence with the St. John River (length = 92 miles).

13. Federal Navigation Project. Any structure or work that extends closer to the horizontal limits of any Corps Federal Navigation Project (See Appendix B) than a distance of three times the project's authorized depth shall be subject to removal at the owner's expense prior to any future Corps dredging or the performance of periodic hydrographic surveys.

14. Navigation. (a) There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein. (b) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

15. Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following: (a) damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes; (b) damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States (U.S.) in the public interest; (c) damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit; (d) design or construction deficiencies associated with the permitted work; (e) damage claims associated with any future modification, suspension, or revocation of this permit.

Minimization of Environmental Impacts

16. Minimization. Discharges of dredged or fill material into waters of the United States, including wetlands, shall be avoided and minimized to the maximum extent practicable. Permittees may only fill those jurisdictional wetlands that the Corps authorizes to be filled and impact those wetlands that the Corps authorizes as secondary impacts. For coastal structures such as piers and docks, the height above the marsh at all points should be equal to or exceed the width of the deck. The height shall be measured from the marsh substrate to the bottom of the longitudinal support beam. This will help ensure sunlight reaches the area beneath the structure.

17. Heavy Equipment in Wetlands. Heavy equipment, other than fixed equipment (drill rigs, fixed cranes, etc.), working within wetlands shall not be stored, maintained or repaired in wetlands unless it is less environmentally damaging otherwise, and as much as possible shall not be operated there. Where construction requires heavy equipment operation in wetlands, the equipment shall

either have low ground pressure (<3 psi), or shall not be located directly on wetland soils and vegetation; it shall be placed on swamp or timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation. (See General Condition 18 below.) Other support structures that are less impacting and are capable of safely supporting equipment may be used with written Corps authorization. Similarly, not using mats during frozen, dry or other conditions may be allowed with written Corps authorization. An adequate supply of spill containment equipment shall be maintained on site.

NOTE: "Swamp mats" is a generic term used to describe structures that distribute equipment weight to prevent wetland damage while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes, and they include large timbers bolted or cabled together (timber mats). Corduroy roads, which are not considered to be swamp mats, are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another.

18. Temporary Fill. Fill placed into waters of the U.S. (including wetlands) totaling greater than or equal to 4,300 SF (15,000 SF if a DEP Tier One Permit is issued) in total area (i.e., the sum of permanent and temporary fill areas) exceeds the Category 1 threshold and may not be discharged without written authorization from the Corps. When temporary fill is used (e.g., access roads, swamp mats, cofferdams), it shall be stabilized and maintained during construction in such a way as to prevent soil eroding into portions of waters of the U.S. where it is not authorized. Swamp or timber mats (see Gen.Cond. 17 above) are considered as temporary fill when they are removed immediately upon work completion. The area must be restored in accordance with Gen.Cond. 19.

- Unconfined temporary fill authorized for discharge into flowing water (rivers and streams) shall consist only of clean washed stone.
- Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric laid on the pre-construction wetland grade. (Swamp and timber mats are excluded from this requirement.)
- Temporary fill shall be removed as soon as it is no longer needed, and it shall be disposed of at an upland site and suitably contained to prevent subsequent erosion into waters of the U.S.
- Waters of the U.S. where temporary fill was discharged shall be restored (see Gen.Cond. 19).
- No temporary work shall drain a water of the U.S. by providing a conduit for water on or below the surface.

19. Restoration.

- Upon completion of construction, all disturbed wetland areas (the disturbance of these areas must be authorized) shall be stabilized with a wetland seed mix containing only plant species native to New England.
- The introduction or spread of invasive plant species in disturbed areas shall be controlled.
- In areas of authorized temporary disturbance, if trees are cut they shall be cut at ground level and not uprooted in order to prevent disruption to the wetland soil structure and to allow stump sprouts to revegetate the work area, unless otherwise authorized.
- Wetland areas where permanent disturbance is not authorized shall be restored to their original condition and elevation, which under no circumstances shall be higher than the pre-construction elevation. Original condition means careful protection and/or removal of existing soil and vegetation, and replacement back to the original location such that the original soil layering and vegetation schemes are approximately the same, unless otherwise authorized.

20. Coastal Bank Stabilization. Projects involving construction or reconstruction/maintenance of bank stabilization structures within Corps jurisdiction should be designed to minimize environmental effects, effects to neighboring properties, scour, etc. to the maximum extent practicable. For example, vertical bulkheads should only be used in situations where reflected wave energy can be tolerated. This generally eliminates bodies of water where the reflected wave energy may interfere with or impact on harbors, marinas, or other developed shore areas. A revetment is sloped and is typically employed to absorb the direct impact of waves more effectively than a vertical seawall. It typically has a less adverse effect on the beach in front of it, abutting properties and wildlife. For more information, see the Corps Coastal Engineering Manual (supersedes the Shore Protection Manual), located at http://chl.erdc.usace.army.mil. Select "Products/ Services," "Publications." Part 5, Chapter 7-8, a(2)c is particularly relevant.

21. Sedimentation and Erosion Control. Adequate sedimentation and erosion control management measures, practices and devices, such as phased construction, vegetated filter strips, geotextile silt fences, hay bales or other devices, shall be installed and properly maintained to reduce erosion and retain sediment on-site during and after construction. They shall be capable of preventing erosion, of collecting sediment, suspended and floating materials, and of filtering fine sediment. These devices must be removed in a timely manner upon completion of work, but not until the disturbed areas have been stabilized. The sediment collected by these devices shall be removed and placed at an upland location in a manner that will prevent its later erosion into a waterway or wetland. All exposed soil and other fills shall be permanently stabilized at the earliest practicable date.

22. Waterway Crossings.
(a) All temporary and permanent crossings of waterbodies (waterways and wetlands) shall be suitably culverted, bridged, or otherwise designed to withstand and to prevent the restriction of high flows, to maintain existing low flows, and to not obstruct the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction. (NOTE: Areas of fill and/or cofferdams must be included in total waterway/wetlands impacts to determine applicability of this PGP).
(b) Aquatic Life Movements. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. For new permanent crossings, open bottom arches, bridge spans or embedded culverts are generally preferred over traditional culverts and should be installed when practicable. Coordination with the Corps is recommended for Category 1 projects when site constraints (e.g., placing footings) may render open bottom arches, bridge spans or embedded culverts impractical. In these cases, well-designed culverts may actually perform better. Culverts shall be installed with their inverts embedded below existing streambed grade to avoid "hanging" and associated impediments to fish passage. The "Design of Road Culverts for Fish Passage" provides design guidance and is available at www.nae.usace.army.mil, "Regulatory/Permitting," "Other."
(c) Culverts at waterbody crossings shall be installed in such a manner as to preserve hydraulic connectivity, at its present level, between the wetlands on either side of the road. The permittee shall take necessary measures to correct wetland damage due to lack of hydraulic connectivity.
(d) Culverts and bridges shall span the waterway a minimum of 1.2 times the bankfull width in probable fish bearing waterways to qualify as a Category 1 non-reporting activity. See "Design of Road Culverts for Fish Passage," referenced in (b) above, for information on bankfull width.

(e) Projects using slip lining (retrofitting an existing culvert by inserting a smaller diameter pipe), plastic pipes, and High Density Polyethylene Pipes (HDPP) are not allowed as non-reporting Category 1 activities, either as new work or maintenance activities.
(f) Waterbody crossings shall be culverted to at least municipal or State standards. The Maine DEP's stream crossing standards are at 06-096, Chapter 305: Permit by Rule, Section 10. Stream crossings (bridges, culverts and fords).
(g) Waterway crossings proposed by the Maine Dept. of Transportation should conform to the MDOT Fish Passage Policy and Design Guides.
(h) Construction equipment shall not cross streams without the use of temporary bridges, culverts, or cofferdams.
(i) For projects that otherwise meet the terms of Category 1, in-stream construction work shall be conducted during the low flow period July 15 - October 1 in any year. Projects that are not to be conducted during that time period are ineligible for Category 1 and shall be screened pursuant to Category 2, regardless of the waterway and wetland fill and/or impact area.

23. Discharge of Pollutants. All activities involving any discharge of pollutants into waters of the U.S. authorized under this PGP shall be consistent with applicable water quality standards, effluent limitations, standards of performance, prohibitions, and pretreatment standards and management practices established pursuant to the CWA (33 USC 1251) and applicable State and local laws. If applicable water quality standards, limitations, etc., are revised or modified during the term of this PGP, the authorized work shall be modified to conform with these standards within six months of the effective date of such revision or modification, or within a longer period of time deemed reasonable by the District Engineer in consultation with the Regional Administrator of the EPA. Applicants may presume that State water quality standards are met with the issuance of a LURC or DEP NRPA permit.

24. Spawning Areas. Discharges of dredged or fill material, and/or suspended sediment producing activities in fish and shellfish spawning or nursery areas and amphibian and waterfowl breeding areas during spawning or breeding seasons shall be avoided. During all times of year, impacts to these areas shall be avoided or minimized to the maximum extent practicable.

25. Storage of Seasonal Structures. Coastal structures, such as pier sections and floats, that are removed from the waterway for a portion of the year (often referred to as seasonal structures) shall be stored in an upland location located above mean high water (MHW) and not in tidal wetlands. These seasonal structures may be stored on the fixed, pile-supported portion of the structure that is seaward of MHW. This is intended to prevent structures from being stored on the marsh substrate and the substrate seaward of MHW. Seasonal storage of structures in navigable waters, e.g., in a protected cove on a mooring, requires Corps and local harbormaster approval.

26. Environmental Functions and Values. The permittee shall make every reasonable effort to carry out the construction or operation of the work authorized herein in a manner so as to maintain as much as is practicable, and minimize any adverse impacts on existing fish, wildlife, and natural environmental functions and values.

27. Protection of Vernal Pools. Impacts to uplands in proximity (within 500 feet) to the vernal pools referenced in Appendix A - Definitions of Categories, shall be minimized to the maximum extent possible.

Procedural Conditions

28. Cranberry Development Projects. For cranberry development projects authorized under the PGP, the following conditions apply:

- If a cranberry bog is abandoned for any reason, the area must be allowed to revert to natural wetlands unless an Individual Permit is obtained from the Corps allowing the discharge of fill for an alternate use.
- No stream diversion shall be allowed under this permit.
- No impoundment of perennial streams shall be allowed under this permit.
- The project shall be designed and constructed to not cause flood damage on adjacent properties.

29. Inspections. The permittee shall allow the District Engineer (DE) or his authorized representative(s) to make periodic inspections at any time deemed necessary in order to ensure that the work is being performed in accordance with the terms and conditions of this permit. The DE may also require post-construction engineering drawings for completed work and post-dredging survey drawings for any dredging work.

30. Work Start Notification Form and Compliance Certification. Every permittee who receives a written Category 1 or 2 PGP authorization from the Corps must submit a 1) Work Start Notification Form (WSNF) two weeks before work commencement, and 2) signed Compliance Certification Form within one month following the completion of the authorized work and any required mitigation (but not mitigation monitoring, which requires separate submittals). The Corps will forward the blank WSNF and Compliance Certification Form with the authorization letter. The Compliance Certification Form will include: (a) a statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions; (b) a statement that any required mitigation was completed in accordance with the permit conditions; and (c) the signature of the permittee certifying the completion of the work and mitigation.

31. Maintenance. The permittee shall maintain the work or structures authorized herein in good condition and in conformance with the terms and conditions of this permit. This does not include maintenance of dredging projects. Maintenance dredging is subject to the review thresholds in Appendix A and/or any conditions included in a written Corps authorization. Maintenance dredging includes only those areas and depths previously authorized and dredged. Some maintenance activities may not be subject to regulation under Section 404 in accordance with 33 CFR 323.4(a)(2).

32. Property Rights. This permit does not convey any property rights, either in real estate or material, or any exclusive privileges, nor does it authorize any injury to property or invasion of rights or any infringement of Federal, State, or local laws or regulations. If property associated with work authorized by the PGP is sold, the PGP authorization is automatically transferred to the new property owner. The new property owner should provide this information to the Corps in writing. No acknowledgement from the Corps is necessary.

33. Modification, Suspension, and Revocation. This permit may be either modified, suspended, or revoked, in whole or in part, pursuant to the policies and procedures of 33 CFR 325.7. Any such action shall not be the basis for any claim for damages against the United States.

34. Restoration. The permittee, upon receipt of a notice of revocation of authorization under this permit, shall restore the wetland or waterway to its former condition without expense to the United States and as directed by the Secretary of the Army or his authorized representative. If the permittee fails to comply with such a directive, the Secretary or his designee may restore the wetland or waterway to its former condition, by contract or otherwise, and recover the cost from the permittee.

35. Special Conditions. The Corps, independently or at the request of the Federal resource agencies, may impose other special conditions on a project authorized pursuant to this general permit that are determined necessary to minimize adverse environmental effects or based on any other factor of the public interest. Failure to comply with all conditions of the authorization, including special conditions, will constitute a permit violation and may subject the permittee to criminal, civil, or administrative penalties or restoration.

36. False or Incomplete Information. If the Corps makes a determination regarding the eligibility of a project under this permit and subsequently discovers that it has relied on false, incomplete, or inaccurate information provided by the permittee, the permit shall not be valid and the government may institute appropriate legal proceedings.

37. Abandonment. If the permittee decides to abandon the activity authorized under this general permit, unless such abandonment is merely the transfer of property to a third party, he/she must restore the area to the satisfaction of the District Engineer.

Duration of Authorization/Grandfathering:

38. Duration of Authorization. This PGP expires five years from the effective date listed at the top of Page 1. Activities authorized under Category 1 of this PGP that have commenced (i.e., are under construction) or are under contract to commence in reliance upon this PGP's authorization will remain authorized provided the activity is completed within 12 months of the PGP's expiration date. Activities authorized under Category 2 of this PGP will remain authorized in accordance with the project-specific date that the Corps provides to the permittee in the PGP authorization letter, unless:
(a) The PGP is either modified or revoked, or
(b) Discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 325.2 (e)(2).

39. Previously Authorized Activities.
(a) Activities completed under the authorizations of past PGPs that were in effect at the time the activity was completed will continue to be authorized by those PGPs.
(b) Completed projects that have received written verification or approval from the Corps, based on applications made to the Corps prior to issuance of this PGP or the previous nationwide permits, regional general permits, or letters of permission shall remain authorized as specified in each authorization.
(c) Activities authorized pursuant to 33 CFR Part 330.3 ("Activities occurring before certain dates") are not affected by this PGP.

VI. CONTACTS FOR MAINE PROGRAMMATIC GENERAL PERMIT:

1. FEDERAL

U.S. Army Corps of Engineers
Maine Project Office
675 Western Avenue #3
Manchester, Maine 04351
(207) 623-8367
(207) 623-8206 (fax)

Federal Endangered Species
U.S. Fish and Wildlife Service
Maine Field Office
1168 Main Street
Old Town, Maine 04468
(207) 827-5938
207-827-6099 (fax)

Federal Endangered Species & Essential Fish Habitat
National Marine Fisheries Service
One Blackburn Drive
Gloucester, Massachusetts 01939
(978) 281-9102
(978) 281-9301 (fax)

Wild and Scenic Rivers
National Park Service
North Atlantic Region
15 State Street
Boston, Massachusetts 02109
(617) 223-5203

Bridge Permits
Commander (obr)
First Coast Guard District
One South Street - Battery Bldg
New York, New York 10004
(212) 668-7021

2. STATE OF MAINE

Maine Department of Environmental Protection
(For State Permits & Water Quality Certifications)
Division of Land Resource Regulation
Bureau of Land and Water Quality
17 State House Station
Augusta, Maine 04333
(207) 287-2111

Southern Maine Regional Office
312 Canco Road
Portland, Maine 04103
(201) 822-6300

Eastern Maine Regional Office
106 Hogan Road
Bangor, Maine 04401
(207) 941-4570

Northern Maine Regional Office
1235 Central Drive - Skyway Park
Presque Isle, Maine 04769
(207) 764-0477

Maine Land Use Regulation Commission (LURC)
[call (800) 452-8711 for appropriate LURC office]
22 State House Station
Augusta, ME 04333-0022
(207) 287-2631
(207) 287-7439 (fax)

45 Radar Road
Ashland, ME 04732-3600
(207) 435-7963
(207) 435-7184 (fax)

Lakeview Drive
P.O. Box 1107
Greenville, ME 04441
(207) 695-2466
(207) 695-2380 (fax)

(For CZM Determinations)
State Planning Office
Coastal Program
184 State Street
State House Station 38
Augusta, Maine 04333
(207) 287-1009

(For Submerged Lands Leases)
Maine Department of Conservation
Bureau of Parks and Lands
22 State House Station
Augusta, Maine 04333
(207) 287-3061

191 Main Street
East Millinocket, ME 04430
(207) 746-2244
(207) 746-2243

(For Aquaculture Leases)
Maine Department of Marine Resources
P.O. Box 8
West Boothbay Harbor, Maine 04575
(207) 633-9500

3. HISTORIC PROPERTIES

Maine Historic Preservation Commission
State House Station 65
Augusta, Maine 04333-0065
(207) 287-2132
(207) 287-2335 (fax)

Aroostook Band of Micmacs
Attn: Mr. Williams Phillips, Chief
7 Northern Road
Presque Isle, Maine 04769
(207) 764-1972
(207) 764-7667 (fax)

Houlton Band of Maliseet Indians
Attn: Tribal Chief
88 Bell Road
Littleton, Maine 04730
(207) 532-4273, x215
(207) 532-2660 (fax)

Passamaquoddy Tribe of Indians
Pleasant Point Reservation
Attn: Tribal Council
P.O. Box 343
Perry, Maine 04667
(207) 853-2600
(207) 853-6039 (fax)

Passamaquoddy Tribe of Indians
Indian Township Reservation
Attn: Donald Soctomah, THPO
P.O. Box 301
Princeton, Maine 04668
(207) 796-2301
(207) 796-5256 (fax)

Penobscot Indian Nation
Indian Island Reservation
Attn: Ms. Bonnie Newsom, THPO
12 Wabanaki Way
Indian Island, Maine 04468
(207) 817-7471
(207) 817-7450 (fax)

4. ORGANIZATIONAL WEBSITES:

Army Corps of Engineers	www.nae.usace.army.mil (click "Regulatory/Permitting")
Corps of Engineers Headquarters	www.usace.army.mil (click "Services for the Public")
Environmental Protection Agency	www.epa.gov/owow/wetlands/
National Marine Fisheries Service	www.nmfs.noaa.gov
U.S. Fish and Wildlife Service	www.fws.gov
National Park Service	www.nps.gov/rivers/index.html
State of Maine	www.maine.gov
State of Maine -Aquaculture Guidelines	www.maine.gov/dmr/aquaculture/index.htm

for Christine J. Hrey 10-11-05
District Engineer Date

APPENDIX A: DEFINITION OF CATEGORIES

A. INLAND WATERS AND WETLANDS	**Inland Waters and Wetlands:** Waters that are regulated under Section 404 of the Clean Water Act, including rivers, streams, lakes, ponds and wetlands, and excluding Section 10 Navigable Waters of the U.S. The jurisdictional limits are the ordinary high water (OHW) mark in the absence of adjacent wetlands, beyond the OHW mark to the limit of adjacent wetlands when adjacent wetlands are present, and the wetland limit when only wetlands are present. For the purposes of this PGP, fill placed in the area between the mean high water (MHW) and the high tide line (HTL), and in the bordering and contiguous wetlands[1] to tidal waters are reviewed in the Navigable Waters section. (See II. Navigable Waters on the next page.)		
	CATEGORY 1	**CATEGORY 2**	**INDIVIDUAL PERMIT**
(a) NEW FILL/ EXCAVATION DISCHARGES	<4,300 SF inland waterway and/or wetland fill and associated secondary impacts (e.g., areas drained, flooded, cleared or excavated). Fill area includes all temporary and permanent fill, and excavation discharges (except for incidental fallback). Swamp mats are considered as fill. [See General Condition (GC) 18.] Provided: • In-stream (e.g., rivers, streams, brooks, etc.) work limited to Jul 15 - Oct 1 • In-stream work of up to 4,300 SF of fill below OHW in waterways not designated as EFH for Atlantic salmon (see GC 11, Page 9) and performed in accordance with Maine Permit By Rule standards or a LURC permit. • Waterway crossings shall comply with GC 22. • Projects covered by a DEP Tier One permit with no cumulative impacts >15,000 SF in inland wetlands from previous permits, unauthorized work, and/or other state permits. • Subdivision fill complies with GC 5, Single and Complete Projects (see Page 7). This category excludes: • Dams, dikes or activities involving water diversions.[2] • Non-State approved sediment releases/sluices from dams. • Open trench excavation in flowing waters (see GC 22, Page 12).	4,300 SF to <3 acres inland waterway and/or wetland fill and associated secondary impacts (e.g., areas drained, flooded, cleared or excavated). Fill area includes all temporary and permanent fill, and excavation discharges (except for incidental fallback). Swamp mats filling any area ≥4,300 SF are reviewed in Category 2. (See GC 18, Page 11.) Includes: In-stream work, including crossings (other than spanned crossing as described in Category 1) with any discharge of fill below ordinary high water in perennial waterways designated as EFH for Atlantic salmon. Time of year restrictions determined case-by-case. Projects with proactive restoration as a primary purpose with impacts of any area ≥4,300 SF. The Corps, in consultation with State & Federal agencies, must determine that net adverse effects are not more than minimal. Specific activities with impacts of any area ≥4,300 SF required to affect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority. Wetlands must be restored in place.	≥3 acres inland waterway and/or wetland fill and secondary impacts (e.g., areas drained, flooded, cleared or excavated). Fill area includes all temporary and permanent fill, and excavation discharges (except for incidental fallback).[5] EIS required by the Corps. In-stream work exceeding Category 2 limits.

	CATEGORY 1	CATEGORY 2	INDIVIDUAL PERMIT
	• Work in waters designated as EFH for Atlantic salmon (see GC 11, Page 9), unless the waterway is crossed with a span and footprints of the span abutments are outside ordinary high water with no more than 4,300 SF of associated wetland impact. • Work in Special Inland Waters or Wetlands[3] (vernal pools). • Work in special aquatic sites (SAS)[4] other than wetlands. • Work within ¼ mile of a Wild and Scenic River (see GC 12, Page 9). • Work on National Lands (see GC 9, Pg. 9). • Work affecting threatened or endangered species (see GC 10, Page 9) or EFH salmon migration (see GC 11, Page 9).		
(b) BANK STABILIZATION PROJECTS	Inland bank stabilization <100 FT long and <1 CY of fill per linear foot below OHW. Provided: • In-stream work limited to Jul 15 - Oct 1. • No work in special inland waters & wetlands[3] and SAS[4]. • No open trench excavation in flowing waters (see GC 22, Page 12). • No structures angled steeper than 3H:1V allowed. Only rough-faced stone or fiber roll revetments allowed. • No work affects threatened or endangered species (see GC 10, Page 9) or EFH (see GC 11, Page 9).	Inland bank stabilization ≥100 FT long and/or ≥1 CY of fill per linear foot, or any amount with fill in wetlands.	
(c) REPAIR AND MAINTENANCE OF AUTHORIZED FILLS	Repair or maintenance of existing, currently serviceable, authorized fills with no substantial expansion or change in use. *Conditions of the original authorization apply, however minor deviations in fill design allowed.[6]	Replacement of non-serviceable fills, or repair/maintenance of serviceable fill, with expansion <3 acres, or with a change in use.	Replacement of non-serviceable fill, or repair/maintenance of serviceable fill, with expansion ≥1 acre.

II. NAVIGABLE WATERS	**Navigable Waters of the United States:** Waters that are subject to the ebb and flow of the tide and Federally designated navigable rivers (the Penobscot River, Kennebec River, and Lake Umbagog) (Section 10 Rivers and Harbors Act of 1899). The jurisdictional limits are the mean high water (MHW) line in tidal waters and the ordinary high water (OHW) mark in non-tidal portions of the Federally designated navigable rivers. For the purposes of this PGP, fill placed in the area between the mean high water (MHW) and the high tide line (HTL), and in the bordering and contiguous wetlands[1] to tidal waters are also reviewed in this Navigable Waters section.		
	CATEGORY 1	**CATEGORY 2**	**INDIVIDUAL PERMIT**
(a) FILL	Discharges of dredged or fill material incidental to the construction of bridges across navigable waters of the United States, including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills provided the U.S. Coast Guard authorizes such discharges as part of the bridge permit. Causeways and approach fills are not included in this category and require Category 2 or Individual Permit authorization.	<1 acre fill and/or secondary waterway impacts (e.g., areas drained, flooded or cleared). Fill includes temporary and permanent waterway fill. Temporary fill or excavation <1 acre in SAS[4]. Permanent fill or excavation <1,000 SF in SAS[4]. Permanent fill and/or excavation ≥1,000 SF in SAS[5] when associated with a project with proactive restoration as a primary purpose. The Corps, in consultation with Federal & state agencies, must determine that net adverse effects are not more than minimal. Specific activities with impacts of any area required to affect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored by a government agency with established legal or regulatory authority. Wetlands must be restored in place.	≥1 acre waterway fill and/or secondary waterways or wetland impacts (e.g., areas drained, flooded or cleared). Fill includes temporary and permanent waterway fill. Temporary fill or excavation ≥1 acre in SAS[4]. Permanent fill or excavation ≥1,000 SF in SAS[4] other than as specified in Cat. 2 EIS required by the Corps.
(b) REPAIR AND MAINTENANCE WORK	Repair or maintenance of existing, currently serviceable, authorized structure or fill with no substantial expansion or change in use. *Conditions of the original authorization apply. Must be rebuilt in same footprint, however minor deviations in structure design allowed[6]	Replacement of non-serviceable structures and fills or repair/maintenance of serviceable structures or fills, with fill, replacement or expansion <1 acre, or with a change in use.	Replacement of non-serviceable structures and fills or repair/ maintenance of serviceable structures or fill, with replacement or expansion ≥1 acre.

	CATEGORY 1	CATEGORY 2	INDIVIDUAL PERMIT
(c) DREDGING AND ASSOCIATED DISPOSAL	Maintenance dredging for navigational purposes <1,000 cy with upland disposal. Includes return water from upland contained disposal area. Provided: • Proper siltation controls are used. • Dredging & disposal operation limited to November 1 - January 15. • No impact to special aquatic sites[4]. • No dredging in intertidal areas. • No work affects threatened or endangered species (see GC 10, Page 9) or EFH salmon migration (see GC 11, Page 9).	Maintenance dredging ≥1,000 CY, new dredging <25,000 CY, or projects not meeting Category 1. Includes return water from upland contained disposal areas. Provided: • Disposal includes 1) upland, 2) beach nourishment (above MHW) of any area provided dredging's primary purpose is navigation or sand is from an upland source and Corps, in consultation w/Federal and State agencies, determines the net adverse effects are not more than minimal; and 3) open water & confined aquatic disposal, if Corps, in consultation with Federal and State agencies, finds the material suitable.	Maintenance dredging and/or disposal (any amount) in or affecting a SAS[4]. See II(a) above for dredge disposal in wetlands or waters. New dredging ≥25,000 CY, or any amount in or affecting SAS[4]. Beach nourishment associated with dredging when the primary purpose is not navigation (i.e., aggregate/sand mining) or the material is from an upland source.
(d) MOORINGS	Private, non-commercial, non-rental, single-boat moorings authorized by the local harbormaster. Provided: • Not associated with any boating facility[7] • Not located in a Federal Navigation Project other than a Federal Anchorage. Moorings in Federal Anchorage not associated with a boating facility[7]. • No interference with navigation • Not located in vegetated shallows[8] • Within ¼ mile of the owner's residence or a public access point.[9] Minor relocation of previously authorized moorings and moored floats consistent with Harbormaster recommendations, provided it is also consistent with local regulations, is not located in vegetated shallows, and does not interfere with navigation.	Moorings associated with a boating facility[7]. Moorings that don't meet the terms in Category 1 and don't require an Individual Permit. Moorings located such that they, and/or vessels docked or moored at them, are within the buffer zone of the horizontal limits[10] of a Corps Federal Channel. (See Appendix B.) The buffer zone is equal to three times the authorized depth of that channel.	Moorings within the horizontal limits[10], or with moored vessels that extend, into the horizontal limits of a Federal Navigation Project (See App. B), except those in Federal Anchorages under Category 1. Note: Federal Navigation Projects include both Federal Channels and Federal Anchorages.

	CATEGORY 1	CATEGORY 2	INDIVIDUAL PERMIT
(e) STRUCTURES AND FLOATS	Reconfiguration of existing authorized structures or floats. Provided: • Structures not positioned over vegetated shallows[8] or salt marsh. • Floats supported off substrate at low tide. • No dredging, additional slips or expansion. • No work affects threatened or endangered species (see GC 10, Page 9) or EFH salmon migration (see GC 11, Page 9)..	Private structures or floats, including floatways/skidways, built to access waterway (seasonal and permanent) Expansions to existing boating facilities[7]. Compliance with the following is recommended, but not required: • Pile-supported structures <400 SF, with attached floats totaling ≤200 SF. • Bottom anchored floats ≤200 SF. • Structures are ≤4' wide and have at least a 1:1 height:width ratio[11]. • Floats supported above the substrate during all tides. • Structures & floats not located within 25' of any vegetated shallows[8]. • Moored vessels not positioned over SAS[4]. • No structure located within 25' of the riparian property boundary. • No structure extends across >25% of the waterway width at mean low water. • Not located within the buffer zone of the horizontal limits[10] of a Corps Federal Navigation Project (FNP) (See App. B). The buffer zone is equal to three times the authorized depth of that FNP.	Structures or floats, including floatways/skidways, located such that they and/or vessels docked or moored at them are within the horizontal limits of a Corps Federal Navigation Project (see App. B). Structures and floats associated with a new or previously unauthorized boating facility[7]. Note: Federal Navigation Projects include both Federal Channels and Federal Anchorages.
(f) MISCELLANEOUS	Temporary buoys, markers, floats, etc. for recreational use during specific events, provided they are removed within 30 days after use is discontinued. The placement of aids to navigation and regulatory markers which are approved by and installed in accordance with the requirements of the U.S. Coast Guard. (See 33 CFR part 66, Chapter I, subchapter C)."	Structures or work in or affecting tidal or navigable waters, that are not defined under any of the previous headings listed above. Includes, but is not limited to, utility lines, aerial transmission lines, pipelines, outfalls, boat ramps, floatways/skidways, bridges, tunnels and horizontal directional drilling activities seaward of the MHW line.	EIS required by the Corps. Shellfish/finfish (other than Atlantic salmon), or other aquaculture facilities with more than minimal individual and cumulative impacts to environmental resources or navigation. A 25' eelgrass set back is recommended.

	Oil spill clean-up temporary structures or fill. Fish/wildlife harvesting structures/fill (as defined by 33 CFR 330, App. A-4) Scientific measurement devices and survey activities such as exploratory drilling, surveying and sampling activitities. Does not include oil and gas exploration and fill for roads or construction pads. Shellfish seeding (brushing the flats[12]) projects. Provided: • No work in National Wildlife Refuges. • No work affects threatened or endangered species (see GC 10, Page 9) or EFH salmon migration (see GC 11, Page 9).	Shellfish/finfish (other than Atlantic salmon), or other aquaculture facilities with no more than minimal individual and cumulative impacts to environmental resources or navigation. A 25' eelgrass set back is recommended. Aquaculture guidelines are provided at: www.maine.gov/dmr/aquaculture/index.htm.	Aquaculture guidelines are provided at: www.maine.gov/dmr/aquaculture/index.htm.

[1] **Bordering and Contiguous Wetlands:** A bordering wetland is immediately next to its adjacent waterbody and may lie at, or below, the ordinary highwater mark (MHW in navigable waters) of that waterbody and is directly influenced by its hydrologic regime. Contiguous wetlands extend landward from their adjacent waterbody to a point where a natur or manmade discontinuity exists. Contiguous wetlands include bordering wetlands as well as wetlands that are situated immediately above the ordinary highwater mark and above th normal hydrologic influence of their adjacent waterbody. Note, with respect to the Federally designated navigable rivers, the wetlands bordering and contiguous to the tidally influenced portions of those rivers are reviewed under "II. Navigable Waters."

[2] **Water Diversions:** Water diversions are activities such as bypass pumping or water withdrawals. Temporary flume pipes, culverts or cofferdams where normal flows are maintaine within the stream boundary's confines aren't water diversions. "Normal flows" are defined as no change in flow from pre-project conditions.

[3] **Special Inland Waters and Wetlands:** Vernal Pools - Temporary to permanent bodies of water occurring in shallow depressions that fill during the spring and fall and may dry during the summer. Vernal pools have no permanent or viable populations of predatory fish. Vernal pools provide the primary breeding habitat for wood frogs, spotted salamanders, blue-spotted salamanders, and fairy shrimp, and provide habitat for other wildlife including several endangered and threatened species.

[4] **Special Aquatic Sites:** Includes wetlands and saltmarsh, mudflats, riffles and pools, and vegetated shallows.

[5] **IP Required:** The greater the impacts, the more likely an Individual Permit will be required. The Corps will determine the need for compensatory mitigation on a case-by-case basi

[6] **Maintenance:** Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards, which are necessary to make repair, rehabilitation, or replacement are permitted, provided the adverse environmental effects resulting from such repair, rehabilitatior or replacement are minimal. No seaward expansion for bulkheads or any other fill activity is considered Category 1 maintenance. Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

[7] **Boating Facilities:** Facilities that provide, rent, or sell mooring space, such as marinas, yacht clubs, boat clubs, boat yards, town facilities, dockominiums, etc.

[8] **Vegetated Shallows:** Subtidal areas that support rooted aquatic vegetation such as eelgrass

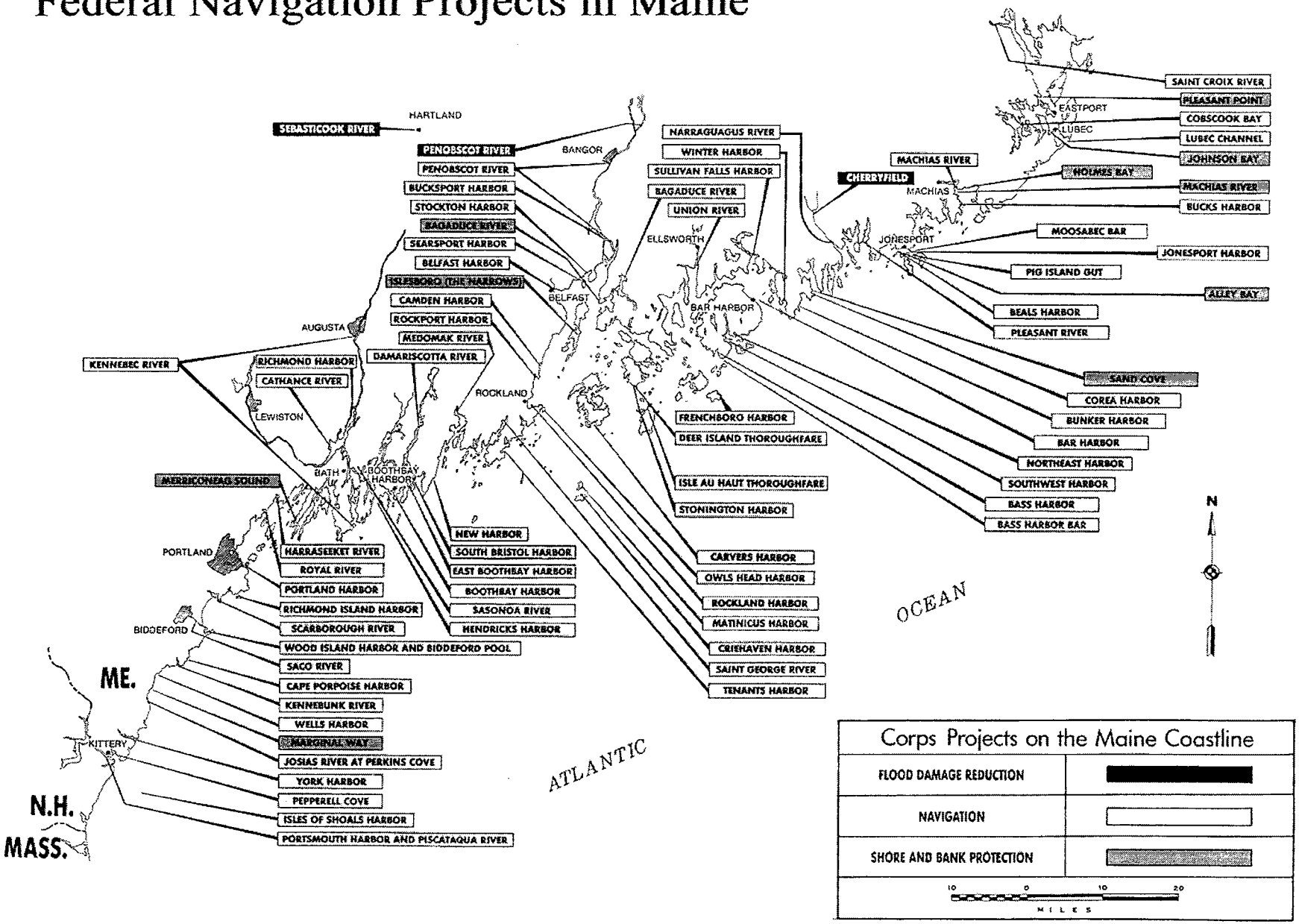
[9] **Mooring Location:** Cannot be at a remote location to create a convenient transient anchorage.

[10] **Horizontal Limits:** The outer edge of a Federal Navigation Project (FNP). Contact the Corps of Engineers for information on FNP's.

[11] **Structures:** The height of structures shall at all points be equal to or exceed the width of the deck. For the purpose of this definition, height shall be measured from the marsh substrate to the bottom of the longitudinal support beam.

[12] **Brushing the Flats:** The placement of tree boughs, wooden lath structure, or small-mesh fencing on mudflats to enhance recruitment of soft-shell clams (*Mya arenaria*).

Federal Navigation Projects in Maine



DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)

PERMIT BY RULE NOTIFICATION FORM

(For use with DEP Regulation, Chapter 305)

■ **MDOT PIN: 12630.00**

Name of Applicant: State of Maine Department of Transportation **Name of Contact:** Ben Condon
Mailing Address: 16 Station State House **Town/City:** Augusta **State:** Me. **Zip Code:** 04330-0016
Daytime Telephone #: (207)-624-3074 **Name of Wetland, Water Body or Stream:** Back River

Detailed Directions to Site: Project is located on Barters Island Road at the bridge between Boothbay and Hodgdon Island.

Town/City: Boothbay/Hodgdon Island **Map #:** N/A **Lot #:** N/A **County:** Lincoln

Description of Project:. Project consists of bridge replacement. The project will be performed in accordance with erosion control measures conforming with the latest versions of the *State of Maine Department of Transportation Standard Specifications for Highways and Bridges* and the *Department of Transportation's Best Management Practices for Erosion and Sediment Control.*

Part of a larger project? ☐Yes ☒No

(**CHECK ONE**) This project... ☒ does ☐ does not ...involve work below mean low water.

I am filing notice of my intent to carry out work which meets the requirements for Permit By Rule (PBR) under DEP Regulation, Chapter 305. I have a copy of PBR Sections checked below. I have read and will comply with all of the standards.

☐Sec. (2) Soil Disturbance	☐Sec. (8) Shoreline stabilization	☐Sec. (14) Piers, Wharves & Pilings
☐Sec. (3) Intake Pipes	☐Sec. (9) Utility Crossing	☐Sec. (15) Public Boat Ramps
☐Sec. (4) Replacement of Structures	☐Sec. (10) Stream Crossing	☐Sec. (16) Coastal Sand Dune Projects
☐Sec. (5) REPEALED	☒Sec. (11) State Transport. Facilities	☐Sec. (17) Transfers/Permit Extension
☐Sec. (6) Movement of Rocks or Vegetation	☐Sec. (12) Restoration of Natural Areas	☐Sec. (18) Maintenance Dredging
☐Sec. (7) Outfall Pipes	☐Sec. (13) F&W Creation/Enhance/Water Quality Improvement	

I authorize staff of the Departments of Environmental Protection, Inland Fisheries & Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules. I also understand that ***this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.***

I have attached all of the following required submittals. **NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS:**

- ■ **A $55 (non-refundable) payment shall be done by internal billing.**
- ■ ***Attach* a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.**
- ❑ ***Attach* photographs showing existing site conditions (unless not required under standards).**

Signature of Applicant: John E. Dority, Chief Engineer **Date:** 08/28/08

Keep the bottom copy as a record of permit. Send the form with attachments via certified mail to the Maine Dept. of Environmental Protection **at the appropriate regional office listed below**. The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Permits are valid for two years. **Work carried out in violation of any standard is subject to enforcement action.**

AUGUSTA DEP STATE HOUSE STATION 17 AUGUSTA, ME 04333-0017 (207)287-2111 PORTLAND DEP 312 CANCO ROAD PORTLAND, ME 04103 (207)822-6300 BANGOR DEP 106 HOGAN ROAD BANGOR, ME 04401 (207)941-4570 PRESQUE ISLE DEP 1235 CENTRAL DRIVE PRESQUE ISLE, ME 04769 (207)764-0477

OFFICE USE ONLY	Ck.#	Staff		Staff	
PBR #	FP	Date	Acc. Date	Def. Date	After Photos

11. State transportation facilities

A. Applicability

(1) This section applies to the maintenance, repair, reconstruction, rehabilitation, replacement or minor construction of a State Transportation Facility carried out by, or under the authority of, the Maine Department of Transportation or the Maine Turnpike Authority, including any testing or preconstruction engineering, and associated technical support services.

(2) This section does not apply to an activity within a coastal sand dune system.

NOTE: The construction of a transportation facility other than roads and associated facilities may be subject to the Storm Water Management Law, 38 M.R.S.A. Section 420-D.

B. Standards

(1) Photographs of the area to be altered by the activity must be taken before work on the site begins. The photographs must be kept on file and be made available at the request of the DEP.

(2) The activity must be reviewed by the Department of Inland Fisheries and Wildlife, the Department of Marine Resources, and the Atlantic Salmon Authority. The activity must be performed according to any recommendations from these authorities.

(3) The activity must be performed in accordance with erosion control measures conforming with the State of Maine Department of Transportation Standard Specifications for Highways and Bridges Revision of April 1995 and with the Department of Transportation's Best Management Practices for Erosion and Sediment Control, September 1997.

NOTE: Guidance on the use of erosion control best management practices can be obtained from the on site Construction Manager.

(4) Alignment changes may not exceed a distance of 200 feet between the old and new center lines in any natural resource.

(5) The activity may not alter more than 300 feet of shoreline (both shores added together) within a mile stretch of any river, stream or brook, including any bridge width or length of culvert.

(6) The activity may not alter more than 150 feet of shoreline (both shores added together) within a mile stretch of any outstanding river segment identified in 38 M.R.S.A. 480-P, including any bridge width or length of culvert.

(7) The activity must minimize wetland intrusion. The activity is exempt from the provisions of Chapter 310, the Wetland Protection Rules, if the activity alters less than 15,000 square feet of natural resources per mile of roadway (centerline measurement) provided that the following impacts are not exceeded within the 15,000 square foot area:

(a) 1,000 square feet of coastal wetland consisting of salt tolerant vegetation or shellfish habitat; or

(b) 5,000 square feet of coastal wetland not containing salt tolerant vegetation or shellfish habitat; or

(c) 1,000 square feet of a great pond.

All other activities must be performed in compliance with all sections of Chapter 310, the Wetland Protection Rules, except 310.2(C), 5(A), 9(1), 9(B) and 9(C).

(8) The activity may not permanently block any fish passage in any watercourse containing fish. The applicant must improve passage beyond what restriction may already exist unless the Department of Inland Fisheries and Wildlife, the Department of Marine Resources, and the Atlantic Salmon Authority concur that the improvement is not necessary.

(9) Rocks may not be removed from below the normal high water line of any coastal wetland, freshwater wetland, great pond, river, stream or brook except to the minimum extent necessary for completion of work within the limits of construction.

(10) If work is performed in a river, stream or brook that is less than three feet deep at the time and location of the activity, with the exception of culvert installation, the applicant must divert flow away from the activity while work is in progress.

(a) Diversion may be accomplished by the use of stable, inert material. No more than two thirds (2/3) of stream width may be diverted at one time.

(b) Any material used to divert water flow must be completely removed upon completion of the activity, and the stream bottom must be restored to its original condition.

(c) A pump may be operated, where necessary, for a temporary diversion. The pump outlet must be located and operated such that erosion or the discharge of sediment to the water is prevented.

NOTE: Guidance on the appropriate location of a diversion and materials which should be used for a stream diversion can be obtained from the on site Construction Manager.

(11) Wheeled or tracked equipment may not operate in the water. Equipment operating on the shore may reach into the water with a bucket or similar extension. Equipment may cross streams on rock, gravel or ledge bottom.

(12) All wheeled or tracked equipment that must travel or work in a vegetated wetland area must travel and work on mats or platforms.

(13) Any debris or excavated material must be stockpiled either outside the wetland or on mats or platforms. Hay bales or silt fence must be used, where necessary, to prevent sedimentation. Any debris generated during the activity must be prevented from washing downstream and must be removed from the wetland or water body. Disposal

of debris must be in conformance with the Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. Section 1301 *et seq.*

(14) Work below the normal high water line of a great pond, river, stream or brook must be done at low water except for emergency work or work agreed to by the resource agencies listed in paragraph 2 above. Measures, such as a silt boom or staked fencing, must be employed to reduce and isolate turbidity.

(15) Perimeter controls must be installed before the work starts. Disturbance of natural resources beyond the construction limits shown on the plans is not allowed under this rule.

NOTE: Guidance on the location of construction limits can be obtained from the on site Construction Manager.

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(16) The use of untreated lumber is preferred. Lumber pressure treated with chromated copper arsenate (CCA) may be used, provided it is cured on dry land in a manner that exposes all surfaces to the air for a period of at least 21 days prior to construction. Wood treated with creosote or pentachlorophenol may not be used where it will contact water.

(17) A temporary road for equipment access must be constructed of crushed stone, blasted ledge, or similar materials that will not cause sedimentation or restrict fish passage. Such roads must be completely removed at the completion of the activity. In addition, any such temporary roads which are in rivers, streams or brooks, must allow for a passage of stormwater flows associated with a 10-year storm.

(18) Soil may not be disturbed during any period when soils are saturated due to rain or snow melt, except as necessary to protect work in progress or as required for bridge maintenance activities. Areas where soils are saturated (i.e. water drips from the soil when squeezed by hand, or the soil is capable of being rolled into a rod 1/8th inch in diameter that does not crumble) must be immediately mulched if they are disturbed.

(19) Disturbed soil must be protected within one week from the time it was last actively worked, and prior to any storm event, using temporary or permanent measures such as the placement of riprap, sod, mulch, erosion control blankets, or other comparable measures.

(20) Hay bale or straw mulch, where used, must be applied at a rate of at least one bale per 500 square feet (1 to 2 tons per acre).

(21) If mulch is likely to be moved because of steep slopes or wind exposure, it must be anchored with netting, peg and twine, binder or other suitable method and must be maintained until a catch of vegetation is established over the entire disturbed area.

(22) In addition to the placement of riprap, sod, erosion control blankets or mulch, additional steps must be taken where necessary to prevent sedimentation of the water Evidence of sedimentation includes visible sheet, rill or gully erosion, discoloration of water by suspended particles and/or slumping of banks. Silt fences, staked hay bales and other sedimentation control measures, where planned for, must be in place

prior to the commencement of an activity, but must also be installed whenever necessary to prevent erosion and sedimentation.

NOTE: Guidance on the location and proper installation of erosion control measures can be obtained from the on site Construction Manager.

(23) Temporary erosion control measures must be maintained and inspected weekly until the site is permanently stabilized with vegetation or other permanent control measures. Erosion control measures must also be inspected immediately prior to and following storms.

(24) Permanent erosion control measures protecting all disturbed areas must be implemented within 30 days from the time the areas were last actively worked, or for fall and winter activities by the following June 15, except where precluded by the type of activity (e.g. riprap, road surfaces, etc.). The permanent erosion control measures must be maintained.

(25) The applicant shall immediately take appropriate measures to prevent erosion or sedimentation from occurring or to correct any existing problems, regardless of the time of year.

(26) Non-native species may not be planted in restored areas.

(27) Disposal of debris must be in conformance with Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. Sections 1301 *et seq.*

(28) Disturbance of vegetation must be avoided, if possible. Where vegetation is disturbed outside of the area covered by any road or structure construction, it must be reestablished immediately upon completion of the activity and must be maintained.

(29) A vegetated area at least 25 feet wide must be established and maintained between any new stormwater outfall structure and the high water line of any open water body. A velocity reducing structure must be constructed at the outlet of the stormwater outfall that will create sheet flow of stormwater, and prevent erosion of soil within the vegetated buffer. If the 25 foot vegetated buffer is not practicable, the applicant must explain the reason for a lesser setback in writing. Approval from the DEP must be in writing and any recommendations must be incorporated into the activity.

C. Definitions. The following terms, as used in this chapter, have the following meanings, unless the context indicates otherwise:

(1) Diversion. A rerouting of a river, stream or brook to a location outside of its established channel.

(2) Fill. a. (verb) To put into or upon, supply to, or allow to enter a water body or wetland any earth, rock, gravel, sand, silt, clay, peat, or debris; b. (noun) Material, other than structures, placed in or immediately adjacent to a wetland or water body.

(3) Floodplain wetlands. Freshwater wetlands that are inundated with flood water during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Agency or other site specific information.

(4) Riprap. Rocks that are fit into place, usually without mortar, on a slope as defined in the State of Maine, Department of Transportation, Standard Specifications for Highway and Bridges, revision of April 1995.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

DEC 22 2009

Gary Kassof
United States Coast Guard
First Coast Guard District
One South Street
Battery Park Building
New York, NY 10004-1466

RE: Knickerbocker Bridge Replacement, Boothbay, Maine

Dear Mr. Kassof:

This responds to your December 1, 2009 request for consultation pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended, regarding the U.S. Coast Guard's proposed issuance of a permit to the Maine Department of Transportation (MDOT) for the replacement of the Knickerbocker Bridge over the Back River in Boothbay, Maine. The Coast Guard has made the preliminary determination that this proposed project is not likely to adversely affect listed shortnose sturgeon, listed Atlantic salmon or designated critical habitat and has requested NOAA's National Marine Fisheries Service's (NMFS) concurrence with this determination. This correspondence is based on information provided to NMFS in the December 1, 2009 letter from the Coast Guard.

NMFS Listed Species and Critical Habitat in the Action Area

The Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon (*Salmo salar*) is listed as endangered under the ESA. The GOM DPS includes all anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River. Included are all associated conservation hatchery populations used to supplement these natural populations; currently, such conservation hatchery populations are maintained at Green Lake National Fish Hatchery (GLNFH) and Craig Brook National Fish Hatchery (CBNFH). The project site in Boothbay, Maine is located within the GOM DPS of Atlantic salmon.

Critical habitat has been designated for listed Atlantic salmon pursuant to section 4(b)(2) of the ESA. The critical habitat designation for the GOM DPS includes 45 specific areas occupied by Atlantic salmon at the time of listing that include approximately 19,571 km of perennial River, stream, and estuary habitat and 799 square km of lake habitat within the range of the GOM DPS

and in which are found those physical and biological features essential to the conservation of the species. The entire occupied range of the GOM DPS in which critical habitat is designated is within the State of Maine. The project site in Boothbay, Maine is located within designated critical habitat for the Atlantic salmon GOM DPS.

Federally endangered shortnose sturgeon (*Acipenser brevirostrum*) occur in the estuarine complex formed by the Sheepscot, Kennebec, and Androscoggin rivers. A Schnabel estimate of 7,222 adult sturgeon was computed for the estuarine complex based on the results of a mark and recapture study conducted from 1977 to 1981. The project in Boothbay, Maine is within the range of listed shortnose sturgeon.

Proposed Action

The Coast Guard proposes to issue a permit under the General Bridge Act of 1946, as amended (33 USC 525) to the MDOT for the replacement of the existing, structurally-deficient Knickerbocker Bridge. The existing 520-ft long, 37 span bridge will be replaced with a 540-ft long, 8 span bridge supported on 7 pile bents. Six of the 7 new bents will have 5 piles each while the 7th bent will have 10 piles. Twenty-five steel piles will be 24-inch diameter and fifteen will be 26-inch diameter steel. A barge-mounted crane will likely be used to remove old piles and install new piles. Piles will be installed with a vibratory hammer. A barge mounted crane will also likely be used to install the superstructure (decking, roadway, etc.) of the new bridge. The existing bridge will be entirely removed by MDOT. Approximately 4,910 square feet of new fill will be placed in the Back River for the project. The Coast Guard anticipates that no new access road will be needed for the project.

With the exception of pile installation and removal, all work associated with removing the old bridge and constructing the new bridge will occur either in the dry at low tide or during a November 8th to April 9th work window. The Coast Guard proposes that pile driving and removal occur at any time of the year. Old piles will be removed either using a hydraulic saw and/or crane.

Effects of the Action

Several factors were considered in assessing the potential effects of this project on listed shortnose sturgeon, listed Atlantic salmon, and designated critical habitat. These include the frequency of occurrence of listed species in the project area and the likelihood that listed species or designated critical habitat, if present in the action area, would be impacted by the proposed action through harm or harassment, increased sedimentation, modification of spawning, rearing, or migratory habitat, or changes to hydraulics.

The Back River is a side-channel within the Sheepscot River estuary. The Sheepscot River estuary is located within the geographic range of listed shortnose sturgeon and listed Atlantic salmon, as well as within designated critical habitat for Atlantic salmon. The Sheepscot River estuary is known to provide rearing habitat for listed shortnose sturgeon. The Sheepscot River estuary is also a known migratory corridor for both juvenile and adult Atlantic salmon. However, as the Back River is a side-channel to the mainstem Sheepscot River, it is not likely to serve as a significant migratory pathway for Atlantic salmon. A migratory corridor free from physical and biological barriers that delay or prevent access of adult salmon seeking spawning

grounds or prevent emigration of smolts to the marine environment is identified in the critical habitat designation as essential for the conservation of Atlantic salmon. The hydraulic conditions of the Sheepscot River estuary are expected to remain effectively unchanged as a result of this project and the relatively small amount of fill for the project is not expected to significantly affect shortnose sturgeon foraging in the estuary.

With the exception of installing/removing piles, all work associated with the proposed project will occur either in the dry or during a November 8th to April 9th work window. During the winter months, no Atlantic salmon or shortnose sturgeon will occur in the Back River. In winter months, Atlantic salmon are found either in freshwater or in the open North Atlantic ocean feeding. Shortnose sturgeon within the Kennebec-Androscoggin-Sheepscot River estuarine complex typically overwinter in Merrymeeting Bay. Therefore, the only aspects of the proposed project with the potential to impact Atlantic salmon or shortnose sturgeon are pile driving and removal.

Pile Driving Noise Impacts

Forty piles will be installed within the Back River to construct the new Knickerbocker Bridge. The available literature indicates that the driving of 24"-26" diameter steel pipe piles, via a vibratory hammer, results in underwater noise levels of 161-176 dB_{SEL}[1] within 10 meters of the pile being installed (ICF Jones & Stokes and Illingworth and Rodkin Inc. 2009). These levels are dependent not only on the pile and hammer characteristics, but also on the geometry and boundaries of the surrounding underwater and benthic environment. As the distance from the source increases, underwater sound levels produced by pile driving are known to dissipate rapidly. Illinworth and Rodkin, Inc. (2007) have conducted underwater sound level measurements as far as 1,000 meters from various types of piles being driven. Using data from Illingworth and Rodkin, Inc. (2007), a conservative literature estimate of an attenuation rate of 5dB per 20-40meters (Illingworth and Rodkin, Inc., 2009) is expected when driving steel piles.

Pile driving affects fish through underwater noise and pressure which can cause effects to hearing and air containing organs, such as the swim bladder. Effects to fish can range from temporary avoidance of an area to death due to injury of internal organs. The type and size of pile, type of installation method (i.e., vibratory vs. hammer), type and size of fish (smaller fish are more often impacted), and distance from the sound source (i.e., sound dissipates over distance so noise levels are greater closer to the source) all contribute to the likelihood of effects to an individual fish. The available literature on effects of pile driving on aquatic species is difficult to summarize due to inconsistent methods of measuring underwater sound, the diversity of pile driving methods and receiving substrates, and the differing tolerances of aquatic species to underwater noise. Generally, however, the larger the pile and the closer a fish is to the pile, the greater the likelihood of effects.

Shortnose sturgeon

Popper et al. (2006) have proposed a set of criteria for injury to fish exposed to pile driving. They propose that non-continuous pile strikes which result in a sound exposure level (SEL) of 187 dB re 1 µPa as measured 10 meters from the source are expected to produce injuries to fish, while. As different fish species demonstrate differing sensitivities to sound levels and there is

little information on the effects of underwater noise on shortnose sturgeon, it is difficult to determine whether this criterion is appropriate for shortnose sturgeon.

While no studies have been conducted on the effects of pile driving on shortnose sturgeon, two studies have been conducted on the effects of blasting on this species. Both activities produce sound waves that would act similarly in the water column, making effects comparable. Moser (1999) studied the effects of rock blasting in Wilmington Harbor on caged hatchery reared shortnose sturgeon. A study done in the Cooper River, South Carolina, by Collins and Post (2001) tested the use of blasting caps to possibly repel shortnose sturgeon from a blasting site. These studies indicate that mortality of shortnose sturgeon only occurred when recorded sound levels were 234dB. At sound levels between 196-229 dB, some shortnose sturgeon were temporarily stunned. These studies suggest that, consistent with the recommendations by Popper et al. 2006, exposure of shortnose sturgeon to sound levels below 187dB is unlikely to result in effects to this species. Sound levels within the proposed project site (i.e., 161-176 dB_{SEL}) are below the range that could negatively affect shortnose sturgeon; therefore, all effects to shortnose sturgeon from exposure to underwater noise associated with pile driving will be insignificant.

Atlantic salmon

The best available information for Atlantic salmon suggests that noise below an upper threshold of 180 dB will protect fish from harm (Hastings 2002 as cited in Washington State Department of Transportation 2006). As noted above, the installation of piles is expected to result in underwater noise levels of 161-176 dB_{SEL}[1] within 10 meters of the pile being installed. As such, no Atlantic salmon will be exposed to underwater noise levels of 180dB and no Atlantic salmon will be injured or killed.

Noise generated by pile installation also has the potential for behavioral disruptions of adult Atlantic salmon during their upstream migration. Noise generated by pile installation could also temporarily affect designated critical habitat through the disruption of the migratory corridor. Sound pressure levels greater than 155dB can elicit avoidance behaviors and can stun small fish (NMFS 2003). Based upon this information, it is possible that Atlantic salmon could avoid areas of the Back River where sound levels are over 155 dB. Based on the information on noise attenuation presented above, sound levels greater than 155dB are expected to be experienced for a distance of no more than 120 meters from the pile being driven. The Back River in the vicinity of the proposed work is approximately 540 ft wide (164 meters). Because the project location is a side-channel to the mainstem Sheepscot River and noise levels are not expected to occur across the entire Back River, a safe zone-of-passage will exist in the river where noise levels are not expected to reach 155 dB. Thus, underwater noise associated with pile driving is not expected to affect the normal behaviors of migrating Atlantic salmon. As a result, any Atlantic salmon in the action area could move unimpeded through the action area and there would be no delay in migration or prevention of access to other areas within the estuary. In summary, any effects of exposure to sound resulting from the pile installation or removal on Atlantic salmon will be insignificant.

Sedimentation

Atlantic salmon and shortnose sturgeon can experience negative effects when exposed to high levels of suspended sediment or turbidity. Studies of the effects of turbid waters on fish suggest

that concentrations of suspended solids can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton 1993). The studies reviewed by Burton demonstrated lethal effects to fish at concentrations of 580mg/L to 700,000mg/L depending on species. Sublethal effects have been observed at substantially lower turbidity levels. In a review of the effects of sediment loads and turbidity on fish, Newcomb and Jensen (1996) concluded that more than 6 days exposure to total suspended solids (TSS) greater than 10 mg/l is a moderate stress for juvenile and adult salmonids. A single day exposure to TSS in excess of 50 mg/l is also a moderate stress to salmonids. Studies with striped bass adults showed that prespawners did not avoid concentrations of 954 to 1,920 mg/L to reach spawning sites (Summerfelt and Moiser 1976 and Combs 1979 in Burton 1993). While there have been no directed studies on the effects of TSS on shortnose sturgeon, shortnose sturgeon juveniles and adults are often documented in turbid water and Dadswell (1984) reports that shortnose sturgeon are more active under lowered light conditions, such as those in turbid waters. As such, shortnose sturgeon are assumed to be at least as tolerant to suspended sediment as other estuarine fish such as striped bass. The life stages of shortnose sturgeon most vulnerable to increased sediment are eggs and larvae which are subject to burial and suffocation. Early life stages of shortnose sturgeon are expected to experience adverse effects when exposed to TSS levels of 100mg/L or greater. However, no shortnose sturgeon eggs and/or larvae occur in the action area.

Installing and removing piles is expected to produce only minor amounts of sedimentation in the Back River. NMFS anticipates that TSS levels will remain well below 50 mg/l. Additionally, shortnose sturgeon and Atlantic salmon are expected to be able to temporarily avoid the area and continue normal behaviors nearby in adjacent portions of the river. Therefore, there would not be any disruption of essential behaviors such as migrating or foraging. Therefore, any effects of increased suspended sediment or turbidity on shortnose sturgeon or Atlantic salmon will be insignificant.

Effects on Critical Habitat

The Sheepscot River estuary in the vicinity of the project site is a known migratory corridor for both juvenile and adult Atlantic salmon. A migratory corridor free from physical and biological barriers that delay or prevent access of adult salmon seeking spawning grounds or prevent emigration of smolts to the marine environment is identified in the critical habitat designation as essential for the conservation of Atlantic salmon.

NMFS has analyzed the potential impacts of the project on designated critical habitat in the action area. NMFS has determined that the effects to critical habitat will be insignificant because:

1) the project will not result in a significant or permanent migration barrier to or through any estuarine habitat;
2) the project will not increase the risk of predation;
3) the project is not expected to significantly affect water quality at the time of any salmon migrations in the action area;
4) the project will not significantly affect the forage of juvenile or adult Atlantic salmon because of the timing and location; and,

5) any effects to the natural structure of the nearshore habitat is not expected to appreciably diminish the capacity of substrate, food resources, and natural cover to meet the conservation needs of listed Atlantic salmon.

Conclusions

Based on the determination that all effects, if adverse, will be insignificant or discountable, NMFS concurs with the USCG's determination that the proposed project is not likely to adversely affect the GOM DPS of Atlantic salmon, listed shortnose sturgeon, or designated critical habitat for the Atlantic salmon GOM DPS.

This concludes consultation pursuant to Section 7 of the ESA for this project. Re-initiation of consultation is required and shall be requested by the USCG or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or, (c) if a new species is listed or critical habitat designated that may be affected by the identified action. NMFS looks forward to continuing to work with you and your staff on issues related to Atlantic salmon and other listed species in Maine. Please contact Jeff Murphy (207) 866-7379 at our Maine Field Office for any questions regarding Atlantic salmon and this consultation.

Sincerely,

Patricia A. Kurkul
Regional Administrator

EC:
Mahaney – USFWS
Murphy, Crocker, Liebich, Lipsky – NMFS

File Code: Sec. 7 USCG Knickerbocker Bridge (Maine)
PCTS: I/NER/2009/06429

Environmental Summary Sheet

PIN #: 12630.00 **Town: Boothbay** **Date: 1/25/10**

Environmental Office Contact: Dave Gardner (david.gardner@maine.gov) 592-2471
Coordination & Permits Manager: Matt Steele
Database/Projex ☒

☒ **Section 106 and Tribal Consultation**

☒ **4(f) and 6(f)**

☒ **FEMA**

☒ **Maine Department of Inland Fisheries and Wildlife (MDIFW) Essential Habitat**

☒ **Maine Department of Conservation/ Public Lands, Submerged Land Lease**

☒ **Land Use Regulation Commission (LURC)**

☒ **Coast Guard Permit** Not Required ☐ Application Sent ☒ Coast Guard Permit Approved ☐

☒ **Maine Department of Environmental Protection (MDEP) Site Location of Development**

☒ **Maine Department of Environmental Protection (MDEP), Natural Resource Protection Act**

No permit required ☐
Exempt ☐ (Must use erosion and sediment control and not block fish passage.)
PBR ☒ Approved ☒
Tier 1 ☐ Approved ☐
Tier 2 ☐ Approved ☐
Individual ☐ Approved ☐

☒ **Army Corps of Engineers (ACOE), Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.**

No permit required ☐
Category 1-NR☐ Approved ☐
Category 2☒ Approved ☒
Category 3☐ Approved ☐

NOTE: If project requires a Category 2 or 3 Permit from the ACOE, then the MaineDOT Resident **must** fill out a **"Work Start Notification Form"** and a **"Compliance Certification Form" (when project has been completed)** and send them to the Environmental Office Contact named above.

☒ **IN-STREAM TIMING RESTRICTIONS:** 105 Special Provision ☒ n/a ☐

☒ Special Provision 656, Erosion Control Plan ☒ Special Provision 203, Dredge